


Appendix 11-D


*Murray River Project: Species Accounts of Rare Plants and
Lichens*


MURRAY RIVER COAL PROJECT


Application for an Environmental Assessment Certificate / Environmental Impact Statement


APPENDIX 11-D. MURRAY RIVER PROJECT: SPECIES ACCOUNTS OF RARE PLANTS AND LICHENS


<i>Bryoria furcellata</i> (Fr.) Brodo & Hawksw.	LICHEN
	Not listed, new discovery for BC.
	Habitat: On conifers in open, dry forest, boreal.
	This species is distinguished easily by its clusters of finger-like isidia on stiffly contorted, dark brown branches. No other species can be confused with it when the isidia are well developed. When the isidia are few, the dark colour and stiffly fruticose growth form are diagnostic. Photo from northern Alberta.


<i>Cladonia coccifera</i> (L.) Willd.	LICHEN
	<p>Conservation Rank:</p> <ul style="list-style-type: none"> • Red-listed (endangered, extirpated or threatened) • S1 (provincially critically imperilled) • G5 (globally secure)
	Habitat: Among mosses and other lichens on thin soil over rock.
	From other <i>Cladonia</i> species having broad cups and bright red apothecia, <i>C. coccifera</i> differs in having mostly corticate podetia, moderately abundant dorsiventral squamules, and the presence of zeorin in addition to usnic acid. Photo from northwest British Columbia.


<i>Collema tenax</i> var. <i>expansum</i> Degel.	LICHEN
	<p>Conservation Rank:</p> <ul style="list-style-type: none"> • No BC CDC rank • S Rank unavailable • G1 (globally rare) only one other locality known in North America.
	<p>Habitat: Over moss on calcareous rock.</p>
	<p>This gel lichen differs from other <i>Collema</i> in its habit of inflating when wet and becoming sharply wrinkled when dry, by its thickened margins, presence of isidia over the upper surface, large, foliose growth form, and tomentum on the lower surface. Typical var. <i>expansum</i> is strictly European in its distribution, lacks the tomentum on the lower surface, and sometimes lacks isidia. The two North American populations are both isidiate and tomentose, and may constitute an additional, even rarer taxon. The present population is named fide P.M. Jørgensen (Bergen, Norway), the lead gel lichen taxonomist. Photo from the Project area.</p>


<i>Hypogymnia dichroma</i> Goward	LICHEN
	<p>Conservation Rank:</p> <p>Not listed, recently named as a species new to science, very few localities known.</p>
	<p>Habitat: On bark or wood in open, dry forest, less often on rock.</p>
	<p>This species is similar to a suite of sorediate <i>Hypogymnia</i> species of the <i>H. austerodes</i> group. From all of these it differs in its closely adnate growth form, finely farinose soredia that are produced over nearly the entire thallus centre. The young soredia form from patch-like soralia. Photo from the Project area.</p>


<i>Leptogium tenuissimum</i> (Dicks.) Körb.	LICHEN
	<p>Conservation Rank:</p> <ul style="list-style-type: none"> • S2?, • Red-listed (endangered, extirpated or threatened) • GNR (not ranked globally)
	<p>Habitat: Among mosses on soil, usually where naturally disturbed, as on tip-up root mounds of fallen trees.</p>
	<p>Among the small species of <i>Leptogium</i>, <i>L. tenuissimum</i> differs in its characteristic birds-nest like apothecia. The apothecial rim is densely lobulate, and the lobules merge into the lobes of the thallus, leaving the disc sunken below the level of the thallus. Photo of specimen from central British Columbia.</p>


<i>Usnea cavernosa</i> Tuck.	LICHEN
	<p>Conservation Rank:</p> <ul style="list-style-type: none"> • S2S3, • Blue-listed
	<p>Habitat: On conifer twigs in open, dry forest in regions having dry winters and wet summers.</p>
	<p>From other long, pendent <i>Usnea</i> this species differs in its lack of soredia or isidia, its fragmenting reproductive strategy, and its usually foveolate stems. Non-foveolate forms can be distinguished from other pendent <i>Usnea</i> by the lack of soredia or isidia. Photo from the project area.</p>

<p><i>Mielichhoferia elongata</i> (Hoppe & Hornsch.) Nees & Hornsch.</p>	<p style="text-align: center;">MOSS</p>
	<p>Conservation Rank: Not listed, globally rare.</p> <p>Habitat: Previously known only from acidic, especially copper-bearing rock. However, the present population occurs on alkaline rock. The commonality among all sites may be strong concentration of sulphur.</p> <p>This distinctive moss forms characteristic dense carpets of foliar stems, which are pale green and which appear iridescent from their differential light refraction. Other members of the Mielichhoferiaceae have a well developed exostome. The only other <i>Mielichhoferia</i> present in British Columbia differs in being a more sombre colour, having less imbricate leaves, and in being only weakly iridescent. Photo from the Project area.</p>

<p><i>Cardamine parviflora</i> L.</p>	<p style="text-align: center;">VASCULAR PLANT</p>
	<p>Conservation Rank</p> <ul style="list-style-type: none"> • Blue-listed (of special concern) • S2S3 (provincially imperilled to vulnerable) • G5 (globally secure) <p>Habitat: Drying mud and shallow water of various wetlands.</p> <p>From similar white-flowered species of <i>Cardamine</i>, <i>C. parviflora</i> can be distinguished by its short-lived status, lack of rhizomes, lack of a basal rosette, narrow cauline leaflets, and small petals.</p> <p><i>Cardamine pensylvanica</i> lives in similar habitats, but has much broader leaflets and larger petals. Two forms are present in British Columbia. The form present along the Fraser River in the Lower Mainland is possibly introduced from Europe (var. <i>parviflora</i>), while the populations in the interior are native (var. <i>arenosa</i>). Photo from the Project area.</p>

<i>Carex tenera</i> Dewey	VASCULAR PLANT
	<p>Conservation Rank:</p> <ul style="list-style-type: none"> • Blue-listed (of special concern) • S2S3 (provincially imperiled to vulnerable); • G5TNR (Globally secure, subspecies not rated nationally)
	<p>Habitat: Various open and lightly shaded sites, usually in meadows.</p>
	<p>Photo from the Project area.</p>

<i>Drymocallis arguta</i> (Pursh) Rydb.	VASCULAR PLANT
	<p>Conservation Rank:</p> <ul style="list-style-type: none"> • Red-listed (endangered, extirpated or threatened) • S1S3 (provincially critically imperiled to vulnerable) • G5T5 (globally secure).
	<p>Habitat: Grasslands and forest clearings, less often in other dry, open sites such as rock outcrops.</p>
	<p><i>Drymocallis convallaria</i>, which is more common and widespread in British Columbia, is similar. It differs in having blunter terminal leaflets, fewer than 20 teeth per side of the leaflets of the basal and lower cauline leaves, and a more diffuse inflorescence. Additionally, at least the British Columbia populations of <i>D. arguta</i> have white flowers, while the flowers of <i>D. convallaria</i> are light yellow. Photo from the Peace Lowlands, British Columbia.</p>

<p><i>Botrychium crenulatum</i> W.H Wagner</p>	<p>VASCULAR PLANT</p>
	<p>Conservation Rank:</p> <ul style="list-style-type: none"> • Blue-listed (of special concern) • S2S3 (provincially imperilled to vulnerable) • G3 (globally vulnerable)
	<p>Habitat:</p> <p><i>Botrychium crenulatum</i> is one of the most hydrophyllic of <i>Botrychiums</i>. It usually grows in saturated soils of seeps and along the stabilized margins of small streams, often among dense herbaceous vegetation. It also occurs occasionally in seasonally wet roadside ditches and drainage ways. It is usually found in partly shaded to heavily shaded sites at mid to high elevations. Photo from the Project area.</p>
	<p><i>Botrychium crenulatum</i> is one of few moonworts in which the span of the basal pinnae often approaches a half circle (pinna span 90-180).</p> <p><i>Botrychium crenulatum</i> can be differentiated from these species by its more delicate texture, light green color, finely crenulate outer pinna margins, fewer pinna pairs (2-5 vs 3-7), distinctly stalked trophophore, and sporophore stalk, at spore release, approximately equal to the length of the trophophore (stalks of <i>B. lunaria</i> and <i>B.yaaxudakeit</i> are longer).</p>