

DRAFT Government Response Statement
to
Recovery Strategy for the Lake Whitefish – Opeongo Lake large- and small-bodied
populations in Ontario

1 **Lake Whitefish (Opeongo Lake large- and small-bodied**
2 **populations)**
3 **Ontario Government Response Statement**

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

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

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

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

24 The Recovery Strategy for the Lake Whitefish (*Coregonus clupeaformis*) – Opeongo
25 Lake large- and small-bodied populations in Ontario was completed on January 16,
26 2024.

27 Lake Whitefish is silvery in colour with a darker back, lighter underside and large,
28 rounded scales. It has a short head with small eyes and a snout that slightly overhangs
29 the mouth.

30 As suggested by the name, large-bodied individuals reach a larger size at maturity than
31 small-bodied individuals.

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32 **Protecting and Recovering Lake Whitefish (Opeongo Lake large- and small-**
33 **bodied populations)**

34 Lake Whitefish (Opeongo Lake large- and small-bodied populations) are listed as
35 threatened species under the ESA, which protects both the animals and their habitat.
36 The ESA prohibits harm or harassment of the species and damage or destruction of
37 their habitat without authorization or complying with the requirements of a regulatory
38 exemption.

39 In response to the listing of the Lake Whitefish (Opeongo Lake large- and small-bodied
40 populations), Ontario closed recreational fishing for Lake Whitefish in Opeongo Lake in
41 2022.

42 Lake Whitefish is widely distributed across Canada and the northern United States
43 including New England west to Minnesota. It is generally common where it occurs, but
44 has undergone local adaptations in some lakes, giving rise to evolutionarily distinct
45 forms. Lake Whitefish in Opeongo Lake, Algonquin Provincial Park (southeastern
46 Ontario) are unique, as they have co-evolved as two separate populations of larger and
47 smaller bodied individuals. The two forms – collectively referred to as a “species pair” –
48 occur only in Opeongo Lake. Although they are the same species, the forms are
49 physically distinct and reproduce independently of one-another. For more information
50 about the identification of each form, please view the [Recovery Strategy for the Lake](#)
51 [Whitefish \(*Coregonus clupeaformis*\) – Opeongo Lake large- and small-bodied](#)
52 [populations in Ontario](#). Although the Lake Whitefish found in Opeongo Lake are not a
53 separate taxonomic species from the Lake Whitefish found in other lakes in Ontario,
54 they are considered discrete, significant entities that are eligible for assessment under
55 the ESA. Only one other Lake Whitefish pair has been assessed in Ontario (Como Lake
56 populations) and both forms are classified as Extinct. Lake Whitefish found in other
57 Ontario lakes are not considered at risk.

58 Lake Whitefish is a freshwater member of the salmonid family, found mainly in large,
59 cold lakes and their tributaries. Opeongo Lake is the largest lake in Algonquin Provincial
60 Park and consists of four basins separated by shallow narrows. Large- and small-
61 bodied populations of Lake Whitefish are found throughout Opeongo Lake, though there
62 are fewer records from shallower bays, which likely reflects the species’ preferences for
63 deeper areas and cooler temperatures. Generally, species pairs arise when Lake
64 Whitefish evolve to occupy different trophic niches within the same lake: one form tends
65 to occupy the benthic (bottom) zone and feed on benthic organisms, while the other
66 form tends to occupy the limnetic (open water) zone and feed on plankton. However,

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67 available information suggests that adults of both the large- and small-bodied forms in
68 Opeongo Lake are using benthic habitat throughout most of the ice-free season.
69 Additional research is needed to better understand the degree and timing of overlap in
70 trophic niches and habitat use between the two forms and clarify the factors that support
71 the maintenance of the two different forms.

72 Lake Whitefish generally spawn in nearshore areas of lakes with rocky shoals.
73 However, locations and key characteristics of spawning habitat in Opeongo Lake are
74 not known with certainty. Lake Whitefish are also known to spawn in rivers, but it is
75 unknown whether the Opeongo Lake forms use creeks which are connected to the lake
76 (e.g., Costello Creek, Hailstorm Creek). Habitat needs of juvenile Lake Whitefish in
77 Opeongo Lake are also unknown, though historical capture of juveniles alongside adults
78 suggests some degree of overlap in habitat use.

79 The most significant threat to the Lake Whitefish species pair in Opeongo Lake is the
80 introduction of invasive or non-native species, such as invasive zooplankton (e.g., Spiny
81 Water Flea [*Bythotrephes longimanus*], Fishhook Water Flea [*Cercopagis pengoi*]),
82 dreissenid mussels (e.g., Zebra Mussel [*Dreissena polymorpha*], Quagga Mussel [*D.*
83 *bugensis*]), and nonindigenous and predatory fish (e.g., Rainbow Smelt [*Osmerus*
84 *mordax*], Northern Pike [*Esox lucius*]). The introduction and establishment of invasive or
85 non-native species can alter food web dynamics, with implications for the conditions
86 which maintain the Lake Whitefish species pair, as suggested by the extinction of the
87 species pair in Como Lake, Ontario after the introduction of Spiny Waterflea around
88 2011. New populations of Rainbow Smelt (e.g., Radiant Lake) and Spiny Waterflea
89 (e.g., Rock Lake) have recently become established in the park, demonstrating that
90 there is a real and current risk for their introduction into Opeongo Lake.

91 Climate change represents another potential threat to the Lake Whitefish species pair in
92 Opeongo Lake, as increases in temperatures and reductions in dissolved oxygen and
93 winter ice cover may reduce suitable habitat, increase egg mortality, influence prey
94 availability, and increase the incidence of harmful algal blooms. Incidental catch by
95 anglers fishing for other sport fish species may pose a minor risk, but the likelihood and
96 intensity of this threat is low.

97 The Lake Whitefish species pair in Opeongo Lake represents a unique component of
98 whitefish diversity, and its single location makes it especially vulnerable to extinction.
99 Given that Opeongo Lake is in a provincially protected area, threats, particularly those
100 with the potential to impact habitat, are minimized. However, the lake receives a high
101 level of traffic, which poses a risk of introduction of invasive and/or non-native species.

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102 Species pairs are typically distinguished by isolated niches, but the conditions
103 maintaining the Opeongo Lake species pair are not well-understood. Research is
104 needed to provide reliable estimates of abundance, genetics, and population structure
105 and trends to determine whether the population is self-sustaining, and to better
106 understand the dynamics of the two forms, individually and in relation to one-another,
107 and how they may be impacted by the identified threats.

108 **Government’s Recovery Goal**

109 The government’s goal for the recovery of Lake Whitefish (Opeongo Lake large- and
110 small-bodied populations) is to maintain self-sustaining populations of both forms.

111 **Actions**

112 Protecting and recovering species at risk is a shared responsibility. No single agency or
113 organization has the knowledge, authority or financial resources to protect and recover
114 all of Ontario’s species at risk. Successful recovery requires inter-governmental co-
115 operation and the involvement of many individuals, organizations and communities. In
116 developing the government response statement, the government considered what
117 actions are feasible for the government to lead directly and what actions are feasible for
118 the government to support its conservation partners to undertake.

119 The government endorses the following actions as being necessary for the protection
120 and recovery of Lake Whitefish (Opeongo Lake large- and small-bodied populations).
121 Actions identified as “high” may be given priority consideration for funding under the
122 Species at Risk Stewardship Program. Where reasonable, the government will also
123 consider the priority assigned to these actions when reviewing and issuing
124 authorizations under the ESA. Other organizations are encouraged to consider these
125 priorities when developing projects or mitigation plans related to species at risk.

126 Given the species pair is found only within a provincially protected area, it is recognized
127 that all recovery actions for this species will likely require some level of government
128 oversight or involvement, therefore some actions below are identified as both
129 government led and supported.

130 The government will conduct a review of progress toward the protection and recovery of
131 Lake Whitefish (Opeongo Lake large- and small-bodied populations) within five years of
132 the publication of this document.

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134 **Focus Area:** **Threat Mitigation and Awareness**
135 **Objective:** Take proactive measures to mitigate threats to the species and
136 their habitats and increase the level of public awareness and
137 engagement in protecting the species pair.

138 The greatest threat to the Lake Whitefish species pair in Opeongo Lake is the
139 introduction and spread of aquatic invasive species and non-native predatory fishes. As
140 knowledge gaps are being filled to better understand how these threats might impact
141 the species pair, proactive efforts should be undertaken to minimize the risk of
142 introducing aquatic invasive and predatory species to Opeongo Lake and nearby
143 waterbodies.

144 Increasing public awareness of the Lake Whitefish pair in Opeongo Lake and its threats
145 is essential to garnering public support of, and participation in, threat mitigation
146 activities. The public is the primary vector for the introduction and spread of invasive
147 species through recreational activities, and their diligence in participating in activities to
148 mitigate the risk is essential.

149 **Actions:**

150 1. **(High)** Continue to implement Ontario’s *Invasive Species Act, 2015* to
151 prevent the introduction and spread of invasive species (e.g., dreissenid
152 mussels, Spiny Water Flea) that threaten Lake Whitefish (Opeongo Lake
153 large- and small-bodied populations) and their habitats by requiring
154 boaters to take mandatory precautions to remove aquatic organisms and
155 drain water from watercraft and watercraft equipment prior to transporting
156 overland or launching into any waterbody in Ontario. **(government led)**

157 2. **(High)** Encourage cleaning of watercraft and gear before accessing
158 Opeongo Lake and nearby waterbodies. This action may include the
159 installation or use of mobile watercraft and gear washing stations at key
160 locations (e.g., Opeongo Lake access road). **(government led and**
161 **supported)**

162 3. Continue efforts to educate the public about the risks of invasive species
163 on natural ecosystems and species at risk and actions that can be taken
164 to prevent the threat. **(government led and supported)**

165 This action may include:

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- 166 i. undertaking communications and outreach to increase public
167 awareness of species at risk in Ontario (e.g., through Ontario Parks
168 Discovery Program, where appropriate)
- 169 ii. installing signage at the Opeongo Lake boat launch, Annie Bay dam,
170 and other strategic locations to inform anglers and visitors about the
171 risks of aquatic species introductions and related prohibitions (e.g.,
172 against transporting live sportfish overland and dumping bait within
173 30 m of water) and best management practices (e.g., drying gear
174 between lakes)
- 175 iii. leveraging the park reservation system to promote awareness of
176 Lake Whitefish in Opeongo Lake and highlight activities which may
177 pose risks
- 178 iv. creating and disseminating educational materials (e.g., pamphlets)
179 and delivering lectures/workshops at strategic areas (e.g., Visitors
180 Centre, Opeongo Lake Access Point)
- 181 v. supporting aquatic invasive species prevention efforts
- 182 4. Increase angler awareness of the Lake Whitefish pair, including how to
183 identify the species and that they should be immediately released if
184 caught. **(government led and supported)**

185

186 Focus Area:	Research and Monitoring
187 Objective:	Fill knowledge gaps related to Lake Whitefish (Opeongo Lake 188 large- and small-bodied populations) habitat, trophic niches and 189 population trends.

190 In order to better understand how identified threats may impact the Lake Whitefish
191 species pair in Opeongo Lake, research is needed to clarify the conditions that are
192 maintaining differentiation of the large- and small-bodied populations. For this purpose,
193 all research and monitoring efforts should distinguish between the large- and small-
194 bodied forms. Surveys are required to refine physical and spatial habitat needs for all
195 life stages, determine population dynamics and clarify trophic niche of each form. Lake
196 wide, depth-stratified netting surveys using the large-mesh gill nets used in Ontario's
197 Broadscale Monitoring Program were conducted by Harkness Lab in 2013, 2019, and
198 2023. These surveys provide a foundation of spatial distribution and relative abundance
199 information to build upon. Continuous open-water temperature profile monitoring has
200 been in place in Lake Opeongo since 2001 against which future changes in thermal

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201 habitat availability may be assessed. Annual ice-out dates (the first day of the year on
202 which a boat can travel from one end of the lake to the other unimpeded by ice) have
203 been recorded for Opeongo Lake since 1964. Continued monitoring of ice-out dates will
204 provide important information about lake characteristics in the short-term and serve as
205 an indicator of climate change in the long-term. Where possible, these actions should
206 be undertaken in collaboration with academic institutions, Indigenous communities and
207 organizations, and other conservation partners to promote inclusion of local knowledge
208 and resources.

209 **Actions:**

210 5. **(High)** Implement monitoring programs for Opeongo Lake, where
211 feasible. **(government led and supported)**

212 Programs should include:

- 213 i. surveys that can provide reliable estimates of Lake Whitefish
214 abundance, genetics, and population structure and trends
- 215 ii. monitoring of key water chemical parameters including dissolved
216 oxygen, temperature, calcium, nitrogen, phosphorous and pH at
217 stratified depths
- 218 iii. continued annual ice-out monitoring
- 219 iv. monitoring for invasive species

220 6. Undertake surveys to characterize physical and spatial habitat at different
221 life stages to clarify niche occupancy and inform habitat protection.
222 **(government led and supported)**

223 Actions may include:

- 224 i. surveys to identify and characterize physical attributes of spawning
225 locations
- 226 ii. increasing knowledge about early life history
- 227 iii. assessing movement and occupancy patterns of adult Lake Whitefish
228 throughout the year to determine the functional value, spatial
229 distribution, and importance of different habitat types
- 230 iv. confirming whether connected watercourses (e.g., Costello Creek,
231 Hailstorm Creek) provide important habitat (e.g., for spawning)
232 and/or seasonal habitat (e.g., in spring and fall)

233 7. Clarify diet and trophic niche of each form at different life stages through
234 isotopic and stomach content analysis to inform an understanding of the

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235 mechanisms maintaining species differentiation. **(government led and**
236 **supported)**

237 8. Encourage the submission of Lake Whitefish (Opeongo Lake large- and
238 small- bodied populations) data to Ontario’s central repository through
239 the Natural Heritage Information Centre. **(government led)**

240

241 **Focus Area: Protection and Management**

242 Objective: Continue to protect and manage the Lake Whitefish species pair in
243 Opeongo Lake and its habitat through existing legislation, programs
244 and plans.

245 Opeongo Lake is located within a provincially protected area which is managed for the
246 purposes of maintaining natural and cultural landscapes and supporting low-intensity
247 recreational opportunities. As a result, threats to the species pair are minimized. The
248 government will support the persistence of the species pair by continuing to protect and
249 manage Lake Whitefish in Opeongo Lake through existing legislation, programs and
250 plans, and through the development of additional guidance for the management of the
251 unique species pair and the ecosystem on which it relies.

252 **Actions:**

253 9. **(High)** Continue to protect Lake Whitefish (Opeongo Lake large- and
254 small-bodied populations) and their habitat through the ESA. **(government**
255 **led)**

256 10. Educate other agencies and authorities involved in planning and
257 environmental assessment processes on the protection requirements
258 under the ESA. **(government led)**

259 11. Continue to support conservation, agency, municipal and industry
260 partners, and Indigenous communities and organizations to undertake
261 activities to protect and recover Lake Whitefish (Opeongo Lake large- and
262 small-bodied populations). Support will be provided where appropriate
263 through funding, agreements, permits and/or advisory services.
264 **(government led)**

265 12. Continue managing Algonquin Provincial Park in a manner consistent with
266 the Algonquin Provincial Park Management Plan (1998) and associated
267 amendments or revisions. **(government led)**

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268 13. Develop a Fisheries and Aquatic Ecosystem Management Plan for
269 Algonquin Provincial Park. **(government led)**

270 **Implementing Actions**

271 Financial support for the implementation of actions may be available through the
272 Species at Risk Stewardship Program. Conservation partners are encouraged to
273 discuss project proposals related to the actions in this response statement with Ministry
274 of the Environment, Conservation and Parks staff. The Ontario government can also
275 provide guidance about the requirements of the ESA, whether an authorization or
276 regulatory exemption may be required for the project and, if so, the authorization types
277 and/or conditional exemptions for which the activity may be eligible. Implementation of
278 the actions may be subject to changing priorities across the multitude of species at risk,
279 available resources and the capacity of partners to undertake recovery activities. Where
280 appropriate, the implementation of actions for multiple species will be co-ordinated
281 across government response statements.

282 **Performance Measures**

283 Progress towards achieving the government's goal for the recovery of Lake Whitefish
284 (Opeongo Lake large- and small-bodied populations) will be measured against the
285 following performance measures:

- 286
- 287 • By 2029, both forms of Lake Whitefish continue to be present in Opeongo Lake.
 - 288 • By 2049, there is evidence that both forms of Lake Whitefish are self-sustaining
289 in Opeongo Lake.

290 **Reviewing Progress**

291 The ESA requires the Ontario government to conduct a review of progress towards
292 protecting and recovering a species no later than the time specified in the species'
293 government response statement, which has been identified as 5 years. The review will
294 help identify if adjustments are needed to achieve the protection and recovery of Lake
295 Whitefish (Opeongo Lake large- and small-bodied populations).

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296 **Acknowledgement**

297 We would like to thank all those who participated in the development of the Recovery
298 Strategy and Government Response Statement for the Lake Whitefish (*Coregonus*
299 *clupeaformis*) (Lake Opeongo large- and small-bodied populations) in Ontario for their
300 dedication to protecting and recovering species at risk.

301 **For Additional Information:**

302 Visit the species at risk website at ontario.ca/speciesatrisk
303 Contact the Ministry of the Environment, Conservation and Parks
304 1-800-565-4923
305 TTY 1-855-515-2759
306 www.ontario.ca/environment