

DRAFT Government Response Statement
to the
Recovery Strategy for the White Wood Aster in Ontario

1 **White Wood Aster**

2 **Ontario Government Response Statement**

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 Government of Ontario's legislative
6 commitment to protecting and recovering species at risk and their habitats.

7 Under the ESA, the Government of Ontario must ensure that a recovery strategy is
8 prepared for each species that is listed as endangered or threatened. A recovery
9 strategy provides science-based advice to government on what is required to achieve
10 recovery of a 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 Traditional Ecological Knowledge where it has been shared by
19 communities and Knowledge Holders, as appropriate, and may be adapted if new
20 information becomes available. In implementing the actions in the response statement,
21 the ESA allows the government to determine what is feasible, taking into account social,
22 cultural and economic factors.

23 The [Recovery Strategy for the White Wood Aster \(*Eurybia divaricata*\) in Ontario](#) was
24 completed on December 5, 2019.

25 White Wood Aster is a tall, herbaceous perennial that grows in open, deciduous forests. 26 It has deeply serrated leaves that are heart-shaped at the base of the plant. Small, flat 27 topped clusters of flowers with yellow or purple centers bloom in the late summer to fall.

28 **Protecting and Recovering White Wood Aster**

29 White Wood Aster is listed as a threatened species under the ESA, which protects both
30 the plant 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. Such authorization would
32 require that conditions established by the Ontario government be met.

33 White Wood Aster is found only in eastern North America, with a range stretching from
34 Maine and New Hampshire south to South Carolina and Alabama, west through Ohio,
35 and into eastern Tennessee and Kentucky. It is relatively common in the Appalachian
36 Mountains and surrounding area.

37 In Canada, White Wood Aster is found only in Ontario and Quebec with populations
38 restricted to the southern portions of each province. It is believed there are over 49
39 extant local populations of White Wood Aster in Ontario, all of which are located on the
40 Niagara Peninsula between Hamilton and Fort Erie. Of these populations, one has not
41 been monitored in almost 20 years, and four other locations were surveyed in 2018 with
42 no White Wood Aster detected at the sites. Additionally, the status of 19 of the extant
43 local populations has not been reconfirmed in more than 10 years, and when last
44 evaluated these populations were small in size (i.e., less than 30 plants) or population
45 size was unknown. Therefore, reassessment of these populations may demonstrate
46 considerable changes to the overall species population. There are also six locations
47 where White Wood Aster is considered to be extirpated and one where it is historic,
48 having not been found at that location in more than 45 years. There is one additional
49 local population for which the status is considered 'unknown', but White Wood Aster has
50 not been identified at this location since 1879, and it is therefore considered likely this
51 population is extirpated. Additional populations are reported to occur in the southern
52 part of the Niagara Region, but have not been officially confirmed.

53 White Wood Aster is a perennial herbaceous plant found in open forests with a mix of
54 deciduous tree species in the overstory. It prefers sites where moderate disturbance
55 maintains an open canopy with suitable light conditions, or sites along the edges of
56 recreational trails. Excessive disturbance may render sites unsuitable since the species
57 appears to prefer locations with a thick accumulation of leaf litter and is slow to
58 recolonize regenerating forest areas.

59 White Wood Aster is able to produce both sexually through the creation of fertile seeds
60 and asexually through the production of new shoots that grow from the roots of an
61 existing plant and create a clone. This may result in local populations comprised of
62 many stems containing the same genetic makeup if it was colonized by only one
63 individual. Such populations have low genetic diversity and may be less adaptable to
64 changing conditions or facing threats.

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65 Plants flower in late summer to fall and are pollinated by insects, such as hoverflies
66 (*Syrphus spp.*) and the Common Eastern Bumblebee (*Bombus impatiens*) among
67 others. Seeds are dispersed by the wind but appear to have very low migration rates
68 resulting in limited distribution, even to nearby suitable habitat.

69 Light conditions on the forest floor have a strong influence on the growth and
70 reproduction of White Wood Aster for both sexually and asexually reproducing
71 populations. In appropriate light conditions, if at least two genetically distinct plants are
72 present, flowering and seed production increase. Mature individuals may also produce
73 more clones in these conditions, increasing overall stem density. In closed canopy or
74 low-light conditions, seed production decreases and clonal (asexual) growth becomes
75 the primary source of reproduction.

76 The most significant threat to White Wood Aster in Ontario is land development that
77 results in the removal of woodlands that the species relies on for habitat. Historically,
78 much of the forest in the species' provincial range was removed for agriculture, and the
79 remaining woodland habitat is highly fragmented, reducing opportunities for populations
80 to cross-pollinate or disperse seeds to suitable growing conditions. Fragmentation may
81 also increase the frequency and impact of low genetic diversity in populations as it is
82 less likely natural dispersal will supply additional plants and new genetic material to
83 these populations.

84 Although the species can tolerate and may even benefit from some level of disturbance,
85 high intensity forest harvest, off-path use of All-Terrain Vehicles (ATVs), and excessive
86 deer browse all have the potential to damage individual plants and alter growing
87 conditions in a way that adversely affects White Wood Aster. In particular, forestry
88 operations that compact soils, create clear-cuts or single-aged stands may negatively
89 impact habitat, and use of herbicides or insecticides within the forest stand may damage
90 White Wood Aster plants or their pollinators. Alternatively, suppression of natural
91 disturbance processes and a lack of land management practices that simulate them
92 may result in full canopy closure and excessive shading that can inhibit sexual
93 reproduction and overall stem growth.

94 Invasive species are another significant threat to White Wood Aster through both
95 competition and predation. Invasive plants, such as Garlic Mustard (*Alliaria petiolata*)
96 and European Reed (*Phragmites australis ssp. australis*; commonly referred to as
97 Phragmites) have been identified growing in or near areas with established White Wood
98 Aster populations and have a demonstrated ability to outcompete and displace native
99 plants. The Hairy Spider Weevil (*Barypeithes pellucidus*), an invasive insect that is
100 widespread in southern Ontario, has been observed feeding heavily on White Wood

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101 Aster with a documented preference for the plant when other food sources were
102 available. Non-native earthworms may also have a negative impact on White Wood
103 Aster by altering the leaf-litter depth needed for germination and over-wintering.
104 Earthworms have been documented removing the leaf litter down to the bare soil and
105 are an identified threat to the forest ecosystems on which White Wood Aster depends.

106 Further research is required to assess the current status of each local population and
107 population dynamics over the long-term, to gain a better understanding of long-term
108 population trends and distribution. Recent monitoring efforts have both identified new
109 populations and indicated that plants may no longer exist as sites currently considered
110 to be extant, suggesting that confirmation of the persistence of these local populations
111 is needed. As a result, early recovery efforts for White Wood Aster will focus on filling
112 knowledge gaps through monitoring known local populations and nearby suitable
113 habitat. Research actions include identifying suitable propagation methods for potential
114 use in local populations with low genetic diversity or small overall plant numbers and the
115 evaluation of habitat management methods to improve the ability of existing plants to
116 survive and reproduce.

117 Habitat maintenance and improvement is a key component of ensuring the survival of
118 White Wood Aster in Ontario. Identifying and promoting methods of forest and land
119 management that preserve habitat conditions, such as optimal canopy openness, and
120 managing threats, including invasive species, are important recovery approaches. The
121 government supports recovery actions for White Wood Aster that increase knowledge of
122 the species, manage the habitat, limitations, and threats to the species, and promote
123 the education and participation of landowners and members of the public that may use,
124 own, or manage lands containing the species. As information is gathered about local
125 populations, including their size and genetic diversity, the need for and feasibility of
126 augmenting these populations should be evaluated.

Government's Recovery Goal

128 The government's goal for the recovery of White Wood Aster is to maintain the species'
129 distribution in Ontario while promoting the viability of extant populations. The
130 government supports investigating the necessity and feasibility of augmenting local
131 populations to support population viability.

132 Actions

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

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

140 **Government-led Actions**

141 To help protect and recover White Wood Aster, the government will directly undertake
142 the following actions:

- 143 • Continue to protect White Wood Aster and its habitat through the ESA.
- 144 • Undertake communications and outreach to increase public awareness of
145 species at risk in Ontario (e.g., through Ontario Parks Discovery Program, where
146 appropriate).
- 147 • Consistent with the *Short Hills Provincial Park Management Plan (2002)*,
148 continue to monitor populations and mitigate threats.
- 149 • Educate other agencies and authorities involved in planning and environmental
150 assessment processes on the protection requirements under the ESA.
- 151 • Encourage the submission of White Wood Aster data to Ontario's central
152 repository (Natural Heritage Information Centre, NHIC) through the [NHIC \(Rare
153 species of Ontario\) project in iNaturalist](#) or directly through the [NHIC](#).
- 154 • Continue to support conservation, agency, municipal and industry partners, and
155 Indigenous communities and organizations to undertake activities to protect and
156 recover White Wood Aster. Support will be provided where appropriate through
157 funding, agreements, permits (including conditions) and/or advisory services.
- 158 • Continue to implement Ontario's *Invasive Species Act* to control the spread of
159 invasive species (e.g., European Reed, also known as Phragmites) that threaten
160 White Wood Aster by restricting the importation, deposition, release,
161 breeding/growing, buying, selling, leasing or trading of the species.
- 162 • Continue to implement the *Ontario Invasive Species Strategic Plan (2012)* to
163 address the invasive species (e.g. Garlic Mustard) that threaten White Wood
164 Aster.

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- 166
- Conduct a review of progress toward the protection and recovery of White Wood Aster within five years of the publication of this document.

167 **Government-supported Actions**

168 The government endorses the following actions as being necessary for the protection
169 and recovery of White Wood Aster. Actions identified as “high” may be given priority
170 consideration for funding under the Species at Risk Stewardship Program. Where
171 reasonable, the government will also consider the priority assigned to these actions
172 when reviewing and issuing authorizations under the ESA. Other organizations are
173 encouraged to consider these priorities when developing projects or mitigation plans
174 related to species at risk.

175	Focus Area:	Research and Monitoring
176	Objective:	Increase knowledge of the distribution, abundance, population 177 composition, and ecology of White Wood Aster in Ontario.

178 Recent surveys of existing White Wood Aster populations and areas of suitable habitat
179 have provided valuable information about the current distribution and status of the
180 species, such as data on five previously unreported local populations, and the evidence
181 that plants may be no longer present at four sites. There is a large number of additional
182 local populations that have not been assessed in more than 15 years, for which little
183 demographic information is available. Continued and expanded collection of monitoring
184 information is warranted to document any demographic changes that may impact the
185 populations’ ability to persist and to allow for prioritization of populations for recovery
186 efforts. Populations with low rates of sexual reproduction may be less able to adapt to
187 changing site conditions, and less genetically diverse. Minimal information has been
188 collected as to the reproductive status of each population, including the ability to
189 produce seed and percentage of each population comprised of clones. In addition,
190 regular inventory of growing conditions at each site may provide valuable information
191 regarding environmental factors influencing plant survival, seed production, and
192 germination.

193 **Actions:**

- 194
- 195
- 196
- 197
1. **(High)** Develop and implement a survey and monitoring program for White Wood Aster. The program should be designed and implemented in such a manner that it may contribute to research actions and may involve the following:

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- 198 ○ developing a monitoring protocol to gather information on White
199 Wood Aster population ecology. This may include methods for
200 evaluating:
- 201 • presence/absence and abundance of plants;
- 202 • means and rates of reproduction;
- 203 • habitat conditions at occupied sites; and
- 204 • the presence and impact of threats.
- 205 ○ refining distribution information for White Wood Aster in Ontario by
206 conducting presence surveys at location of extant and historical
207 populations, or where modelling suggests the species is likely to be
208 found;
- 209 ○ evaluating detectability of White Wood Aster, considering factors
210 such as seed bank dynamics, flowering rates, and the results of
211 presence/absence surveys.
- 212 2. **(High)** Investigate the viability of White Wood Aster populations in
213 Ontario and estimate the minimum viable population size and extirpation
214 thresholds. Factors to consider include:
- 215 ○ population size and composition including number of genetic
216 individuals, genetic diversity, and diversity of plant ages/sizes;
- 217 ○ changes or developments in a particular direction over time of
218 populations at extant sites;
- 219 ○ rates of vegetative and sexual reproduction;
- 220 ○ pollination biology, and seed and seedling ecology;
- 221 ○ the influence of site conditions; and
- 222 ○ interactions between local populations.
- 223 3. Utilize information collected through monitoring and research activities to
224 confirm the optimal habitat conditions for White Wood Aster reproduction
225 and survival.
- 226 4. Conduct research to determine optimal habitat management methods for
227 White Wood Aster populations including evaluating the effect of different
228 silvicultural practices (including site preparation, tending practices, etc.)
229 on habitat quality.

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- 230 5. Conduct research to determine optimal methods of supporting White
231 Wood Aster populations including:
- 232 ○ identifying conditions under which augmentation may be necessary
233 (e.g. low genetic diversity);
 - 234 ○ evaluating the approaches that would be most efficient to implement
235 augmentation (e.g., appropriate seed sourcing, propagation
236 methods); and,
 - 237 ○ evaluating practices that increase pollination rates, seed production,
238 dispersal, germination, and seedling establishment in populations
239 with sufficient genetic material.
- 240 6. Investigate potential threats to the species and methods for mitigating
241 impacts including:
- 242 ○ evaluating impacts to the species from competition with non-native
243 vegetation and insects;
 - 244 ○ evaluating damage to the species resulting from deer browse and the
245 effectiveness of available protection methods; and,
 - 246 ○ identifying suitable best management practices (e.g., invasive plant
247 removal) for the habitat in which it is found.
- 248

249 Focus Area:	Management and Habitat Protection
250 Objective:	Maintain or improve the quality of habitat available for White Wood 251 Aster, and where feasible and appropriate, enhance the ability of 252 existing plants to reproduce.

253 White Wood Aster populations and habitat occur primarily on a mix of public and private
254 lands, including those belonging to municipalities and conservation organizations. Many
255 of the habitat areas in which it is found consist of fragmented woodlots separated by
256 roads, agricultural areas, and development. As a result, a collaborative approach to
257 population and habitat management and protection is needed to support the recovery of
258 the species. Encouraging the use of best management practices across multiple sectors
259 and land users will also support better long-term recovery.

260 **Actions:**

- 261 7. **(High)** Work collaboratively with landowners, land managers, and
262 researchers to develop, implement and evaluate management plans and

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- 263 best management practices to maintain or improve the quality of White
264 Wood Aster habitat at existing sites. Plans may include:
- 265 ○ encouraging the use of silvicultural practices that allow for
266 sustainable harvest while maintaining or improving habitat conditions;
 - 267 ○ strategies to remove and/or monitor the presence and impacts of
268 invasive plants (e.g., Garlic Mustard) or harmful insect pests in areas
269 with or adjacent to populations; and,
 - 270 ○ where deemed necessary and where there are willing partners,
271 undertake on-the-ground efforts to restore, maintain or enhance
272 White Wood Aster habitat within Ontario in collaboration with
273 organizations, agencies and interested Indigenous communities and
274 organizations.
- 275 8. Based on the results of actions 2 and 5, if determined necessary and
276 feasible, implement, monitor and adapt augmentation actions for local
277 populations in collaboration with landowners and local agencies to
278 promote species viability.
- 279 9. As opportunities arise, work with local landowners and community
280 partners to support the securement of habitat of White Wood Aster
281 through existing land securement and stewardship programs.
- 282 10. Implement approaches to avoid or reduce impacts of recreational
283 activities on White Wood Aster and its habitat including:
- 284 ○ redirecting recreational activities away from the species;
 - 285 ○ erecting physical barriers, if appropriate; and,
 - 286 ○ installing signage to alert land users to the presence of the species.

289 Focus Area:	Outreach and Awareness
290 Objective:	Increase public awareness of and participation in efforts to 291 minimize threats to White Wood Aster.

292 White Wood Aster is found on a variety of land-use types with the potential to be
293 impacted by private, commercial, and recreational activities. Therefore, the education
294 and involvement of the public is a key factor in supporting recovery of the species,
295 particularly to help manage the threats of inappropriate recreational vehicle use, and
296 damage occurring incidentally to the species from activities such as brush clearing.
297 Ensuring landowners are aware of the presence of the species and potential threats will

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298 require collaboration between agencies with an emphasis on sharing the best available
299 information.

300 **Actions:**

- 301 11. Promote awareness about White Wood Aster among land owners, land
302 managers and land users by sharing information on:
- 303 ○ how to identify the species;
 - 304 ○ the species' habitat requirements;
 - 305 ○ protection afforded to the species and its habitat under the ESA; and,
 - 306 ○ actions that can be taken to reduce threats to the species and its
307 habitat (e.g., distributing best management practices for recreational
308 activities to land users).

309 **Implementing Actions**

310 Financial support for the implementation of actions may be available through the
311 Species at Risk Stewardship Program. Conservation partners are encouraged to
312 discuss project proposals related to the actions in this response statement with Ministry
313 of the Environment, Conservation and Parks staff. The Ontario government can also
314 advise if any authorizations under the ESA or other legislation may be required to
315 undertake the project.

316 Implementation of the actions may be subject to changing priorities across the multitude
317 of species at risk, available resources and the capacity of partners to undertake
318 recovery activities. Where appropriate, the implementation of actions for multiple
319 species will be co-ordinated across government response statements.

320 **Reviewing Progress**

321 The ESA requires the Ontario government to conduct a review of progress towards
322 protecting and recovering a species no later than the time specified in the species'
323 government response statement, or not later than five years after the government
324 response statement is published. The review will help identify if adjustments are needed
325 to achieve the protection and recovery of White Wood Aster.

326 **Acknowledgement**

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327 We would like to thank all those who participated in the development of Ontario's
328 Recovery Strategy and Government Response Statement for the White Wood Aster
329 (*Eurybia divaricata*) for their dedication to protecting and recovering species at risk.
330

331 **For Additional Information:**

332 Visit the species at risk website at ontario.ca/speciesatrisk
333 Contact the Ministry of the Environment, Conservation and Parks
334 1-800-565-4923
335 TTY 1-855-515-2759
336 www.ontario.ca/environment