



Yellow Lampmussel

Lampsilis cariosa

Priority 1 Species of Greatest Conservation Need (SGCN)

Class: Marine And Freshwater Molluscs (*Bivalvia*)

Order: Freshwater Mussels (*Unionoida*)

Family: Freshwater Mussels (*Unionidae*)

Marine And Freshwater Molluscs

General comments:

The Yellow Lampmussel is a medium- to large-sized freshwater mussel (Unionidae) that is distinctly yellow and somewhat resembles a marine clam. It lives in both still and flowing waters and is found in the Penobscot, St. George, and Kennebec River watersheds. This species has experienced extensive population declines throughout its range from habitat loss and degradation caused by stream channelization, dams, pollution, shoreline development, and invasive species, and is vulnerable to impacts of climate change. It is listed as Threatened in Maine, where some of the best remaining populations are found, and is considered vulnerable to critically imperiled in nearly every state where it still occurs.

Species Conservation Range Maps:

Town Map: [Lampsilis cariosa_Towns.pdf](#)

Subwatershed Map: [Lampsilis cariosa_HUC12.pdf](#)

SGCN Priority Ranking - Designation Criteria:

Risk of Extirpation:	Maine Status: Threatened	Federal Status: None	IUCN Red List Status: Vulnerable
High Regional Conservation Priority:	Northeast Regional Synthesis (RSGCN): Responsibility: High, Concern: High		

Habitat Associations:

Formation: Freshwater Aquatic

Macrogroup: Lentic

★ Primary Habitat	Habitat System: Deep Pelagic Lakes
★ Primary Habitat	Habitat System: Lakes without Depth Data
★ Primary Habitat	Habitat System: Shallow and Intermediate Depth Pelagic Lakes

Macrogroup: Lotic

	Habitat System: Cold Rivers <i>not typical, just one occurrence (Millinocket Stream)</i>
	Habitat System: Compromised Water Quality <i>Sebasticook River</i>



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Formation: Freshwater Aquatic

* Primary Habitat	Habitat System: Non-cold Large Rivers <i>Penobscot and Kennebec Rivers</i>
* Primary Habitat	Habitat System: Transitional Small and Medium Rivers
* Primary Habitat	Habitat System: Unknown Thermal Regime Small and Medium Rivers
* Primary Habitat	Habitat System: Warm Small and Medium Rivers

Threats

Threat Priority Level based on Severity and Actionability		Moderate Severity	High Severity
	Highly Actionable	Medium-High	High
	Moderately Actionable	Medium	Medium-High
	Actionable with Difficulty	Low	Low

IUCN Level 1 Threat Other Options

IUCN Level 2 Threat: Other Threat

Severity: Moderate Severity **Actionability:** Highly Actionable

Notes: lack of comprehensive statewide species assessment, recovery goals/plan, and site specific conservation plans

IUCN Level 2 Threat: Resource Needs

Severity: High Severity **Actionability:** Moderately Actionable

Notes: MDIFW lacks funding and staff to implement conservation actions for SGCN invertebrates (e.g., surveys and monitoring, research, habitat protection, outreach and education)

IUCN Level 1 Threat Agriculture and Aquaculture

IUCN Level 2 Threat: Annual and Perennial Non-timber crops

Severity: Moderate Severity **Actionability:** Moderately Actionable

Notes: in riparian buffer where intensive land use and loss of intact forest canopy can degrade aquatic habitat integrity and water quality



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IUCN Level 1 Threat Agriculture and Aquaculture

IUCN Level 2 Threat: Livestock Farming and Ranching

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: in riparian buffer where loss or degradation of intact forest canopy can degrade aquatic habitat integrity and water quality; in unfenced stream channel where livestock access can result in bank erosion, sedimentation, water quality degradation, and direct mortality from trampling

IUCN Level 1 Threat Biological Resource Use

IUCN Level 2 Threat: Logging and Wood Harvesting

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: in riparian buffer where loss of intact forest canopy can degrade aquatic habitat integrity and water quality; instream where sunken logs are salvaged

IUCN Level 1 Threat Natural Systems Modifications

IUCN Level 2 Threat: Dams and Water Management-Use

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: dams can alter and degrade habitat, block access to fish hosts, and potentially fragment populations; drawdowns for dam maintenance can cause direct mortality and downstream sedimentation; water withdrawals for irrigation or other large scale consumptive uses can alter/degrade habitat integrity and cause direct mortality; see also "Removing or Reducing Human Maintenance" for impacts of dam removal (some impoundments provide excellent habitat for this species)

IUCN Level 2 Threat: Removing or Reducing Human Maintenance

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: in Maine, this species appears to do well and occurs in large densities in some hydropower impoundments; dam removal can result in significant mortality and permanent loss of habitat



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IUCN Level 1 Threat Other Options

IUCN Level 2 Threat: Education & Outreach

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: some threats and challenges can be minimized through enhanced public outreach and advocacy (e.g., maintaining riparian buffers, protecting water quality, Stream Smart crossings, awareness and appreciation)

IUCN Level 2 Threat: Lack of knowledge

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: lack of comprehensive survey effort and long-term monitoring to document status and trends of individual populations

IUCN Level 1 Threat Pollution

IUCN Level 2 Threat: Agricultural and Forestry Effluents

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: impacts to water quality from point and non-point sources; direct impacts to mussels and/or fish hosts from contaminants and toxins

IUCN Level 2 Threat: Domestic and Urban Waste Water

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: impacts to water quality from point and non-point sources; direct impacts to mussels and/or fish hosts from contaminants and toxins

IUCN Level 2 Threat: Industrial and Military Effluents

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: impacts to water quality from point and non-point sources; direct impacts to mussels and/or fish hosts from contaminants and toxins



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IUCN Level 1 Threat Residential and Commercial Development

IUCN Level 2 Threat: Commercial and Industrial Areas

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: in riparian buffer where permanent land use changes and loss of intact forest canopy can degrade aquatic habitat integrity and water quality

IUCN Level 2 Threat: Housing and Urban Areas

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: in riparian buffer where permanent land use changes and loss of intact forest canopy can degrade aquatic habitat integrity and water quality

IUCN Level 2 Threat: Tourism and Recreational Areas

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: in riparian buffer where permanent land use changes and loss of intact forest canopy can degrade aquatic habitat integrity and water quality; in stream channel where construction and recreational use can cause erosion of stream banks, alteration of stream habitat, disturbance to bottom substrates, water quality degradation, and direct mortality (e.g., from crushing, dredging); impacts to fish host access and distribution from poorly designed stream crossings

IUCN Level 1 Threat Transportation and Service Corridors

IUCN Level 2 Threat: Roads and Railroads

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: in riparian buffer where loss of intact forest canopy can degrade aquatic habitat integrity and water quality (e.g., run-off, road salt); in stream channel where construction and maintenance can cause erosion of stream banks, sedimentation, water quality degradation, and direct mortality (e.g., bridge pier construction/repair); impacts to fish host access and distribution from poorly designed stream crossings



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IUCN Level 1 Threat **Transportation and Service Corridors**

IUCN Level 2 Threat: **Utility and Service Lines**

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: in riparian buffer where loss of intact forest canopy can degrade aquatic habitat integrity and water quality; in stream channel where utility crossings can disturb stream bed and cause direct mortality

IUCN Level 1 Threat **Climate Change and Severe Weather**

IUCN Level 2 Threat: **Changes in Precipitation and Hydrological Regimes**

Severity: Moderate Severity	Actionability: Actionable with Difficulty
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Notes: extreme and/or prolonged events (flooding or drought) can cause direct mortality, displacement, exposure, erosion of shorelines, sedimentation, increased water temperatures, water quality degradation, etc

IUCN Level 2 Threat: **Changes in Temperature Regimes**

Severity: Moderate Severity	Actionability: Actionable with Difficulty
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Notes: potential impacts from climate change or water management could exceed species' temperature thresholds

IUCN Level 1 Threat **Invasive and Other Problematic Species, Genes and Diseases**

IUCN Level 2 Threat: **Intrinsic Biological Limitations**

Severity: Moderate Severity	Actionability: Actionable with Difficulty
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Notes: inherent characteristics of life history (e.g., sedentary, fish host requirements, filter-feeder, long-lived, habitat requirements) and demographics (e.g., low densities, fragmented populations, low recruitment) all contribute to threat sensitivity and challenges for conservation and recovery

IUCN Level 2 Threat: **Invasive Non-native-Alien Species-Diseases**

Severity: Moderate Severity	Actionability: Actionable with Difficulty
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Notes: zebra mussel recently accidentally introduced to northern Maine waters and could potentially reach river systems occupied by this species; Asian clam also a potential threat that has not yet been documented in Maine but is present in other New England states; both species can degrade habitat for native species and compete for resources; invasive aquatic plants can alter/degrade habitat; outreach and prevention/control efforts can help minimize potential impacts but may not be able to entirely prevent



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IUCN Level 1 Threat **Invasive and Other Problematic Species, Genes and Diseases**

IUCN Level 1 Threat **Pollution**

IUCN Level 2 Threat: Air-Bourne Pollutants

Severity: Moderate Severity	Actionability: Actionable with Difficulty
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Notes: impacts to water quality and direct impacts to mussels from acidification, mercury deposition, other contaminants, etc

Species Level Conservation Actions:

Only species specific conservation actions that address high (red) or medium-high (orange) priority threats are summarized here.

Conservation Action	Category	Biological Priority	Type
Draft a statewide species assessment and conservation plan, including recovery goals, as well as site-specific conservation plans for each occupied waterbody.	Species Management	critical	new

Threat(s) Addressed By This Conservation Action

- Other Threat
- Education & Outreach

Conservation Actions Associated with the Freshwater Mussels Guild:

Conservation Action	Category	Biological Priority	Type
Increase MDIFW staff capacity for survey, research, and conservation of SGCN invertebrates.	Policy	critical	new

Threat(s) Addressed By This Conservation Action

- Resource Needs
- Education & Outreach
- Lack of knowledge



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Conservation Action	Category	Biological Priority	Type
Develop/distribute Best Management Practices for landowners, land managers and conservation partners to avoid and minimize impacts of intensive land use activities (e.g., forestry, stream crossings, agriculture, development, hydro facilities).	Habitat Management	critical	on-going

Threat(s) Addressed By This Conservation Action

- Dams and Water Management-Use
- Tourism and Recreational Areas
- Utility and Service Lines
- Roads and Railroads
- Housing and Urban Areas
- Commercial and Industrial Areas
- Domestic and Urban Waste Water
- Industrial and Military Effluents
- Agricultural and Forestry Effluents
- Education & Outreach
- Logging and Wood Harvesting
- Livestock Farming and Ranching
- Annual and Perennial Non-timber crops

Conservation Action	Category	Biological Priority	Type
Conduct comprehensive statewide surveys to inform/update distribution and status.	Survey and Monitoring	high	on-going

Threat(s) Addressed By This Conservation Action

- Lack of knowledge

Conservation Action	Category	Biological Priority	Type
Develop/distribute outreach materials to raise public awareness and appreciation of freshwater mussel ecology, threats and conservation needs.	Public Outreach	moderate	on-going

Threat(s) Addressed By This Conservation Action

- Invasive Non-native-Alien Species-Diseases
- Education & Outreach



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Conservation Action	Category	Biological Priority	Type
Proactively work with conservation partners to focus incentives for voluntary habitat management towards farms where forested riparian buffers are lacking and/or livestock have access to the stream channel, especially where at-risk species are present.	Habitat Management	high	new

Threat(s) Addressed By This Conservation Action

- Education & Outreach
- Agricultural and Forestry Effluents
- Livestock Farming and Ranching
- Annual and Perennial Non-timber crops

Conservation Action	Category	Biological Priority	Type
Update/modernize the statewide freshwater mussel database, including with external records (e.g., iNaturalist, museum specimens, literature) to better inform conservation actions.	Species Management	high	on-going

Threat(s) Addressed By This Conservation Action

- Education & Outreach
- Lack of knowledge

Conservation Action	Category	Biological Priority	Type
Develop standardized survey, relocation, and post-monitoring protocols for projects where Take of listed freshwater mussels may occur as a result of project activities.	Survey and Monitoring	high	on-going

Threat(s) Addressed By This Conservation Action

- Removing or Reducing Human Maintenance
- Dams and Water Management-Use
- Education & Outreach
- Commercial and Industrial Areas
- Tourism and Recreational Areas
- Housing and Urban Areas
- Roads and Railroads
- Utility and Service Lines

Conservation Action	Category	Biological Priority	Type
Work with conservation partners (e.g., Regional Working Groups, University of Maine) to improve understanding of conservation needs, life history, population status, survey and monitoring techniques, etc.	Research	high	on-going

Threat(s) Addressed By This Conservation Action

- Lack of knowledge
- Resource Needs



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Conservation Action	Category	Biological Priority	Type
Update NatureServe S-ranks for all Maine freshwater mussel species.	Research	high	completed

Threat(s) Addressed By This Conservation Action

- Lack of knowledge

Broad Taxonomic Group Conservation Actions:

Additional relevant conservation actions for this species are assigned within broader taxonomic groups in Maine's Wildlife Action Plan: Element 4.

Habitat Based Conservation Actions:

Additional conservation actions that may benefit habitat(s) associated with this species can be found in Maine's Wildlife Action Plan: Element 4. Click on the Habitat Grouping of interest to launch a habitat based report summarizing relevant conservation actions and associated SGCN.

The Wildlife Action Plan was developed through a lengthy participatory process with state agencies, targeted conservation partners, and the general public. The Plan is non-regulatory. The species, threats, and voluntary conservation actions identified in the Plan complement, but do not replace, existing work