

The Canadian Field-Naturalist

Volume 124, Number 1

January–March 2010

New Records of Vascular Plants in the Yukon Territory VIII

BRUCE A. BENNETT¹, PAUL M. CATLING², WILLIAM J. CODY², and GEORGE W. ARGUS³

¹ Department of Environment, Government of Yukon, Box 2703, Whitehorse, Yukon Y1A 2C6 Canada; e-mail: Bruce.Bennett@gov.yk.ca

² Biodiversity, National Program on Environmental Health, Agriculture and Agri-Food Canada, Wm. Saunders Building (49), Central Experimental Farm, Ottawa, Ontario K1A 0C6 Canada; e-mail: catlingp@agr.gc.ca

³ Canadian Museum of Nature, P.O. Box 3443, Postal Station Douglas, Ottawa, Ontario K1P 6P4; e-mail: argus@sympatico.ca

Bennett, Bruce A., Paul M. Catling, William J. Cody, and George W. Argus. 2010. New records of vascular plants in the Yukon Territory VIII. *Canadian Field-Naturalist* 124(1): 1–27.

Forty-seven taxa, 35 native and 12 introduced, are reported as new to the flora of Yukon and nine taxa previously reported are deleted. The new native taxa are: *Artemisia arctica* ssp. *comata*, *Botrychium alaskense*, *Botrychium minganense*, *Bromus richardsonii*, *Calamagrostis holmii*, *Carex incurviformis*, *Carex mackenziei*, *Carex microchaeta* ssp. *nesophila*, *Carex ramenskii*, *Carex rariflora* var. *androgyna*, *Carex tahoensis*, *Carex xerantica*, *Carex* × *flavicans*, *Deschampsia sukatschewii*, *Eleocharis erythropoda*, *Eleocharis macrostachya*, *Eleocharis mamillata*, *Erigeron ochroleucus*, *Impatiens noli-tangere*, *Limnorchis huronensis*, *Nymphaea tetragona*, *Polygonum douglasii* ssp. *douglasii*, *Potamogeton natans*, *Potentilla crebridens* ssp. *hemicyrophila*, *Puccinellia tenella* ssp. *langeana*, *Rumex beringensis*, *Salix farriarum*, *Salix glauca* ssp. *Stipulifera*, *Saussurea nuda*, *Saxifraga hyperborea*, *Saxifraga rivularis* ssp. *arctolitoralis*, *Silene soczavana* var. *macrosperma*, *Symphotrichum subspicatum*, *Taraxacum hyparcticum*, and *Zannichellia palustris*. The new introduced taxa are: *Acer negundo*, *Avena fatua*, *Camelina microcarpa*, *Crepis capillaris*, *Hippophae rhamnoides*, *Lamium amplexicaule*, *Linaria dalmanica*, *Medicago lupulina*, *Prunus padus*, *Rumex pseudonatronatus*, *Valeriana officinale*, and *Viola tricolor*. Deleted taxa are: *Aster laevis* var. *geyeri*, *Carex athrostachya*, *Elatine triantha*, *Camelina sativa*, *Erysimum cheiri*, *Galium palustre*, *Impatiens capensis*, *Platanthera hyperborea*, and *Sonchus oleraceus*. Vouchers are cited and general notes on distribution and identification are provided. Four of the native taxa reported here are new to Canada: *Botrychium alaskense*, *Carex microchaeta* ssp. *nesophila*, *Potentilla crebridens* ssp. *hemicyrophila* and *Rumex beringensis*.

Key Words: Vascular plants, flora, new records, phytogeography, Ivvavik National Park, Beaufort Sea, Asi Keyi Special Management Area, Yukon Territory.

Since the writing of *New Records of Vascular Plants in the Yukon Territory VII* (Cody et al. 2005), a considerable number of additional plant specimens have been collected. Earlier collections have been reviewed, particularly herbarium collections from the University of British Columbia (UBC), University of Alberta (ALTA), Royal B.C. Museum (V) and Kluane National Park Herbarium “KNPR.” None of these collections had been reviewed in the preparation of the *Flora of the Yukon Territory* (Cody 1996). The major new collection areas include the following locations (1) Yukon Arctic coast including Ivvavik National Park; (2) southern Yukon including the new Special Management areas, Asi Keyi and Agay Mene; and (3) the Peel River watershed as part of a regional planning effort.

This paper serves to further update the *Flora of the Yukon Territory* (Cody 1996) and its second edition (Cody 2000) along with other records recently published (Cody et al. 1998, 2000, 2001, 2002, 2003, 2004, 2005). The floristic information presented earlier and updated here provides the basis for biological

research and ongoing work relating to wildlife management, forestry, sustainable resource management and agriculture. “Additions” are defined here as either first records or those reported elsewhere but not included in Cody (2000) or the updates listed above. With additions and deletions reported here, the flora now includes 1234 species (1349 taxa, including infra-specific entities).

The taxa addressed in the body of this paper appear in a synoptic list in alphabetical order within families which are in the same order as presented in the *Flora of the Yukon Territory* (Cody 1996, 2000). Taxa to be added to Yukon’s list of rare plants (Yukon Conservation Data Centre 2009*) are indicated with a cross (†). Deletions or additions are indicated as such following the common name with an “N” for native and “I” for introduced. For each taxon, general notes are followed by a list of specimens examined and information on identification, often in the form of a key. Common names follow Cody (1996), Douglas et al. (1998–2001) and Kartesz and Meacham (1999).

Location of Specimens

Most collections reported in this paper have been deposited in the National Herbarium at Agriculture and Agri-food Canada, Ottawa (DAO). However, specimens may also be found in the following herbaria as indicated (universal acronyms from Holmgren and Holmgren 1998, with the exception of the last three which are local):

ALA – University of Alaska, Museum of the North, Fairbanks

ALTA – University of Alberta, Edmonton, Alberta

CAN – Canadian Museum of Nature, Ottawa, Ontario

ISC – Iowa State University, Ada Hayden Herbarium, Ames, Iowa

MICH – Michigan State University, Ann Arbor, Michigan

MTMG – McGill University, Montreal, Quebec

MT – Université de Montréal, Herbar Marie-Victorin, Montreal, Quebec

O – Botanical Museum, Oslo, Norway

OBI – Robert F. Hoover Herbarium, California Polytechnic State University, San Luis Obispo, California

UBC – University of British Columbia, Vancouver, British Columbia

US – Smithsonian Institution, Washington, D.C.

UTC – Utah State University, Intermountain Herbarium, Logan, Utah

V – Royal British Columbia Museum, Victoria, British Columbia

WTU – University of Washington, Burke Museum, Seattle, Washington

BABY (local acronym) – B. A. Bennett Herbarium, Whitehorse, Yukon

YG (local acronym) – Yukon Government Herbarium, Whitehorse, Yukon

KNPR (local acronym) – Kluane National Park Reserve Herbarium, Haines Junction, Yukon

Synoptic list by Yukon Status

Native taxa (N) new to Yukon: (35)

Artemisia arctica ssp. *comata*

Botrychium alaskense

Botrychium minganense

Bromus richardsonii

Calamagrostis holmii

Carex incurviformis

Carex mackenziei

Carex microchaeta ssp. *nesophila*

Carex ramenskii

Carex rariflora var. *androgyna*

Carex tahoensis

Carex xerantica

Carex × *flavicans*

Deschampsia sukatschewii

Eleocharis erythropoda

Eleocharis macrostachya

Eleocharis mamillata

Erigeron ochroleucus

Impatiens noli-tangere

Limnorchis huronensis

Nymphaea tetragona

Polygonum douglasii ssp. *douglasii*

Potamogeton natans

Potentilla crebridens ssp. *hemicyophila*

Puccinellia tenella ssp. *langeana*

Rumex beringensis

Salix farriae

Salix glauca ssp. *stipulifera*

Saussurea nuda

Saxifraga hyperborea

Saxifraga rivularis ssp. *arctolitoralis*

Silene soczavana var. *macrosperma*

Symphyotrichum subspicatum

Taraxacum hyparcticum

Zannichellia palustris

Introduced taxa (I) new to Yukon: (12)

Acer negundo

Avena fatua

Camelina microcarpa

Crepis capillaris

Hippophae rhamnoides

Lamium amplexicaule

Linaria dalmatica

Medicago lupulina

Prunus padus

Rumex pseudonatronatus

Valeriana officinale

Viola tricolor

Deletions (both N and I) of taxa from the Yukon flora: (9)

Aster laevis var. *geyeri*

Carex athrostachya

Elatine triantha

Camelina sativa

Erysimum cheiri

Galium palustre

Impatiens capensis

Platanthera hyperborea

Sonchus oleraceus

Taxa Accounts by Family

OPHIOGLOSSACEAE Adder's Tongue Family

†*Botrychium alaskense* Wagner & Grant, Alaskan Moonwort – (Addition – N, Canada also) Figure 1.

This species was recently described from collections made in Alaska (Wagner and Grant 2002) where it occurs in the southern third of the state including the Alaska Peninsula and the panhandle. As it occurred nearby in the Wrangell-St. Elias Mountains of Alaska it was expected to be found in Yukon (Farrar 2006*), and more collections may be found after reviewing herbarium specimens.

Specimens examined: Kluane National Park, Fisher Glacier near Alsek River, S-facing slope above Fisher Glacier, in open loose soil especially around Arctic Ground Squirrel (*Spermophilus parryii*) burrows, 40° slope dominated by *Lupinus nootkatensis*, *Artemisia norvegica* ssp. *saxatilis*. Growing with *B. pinnatum*, *B. lunaria* and *B. spathulatum*, 60°07'56"W 138°12'16"W, 3786', *B. A. Bennett 03-1344a*, July 8, 2003 (DAO); Haines Road, Vand Creek, in clearing that was part of the Haines pipeline, substrate 60% lichen encrusted gravel, dominant plants include *Populus* seedlings 20% *Salix* 10% and *Epilobium angustifolium* 5%, 60.22805°N 136.96016°W, 28 June 2007 (ISC) (Stensvold and Farrar 2008*); North Klondike Highway km 609, Clear Creek Road junction, gravel pit, growing in poorly vegetated gravels with *B. pinnatum*, 63.7543°N 137.6759°W 624 m, *G. Brunner KH16*, Photographed by G. & M. Brunner, 3 August 2007. All collections were confirmed by D. R. Farrar and M. Stensvold.

This species can be separated from similar pinnate-pinnatifid species as follows (from Farrar, 2006*):

- 1a. Upper pinna bases obtuse (angle > 90°) to cordate (>180°); pinna apices rounded; sporophore stalk equal to trophophore length; sporophore pinnately branched. *B. pinnatum*
- 1b. Upper pinna bases acute (angle < 90°); pinna apices angular; sporophore stalk shorter than trophophore length; sporophore divided into three main branches. 2
- 2a. Trophophore outline triangular (equilateral) with basal pinnae nearly as large as the central rachis and pinnae; pinna pairs 3-4; pinnae narrowly ovate to oblong. *B. lanceolatum*
- 2b. Trophophore outline narrowly triangular to broadly ovate; basal pinnae not disproportionately enlarged; pinna pairs 5-6; pinnae ovate to elliptic. *B. alaskense*

Botrychium minganense Victorin, (*B. lunaria* (L.) Sw. var. *minganense* (Vict.) Dole), Mingan Moonwort – (Addition – N)

Porsild (1951) previously reported collections of this species under the name *Botrychium lunaria* var. *minganense* from the upper Rose River valley, Mile 95, meadows along Rose River, *Porsild & Breitung #10337* (CAN) and Macmillan Pass, Yukon-Mackenzie Divide, Mile 284-290, *Porsild & Breitung #11178* (CAN). Porsild (1966) added the vicinity of Mackintosh Lodge, Mile 1022 Alaska Highway, *Porsild #7989, #7430* (CAN) and Porsild (1975) added the vicinity of Mayo on river terrace with *Potentilla anserina* #698. These records were unfortunately missed when writing the Flora of the Yukon Territory (Cody 1996). Since then, many collections of this species have come to light. *Botrychium minganense* is thus widespread throughout Yukon and should be added to the flora. The last collection cited is the most northerly collection of this species.



FIGURE 1. *Botrychium alaskense* photo credit G. Brunner.

Specimens examined: north shore of Kluane Lake near mouth of Big Arm, 61°22'N 138°43'W, *H. M. Raup & L. G. Raup*, 8 July, 1944 (CAN); Alsek River, Kluane National Park and Reserve, side of an abandoned mining road, 60°39'N 137°49'W, *P. Williston, C. Johansson & C. Wulff*, 98-508, 22 Aug 98, (UBC) (determined by W. H. Wagner); Kathleen Lake on Cottonwood Trail, *Z. Mattson, P. Caswell*, 21 June 2004 (ISC) (confirmed by electrophoresis by D. Farrar); along Donjek River, *G. W. & G. G. Douglas*, 26 June 1974 (KNPR) (identified by D. Farrar and M. Stensvold); Half Breed Creek, ca. 17 km. SSW of Burwash Landing, *L. Freese sn* (KNPR), 11 Aug. 1976; Fisher Glacier, Kluane National Park, mesic silty sand in herbaceous meadow with open soil, *B. A. Bennett 03-1041*, 7 July 2003 (ISC) (identified by D. Farrar); Nunatak near Ulu Mountain, Kluane National Park, 60°21'32"N W138°34'49"W, 5439 feet, *B. A. Bennett sn*, 6 July 2003 (ISC); Cache Lake, Kluane National Park, *L. Freese sn*, 1976 (KNPR); frequent at intervals within the Kluane Game Sanctuary on upper Copper Joe Creek 4838 feet to a point well past Cache Lake, 61°12.861'N 139°03.863'W, *L. Freese and P. Caswell sn*, 24 July 2002; Kluane National Park, trail to Duke River, 61°12.109'N 139°04.112'W, 4806 feet, *P. Caswell*

sn (ISC) (confirmed by D. Farrar); Alaska Highway, Duke River SE of bridge, in open meadow with *Anemone multifida*, *Helictotrichon hookeri*, *Achillea millefolium* and *Elymus trachycaulus* in gravelly substrate, 61°22.39'N 139°08.44'W, 850m, B. A. Bennett, R. Elven & H. Solstad 03-0063, 8 August, 2003 (DAO); Aishihik road, just before airport, north side of road along old transmission line, 962 m 61°39'16.6"N 137°29'59.1"W, B. A. Bennett et al. 04-0127, 20 June 2004; Asi Keyi SMA, Brooke Creek, volcanic ash slope, 61°33'34.8"N 140°49'04"W, 1495m, B. A. Bennett & P. Secombe-Hett 04-0903, 22 July 2004; north of Klutlan Glacier, Asi Keyi SMA, 61°27.461"N 140°48.217'W, 5364' P. Caswell, J. Meikle & F. Mueller 04-1023, 23 July 2004; Richardson Mountains, tributary of Fish Creek, S of Vunta Creek, rare, only place seen, on ESE-facing upper 30° slope in shallow soil over boulders in saddle just below ridge with *Salix reticulata*, *Aconitum delphinifolium*, *Festuca altaica*, *Senecio lugens*, *Dodecatheon frigidum* and *Parnassia kotzebuei*, 67.895°N 136.562°W, 1097 m, B. A. Bennett & M. J. Oldham 06-284, 3 August, 2006; South Klondike Highway, Robinson Roadhouse, NW of buildings, occasional in open field, growing in open sandy soil with *Botrychium lunaria*, *Sedum lanceolatum*, *Arenaria capillaris* and *Potentilla pensylvanica*, 60.449°N 134.847°W, 780 m, B. A. Bennett & R. S. Mulder 06-616 (confirmed by D. Farrar and M. Stensvold) 8 July 2006 (BABY); Faro Mine site, under *Alnus crispa* ssp. *crispa* stand along dirt road near base of waste rock slope, two plants found, 62°14'57"N 133°13'29"W, 1130 m, R. Rosie W.P. 517, 11 August 2008 (BABY); Malcolm River, Locally, common at top of *Salix alaxensis*/*Festuca altaica* nivean meadow with lots of arctic ground squirrel diggings, growing with *Aster sibiricus*, *Festuca altaica*, *Potentilla fruticosa*, *Aconitum delphinifolium*, *Solidago multiradiata* and *Artemisia norvegica*. 20° S-facing slope, 69.30643°N 140.4921°W, 773 m, B. A. Bennett & S. Wolfe 08-364, 22 July, 2008 (ALA, CAN).

It can be separated from similar species of *Botrychium* as follows (adapted from Farrar 2003*):

- 1a. Span of basal pinnae span 120° to 180°, basal side margin slightly concave; basal pinnae sessile or nearly so; pinnae not overlapping the rachis *B. lunaria*
- 1b. Span of basal pinnae 60° to 120° 2
- 2a. Pinnae spreading (nearly perpendicular to the rachis), broader than long, thin textured, margin finely toothed or crenulate, seldom deeply lobed *B. crenulatum*
- 2b. Pinnae ascending (angled toward the apex), longer than broad, firm in texture, margin entire, coarsely toothed or lobed 3
- 3a. Pinnae margin entire or shallowly lobed, basal pinnae lacking sporangia; trophophore usually long-stalked; sporophore long-stalked, lax *B. minganense*
- 3b. Pinnae margin coarsely toothed, often deeply bifurcate, basal pinnae often bearing sporangia; sporophore short-stalked and stiffly upright *B. ascendens*

*All species occasionally produce sporangia on the lowermost pinnae

POTAMOGETONACEAE Pondweed Family

Potamogeton natans L., Floating Pondweed – (Addition – N)

This species was known from surrounding jurisdictions of British Columbia, Northwest Territories, and Alaska. Cody (1996) predicted its occurrence in southeast Yukon

Specimens examined: Labiche River, along edge of beaver pond, 60°02'41"N 123°58'30"W, B. A. Bennett 95-244, June 15, 1995. (DAO); Peel River Plateau, in floating mat dominated by *Carex limosa*, *C. canescens* and *C. aquatilis*, 66°40'39.2"N 133°54'28.9"W, L. Schroeder and L. Randall NPE-LDS059, July 7, 2005 (DAO).

ZANNICHELLIACEAE Horned-pondweed Family

†*Zannichellia palustris* L., Horned Pondweed – (Addition – N)

This species was included in *The Flora of the Territory* (Cody 1996) but was deleted because of a misidentification (Cody 1998, 2000). The specimens cited below are from the only three sites now known in the Territory.

Specimens examined: Cracker Creek drainage, submerged and widespread in shallow, slightly alkaline pond with *Triglochin maritima* and *Eleocharis* around the edge, 60°48'31.6"N 136°47'17.3"W, B. A. Bennett, J. M. Line, P. Secombe-Hett, T. McIntosh & R. Rosie 04-0101, 18 June 2004 (DAO); Takhini Salt Flats, alkaline pond, A. Ceska & T. McIntosh 33225, 19 June 2004 (DAO); Peel Plateau, south of Snake River, east of junction with Peel River, washed up in shallows near shore of upland lake (NP46). Not found elsewhere along the shore, 65.908°N 133.929°W, 381 m, R. Rosie 05-74, 24 July 2005 (DAO).

POACEAE Grass Family

Avena fatua L., Wild Oat – (Addition – I)

Brink first reported this species as occurring in fields in Carmacks V. C. Brink sn, 20 July 1943 (UBC). It has been reported in the vicinity of Whitehorse (B. A. Bennett, personal communication 2007). Plants may have originated with imported seed from Alberta. There have been no reports of this problematic agricultural weed occurring outside cultivated fields and no evidence that it can persist, but periodic introduction is likely to continue.

Avena fatua can be separated from the more common *A. sativa* as follows (adapted from Baum 2007):

- 1a. Florets disarticulating at maturity, only the glumes remaining attached. Calluses bearded. Sheaths of basal leaves with scattered hairs. Spikelets 3-flowered, with 2-3 awns. *A. fatua*
- 1b. Florets not disarticulating from the glumes, remaining attached to the plant even at maturity; calluses glabrous. Sheaths of basal leaves smooth or scabridulous. Spikelets 2-flowered, with 1 awn. *A. sativa*

†*Bromus richardsonii* Link (*B. ciliatus* var. *richardsonii* (Link) Boivin), Richardson's Brome Grass – (Addition – N)

Pavlick (1995) illustrates the distribution of this Cordilleran species as ranging from Baja Mexico north to Yukon and Alaska. However, Pavlick & Anderton (2007) show the closest known collection to be just south of the Yukon border and do not mention any Yukon occurrence. The Douglas collections cited below are 65 km northwest of the known distribution (Saarela 2009*) and a collection from the Little Susitina Valley, north of Palmer, Alaska (Mitchell, 1967; Pavlick & Anderton, 2007) is a further 600 km west. Some other collections identified as *B. ciliatus* may be referable to *B. richardsonii*, but none were found in a review of more than 30 additional Yukon collections of *B. ciliatus* (ALA, BABY, UBC). *Bromus richardsonii* should be looked for in southern Yukon and adjacent Alaska at higher elevations.

Specimens examined: Kluane National Park and Reserve, St. Elias Lake, north shore, small meadow partially overwashed with gravel, south-facing slope of 3°, 60% vegetative coverage, moist organic soil with *Geranium erianthum*, about ten clumps present, 60°19.12'N 137°05.564'W, 2962', *P. Caswell and L. Freese PPC-2003-515*, 26 July, 2003 (ALA, DAO, KNPR Herbarium, UTC) (confirmed by J. Cayouette & M. Barkworth); Kluane National Park, Field Creek, ca 40 mi SSW of Haines Junction, 60°12'10"N, 137°38'40"W, 3700', 6 August 1974, *G. W. & G. G. Douglas 7829* (V) (determined by J. M. Saarela, 2007); Kluane National Park. Onion Lake, ca 46 mi S of Haines Junction, in subalpine meadow, 60°05'45"N, 137°25'00"W, 2800 ft, 12 August 1973, *G. W. & G. G. Douglas 7105* (CAN, V) (determined by J. M. Saarela, 2010).

Bromus richardsonii can be separated from *B. ciliatus* as follows (adapted from Saarela 2008, 2009):

1. Lemma backs glabrous or sparsely puberulent with hairs to 0.1 mm long, margins pubescent with hairs 0.5-1.3 mm long; upper glumes 6.5-9.5 mm long; lower glumes 5-7.5 mm long; anthers 0.9-1.6 mm long; basal leaf sheaths glabrous or sparsely to densely pubescent with soft and wavy hairs; upper blades with pilose adaxial surfaces; upper nodes usually pubescent. *B. ciliatus*
2. Lemma backs sparsely to densely pubescent with hairs > 0.1 mm long; upper glumes (8-)9.5-11.5(-14.5) mm long; lower glumes 7-9.5 mm long; anthers (1.2-) 1.6-2.7(-3.4) mm long; basal leaf sheaths glabrous or sparsely to densely pubescent with stiff hairs; upper blades with glabrous adaxial surfaces; upper nodes usually glabrous. *B. richardsonii*

†*Calamagrostis holmii* Lange (*C. kolymaensis* Kom.; *C. chordorrhiza* Porsild), Holm's Reed Grass – (Addition – N)

Included in *Calamagrostis stricta* ssp. *stricta* by some authors, most recently Marr et al. (2007), *C. holmii* is an Amphiberingian, almost exclusively Asian,

arctic species found along the north coast of Alaska and apparently reaching its eastern limit in the vicinity of the Melville Hills, Northwest Territories (Hultén 1968; McJannet et al. 1995). In Yukon this taxon has only been found in a small area of the western extension of the Mackenzie Delta.

Specimens examined: Beaufort Sea, Blow River Delta east, in moist silty sand, slightly brackish, many dead *Alnus* in surrounding area from tidal flood of 1998, dominated by *Leymus mollis*, *Chrysanthemum arcticum*, *Calamagrostis canadensis*, *C. lapponica*, *Carex ramenskii*, *Puccinellia phryganodes* and *P. tenella* ssp. *langeana*, 68.896°N 136.961°W, 1 m, *B. A. Bennett, M. J. Oldham, C. A. Kennedy, P. Secombe-Hett & D. C. Gordon 06-132*, 28 July, 2006 (US); Blow River Delta east, on hummocky ground amongst dead *Alnus crispa*, soil mesic silty, slightly saline with *Cochlearia groenlandica*, 68.893°N 136.961°W 3 m *B. A. Bennett, et al. 06-177*, 28 July, 2006 (CAN, US); Blow River Delta east, occasional in higher areas amongst on flood killed, *Eriophorum vaginatum* tundra with many dead *Alnus* in surrounding area from tidal flood of 1998 dominated by *Rubus chamaemorus*, *Ledum decumbens* and *Vaccinium vitis-idaea*, 68.894°N 136.965°W, 1 m, *B. A. Bennett, et al. 06-181*, 28 July, 2006 (US); Blow River Delta east, Outer Delta west of Whitefish Station, growing in an unusual patch of ericaceous tundra in mid delta with *Arctostaphylos alpina*, *Vaccinium vitis-idaea*, *Empetrum nigrum*, *Luzula confusa* and *Pedicularis labradorica*, 68.902°N 136.976°W 3 m *B. A. Bennett, et al. 06-208*, 28 July, 2006 (CAN, US); Blow River Delta, mainland sites S of E delta, tundra within 1 km of coast occasional in moist to wet *Carex* tundra meadows surrounded by *Carex aquatilis*, *C. chordorrhiza*, *C. rotundata* and *Eriophorum russeolum*, 68.868°N 136.991°W, 47 m, *B. A. Bennett, et al. 06-246*, 29 July 2006 (CAN, US); Blow River Delta east, Outer Delta west of Whitefish Station, uncommon on the delta in silty sand amongst *Oxytropis maydelliana*, *Empetrum nigrum*, *Salix fuscescens* and *Rumex arcticus*, 68.901°N 136.950°W, 3 m, *B. A. Bennett, et al. 06-185*, 28 July 2006 (US). All collections above were confirmed by P. Petersen & B. Paszko 2008. An additional collection: Arctic coastal plain near Firth River, sand dune area 69°10'N 139°20'W, *A. Rencz 285*, 17 July 1972 (ALTA) was identified by W. J. Cody.

C. holmii can be separated from *C. stricta* as follows (adapted from Hultén 1968 and Tolmachev et al. 1995):

- 1a. Longest callus hairs distinctly shorter than lemma. 2a
- 2a. Awn thin, straight, not twisted. 3
- 3a. Culms tall; glumes dull, somewhat scabrous on sides, branchlets always scabrous; panicle grayish brown. *C. stricta* ssp. *stricta*
- 3b. Culms shorter; glumes shiny, completely glabrous on sides, branchlets sometimes glabrous; panicle purplish-black when young. *C. holmii*

Deschampsia sukatschewii (Popl.) Roshev. (*D. borealis* (Trautv.) Roshev.; *D. caespitosa* (L.) P. Beauv. ssp. *borealis* (Trautv.) A. & D. Löve), Sukatshev's Tufted Hair Grass – (Addition – N)

Previously included in *D. caespitosa*, *D. sukatschewii* is a circumboreal species recently recognized as distinct (Barkworth 2007). It is known from a single collection near the Yukon – British Columbia border (Barkworth 2007), though it is expected to be more widespread throughout the territory. The botanical and common names are in honour of Vladimir Nikolajevich Sukatshev 1880-1967, a Russian botanist.

The two species can be separated as follows (from Barkworth 2007):

- 1a. Basal blades with 5-11 ribs, usually most or all ribs scabridulous or scabrous, outer ribs often more strongly so, sometimes the ribs only papillose or puberulent, usually at least some blades flat and 1-4 mm wide, the majority folded or rolled and 0.5-1 mm in diameter; lower glumes often scabridulous distally over the midvein; lower panicle branches often scabridulous or scabrous, sometimes smooth. *D. caespitosa*
- 1b. Basal blades with 3-5 ribs, ribs usually smooth or papillose, sometimes puberulent of the outer ribs scabridulous, all blades of the current year usually strong involute and hairlike, 0.3-0.5 (0.8) in diameter; lower glumes smooth over the midvein; lower panicle branches usually smooth, sometimes sparsely scabridulous. *D. sukatschewii*

Puccinellia tenella (Lange) Holmb. ssp. *langeana* (Berlin) Tzvelev (*Phippsia langeana* (Berlin) A. & D. Löve; *Puccinellia langeana* (Berlin) T.J. Sørensen ex Hultén), Tundra Alkali Grass – (Addition – N)

This is a halophytic temperate and Arctic species and is found throughout the coastal areas to the high Arctic in Canada. *Puccinellia tenella* subsp. *tenella* is found in Russia and occupies the same habitat as our subspecies (Consaul personal communication, 2006). Cody (1996) anticipated the presence of ssp. *langeana* along the Arctic coast of Yukon. This taxon is inconspicuous and easily overlooked though apparently widespread in the appropriate habitat along the coast. *Puccinellia tenella* closely resembles *Phippsia algida* in growth form, habitat and appearance but has 3-6 flowered spikelets, whereas *P. algida* has 1-flowered spikelets.

Specimens examined: Herschel Island, *Elymus/Saxifraga*/Crucifera, 69°35'N, 139°05'W, C. A. Kennedy sn, 22 July, 1995 (YG); Shingle Point area, mainland opposite, common on moist muddy slough right at extreme high water mark growing with *Montia fontana* and *Puccinellia phryganodes*, 69.000°N, 137.473°W, B. A. Bennett et al. 05-0836, 30 July, 2005 (MTMG, US); Shingle Point, common in moist mud around brackish ponds often submerged by high tides, growing with *Puccinellia phryganodes*, 68.992°N, 137.404°W, B. A. Bennett, et al. 05-0895, 24 July, 2005 (DAO, MTMG); Ivvavik National Park, Clarence Lagoon, common in brackish marsh, forming large mats with

Hippuris tetraphylla and *Carex glareosa*, 69.619°N, 140.767°W B. A. Bennett, et al. 05-1087, 7 August 2005 (DAO, MTMG); Blow River Delta east, locally common but only found growing at two sites in moist silty sand, slightly brackish, many dead *Alnus* in surrounding area from tidal flood of 1998, dominated by *Leymus mollis*, *Chrysanthemum arcticum*, *Calamagrostis canadensis*, *C. lapponica*, *Carex ramenskii* and *Puccinellia phryganodes*, 68.89552, 136.96149, 1m, B. A. Bennett, M. J. Oldham, C. A. Kennedy, P. Secombe-Hett & D. C. Gordon 06-131, July 28, 2006 (ALA, CAN, DAO, US); Ivvavik National Park, Malcolm River, barrier beach at mouth of, common on beach sand on ocean side of lagoon with *Artemisia arctica* ssp. *comata*, *Mertensia maritima*, *Honckenya peploides*, *Festuca baffinensis* and *Papaver lapponica*, 69°36.845'N 139°55.512'W, 5', B. A. Bennett, C. L. Parker, T. McIntosh, P. Secombe-Hett and M. Joe 05-0686b, August 5, 2005 (MTMG); Northern Yukon (Ivvavik) National Park, Stokes Point, saline marshland, periodically flooded, with *Carex maritima*, *Eriophorum*, vetches, 69°20'N, 138°44'W, L. L. Consaul and S. G. Aiken 1009, 11 July 1990 (CAN). All collections were confirmed by L. Consaul.

CYPERACEAE Sedge Family

Carex athrostachya Olney, Slender-Beak Sedge – (Deletion – N)

First reported by Porsild (1975) in the vicinity of Mayo it was added to *The Rare Vascular Plants of the Yukon* (Douglas 1981); however, the collection was not reviewed at that time. Cody et al. (2004) reported a second collection. Both collections have since been revised to *C. crawfordii* by A. A. Reznicek (MICH). This species should therefore be removed from the Yukon flora.

Carex athrostachya may be separated from *C. crawfordii* as follows (adapted from Mastrogiuseppe, et al. 2002):

- 1a. Proximal 2-3 inflorescence bracts leaf-like, much longer than the inflorescence and more or less surrounding the culm. *C. athrostachya*
- 1b. Proximal 2-3 inflorescence bracts bristle-like, often with a bristle tip shorter or equaling the inflorescence. *C. crawfordii*

†*Carex incurviformis* Mackenzie var. *incurviformis* (*C. maritima* Gunn. var. *incurviformis* (Mackenzie) Boivin), Curved-spiked Sedge – (Addition – N)

“*Carex incurviformis* is an alpine member of the *C. maritima* complex, and seems clearly (though subtly) distinct from the widespread and variable *C. maritima* which in North America is a lowland and mostly coastal species” (Reznicek 2002). *Carex incurviformis* was unfortunately missed both from Cody (1996, 2000). The species was included in Flora of North America (2002), but the Yukon was omitted from the distribution statement and map.

Specimens examined: Kaskawulsh nunatak, jct. N and central arms Kaskawulsh Glacier, dry, exposed slope, 6000 ft., *D. F. and B. M. Murray 1081*, July 24-27, 1967 (ALA); Steele Glacier and vicinity, moist sheltered valley, above 6000 ft., *D. F. and B. M. Murray 1344*, August 5-10, 1967 (ALA); King Peak above Quintino Sella Glacier, south facing granitic rock at end of spur ridge, 9200-9400 ft., *V. Hoeman sn.*, July 29, 1967 (ALA); vicinity of Rusty Glacier terminus, neoglacial moraine, 61°16'N, 140°15'W, *D. F. Murray 1336*, August 6, 1967 & *D. F. Murray 1788*, July 15, 1968 (ALA); Asi Keyi SMA, north of Klutlan Glacier, uncommon in wet flat alpine tundra 90% vegetated with *Carex microglochis* and *Salix arctica*, 61°27.545'N, 140°48.017'W, 5418', *P. Caswell, J. Meikle & F. Mueller 04-1033*, July 23, 2004 (DAO).

Carex incurviformis can be separated from *C. maritima* as follows (adapted from Reznicek 2002):

- 1a. Perigynia finely veined to nearly veinless abaxially, essentially veinless adaxially, ovate to broadly ovate, (1.4-) 1.6-2.3 (-2.7) mm wide; pistillate scales with usually broad whitish hyaline margins, broadly ovate to orbicular, apex obtuse to ± acute; arctic and subarctic lowlands. *C. maritima*
- 1b. Perigynia finely veined on both surfaces, elliptic, 1-1.5(-1.6) mm wide; pistillate scales with very narrow whitish hyaline margins, ovate, apex acute to acuminate; alpine zone of the Rocky Mountains. *C. incurviformis*

†*Carex mackenziei* Krecz., Mackenzie's Sedge – (Addition – N)

This species was previously reported from Yukon (Toivonen 2002) but without reference to specific locations and vouchers. It was found to be locally abundant though limited in distribution,

Specimens examined: Beaufort Sea, Lower Blow River Delta, dry gravel sandspit dominated by *Elymus arenarius*, *Lathyrus japonicus* and graminoides. 30% cover, 69°56'N 137°11'W *L. Dickson 5287*, 8 July 1982 (DAO) originally identified as *C. marina* (*C. amblyorhyncha*) from which it differs by having 3-10 spikes, whereas *C. marina* has 2-3 (4) spikes. (determined by J. Cayouette); Blow River delta, extreme western edge, locally common but only place seen on the survey of the Yukon coast, codominant in brackish marsh behind logs growing with *Carex aquatilis* ssp. *stans*, *Dupontia fisheri*, *Arctophila fulva*, *Hippuris tetraphylla* and *Alopecurus alpinus*, 68.929°N 137.090°W, 2', *B. A. Bennett 05-0930*, 28 July 2005 (ALA, DAO, UBC); east of the Blow River on the outer delta to the Northwest Territories border, 2006, common and widespread codominant, 68.896°N 136.961°W, *B. A. Bennett, M. J. Oldham, C. A. Kennedy, P. Secombe-Hett & D. C. Gordon 06-130, 06-191, 06-300, 06-318, 06-340, 06-346*, 28 July 2006 (ALA, ALTA, CAN, DAO, MICH, WTU) (confirmed by J. Cayouette).

C. mackenziei can be separated from other members of this group by its terminal spike clearly being

clavate and staminate for at least ½ its length; also its pistillate scales are equal or exceeding the perigynia and partly concealing them.

Carex microchaeta T. Holm ssp. *nesophila* (Holm) D. F. Murray, (*C. nesophila* T. Holm), Alpine Tundra Sedge – (Addition – N, Canada also)

This species has a Beringian in distribution and is known from Alaska and the Russian Far East. It was reported in Taylor and MacBryde (1977) as occurring in British Columbia and in the Richardson Mountains, Northwest Territories by Porsild (1943); however, neither report is mentioned in Murray (1970, 2002). It has been expected in Yukon as it is known from several sites adjacent to the Yukon/Alaska border, and it may be more widespread especially in western and northern Yukon.

Specimens examined: Asi Keyi SMA, volcanic ash areas north of Brooke Creek, locally common in open areas amongst shrubs and along stream in wet heath shrub tundra, 61°34'08.6"N 140°49'42.7"W, 1504m, *B. A. Bennett, K. Kuba & P. Secombe-Hett 04-1012*, 24 July 2004 (DAO); Asi Keyi SMA, Kluane Range, mountain NW of Sergerent Creek, in south-facing seepage slope in heath tundra growing with *Carex misandra* and *Carex podocarpa*, 61°41'54.4"N 140°20'10.2"W, 1843 m, *B. A. Bennett & P. Secombe-Hett 04-1127*, 26 July 2004 (ALA); Asi Keyi SMA, Kluane Range, mountain NW of Sergerent Creek, commonly growing in rock and boulder pavement in organic soil at mountain summit granite bedrock, 20% vegetation cover, E-facing 5° slope, 61°42'32.5"N 140°19'21.3"W, 2186m, *B. A. Bennett & P. Secombe-Hett 04-1145*, 26 July 2004 (DAO). Specimens were confirmed by C. L. Parker (ALA).

The two subspecies can be separated as follows (from Murray 2002):

- 1a. Perigynia, including beak, reddish brown or purple; midvein of pistillate scales dark, same colour as body, inconspicuous. *Carex microchaeta* ssp. *microchaeta*
- 1b. Perigynia, greenish yellow or yellow-brown, beak black; midvein of pistillate scales lighter colour than body, conspicuous. *Carex microchaeta* ssp. *nesophila*

Carex ramenskii Komarov, Ramens's Sedge – (Addition – N)

Standley et al. (2002) wrote, "*Carex ramenskii* seems to be the northwestern counterpart of *C. salina* and is thought to be a stabilized hybrid of *C. lyngbyei* and *C. subspathacea*. It has not been reported outside of the common range of the two putative parents. Plants identified as *C. ramenskii* from Alaska and Northwest Territories attributed to *C. ramenskii* are mostly *C. subspathacea*." The collections listed above are well beyond the range of *C. lyngbyei* yet match the collections from southern Alaska. Though *C. subspathacea* appears to be more common throughout

the Yukon Arctic coast, and populations of *C. ramenskii* are mixed throughout; it is difficult at this time to assess the status of this species.

Specimens examined: Shingle Point, drinking hole on mainland, common forming nearly pure stands at south end of bay in shallow water with *Dupontia fisheri* and *Carex subspathacea*, lots of driftwood debris, 68.970°N 137.373°W, 12', B. A. Bennett, T. McIntosh, J. Line, J. Staniforth and D.C. Gordon 05-1033, 29 July 2005 (ALA, DAO, MICH); Kay Point, common to abundant forming meadows on brackish flats, 69.287°N 138.366°W, 2', B. A. Bennett & T. McIntosh 05-1183, 1 August 2005 (CAN, MICH); common on meadows on delta, occasionally flooded by brackish water dominated by *Palustriella falcata*, *Potentilla egedii*, *Puccinellia phryganodes*, *P. vaginata*, *Triglochin maritima*, *Carex ursina*, *Salix ovalifolia* and *Calamagrostis deschampsoides*. Blow River Delta east, "Bill Storr Channel" 68.863°N 136.802°W 1 m B. A. Bennett, M. J. Oldham, C. A. Kennedy, P. Seccombe-Hett & D. C. Gordon 06-345 31 July, 2006 (MICH). All specimens were identified by A. A. Reznicek.

C. ramenskii can be separated from *C. subspathacea* as follows (adapted from Standley et al. 2002):

- 1a. Leaves involute, 1-2 mm wide, plants small 3-15 cm tall. *C. subspathacea*
- 1b. Leaves v-shaped, greater than 2 mm wide, plants 10-50 cm. *C. ramenskii*

†*Carex rariflora* (Wahlenb.) Sm. var. *androgyna* Porsild, Loose-flowered Alpine Sedge – (Addition – N)

This variety was first described from Atkinson Point, Northwest Territories (Porsild 1943) and as an endemic to the Arctic coast just east of the Mackenzie River in the N.W.T. (Porsild and Cody, 1980). Variety *rariflora* was found to be common, widespread and often dominant, however variety *androgyna* is rare and was seen only in a few spots. Variety *androgyna* is more robust and flowers later after most plants of variety *rariflora* have senesced. The existence of this apparently Canadian endemic was not discussed in the *Flora of North America* treatment of this group (Ball 2002).

Specimens examined: Blow River Delta, near Whitefish Station, occasional in boggy poorly drained overgrown back channels, slightly brackish, with many dead *Alnus* in surrounding area from tidal flood of 1998; often growing with *Carex mackenziei*, *C. aquatilis*, *Ranunculus pallasii*, *Eriophorum angustifolium*, *Dupontia fisheri* and *Arctophila fulva* in moss. 68.894°N 136.965°W, B. A. Bennett, M. J. Oldham, C. A. Kennedy, P. Seccombe-Hett & D. C. Gordon 06-174, 28 July 2006 (CAN, DAO).

It can be separated from variety *rariflora* as follows (adapted from Porsild & Cody, 1980):

- 1a. Terminal spike mainly staminate, occasionally a few pistillate flowers may be present at the base. Pistillate flowers with 3 stigmas. var. *rariflora*
- 1b. Terminal spike mainly pistillate, with a few staminate flowers present at the summit. Pistillate flowers with 2 stigmas. var. *androgyna*

Carex tahoensis Smiley Lake, Tahoe Sedge – (Addition – N)

"*Carex tahoensis* resembles *C. phaeocephala* somewhat but often occurs at lower elevation, has longer achenes, and more coriaceous perigynia that are clearly veined adaxially. *Carex tahoensis* was originally described as a Californian endemic, but is much more widespread. The precise distribution is as yet unclear because of confusion with *C. phaeocephala* and *C. petasata*. Many reports of *C. xerantica* from the Rocky Mountain region are based on this species." (Mastrogriuseppe et al. 2002). *Carex tahoensis* is apparently widespread in the low elevation grasslands of south-west Yukon.

Specimens examined: Carcross Dunes, just beyond unstable dunes in moraine, 60°10.113'N, 134°42.983'W, 663m, B. A. Bennett, C. L. Parker, R. Rosie and R. S. Mulder 98-636, August 29, 1998 (DAO, MICH); Carcross Dunes, slope 15°, exposure south, silt over bedrock with *Calamagrostis purpurascens*, *Stipa nelsonii*, *Achillea millefolium*, *Antennaria rosea*, *Arctostaphylos uva-ursi*, *Erigeron compositus*, *Pulsatilla patens*, *Potentilla arguta*, 60°10'59"N, 134°43'47"W, 2242', B. A. Bennett & R. S. Mulder 03-1326, August 17, 2003 (DAO, MICH); Carcross, dunes and NE shore of Lake Bennett, bedrock knoll among dunes, dry *Artemisia*-graminoid slope, scattered, 60.1667°N, -134.700°W, C. L. Parker & B. A. Bennett 8286, August 30, 1998, (ALA); Mtns. about 11 km E of Little Atlin Lake, N of road, rocky soil below timberline, 60.367°N, 133.850°N, Raup & Correll 11270, August 13, 1943 (ALA); Snafu Lake, slope behind campground, accuracy 7m, slope 28°, SSE-facing, east of ATV track, silty soil with gravels and cobbles with *Potentilla arguta*, *Stipa richardsonii*, *Ame-lanchier alnifolia*, *Pulsatilla patens*, *Saxifraga tricuspidata*, *Cerastium arvense*, *Sedum lanceolatum*, *Achillea millefolium*, *Penstemon procerus*, 60°08'08.6"N, 133°48'22"W, 791m, B. A. Bennett, R.S. & P. Mulder 04-0045, May 23, 2004 (MICH); Snafu Lake, slope behind campground, commonly growing in dry to xeric conditions along eskers and south-facing slopes, 60°08'08.6"N, 133°48'22"W, 790m, B. A. Bennett, A. & O. Ceska, R. Rosie & P. Seccombe-Hett 04-0287, June 28, 2004, (DAO, MICH); Mile 13 Dawson Road (from Alaska Hwy.), E of Lake Laberge, occasional in runnel on open grassy SW-facing slope, 60.983°N, 135.167°W, 640 m, J. A. Calder & I. Kukkonen 27995, August 9, 1960 (ALA); Sideslip Lake, south-facing extremely steep dry meadow above lake 63°09'N 135°24'W, 1219 m, C. E. Kennedy sn, 25 July, 1987 (YG); vicinity of Pine Creek near mile 1019 Alaska

Hwy., prairie, 60.783°N, 137.583°W, *Raup & Raup 11761*, June 16, 1944 (ALA); Alsek River valley ca. 1.6 km E of Haines Road Jct., prairie, among willows, 60.767°N, 137.500°W, *Raup & Raup 11958*, June 26, 1944 (ALA); Bridge River-Tatshenshini River confluence, in *Betula glandulosa-Festuca altaica* meadow, slope 0%, 60.00°N, 137.217°W, 550 m, August 9, 1975 (ALA); Kluane National Park, Mile 154 Haines Highway ca 900' S of highway in *Betula / Festuca* stand S35W slope 3%, 2600', *G. W. Douglas & G. G. Douglas 6575*, 30 July 1973 (V); Blanchard River (Mile 66 from Haines Junction), rare in grassy-gravelly area near river bank and roadside, 59.98°N, 136.83°W, *J. A. Calder & I. Kukkonen 28177*, August 12, 1960 (ALA); Kluane National Park, Bates Lake, ca 1.5 km W of, in *Festuca altaica* community, slope 0%, 60°11'00"N 137°39'00"W, 720 m, *H. L. Weaver & I. J. Weaver 55*, July 4, 1975 (V); Alaska Highway Mile 1018, along roadside, on edge of *Populus tremuloides* stand, 60°46'00"N 137°33'00"W, 745 m, *G. W. Douglas & G. G. Douglas 9133*, August 6, 1975 (V); Kluane National Park, Bridge River and Tatshenshini River; junction of two rivers, in *Betula glandulosa-Festuca altaica* meadow, slope 0%, 60°00'00"N 137°13'00"W, 550 m, *G. W. Douglas & G. G. Douglas 9147*, August 9, 1975 (V); Kluane National Park, Onion Lake, ca 46 miles S of Haines Junction, in subalpine meadow, 60°05'45"N 137°25'00"W, 2800 ft., *G. W. Douglas & G. G. Douglas 7098*, August 12, 1973 (V). All specimens were identified or confirmed by A. A. Reznicek).

In Yukon *C. tahoensis* has also been confused with *C. macloviana* and *C. praticola* from which it can be separated as follows (adapted from Mastrogioseppe et al. 2002):

Plants densely caespitose. Perigynia conspicuously veined adaxially, at least 3 veins longer than achene. Pistillate scales uniformly as long as or longer than mature perigynia, usually concealing the beaks which are cylindrical, unwinged, and more or less entire for 0.4 mm or more from apex, and hyaline tipped; pistillate scales white hyaline margined; inflorescences stiffly erect.

- 1a. Larger perigynia 6-8 mm long; inflorescence open.
..... *C. petasata*
- 1b. Larger perigynia less than 3.8-6 mm long; inflorescence dense to ± open. 2
- 2a. Pistillate scales margin white-hyaline 0.1-0.3 mm wide, perigynia conspicuously (0-) 4-9 veined abaxially, conspicuously 0 (-4) veined adaxially.
..... *C. phaeocephala*
- 2b. Pistillate scales margin white-hyaline 0.2-0.6 mm wide, perigynia conspicuously 7-14 veined abaxially, conspicuously 3-8 veined adaxially. ... *C. tahoensis*

C. tahoensis is apparently relatively widespread in south central and southwestern Yukon as far north as 63°N. It is found mainly on open rocky or gravelly south-facing low elevation slopes. Mastrogioseppe et al. (2002) remark, "Reports of *Carex phaeocephala*

from northern Canada are based on other species, mostly *C. tahoensis*," and thus exclude *C. phaeocephala* from Yukon in their distribution maps. However, this statement is in error. Though several collections of *C. phaeocephala* examined by A. A. Reznicek were revised, many retained their original identification and thus *C. phaeocephala* remains a rare element of the Yukon flora and should continue being listed as such (Yukon Conservation Data Centre 2009*).

†*Carex xerantica* Bailey, White-Scale Sedge – (Addition – N)

According to (Mastrogioseppe et al. 2002, page 358) "*Carex xerantica* is a rather local northern species of the Great Plains which has a distinctive pale silvery aspect to the inflorescences." It has now been found and collected on dry grass slopes above Marcella Lake, Carcross-Atlin Road; close to British Columbia border. 60°10'N 134°42'W, *A. Ceska, O. Ceska & T. Goward 11961*, 8 July 1982. (V187548 – photocopy DAO) (identified by A. Ceska, confirmed by A. A. Reznicek)

To the south it is known in northeastern British Columbia (Douglas et al. 2002); an extension of 835 km to the NW. Additional collections of this species from Alaska and the Northwest Territories are housed at ALA.

Carex xerantica has been confused with *C. tahoensis* and *C. petasata* but can be separated as follows (A. A. Reznicek, personal communication, 2005):

- 1a. Pistillate scales reddish brown; perigynia 4.5 × 6 × 1.5-2.6 mm; distinctly veined adaxially.
..... *C. tahoensis*
- 1b. Pistillate scales whitish to yellowish; 3.8 -4.8 × 1.4 -2.2 mm; veinless or indistinctly veined adaxially.
..... *C. xerantica*

Carex × flavicans (Nylander) Nylander (= *C. subspathacea* Wormsk. × *C. aquatilis* Wahlenb.) – (Addition – N)

"*C. × flavicans* is known from various regions: James Bay in Ontario, Hudson Bay in Manitoba, Southampton Island, Devon Island, and Baffin Island." (Cayouette and Catling 1992). Cayouette (in press) writes "*Carex × flavicans* seems to replace *C. salina* beyond its northern limit and represents most of the plants considered by Polunin as "*C. salina* transitional to *C. aquatilis* var. *stans*" (Polunin, 1940). This hybrid is not only widespread, but frequently forms extensive populations in coast ponds in the Churchill area."

The region of the eastern Blow River delta to the mouth of the Mackenzie River is a complex combination of many of the arctic members of the *Carex* section *Phacocytis*. *Carex subspathacea*, *C. aquatilis*, and *C. ramenskii* grow in meadows in a complex mix. This hybrid was not observed elsewhere on the Yukon coast; however, it likely occurs where the two parent species grow together; both are widespread.

Specimens examined: Beaufort Sea, Blow River Delta east, locally common in moist silty sand, slightly brackish, many dead *Alnus* in surrounding area from tidal flood of 1998; dominated by *Leymus mollis*, *Chrysanthemum arcticum*, *Calamagrostis canadensis*, *C. lapponica*, *Carex ramenskii*, *Puccinellia phryganodes* and *P. tenella* ssp. *langeana*, 68.896°N 136.961°W, 1 m, B. A. Bennett, M. J. Oldham, C. A. Kennedy, P. Seccombe-Hett & D. C. Gordon 06-120, 28 July, 2006 (ALA, DAO, MICH) (identified by A. A. Reznicek, confirmed by J. Cayouette); Peel/Blow River Delta, Fish River, uncommon and patchy in low lying area surrounded by tundra, 68.861°N 136.812°W, 2 m, B. A. Bennett, et al. 06-341, 31 July 2006 (DAO, MICH) (identified by A. A. Reznicek, confirmed by J. Cayouette); Blow River Delta east, Whitefish Station, outer delta, common to abundant invading tundra ponds growing with *Carex aquatilis*, *C. mackenziei* and *Hippuris tetraphylla*, 68.888°N 136.894°W, 3 m, B. A. Bennett, et al. 06-302b, 30 July 2006 (DAO, MICH) (identified by A. A. Reznicek); Blow River Delta east, Whitefish Station, outer delta, dominant forming nearly pure stands in moist meadows. Highly variable at times resembling *C. ramenskii* and grading into *C. aquatilis* ranging from under 6" in height to over 14", 68.891°N 136.911°W, 1 m, B. A. Bennett, et al. 06-309, July 30, 2006 (DAO, MICH) (identified by A. A. Reznicek).

†*Eleocharis erythropoda* Steud., Bald Spike-rush – (Addition – N)

This species was known from the surrounding jurisdictions of British Columbia, Northwest Territories, and Alaska (Smith et al. 2002) and so was expected to occur in Yukon

Specimen examined: Liard River approximately 20 km NW of Watson Lake, on sand bar, 60.152°N 129.020°W, 616 m, G. E. Hutchings sn, 9 August 2004 (CAN) (Confirmed by J. Sarrela)

Eleocharis macrostachya Britt., Pale Spike-rush – (Addition – N)

This taxon was reported as occurring in the territory (Smith et al. 2002) and as it is close in appearance to *E. palustris* and *E. mamillata* it may be overlooked.

Specimens examined: Alaska Highway, vicinity of Mackintosh, mile 1022, damp open alkaline meadow in spruce woodland forming large patches in moist depressions, W. B. Schofield & H. A. Crum 8173, 4 August 1957 (UBC V115635) (identified by S. G. Smith, 1999 as part of the Flora of North America Project); Alaska Highway, Sulphur Lake, mile 1038, pond margin, W. B. Schofield & H. A. Crum 8027 28 July 1957 (CAN) (identified by J. Sarrela).

Eleocharis mamillata (Lindb.) Lindb., Soft-stem Spike-rush – (Addition – N)

This taxon was reported as occurring in the territory (Smith et al. 2002) although these are the first collections to be reported.

Specimens examined: Near Dawson City, Hunker Creek near Independence Creek, old dredge pond, D. J. Campbell 142, 13 August 1951 (MT) (identified by S. G. Smith); Aishihik Road, east of, near Decourcy Lake, commonly growing in *Drepanocladus* mats with *Senecio congestus*, *Stellaria crassifolia* in wet marly soil at edge of lakes in deep humus, 3247' 61.423°N 137.025°W, B. A. Bennett, B. Smith, L. Schroeder, A. & O. Ceska, R. Rosie & P. Seccombe-Hett 04-0198, 23 June 2004 (CAN) (confirmed by J. Saarela); Lower Labiche valley, along western edge of pond with *Juncus alpinoarticulatus*, 60.044°N 123.970°W, 397 m., B. A. Bennett & L. Schroeder 04-0712, 14 July 2004 (DAO).

Eleocharis palustris is very difficult to separate from *E. mamillata* and *E. macrostachya*. Specimens require mature achenes and a large collection is recommended to capture the variation within a population. More work is required to assess the status of this complex in Yukon. The three new species of *Eleocharis* reported here can be separated from the more common *E. palustris* as follows (adapted from Alaska *Eleocharis* key A. A. Reznicek 2003*):

- 1a. Lowest scale of spikelet clasping at least ¼ of the diameter of the culm
- 2a. Lowest scale of spikelet consistently clasping the entire stem, only one sterile basal scale present.
 - *E. erythropoda*
- 2b. Lowest scale of some or all spikelets clasping less than the entire stem; 2 sterile scales present in some spikelets. *E. macrostachya*
- 1b. Lowest scale of spikelet clasping only about 2/3 of the diameter of the culm
- 3a. Perianth bristles absent or up to 4 (-5), usually shorter than achenes (tubercles included); achene apex with or without distinct neck, tubercles often not sessile on achenes, culm subterete and firm.
 - *E. palustris*
- 3b. Perianth bristles absent or up to (-4) 5-6 (-8), longer than achenes (tubercles included); achene apex without distinct neck, tubercles sessile on achenes, culms very soft and flat or compressed.
 - *E. mamillata*

ORCHIDACEAE Orchid Family

Limnorchis huronensis (Nutt.) Rebrist. & Elven (*Orchis huronensis* Nutt., *Platanthera huronensis* (Nutt.) Lindl.), Lake Huron Green Orchid – (Addition – N)

Some of the Yukon plants previously referred to as *Platanthera* (*Limnorchis*) *hyperborea*, are now correctly placed with *Platanthera* (*Limnorchis*) *aquilonis* (Sheviak 1999, 2002; Cody et al 2001) and others are in fact correctly referred to *Platanthera* (*Limnorchis*) *huronensis*. A number of recent collections are also referred to the latter. *Platanthera huronensis* was previously known from southeastern Alaska and north-eastern BC adjacent to the Yukon border (Sheviak, 2002). In 2008, this group of orchids was found to be peripheral to the main group of *Platanthera* spp.

(Elven and Murray 2008a) and thus *Limnorchis* proposed by Rydberg (1900) has been accepted as different from *Platanthera*.

Specimens examined: Labiche River, edge of old gravel pit with beaver lodge surrounded by *Picea mariana* forest SE of bridge, 60°03'N 124°00'W *B. A. Bennett 97-311*, 25 June 1997 (BABY); very robust form in meadow downstream of beaver pond where rare, Larsen Hot Springs Lower Pool, 60°12'N 125°32'W, *B. A. Bennett 98-335*, 14 August, 1998 (DAO); "Ottetail Creek", west of Mt. Martin, occasional amongst *Salix* in *Carex* fen, 60°07'00"N 124°15'20"W, *B. A. Bennett 98-257*, 16 June 1998 (DAO); Coal River, wetland-*Larix/Betula/Salix*, 60°08'N 127°25'W. *C. E. Kennedy #28*, 6 July 1983 (YG 1026); Whitehorse, east of Copper Haul Road, marl concretions – *Menyanthes* 20% shrub birch, 60°43'N 135°09'W *C. E. Kennedy #40* 9, July 1996 (YG 3259); Hotspring Creek, hot springs area, large forb meadow, 63°04'N 135°41'W *B. Gallagher #663*, 7 August 1987 (YG 2413); Jackfish Lake, pond with large graminoid fen, 66°49'N 133°49'W *G. Brunner #51a-99*, 9 July 1996 (YG 4959). The Kennedy, Gallagher and Brunner collections bear the note "*P. huronensis* s.l. autogamous northern race, perhaps aff. *P. hyperborea*" (determinations by C. J. Sheviak). Undoubtedly there are many more than these that require re-identification.

These two species may be separated as follows: (adapted from Sheviak, personal communication 2006)

- 1a. Flowers whitish green; lip slenderly lance-acuminate, the base often rounded-dilated; anther high with anther sacs only somewhat diverging toward oblong viscidia; pollinia retained within the anther sacs and flowers not autopollinating. *L. huronensis*
- 1b. Flowers green with dull yellowish lip; lip rhombic-lanceolate, not rounded-dilated at the base; anther low with the anther sacs very widely diverging toward orbicular viscidia; flowers autopollinating with whole pollinia falling out on the stigma or the massulae dissociating and spilling out of the anther sacs. *L. aquilonis*

SACEAEALIC

†*Salix farriae* Ball (*Salix hastata* L. var. *farriae* (Ball) Hultén), Farr's Willow – (Addition – N). Figure 2.

This is a cordilleran species ranging from Wyoming to central British Columbia with disjunct occurrences in southern Yukon, western Northwest Territories, and northwestern British Columbia. It is related to *S. hastata*, an amphiberian species ranging from Scandinavia to southwestern Yukon and northwestern Northwest Territories.

Specimens examined: Rose-Lapie River Pass slopes east of mile 105 Canol Road, elevation 6000' *A. E. Porsild & A. J. Breitung No. 10887* 1944 (CAN) originally identified as *S. barclayi*; Canol Road mile 77 east slope of Rose River valley, forming thickets by a stream, *A. E. Porsild & A. J. Breitung No. 10276* 1944 (CAN) originally identified as *S. barclayi*; uncom-



S. farriae

FIGURE 2. *Salix farriae* illustration by J. R. Janisch courtesy of the University of the Washington Press.

mon shrub three feet tall at edge of *Salix planifolia* fen and *Pinus contorta* forest. Mile 635, Alaska Highway Watson Lake 60°03'N 128°40'W *G. W. Argus & W. Chunys 5055* 26 June, 1966 (CAN); Mile 174 Campbell Hwy. growing 1.5 m tall with *S. bebbiana*, 61°04'N 131°25'W *R. D. Dorn 1641*, 8 July, 1972 (CAN) originally identified as *S. barclayi*; Spencer Creek, 35 miles west of Watson Lake (Note: "35 miles" on original specimen label is a typographical error), common on burned till ridges, *J. S. Rowe 7304*, 20 June 1973 (CAN) originally identified as *S. barclayi*; Labiche Range, occasional low growing 1 m or less, in rich lush herbaceous meadow south-facing 30° slope with *Festuca altaica*, *Epilobium angustifolium*, *Artemisia norvegica* ssp. *saxatilis*, *Mertensia paniculata*, *Phleum alpinum*, *Vaccinium caespitosum*,

60.441°N 124.436°W, 1403m, *B. A. Bennett & P. Seccombe-Hett 04-0672*, 14 July, 2004 (CAN, DAO); Crow River Hot Springs, moist hot spring meadows dominated by *Solidago canadensis*, *Castilleja miniata* and *Geranium richardsonii*, 60.441°N 124.436°W, 1403m, *B. A. Bennett & P. Seccombe-Hett 04-0735*, 16 July, 2004, originally identified as *Salix prolixa* (CAN). All specimens were identified by G. W. Argus.

Salix farriarum is often confused with *S. barclayi* and is closely related to *S. hastata*. The following comparison may help to distinguish them:

- 1a. Juvenile leaves glabrous, pilose, or moderately densely villous; largest medial leaf blades oblong, narrowly elliptic, elliptic, oblanceolate, or obovate, margins always toothed; pistillate flowering branchlets 4-24 mm; staminate flowering branchlets 0-17 mm; floral bracts brown to black, moderately densely hairy; anthers 0.6-1 mm styles 0.6-2.5 mm; stipes 0.4-1.5 mm. *Salix barclayi*
- 1b. Juvenile leaves glabrous or sparsely villous; largest medial leaf blades narrowly elliptic to elliptic, margins generally entire; pistillate flowering branchlets 1.5-14 mm; staminate flowering branchlets 1-5 mm; floral bracts bicolor, brown or black, sparsely hairy; anthers 0.3-0.6 mm styles 0.3-1.2 mm; stipes 0.5-1.2 mm. *Salix farriarum*
- 1c. Juvenile leaves sparsely pubescent; largest medial leaf blades narrowly to broadly elliptic, narrowly ovate, or ovate, margins generally entire; pistillate flowering branchlets 1.5-9 mm; staminate flowering branchlets 1-7 mm; floral bracts brown or bicolor, sparsely hairy; anthers 0.4-0.6 mm; styles 0.2-0.48 mm; stipes 0.4-1.2 mm. *Salix hastata*:

Salix glauca L. ssp. *stipulifera* (Floderus ex Hayren) Hiitonen (*Salix stipulifera* Floderus ex Hayren, Mem.; *S. glauca* var. *stipulata* Floderus), Blue-green Willow, Gray Willow – (Addition – N)

This subspecies was known from Alaska and northern Northwest Territories and was expected to occur in northern Yukon; however, these are the first confirmed collections of this subspecies.

Specimens examined: Shingle Point area, mainland opposite herbaceous slopes above beaches at Arctic Ocean, 68.985°N 137.420°W 25' *B. A. Bennett, T. McIntosh, J. Line, J. Staniforth and D. C. Gordon 05-0981b*, 25 July 2005 (CAN); Blow River Delta, mainland sites S of E delta, shale cliffs near Coney Lake common on edge of tundra and along shale cliffs along shore with *Alnus crispa*, *Empetrum nigrum*, *Calamagrostis canadensis*, *Rumex arcticus*, *Salix pulchra*, *Leymus mollis*, *Rubus chamaemorus* and *Arctagrostis latifolia*, 68.856°N 136.918°W 2 m *B. A. Bennett, M. J. Oldham, C. A. Kennedy, P. Seccombe-Hett & D. C. Gordon 06-323*, 30 July 2006 (CAN) (identified by G. W. Argus).

The following key will help identify the subspecies, but there are extensive areas of overlap between them and many intermediates.

- 1a. Stipules on later leaves foliaceous and prominent, often persistent for more than one year, mostly linear to lanceolate-inequilateral, 2–17 mm; branchlets generally very densely villous but becoming glabrous; branches generally red-brown but sometimes gray to yellow-brown; proximal leaves entire; floral bracts 1.2–2.5 mm; ovaries generally obclavate, sometimes pyriform; staminate flowering branchlets 1–14 mm; northwestern Canada and Alaska. 2
- 2a. Shrubs 0.25–1 m; branchlets generally villous; petioles shorter, 1–9 mm; largest medial leaf blade apex acute, moderately densely to sparsely hairy adaxially; staminate catkins 14–26 mm; filaments glabrous or hairy, distinct to partially connate; pistillate catkins stout to subglobose, flowering branchlet 2–19 mm; stipe 0.4–1.8 mm; arctic Alaska and Northwest Territories and western Nunavut 50a. *Salix glauca* subsp. *stipulifera*
- 2b. Shrubs 0.25–6 m; branchlets soon becoming pilose or glabrous; petioles longer, 4–27 mm; largest medial leaf blade apex acute to sometimes acuminate, often sparsely hairy adaxially; staminate catkins 19–45 mm; filaments glabrous, distinct; pistillate catkins slender to stout, flowering branchlet 3–37 mm; stipe 0.5–2.8 mm; central Alaska and Yukon east to Great Slave Lake, Northwest Territories 50b. *Salix glauca* subsp. *acutifolia*

†*Salix sphenophylla* Skvort, Wedge-leaf Willow – (Addition – N)

This Amphi-Beringian species was included in Cody (1996) as a species to be expected in Yukon as its known distribution included areas in adjacent coastal Alaska and also from Cape Dalhousie just east of the Mackenzie River delta.

Specimen examined: Ivvavik National Park, unnamed creek north of Muskeg Creek near Firth River, Uncommon in graminoid wetland ribbon fen toe of slope 3% southwest-facing. Very poorly drained terric fibric organic crysol, 95% moss cover dominated by *Carex lugens*, *C. rotundata*, *Betula glandulosa*, *Andromeda polifolia* with *Salix candida* in 10% open water. 68.87703°N 140.3775°W, 486 m, *B. A. Bennett, S. Wolfe & M. Kirk 08-312*, 23 July 2008 (CAN) (identified by G. W. Argus).

POLYGONACEAE Buckwheat Family

†*Polygonum douglasii* Greene ssp. *douglasii*, Douglas' Knotweed – (Addition – N) Figure 3.

Polygonum douglasii is the only member of the *Polygonum* section *Duravia* in the Territory. This native annual plant was previously known from the vicinity of the Stikine and Peace rivers in northern British Columbia so the Yukon collection is an extension of nearly 400 km. The occurrence of this species is in an extremely remote location and so is likely a natural occurrence.

Crow River Hot Springs, rare, the only place seen, <100 plants, 20° south-facing slope growing with *Draba nemorosa*, *Arctostaphylos uva-ursi*, *Anaphalis*

margaritacea, *Potentilla arguta*, *Collomia linearis*, *Phleum alpinum*, *Aster ciliolatus*, *Amelanchier alnifolia*, *Solidago canadensis*, and *Hieracium umbellatum*, sandy soil, 60.199°N 125.789°W, 975 m. B. A. Bennett, P. Seccombe-Hett & J. Legare 04-0803, 16 July, 2004 (ALA, DAO).

It can be separated from section *Polygonum* as follows (from Costea *et al.* 2005):

- 1a. Stems distinctly and + regularly 8-16 ribbed; leaf blade venation pinnate, secondary veins conspicuous; anthers whitish yellow. *Polygonum* sect. *Polygonum*
- 1b. Stems 4-gonous, ribs obscure or absent; leaf blade venation parallel, secondary veins not conspicuous; anthers pink to purple. *Polygonum* sect. *Duravia* including *P. douglasii*

†*Rumex beringensis* Yurtsev & Petrovsky, Bering Sea Dock – (Addition – N). Figure 4.

The nearest collections known are also from the White River drainage in the Wrangell Mountains, Guerin Glacier terminus, Alaska, a distance of approximately 65 km (Murray 1971).

Specimen examined: Asi Keyi SMA, Boundary Lake, abundantly growing in pumice near shore of lake with *Carex rostrata*, 61°39.181'N 140°50.668'W, P. Caswell 04-0955, 22 July 2004 (ALA, CAN, DAO, WTU). This species is relatively widespread in wet areas including stream sides and lake shore in the vicinity of Boundary Lake.

Rumex beringensis is similar to *R. acetosella* in having dioecious flowers and linear leaves, but *R. beringensis* lacks the basal (hastate) lobes on the leaves and tepals have a free wing 0.3-0.5 mm wide, whereas in *R. acetosella* they are absent or barely visible. (adapted from Mosyakin 2005).

Rumex pseudonatronatus (Borbás) Murbeck (*R. domesticus* Hartman var. *pseudonatronatus* Borbás; *R. femicus* (Murbeck) Murbeck), Finnish or Field Dock – (Addition – I)

This species was introduced to North America from eastern Europe and occurs mainly in the northern prairie region. Boivin (1968) reports a collection from “Dawson in Yukon,” however the source of this report is unknown. *Rumex pseudonatronatus* is commonly mistaken for *R. crispus* or occasionally the less common *R. longifolius*. The specimen cited below is therefore a new introduced species to Yukon.

Specimens examined: Labiche Airstrip, roadside herbaceous meadow beside airstrip, 60°07'42"N 124°02'21"W, 1200', B. A. Bennett & P. Seccombe-Hett 04-0566B, 12 July 2004 (BABY, photo DAO).

Rumex pseudonatronatus is commonly mistaken for *R. crispus* or occasionally the less common *R. longifolius*; it can be separated from these species as follows (adapted from Mosyakin, 2005):

- 1a. Mature valves rotund- or reniform-cordate, as broad or broader than long; leaves tapering to base 2

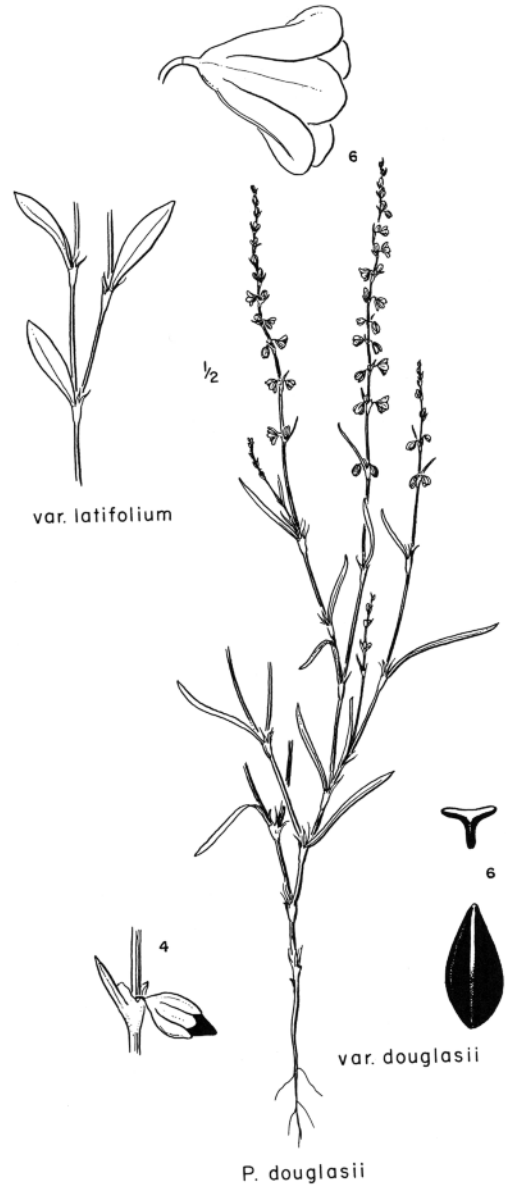


FIGURE 3. *Polygonum douglasii* ssp. *douglasii* illustration by J. R. Janish courtesy of the University of the Washington Press.

- 1b. Mature valves broadly ovate, longer than broad; lower leaves truncate, subcordate, or cordate at base. *R. crispus*
- 2a. Leaves narrowly lanceolate, their margins very strongly wavy-curved (appearing shallowly pinnatifid when pressed); achenes usually reddish brown, 2-2.5 × 1-1.5 mm; stems purplish or reddish brown at maturity. *R. pseudonatronatus*.

- 2b. Leaves oblong-lanceolate to oblong on narrowly ovate, flat or merely slightly undulate; dark brown or brown, (2.5) 3-3.5 (4) × 1.5-2 mm. *R. longifolius*

CARYOPHYLLACEAE Pink Family

Silene soczaviana (Schischk.) Bocquet var. *macrosperma* (A. E. Porsild) V. V. Petrovsky, D. F. Murray & Elven, (*Melandrium macrospermum* A. E. Porsild; *Silene macrosperma* (Porsild) Hultén; *S. soczaviana* (Schischkin) Bocquet, *S. uralensis* (Rupr.) Bocquet ssp. *porsildii* Bocquet), Large-seeded Nodding Campion – (Addition – N)

Morton (2005) reports this species as occurring in Yukon, though no other reports of specimens bearing this name are known for the territory.

Specimens examined: Vuntut National Park, Dog Creek crest of Mountain west of camp, rare collected only once, on open mountain summit west of camp, 68°27'42"N 138°42'05"W, 2481', B. A. Bennett, R. Markel, R. Lewis, B. Njootli (*Farkus*) & L. Nukon 00-0952, August 3, 2000 (DAO) (confirmed by D. F. Murray 2006 and J. Morton 2008); Ogilvie Mountains, Blackstone River drainage, site 16, uncommon in patches amongst large boulder talus, with *Salix dodgeana*, *Carex glacialis*, *Dryas alaskensis*, *Cardamine purpurea* and *Lesquerella calderi*. SW-facing 45° slope limestone bedrock, 65.66064°N 137.09242°W, 4230', B. A. Bennett, D. Cooley & H. Guest 05-0131, June 29, 2005 (ALA, DAO); Martha Black Peak, along trail to peak, 60.68°N 137.55°W, P. P. Caswell 518, August 2, 2000 (ALA); Kaskawulsh nunatak, junction of north and central arms Kaskawulsh Glacier, moist, shaded soil, 60.7333°N 139.1667°W, 1829 m, D. F. Murray & B. M. Murray 62 & 82, July 1, 1965 (ALA); Slims River, NW of, high alpine slopes, screes, 60.9167°N 138.7167°W, 1921 m, D. F. Murray & B. M. Murray 867, July 7, 1967 (ALA); Slims River, NW of, high elevation limestone scree, 60.9167°N 138.7167°W, 1921, D. F. Murray & B. M. Murray 1553, June 30, 1968 (ALA); Steele Glacier and vicinity, W of Burwash Landing, talus slopes, 61.2667°N 140.1333°W, 2134 m, D. F. Murray & B.M. Murray 1345, August 7, 1967 (ALA); Windy Pass and vicinity, shale scree, N-facing, 65.0667°N 138.25°W, 1679 m, C. L. Parker 1021, June 23, 1984 (ALA) (confirmed by D. F. Murray and R. Elven).

Silene soczavana var. *macrosperma* can be separated from other subspecies in the genus as follows (adapted from Morton 2005):

- 1a. Inflorescences usually simple, pedicels slender with single nodding (deflexed) flower (fruiting pedicels erect); seeds 1.5-2 (2.5) mm diameter (including broad wing). *Silene uralensis* ssp. *uralensis*
- 1b. At least some of the inflorescences branched with 2 to several flowers, pedicels erect to angled but not deflexed except at tip in flower; 2-2.5 mm diameter.
- 2a. Stems usually glabrous to sparsely, rarely pubescent, (15) 20-40 cm, slender; inflorescences branched with

- with (1) 2-10 flowers; corolla only slightly exceeding calyx. *Silene uralensis* ssp. *ogilviensis*
- 2b. Stems densely pubescent with purple-septate hairs, 10-35 cm, stout; at least some inflorescences forked with 1-3(-4) flowers; corolla usually ca. 1 ½ times calyx. *Silene soczavana* var. *macrosperma*

NYMFAEACEAE Water-Lily Family

†*Nymphaea tetragona* Georgi, Pygmy Water-lily – (Addition – N)

This species was reported as *Nymphaea tetragona* ssp. *leibergii* (Morong) Pors. in Hultén (1950) from a collection made by J. P. Anderson (9160) on the Alaska Highway near the Canadian Border (ALA). It was mapped at this locality in Hultén (1968). Cody (1994) felt the dot depicted in Hultén (1968) was “a misplacement for the *Anderson 9160* collection”. He felt the dot should have come from the Haines Highway and not the Alaska Highway reasoning that, “A collection by C. H. D. Clarke at Mile 85 Haines Road (CAN) which was initially thought to have been made in the Yukon Territory was later proved to be from northern British Columbia a few miles south of the Yukon border.” Cody (1996) suggests the species should be looked for in the southern Yukon Territory, and it is known from Alaska and also the southern parts of Northwest Territories where *Nymphaea leibergii* also occurs (Catling 2005).

During a vegetation survey in the vicinity of Beaver Creek, *N. tetragona* was found to be fairly abundant in shallows growing with Nuphar, several dozens of flowers seen, this is the only lake where found, wetland #13, along west side of one of the Enger Lakes, on west side of Alaska Highway, 62.240°N 140.693°W, 776 m, L. Schroeder & R. Rosie LS-WP72-JY31, 31 July, 2006. This collection may be from the same locality as Anderson’s earlier collection.

BRASSICACEAE Mustard Family

Camelina microcarpa Andr. ex DC, Little Pod Falseflax – (Addition – I)

This species is new to the Yukon flora based on a collection previously identified as *C. sativa* (see below). A second older collection was found housed in the UBC herbarium as an unidentified species of *Camelina* and identified by BAB as this species as well. An introduced species from Eurasia, *C. microcarpa* is known from the Mackenzie District of the Northwest Territories (Cody 1956, 1961) but has not been reported from Alaska.

Specimens examined: Whitehorse Shipyards, disturbed site, 60°43'34"N 135°03'12"W, B. Bennett 01-150, 28 Aug. 2001 (BABY, photo DAO). Whitehorse, open ground, back yards etc., V. C. Brink sn, 30 June 1943 (UBC 51786).

These two species of *Camelina* can be separated as follows (key adapted from *The Flora of North America* and Douglas et al. 1998b):

- 1a. Fruits 3.5-7 mm, valves obscurely veined; seeds 0.8-1.0 mm; stems hairy below with some simple trichomes to 1-3.5 mm, these often mixed with smaller branched ones. *Camelina microcarpa*
- 1b. Fruits 6-9 mm, valves prominently veined; seeds 1.5-2 mm; stems basally glabrous or almost exclusively with minute branched trichomes, simple trichomes rarely present. . . . *Camelina sativa*

Camelina sativa (L.) Crantz ssp. *sativa*, Gold-of-Pleasure – (Deletion – I)

This was erroneously reported as new to the Territory (Cody *et al.* 2004) based on a misidentification of *Camelina microcarpa* (see above). Although *C. sativa* has not been found out of cultivation in Yukon, it can survive a Yukon winter and is expected to become established. Plants were able to produce viable seed and self-seed in agricultural trials at the Takhini Forestry Farm Demonstration Site, where it was cultivated for research. The specific site was near Whitehorse: Takhini Hot Springs Road, Gunnar Nilsson and Mickey Lammers Research Forest 60.856°N 135.208°W 666 m B. A. Bennett & M. Ball 07-264 17 August, 2007 (MO) (confirmed by Ihsan A. Al-Shehbaz). Since *Camelina sativa* has been reported from the Mackenzie District of the Northwest Territories (Cody, 1956, 1961) and Alaska (Carlson & Shepherd, 2007) it should be expected to be found in Yukon, but interestingly it has not yet been reported as definitely naturalized in any northern North American jurisdiction.

Erysimum cheiri (L.) Crantz, Common Wallflower – (Deletion – I)

Cody *et al.* (2002) reported a collection of this species from Whitehorse, Yukon (Cody & Cody 37439). It had grown from a “wildflower seed mix” planted by the City of Whitehorse and is not a persistent species.

SAXIFRAGACEAE Saxifrage Family

Saxifraga hyperborea R. Br., (*S. rivularis* L. var. *flexuosa* (Sternberg) Engler & Irmischer; *S. rivularis* ssp. *hyperborea* (R. Br.) D. Dorn), Pygmy Saxifrage – (Addition – N)

The majority of plants referred to as *Saxifraga rivularis sensu lato* reported throughout northern and western North America, including all those reported by Cody (1996) that have been examined by BAB are referable to *Saxifraga hyperborea* R. Br. which occurs throughout Yukon to the Arctic coast.

Exemplary specimens examined: Mountain between Kusawa and JoJo Lakes, 60°35'47"N 136°15'19"W, 6300', B. A. Bennett, D. E. Russell & G. W. Kuzyk 97-645, Sept. 19, 1997, wet alpine rich tundra below cirque. (DAO, BABY); Printer's Pass, 61°11'40"N 138°19'30"W, 5274', B. A. Bennett 01-122, July 15, 2001, alpine meadow in moist area at base of cliff, rare

only three plants seen. (BABY); Kluane National Park, Fisher Glacier near Alosek, W-facing slope above valley glacier leading into Fisher Glacier, 60°08'20"N 138°13'20"W, 3800', B. A. Bennett 03-0999, July 7, 2003, base of rock outcrops and in talus, poorly vegetated with *Saxifraga reflexa* and *Cardamine bellidifolia*. (YG); Kluane National Park, Fisher Glacier near Alosek, base camp; 60°08'31"N 138°13'13"W, 3620', B. A. Bennett 03-1084, July 6, 2003, occasional in seepy areas along creeks and rock bluffs. (DAO); Kotaneelee Ridge, south end; 60.20937°N 124.1129°W, 1437 m, B. A. Bennett, R. Rosie & C. Guppy 04-0645, July 13, 2004, Small depression forming little lake dominated by *Eriophorum*, moss, *Salix reticulata*, *Carex podocarpa* and *Betula glandulosa*. Limestone bedrock. (DAO); LaBiche Range, 60.44792600°N - 124.42288913°W, 1666m, B. A. Bennett & P. Secombe-Hett 04-0659, July 14, 2004, SSE-facing vertical cliff faces of limestone bedrock, growing in moist rich herbaceous meadows with *Claytonia tuberosa*, *Saxifraga reflexa*, *Petasites frigidus*, *Oxyria digyna*, *Trisetum spicatum*, *Artemisia norvegica* ssp. *saxatilis*, *Polemonium acutifolium*, *Arctagrostis latifolia*, and *Ranunculus pygmaeus*. (DAO); Asi Keyi SMA, Brooke Creek, plateau north of, camp, 61°33'34.8"N 140°49'03.6"N, 1489m, B. A. Bennett & P. Secombe-Hett 04-0940, July 22, 2004, Common, growing amongst cobbles along edges of an ephemeral creek with *Artemisia tilesii* and *Festuca richardsonii*. (YG); Asi Keyi SMA, headwaters of Wolverine Creek by glacier, 61°25.876'N, 140°11.001'W, 6862', P. Caswell, J. Meikle & F. Mueller 04-1083, July 25, 2004, Uncommon in rock and boulder field at edge of glacier, growing in organic soil. (DAO); Asi Keyi SMA, Kluane Range, mountain NW of Sergerent Creek, 61°42'32.5"N, 140°19'21.3"W, 2186m, B. A. Bennett & P. Secombe-Hett 04-1137, July 26, 2004; Commonly growing in rock and boulder pavement in organic soil at mountain summit. Bedrock granite, 20% vegetation cover. East-facing 5° slope. (DAO); Bonnet Plume Drainage, Gillespie Lake, 64.70740216°N 134.01495472°W, 5270', B. A. Bennett, P. Secombe-Hett, J. Ryder, S. Thompson & D. Mahoney 05-1226, July 13, 2005, Occasional in wet mossy areas along edges of mountain stream at the elevational extreme of vegetation. Mountain stream has almost no grade. (DAO, O) (Confirmed by R. Elven January 2007); Blow River Delta, 68.92228475°N 137.17964603°N, 30', B. A. Bennett, T. McIntosh, J. Line, J. Staniforth and D. C. Gordon 05-0922, July 26, 2005, Occasional on dry sand banks on northeast-facing slopes above stream draw. Growing with *Oxytropis nigrescens*, *Carex rupestris*, *Poa glauca*, *Trisetum spicatum* and *Selaginella sibirica*. At the mouth of an arctic ground squirrel burrow. (O) (confirmed by R. Elven January 2007); Richardson Mountains, tributary of Fish Creek, S of Vunta Creek; 67.87537°N 136.56293°W, 1000 m, B. A. Bennett & M. J. Oldham 06-567, August 5, 2006,

Occasional in eroding shale bank at late snowmelt site. Wet growing with *Ranunculus nivalis*, *Saxifraga cernua*, *Taraxacum alaskanum* and *Cardamine microphylla*. (CAN, DAO); Blow River Delta, mainland sites S of E delta, rich bluffs, 68.87245°N 136.97964°W, 1 m, B. A. Bennett, M. J. Oldham, C. A. Kennedy, P. Secombe-Hett & D. C. Gordon 06-253, July 29, 2006, Occasional in wet seepy area in muddy shaley soil, late snow melt patch. Poorly vegetated. Growing with *Carex podocarpa*, *Saxifraga radiata*, and *Ranunculus pygmaeus*. (CAN, DAO, O); Mount Sedgwick, 68.87295°N 139.14218°W, 905 m, B. A. Bennett & S. Wolfe 08-414, July 25, 2008, Occasional, growing in seepy areas below rock outcrops and boulders with *Potentilla hyparctica*, *Poa paucispicula*, *Ranunculus nivalis* and *Trisetum spicatum*. (ALA, CAN); Mount Conybeare, 69.46454°N 140.07408°W, 459 m, B. A. Bennett & S. Wolfe 08-301, July 26, 2008, 65% N-facing slope, late snowmelt patch, lots of leaf litter that was deposited on snow. Growing with *Ranunculus pygmaeus*, *Geum glaciale*/*Cassiope tetragona*/*Saxifraga bronchialis*, argillite bedrock. (CAN, UBC)

Saxifrage rivularis ssp. *arctolitoralis* has been recently discovered in Yukon (see below). In Yukon, these two taxon may be separated by habitat and growth form; *S. rivularis* ssp. *arctolitoralis* growing in brackish areas forming cushions, where as *S. hyperborea* growing on the coast is only found in fresh seepage areas, is more delicate and very loosely growing. The most reliable differentiation is based on rhizomes which are absent in *S. hyperborea* but present in *S. rivularis* ssp. *arctolitoralis* (Jørgensen, et al. 2006).

†*Saxifraga rivularis* L. ssp. *arctolitoralis* (Jurtz. & V. V. Petrovsky) Jørgensen & Elven (*S. arctolitoralis* Jurtz. & V. V. Petrovsky), Arctic Coast Saxifrage – (Addition – N). Figure 5.

Saxifraga rivularis is a circumpolar species with two subspecies found on Arctic seashores on silt and clay, sloping soil banks. The subspecies *rivularis* is a plant of snowbeds, damp tundra, bird-manured cliffs, springs, seepage slopes, brook margins and silty or gravelly seashores. It is Amphi-Atlantic in distribution extending from the Russian Arctic coast from West Taymyr to Baffin Island south to the Gaspé Peninsula, Quebec and White Mountains, New Hampshire (Jørgensen et al. 2006).

The subspecies *arctolitoralis* is Amphi-Beringian found from the northern coast of Chukotka and Wrangel Island, east to the Arctic Pacific from the Seward Peninsula to Barrow (Jørgensen et al. 2006). The discovery of this taxon in Yukon extends its distribution farther eastward to Shingle Point. No plants were seen east of Running River.

Specimens examined: Shingle Point area, mainland opposite, common on moist brackish areas occasionally flooded by high tides, growing in seepage areas with *Puccinellia phryganodes* and *Ranunculus pygmaeus*, 68.985°N 137.420°W, 2', B. A. Bennett, T.



FIGURE 4. *Rumex beringensis* photo credit B. Bennett.

McIntosh, J. Line, J. Staniforth & D. C. Gordon 05-0782, 25 July 2005 (O); King Point, uncommon in depressions in slightly brackish flats on the southeast side of lagoon in sand with *Matricaria ambigua*, *Ranunculus pygmaeus* and *Minuartia rubella*, 69.094°N 137.968°W, 2', B. A. Bennett, T. McIntosh, J. Line, J. Staniforth and D. C. Gordon 05-0866, 27 July 2005 (ALA, O); Ivvavik National Park, Ptarmigan Bay, common along shore of bay in muddy banks, 69.464°N 139.066°W, 5', B. A. Bennett, C. L. Parker, T. McIntosh, P. Secombe-Hett and M. Joe 05-1050, 9 August 2005 (O); Kay Point, common at base of silty south-west facing bank along broad slow stream flowing into lake with *Antennaria friesiana* and *Ranunculus pygmaeus*, 69.273°N 138.378°N, 10', B. A. Bennett & T. McIntosh 05-1131, 2 August 2005 (CAN, O) (all collections confirmed by R. Elven 2007).

Saxifraga rivularis ssp. *arctolitoralis* may be separated from ssp. *rivularis* as follows (Jørgensen et al. 2006):

- 1a. Hypanthium sparsely covered by short glandular hairs (0.15-0.25 mm) with non-coloured or weakly coloured

partition walls. The whole plant green or with some purple pigmentation in the inflorescence. Flowering stem long, 27-70 mm, glabrous or sparsely hairy.

- ssp. *rivularis*
 1b. Hypanthium densely covered by long glandular hairs (0.3-0.6 mm) with purple partition walls. The whole plant or at least the inflorescence purple-pigmented. Flowering stem short, 17-30 mm, sparsely to densely hairy. ssp. *arctolitoralis*

ROSACEAE Rose Family

Potentilla crebridens Juz. ssp. *hemicryophila* Juz., Beringian Cinquefoil – (Addition – N, Canada also)

Cody (1996) misapplied the long accepted name of *Potentilla nivea* L. to plants belonging to *P. arenosa* (Turcz.) Juz. (*P. hookeriana* Lehm.). Plants with floccose petioles that “had been understood as *P. nivea* were now given the very unfamiliar name *P. prostrata*” (Elven and Murray 2008b). “Yurtsev (1984) decided that the Beringian plants with floccose petioles actually consisted of two species: *P. nivea* s. str. and *P. crebridens* Juz., and within that latter species he recognized a northern subsp. *hemicryophila* Jurtz. This subspecies was reported by him as widespread in Alaska, together with *P. nivea*.” (Elven and Murray 2008b). The collections cited below represent a previously unreported species for both Yukon and Canada. Plants referred to as *P. prostrata* should be reviewed.

Specimens examined: Bonnet Plume Drainage, Quartet Lake, occasional on xeric platy argillite 30° west-facing slopes and rock outcrops, poorly vegetated with *Dryas alaskensis*, *Minuartia arctica*, *Saxifraga reflexa*, *Oxytropis viscida*, *Phlox alaskensis*, *Woodsia glabella*, *Artemisia alaskana*, *Bupleurum americanum*, *Calamagrostis purpurascens* and *Dryopteris fragrans*, 63.119°N 134.421°W, B. A. Bennett, P. Seccombe-Hett, S. Thompson & D. Mahoney 05-0395, 8 July 2005 (ALA, DAO) (confirmed by D. F. Murray); Asi Keyi SMA, Wolverine Plateau “Red Rock”, Rarely found growing in 2" loose scree at bottom of slope south-facing slope above ephemeral river, 61°32'13.8"N 140°11'57.6"W, 1593m, B. A. Bennett & P. Seccombe-Hett 04-1060, July 25, 2004 (ALA, CAN, DAO) (identified by C. L. Parker, March 2006, confirmed by D. F. Murray) Ivvavik National Park, dry calcareous heath, 69.41°N 139.63°W, R. Elven 2269/99, 04 August, 1999 (ALA); Ivvavik National Park, Sheep Creek drainage, Parks Canada base camp. Common on open soil with *Zygadenus elegans*, *Salix glauca*, *Potentilla fruticosa*, *P. subgorodkovii* and *Dryas integrifolia*, south-facing slope on upper bench. 69.16109°N 140.15515°W, 241 m, B. A. Bennett, 08-665, 14 July, 2008 (CAN, ALA); Ivvavik National Park, Sheep Creek drainage, Uncommon on argillite bedrock outcrop dominated by *Dryas alaskensis*, *Cassiope tetragona*, *Vaccinium vitis-idaea*, *Saxifraga bronchialis*, *Saxifraga tricuspidata*, *Lupinus arcticus*, *Anemone multiceps* and *Salix glauca*. NE-facing 30° slope. Growing with *P. villosula*, 69.15971°N 140.20885°W, 472 m, B. A. Bennett, S.



FIGURE 5. *Saxifraga rivularis* ssp. *arctolitoralis* photo credit B. Bennett.

Wolfe & S. McLeod, 08-467, 15 July, 2008, (ALA); Ivvavik National Park, Malcolm River, common on *Dryas/Hedysarum* stable alluvial river terrace, 69.2897°N 140.47318°W, 446 m, B. A. Bennett & S. Wolfe, 08-362, 22 July, 2008, (ALA); Ivvavik National Park, Mount Coneybeare, locally common on *Dryas* heath tundra in shaley saddle <10% *Artemisia glomerata/Dianthus repens/Smelowskia media/Dryas alaskensis/Salix phlebophylla/Potentilla nivea*, 69.47323°N 140.06461°W, 464 m, B. A. Bennett & S. Wolfe, 08-454, 26 July, 2008 (ALA); Ivvavik National Park, Babbage River drainage, alpine slope, 68.78558°N 138.8115°W, 341m, B. A. Bennett, I. Olthof, R. Fraser & G. Brooks, 08-293, 27 July, 2008 (ALA).

Potentilla crebridens can be separated from other members of the *Niveae* section in Yukon as follows (from Elven and Murray, 2008b):

- 1a. Petioles with short tomentum of floccose hairs; central leaflet not distinctly stipitate
- 2a. Epicalyx bractlets elliptic or lanceolate, nearly as broad as sepals; styles with several distinct basal papillae; leaflets not overlapping, central leaflet with 3–5 well separated teeth per side, upper surface not densely hairy (green), base cuneata *P. nivea*
- 2b. Epicalyx bractlets linear, much narrower than sepals; styles with few basal papillae; leaflets overlapping, central leaflet with 4–8 approximate teeth per side,

upper surface mostly densely hairy (gray), base broadly cuneate

..... *P. crebridens* subsp. *hemicyphila*

- 1b. Petioles without floccose hairs, with upper layer of long straight verrucose (50× magnification) hairs; central leaflet distinctly stipitate.

..... *P. arenosa* (*P. hookeriana*)

Prunus padus L., Maytree or European Bird Cherry – (Addition – I). Figure 6.

This is a widespread cultivated species throughout Yukon in populated areas. Individual trees are known to be in excess of 70 years old. Several seedlings have been found over the past several years and the plant has been seen naturalized and producing fruit. In addition to the locations cited below, many small plants several years old have also been seen in natural areas around Whitehorse including Bert Law Park and on the Yukon College campus.

Specimens examined: Found in *Picea glauca* forest at base of bluff at rest area 2-3 km south of Carmacks. *B. A. Bennett, R. Elven & H. Solstad 03-1303*, 25 August, 2003 (DAO); Kishwoot Island, Whitehorse, rare, only one shrub seen 4 m tall with *Salix scouleri-ana*, *Alnus incana*, *Ribes hudsonianum* and *Rubus acaulis*, 60.7317°N 135.065°W, *B. A. Bennett & R.S. Mulder 06-034*, 3 July, 2006 (DAO).

Prunus padus has white flowers and black fruits in elongate terminal racemes similar to the native *P. virginiana* from which it can be separated as follows:

- 1a. Calyx-tube and hypanthium pubescent within, petals 6-10 mm, stone sculptured. *P. padus*
 1b. Calyx tube and hypanthium glabrous within, petals 2.5-4 mm, stone smooth. *P. virginiana*

FABACEAE Pea Family

Medicago lupulina L., Black Medick – (Addition – I)

Cody (1996) suggested that this introduced species should be expected to be found about townsites.

Specimen examined: North Klondike Highway, km 678, Dempster Corner Services, where it was rare on disturbed ground beside car washing station, 63.991°N 138.750°W, 433 m, *B. A. Bennett & R. S. Mulder 07-229*, 30 July 2007 (DAO). *Medicago lupulina* should be added to the Yukon flora.

ACERACEAE Maple Family

Acer negundo L., Manitoba or Ash-leaf Maple – (Addition – I)

This species is native to North America but introduced to Yukon. It is a common cultivated plant in communities, where it has occasionally become naturalized. It has previously been known from Northwest Territories (Cody, 1961) and from northern British Columbia as least as far north as Chetwynd (Klinkenberg 2009); however, it has not been reported from Alaska (Carlson and Shepherd 2007; University of Alaska 2009). It has not yet been found in undisturbed woodlands.



FIGURE 6. *Prunus padus* photo credit B. Bennett.

Specimen examined: Cultivated but self-seeding in the yard and surrounding alley, Whitehorse, Steele Street, 60°43'11"N 135°03'35"W, 2063', *B. A. Bennett 03-0018*, 27 May 2003. (BABY).

BALSAMINACEAE Touch-me-not Family

Impatiens noli-tangere L., Western Touch-me-not – (Addition – N). Figure 7.

Cody et al. (2000) cited a specimen collected from a roadside ditch west of bridge, Labiche River (*B. A. Bennett 98-285*, 15 June 1998) as *Impatiens ?capensis*. This specimen has now been revised to *I. ? noli-tangere* by P. Zika (WTU). *Impatiens* produces two forms of flowers, cleistogamous (obligate self-pollinating flowers) and outcrossing flowers. Cleistogamous flowers are produced first and allow these annual plants to reproduce. The larger outcrossing flowers are required to positively identify the plant to species. Several collections have been made that have cleistogamous flowers and mature fruit but none have been collected with outcrossing flowers. As the identity of this species still remains uncertain, additional collections are required.

Specimens examined (likely referable to *I. noli-tangere*): Labiche, Lower Valley, in rotting vegetation in lee of downed log with *Circaea alpina* and *Viola selkirkii*, *Matteuccia struthiopteris* in surrounding area, 60.121°N 124.046°W, 368m, *B. A. Bennett & L. Schroeder 04-0702*, 14 July 2004 (ALA, DAO),

WTU); Labiche River boggy *Potentilla palustris* edge of beaver pond, 60.65°N 124.02°W, B. A. Bennett 95268.1, June 17, 1995 (DAO); Labiche River west of bridge, roadside ditch. 60°04'45"N 124°02'09"W, 1200', B. A. Bennett, R. Rosie & J. Staniforth 98-285, 15 June 1998 (DAO) (identified by P. Zika WTU); east of Labiche River, locally abundant in silty soil in disturbed site along pipeline right-of way with *Osmorhiza depauperata*, *Rubus idaeus*, *Rosa acicularis*, *Mentha arvensis*, *Taraxacum officinale*, *Aralia nudicaulis* and *Bromus inermis*. Also common in surrounding open riparian *Picea glauca* / *Betula papyrifera* forest growing in shaded areas with *Circaea alpina*, 60.145°N 124.042°W, 363 m, B. A. Bennett, L. Mennell, V. Chisholm & M. Keeler 04-0533, 12 July 2004 (ALA, DAO, WTU) (identified by P. Zika WTU).

These two species can be separated as follows (as suggested by P. Zika, see also Zika 2009):

- 1a. Gradual concave taper to spur; floral tube spots often dorsal, sparse. *I. noli-tangere*
- 1b. Abrupt and convex taper to spur; floral tube spots mostly ventral, often dense near throat. . . . *I. capensis*

Impatiens capensis Meerb., Spotted Touch-Me-Not – (Deletion – N)

The specimen cited by Cody et al. (2000) has been revised (see above).

ELATINACEAE Waterwort Family

Elatine triandra Schk., Eurasian Waterwort – (Deletion – N)

This species was reported based on a single collection from the Lower Blow River Delta (Cody 1994). The specimen has been revised to *Callitriche hermaphroditica* L. (M. Garneau QFA 2004).

ELAEAGNACEAE Oleaster Family

Hippophae rhamnoides L., Sea-Buckthorn – (Addition – I)

This species is a garden ornamental not commonly found in the territory. It has however been found to be capable of producing viable seed and colonizing disturbed areas. It has not yet been found in undisturbed natural areas.

Specimen examined: Whitehorse, Cowley Creek Subdivision, garden escape, selfing possibly by rhizomes, 60°35.45'N 134°53.72'W, 2350', B. A. Bennett & R. S. Mulder 07-344, 18 August 2007.

VIOLACEAE Violet Family

Viola tricolor L., Johnny-jump-up – (Addition – I)

This species is a garden ornamental commonly found in Whitehorse that local people report has been found naturalized and spreading for many years. It has been found to be capable of producing viable seed and colonizing disturbed areas. It has not yet been found in undisturbed natural areas. This new introduced species



Impatiens noli-tangere

FIGURE 7. *Impatiens noli-tangere* illustration by J. R. Janish courtesy of the University of the Washington Press.

is widespread in Canada and has been reported from every jurisdiction except Labrador and Nunavut (Kartesz, 1999). It also occurs in Alaska (ALA).

Specimens examined: Whitehorse, Cowley Creek Subdivision, garden escape, 60.59031°N 134.89626°W, 723 m, B. A. Bennett & R. S. Mulder 08-663, 1 August, 2008. Whitehorse, Yukon Government Building, garden escape, 60.71658°N 135.04794°W, 634 m, B. A. Bennett & R. S. Mulder 09-001, 25 May, 2009.

Viola tricolor has larger petals (at least 3 mm longer than the sepals) than *Viola arvensis* Murray, the other widespread introduced (in North America) violet with pinnate and leafy stipules. The former can be separated from other members of the genus in Yukon by the following characters (adapted from Douglas et al., 2000):

- 1a. Plants annual, with leafy stems bearing large, deeply lobed leaf-like stipules *V. tricolor*

- 1b. Plants perennials, lacking leafy stems or the stems not bearing large and deeply lobed leaf-like stipules *Viola* spp.

LAMIACEAE Mint Family

Lamium amplexicaule L., Giraffehead – (Addition – I). Figure 8.

This introduced species is found throughout North America except Alaska and Nunavut.

Specimen examined: Collected at the Whitehorse International Airport, in cobbles outside entrance, weedy, growing amongst wood chips in flower bed with *Dasiphora fruticosa*, *Stellaria media* and *Crepis tectorum*. Only place seen, 15 plants counted. Introduced. 60.714°N 135.076°W, 705 m, B. A. Bennett & S. Green 07-301, 21 August 2007 (DAO). Found again at the same site in 2008. It should be added to the Yukon flora.

Lamium can be separated from other members of Lamiaceae in Yukon with the combination of characters as follows (adapted from Douglas et al. 1999):

- 1a. Plants annual, corolla more or less 2-lipped, stamens 4, inflorescences axillary or appearing terminal, calyx teeth 5, north hooked at the tips. 2
- 2a. Stems glabrous to inconspicuously hairy. ... *Lamium*
- 2b. Stems bristly hairy with red or yellow gland-tipped hairs. *Galeopsis*

SCROPHULARIACEAE Figwort Family

Linaria dalmatica (L.) P. Mill. (*L. genitifolia* (L.) P. Mill. ssp. *dalmatica* (L.) Maire & Petitmengin), Dalmatian Toadflax (Addition – I). Figure 9.

Two plants found, one growing nearly four feet tall with old stalks of previous season still attached was found on the Alaska Highway one kilometer west of Spencer Creek, on a steep gravel embankment, 60.141°N 130.231°W, B. A. Bennett, R. Rosie & L. Schroeder 04-1271, 9 July 2004 (ALA, DAO). The plants were removed and a search of the site in 2007 found no sign of this potential invasive plant remaining.

Linaria dalmatica can be separated from the *Linaria vulgaris* as follows (adapted from Douglas et al. 2000):

- 1a. Leaves linear, 1-5 mm wide, not clasping at the base. *L. vulgaris*
- 1b. Leaves egg or lance-egg shaped, 10-20 mm wide, clasping at the base. *L. dalmatica*

RUBIACEAE Madder Family

Galium palustre L., Marsh Bedstraw – (Deletion – N)

This species was reported based on a single collection from near Sidney Creek on the South Canol Road (Porsild, 1951). The specimen (Number.10855) has been revised to *Galium trifidum* L. by B. A. Bennett with the following comments “stems scabrous, pedicels more scabrous than in *Galium palustre*; anthers not red.” (CAN).

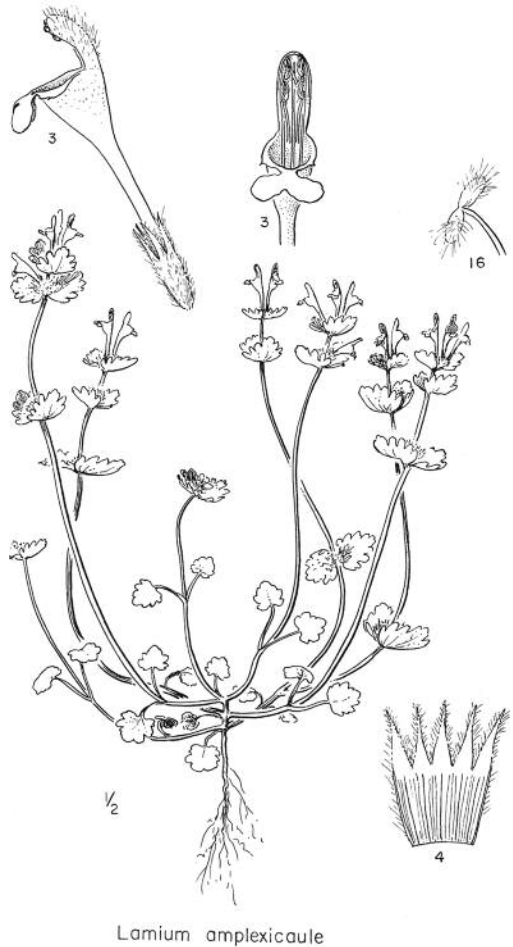


FIGURE 8. *Lamium amplexicaule* illustration by J. R. Janish courtesy of the University of the Washington Press.

VALERIANACEAE Valerian Family

Valeriana officinalis L., Garden Valerian – (Addition – I)

This species is commonly sold in the horticultural trade.

Specimen examined: Whitehorse, Cowley Creek Subdivision, garden plant self seeding and spreading into undisturbed native habitat, 60°35.45'N 134°53.72'W, 2350', B. A. Bennett & R. S. Mulder 07-285, 18 August 2007 (DAO).

Valeriana officinale may be separated from the native members of this genus by having lower leaves pinnately divided or compound with 8-12 leaflets, the terminal ones not much larger than the others.

ASTERACEAE Aster Family

Artemisia arctica ssp. *comata* (Rydb.) Hultén, (*A. norvegica* var. *comata* (Rydb.) Welsh; *A. comata* Rydb.,

A. n. ssp. *saxatilis sensu* Cody 1996 *pro parte*), Boreal Sagebrush – (Addition – N, two taxa previously treated as one)

Hultén (1968) recognized *Artemisia arctica* subsp. *comata* as “a well-marked arctic race and shows its distribution throughout northern Alaska and Yukon including the north slope and northern Richardson Mountains. All the collections cited below fall within Hultén’s estimated distribution. Many botanists over the years have accepted the tetraploid ($2n=36$) *A. comata* as a separate entity from the diploid ($2n=18$) *A. arctica*. Shultz (2006) discusses the complexity in the *A. norvegica* complex, and states that “if separated as distinct species then *A. arctica* is the name for the North American plants.” As the taxon is distinctive in the field, even where subsp. *arctica* and subsp. *comata* grow together, it is recommended that this taxon be added to the Yukon flora. Being locally common where found, it does not however represent a species of conservation concern.

Specimens examined (ssp. *comata*): Malcolm River valley, braided cobble of river bed, 69°17'N 140°52'W, W. J. Cody 27521, 10 July 1980 (DAO, US) (det. B. A. Bennett); Arctic coastal plain near Firth River, sand dune area, 69°10'N 139°20'W, L. R. Hettinger 285, 17 July 1972 (ALTA) (det. W. J. Cody); Firth River, upland tundra not far from coast, 69°30'N 139°20'W, E. H. McEwen 213, 6 August, 1953 (CAN) (det. A. E. Porsild); Komakuk Beach, between runway and Beaufort Sea on a strip of narrow land. Site 16, in tundra beside sea dominated by sterile grass, probably *Poa arctica*, 69°37'N 140°07'W, 5 m, S. G. Aiken 88-087, 6 July 1988 (CAN) (det. A. W. Dugal); Arctic coast west of Mackenzie River Delta between King Pt. and Kay Pt., 69°12'N 138°30'W, A. E. Porsild 7199, 23-25 July 1934 (CAN) (det. D. F. Brunton); Clarence Lagoon, 69°37'N 140°46'W, 758', P. F. Cooper, 08 July 1979 (CAN) (det. J. M. Gillett); Upper Malcolm River, site XIII, 69°10'N 140°58'W, 1253', P. F. Cooper, 18 July 1979 (CAN) (det. B. A. Bennett); Ivvavik National Park, Clarence Lagoon, common on moist tundra on sandy windswept low beach head with open linear frost boils and low shrub/herbaceous meadows with dry and wet areas dominated by *Salix arctica*, *S. rotundifolia*, *Carex consimilis*, *C. maritima*, *Arctagrostis latifolia*, *Oxytropis maydelliana*, no ericaceous shrub, 69.6313°N 140.8380°W, 15', B. A. Bennett, C. L. Parker, T. McIntosh, P. Seccombe-Hett and M. Joe 05-1213, August 6, 2005 (ALA, DAO); Ivvavik National Park, Komakuk DEW Line station, common to abundant in sandy and gravelly areas throughout, one of the codominants along the shore and along the airstrip with *Senecio congestus*, *Carex aquatilis* and *Dupontia fisheri*, 69.5979°N 140.1782°W, 15', B. A. Bennett, C. L. Parker, T. McIntosh, P. Seccombe-Hett and M. Joe 05-0637, August 5, 2005 (DAO, UBC, UVIC); Ivvavik National Park, Komakuk River, common in gravel and sand along beach and throughout the mouth of the river one of the codominants growing with



FIGURE 9. *Linaria dalmatica* illustration by J. R. Janish courtesy of the University of the Washington Press.

Cochlearia officinalis and *Salix ovalifolia*, 69.6027°N 140.1319°W, 2', B. A. Bennett, C. L. Parker, T. McIntosh, P. Seccombe-Hett and M. Joe 05-0754, August 8, 2005 (DAO); Ivvavik National Park, Malcolm River, barrier beach at mouth of, common on beach sand on ocean side of lagoon, less than 5% vegetated open beach sand, 69°36.845'N 139°55.512'W, 5', B. A. Bennett, C. L. Parker, T. McIntosh, P. Seccombe-Hett and M. Joe 05-0682, August 5, 2005 (DAO, UBC); Ivvavik National Park, Nuneluk Spit, mouth of the Firth River, common on open gravel of spit on the protected side, and along airstrip with *Honckenya peploides*, *Artemisia borealis* ssp. *richardsoniana*, *Leymus mollis* and *Cochlearia officinalis*, 68.893°N 136.4295°W, 7', B. A. Bennett, C. L. Parker, T. McIntosh, P. Seccombe-Hett and M. Joe 05-0746, August 8, 2005 (DAO); Ivvavik National Park, Ptarmigan Bay, common in moist sand at edge of beach and tundra, forming large patches with *Saxifraga rivularis*, *Stellaria longipes*, *Draba lactea* and *Trisetum spicatum*, 69.4832°N 139.0817°W, 5', B. A. Bennett, C. L. Parker, T. McIntosh, P. Seccombe-Hett and M. Joe 05-0711, August 4, 2005 (ALA, DAO, V); King Point, common on moist areas of tundra dominated by *Salix richardsonii*, *S. pulchra*, *Petasites frigidus*, *Rubus chamaemorus*, 69.0942°N 137.9679°W, 2', B. A. Bennett, T. McIntosh, J. Line, J. Staniforth and D.C. Gordon 05-0875, July 27, 2005 (BABY).

Artemisia arctica subsp. *comata* can be separated from subsp. *arctica* as follows (adapted from Hultén 1968):

- 1a. Inflorescence open, glabrata or sparingly villous; lower peduncles elongate; leaves with narrow rachis. *A. arctica* subsp. *arctica* (*A. norvegica* ssp. *saxatilis*)
- 1b. Inflorescence lanate, spikelike; leaves with broad rachis, involucrem lanate, leaves noticeably fleshy. *A. arctica* subsp. *comata*

Crepis capillaris (L.) Wallr., Smooth Hawksbeard – (Addition – I)

This introduced European plant is not known to persist in the Territory; however collections of *C. tectorum* should be reviewed more closely. It has been reported from central Alaska and similar latitudes in northern Europe and seems therefore potentially capable of persisting. Hultén (1968) reports a single collection from central Alaska and another is known from the vicinity of Wrangell, Alaska (University of Alaska, 2009). In British Columbia it has been reported from the vicinity of Dease Lake and on the Alaska Highway between Muncho and Summit lakes (Klinkenberg 2009). Recent searches have not resulted in the discovery of any more plants at the single locality cited below.

Specimen examined: Beaver Creek, Mile 1202, ditch along highway, damp rocky soil, 62°23'N 140°53'W. A. Roik 98-20, 29 June 1998. (V #177921 – photocopy DAO) (determined by A. Ceska).

It can be separated from the common introduced roadside weed *Crepis tectorum* as follows (from Douglas et al. 1998a):

- 1a. Inner involucre bracts hairy within; mature achenes purplish-brown. *C. tectorum*
- 1b. Inner involucre bracts glabrous within; mature achenes tawny or pale brown. *C. capillaris*

†*Erigeron ochroleucus* Nutt., Buff Fleabane (Addition – N). Figure 10.

Nesom and Murray (2004) reported this species as new to Yukon based on the first collection listed below from Rampart House (Porcupine River) on the Yukon-Alaska border. The occurrence of this species in northern Alaska and Yukon represents a disjunct population over 2800 km from its' closest localities in southern Alberta and British Columbia. The other collections represent an additional range extension of 190 km to the north of the Porcupine River and the first to be found in Ivvavik National Park. Nesom and Murray (2004) recognize that though very restricted in Alaska, it is nevertheless common along that section of the Porcupine River. This is not the case in Yukon where the populations are far more restricted.

Specimens examined: Porcupine River, Rampart House on the Yukon-Alaska border, C.C. Loan 568b, 11 July 1951 (DAO); Firth River, west side opposite Muskeg Creek, gravelly limestone scree, 68°52'N 140°30'W, 700 m, J. Pojar sn, July 16, 2007 (DAO); Firth River, west side opposite Wolf Creek, scree slopes below shaly ridge, windswept, linear leaves, corollas whitish to lavender, 69°06'N 140°15'W, 1000 m, J. Pojar & R. Pojar sn, July 20, 2007 (DAO) (confirmed by D. F. Murray & G. L. Nesom); Ivvavik National Park, Sheep Creek drainage, Parks Canada base camp. Locally common in open silty soil is gravelly area on upper ridge by rock outcrops with Dall sheep enriched soils. Growing on *Dryas crenulata* tundra with *Carex rupestris*, *Pseudoroegneria spicata* and *Potentilla uniflora*. S-facing 10° slope. 69.16231°N 140.16167°W, 300 m, B. A. Bennett, 08-089, 16 July 2008 (ALA, CAN).

Erigeron ochroleucus can be separated from most other members of the genus by a combination of the following characters. Basal unclasping leaves linear to linear-oblancheolate, stems unbranched, involucre densely hirsute-villous, densely and minutely glandular. Flower ligules mostly white, less commonly bluish. With its narrowly oblancheolate leaves, solitary heads, and conspicuous ligules it resembles *E. hyperboreus*, *E. caespitosus* and *E. yukonensis*. It can be separated from these as follows (based on Nesom 2006):

- 1a. Plants with prominent taproots (taproots usually collected because rhizomes and fibrous roots are not well developed). 2
- 2a. leaves glabrous or glabrate abaxially, linear to linear oblancheolate, 1-4 (-5) mm wide. *E. ochroleucus*

- 2b. leaves hairy on both surfaces, narrowly oblanceolate to spatulate, 2-15 mm wide. *E. caespitosus*
- 1b. Plants fibrous-rooted (taproots poorly developed and or not collected due to extensive rhizome or caudex system). 3
- 3a. Hairs of phyllaries with black or dark purple cross walls. *E. hyperboreus*
- 3b. Hairs of phyllaries with clear cross walls. *E. yukonenis*

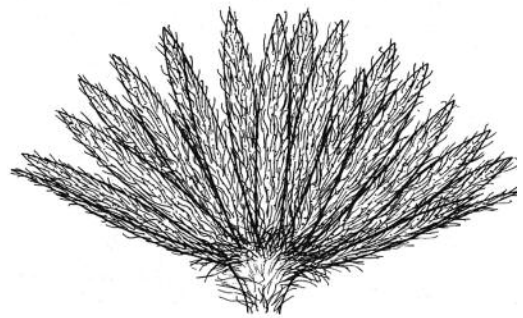
†*Saussurea nuda* Ledeb. (*S. densa* (Rydb.) Hook., *S. nuda* ssp. *densa* (Hook.) G. W. Douglas, *S. nuda* var. *densa* (Hook.) Hultén, Dwarf Saw-wort – (Addition – N). Figure 11.

North American populations of *Saussurea nuda* have been segregated as var. *nuda* from coastal Alaska and var. *densa* including the dwarfed alpine plants from the northern Rockies of southern British Columbia and Alberta. Neither of these varieties have been retained in the most recent taxonomic treatment (Keil 2006). The collections reported here are located between the two populations but grow in mountainous alpine habitats. The collections reported below are all from northwest Yukon, however additional populations have been seen and collected by the first author at Chandler Lake, Gates of the Arctic National Park, Alaska, and photographed from the Richardson Mountains (Pojar 2008 personal communication). *Saussurea nuda* should also be looked for in southwest Yukon.

Specimens examined: Keele Range, Common on limestone talus scree upper and midslope 30° WSW-facing, dry to xeric, growing with *Carex misandra*, *Dryas octopetala*, *Silene soczavana*, *Saxifraga oppositifolia*, *Potentilla uniflora*, and *Smelowskia borealis*. 15% vegetated. 1162 m, B. A. Bennett, J. Line, C. A. Kennedy & L. Mennell, 07-090, 66.95543°N 140.81625°W, June 30, 2007, (BABY OBI) (Confirmed by D. J. Keil, Oct. 2008); Ivvavik National Park, Malcolm River drainage Alpine slope, 550-840 m, B. A. Bennett & D. McLennan 08-366, 69.27°N 140.6°W, July 23, 2008 (BABY); Ivvavik National Park, Upper Malcolm River, Locally common 35° N-facing slope, *Salix alaxensis* wet drainage slope, nivean, dominated by *Boykinia richardsonii*, *Dryas alaskensis* and *Geum glaciale* and throughout local talus slopes. 962 m, B. A. Bennett, S. Wolfe & S. McLeod 08-440, 69.20985°N 140.46008°W, July 21, 2008. (CAN, OBI) (Confirmed by D. J. Keil, October 2008). Though this species is likely more widespread than currently known, and its known populations are remote and in some cases protected within National Parks, it is still a rare element of the Yukon flora.

Saussurea xtschuktschorum Lipschitz is apparently a hybrid between *S. angustifolia* and *S. nuda* (Keil 2006) and may be expected in Yukon. *Saussurea nuda* is most similar to *S. angustifolia* from which it can be separated as follows: (adapted from Keil 2006)

- 1a. Phyllaries subequal, linear to lanceolata, receptacles naked; heads 2-10+ in open or crowded corymbiform arrays. *S. nuda*



3.2

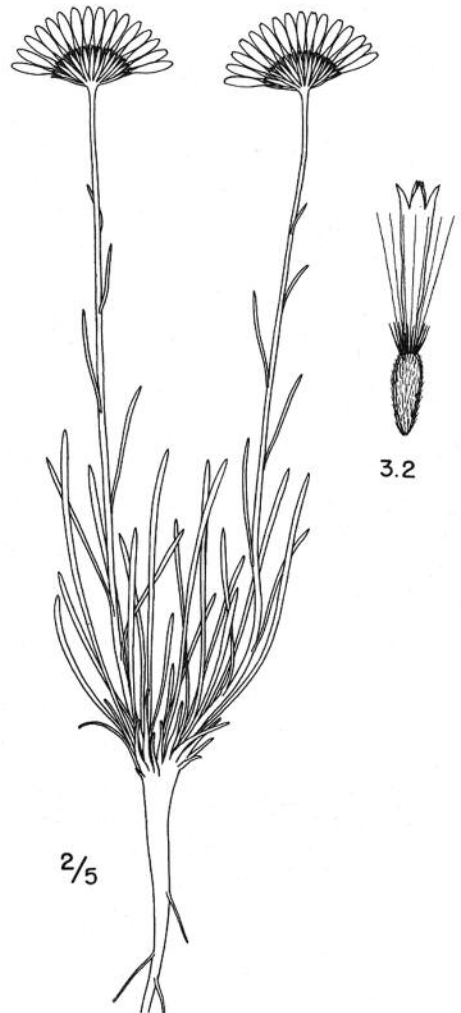


FIGURE 10. *Erigeron ochroleucus* illustration by J. R. Janish courtesy of the University of the Washington Press.



FIGURE 11. *Saussurea nuda* photo credit B. Bennett.

- 1b. Phyllaries strongly unequal, the outer ovate to lanceolata, conspicuously shorter than inner; receptacles scaly; heads 3-20+ in corymbiform to subcapitate arrays. *S. angustifolia*

Sonchus oleraceus L., Common Sow-thistle – (Deletion – I)

This was reported in Cody et al. (2000) from Beaver River Hot Springs B. A. Bennett 98-334. However, the collection has been revised to *Lactuca biennis*. Additionally *S. oleraceus* ssp. *uliginosus* was mapped in the addendum of Cody (2000) in the Labiche Valley, southeast Yukon. This should correctly read *S. arvensis* ssp. *uliginosus*.

Symphyotrichum laeve (L.) A. & D. Löve var. *geyeri* (Gray) Nesom (*Aster laevis* L. ssp. *geyeri* (A.Gray) Piper), Smooth Blue American-Aster – (Deletion – N)

The specimen cited by Cody (1994) has been revised (see below).

†*Symphyotrichum subspicatum* (Nees) Nesom var. *subspicatum* (*Aster subspicatus* Nees), Leafy-bract American-Aster – (Addition – N)

Aster laevis was first reported in Cody (1994). A supporting specimen was collected at Marsh Lake, 60°31'N 134°20'W, S. Harris sn (UAC – photocopy DAO). This specimen has since been revised to *Symphyotrichum subspicatum*. An additional collection identified as *A. laevis* was reported from the edge of willows on west side of Haines Road, 25 km south of Haines Junction, R. Whitcus 1654, 5 August 1979 (ALTA) was revised to *Solidago multiradiata* Aiton by B. A. Bennett with the note “unusually tall likely due to growing in the shade of the willows.”

†*Taraxacum hyparcticum* Dalst., Northern Dandelion – (Addition – N)

This species is known both to the west in scattered localities in Alaska and to the east throughout the Northwest Territories and Nunavut; the nearest known

locality being in the vicinity of Inuvik 350 km to the southeast.

Specimens examined: Ptarmigan Bay, Ivvavik National Park, where it was rare, only place found on 10° north-facing slope, 50% gravelly sandy silt on long linear frost boils with *Taraxacum alaskanum*, *Salix arctica*, *Primula borealis* and *Trisetum spicatum*. Approximately 80 plants seen flowering, many more not flowering, flowers appear pinkish with the backs with a bluish tinge which may only be visible to most under ultra-violet light, 69.488°N 139.087°W, 20 m, B. A. Bennett & C. L. Parker 05-0723, 5 August 2005 (ALA, DAO, MT) (determined by C. L. Parker). It can be distinguished from other species of *Taraxacum* in Yukon as follows (adapted from Brouillet 2006):

- 1a. Calyculus bractlets horned. 2
 2a. Corollas cream-coloured to white or pink distally, outer abaxially pinkish-striped, low growing 5-12 cm, flowers comparatively large and open. *T. hyparcticum*
 2b. Corollas yellow, drying cream to whitish, plants taller 6-50 cm. *T. ceratophorum*

Acknowledgments

We thank: Jacques Cayouette for identification of *Carex mackenziei* and confirmation of *Carex* × *flavicans*; Adolf Ceska for identification of *Carex xerantica* and *Crepis capillaris*; Leslie Cody for the many hours entering this information on her computer; Laurie Consaul for confirmation of *Puccinellia tenella*; Stephen Darbyshire for review of *Agrostis filiculmis*; Reidar Elven for confirmation of *Silene soczavana* var. *macrosperma* and *Saxifraga rivularis* ssp. *arctolitoralis*; Don Farrar and Mary Stensvold for the identification of *Botrychium* specimens; Marc Garneau for revision of *Elatine triandra*; David F. Murray for the identification of *Potentilla crebridens* and *Silene soczavana* var. *macrosperma*; Terry McIntosh for reviewing an earlier draft of this paper. Michael J. Oldham for identification of *Carex rariflora* var. *androgyna*; Carolyn L. Parker for confirmation of *Carex microchaeta* ssp. *nesophila* and identification of *Taraxacum hyparcticum*; Paul Petersen and Beata Paszko for the confirmation of *Calamagrostis holmii*; A. A. (Tony) Reznicek for identification of several species of *Carex*; Charles J. Sheviak for identification of *Plantanthera (Limnorchis) huronensis*; and Peter Zika for advice on identification of *Impatiens*.

Documents Cited (marked * in text)

- COSEWIC. 2005. Committee on the Status of Endangered Wildlife in Canada. <http://www.cosewic.gc.ca>
 Farrar, D. R. 2003. Key to western species of moonwort ferns (*Botrychium* subgenus *Botrychium*). Unpublished key.

- Farrar, D. R.** 2006. Moonwort (*Botrychium*) Systematics, Ada Hayden Herbarium. www.public.iastate.edu/~herbarium/botrychium.html
- Reznicek, A. A.** 2003. Alaska *Eleocharis* key. Alaska Cyperaceae Workshop. Fairbanks, Alaska. Unpublished key.
- Stensvold, M., and D. R. Farrar.** 2008. Moonwort fern surveys in the Wrangell-St. Elias Mountains and genetic analysis with an emphasis on *Botrychium tunux* & *Botrychium lineare*. Unpublished report, US Fish and Wildlife Service, Anchorage, Alaska. 24 pages.
- Yukon Conservation Data Centre.** 2009. NatureServe Explorer: An online encyclopedia of the (web application). Version 6.2. NatureServe, Arlington, Virginia. <http://www.natureserve.org/explorer>
- University of Alaska, Museum of the North.** 2009. Arctos database. <http://arctos.database.museum/SpecimenResults.cfm>. Accessed 13 December 2009. Fairbanks, Alaska
- ### Literature Cited
- Ball, P. W.** 2002. 26t. *Carex* Linnaeus sect. *Limosae* Pages 416-419 in *The Flora of North America*. Volume 23. Magnoliophyta: Commelinidae [in part]: Cyperaceae. Oxford University Press, New York.
- Barkworth, M. E.** 2007. 14.26 *Deschampsia* P. Beauv. Pages 624-633 in *The Flora of North America*. Volume 24. Magnoliophyta: Commelinidae [in part]: Poaceae, part 1. *Edited by* The Flora of North America Editorial Committee. Oxford University Press, New York.
- Baum, B. R.** 2007. 14.52 *Avena* L. Pages 734-739 in *The Flora of North America*. Volume 24. Magnoliophyta: Commelinidae [in part]: Poaceae, part 1. *Edited by* the Flora of North America Editorial Committee. Oxford University Press, New York.
- Boivin, B.** 1968. *Flora of the Prairie Provinces Part II. Provancheria 3. Hierbier Louis-Marie*, Université Laval, Québec, pages 219-339.
- Brouillet, L.** 2006. 37. *Taraxacum* F. H. Wiggers, Pages. 239-252 in *The Flora of North America*. *Edited by* The Flora of North America Editorial Committee. Volume 19, Magnoliophyta: Asteridae [in part]: Asteraceae, part 1. Oxford University Press, New York.
- Carlson, M. L., and M. Shepherd.** 2007. Is the spread of non-native plants in Alaska accelerating? USDA General Technical Report. PNW-GTR-694. Pages 117-133.
- Catling, P. M.** 2005. Identification and distribution of the small white water-lilies, *Nymphaea tetragona* and *N. leiberghii*, in Northwest Territories. *Botanical Electronic News* 348: 1-2.
- Cayouette, J.** [in press]. The *Carex* flora of Quebec-Labrador north of 54°N in Sedges, uses, diversity, and systematics of the Cyperaceae. *Naczi*. *Edited by* R. F. C. and B. A. Ford. *Monographs in Systematic Botany*, Missouri Botanical Garden.
- Cayouette, J., and P. M. Catling.** 1992. Hybridization in the genus *Carex* with special reference to North America. *Botanical Review* 58: 351-438
- Cody, W. J.** 1956. New plant records for northern Alberta and southern Mackenzie District, N.W.T. *Canadian Field-Naturalist* 68(3): 110-117.
- Cody, W. J.** 1961. New plant records from the Upper Mackenzie River Valley, Mackenzie District, Northwest Territories. *Canadian Field-Naturalist* 75(2): 55-69.
- Cody, W. J.** 1994. The flora of the Yukon Territory: Additions, range extensions and comments. *Canadian Field-Naturalist* 108(4): 428-476.
- Cody, W. J.** 1996. *Flora of the Yukon Territory*. NRC Research Press, Ottawa, Ontario, Canada. 643 pages.
- Cody, W. J.** 2000. *Flora of the Yukon Territory*. Second Edition. NRC Research Press, Ottawa, Ontario, Canada. 669 pages.
- Cody, W. J., B. Bennett, and P. Caswell.** 2005. New records of Vascular Plants in the Yukon Territory VII. *Canadian Field-Naturalist* 119(3): 417-436.
- Cody, W. J., C. E. Kennedy, and B. Bennett.** 1998. New Records of Vascular Plants in the Yukon Territory. *Canadian Field-Naturalist* 112(2): 289-328.
- Cody, W. J., C. E. Kennedy, and B. Bennett.** 2000. New Records of Vascular Plants in the Yukon Territory II. *Canadian Field-Naturalist* 114(3): 417-443.
- Cody, W. J., C. E. Kennedy, and B. Bennett.** 2001. New Records of Vascular Plants in the Yukon Territory III. *Canadian Field-Naturalist* 115(2): 301-322.
- Cody, W. J., C. E. Kennedy, B. Bennett, and V. Loewen.** 2002. New Records of Vascular Plants in the Yukon Territory IV. *Canadian Field-Naturalist* 116(3): 446-474.
- Cody, W. J., C. E. Kennedy, B. Bennett, and J. Staniforth.** 2003. New Records of Vascular Plants in the Yukon Territory V. *Canadian Field-Naturalist* 117(2): 278-301.
- Cody, W. J., C. E. Kennedy, B. Bennett, and P. Caswell.** 2004. New records of Vascular Plants in the Yukon Territory VI. *Canadian Field-Naturalist* 118(4): 558-578.
- Costea, M., F. J. Tardif, and H. R. Hinds.** 2005. 30. *Polygonum* Linnaeus pages. Pages 547-571 in *The Flora of North America*. Volume 5, Magnoliophyta: Caryophyllidae, part 2. *Edited by* The Flora of North America Editorial Committee. Oxford University Press, New York.
- Douglas, G. W., G. W. Argus, H. L. Dickson, and D. F. Brunton.** 1981. The rare vascular plants of the Yukon. *Syllogeus* 28: 1-96
- Douglas, G. W., D. Meidinger, and J. Pojar.** 1999a. *Illustrated Flora of British Columbia Volume 3. Dicotyledons (Diapensiaceae through Onagraceae)*. Ministry of the Environment, Lands and Parks, British Columbia Ministry of Forests, Victoria, British Columbia. 423 pages.
- Douglas, G. W., D. Meidinger, and J. Pojar.** 1999b. *Illustrated Flora of British Columbia Volume 4. Dicotyledons (Orobanchaceae through Rubiaceae)*. Ministry of the Environment, Lands and Parks, British Columbia, Ministry of Forestry, Victoria, British Columbia. 427 pages.
- Douglas, G. W., D. Meidinger, and J. Pojar.** 2000. *Illustrated Flora of British Columbia Volume 5. Dicotyledons (Salicaceae through Zygophyllaceae)*. Ministry of the Environment, Lands and Parks, British Columbia Ministry of Forests, Victoria, British Columbia. 389 pages.
- Douglas, G. W., D. Meidinger, and J. Pojar.** 2002. *Illustrated Flora of British Columbia Volume 8. General Summary, Maps and Keys*. Ministry of the Environment, Lands and Parks, British Columbia Ministry of Forests, Victoria, British Columbia.
- Douglas, G. W., G. B. Straley, D. Meidinger, and J. Pojar.** 1998a. *Illustrated Flora of British Columbia Volume 2. Gymnosperms and Dicotyledons (Aceraceae through Asteraceae)*. Ministry of the Environment, Lands and Parks, British Columbia Ministry of Forests, Victoria, British Columbia. 436 pages.
- Douglas, G. W., G. B. Straley, D. Meidinger, and J. Pojar.** 1998b. *Illustrated Flora of British Columbia Volume 2. Dicotyledons (Balsaminaceae through Cuscutaceae)*. Ministry of the Environment, Lands and Parks, British Columbia Ministry of Forests, Victoria, British Columbia. 401 pages.

- Elven, R., and D. F. Murray.** 2008a. New combinations in the Panarctic vascular plant flora. *Journal of the Botanical Research Institute of Texas* 2(1): 433-446
- Elven, R., and D. F. Murray.** 2008b. The *Potentilla nivea* group in northwestern North America. *Botanical Electronic News*. 389. www.ou.edu/cas/botany-micro/ben
- Holmgren, P. K., and N. H. Holmgren.** 1998 onwards (continuously updated). *Index Herbariorum*. New York Botanical Garden. Available at: <http://sciweb.nybg.org/science2/IndexHerbariorum.asp>.
- Hultén, E.** 1950. *Flora of Alaska and Yukon*. X. *Lunds Universitets Ny Följd Afdelningen 2, Band 45, Nr. 1*: 1485-1902.
- Hultén, E.** 1968. *Flora of Alaska and Neighboring Territories*. Stanford University Press. Stanford, California, USA. 1008 pages.
- Jørgensen, M. H., R. Elven, A. Tribsch, T. M. Gabrielsen, B. Stedje, and C. Brochmann.** 2006. Taxonomy and evolutionary relationships in the *Saxifraga rivularis* complex. *Systematic Botany* 31(4): 702-729.
- Keil, D. J.** 2006. 15. *Saussurea* de Candolle. Pages 165-168 in *The Flora of North America*. Volume 19. Magnoliophyta: Asteridae (in part): Asteraceae, part 1. Oxford University Press, New York.
- Klinkenberg, B.** *Editor*. 2009. E-Flora BC: Electronic Atlas of the Plants of British Columbia (eflora.bc.ca). Lab for Advanced Spatial Analysis, Department of Geography, University of British Columbia, Vancouver, 13 December 2009.
- Marr, K. L., R. J. Hebda, and C. W. Greene.** 2007. 14.49 *Calamagrostis* Adans. Pages 706-732 in *Flora of North America*. Volume 24. Magnoliophyta: Commelinidae (in part): Poaceae, part 1. *Edited by the Flora of North America Editorial Committee*. Oxford University Press, New York.
- Mastroguseppe, J., P. E. Rothrock, A. C. Dibble, and A. A. Reznicek.** 2002. 26q. *Carex* Linnaeus sect. *Ovales* Kunth, Pages 332-378 in *The Flora of North America*. Volume 23. Magnoliophyta: Commelinidae (in part): Cyperaceae. *Edited by the Flora of North America Editorial Committee*. Oxford University Press, New York.
- McJannet, C. L., G. W. Argus, and W. J. Cody.** 1995. The rare vascular plants in the Northwest Territories. *Syllogeus* 73, Canadian Museum of Nature. 104 pages.
- Mitchell, W. W.** 1967. Taxonomic synopsis of *Bromus* section *Bromopsis* (Gramineae) in Alaska. *Canadian Journal of Botany* 45: 1309-1313
- Morton, J. K.** 2005. *Silene* Linnaeus. Pages 166-214 in *The Flora of North America*. Volume 5, Magnoliophyta: Caryophyllidae, part 2. *Edited by Editorial Committee the Flora of North America*. Oxford University Press, New York.
- Mosyakin, S. L.** 2005. *Rumex* Linnaeus pp. 489-533 in *The Flora of North America* Volume 5, Magnoliophyta: Caryophyllidae, part 2. *Edited by the Flora of North America Editorial Committee*. Oxford University Press, New York.
- Murray, D. F.** 1970. *Carex podocarpa* and its allies in North America. *Canadian Journal of Botany* 48(2): 313-324.
- Murray, D. F.** 1971. Notes on the alpine flora of the St. Elias Mountains. *Arctic* 24: 301-304.
- Murray, D. F.** 2002. 26t. *Carex* Linnaeus sect. *Scitae* Pages 414-416 in *Flora of North America*. Volume 23. Magnoliophyta: Commelinidae (in part): Cyperaceae. *Edited by the Flora of North America Editorial Committee*. Oxford University Press, New York.
- Nesom, G. L.** 2006. 186. *Erigeron* Linnaeus. Pages 256-348 in *The Flora of North America*, Volume 20, Magnoliophyta: Asteridae (in part), part 8: Asteraceae, part 2. *Edited by the Flora of North America Editorial Committee*. Oxford University Press, New York.
- Nesom, G. L., and D. F. Murray.** 2004. Notes on North American arctic and boreal species of *Erigeron* (Asteraceae: Astereae). *Sida* 21(1): 41-57.
- Pavlick, L. E.** 1995. *Bromus* L. Royal British Columbia Museum, Victoria. 180 pages.
- Pavlick, L. E., and L. K. Anderton.** 2007. 12.01 *Bromus* L. Pages 193-237 in *The Flora of North America* Volume 24, Magnoliophyta: Commelinidae (in part): Poaceae, part 1. *Edited by the Flora of North America Editorial Committee*. Oxford University Press, New York.
- Porsild, A. E.** 1943. Materials for a flora of the continental Northwest Territories of Canada. *Sargentia* 4. 71 pages.
- Porsild, A. E.** 1951. Botany of Southeastern Yukon Adjacent to the Canol Road. *National Museum of Canada Bulletin* 121. 400 pages.
- Porsild, A. E.** 1966. Contributions to the flora of southwestern Yukon Territory. *National Museum of Canada Bulletin* 216: 1-86
- Porsild, A. E.** 1975. Materials for a flora of central Yukon Territory. *National Museums of Canada, National Museum of Natural Sciences Publications in Botany* 4. 77 pages.
- Porsild, A. E., and W. J. Cody.** 1980. Vascular plants of the Continental Northwest Territories, Canada. *National Museums of Canada, National Museum of Natural Science*, Ottawa, Ontario. 667 pages.
- Reznicek, A. A.** 2002. 26f. *Carex* Linnaeus sect. *Foetidae* Pages 309-311 in *Flora of North America*. Volume 23. Magnoliophyta: Commelinidae (in part): Cyperaceae. *Edited by the Flora of North America Editorial Committee*. Oxford University Press, New York.
- Rydberg, P. A.** 1900. Catalogue of the flora of Montana and the Yellowstone National Park. *Memoir of the New York Botanical Gardens* 1:vi-xii.1-492.
- Saarela, J. M.** 2008. Taxonomy of *Bromus* (Poaceae: Pooideae: Bromoeae) sections *Bromopsis*, *Bromus*, and *Genea* in British Columbia, Canada. *Journal of the Botanical Research Institute of Texas* 2: 323-372.
- Saarela, J. M.** 2009. Taxonomy of *Bromus* sections *Bromus*, *Bromopsis* and *Genea* (Poaceae) in British Columbia: A Summary, a key, new records, specimen citations, and miscellaneous notes. *Botanical Electronic News*. 415. <http://www.ou.edu/cas/botany-micro/ben/ben415>
- Sears, C. J.** 2008. Morphological discrimination of *Platanthera aquilonis*, *P. huronensis*, and *P. dilatata* (Orchidaceae) herbarium specimens. *Rhodora*. 110(944): 389-405.
- Sheviak, C. J.** 1999. The identities of *Platanthera hyperborea* and *P. huronensis*, with the description of a new species from North America. *Lindleyana*. 14(4): 193-203.
- Sheviak, C. J.** 2002. 26. *Platanthera* Richard, De Orchid. Pages 551-571 in *The Flora of North America*. Volume 26, Magnoliophyta: Liliidae. *Edited by the Flora of North America Editorial Committee*. Oxford University Press, New York.
- Shultz, L. M.** 2006. 119. *Artemisia* Linnaeus, Pages. 503-534 in *The Flora of North America*. *Flora of North America*. Volume 19, Magnoliophyta: Asteridae (in part): Asteraceae, part 1. *Edited by the Flora of North America Editorial Committee*. Oxford University Press, New York.

- Smith, S. G., J. J. Bruhl, M. S. González-Elizondo, and F. J. Menapace.** 2002. 8. *Eleocharis* R. Brown. Pages 60-120 in *The Flora of North America*. Volume 23. Magnoliophyta: Commelinidae (in part): Cyperaceae. Edited by the Flora of North America Editorial Committee. Oxford University Press, New York.
- Standley, L. A., J. Cayouette, and L. Bruederle.** 2002. 26r. *Carex* Linnaeus sect. *Phacocystis* Pages 379-401 in *The Flora of North America*. Volume 23. Magnoliophyta: Commelinidae (in part): Cyperaceae. Edited by the Flora of North America Editorial Committee. Oxford University Press, New York.
- Taylor, R. L., and B. MacBryde.** 1977. Vascular plants of British Columbia. Botanical Gardens Technical Bulletin Number.4. UBC Press. Vancouver, British Columbia. 754 pages.
- Toivonen, H.** 2002. 26m. *Carex* Linnaeus sect. *Glareosae*. Pages 311-321 in *The Flora of North America*. Volume 23. Magnoliophyta: Commelinidae (in part): Cyperaceae. Edited by the Flora of North America Editorial Committee. Oxford University Press, New York.
- Tolmachev, A. I., J. G. Packer, and G. C. D. Griffiths.** 1995. Flora of the Russian Arctic Volume I *Polypodiaceae* – *Gramineae*. University of Alberta Press, Edmonton. Alberta, 303 pages.
- Wagner, W. H. Jr., and J. R. Grant.** 2002. *Botrychium alaskense*, a new moonwort from the interior of Alaska. *American Fern Journal* 92(2): 164-170.
- Welsh, S. L.** 1974. Anderson's Flora of Alaska and Adjacent Parts of Canada. Brigham Young University Press, Provo, Utah, U.S.A. 724 pages.
- Yurtsev, B. A.** 1984. Flora Arctica USSR. IX, 1. Droseraceae – Rosaceae. Nauka, Leningrad.
- Zika, P.** 2009. Jewelweeds and touch-me-nots (*Impatiens*, Balsaminaceae) in the Pacific Northwest of North America. *Botanical Electronic News* 408: 2-6, + 14 figures. <http://www.ou.edu/cas/botany-micro/ben/ben408.html#3>
http://bomi.ou.edu/ben/408/impatiens_figures_408.pdf

Received 27 January 2010

Accepted 2 March 2010