

Boreotrophon clathratus* (Clathrate Trophon)*Priority 2 Species of Greatest Conservation Need (SGCN)****Class:** *Gastropoda* (Aquatic And Terrestrial Snails)**Order:** *Neotaenioglossa* (Mostly Sea Snails)**Family:** *Muricidae* (Murex Snails)**General comments: none****No Species Conservation Range Maps Available for Clathrate Trophon****SGCN Priority Ranking - Designation Criteria:****Risk of Extirpation: NA****State Special Concern or NMFS Species of Concern: NA****Recent Significant Declines:**

Clathrate Trophon is currently undergoing steep population declines, which has already led to, or if unchecked is likely to lead to, local extinction and/or range contraction.

Notes:

recent decline - Trott, in review; last record in Cobscook Bay 1973; climate change - Southward et al. 1995; Schiel et al. 2004; understudied as dredge by-catch, professional judgement

Regional Endemic: NA**High Regional Conservation Priority: NA****High Climate Change Vulnerability:**

Boreotrophon clathratus is highly vulnerable to climate change.

Understudied rare taxa:

Recently documented or poorly surveyed rare species for which risk of extirpation is potentially high (e.g. few known occurrences) but insufficient data exist to conclusively assess distribution and status. *criteria only qualifies for Priority 3 level SGCN*

Notes:

recent decline - Trott, in review; last record in Cobscook Bay 1973; climate change - Southward et al. 1995; Schiel et al. 2004; understudied as dredge by-catch, professional judgement

Historical: NA**Culturally Significant: NA****Habitats Assigned to Clathrate Trophon:**

Formation Name	Intertidal
Macrogroup Name	Intertidal Gravel Shore
Habitat System Name:	Lower Intertidal **Primary Habitat** Notes: assumed spawning habitat and egg-laying habitat, non-pelagic direct development, juvenile feeding habitat, adult feeding habitat
Macrogroup Name	Intertidal Mudflat
Habitat System Name:	Non-Vascular Mudflat **Primary Habitat** Notes: assumed spawning habitat and egg-laying habitat, non-pelagic direct development, juvenile feeding habitat, adult feeding habitat
Macrogroup Name	Intertidal Sandy Shore
Habitat System Name:	Sand Flat **Primary Habitat** Notes: over-wintering habitat, assumed spawning habitat and egg-laying habitat, non-pelagic direct development, juvenile feeding habitat, adult feeding habitat
Formation Name	Subtidal
Macrogroup Name	Subtidal Coarse Gravel Bottom
Habitat System Name:	Coarse Gravel **Primary Habitat** Notes: over-wintering habitat, assumed spawning habitat and egg-laying habitat, non-pelagic direct development, juvenile feeding habitat, adult feeding habitat

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Family: *Muricidae* (Murex Snails)

Formation Name Subtidal

Habitat System Name: Kelp Bed ****Primary Habitat**** **Notes:** *over-wintering habitat, assumed spawning habitat and egg-laying habitat, non-pelagic direct development, juvenile feeding habitat, adult feeding habitat*

Macrogroup Name Subtidal Mud Bottom

Habitat System Name: Unvegetated ****Primary Habitat**** **Notes:** *over-wintering habitat, assumed spawning habitat and egg development habitat, non-pelagic direct development, juvenile feeding habitat, adult feeding habitat*

Stressors Assigned to Clathrate Trophon:

Stressor 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 Biological Resource Use

IUCN Level 2 Threat: Fishing and Harvesting of Aquatic Resources

Severity: Severe **Actionability:** Highly actionable

Notes: Large-scale, unintentional catch by commercial trawling reduces population size and subsequently results in local extinctions, impaired role of the functional group "predator," and subsequently results in decreased benthic diversity through trophic cascades and thus decreases the availability of food for other species. Large-scale incidental catch contributes to these effects. Likelihood is high (high certainty) and large scale (throughout the region where this species occurs). Actionability is low for incidental catch.

IUCN Level 1 Threat Pollution

IUCN Level 2 Threat: Agricultural and Forestry Effluents

Severity: Severe **Actionability:** Moderately actionable

Notes: Loss of habitat due to excessive nutrients, toxic chemicals (including pesticides and chemical therapeutants), and/or sediments originating from aquaculture can reduce populations size. Direct effects could include toxicity of tributyl compounds shown in other gastropods. Likelihood is high (high certainty). Current spatial extent is expanding along coast along with development of the aquaculture industry, so actionability is moderate, i.e. the threat can be minimized in newly developing areas.

IUCN Level 2 Threat: Industrial and Military Effluents

Severity: Severe **Actionability:** Moderately actionable

Notes: Oil spills are toxic to species with intertidal distributions. Local scale spills have an unpredictable likelihood and actionability is moderate and influenced by response time to spills.

IUCN Level 1 Threat Climate Change and Severe Weather

IUCN Level 2 Threat: Habitat Shifting or Alteration

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Ocean acidification may result in decreased survivorship of larvae, and growth and feeding shown in other molluscs. Likelihood is high and large scale. The ability to mitigate ocean acidification is low.

IUCN Level 2 Threat: Temperature Extremes

Severity: Severe **Actionability:** Actionable with difficulty

Notes: Clathrate trophons are cold-water species. Increased water temperatures may have interactive effects with ocean pH decreasing survivorship of larvae and growth rate shown for other molluscs. Likelihood is high (high certainty) and large scale. The ability to mitigate sea temperature change is low.

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Conservation Action	Category: Public Outreach	Biological Priority: high	Type: on-going
Encourage the use of more targeted fishing gear in order to reduce bycatch and habitat disturbance			

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action	Category: Policy	Biological Priority: critical	Type: new
Reduce the collection and possession of live specimens			

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action	Category: Research	Biological Priority: high	Type: new
Develop molecular tools to identify where specimens are collected.			

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action	Category: Survey and Monitoring	Biological Priority: high	Type: on-going
Ground-truth mapped habitat and compare to historical maps to monitor change over time, may require updating mapping plans to map more frequently			

Stressor(s) Addressed By This Conservation Action

Fishing and Harvesting of Aquatic Resources

Conservation Action	Category: Policy	Biological Priority: critical	Type: new
Reduce the use of tributyltin compounds as a biocide and antifouling prophalactic			

Stressor(s) Addressed By This Conservation Action

Agricultural and Forestry Effluents

Broad Taxonomic Group Conservation Actions:

Additional relevant conservation actions for this species are assigned within broader taxonomic groups in Maine's 2015 Wildlife Action Plan: Element 4, Table 4-1.

Habitat Based Conservation Actions:

Additional conservation actions that may benefit habitat(s) associated with this species can be found in Maine's 2015 Wildlife Action Plan: Element 4, Table 4-15. Click on the Habitat Grouping of interest to launch a habitat based report summarizing relevant conservation actions and associated SGCN.

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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, stressors, and voluntary conservation actions identified in the Plan complement, but do not replace, existing work programs and priorities by state agencies and partners.