

# Replacement of Sections 2.3.1, 2.3.2, and 2.3.3 of the Recovery Strategy for Multi-Species at Risk in Woodlands associated with Garry Oak Ecosystems in Canada

Deltoid Balsamroot  
Howell's Triteleia  
Small-flowered Tonella  
White-top Aster  
Yellow Montane Violet *praemorsa* subspecies



2016

2 **Replacement of Sections 2.3.1, 2.3.2, 2.3.3 of the following Recovery Strategy**

3 Parks Canada Agency. 2006. Recovery Strategy for Multi-Species at Risk in Garry Oak  
4 Woodlands in Canada. In Species at Risk Act Recovery Strategy Series. Ottawa: Parks Canada  
5 Agency. 58 pp.

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15 For copies of the recovery strategy, or for additional information on species at risk, including  
16 COSEWIC Status Reports, residence descriptions, action plans, and other related recovery  
17 documents, please visit the SAR Public Registry<sup>1</sup>

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21 **Cover illustration:** Deltoid Balsamroot (upper right), Yellow Montane Violet (lower right), and  
22 White-top Aster (centre), Matt Fairbarns; Howell's Tritoleia (center right), Chris Junck; and  
23 Small-flowered Tonella (left), Ryan Batten

24  
25

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30

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37 *the source.*

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<sup>1</sup> [www.registrelep.gc.ca](http://www.registrelep.gc.ca)

## 38 **Acknowledgments**

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48

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## 68 Introduction

69 This document replaces the first five paragraphs of section 2.3 and sections 2.3.1, 2.3.2, and  
70 2.3.3 of the “Recovery Strategy for Multi-Species at Risk in Woodlands associated with Garry  
71 Oak Ecosystems in Canada” (Parks Canada Agency 2006), which was posted on the Species at  
72 Risk Public Registry on August 11<sup>th</sup> 2006  
73 ([www.sararegistry.gc.ca/document/default\\_e.cfm?documentID=873](http://www.sararegistry.gc.ca/document/default_e.cfm?documentID=873)).

74 This document includes a partial identification of critical habitat for multiple species at risk in  
75 woodlands associated with Garry Oak ecosystems in British Columbia, Canada. The  
76 Government of Canada, in cooperation with the provinces and other partners, is continuing work  
77 that will lead to the identification of additional critical habitat in future recovery planning  
78 documents, in an effort to meet the population and distribution objectives for the recovery of  
79 multiple species at risk in woodlands associated with Garry Oak ecosystems in Canada.

### 80 2.3. Critical Habitat

81 Critical habitat is defined in the *Species at Risk Act* as “the habitat that is necessary for the  
82 survival or recovery of a listed wildlife species and that is identified as the species’ critical  
83 habitat in the recovery strategy or in an action plan for the species” (Subsection 2(1)). Habitat for  
84 a terrestrial wildlife species is defined in the *Species at Risk Act* as “...the area or type of site  
85 where an individual or wildlife species naturally occurs or depends on directly or indirectly in  
86 order to carry out its life processes or formerly occurred and has the potential to be reintroduced”  
87 (Subsection 2(1)).

88 Critical habitat for Deltoid Balsamroot, Small-flowered Tonella, Howell’s *Triteleia*, and Yellow  
89 Montane Violet *praemorsa* subspecies is identified to the extent possible, based on the best  
90 available information. Critical habitat is not identified for special concern species White-top  
91 Aster. It is recognized that the critical habitat identified below is necessary, but insufficient, to  
92 achieve the population and distribution objectives<sup>2</sup> (Section 2.5.1 of the recovery strategy; Parks  
93 Canada 2006) because additional critical habitat is required to create new populations for these  
94 five species. More precise boundaries may be mapped, and additional critical habitat may be  
95 added in the future if ongoing research supports the inclusion of areas beyond those currently  
96 identified. The schedule of studies (Section 2.3.4 of the recovery strategy; Parks Canada 2006)  
97 outlines the activities required to identify additional critical habitat necessary to support the  
98 population and distribution objectives of each of the species. While some studies remain to be  
99 completed, the schedule of studies is still expected to provide the required information.

100 Garry Oak woodlands on southeastern Vancouver Island and the adjacent Gulf Islands and islets  
101 express a variety of habitat types and may occur as oak parklands with rich, deep soil and a  
102 variable understory of shrubs and herbaceous vegetation, or as drier scrub oak woodlands with  
103 poorer, shallower soils and a sparser understory. The species addressed by this amendment

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<sup>2</sup> The species-specific recovery objectives identified in Section 2.5.1 of the recovery strategy are considered to be the population and distribution objectives for the species.

104 typically occur in one of the above woodland types. These woodlands are naturally fragmented  
105 and are characterized by mild winters with frequent coastal fogs and warm, dry summers. To  
106 further characterize the specific habitat of each species, site and vegetation data were collected at  
107 extant locations.

### 108 **2.3.1. Identification of the species' critical habitat**

#### 109 *Geospatial location of areas containing critical habitat for species at risk in Woodlands*

110 Geospatial areas containing critical habitat are depicted as bounding areas (Figures 5-33). These  
111 bounding areas are delineated based on the location of critical habitat attributes Note that several  
112 of the mapped areas shown contain critical habitat for more than one species. Biophysical  
113 attributes of critical habitat are described below.

#### 114 *Biophysical attributes of critical habitat for plant species at risk in Woodlands*

115 Within the geospatial areas containing critical habitat, critical habitat for plant species of  
116 woodlands is identified based on the patch<sup>3</sup> areas currently occupied by the species, and  
117 surrounding habitat which provides the biophysical attributes that maintain it. The specific  
118 attributes required for species' life history functions in occupied and surrounding habitat overlap  
119 biophysically, geospatially, seasonally, and across life history stages. Within the habitat  
120 surrounding patch areas, one habitat feature (high light conditions) is required, and comprises the  
121 biophysical attribute and identification of critical habitat for all species and sites. This feature is  
122 explained below and referred to where relevant, in the species-specific critical habitat sections.

123 These woodland plant species require high light conditions to germinate and grow. The area  
124 surrounding the seed bank must be clear of shading shrubs and trees: this area is the canopy  
125 opening required by the species. The minimum size of canopy openings can be determined based  
126 on the height of vegetation able to grow in the area and cast shade on the plants (e.g.,  
127 Spittlehouse *et al.* 2004). An additional consideration with regards to canopy opening is that  
128 when tall vegetation falls, it will cover an area of ground equal to the distance of its height. In the  
129 habitats occupied by these species the maximum height of the coniferous vegetation able to grow  
130 in the area is approximately 20 metres. In addition this area also allows for reproduction, growth  
131 and dispersal. Dispersal distances for all of these plants (Deltoid Balsamroot, Small-flowered  
132 Tonella, Howell's Triteleia, and Yellow Montane Violet *praemorsa* subspecies) will generally be  
133 within 20 metres (or much less) of the parent plants (Ryan and Douglas 1996; Douglas and  
134 Penny 2003 a&b; COSEWIC 2007). For the species in this amendment, a default minimum  
135 canopy opening of 20 metres radius, based on the maximum height of the vegetation able to  
136 grow in the area, was applied unless more specific data was available.

137 The presence of trees and shrubs create shade and as these species encroach into previously open  
138 sites shade will increase beyond survivable levels at which point the critical habitat would be

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<sup>3</sup> In the explanations below the term 'patch' refers to a group of several plants in close proximity or rarely a single plant. For the purposes of this amendment, the identification of 'patches' is based on survey work performed by a biologist familiar with the species. The term 'population' refers to groups of patches likely to interbreed with each other. This assessment is based on the 'Habitat-based Plant Element Occurrence Delimitation Guidance' and populations generally include patches within 1 km of each other unless otherwise specified (NatureServe 2011).

139 destroyed. Garry Oak trees have a more open canopy structure which generally casts less shade  
 140 than conifers and they are deciduous which significantly decreases shade in fall, winter, and  
 141 spring. For the above reasons, compared to conifers, denser stands of oaks are possible without  
 142 degrading or destroying critical habitat while any encroaching conifers and shrubs are assumed  
 143 to be degrading critical habitat.

144 Critical habitat is each area currently occupied by the species and includes the surrounding  
 145 habitat out to 20 metres distance. This area provides space for individual and population growth,  
 146 seedbank sites, areas for dispersal, and the attributes of a woodland. Where existing roads and  
 147 buildings are located within the critical habitat area they are not considered critical habitat.

148 The spatial delineation of the above habitat feature of high light conditions (comprising the  
 149 biophysical attribute of critical habitat) has been completed for each population as indicated in  
 150 Tables 1-4 based on the best available information. Detailed methods relating to habitat feature  
 151 mapping (i.e., critical habitat identification) for each population are provided below. More  
 152 detailed information on the spatial location of critical habitat to support protection of and its  
 153 habitat may be requested, on a need-to-know basis, by contacting [Environment Canada's](#)  
 154 [Recovery Planning section](#). Delineation of biophysical attributes of critical habitat for Deltoid  
 155 Balsamroot

156 *Delineation of biophysical attributes of critical habitat for Deltoid Balsamroot*

157 All known extant populations for Deltoid Balsamroot are summarized in Table 1 which also  
 158 indicates whether critical habitat is identified for each population. Critical habitat for Deltoid  
 159 Balsamroot is identified in this amendment to the extent possible based on best available  
 160 information. The schedule of studies in the recovery strategy outlines activities required to  
 161 identify additional critical habitat necessary to support the population and distribution objectives  
 162 (Section 2.3.4 of the recovery strategy, Parks Canada Agency 2006).

163 Critical habitat is identified in this strategy for all eight populations, based on the best existing  
 164 available information.

165 **Table 1: Summary of critical habitat identification for extant populations of Deltoid**  
 166 **Balsamroot (*Balsamorhiza deltoidea*).**

Population (as referenced in recovery strategy)	Population (as referenced in amendment)	Figure #	Critical Habitat Identification
Fort Rodd Hill	Fort Rodd Hill	5	Yes
Mt. Tzuhalem	Mt. Tzuhalem	6	Yes
Mill Hill	Mill Hill	7	Yes
Thetis Lake	Thetis Lake	8	Yes
Beacon Hill	Beacon Hill	9	Yes
Francis King Park, SW of	Creed Road	10	Yes
Skirt Mountain	Skirt Mountain	11	Yes
Tyee Spit	Tyee Spit	33	Yes

167 In Canada, Deltoid Balsamroot is found in a range of Garry Oak woodland and/or rocky outcrops  
 168 on southeastern Vancouver Island. It's habitat is typically very dry, exposed or partially shaded



169 sites, with shallow soils (Ryan and Douglas 1996). Field investigations conducted in 2006-2008  
170 helped to further characterize the habitat needs of Deltoid Balsamroot (Fairbarns 2008a and  
171 2008b; GOERT 2008; GOERT 2009).

172 Figure 1 shows typical habitat for Deltoid Balsamroot. Common attributes of habitat for Deltoid  
173 Balsamroot include:

- 174 • Elevations less than 250 metres above sea level.
- 175 • Open areas with short or sparse vegetation (tree canopy dominated by Garry Oaks and  
176 ≤ 50% cover; conifers are rare and the cover of native shrubs is never substantial).
- 177 • Well drained soil that is moist early in the growing season (February and March) with  
178 water deficits by early summer.
- 179 • Soil depths ≥ 30 centimetres over bedrock with very small amounts of exposed  
180 mineral soil and fine litter.



181  
182 **Figure 1. Photo of typical habitat for Deltoid Balsamroot at Mount Tzuhalem (2009)**  
183 **(used with permission from S. Smith).**

184 Within the geographical boundaries identified in Figure 5 (Fort Rodd Hill), Figure 6 (Mt  
185 Tzuhalem, BC Ecological Reserve portion), Figure 7 (Mill Hill), and Figure 8 (Thetis Lake)  
186 critical habitat is identified as the entire patch of Deltoid Balsamroot, plus the area surrounding  
187 the patch, where the canopy structure directly influences the amount of light reaching the plants.  
188 This area varies in size based on the height of vegetation able to grow nearby (up to a maximum  
189 of 20 m) and was mapped by Fairbarns (2008a and 2008b).



190 Within the geographical boundaries identified in Figure 33 (Tye Spit) critical habitat is the  
 191 vegetated area where the plants are growing and delineated by the fence and existing roads,  
 192 sidewalk and parking areas.

193 Within the geographical boundaries identified in Figure 6 (Mount Tzuhalem, private land  
 194 portion), Figure 9 (Beacon Hill), Figure 10 (Creed Road), and Figure 11 (Skirt Mountain),  
 195 critical habitat is identified as all areas within 20 metres of the recorded location of each patch of  
 196 Deltoid Balsamroot (GOERT 2008; GOERT 2009). Surveys of these areas confirmed the  
 197 continued existence of the species and its habitat at the sites and provided partial information on  
 198 habitat and location. In addition, data from the BC Conservation Data Center (2012) is accepted  
 199 as the best available information for the location of a newly discovered sub-population on Skirt  
 200 Mountain.

201 As of December 2012, approximately 8.3 ha of critical habitat has been identified for Deltoid  
 202 Balsamroot.

203 *Delineation of biophysical attributes of critical habitat for Small-flowered Tonella*

204 All known extant populations of Small-flowered Tonella are summarized in Table 2 which also  
 205 indicates whether critical habitat is identified for each population. Since the publication of the  
 206 recovery strategy, one new population at Mt. Erskine has been documented. Critical habitat for  
 207 Small-flowered Tonella is identified in this amendment to the extent possible based on best  
 208 available information. The schedule of studies outlines activities required to identify additional  
 209 critical habitat necessary to support the population and distribution objectives (Section 2.3.4 of  
 210 the recovery strategy, Parks Canada Agency 2006).

211 **Table 2: Summary of critical habitat identification for extant populations of Small-**  
 212 **flowered Tonella (*Tonella tenella*).**

Population (as referenced in recovery strategy)	Population (as referenced in amendment)	Figure #	Critical Habitat Identification
Not recorded in recovery strategy	Mt. Erskine	12	Yes
Sansom Narrows, Saltspring Island	Sansom Narrows, Saltspring Island	n/a	No*

\*Data required to identify critical habitat: location precision <100 m; confirmation of species or habitat presence

213 In Canada, Small-flowered Tonella occurs in Garry Oak woodlands, including transitional  
 214 woodlands, on southeastern Vancouver Island. The habitat is relatively dry, steep, and is partly  
 215 shaded (Parks Canada Agency 2006). Field investigations in 2009 helped to further characterize  
 216 the habitat needs of Small-flowered Tonella (Maslovat 2009; Roemer 2010).

217 Wide population fluctuations are typical of many other annual species (Harper 1977; Bush and  
 218 Lancaster 2004) and it is likely that populations of Small-flowered Tonella are similarly prone to  
 219 large annual fluctuations. While some habitat may not be used every year, the presence of plants  
 220 in one year indicates that the habitat may be critical for storing seeds and boosting seed  
 221 production in favourable years. For this reason all habitat used at any time by each patch of  
 222 plants in each extant population is considered critical to achieve the population and distribution

223 objectives and is critical habitat; however, due to population fluctuations this habitat cannot be  
224 completely identified based on data from any single year: a long term data set is required to  
225 ensure the full range of population fluctuation is captured.

226 Figure 2 shows typical habitat for Small-flowered Tonella. Common attributes of habitat for  
227 Small-flowered Tonella include:

- 228 • Extremely steep rocky slope (110% grade).
- 229 • Elevation of 340 metres above sea level and below 425 metres
- 230 • Open canopy areas with short or sparse understory vegetation within second growth  
231 forest (Arbutus, Bigleaf Maple, Douglas-fir, and/or Garry Oak).
- 232 • Well drained soil that is moist in the growing season (late winter/early spring) with  
233 water deficits by early summer.
- 234 • Soil depth up to 40 centimetres over bedrock with soil surface consisting of exposed  
235 mineral soil and fine litter with bedrock, coarse rock fragments, and coarse woody  
236 debris present.



237

238 **Figure 2: Photo of typical Habitat of Small-flowered Tonella at Mount Erskine**  
239 **(2009) (photo used with permission from C. Maslovat) in Canada.**

240 Within the geographical boundaries identified in Figure 12 (Mount Erskine), critical habitat is  
241 identified as the area around each patch of Small-flowered Tonella where the canopy structure  
242 directly influences the amount of light reaching the plants. Data from the BC Conservation Data  
243 Center (2012) is accepted as the best available information for the location of the northernmost  
244 subpopulation and this data is supplemented with information from Maslovat (2009) regarding  
245 habitat and seepage tracks. The remaining three sub-populations were partially surveyed by

246 (Roemer 2010); these surveys confirmed the continued existence of the species and its habitat at  
 247 the sites and provided partial information on habitat and location.

248 As of December 2012, approximately 1.0 ha of critical habitat has been identified for Small-  
 249 flowered Tonella.

250 *Delineation of biophysical attributes of critical habitat for Howell’s Tritelleia*

251 All known extant populations for Howell’s Tritelleia are summarized in Table 3 which also  
 252 indicates whether critical habitat is identified for each population. Since the publication of the  
 253 recovery strategy, two new populations at Brentwood Bay and Verdier Point have been  
 254 documented and critical habitat remains to be described for these populations. Critical habitat for  
 255 Howell’s Tritelleia is identified in this amendment to the extent possible based on best available  
 256 information. The schedule of studies outlines activities required to identify additional critical  
 257 habitat necessary to support the population and distribution objectives (Section 2.3.4 of the  
 258 recovery strategy, Parks Canada Agency 2006).

259 **Table 3: Summary of critical habitat identification for extant populations of Howell’s**  
 260 **Tritelleia (*Tritelleia howellii*)**

Population (as referenced in recovery strategy)	Population (as referenced in amendment)	Figure #	Critical Habitat Identification
Beacon Hill	Beacon Hill	9	Yes
Albert Head	Albert Head Lagoon	13	Yes
Witty’s Lagoon	Witty’s Lagoon	14&15	Yes
Cowichan Garry Oak Preserve	Elkington Creek	16	Yes
Horth Hill	Horth Hill	17	Yes
Somenos Lake	Somenos Creek	18	Yes
Gordon Head	Gordon Head	19	Yes
William Head Rd.	Parker Bay	20	Yes
Mt. Tzuhalem, base of	Cowichan River Estuary	21	Yes
Cowichan River Estuary	Cowichan River Estuary	21	N/A <sup>4</sup>
Island View Beach	Island View Beach	n/a	No*
Canoe Cove	Canoe Bay	n/a	No†
Thetis Lake	Thetis Lake	n/a	No†
Not recorded in recovery strategy	Brentwood Bay	n/a	No*
Not recorded in recovery strategy	Verdier Point	n/a	No*

\*Data required to identify critical habitat: location precision <100 m; confirmation of species or habitat presence

†Data required to identify critical habitat: confirmation of species or habitat presence

261 In Canada, Howell’s Tritelleia is found in a range of Garry Oak woodland and rocky outcrops on  
 262 southeastern Vancouver Island (Parks Canada Agency 2006). Field investigations conducted in  
 263 2007-2009 helped to further characterize the habitat needs of Howell’s Tritelleia (Fairbarns  
 264 2008b; Costanzo *et al.* 2009a; GOERT 2009, GOERT 2012; Fleming 2010).  
 265

<sup>4</sup> Synonymous with above Cowichan River Estuary record.

266 Figure 3 shows typical habitat for Howell's *Triteleia*. Common attributes of habitat for Howell's  
267 *Triteleia* include:

- 268 • Up to 250 metres above sea level.
- 269 • Terraces and low slopes (0- 20%), steeper slopes face south to southwest.
- 270 • Open areas with short or sparse vegetation. Garry Oak and *Arbutus* trees present, but  
271 conifers are rare and the cover of native shrubs is never substantial.
- 272 • Well drained soil that is moist early in the growing season (late winter/early spring)  
273 with water deficits by early summer.
- 274 • Soil consisting of loam (clay with soil) with 20 to 35 % coarse soil fragments, to 40  
275 centimetres deep.



276

277 **Figure 3: Photo of typical habitat of Howell's *Triteleia* at William Head (2008)**  
278 **(photo used with permission from C. Junck) in Canada.**

279 Within the geographical boundaries identified in Figure 13 (Albert Head) and Figure 15 (Witty's  
280 Lagoon, eastern sub-population), critical habitat is identified as the area around each patch of



281 Howell’s *Triteleia* where the canopy structure directly influences the amount of light reaching  
 282 the plants. This area varies in size based on the height of vegetation able grow nearby (up to a  
 283 maximum of 20 m) and was mapped by Fairbarns (2008b).

284 Within the geographical boundaries identified in Figure 9 (Beacon Hill), Figure 14 (Witty’s  
 285 Lagoon, western sub-population), Figure 16 (Elkington Creek), Figure 17 (Horth Hill), Figure 18  
 286 (Somenos Creek), Figure 19 (Gordon Head), Figure 20 (Parker Bay), and Figure 21 (Cowichan  
 287 River Estuary) critical habitat is identified as all areas within 20 metres of the recorded location  
 288 of each patch of Howell’s *Triteleia* (Costanzo *et al.* 2009a; GOERT 2009; GOERT 2012;  
 289 Fleming 2010). The following populations were partially surveyed: Beacon Hill, Horth Hill,  
 290 Elkington Creek (eastern sub-populations) (Costanzo *et al.* 2009a), Elkington Creek (western  
 291 sub-population), and Cowichan River Estuary (northern sub-population) (GOERT 2009),  
 292 Somenos Creek (Fleming 2010), Gordon Head, Parker Bay (southern subpopulation) and Witty’s  
 293 Lagoon (western sub-population) (GOERT 2012). These partial surveys confirmed the continued  
 294 existence of the species and its habitat at the sites and provided partial information on habitat and  
 295 location. Data from the BC Conservation Data Center (2012) is accepted as the best available  
 296 information for the location of the northern sub-population at Parker Bay and the populations at  
 297 Cowichan River Estuary.

298 As of December 2012, approximately 6.1 ha of critical habitat is been identified for Howell’s  
 299 *Triteleia*.

300 *Delineation of biophysical attributes of critical habitat for Yellow Montane Violet*  
 301 *praemorsa subspecies*

302 All known extant populations for Yellow Montane Violet *praemorsa* subspecies are summarized  
 303 in Table 4 which also indicates whether critical habitat is identified for each population. Since  
 304 the publication of the recovery strategy, one new population at Parry Bay (Devonian Park) has  
 305 been documented Critical habitat for Yellow Montane Violet *praemorsa* subspecies is identified  
 306 in this amendment to the extent possible based on best available information. The schedule of  
 307 studies outlines activities required to identify additional critical habitat necessary to support the  
 308 population and distribution objectives (Section 2.3.4 of the recovery strategy, Parks Canada  
 309 Agency 2006).

310 **Table 4: Summary of critical habitat identification for extant populations of Yellow**  
 311 **Montane Violet *praemorsa* subspecies (*Viola praemorsa* ssp. *praemorsa*)**

Population (as referenced in recovery strategy)	Population (as referenced in amendment)	Figure #	Critical Habitat Identification
Mt. Tzuhalem	Mt. Tzuhalem	6	Yes
Beacon Hill	Beacon Hill	9	Yes
Cowichan Garry Oak Preserve	Elkington Creek	16	Yes
Somenos Lake	Somenos Creek	18	Yes
Little Saanich Mtn.	Little Saanich Mtn.	22	Yes
Bear Hill	Bear Hill	23	Yes
Uplands Park	Uplands Park/Cattle Point	24	Yes
Mt. Maxwell	Mt. Maxwell	25	Yes

Population (as referenced in recovery strategy)	Population (as referenced in amendment)	Figure #	Critical Habitat Identification
Mt. Tuam	Mt. Tuam	26	Yes
Christmas Hill	Christmas Hill	27	Yes
Playfair Park	Playfair Park	28	Yes
Falaise Park	Falaise Park	29	Yes
St. Peter's Church	Quamichan Creek	30	Yes
Smith Hill	Smith Hill	31	Yes
Not recorded in recovery strategy	Parry Bay (Devonian Park)	32	Yes

312 In Canada, Yellow Montane Violet *praemorsa* subspecies is found in a range of open Garry Oak  
 313 woodlands and grass-dominated meadow openings on southeastern Vancouver Island and the  
 314 Gulf Islands (Parks Canada Agency 2006). Field investigations conducted in 2007-2009 helped  
 315 to further characterize the habitat needs of Yellow Montane Violet *praemorsa* subspecies  
 316 (Costanzo *et al.* 2009b; Fleming 2010; Roemer and Annschild 2008; Fairbarns 2008a and 2008b;  
 317 GOERT 2008; GOERT 2009; GOERT 2012; Maslovat 2009).

318 Figure 4 shows typical habitat for Yellow Montane Violet *praemorsa* subspecies. Common  
 319 attributes of habitat for Yellow Montane Violet *praemorsa* subspecies include:

- 320 • Up to 604 metres above sea level.
- 321 • Open areas with short or sparse vegetation (Garry Oak trees present, but conifers are  
 322 absent and the cover of native shrubs is never substantial).
- 323 • Low to moderate slopes (5 to 50% grade).
- 324 • Shallow soils (10 to 30 centimetres) over bedrock with very small amounts of exposed  
 325 mineral soil and fine litter, with coarse woody debris often present.
- 326 • Well drained soil that is moist early in the growing season (January to March) with  
 327 water deficits by early summer.





328

329 **Figure 4. Photo of typical habitat of Yellow Montane Violet *praemorsa* subspecies**  
330 **in Canada (2006) (photo used with permission from M. Fairbarns).**

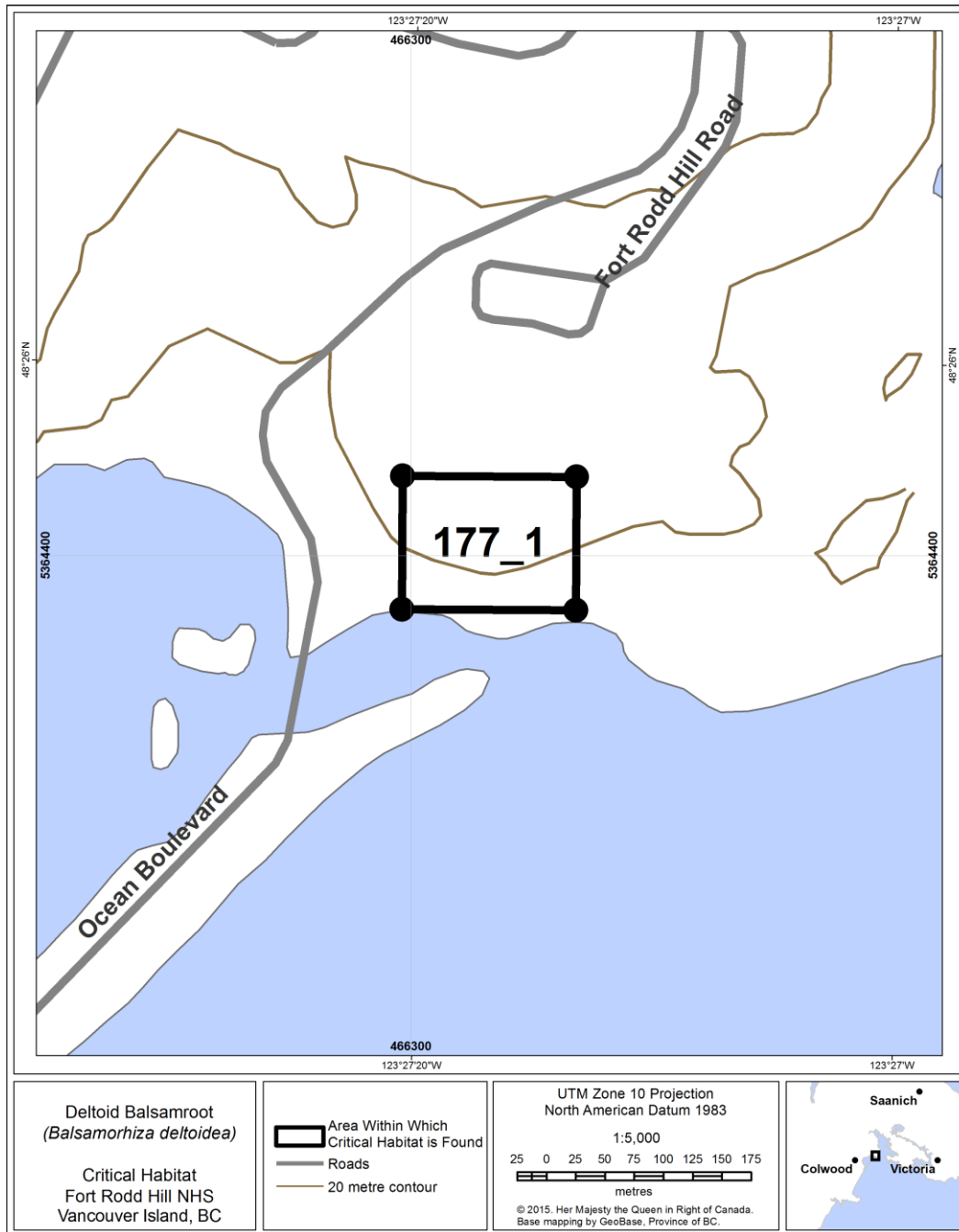
331 Within the geographical boundaries identified in Figure 6 (Mt Tzuhalem) and Figure 23 (Bear  
332 Hill), critical habitat is the area around each patch of Yellow Montane Violet *praemorsa*  
333 subspecies where the canopy structure directly influences the amount of light reaching the plants.  
334 This area varies in size based on the height of vegetation able grow nearby (up to a maximum of  
335 20 metres) and was mapped by Fairbarns (2008a and 2008b).

336 Within the geographical boundaries identified in Figure 9 (Beacon Hill), Figure 16 (Elkington  
337 Creek), Figure 18 (Somenos Creek), Figure 22 (Little Saanich Mountain), Figure 24 (Uplands  
338 Park/Cattle Point), Figure 25 (Mt. Maxwell), Figure 26 (Mt. Tuam), Figure 27 (Christmas Hill),  
339 Figure 28 (Playfair Park), Figure 29 (Falaise Park), Figure 30 (Quamichan Creek), Figure 31  
340 (Smith Hill), and Figure 32 (Parry Bay), critical habitat is identified as all areas within 20 m of  
341 the recorded location of each patch of Yellow Montane Violet *praemorsa* subspecies (Roemer  
342 and Annschild 2008; Costanzo *et al.* 2009b; GOERT 2008, 2009 and 2012; Maslovat 2009;  
343 Fleming 2010). The following populations were partially surveyed: Beacon Hill, Uplands/Cattle  
344 Point, Christmas Hill, Smith Hill (Costanzo *et al.* 2009b), Somenos Creek (Fleming 2010),  
345 Mount Tuam (Roemer and Annschild 2008), Mount Maxwell (Maslovat 2009), Quamichan  
346 Creek (GOERT 2008), Little Saanich Mountain, Falaise Park (GOERT 2009), Playfair Park and  
347 Parry Bay (GOERT 2012). These partial surveys confirmed the continued existence of the  
348 species and its habitat at the sites and provided partial information on habitat and location.

349 As of December 2012, approximately 16.3 ha of critical habitat is identified for Yellow Montane  
350 Violet *praemorsa* subspecies.

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### 2.3.2. Critical Habitat Map Figures



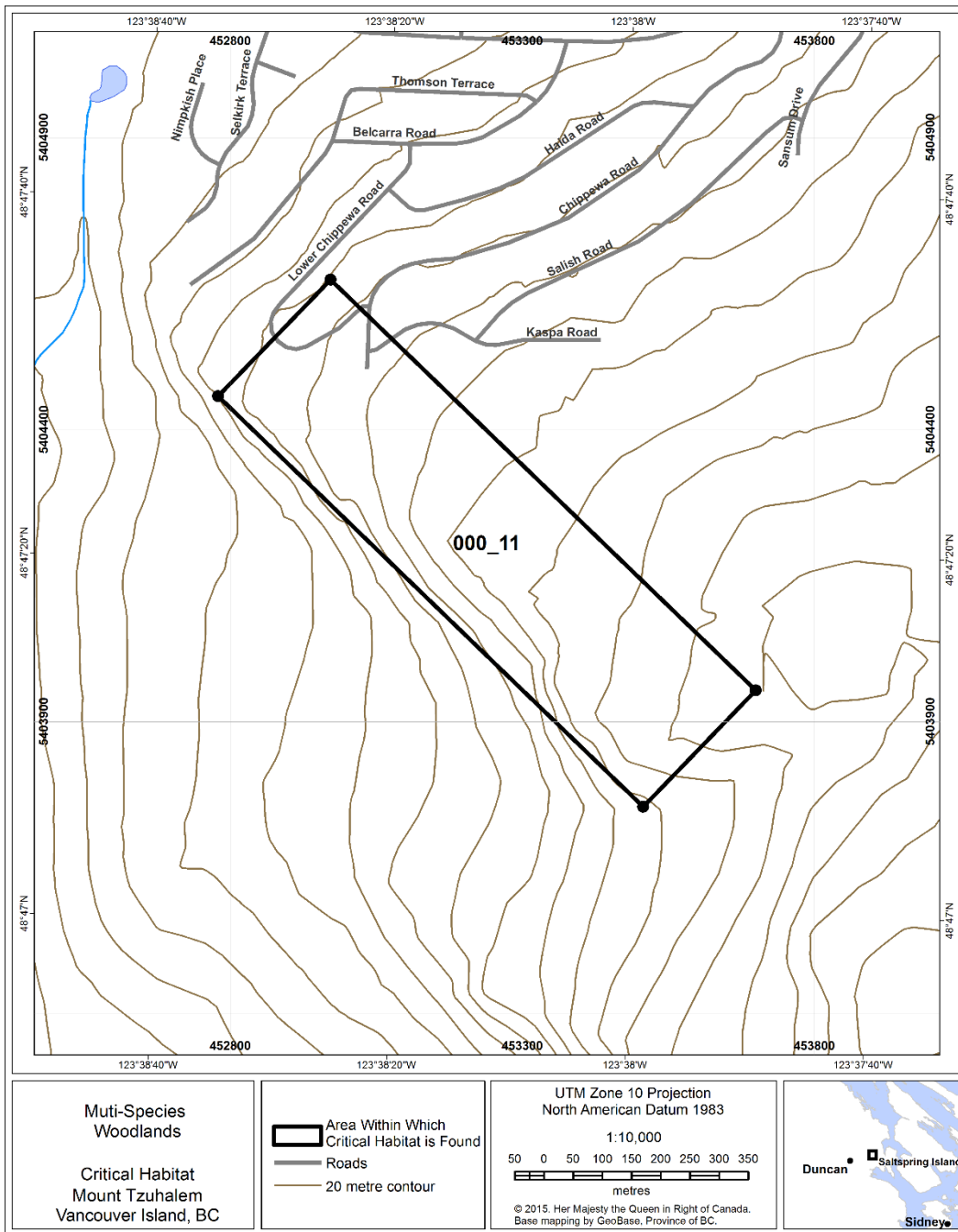
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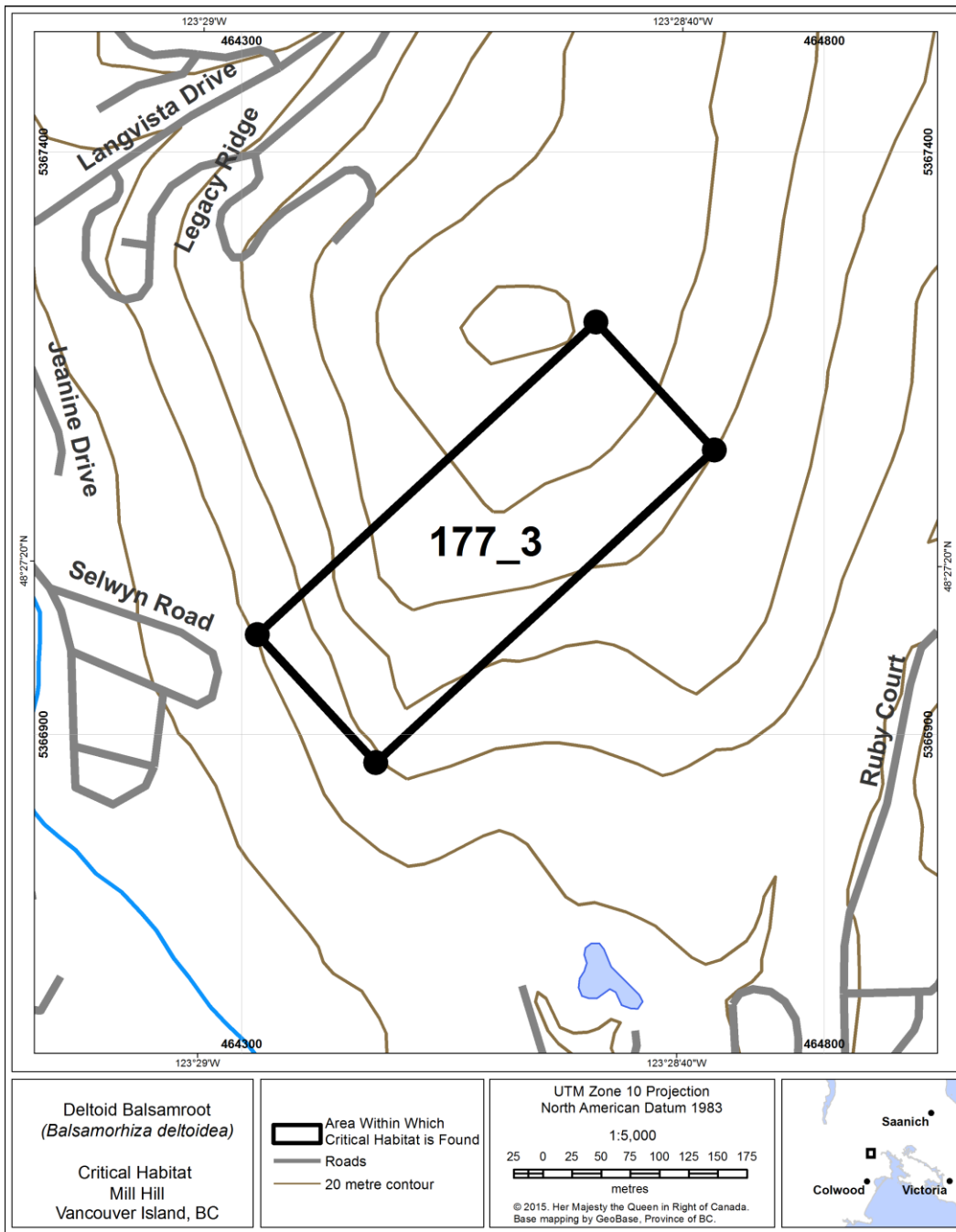
**Figure 5. Area (~1.7 ha) within which critical habitat for Deltoid Balsamroot is found at Fort Rodd Hill National Historic Site, on federal lands. The area of critical habitat within this area is approximately 0.75 ha.**



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**Figure 6. Area (~28.1 ha) within which critical habitat for Deltoid Balsamroot and Yellow Montane Violet *praemorsa* subspecies is found at Mount Tzuhalem, on non-federal lands. The area of critical habitat within this area is approximately 3.4 ha.**



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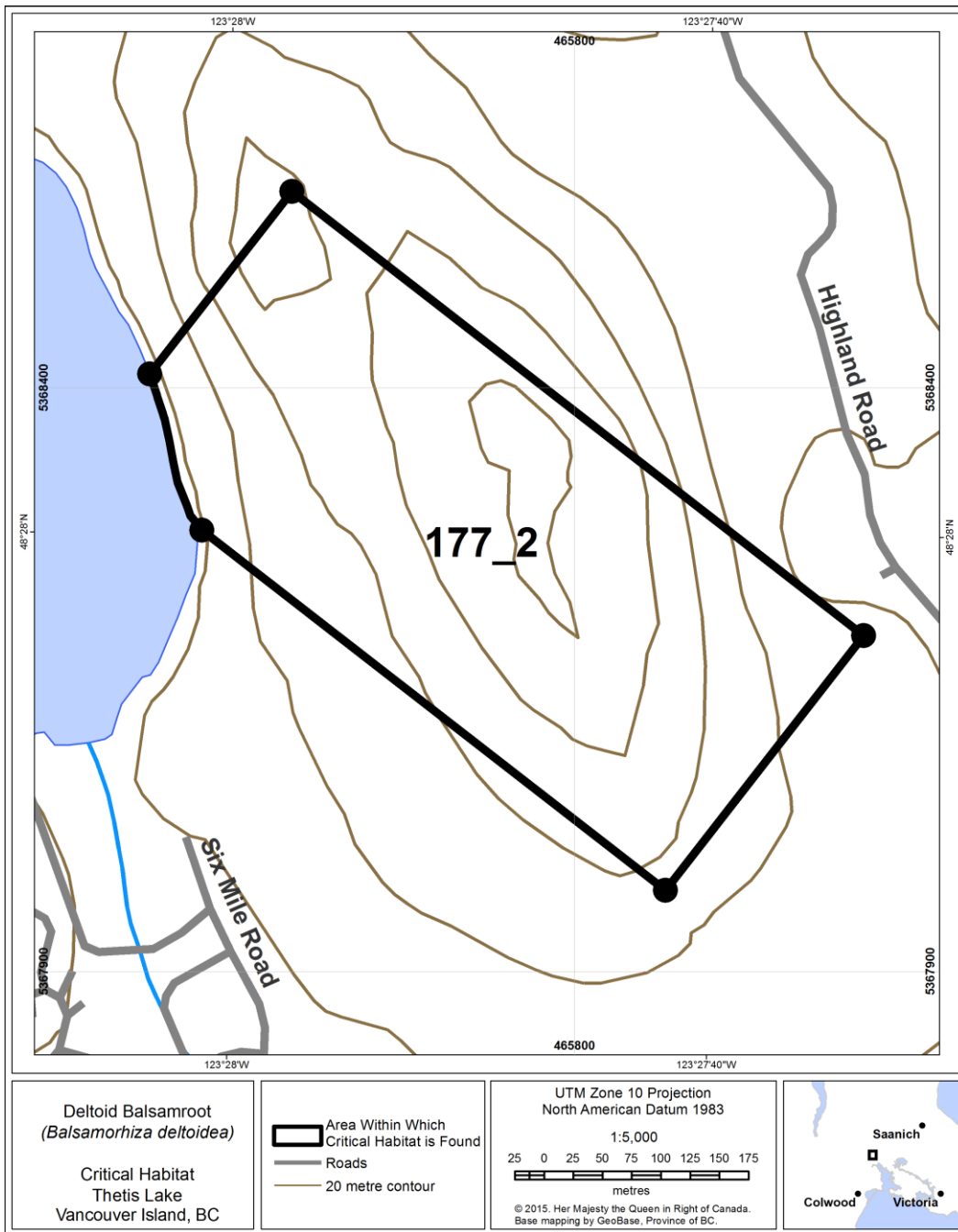
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**Figure 7: Area (~5.9 ha) within which critical habitat for Deltoid Balsamroot is found at Mill Hill Regional Park, on non-federal lands. The area of critical habitat within this area is approximately 0.2 ha.**





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**Figure 8. Area (~16.7 ha) within which critical habitat for Deltoid Balsamroot is found at Thetis Lake Regional Park, on non-federal lands. The area of critical habitat within this area is approximately 3.02 ha.**

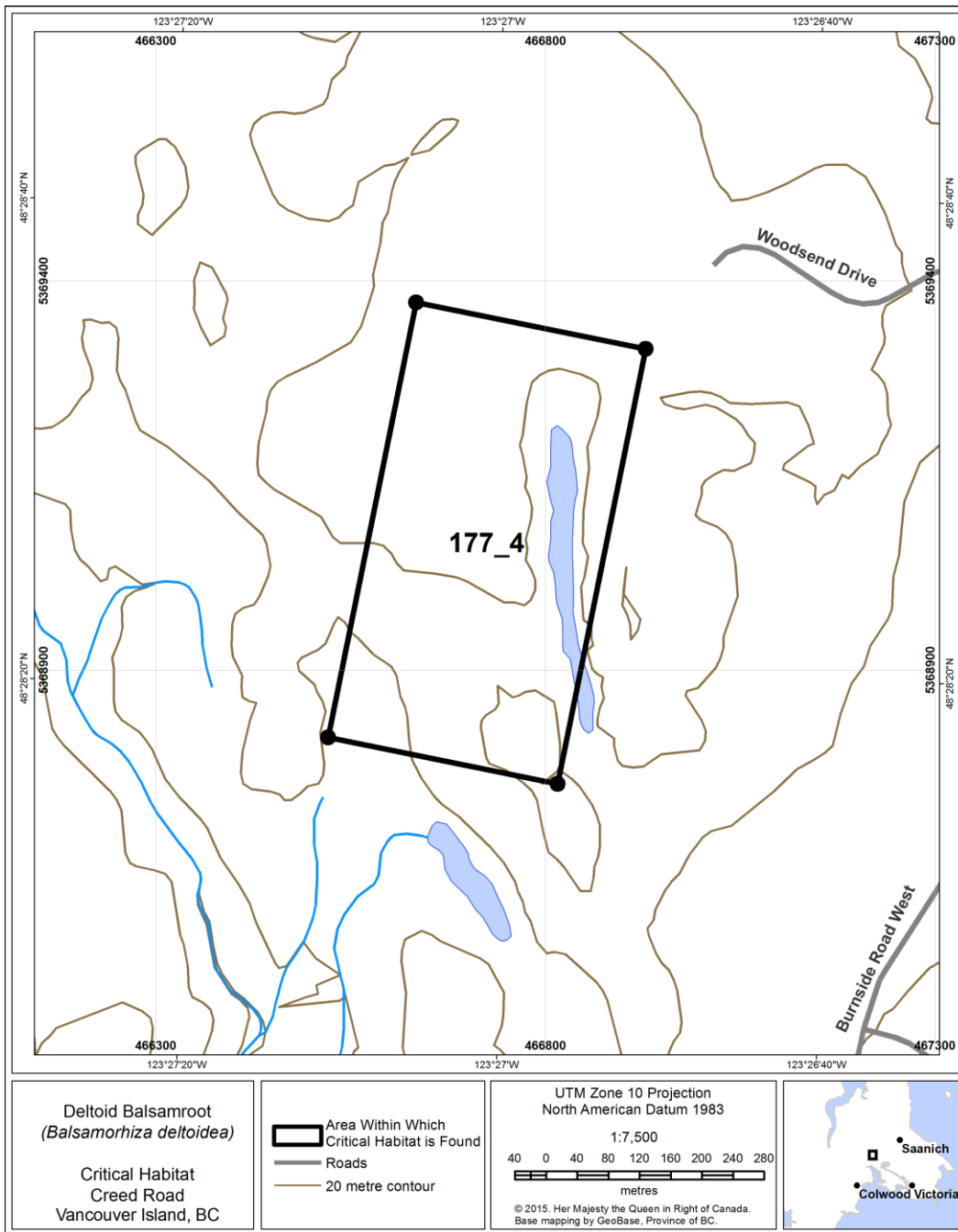




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371 **Figure 9. Area (~63.4 ha) within which critical habitat for Deltoid Balsamroot,**  
 372 **Howell’s Tritelia and Yellow Montane Violet *praemorsa* subspecies are found at**  
 373 **Beacon Hill Park, on non-federal lands. The area of critical habitat within this area**  
 374 **is approximately 1.9 ha.**

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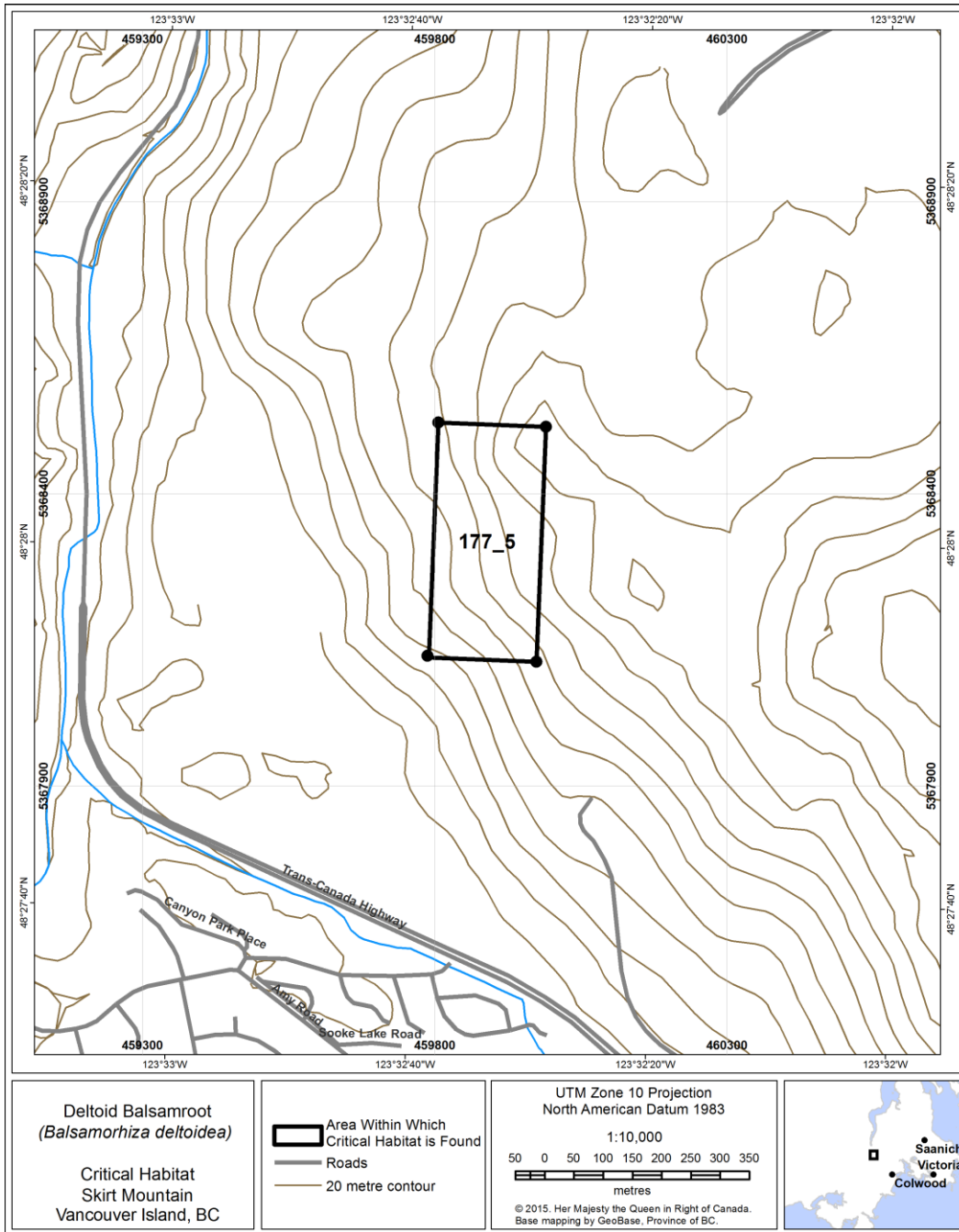
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**Figure 10: Area (~17.2 ha) within which critical habitat for Deltoid Balsamroot is found at Creed Road, on non-federal lands. The area of critical habitat within this area is approximately 0.5 ha.**



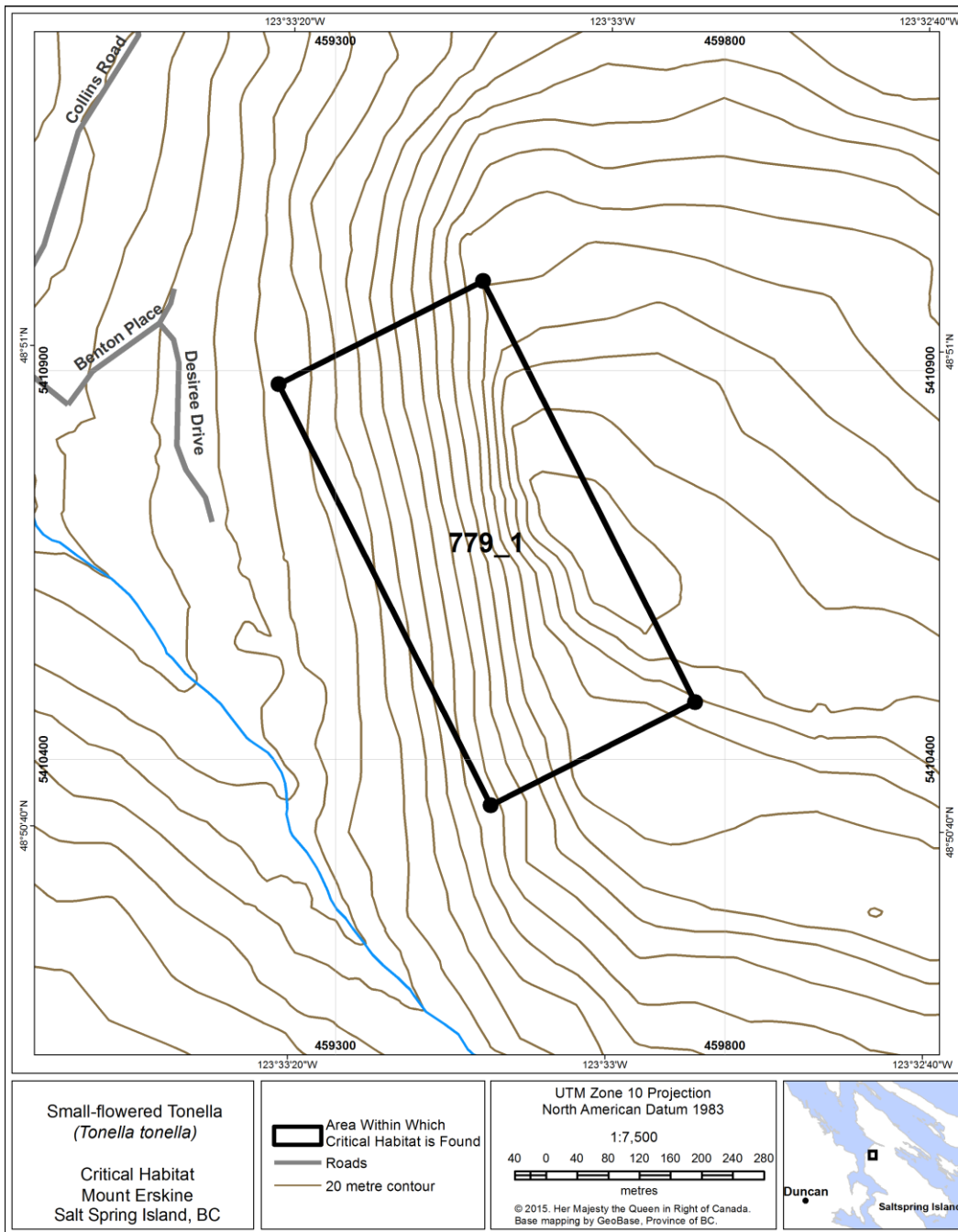
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**Figure 11. Area (~7.4 ha) within which critical habitat for Deltoid Balsamroot is found at Skirt Mountain, on non-federal lands. The area of critical habitat within this area is approximately 1.2 ha.**



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**Figure 12. Area (~17.8 ha) within which critical habitat for Small-flowered Tonella is found on Mount Erskine, on non-federal lands. The area of critical habitat within this area is approximately 1.1 ha.**



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**Figure 13: Area (~0.2 ha) within which critical habitat for Howell's Triteleia is found at Albert Head, on non-federal lands. The area of critical habitat within this area is approximately 0.1 ha.**



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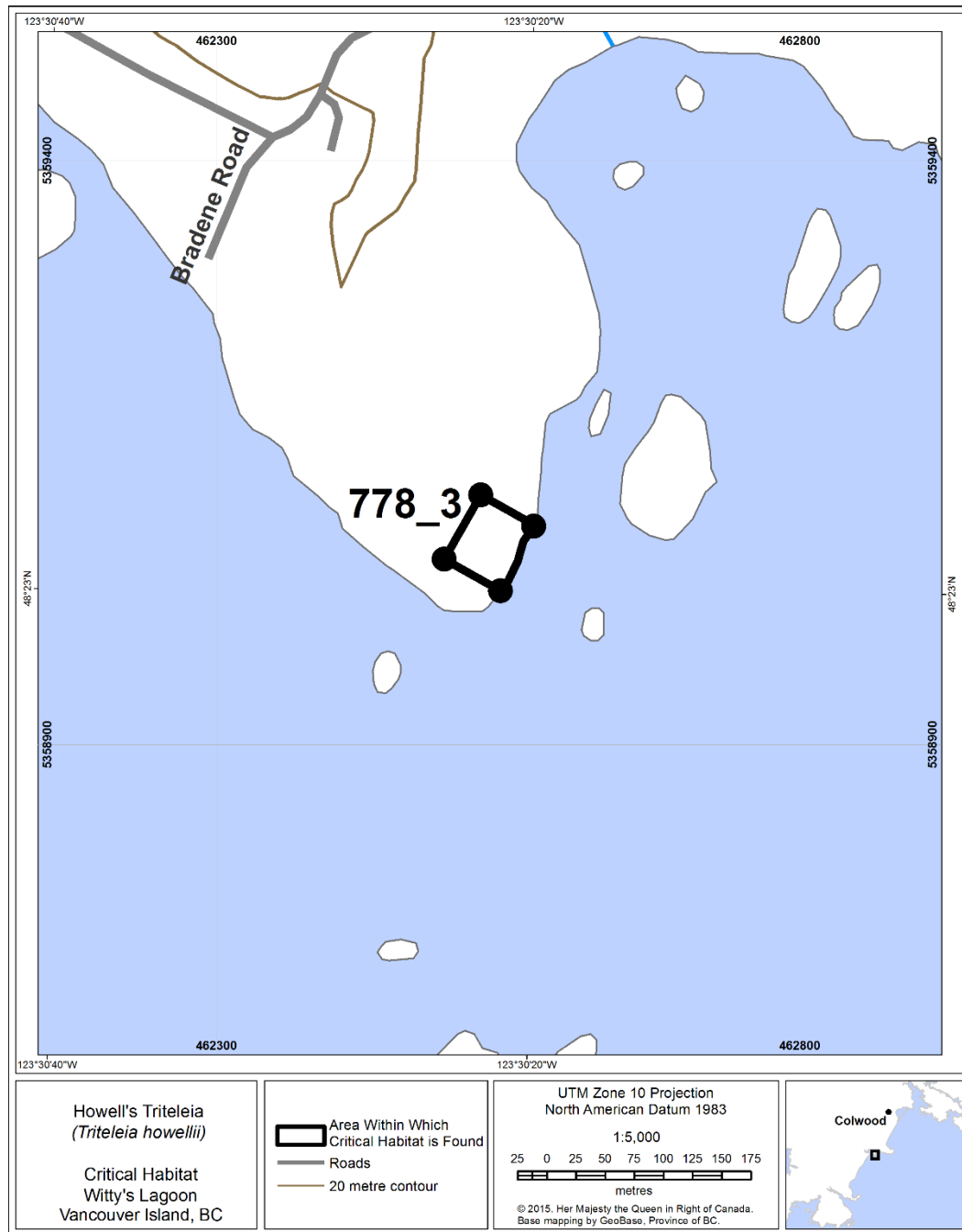
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**Figure 14: Area (~0.5 ha) within which critical habitat for Howell's Triteleia is found at Witty's Lagoon, on non-federal lands. The area of critical habitat within this area is approximately 0.3 ha.**





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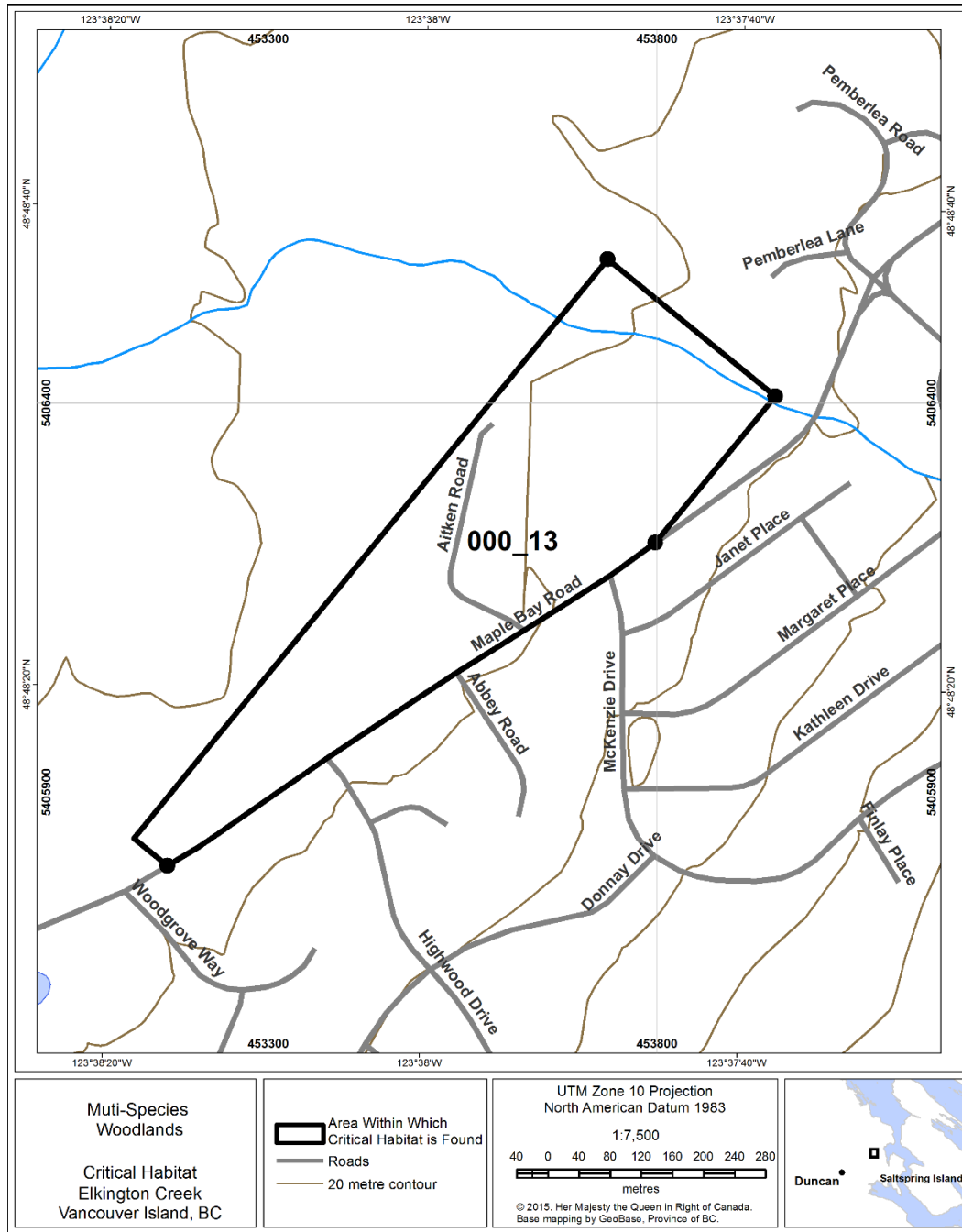
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**Figure 15: Area (~0.3 ha) within which critical habitat for Howell's Triteleia is found at Witty's Lagoon, on non-federal lands. The area of critical habitat within this area is approximately 0.1 ha.**



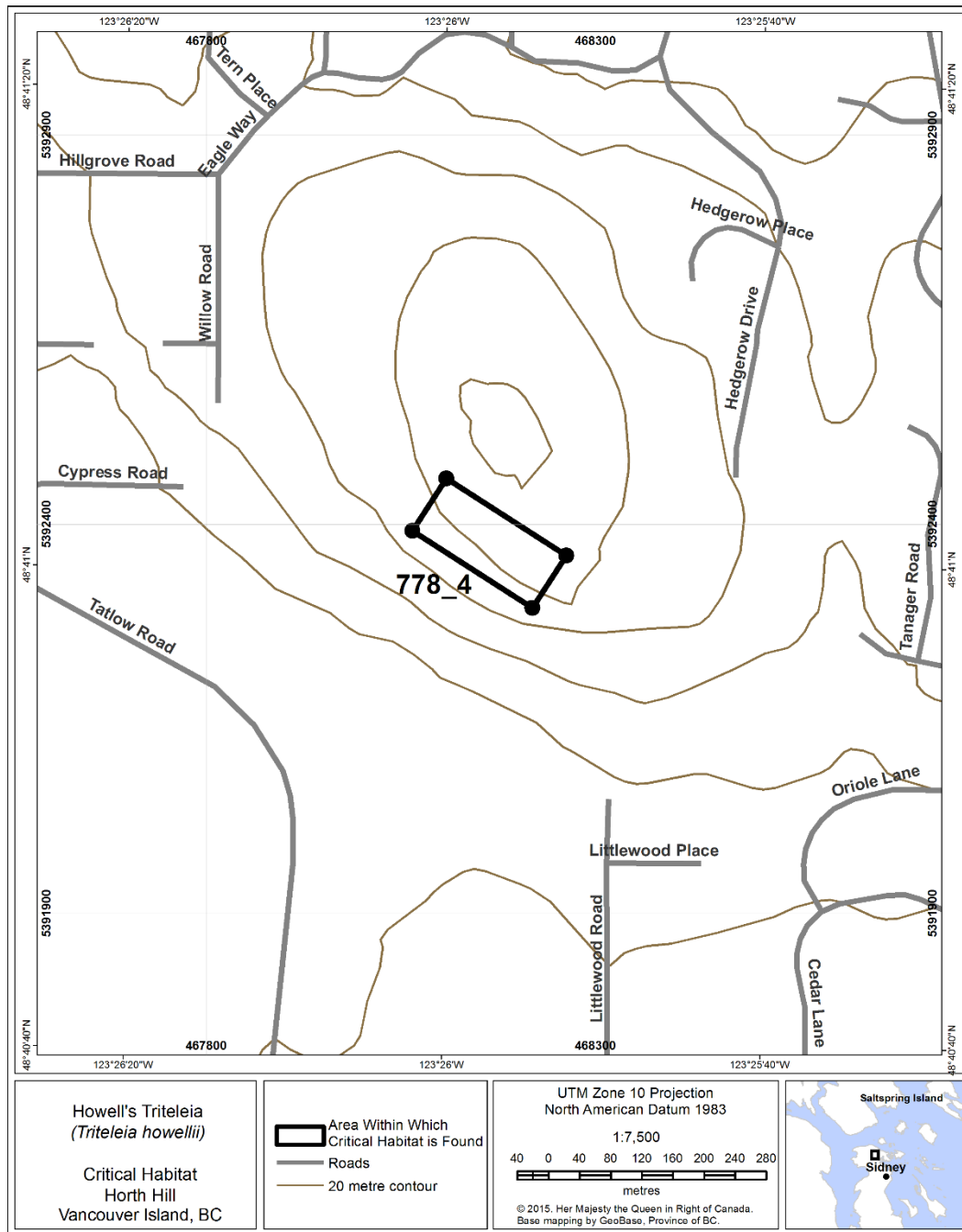
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**Figure 16: Area (~18.8 ha) within which critical habitat for Howell's *Triteleia* and Yellow Montane Violet *praemorsa* subspecies is found at Elkington Creek, on non-federal lands. The area of critical habitat within this area is approximately 5.8 ha.**



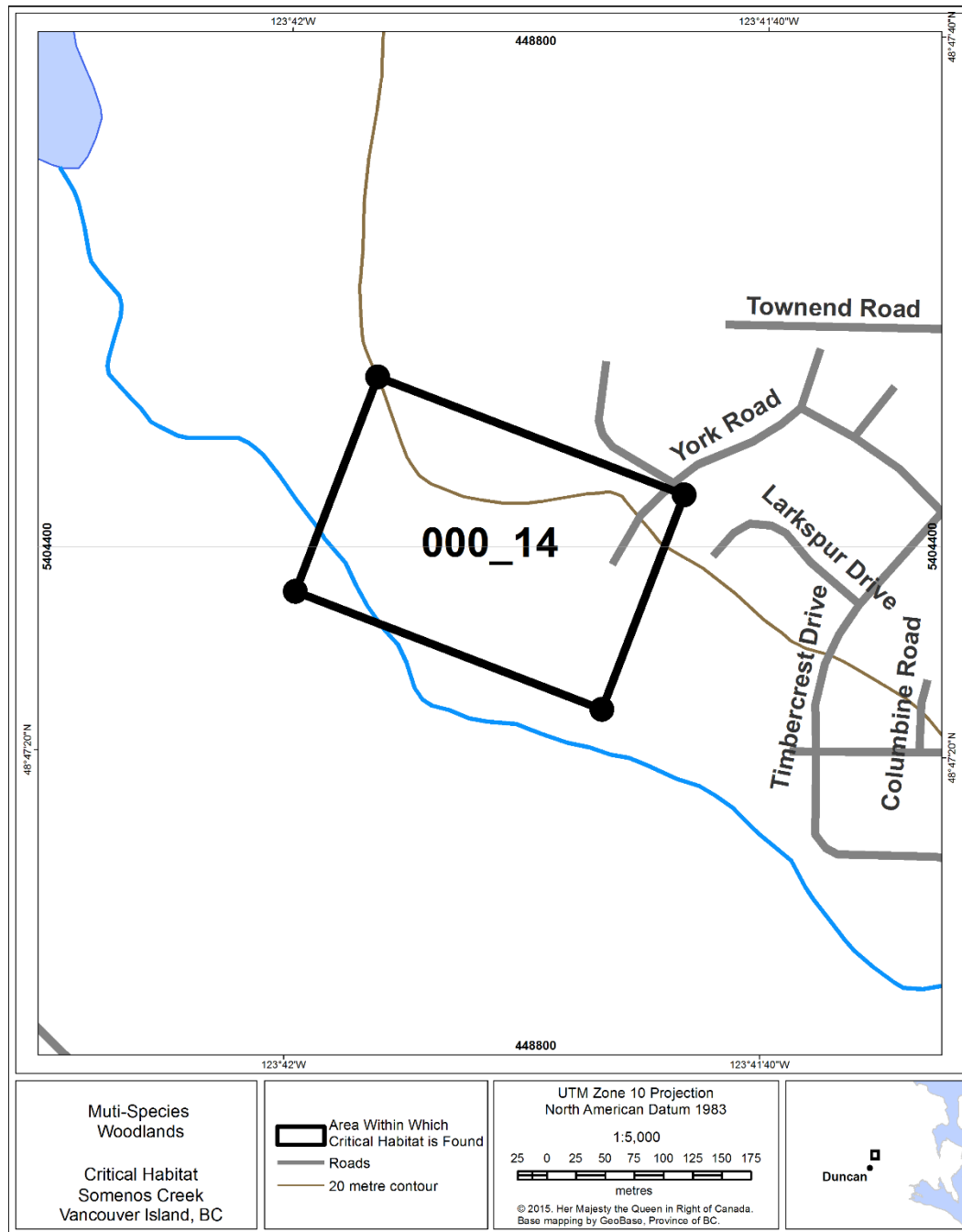
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**Figure 17: Area (~1.5 ha) within which critical habitat for Howell's Tritelleia is found at Horth Hill Regional Park, on non-federal lands. The area of critical habitat within this area is approximately 0.3 ha.**



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**Figure 18: Area (~5.5 ha) within which critical habitat for Howell’s *Triteleia* and Yellow Montane Violet *praemorsa* subspecies is found at Somenos Creek, on non-federal lands. The area of critical habitat within this area is approximately 2.4 ha.**



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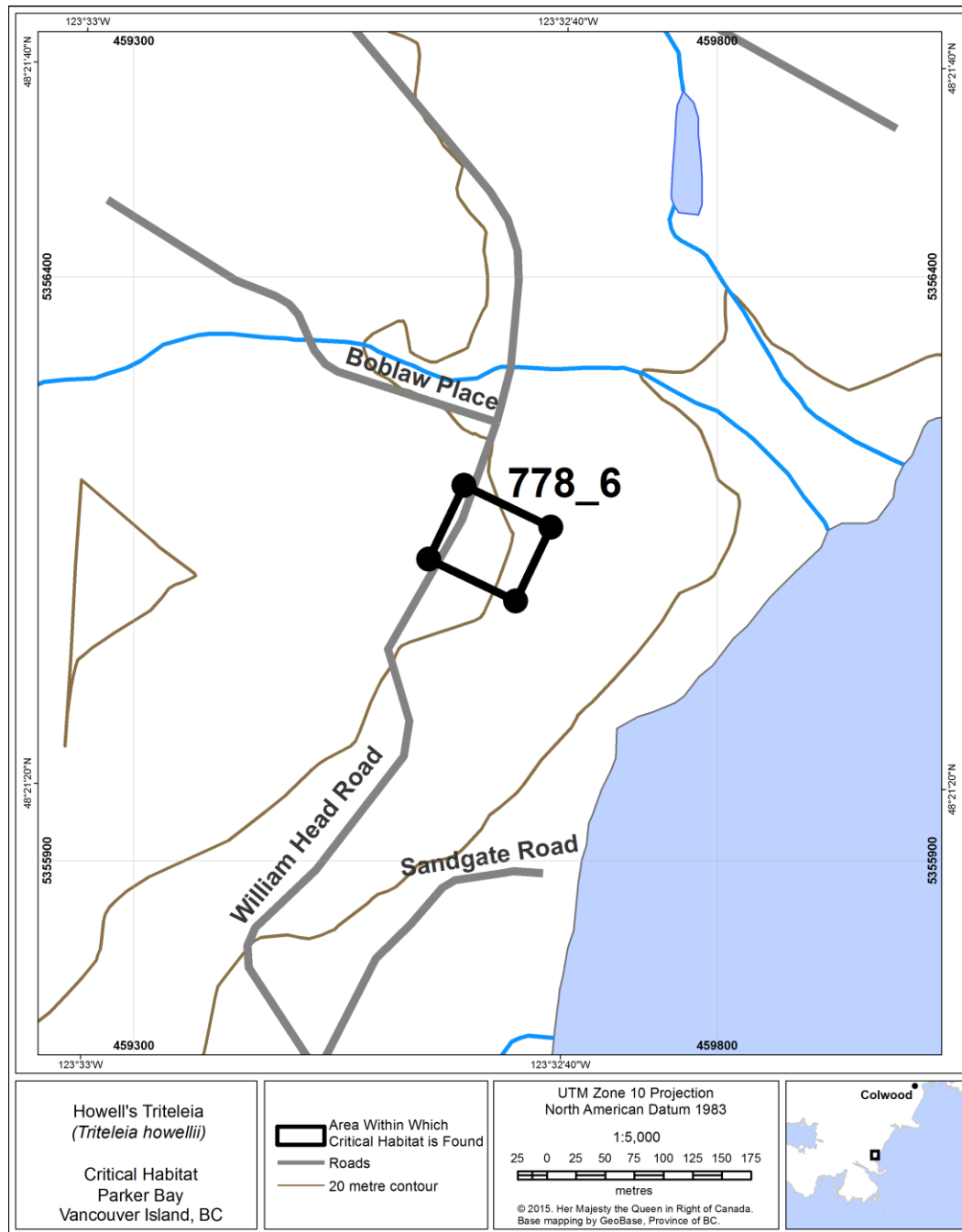
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**Figure 19: Area (~0.3 ha) within which critical habitat for Howell's Triteleia is found at Gordon Head, on non-federal lands. The area of critical habitat within this area is approximately 0.1 ha.**





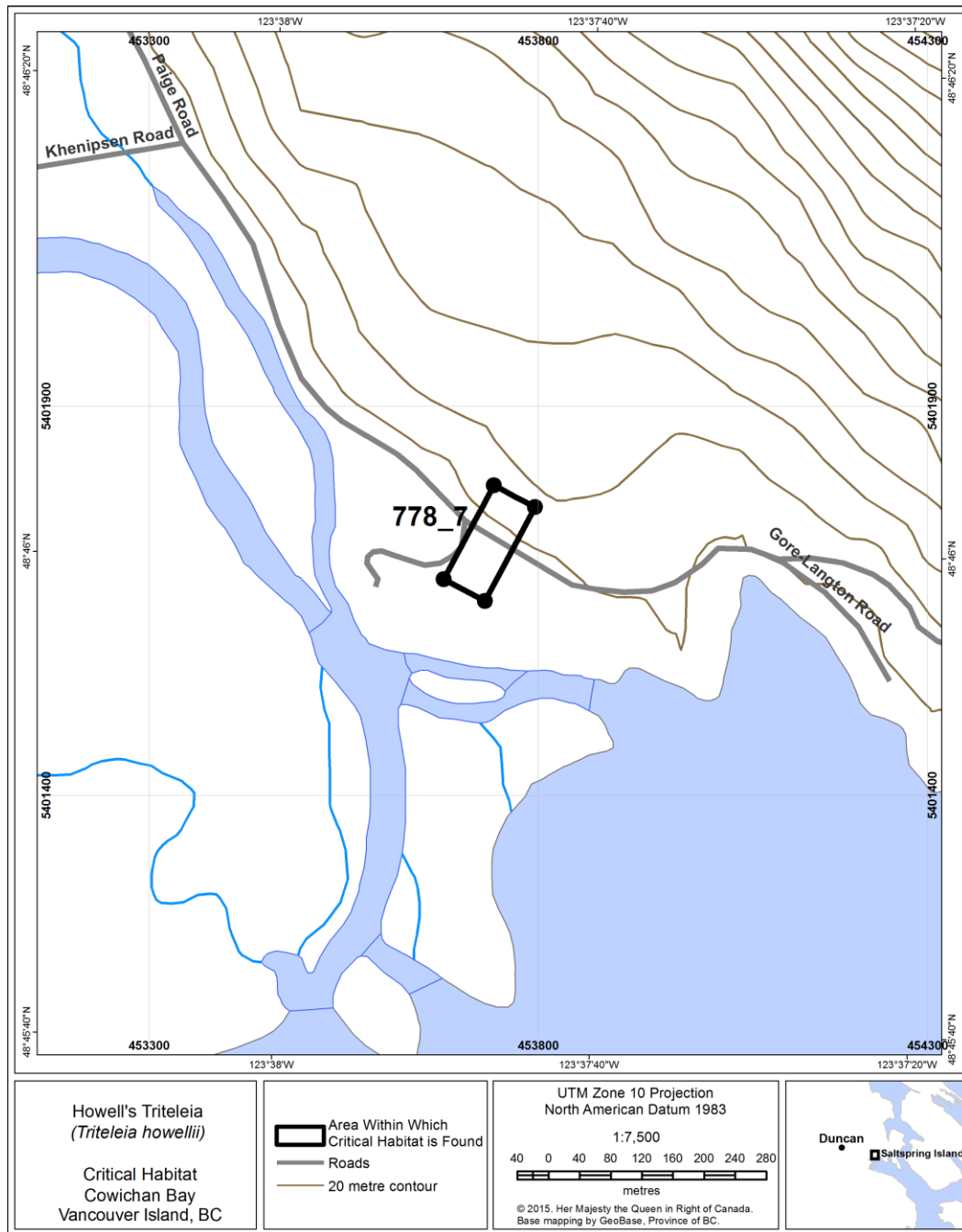
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**Figure 20 Area (~0.6 ha) within which critical habitat for Howell's Triteleia is found at Parker Bay, on non-federal lands. The area of critical habitat within this area is approximately 0.2 ha.**



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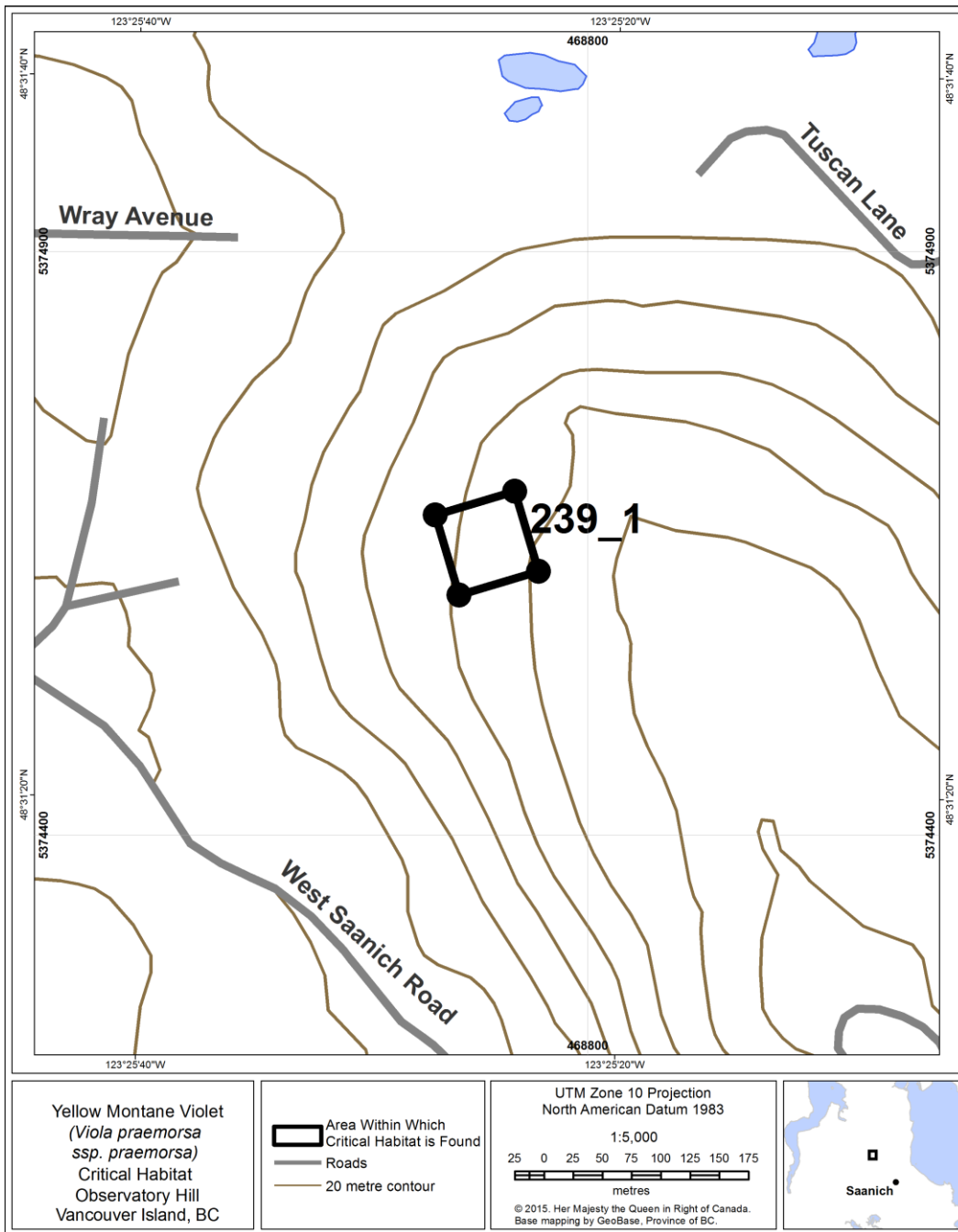
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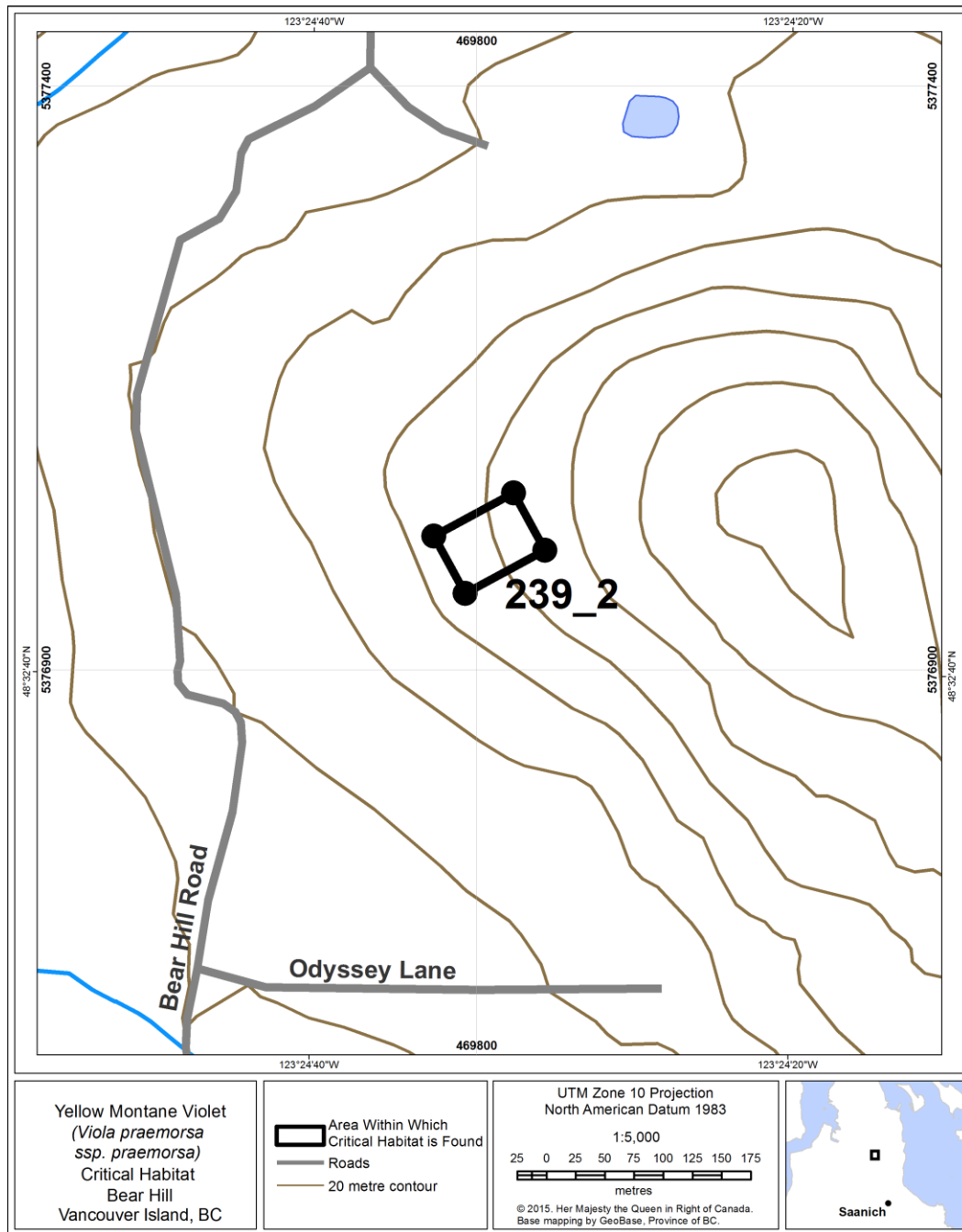
**Figure 21. Area (~0.8 ha) within which critical habitat for Howell's Triteleia is found at Cowichan River Estuary, on non-federal lands. The area of critical habitat within this area is approximately 0.4 ha.**



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**Figure 22. Area (~0.5 ha) within which critical habitat for Yellow Montane Violet *praemorsa* subspecies is found at Little Saanich Mountain, on federal and non-federal lands. The area of critical habitat within this area is approximately 0.1 ha.**



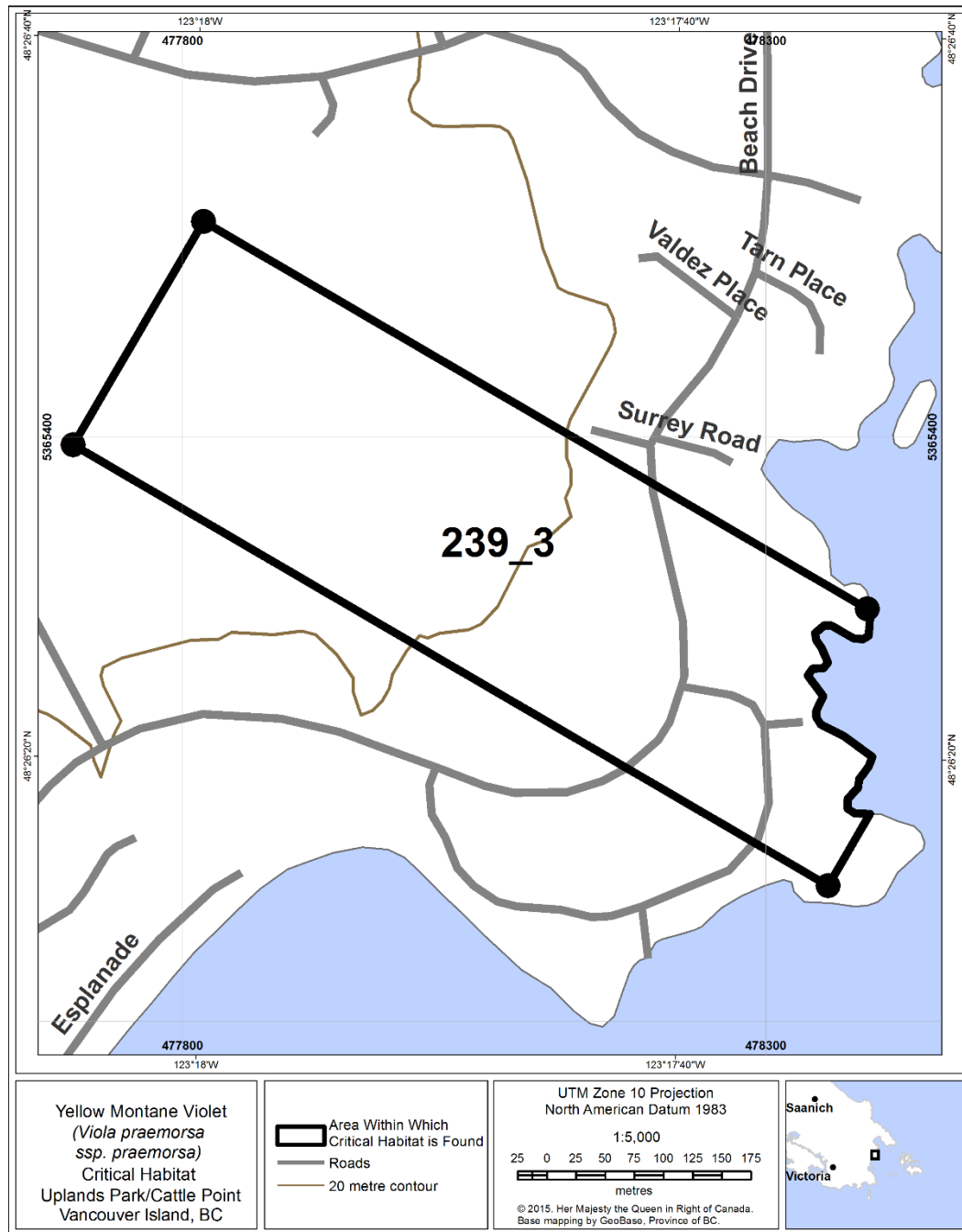
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**Figure 23. Area (~0.4 ha) within which critical habitat for Yellow Montane Violet *praemorsa* subspecies is found at Bear Hill, on non-federal lands. The area of critical habitat within this area is approximately 0.1 ha.**



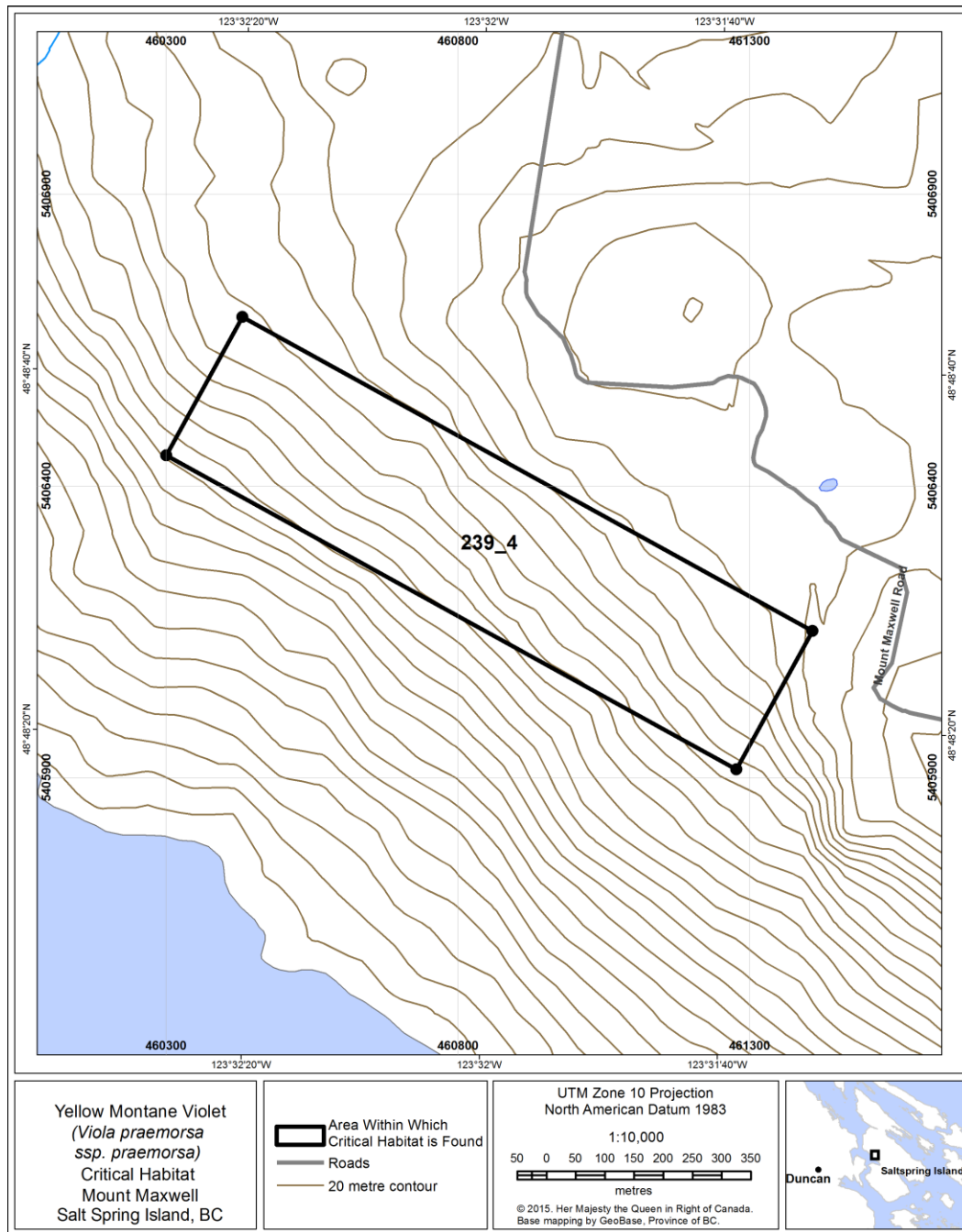
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**Figure 24. Area (~15.5 ha) within which critical habitat for Yellow Montane Violet *praemorsa* subspecies is found at Uplands Park/Cattle Point, on non-federal lands. The area of critical habitat within this area is approximately 1.0 ha.**



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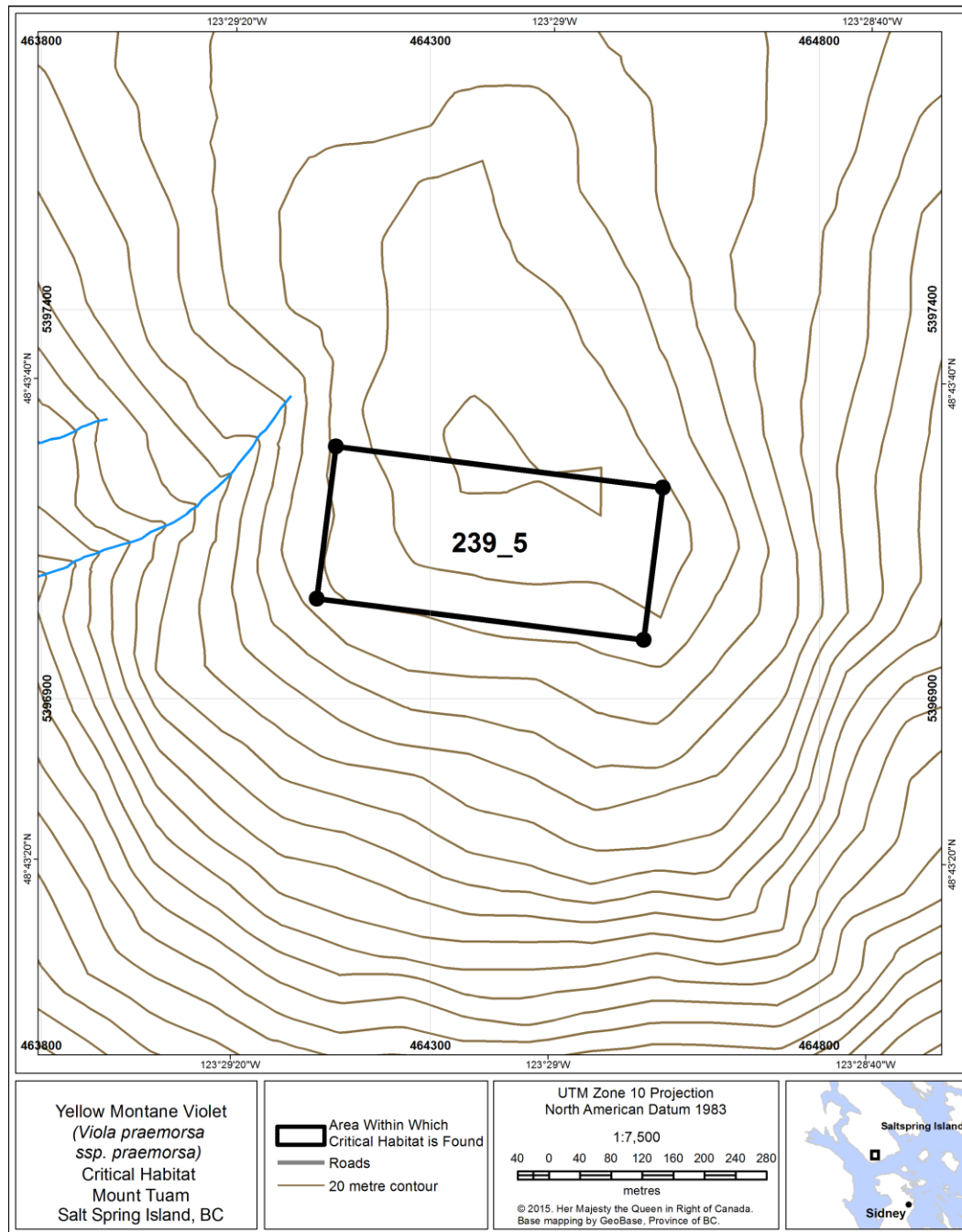
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**Figure 25. Area (~30.1 ha) within which critical habitat for Yellow Montane Violet *praemorsa* subspecies is found at Mount Maxwell, on non-federal lands. The area of critical habitat within this area is approximately 0.8 ha.**





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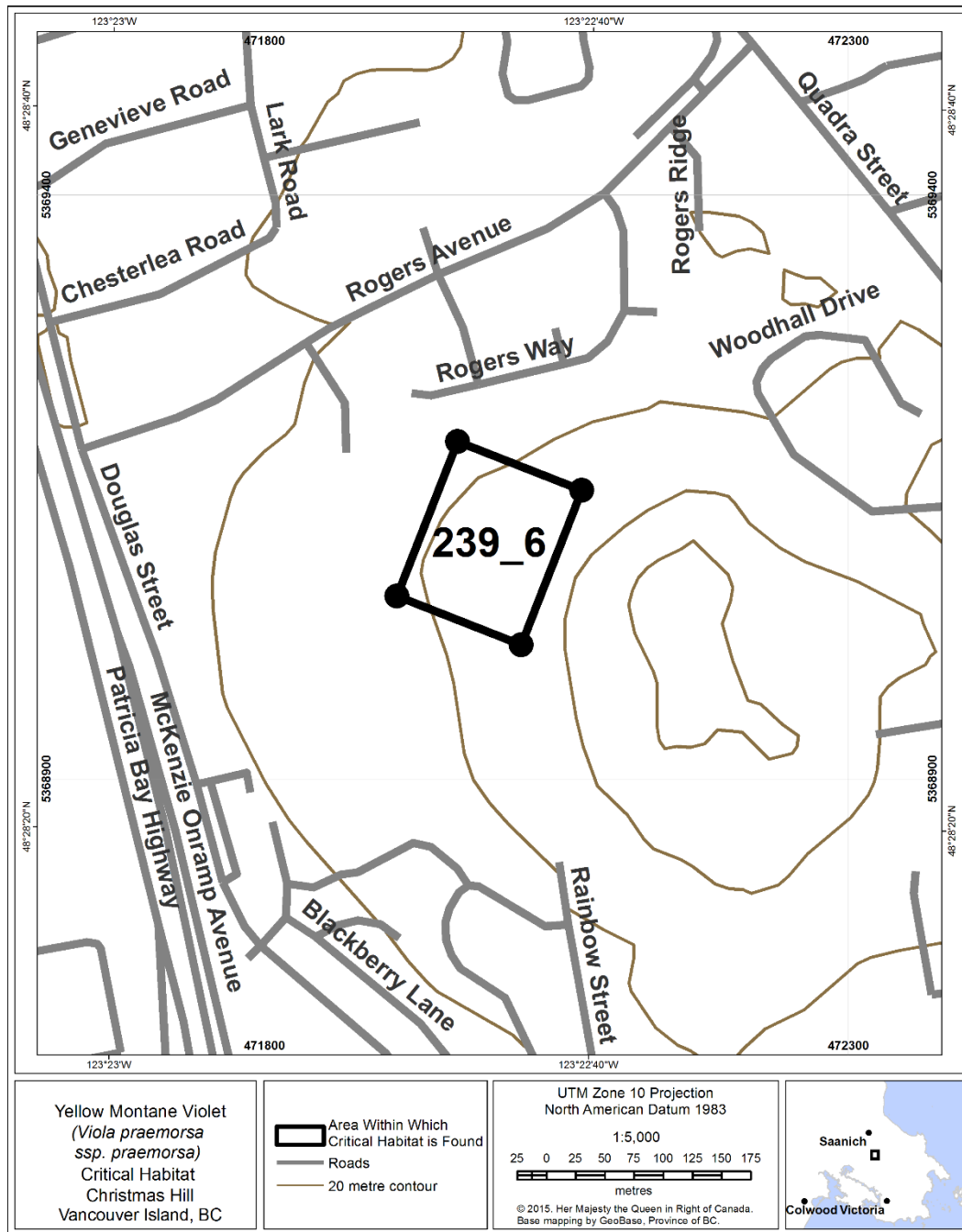
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**Figure 26. Area (~8.3 ha) within which critical habitat for Yellow Montane Violet *praemorsa* subspecies is found at Mount Tuam, on federal and non-federal lands. The area of critical habitat within this area is approximately 2.4 ha on federal land and approximately 0.9 ha on non-federal land.**



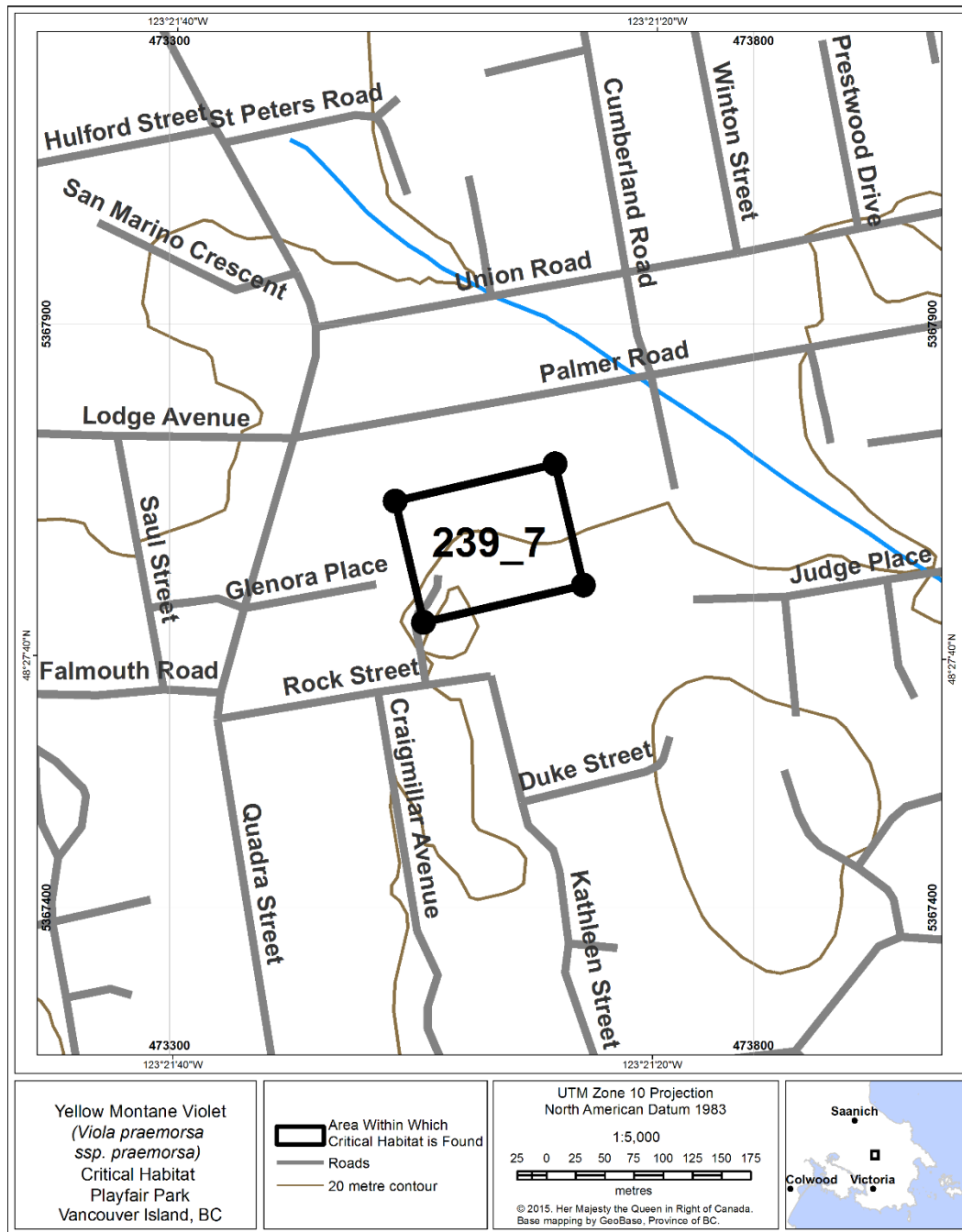
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**Figure 27. Area (~1.6 ha) within which critical habitat for Yellow Montane Violet *praemorsa* subspecies is found at Christmas Hill, on non-federal lands. The area of critical habitat within this area is approximately 0.6 ha.**



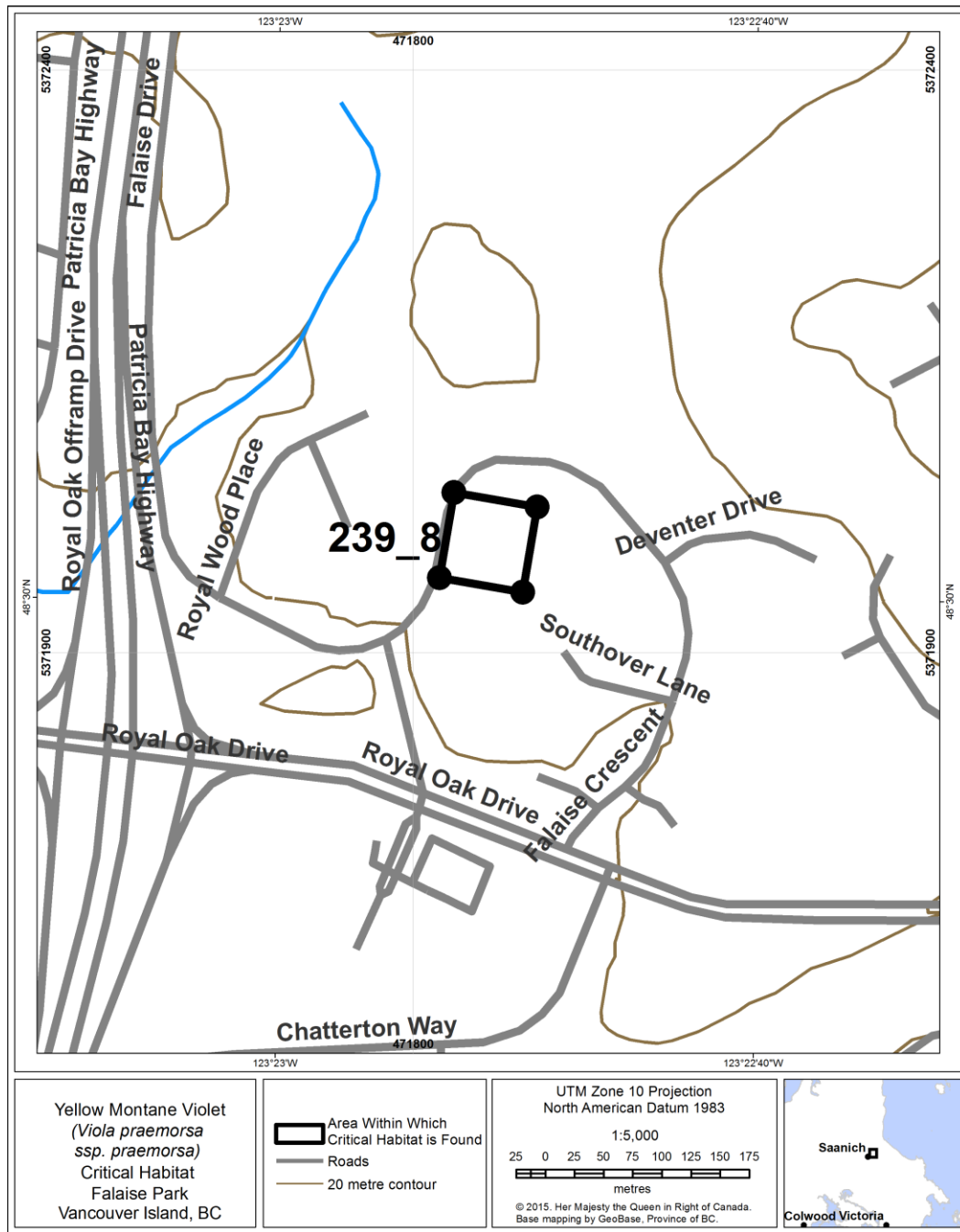
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**Figure 28. Area (~1.5 ha) within which critical habitat for Yellow Montane Violet *praemorsa* subspecies is found at Playfair Park, on non-federal lands. The area of critical habitat within this area is approximately 0.6 ha.**



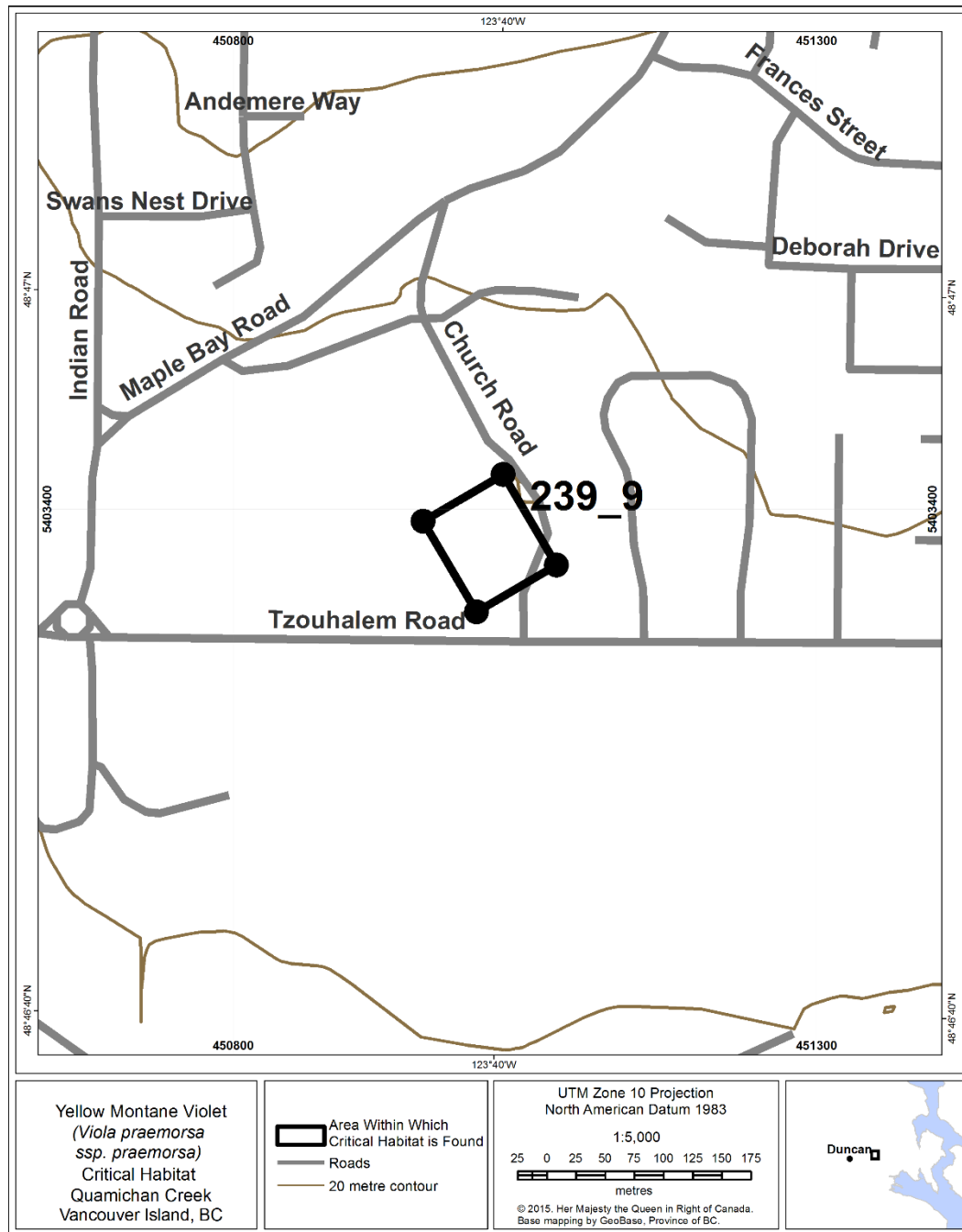
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**Figure 29. Area (~0.5 ha) within which critical habitat for Yellow Montane Violet *praemorsa* subspecies is found at Falaise Park, on non-federal lands. The area of critical habitat within this area is approximately 0.1 ha.**



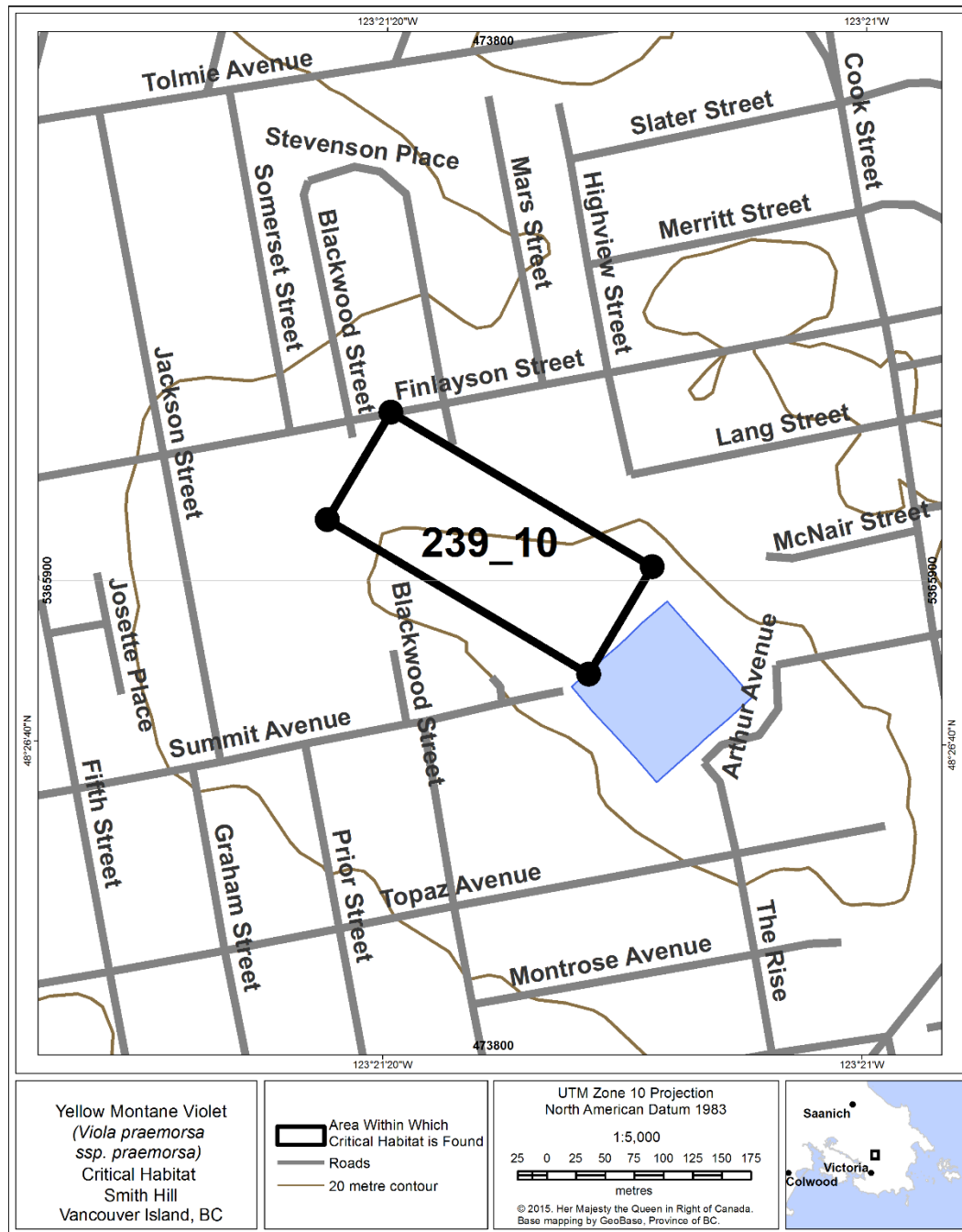
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**Figure 30. Area (~0.7 ha) within which critical habitat for Yellow Montane Violet *praemorsa* subspecies is found at Quamichan Creek, on non-federal lands. The area of critical habitat within this area is approximately 0.2 ha.**



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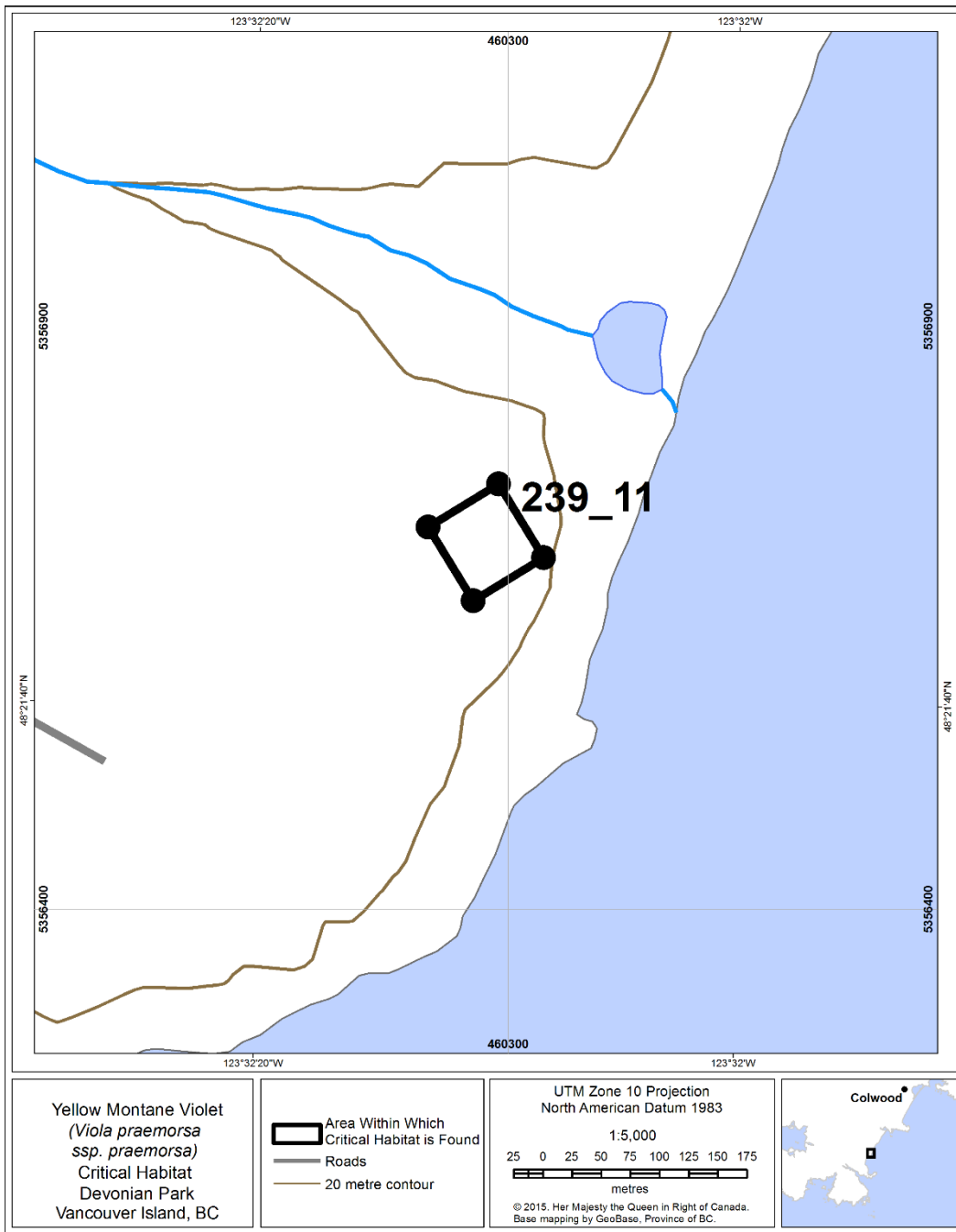
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**Figure 31. Area (~2.8 ha) within which critical habitat for Yellow Montane Violet *praemorsa* subspecies is found at Smith Hill, on non-federal lands. The area of critical habitat within this area is approximately 0.7 ha.**





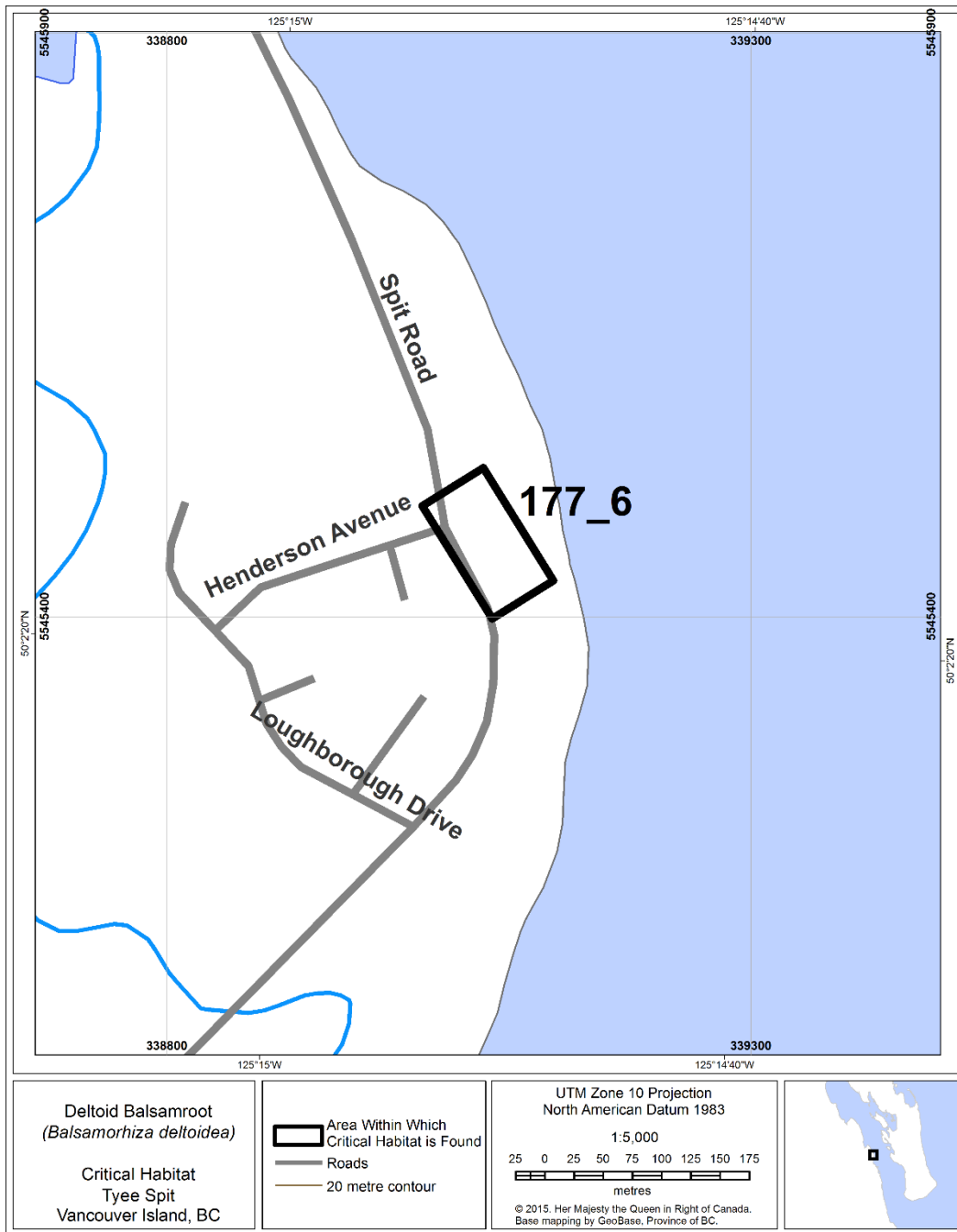
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**Figure 32. Area (~0.5 ha) within which critical habitat for Yellow Montane Violet *praemorsa* subspecies is found at Parry Bay, Devonian Park, on non-federal lands. The area of critical habitat within this area is approximately 0.1 ha.**



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**Figure 33: Area (~0.5 ha) within which critical habitat for Deltoid Balsamroot is found at Tye Spit, Campbell River, on federal lands. The area of critical habitat within this area is approximately 0.18 ha.**

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481 **2.3.3. Examples of activities likely to result in destruction of critical habitat**

482 Examples of activities likely to destroy critical habitat are provided below. Destruction of critical  
 483 habitat will result if any part of the critical habitat is degraded, either permanently or  
 484 temporarily, such that it would not serve its function when needed by the species. Destruction  
 485 may result from single or multiple activities at one point in time or from the cumulative effects  
 486 of one or more activities over time. It is important to note that some activities have the potential  
 487 to destroy critical habitat from outside the critical habitat and also, that if carefully conducted the  
 488 negative effects of some of these activities can be mitigated such that the activity will have no, or  
 489 even a positive, effect on the habitat.

490 **Table 5. Examples of activities likely to result in destruction of critical habitat.**

Activity	Effect of activity on critical habitat	Potentially affected species*	Most likely site
Intensive recreational use (e.g., hiking, mountain biking, ATV traffic).	Soil compaction leading to altered habitat attributes, such as altered soil moisture or texture to the extent that it is no longer suitable for the species.	DB	Mt Tzuhalem Thetis Lake Mill Hill
	In addition, this activity is likely to introduce or spread invasive alien plant species. Invasive alien plant species compete with Garry Oak woodland plant species and alter the availability of light, water, and nutrients in the habitat, such that the habitat would not provide the necessary habitat required conditions (see this standalone activity below for more details).	SFT	Mt. Erskine
		HT	Albert Head Tower Point Horth Hill Somenos
		YMV	Mount Tzuhalem Beacon Hill Somenos Bear Hill Uplands Park Christmas Hill Playfair Park Falaise Park Parry Bay (Devonian Park)
Direct land conversion by human development (e.g., development or modification of existing structures and roads).	Indirect effects of shading (e.g., by introduced plants or nearby structures), and altered moisture regime (e.g., impounded drainage, or reduced water flow to the plants through ditching or diversion of subsurface water by built structures) can alter the habitat of plant species. This disrupts life cycle processes, causes physiological stress and plants may and die or be unable to germinate due to impaired ability of the habitat to provide suitable conditions.	DB	Mt Tzuhalem Campbell River
		SFT	Salt Spring Island
		HT	Maple Bay Road Gordon Head William Head Cowichan Estuary
		YMV	Little Saanich Mountain Falaise Park St. Peter's Church

Activity	Effect of activity on critical habitat	Potentially affected species*	Most likely site
Deliberate or incidental introduction of invasive alien plants (e.g., landscaping plantings, seeds carried on unclean equipment, dumping plant waste).	This activity can cause increased competition from alien species and alter the availability of light, water, and nutrients in the habitat. Accidental introduction may be facilitated by contaminated machinery.	All species	All sites
Landscape maintenance activities (e.g., development and maintenance or modification of trails, stockpiling of materials, installation of park benches, picnic tables, fences, and signs).	These activities can cause direct land conversion, soil compaction and associated hydrological effects, altered moisture regime (e.g., impounded drainage, or reduced water flow to the plants through ditching, or diversion of subsurface water by built structures), and introduction of alien species (e.g., intentional plantings or accidental introductions such as facilitated by unclean machinery).	DB	Mt Tzuhalem Thetis Lake Mill Hill Beacon Hill Park
		HT	Albert Head Tower Point Horth Hill Maple Bay Road William Head
		YMV	Mt Tzuhalem Beacon Hill Park Bear Hill Uplands Park Mt Maxwell Christmas Hill Playfair Park Falaise Park St. Peter's Church Parry Bay (Devonian Park)

\* DB=Deltoid Balsamroot, SFT=Small-flowered Tonella, HT=Howell's Tritelleia, YMV=Yellow Montane Violet *praemorsa* subspecies

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