

DRAFT Government Response Statement  
to  
Recovery Strategy for the Pugnose Minnow in Ontario

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1 **Pugnose Minnow**

2 **Ontario Government Response Statement**

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3 **Protecting and Recovering Species at Risk in Ontario**

4 Species at risk recovery is a key part of protecting Ontario's biodiversity. The  
5 *Endangered Species Act, 2007* (ESA) is the Ontario government's legislative  
6 commitment to protecting and recovering species at risk and their habitats.

7 Under the ESA, the government must ensure that a recovery strategy is prepared for  
8 each species that is listed as endangered or threatened. A recovery strategy provides  
9 science-based advice to government on what is required to achieve recovery of a  
10 species.

11 Generally, within nine months after a recovery strategy is prepared, the ESA requires  
12 the government to publish a statement summarizing the government's intended actions  
13 and priorities in response to the recovery strategy. The response statement is the  
14 government's policy response to the scientific advice provided in the recovery strategy.  
15 In addition to the strategy, the government response statement considers (where  
16 available) input from Indigenous communities and organizations, stakeholders, other  
17 jurisdictions, and members of the public. It reflects the best available local and scientific  
18 knowledge, including Indigenous Knowledge where it has been shared by communities  
19 and Knowledge Holders, as appropriate, and may be adapted if new information  
20 becomes available. In implementing the actions in the response statement, the ESA  
21 allows the government to determine what is feasible, taking into account social, cultural  
22 and economic factors.

23 The [Recovery Strategy for the Pugnose Minnow \(\*Opsopoeodus emiliae\*\) in Ontario](#) was  
24 completed on July 12, 2023.

25 Pugnose Minnow is a small freshwater fish that grows to approximately 5 cm long in 26 Ontario. It has a white belly, pale yellow to olive green back with darkly outlined scales, 27 and a black stripe along its side from tail to snout.
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28 **Protecting and Recovering Pugnose Minnow**

29 Pugnose Minnow is listed as a threatened species under the ESA, which protects both  
30 the animal and its habitat. The ESA prohibits harm or harassment of the species and

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31 damage or destruction of its habitat without authorization or complying with the  
32 requirements of a regulatory exemption.

33 Pugnose Minnow is the only species belonging to the genus *Opsopoeodus*. The species  
34 is found throughout the east-central United States, with a small portion of the range  
35 extending into southwestern Ontario. In the United States, Florida and Texas mark the  
36 southern and western edges of the range, which expands northward throughout the  
37 Mississippi River system as far north as Wisconsin. Extant Ontario populations occur in  
38 the Detroit River and its tributary, the Canard River, Lake St. Clair and Chenail Ecarté,  
39 and several Lake St. Clair tributaries including North Sydenham River, East Sydenham  
40 River, East Otter Creek, Little Bear Creek, Maxwell Creek, and Whitebread Drain/Grape  
41 Run. The species also historically occurred in the McDougall Drain (possibly extirpated)  
42 and Thames River (extirpated), where it was last observed in 1968 and 1984,  
43 respectively. It is possible that other populations exist in areas with suitable habitat.

44  
45 Pugnose Minnow occupies lakes, rivers and streams associated with wetlands in slow  
46 moving water. While Pugnose Minnow has often been documented in clear water with  
47 abundant aquatic vegetation, recent surveys in Ontario have captured most individuals  
48 in turbid (murky) water with various levels of aquatic vegetation. It is unclear whether  
49 turbid environments are preferred or if the species is persisting in less suitable habitat at  
50 these locations. Spawning is thought to occur between May and June, and females  
51 have been observed depositing eggs under flat surfaces, such as rocks, during  
52 laboratory studies. Further research is needed to better understand the species'  
53 biological requirements and preferences at all life stages, as well as how climate  
54 change may impact Pugnose Minnow habitat and distribution in the future.

55 Currently, there are no population size or trend estimates for Pugnose Minnow  
56 populations in Ontario. Although the Canard River appears to support the largest  
57 abundance of Pugnose Minnow individuals compared to other occupied areas, the  
58 population status for this area is still considered "poor" by experts. In other occupied  
59 areas, Pugnose Minnow are caught infrequently and in low numbers.

60 The main threats to the species include habitat loss, degradation and alteration from  
61 sediment and nutrient loading, contaminants and toxic substances, drain maintenance,  
62 and shoreline development. Lands surrounding Pugnose Minnow habitat are primarily  
63 agricultural and urban areas where practices such as removal of riparian areas,  
64 unrestricted livestock access to rivers, improper use of fertilizers and pesticides, and  
65 substandard septic and sewage treatment systems can contribute to sedimentation and  
66 nutrient loading. Contaminant spills are also an issue in these areas. Further to this,  
67 some areas occupied by Pugnose Minnow are municipal drains that are subject to

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68 regular maintenance, which may reduce habitat quality or availability when flow rates  
69 and/or characteristics are altered. Shoreline development and dredging for shipping  
70 lanes has already altered Pugnose Minnow habitat in the Detroit River and Lake St.  
71 Clair, and shoreline development and dredging for marinas is also expected to have  
72 negative impacts on Pugnose Minnow habitat and food sources.

73 Invasive species, such as Common Carp (*Cyprinus carpio*), Round Goby (*Neogobius*  
74 *melanostomus*) and Tubenose Goby (*Proterorhinus semilunaris*) may compete with  
75 Pugnose Minnow for resources or alter food web dynamics. European Common Reed,  
76 also known as invasive Phragmites (*Phragmites australis* ssp. *australis*) and dreissenid  
77 mussels (i.e. Zebra Mussels (*Dreissena polymorpha*) and Quagga Mussels (*Dreissena*  
78 *bugensis*)) may reduce habitat availability for the species by significantly altering  
79 wetland habitat and limiting spawning surfaces, respectively. Incidental harvest is  
80 another potential threat as the species may be found in areas of Ontario where baitfish  
81 are commercially harvested.

82 The extent and severity of threats to Pugnose Minnow and its habitat require further  
83 investigation, including their cumulative effects.

84 Insufficient information on life history, population characteristics, and the extent and  
85 magnitude of threats presents a challenge for developing specific population and  
86 distribution targets. Research and monitoring are required to gain a better  
87 understanding of species-specific life history characteristics, demographic traits,  
88 population size and range, and tolerance for habitat alteration in order to implement  
89 effective strategies to protect known populations and their habitat, and to refine  
90 recovery efforts and objectives. Accordingly, the government supports investigating the  
91 necessity and feasibility of population augmentation. Raising awareness of the species  
92 and its threats is also important for promoting protection and recovery efforts of  
93 Pugnose Minnow and its habitat.

94 **Government's Recovery Goal**

95 The government's goal for the recovery of Pugnose Minnow is to stabilize or increase  
96 populations in currently occupied locations in Ontario, and maintain or expand the  
97 species' distribution within its natural range.

98 **Actions**

99 Protecting and recovering species at risk is a shared responsibility. No single agency or  
100 organization has the knowledge, authority or financial resources to protect and recover

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101 all of Ontario's species at risk. Successful recovery requires inter-governmental co-  
102 operation and the involvement of many individuals, organizations and communities. In  
103 developing the government response statement, the government considered what  
104 actions are feasible for the government to lead directly and what actions are feasible for  
105 the government to support its conservation partners to undertake.

106 **Government-led Actions**

107 To help protect and recover Pugnose Minnow, the government will directly undertake  
108 the following actions:

- 109 • Continue to protect Pugnose Minnow and its habitat through the ESA.
- 110 • Undertake communications and outreach to increase public awareness of  
111 species at risk in Ontario (e.g., through the Ontario Parks Discovery Program,  
112 where appropriate).
- 113 • Educate other agencies and authorities involved in planning and environmental  
114 assessment processes on the protection requirements under the ESA.
- 115 • Encourage the submission of Pugnose Minnow data to Ontario's central  
116 repository through the [NHIC \(Rare species of Ontario\) project in iNaturalist](#) or  
117 directly through the [Natural Heritage Information Centre](#).
- 118 • Continue to support conservation, agency, municipal and industry partners, and  
119 Indigenous communities and organizations to undertake activities to protect and  
120 recover Pugnose Minnow. Support will be provided where appropriate through  
121 funding, agreements, permits and/or advisory services.
- 122 • Work with all levels of government, communities and sectors to take action on  
123 climate change, and to report on progress in reducing greenhouse gas  
124 emissions.
- 125 • Continue to implement Ontario's *Invasive Species Act, 2015* to:
  - 126 ○ prevent the introduction and spread of invasive species (e.g. d invasive  
127 Phragmites) that threaten Pugnose Minnow and its habitat by applying the  
128 prohibitions as prescribed through the associated [Regulations](#).
  - 129 ○ prevent the introduction and spread of invasive species (e.g. dreissenid  
130 mussels) that threaten Black Redhorse and its habitat by requiring boaters

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131 to take mandatory precautions to remove aquatic organisms and drain  
132 water from watercraft and watercraft equipment prior to transporting  
133 overland or launching into any waterbody in Ontario.

134 • Continue to implement the [Aquatic Invasive Species Regulations](#) made under the  
135 federal [Fisheries Act, 1985](#) to control the spread of invasive species that threaten  
136 Pugnose Minnow and its habitat by prohibiting the transportation, possession,  
137 and release of live Round Goby and Tubenose Goby in Ontario.

138 • Continue to implement the [Ontario Invasive Species Strategic Plan \(2012\)](#) to  
139 address the invasive species (e.g. dreissenid mussels, invasive Phragmites, and  
140 Round Goby) that threaten Pugnose Minnow and its habitat.

141 • Conduct a review of progress toward the protection and recovery of Pugnose  
142 Minnow within 5 years of the publication of this document.

#### 143 **Government-supported Actions**

144 The government endorses the following actions as being necessary for the protection  
145 and recovery of Pugnose Minnow. Actions identified as “high” may be given priority  
146 consideration for funding under the Species at Risk Stewardship Program. Where  
147 reasonable, the government will also consider the priority assigned to these actions  
148 when reviewing and issuing authorizations under the ESA. Other organizations are  
149 encouraged to consider these priorities when developing projects or mitigation plans  
150 related to species at risk.

151 <b>Focus Area:</b>	<b>Management</b>
152 Objective:	Maintain or improve the quality of Pugnose Minnow habitat and 153 reduce threats to the species through habitat rehabilitation and 154 threat mitigation.

155 Pugnose Minnow occurs in southern Ontario, where limited habitat availability and  
156 reduced habitat quality present ongoing threats to the species. The removal of riparian  
157 areas, unrestricted livestock access to rivers, improper use of fertilizers and pesticides,  
158 contaminant spills and substandard septic and sewage treatment systems contribute to  
159 increased levels of sediment and nutrients in the watershed. Collaborating with  
160 Indigenous groups, land owners, ecosystem recovery teams, conservation groups, local  
161 industries, and other relevant groups to manage habitat and threats will help to improve  
162 water quality conditions at the watershed scale.

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**Actions:**

1. Minimize threats in and around the species' habitat by undertaking activities and completing effectiveness monitoring for these activities, including:
  - i. **(High)** implementing natural shoreline stabilization techniques (e.g. riparian buffers) to prevent erosion
  - ii. **(High)** developing and implementing Environmental Farm Plans and Nutrient Management Plans
  - iii. **(High)** developing, implementing and updating best management practices to reduce siltation, turbidity, nutrient loading, and runoff of pollutants and to minimize the impact of altered flow regimes
  - iv. managing or controlling invasive species, such as invasive Phragmites
2. If determined necessary and feasible, implement, monitor and adapt augmentation actions for local populations with a focus on those at a higher risk of extirpation.

<b>Focus Area:</b>	<b>Research and Monitoring</b>
Objective:	Improve understanding of Pugnose Minnow biology, habitat requirements, population trends, threats to the species and its habitat, and necessity and feasibility of population management actions (i.e. augmentation).

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In order to ensure that recovery efforts for Pugnose Minnow are effective, it is necessary to gain a more thorough understanding of the species and its habitat in Ontario. There are knowledge gaps regarding life history, habitat requirements, distribution and abundance, population demographics and trends, and the extent and severity of threats. Filling these knowledge gaps will provide information to determine the feasibility of maintaining, expanding or restoring self-sustaining populations at the local scale and will help determine where recovery efforts should be focused. The necessity and feasibility of augmenting existing populations through additional population management techniques such as captive rearing and release programs, should be explored where threats have been mitigated.

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**Actions:**

3. **(High)** Develop and implement standardized inventory and monitoring protocols for Pugnose Minnow, with consideration for other species at risk fish that occur in the same habitat where appropriate. Actions may include:

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- 198           i.    surveying extant populations to determine species abundance and  
199                    demographic, life history and habitat characteristics  
200           ii.   monitoring population and habitat characteristics of extant populations  
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- 202       4.   **(High)** Research habitat needs and life history characteristics of all life-stages to  
203           support the refinement of the recovery goal and habitat protection.  
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- 205       5.   Investigate the severity, extent and source of threats to Pugnose Minnow, such  
206           as siltation and sedimentation, nutrient loading, runoff of pollutants, dredging,  
207           invasive species, and incidental harvest, as well as how climate change and  
208           severe weather may impact the species.  
209
- 210       6.   Conduct surveys within the historical distribution where suitable habitat exists,  
211           and in other targeted areas where there is reason to believe the species may be  
212           present to confirm whether populations exist.  
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- 214       7.   Investigate the necessity and feasibility of augmenting Pugnose Minnow where it  
215           is presently found. Actions may include:  
216           i.    assessing whether current threats can be sufficiently mitigated or reversed  
217                    in order to enable successful augmentation  
218           ii.   undertaking population viability analysis for extant populations  
219           iii.   evaluating the feasibility of captive rearing and release, including  
220                    identifying potential source populations  
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222	<b>Focus Area:</b>	<b>Awareness</b>
223	Objective:	Increase public awareness and promote the protection and 224                    stewardship of Pugnose Minnow in Ontario.

225   Due to the nature of aquatic systems, the Pugnose Minnow habitat may be impacted by  
226   activities occurring on terrestrial areas adjacent to occupied habitat, as well as in areas  
227   upstream of occupied habitat. As such, promoting public awareness of Pugnose  
228   Minnow and its threats across the watersheds in which it occurs is important for  
229   supporting the protection and recovery of the species and their habitat in Ontario.

230   **Actions:**

- 231       8.   Collaborate with Indigenous communities and organizations, landowners, land  
232           managers and conservation partners to promote awareness of Pugnose Minnow  
233           and its threats among people engaged in agriculture, stewardship, fishing, bait  
234           harvesting and shoreline modification activities within the species' range by  
235           sharing information on:

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- 236 i. how to identify the species
- 237 ii. the species' habitat requirements
- 238 iii. protection afforded to the species and their habitat under the ESA
- 239 iv. how to report observations of the species
- 240 v. actions that can be taken to avoid or minimize the impacts to the species
- 241 and their habitats (e.g. harvest techniques and timing windows, practices
- 242 to prevent the introduction and spread of invasive species)
- 243 vi. actions that can be taken to promote the species' protection and recovery
- 244
- 245 9. Undertake work consistent with existing provincial programs and policies (e.g.
- 246 [Ontario's Sustainable Bait Management Strategy](#) and [Ontario's Invading Species](#)
- 247 [Awareness Program](#)) to promote responsible baitfish harvesting and awareness
- 248 of invasive species and their impacts in Ontario, and to implement actions to
- 249 prevent, respond to, and manage the spread of invasive species.

250 **Implementing Actions**

251 Financial support for the implementation of actions may be available through the

252 Species at Risk Stewardship Program. Conservation partners are encouraged to

253 discuss project proposals related to the actions in this response statement with Ministry

254 of the Environment, Conservation and Parks staff. The Ontario government can also

255 provide guidance about the requirements of the ESA, whether an authorization or

256 regulatory exemption may be required for the project and, if so, the authorization types

257 and/or conditional exemptions for which the activity may be eligible. Implementation of

258 the actions may be subject to changing priorities across the multitude of species at risk,

259 available resources and the capacity of partners to undertake recovery activities. Where

260 appropriate, the implementation of actions for multiple species will be co-ordinated

261 across government response statements.

262 **Performance Measures**

- 263 Progress towards achieving the government's goal for the recovery of Pugnose Minnow
- 264 will be measured against the following performance measures:
- 265
- 266 • By 2028, all known Pugnose Minnow populations are persisting.
- 267 • By 2038, all known Pugnose Minnow populations are stabilizing or increasing.



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268 **Reviewing Progress**

269 The ESA requires the Ontario government to conduct a review of progress towards  
270 protecting and recovering a species no later than the time specified in the species'  
271 government response statement, which has been identified as 5 years. The review will  
272 help identify if adjustments are needed to achieve the protection and recovery of  
273 Pugnose Minnow.  
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275 **Acknowledgement**

276 We would like to thank all those who participated in the development of the Recovery  
277 Strategy and Government Response Statement for the Pugnose Minnow (*Opsopoeodus*  
278 *emiliae*) in Ontario for their dedication to protecting and recovering species at risk.

279 **For Additional Information:**

280 Visit the species at risk website at [ontario.ca/speciesatrisk](http://ontario.ca/speciesatrisk)  
281 Contact the Ministry of the Environment, Conservation and Parks  
282 1-800-565-4923  
283 TTY 1-855-515-2759  
284 [www.ontario.ca/environment](http://www.ontario.ca/environment)