



Cassiope tetragona – Dryas integrifolia non-acidic snowbed communities along the Thomson River, Banks Island, Canada



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Introduction: This student's research is the result of the three weeks lasting Arctic Ecology Course 2003 that was taught along the Thomson River on Banks Island in the Canadian Arctic Archipelago (N 73° 13' W 119° 32' – N 73° 50' W 119° 53'). The Thomson River lays within Bioclimatic subzone C with a mean July temperature of 5–7 °C (CAVM Team 2003). Using the Braun-Blanquet approach of vegetation description it was attempted to gain an overview of *Cassiope tetragona*-dominated snowbed communities of different expositions on non-acidic substrates. 23 relevés from five transects allowed to classify the distinct vegetation units and to suggest a northern vicariant of the Tetragono-Dryadetum integrifoliae Barret 1972.

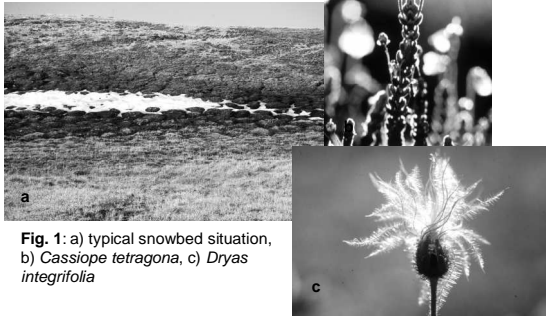


Fig. 1: a) typical snowbed situation, b) *Cassiope tetragona*, c) *Dryas integrifolia*

Carici rupestris-Kobresietea bellardi Ohba 1974
Kobresio-Dryadetalia (Br.-Bl. 1948) Ohba 1974
Dryadion integrifoliae Ohba 1974 ex Daniëls 1982

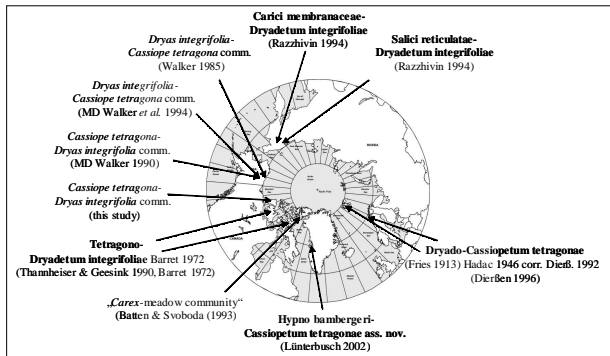


Fig. 3: Circumpolar basiphilous *Cassiope tetragona* communities

Literature: CAVM Team (2003) Circumpolar Arctic Vegetation Map. Scale 1:7,500,000. Conservation of Arctic Flora and Fauna (CAFF) Map No. 1. U.S. Fish and Wildlife Service, Anchorage, Alaska. - **Batten DS, Svoboda J (1993)** Plant communities on the Upland in Vicinity of the Alexandra Fjord Lowland. – In: Svoboda J, Freedman B: Ecology of a polar oasis: 97-110. - **Barrett, PE (1972)** Phytogeography of a coastal ecosystem, Devon Island, N.W.T. – PhD-thesis, University of British Columbia 1972. - **Dierßen K (1996)** Vegetation Nordeuropas. Ulmer, Stuttgart. 1996. - **Linterbusch CH (2002)** Vegetationsökologische Untersuchungen zu *Dryas integrifolia* M. Vahl im Lummannaqgebiet, Nordwest-Grönland, unter besonderer Berücksichtigung von Standort und Vergesellschaftung. – PhD-thesis, University of Münster, Germany, 2002. - **Razzhivin, VY (1994)** Snowbed vegetation of far northeastern Asia. J. Veg. Sc. 5:829-842. - **Thamheiser D, Geesink B (1990)** Dryasreiche Vegetationsheiten mit besonderer Berücksichtigung des westlichen kanadischen Arktis-Archipels. – Mitt. Geogr. Ges. Hamburg 80:175-205. - **Walker DA (1985)** Vegetation and environmental gradients of the Prudhoe Bay region, Alaska. CRREL Report 85-13. U.S. Army Cold Regions Research and Engineering Laboratory, Hanover, NH. - **Walker MD (1990)** Vegetation and Floristics of Pingos, Central Arctic Coastal Plain, Alaska. Diss. Bot. 149. - **Walker MD, Walker DA, Auerbach NA (1994)** Plant Communities of a tussock tundra landscape in the Brooks Range Foothills, Alaska. Journal of Vegetation Science, 5:843-866.

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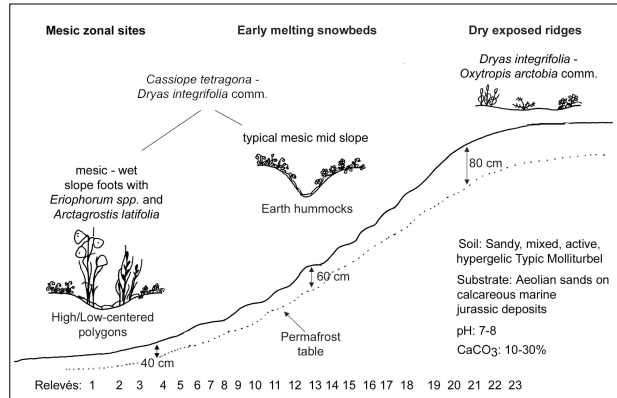


Fig.2: Vegetation transect along an early melting snowbed toposequence

Tab.1 Relevés to the early melting snowbed toposequence (exkl. environmental data)

Sorted number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Vascular plant species	11	12	10	7	3	15	7	12	7	3	8	9	5	7	6	6	4	11	4	7	5	5	3	
Bryophytes	3	11	5	8	3	15	2	6	3	3	5	6	6	6	3	5	5	2	7	8	3	9	3	
Lichens	30	37	27	28	21	46	18	29	24	13	24	28	24	24	25	17	35	16	16	19	12	17	3	
Total diversity	47	56	50	53	47	79	51	65	60	51	67	77	78	77	73	72	87	81	82	90	89	85	89	
<i>Cassiope tetragona</i>	2a	1	2b	2b	-	1	2m	2m	2m	1	2a	1	2m	1	2a	1	1	1	1	1	1	1	1	1
<i>Tomeopogon nitens</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Cleistanium procerum</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Oenothericum chryseum</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Andelica fentica</i>	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m
<i>Blapharostoma trichophyllum</i>	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m
<i>Schizidium cf. apocarpum</i>	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m
<i>Santonica uncinata</i>	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m
<i>Juncus communis</i> spp.	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m
<i>Lappula</i> spp.	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m
<i>Polygonum viviparum</i>	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m
<i>Plagiodia</i> spp.	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m
<i>Deschampsia arctica</i>	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m
<i>Tortula ruralis</i>	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m
<i>Selagin polaris</i>	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m
<i>Tortula arctica</i>	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m
<i>Carex lasiocarpa</i>	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m
<i>Carex lasiocarpa</i>	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m	2m
<i>Eriophorum angustifolium</i>	2a	1	2b	2b	-	1	2m	2m	2m	1	2a	1	2m	1	2a	1	1	1	1	1	1	1	1	1
<i>Cardamine digitata</i>	2m	1	2b	2b	-	1	2m	2m	2m	1	2a	1	2m	1	2a	1	1	1	1	1	1	1	1	1
<i>Luzula micula</i>	2m	1	2b	2b	-	1	2m	2m	2m	1	2a	1	2m	1	2a	1	1	1	1	1	1	1	1	1
<i>Stereocaulon glareosum</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Peltigera</i> sp.	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Acrostichum latifolia</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Eriophorum triste</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Eriophorum vaginatum</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Senecio arthropus</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Cladonia pocillum</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Anilacoemium laeve</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Anilacoemium argutatum</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Polypodium alpinum</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Hypnum splendens</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Valp isla tiliis</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Cerastium debile</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Pteris arctica glomerata</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Pedicularis lanata</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Poa cf. glauca</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Myrica glauca</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Ochrolechia fragida</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Cladonia cf. pyxidata</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Silene acaulis</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Oxyria digyna</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Dryas alpina</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Peltigera rufescens</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Tortula norvegica</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Poa trivialis</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Carex cf. membranacea</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Carex rupestris</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Saxifraga oppositifolia</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Parrya arctica</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Silene monantha</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Fulgensia baccata</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
<i>Pertusaria parvula</i>	+	+	+	+	+																			