

Management Plan for Yukon Podistera (*Podistera yukonensis*) in Canada

Yukon Podistera



2022



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11 The official version of the recovery documents is the one published in PDF. All
12 hyperlinks were valid as of date of publication.

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15 The non-official version of the recovery documents is published in HTML format and all
16 hyperlinks were valid as of date of publication.

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20 For copies of the management plan, or for additional information on species at risk,
21 including the Committee on the Status of Endangered Wildlife in Canada (COSEWIC)
22 Status Reports, residence descriptions, action plans, and other related recovery
23 documents, please visit the [Species at Risk \(SAR\) Public Registry](#)¹.

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25
26 **Cover illustration:** Yukon Podistera, Miller's Ridge, Carmacks, Yukon. Photo Syd
27 Cannings

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29
30 Également disponible en français sous le titre
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32 [Proposition] »

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¹ www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html

43 Preface

44

45 The federal, provincial, and territorial government signatories under the [Accord for the](#)
46 [Protection of Species at Risk \(1996\)](#)² agreed to establish complementary legislation and
47 programs that provide for effective protection of species at risk throughout Canada.
48 Under the *Species at Risk Act* (S.C. 2002, c.29) (SARA), the federal competent
49 ministers are responsible for the preparation of management plans for listed species of
50 special concern and are required to report on progress within five years after the
51 publication of the final document on the SAR Public Registry.

52

53 The Minister of Environment and Climate Change is the competent minister under
54 SARA for the Yukon Podistera and has prepared this management plan, as per section
55 65 of SARA. To the extent possible, it has been prepared in cooperation with the
56 government of the Yukon as per section 66(1) of SARA.

57

58 Success in the conservation of this species depends on the commitment and
59 cooperation of many different constituencies that will be involved in implementing the
60 directions set out in this plan and will not be achieved by Environment and Climate
61 Change Canada, or any other jurisdiction alone. All Canadians are invited to join in
62 supporting and implementing this plan for the benefit of the Yukon Podistera and
63 Canadian society as a whole.

64

65 Implementation of this management plan is subject to appropriations, priorities, and
66 budgetary constraints of the participating jurisdictions and organizations.

67

68

69

² www.canada.ca/en/environment-climate-change/services/species-risk-act-accord-funding.html#2

70

71 Acknowledgments

72

73 The initial draft of this management plan was written by Rhonda Rosie (private
74 consultant). Subsequent drafts were developed by Syd Cannings and Nancy Hughes
75 (Environment and Climate Change Canada, Canadian Wildlife Service – Northern
76 Region [ECCC]). Bruce Bennett, Thomas Jung, Pii Kukka, and Caitlin Willier
77 (Government of Yukon) reviewed a draft of this plan. The Yukon Conservation Data
78 Centre provided data on species occurrences.

79

80

81 **Executive Summary**

82

83 Yukon Podistera (*Podistera yukonensis*) is a long-lived, tufted perennial herb with
84 blue-green pinnate basal leaves. The leafless flowering stems bear compound umbels
85 of small, bright yellow flowers that fade to white. This species grows from a stout
86 elongate taproot, often forming clumps. It grows in alpine habitats in well-drained,
87 rock-dominated areas; on talus or scree slopes, tors, and river bluffs with exposed
88 bedrock.

89

90 Yukon Podistera is restricted globally to unglaciated areas of Alaska and west-central
91 Yukon. Approximately 90% of its global range lies within Canada.

92 Yukon Podistera was listed as a species of Special Concern under Schedule 1 of the
93 *Species at Risk Act* (SARA) in February 2019.

94

95 Perhaps the greatest long-term threat to Yukon Podistera is the loss of alpine habitat as
96 a result of climate warming. Mining and mineral exploration has the potential of
97 degrading habitat at specific sites.

98

99 The management objective is to ensure the long-term persistence of all extant
100 subpopulations in Canada, including any newly located or rediscovered subpopulations.

101

102 The broad strategies to be taken to address the threats to the species are presented in
103 the Conservation Measures section.

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1. COSEWIC* Species Assessment Information

Date of Assessment: November 2014

Common Name (population): Yukon Podistera

Scientific Name: *Podistera yukonensis*

COSEWIC Status: Special Concern

Reason for Designation: This long-lived plant, almost entirely restricted to Canada, is at risk due to projected loss of its alpine habitat as a result of rapidly changing climate. In addition, mining and mineral exploration are occurring at, or near, several locations.

Canadian Occurrence: Yukon

COSEWIC Status History: Designated Special Concern in November 2014.

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* COSEWIC (Committee on the Status of Endangered Wildlife in Canada)

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2. Species Status Information

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In Canada, Yukon Podistera (*Podistera yukonensis*) is listed as Special Concern on Schedule 1 of the federal *Species at Risk Act* (SARA).

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NatureServe (2020) considers Yukon Podistera to be vulnerable to apparently secure globally (G3G4) and nationally in Canada (N3N4), and vulnerable to apparently secure in Yukon (S3S4). In the United States, it is considered critically imperilled to imperilled nationally (N1N2) and subnationally in Alaska (S1S2). Approximately 90% of the global range is found within Canada (COSEWIC 2014).

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3. Species Information

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3.1. Species Description

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Yukon Podistera is a tufted perennial plant, which often forms dense clumps from a branched underground stem arising from a stout elongate taproot. The basal leaves are blue-green, 3-12 cm long, and pinnate³ with 3-6 pairs of leaflets on opposite sides of the stem (Figure 1). The stems are 10-40 cm tall, leafless, and tinged with red when the plant is mature. The flowers form a compound umbel⁴ with several to many rays 5-10 mm long. The five petals are small (about 1 mm long) and bright yellow when

³ Pinnate leaves have small leaflets arranged along a central stem

⁴ An umbel is a group of flowers radiating out from a single point; a compound umbel is an umbel with a group of umbels at the end of each stem.

153 newly opened (cover photo), quickly fading to white. The fruits are about 3-7 mm long
154 by 1.5-3 mm broad, flattened, initially reddish but weathering to a straw color
155 (COSEWIC 2014).
156



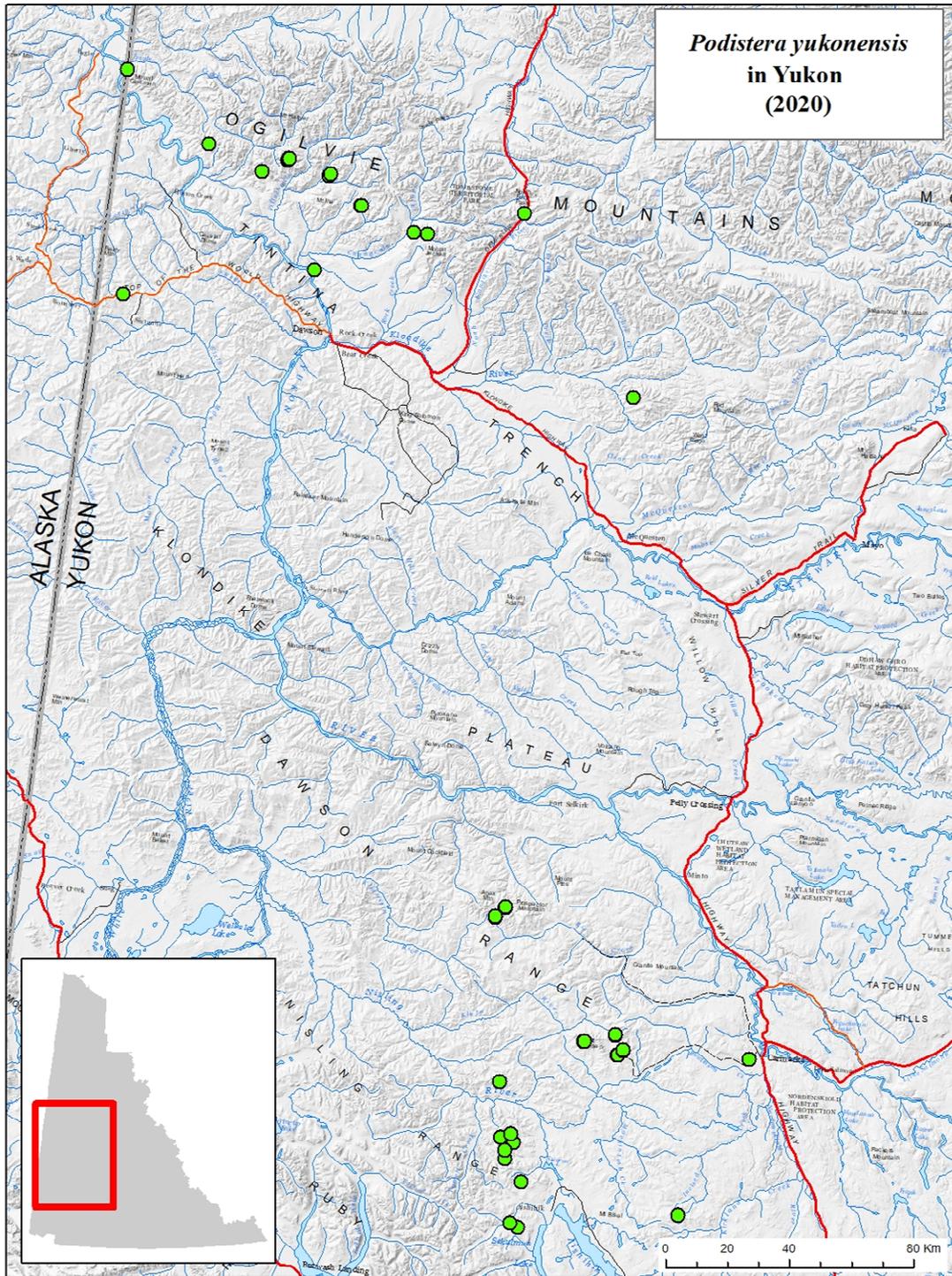
157
158 Figure 1. Yukon Podistera with maturing flowers going to seed; Miller's Ridge,
159 Carmacks, Yukon. Photo: Syd Cannings
160

161 **3.2. Species Population and Distribution**

162
163 Yukon Podistera is one of just a few species restricted globally to eastern Beringia,
164 which includes the unglaciated areas of Alaska and west-central Yukon. With the
165 exception of one known subpopulation, Yukon Podistera is further limited to the upper
166 Yukon River drainage, barely extending into Alaska at the western edge of its range.
167 Approximately 90% of the species' global range lies within Canada based on a global
168 extent of occurrence (COSEWIC 2014).
169

170 Twenty-six subpopulations of Yukon Podistera are known from Canada (Yukon
171 Conservation Data Centre 2021). These subpopulations are isolated from each other by
172 considerable distances, especially between a northern group of subpopulations centred
173 in the Ogilvie Mountains and a southern group in the Dawson and Nisling Ranges
174 (Figure 2).
175

176 The total number of individual plants of Yukon Podistera known in Canada is estimated
177 to be between 17,000 and 30,000, of which approximately two-thirds are mature plants
178 (COSEWIC 2014, Yukon Conservation Data Centre 2021). This is a minimum estimate,
179 since all subpopulations have not been fully censused, and there are potentially
180 undiscovered occurrences. Trends are unknown, but a decline as a result of climate
181 warming is inferred (COSEWIC 2014).
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Figure 2. Known distribution (green dots) of the Yukon Podistera in Canada (Yukon Conservation Data Centre 2021).

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3.3. Needs of the Yukon Podistera

Yukon Podistera is restricted to open, dry, well-drained, rock-dominated habitat, occurring in channels of developed soil and vegetation adjacent to or within rock. It is most often found on talus or scree slopes with slow movement through frost action, most commonly along the edges of vegetation strips oriented down the slope, made up of a mat of low grasses, forbs and lichen over a channel of soil. It also grows in crevices on rock tors, and on river bluffs with exposed bedrock. It grows primarily on south-facing slopes, but in a small number of sheltered microsites a few individuals have been found on east- and west-facing slopes. Slopes range from 5-40° and tend to have low snow accumulation, allowing for early spring exposure. In Yukon, it primarily grows at elevations between 1232 and 1777 m, with three populations between 500 and 800 m (Yukon Conservation Data Centre 2021). In Alaska, it ranges from 360 to 1280 m (Parker 1995; University of Alaska Museum Herbarium ALA15084).

Yukon Podistera appears to be shade-intolerant, although part of the Miller's Ridge subpopulation (approximately 20 plants) does extend into the edge of an open aspen forest that is growing out of the debris flow (or mining trench) at the base of the slope that houses the majority of the subpopulation. The plants tolerate these conditions, but they do not appear to be as numerous, robust or fertile as the plants on the exposed, south-facing slope above (Bruce Bennett, pers. comm. 2020). It is possible that the forest is expanding over areas where Yukon Podistera established itself in the past under better conditions. The relatively young age of the aspen supports this theory. Similarly, small numbers of Yukon Podistera have been found growing within the edge of an aspen forest below the main subpopulation on Kathul Mountain in Alaska (Batten et al. 1979).

Despite large areas of apparently suitable and available habitat at some of the sites searched, Yukon Podistera was only found in very small proportions of that habitat (COSEWIC 2014). This sparse distribution may be the result of poor dispersal capabilities of Yukon Podistera, or it may simply reflect our limited understanding of 'suitable' habitat.

There is no obvious link between the bedrock geology and the Yukon population sites, although none of the subpopulations occur on calcareous sedimentary rock (rock mostly or partially composed of calcium carbonate), which comprises much of the unglaciated areas of Yukon. There is, however, one small subpopulation of 32 plants in Alaska in the Ogilvie Mountains that is known to occur on calcareous shale scree (Parker 1997). In this instance, it may be that Yukon Podistera tolerates the calcareous conditions in order to take advantage of the open vegetation in the area (Parker pers. comm. 2013).

4. Threats

4.1. Threat Assessment

The Yukon Podistera threat assessment (Table 1) is based on the IUCN-CMP (World Conservation Union–Conservation Measures Partnership) unified threats classification system (Master et al. 2009). Threats are defined as the proximate activities or processes that have caused, are causing, or may cause in the future the destruction, degradation, and/or impairment of the entity being assessed (population, species, community, or ecosystem) in the area of interest (global, national, or subnational). Limiting factors are not considered during this assessment process. For purposes of threat assessment, only present and future threats are considered. Historical threats, indirect or cumulative effects of the threats, or any other relevant information that would help understand the nature of the threats are presented in the Description of Threats section.

Table 1. Threat calculator assessment, from COSEWIC (2014). Based on a meeting on 4 September 2014, attended by B. Bennett, S. Cannings, S. Dar, and T. Jung; reviewed in February 2021.

Threat #	Threat description	Impact ^a	Scope ^b	Severity ^c	Timing ^d
3	Energy production & mining	Low	Restricted	Slight	High
3.2	Mining & quarrying	Low	Restricted	Slight	High
6	Human intrusions & disturbance	Negligible	Negligible	Slight	High
6.1	Recreational activities	Negligible	Negligible	Slight	High
11	Climate change & severe weather	Medium-Low	Pervasive	Moderate-Slight	High
11.1	Habitat shifting & alteration	Medium-Low	Pervasive	Moderate-slight	High

^a **Impact** – The degree to which a species is observed, inferred, or suspected to be directly or indirectly threatened in the area of interest. The impact of each threat is based on Severity and Scope rating and considers only present and future threats. Threat impact reflects a reduction of a species population or decline/degradation of the area of an ecosystem. The median rate of population reduction or area decline for each combination of scope and severity corresponds to the following classes of threat impact: Very High (75% declines), High (40%), Medium (15%), and Low (3%). Unknown: used when impact cannot be determined (e.g., if values for either scope or severity are unknown); Not Calculated: impact not calculated as threat is outside the assessment timeframe (e.g., timing is insignificant/negligible or low as threat is only considered to be in the past); Negligible: when scope or severity is negligible; Not a Threat: when severity is scored as neutral or potential benefit.

^b **Scope** – Proportion of the species that can reasonably be expected to be affected by the threat within 10 years. Usually measured as a proportion of the species' population in the area of interest. (Pervasive = 71–100%; Large = 31–70%; Restricted = 11–30%; Small = 1–10%; Negligible < 1%).

^c **Severity** – Within the scope, the level of damage to the species from the threat that can reasonably be expected to be affected by the threat within a 10-year or three-generation timeframe. Usually measured as the degree of reduction of the species' population. (Extreme = 71–100%; Serious = 31–70%; Moderate = 11–30%; Slight = 1–10%; Negligible < 1%; Neutral or Potential Benefit ≥ 0%).

268 ^d **Timing** – High = continuing; Moderate = only in the future (could happen in the short term [< 10 years or
 269 3 generations]) or now suspended (could come back in the short term); Low = only in the future (could
 270 happen in the long term) or now suspended (could come back in the long term); Insignificant/Negligible =
 271 only in the past and unlikely to return, or no direct effect but limiting.

272

273 **4.2. Description of Threats**

274

275 The greatest threat believed to be facing Yukon Podistera is the loss of alpine habitat
 276 through climate change. Habitat shift (shrubification upslope) is expected to be
 277 significant in the longer term.

278

279 **IUCN-CMP Threat 3. Energy production & mining (Low impact)**

280

281 *3.2. Mining & quarrying*

282

283 Mining may affect the portion (18%) of the known Canadian population that are on
 284 active quartz mining claims (COSEWIC 2014); however, the impact was calculated to
 285 be low as currently most of the claims are in the exploration stage. An additional 40% of
 286 the Canadian population occurs in patches within 2 km of active mining claims
 287 (COSEWIC 2014).

288

289 **IUCN-CMP Threat 6. Human intrusions & disturbance (Negligible impact)**

290

291 *6.1 Recreation*

292

293 Impacts of recreation are thought to be negligible, given the remote nature of most of
 294 the subpopulations. Miller's Ridge is along a popular hiking route with no established
 295 trail. Scrambling (climbing/hiking in areas with loose soil) possibly could affect the
 296 population there. The only other site within easy walking distance of a road is the one at
 297 Little Gold on the Top of the World Highway, but this one is on a small tor that is unlikely
 298 to be eroded by walkers (B. Bennett, pers. comm. 2020).

299

300 **IUCN-CMP Threat 11. Climate change & severe weather (Medium-low impact)**

301

302 *11.1 Habitat shifting & alteration*

303

304 Loss of alpine habitat as a result of climate change is ongoing.

305

306 Regional projections indicate an annual increase in temperature of 2.5–3.7°C by 2050
 307 (Hennessey et al. 2011; Hennessey and Streicker 2011; Northern Climate Exchange
 308 2011). Precipitation is generally expected to rise over most of the central territory
 309 although the region northeast of Dawson is expected to have decreasing precipitation.
 310 With a warming climate, the shrub line in Yukon mountain ranges will likely advance
 311 upslope (Danby and Hik 2007). An increase in shrub cover has also been observed in
 312 arctic tundra in Alaska over the last 50 years (Tape et al. 2006). The loss of alpine and
 313 arctic tundra and the increase in shrub cover will likely decrease the amount of habitat

314 suitable for Yukon Podistera, threatening its persistence. Shrubification will likely
315 increase snow capture, which would further reduce habitat suitability for a plant that
316 appears to favour early spring exposure. At the Miller's Ridge site near Carmacks,
317 Trembling Aspen infill appears to be degrading Yukon Podistera habitat around the
318 edges of the subpopulation, leading to plants that are less numerous, robust and fertile
319 than those in the adjacent, exposed sites (COSEWIC 2014).

320

321

322 **5. Management Objective**

323

- 324 • To ensure long-term persistence of all extant subpopulations in Canada,
325 including any newly located or rediscovered subpopulations.

326

327 Continuing presence of apparently stable subpopulations at known sites over the long
328 term (at least 50-100 years) both implies and requires continued habitat integrity. At
329 some sites, continued habitat integrity⁵ may require mitigation measures such as
330 avoiding disturbance of habitat within groups of plants. In the case of Yukon Podistera,
331 this means the persistence of open (unshaded), undisturbed, rocky habitat.

332

333 The susceptibility of this species to the loss of habitat as a result of climate warming
334 (COSEWIC 2014) presents a special challenge, since this is not easily mitigated at local
335 scales.

336

337

338 **6. Broad Strategies and Conservation Measures**

339

340 **6.1. Actions Already Completed or Currently Underway**

341

- 342 • Extensive surveys for Yukon Podistera were undertaken by Canadian Wildlife
343 Service staff in 2012-14; 174 sites were visited in 104 person days of effort.
344 These surveys were designed primarily to locate undiscovered subpopulations;
345 preliminary counts of individuals were made and habitat described in brief.
346
- 347 • More detailed baseline transect surveys for future monitoring were undertaken by
348 Environment Yukon at two sites in the Dawson and Nisling Ranges in 2020.
349 These surveys were designed to monitor the health of Yukon Podistera as
350 shrubs increase in size and number with climate warming.
351
- 352 • A phylogenetic study of the subfamily Apioideae (Sun et al. 2004; Sun and
353 Downie 2010) indicates that the subfamily has radiated rapidly and that the
354 genus *Podistera* is not monophyletic. All Yukon subpopulations have had the
355 barcode region of their DNA analysed; there is evidence of considerable genetic

⁵ Habitat integrity can be more explicitly defined as the system's capacity to sustain native biological and physical properties that have adapted to an area with natural events and processes (Wiken et al. 2003).

356 diversity but further analysis is needed to determine relationships among
357 subpopulations (Bennett pers. comm. 2020).
358

359 **6.2. Broad Strategies**

360
361 In order to achieve the management objective, conservation measures are organized
362 under five broad strategies (from Conservation Measures Partnership's (2016)
363 Conservation Actions Classification v. 2.0).
364

- 365 1. Land management
- 366 2. Awareness raising
- 367 3. Conservation designation and planning
- 368 4. Legal and policy frameworks
- 369 5. Research and monitoring

370

371 **6.3. Conservation Measures**

372

373 **Table 2.** Conservation Measures and Implementation Schedule

374 **Broad Strategies** are taken from **the Conservation Measures Partnership's (2016)**
375 **Conservation Actions Classification v. 2.0.**
376

Conservation Measure	Priority ^c	Threats or Concerns Addressed	Timeline
Broad Strategy			
Land management			
Assess current threats at extant and presumed extant populations, and develop and implement a mitigation plan where appropriate.	Medium	Mining and mineral exploration; Threat 3	2022-2026, then ongoing
Develop mitigation advice	Medium	Mining and mineral exploration; Threat 3	2022-2026, then ongoing
Awareness Raising			
Develop communication strategy for stakeholders and public to build awareness and encourage stewardship; produce and distribute educational materials	High	Mining and mineral exploration; Threat 3	2022-2026, then ongoing
Promote public awareness of the vulnerability of alpine ecosystems to climate change	Medium	Climate Change; Threat 11	2022-2026, then ongoing
Conservation Designation and Planning			
Ensure that Yukon Podistera is considered within the Dawson Regional Land Use Plan, and subsequent land use planning initiatives	High	Mining and mineral exploration: Threat 3	2022-2023

Legal and Policy Frameworks			
Canada meets its climate targets as outlined in the Paris Agreement.	High	Climate Change: Threat 11	2022-2031, then ongoing
Yukon meets its climate targets.	High	Climate Change: Threat 11	2022-2031, then ongoing
Research and Monitoring			
Survey known populations for population status, abundance and threats	High	Knowledge gaps	2022-2031
Search for unknown populations	Low	Knowledge gaps	2022-2031
Establish long-term monitoring plots to determine the rate and extent of shrubification of the lower alpine zone	High	Climate change: Threat 11	2021-2026; then ongoing
Using habitat models and climate change projections, identify areas that may be climate refuges for Yukon Podistera	Medium	Climate change: Threat 11	2022-2026
Genetic studies to determine relationships among isolated populations	Low	Knowledge gaps	2022-2031

377 ^e “Priority” reflects the degree to which the measure contributes directly to the conservation of the species
 378 or is an essential precursor to a measure that contributes to the conservation of the species. High priority
 379 measures are considered those most likely to have an immediate and/or direct influence on attaining the
 380 management objective for the species. Medium priority measures may have a less immediate or less
 381 direct influence on reaching the management objective, but are still important for the management of the
 382 population. Low priority conservation measures will likely have an indirect or gradual influence on
 383 reaching the management objective, but are considered important contributions to the knowledge base
 384 and/or public involvement and acceptance of the species.

385

386 **6.4. Narrative to Support Conservation Measures and** 387 **Implementation Schedule**

388

389 **Broad Strategy: Land Management**

390 In order to ensure the long-term viability of the species in Canada and the continued
 391 integrity of its habitat, there is a need to develop mitigation advice for mining exploration
 392 in alpine sites. Impacts need to be documented and best management practices
 393 developed.

394

395 **Broad Strategy: Conservation Designation and Planning**

396 The Dawson Regional Land Use Plan may identify sites for the conservation of this
 397 species, as could future land use plans in the southern parts of its range.

398

399 **Broad Strategy: Awareness Raising**

400 Much of the public and many stakeholders are likely unaware of the existence of Yukon
 401 Podistera. Increased communications regarding the species, its habitat needs, and the
 402 threats facing it would go a long way to ensuring the success of conservation efforts.
 403 The threat that climate warming poses to alpine ecosystems needs to be stressed to the
 404 public and governments alike.

405

406 **Broad Strategy: Legal and policy frameworks**

407 Because climate warming is considered the foremost long-term threat to Yukon
408 Podistera, both Canada and the Yukon need to play their role in global actions to
409 minimize the magnitude of climate change. Under the Paris Agreement, Canada
410 committed to reducing its greenhouse gas emissions by 30% below 2005 levels by
411 2030. In 2019, the 2005 level was estimated at 730 Mt CO₂ eq (Environment and
412 Climate Change Canada 2020). Similarly, the Government of the Yukon has pledged to
413 reduce the Territory's greenhouse gas emissions by 30% by 2030 (Government of
414 Yukon 2020).

415
416 **Broad Strategy: Research and monitoring**

417 Detailed mapping and accurate census estimates need to be made at all occurrences;
418 monitoring of progress cannot occur without baseline measurements of distribution and
419 abundance. Long-term vegetation monitoring plots or transects should be established to
420 measure the rate and extent of shrubification of the Yukon Podistera's alpine habitat.

421
422 Genetic data from all sites have been collected, but not thoroughly analyzed to reveal
423 the relationships among isolated subpopulations. This would be useful to determine
424 whether or not some might represent designatable units⁶, in future status
425 re-assessments.

426
427

428 **7. Measuring Progress**

429

430 The performance indicators presented below provide a way to measure progress
431 towards achieving the management objectives and monitoring the implementation of the
432 management plan.

433

- 434
- 435 • A stable or increasing population of Yukon Podistera over the next ten years.
436 Population trends will be inferred by repeated surveys of Yukon Podistera at
437 known sites.
 - 438 • Persistence or increase of present distribution of Yukon Podistera in Canada, as
439 measured using repeated reconnaissance surveys.
- 440

⁶ A designatable unit (DU) is a discrete and evolutionarily significant subunit of a species, often assessed as a separate 'wildlife species' under SARA.

441 8. References

442

443 Batten, A.R., D.F. Murray, and J.C. Dawe. 1979. Threatened and Endangered plants in
444 selected area of the BLM Fortymile Planning Unit, Alaska. U.S. Department of
445 the Interior, Anchorage, Alaska. 127 pp.

446

447 Bennett, B. 2020. Personal communication to S. Cannings via telephone, 24 June 2020.
448 Coordinator, Yukon Conservation Data Centre, Whitehorse, YT.

449

450 Conservation Measures Partnership. 2016. Conservation Actions Classification (v2.0).
451 Available at: https://cmp-openstandards.org/using-cs/tools/__actions/. Accessed
452 19 August 2020.

453

454 COSEWIC. 2014. COSEWIC assessment and status report on the Yukon Podistera
455 *Podistera yukonensis* in Canada. Committee on the Status of Endangered
456 Wildlife in Canada. Ottawa. x + 34 pp. Available at:
457 <http://sararegistry.gc.ca/default.asp?lang=En&n=45A14631-1>

458

459 Environment and Climate Change Canada. 2020. Canadian Environmental
460 Sustainability Indicators: progress towards Canada's greenhouse gas emissions
461 reduction target. Available at: [https://www.canada.ca/en/environment-climate-
462 change/services/environmental-indicators/progress-towards-canada-greenhouse-
463 gas-emissions-reduction-target.html](https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/progress-towards-canada-greenhouse-gas-emissions-reduction-target.html). Accessed 26 January 2021.

464

465 Government of Yukon. 2020. Our clean future: A Yukon strategy for climate change,
466 energy and a green economy. Available at: [https://yukon.ca/en/our-clean-future-
467 yukon-strategy-climate-change-energy-and-green-economy](https://yukon.ca/en/our-clean-future-yukon-strategy-climate-change-energy-and-green-economy). Accessed
468 26 January 2021.

469

470 Master, L., D. Faber-Langendoen, R. Bittman, G.A. Hammerson, B. Heidel, J. Nichols,
471 L. Ramsay, and A. Tomaino. 2009. NatureServe conservation status
472 assessments: factors for assessing extinction risk. NatureServe, Arlington,
473 Virginia. 57 pp.

474

475 NatureServe. 2020. NatureServe Explorer [web application]. NatureServe, Arlington,
476 Virginia. Available at <https://explorer.natureserve.org/>. [Accessed 24 June 2020]

477

478 Parker, C.L. 1995. Status and trends survey of category 2 plants in the Yukon-Charley
479 Rivers National Preserve, Alaska. University of Alaska, Fairbanks, Alaska. 78 pp.
480 Available online:
481 <http://science.nature.nps.gov/im/units/cakn/Documents/YUCH1995opt.pdf>

482

483 Parker, C.L. 1997. Rare Plant and Floristic Survey of Selected Sites in Yukon-Charley
484 Rivers National Preserve, Alaska, June 1996. Unpublished report submitted to
485 National Parks Service. 36 pp.

- 486
487 Parker, C.L. Personal communications to L. Schroeder by email correspondence
488 January-March 2013. Botanist/consultant, Fairbanks, Alaska. 2012-2013
489
- 490 Sun, F., S.R. Downie, and R.L. Hartman. 2004. An ITS-based phylogenetic analysis of
491 the perennial, endemic Apiaceae subfamily Apioideae of western North America.
492 Systematic Botany 29:419-431.
493
- 494 Sun, F., and S.R. Downie. 2010. Phylogenetic analyses of morphological and molecular
495 data reveal major clades within the perennial, endemic western North American
496 Apiaceae subfamily Apioideae. Journal of the Torrey Botanical Society
497 137:133-156.
498
- 499 Wiken, E., W.G.B. Smith, J. Cinq-Mars, C.Latsch, and D. Gauthier. 2003. Habitat
500 integrity in Canada: wildlife conservation. Background paper for the National
501 Conference on Guidelines and Tools for the Evaluation of Natura 200 Sites in
502 France. March 3-5, 2003--Montpellier, France.
503
- 504 Yukon Conservation Data Centre. 2021. Element occurrence records of Yukon
505 Podistera, *Podistera yukonensis*, from the database of the Yukon Conservation
506 Data Centre. Yukon Department of Environment, Whitehorse, Yukon. Accessed
507 26 January 2021.
508

509 **Appendix A: Effects on the Environment and Other Species**

510

511 A strategic environmental assessment (SEA) is conducted on all SARA recovery
512 planning documents, in accordance with the [Cabinet Directive on the Environmental
513 Assessment of Policy, Plan and Program Proposals](#)⁷. The purpose of a SEA is to
514 incorporate environmental considerations into the development of public policies, plans,
515 and program proposals to support environmentally sound decision-making and to
516 evaluate whether the outcomes of a recovery planning document could affect any
517 component of the environment or any of the [Federal Sustainable Development
518 Strategy](#)'s⁸ (FSDS) goals and targets.

519

520 Conservation planning is intended to benefit species at risk and biodiversity in general.
521 However, it is recognized that implementation of management plans may also
522 inadvertently lead to environmental effects beyond the intended benefits. The planning
523 process based on national guidelines directly incorporates consideration of all
524 environmental effects, with a particular focus on possible impacts upon non-target
525 species or habitats. The results of the SEA are incorporated directly into the
526 management plan itself, but are also summarized below in this statement.

527

528 This management plan will benefit the environment by promoting the conservation of
529 the unglaciated alpine habitat of Yukon Podistera. This habitat is also home to the
530 Collared Pika (listed under *SARA* as Special Concern), and several plants restricted
531 globally to this region but not yet assessed or listed. The potential for the plan to
532 inadvertently lead to adverse effects on other species was considered and the SEA
533 concluded that this plan will clearly benefit the environment and will not entail any
534 significant adverse effects. The reader should refer to the following sections of the
535 document in particular: description of the species' needs, ecological role, and limiting
536 factors; and the conservation actions.

537

⁷ www.canada.ca/en/environmental-assessment-agency/programs/strategic-environmental-assessment/cabinet-directive-environmental-assessment-policy-plan-program-proposals.html

⁸ www.fsds-sfdd.ca/index.html#/en/goals/