

Plants New to Alberta from Banff and Jasper National Parks

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During an ecological land classification of Banff and Jasper national parks, five species of plants previously unknown to Alberta were discovered: *Hippuris montana* (Mountain Mare's-tail), *Sedum divergens* (Spreading Stonecrop), *Tsuga heterophylla* (Western Hemlock), *Vaccinium ovalifolium* (Oval-leaved Blueberry), and *Aruncus sylvester* (Sylvan Goat's-beard). These Alberta occurrences extend the known ranges of all five species eastward from central British Columbia. In addition, Alberta range extensions of 22 rare vascular species were recorded.

Key Words: Alberta, new species, rare plants, range extension, Banff, Jasper, Rocky Mountains.

Five species of plants (*Hippuris montana*, *Sedum divergens*, *Tsuga heterophylla*, *Vaccinium ovalifolium*, and *Aruncus sylvester*) previously unknown to Alberta were discovered during an ecological land classification (Holland and Coen 1982) of Banff and Jasper national parks (BNP and JNP). These Alberta occurrences extend the known ranges of all five species eastward from central British Columbia. The species occur in the Subalpine zone (Alpine for *Hippuris montana*) in the Main Ranges, usually close to the Continental Divide. These areas are moister than either the lower elevation Montane zone or the Front Ranges to the east (Holland et al. 1982). They are also cooler than the Montane in summer and have warmer extreme minima because arctic air masses in winter intrude from the east along major river valleys at low elevations, creating temperature inversions. Thus, these areas are among the most mesic or temperate in the parks and climatically resemble areas of central British Columbia where these species also occur.

In addition, Alberta range extensions of 22 rare vascular species were recorded. The definition of rare species used here follows that of Argus and White (1978) and Packer and Bradley¹. The vascular flora of BNP and JNP comprises about 1000 species (Holland and Coen 1982) that belong to several floristic elements based on the geographic distributions of the species. The flora contains primarily two elements: boreal and cordilleran. Ogilvie (1962) noted that many species of the cordilleran element in the Rocky Mountains were restricted to southwestern Alberta, south of about 50°N. Of the 107 species that he listed as occurring in Alberta only in this southern area, more than a third are now known to occur further

north, as reported here or by Packer (1983). Nineteen of the 22 extensions reported here are extensions further north in Alberta along the Rocky Mountains. The exceptions are *Dryopteris fragrans*, *Salix reticulata* ssp. *reticulata*, and *Saxifraga nivalis*.

It appears premature to attempt an interpretation of the biological significance of this new information, for we conclude that the ranges are still poorly known. The backcountry of the parks has seldom been visited by plant collectors, particularly so in areas of difficult access along the Continental Divide. The collections made here were largely incidental to fieldwork for a reconnaissance land classification that focused on representative, extensive landscapes. Only limited collecting occurred in rare or unusual habitats that are more likely to contain rare or unusual species. A more thorough effort is required to confirm species distribution patterns and, conversely, the reality of gaps in species distributions.

Nomenclature mainly follows Packer (1983). Voucher specimens are deposited in the herbarium of the Northern Forest Research Centre, Edmonton, Alberta (CAFB). Collectors' names are abbreviated as follows: CC (C. Chernoff), DK, (D. Karasiuk), IC (I. Corns), JC (J. Cuddeford), JD (J. Dyck), JE (J. Marsh), JM (J. McLean), KS (S. Kojima), LC (L. Cole), PA and PLA (P. Achuff), and SJ (S. Scott). Collections are listed in chronological order under each species and national park.

Species New to Alberta

Hippuris montana Ledeb., Mountain Mare's-tail (Figure 1): *Hippuris montana* was found in JNP along shallow stream margins and in wet mossy depressions in the Alpine zone. JNP: Catacombs Mtn. 52°27'N 117°45'W (IC s.n. 28 Sep 76), Lick Ck. 52°27'N 117°52'W (IC s.n. 19 Aug 77), Divergence Ck. 52°32'N 118°00'W (IC s.n. 20 Sep 77), Miette Pass

¹Packer, J. G., and C. Bradley. 1978. A checklist of the rare vascular plants of Alberta with maps. Alberta Recreation and Parks. Unpublished report.

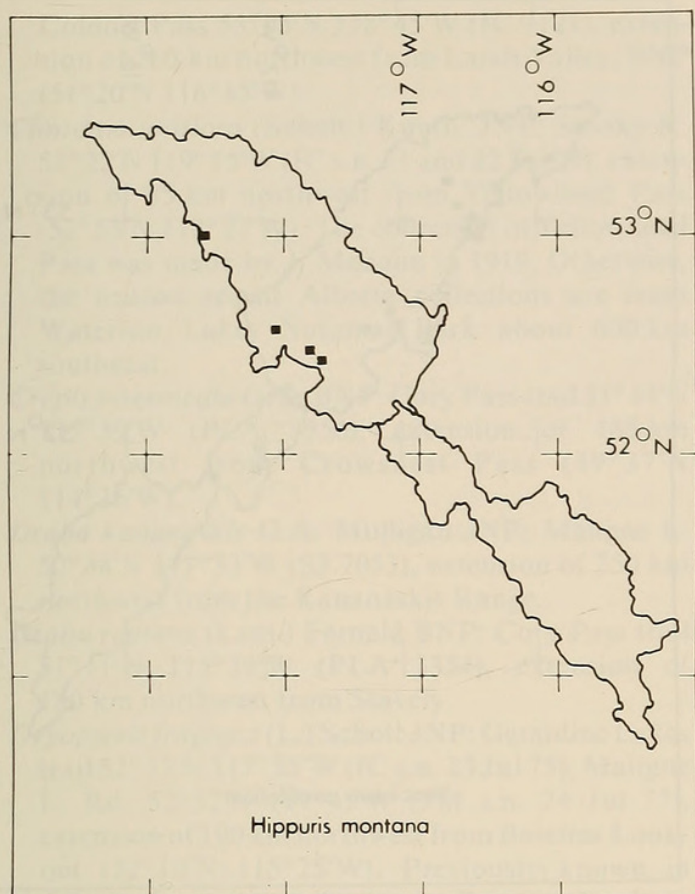


FIGURE 1. *Hippuris montana* collections from Banff and Jasper national parks.

53°03'N 118°37'W (IC s.n. 29 Jul 79). It occurs otherwise from the Aleutian Islands to the western Northwest Territories, south to the Olympic and Cascade mountain ranges of Washington.

Sedum divergens Watson, Spreading Stonecrop (Figure 2): *Sedum divergens* occurs on rocky slopes and ledges and on avalanche slopes in the Subalpine zone of JNP. A map of the range of *Sedum divergens* by Murray (1980) indicates that its range extends into Alberta. Alberta is not mentioned in the text, however, nor does Clausen's (1975) monograph of *Sedum* indicate any occurrences of this species in Alberta. We have not been able to find any previous collections of *Sedum divergens* from Alberta and conclude that the map line in Murray (1980) indicating an Alberta occurrence was misplaced. JNP: Mt. Bridgland 52°55'N 118°31'W (IC s.n. 9 Sep 77), Mt. Thornton 53°09'N 118°16'W (PLA 3651), The Ranee 53°11'N 118°40'W (PLA 3682), Upright Pass 53°07'N 118°46'W (IC s.n. 25 Jul 79), Miette Pass 53°01'N 118°39'W (IC s.n. 29 Jul 79), Derr Ck. 53°01'N 118°31'W (IC 9141), Corral Ck. 53°05'N 118°09'W (JE s.n. 10 Sep 79). *Sedum divergens* occurs otherwise from northeastern California to southern Alaska and eastward through central British Columbia.

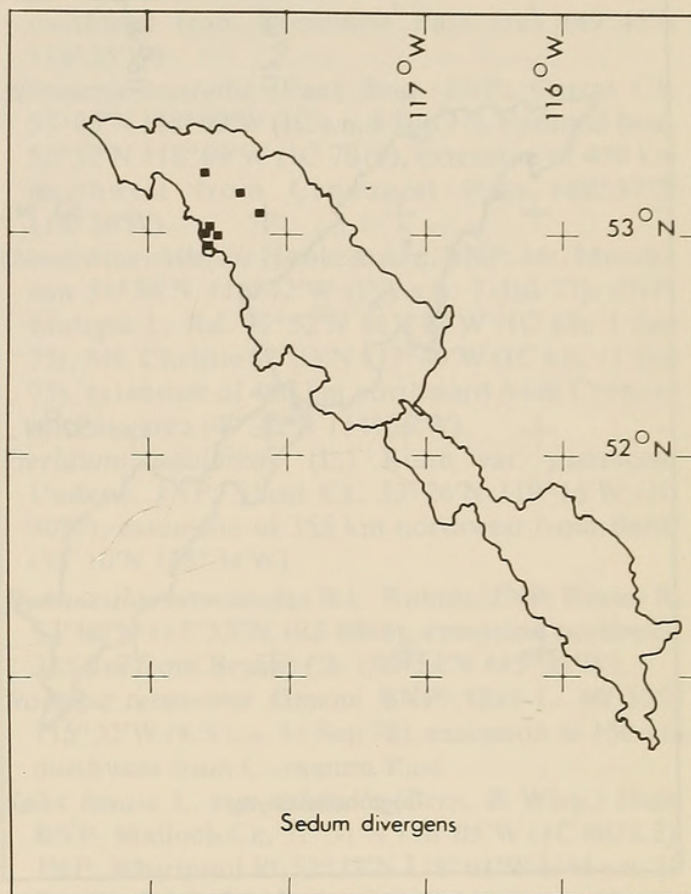


FIGURE 2. *Sedum divergens* collections from Banff and Jasper national parks.

Tsuga heterophylla (Raf.) Sarg., Western Hemlock (Figure 3): *Tsuga heterophylla* was found in moist *Picea engelmannii*-*Abies lasiocarpa* forests in the Subalpine zone of both parks. It occurs otherwise from southern Alaska to northern California and northwestern Montana. BNP: Castleguard R. 52°04'N 117°13'W (DK s.n. Jun 76), Mt. Coleman 52°04'N 117°13'W (PLA s.n. 7 Jun 77), Alexandra R. 52°05'N 116°59'W (JD s.n. 8 Aug 77). JNP: Fryatt Ck. 52°40'N 117°51'W (IC s.n. 17 Aug 77), Whirlpool R. 52°37'N 118°01'W (SJ s.n. 20 Sep 78).

Vaccinium ovalifolium J. E. Smith, Oval-leaved Blueberry (Figure 4): *Vaccinium ovalifolium* occurs in moist *Picea engelmannii*-*Abies lasiocarpa* forests in the Subalpine zone of both parks. It occurs otherwise from Alaska to Oregon and western Montana, in isolated areas of eastern Canada and the United States, and in parts of eastern Asia. BNP: Chephren L. 51°50'N 116°40'W (IC 7045), Arctomys Ck. 51°57'N 116°57'W (PA 7069), Glacier L. 51°54'N 116°59'W (PA 7094), Southeast Lyell Glacier 51°54'N 116°59'W (PLA s.n. 4 Aug 77). JNP: Canoe Pass 52°25'N 118°14'W (J.C. s.n. 9 Aug 77), Lick Ck. 52°27'N 117°52'W (IC s.n. 19 Aug 77), Miette R. 52°56'N 118°35'W (IC 7080), Divergence Ck. 52°32'N

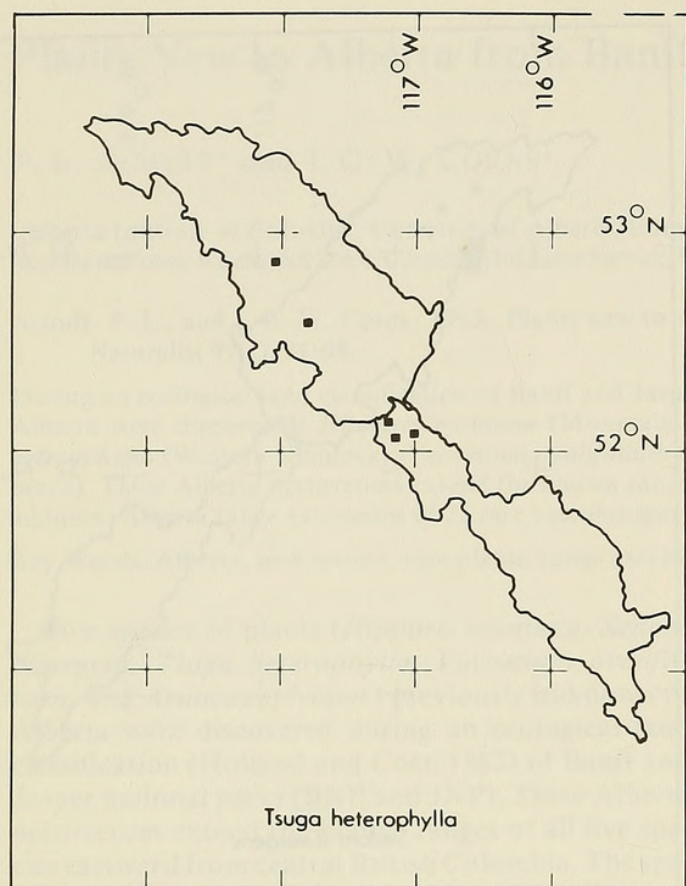


FIGURE 3. *Tsuga heterophylla* collections from Banff and Jasper national parks.

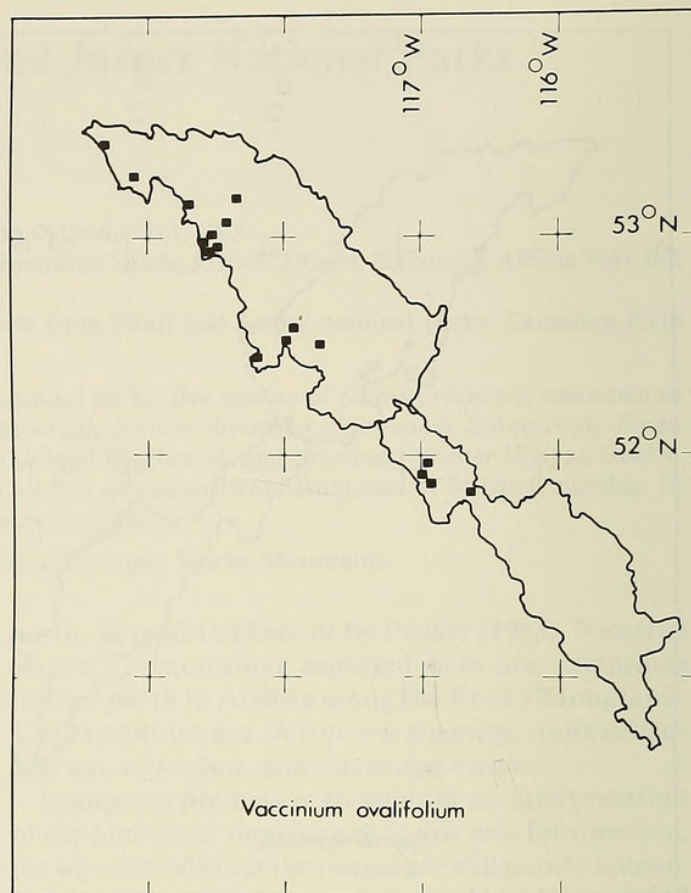


FIGURE 4. *Vaccinium ovalifolium* collections from Banff and Jasper national parks.

118°00'W (IC s.n. 20 Sep 77), Mt. Knight 53°04'N 118°26'W (IC 9080), Mt. Thornton 53°09'N 118°16'W (PLA 3649), Short Ck. 53°26'N 119°16'W (IC 9098), Snake Indian R. 53°15'N 118°52'W (JE 9103.1), Swoda Mtn. 53°18'N 119°13'W (LC s.n. 23 Jul 79), Upright Pass 53°07'N, 118°46'W (IC 9112), Mt. Beupre 53°03'N 118°36'W (IC s.n. 29 Jul 79), Miette R. 53°01'N 118°31'W (IC s.n. 13 Aug 79), Geraldine Lakes 52°37'N 117°55'W (PLA 3724).

Aruncus sylvester Kostel., Sylvan Goat's-beard (Figure 5): *Aruncus sylvester* is found in moist *Picea engelmannii* forests of the Subalpine zone. It has otherwise been observed from central and southwestern British Columbia to Oregon. JNP: Smoky R. 53°22'N 119°15'W (IC s.n. 26 Jul 79). CAFB also has a collection from the Forestry Trunk Road along the Smoky R. valley north of JNP 54°29'N 118°16'W (KS s.n. 9 Jun 77).

Alberta Range Extensions

Arnica parryi Gray JNP: Portal Ck. 52°47'N 118°06'W (IC s.n. 27 Jul 75), extension of 130 km northwest from BNP.

Berberis repens Lindl. BNP: Johnston Ck. 51°15'N 115°50'W (JD s.n. 3 Jul 75), extension of 190 km northwest from Crowsnest Pass (49°37'N 114°36'W).

Botrychium lanceolatum (Gmelin) Angstr. JNP:

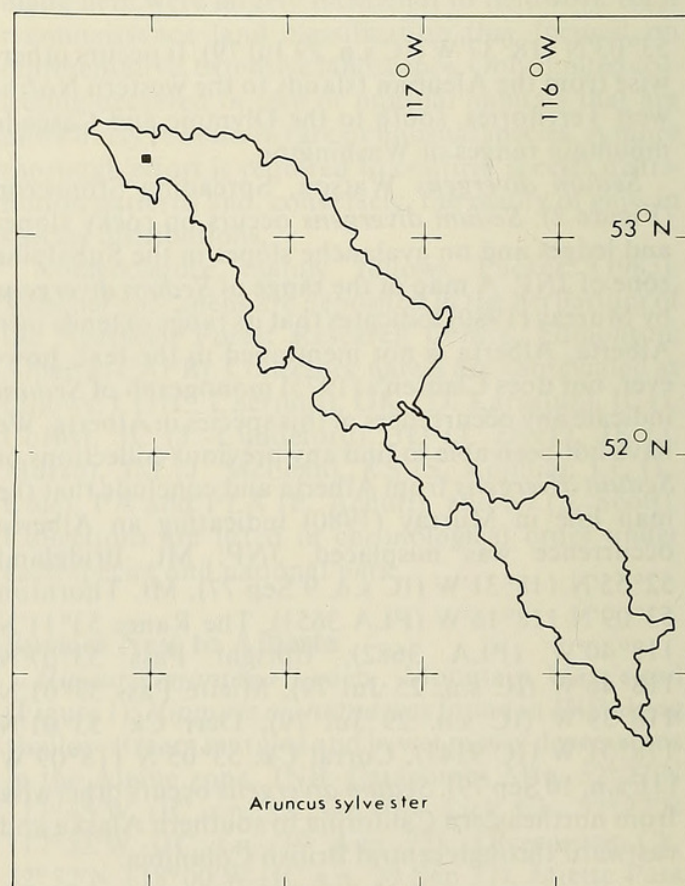


FIGURE 5. *Aruncus sylvester* collection from Jasper National Park.

- Colonel Pass 53°05'N 118°45'W (IC 9121), extension of 260 km northwest from Larch Valley, BNP (51°20'N 116°15'W).
- Clintonia uniflora* (Schult.) Kunth. JNP: Smoky R. 53°22'N 119°15'W (IC s.n. 21 and 22 Jul 79), extension of 85 km northwest from Yellowhead Pass (52°53'N 118°27'W). The collection in Yellowhead Pass was made by J. Macoun in 1919. Otherwise, the nearest recent Alberta collections are from Waterton Lakes National Park about 600 km southeast.
- Crepis intermedia* Gray BNP: Cory Pass trail 51°11'N 115°39'W (PLA 3356), extension of 185 km northwest from Crowsnest Pass (49°37'N 114°36'W).
- Draba kananaskis* G.A. Mulligan JNP: Maligne L. 52°38'N 117°33'W (SJ 7053), extension of 250 km northwest from the Kananaskis Range.
- Draba reptans* (Lam.) Fernald BNP: Cory Pass trail 51°11'N 115°39'W (PLA 3354), extension of 180 km northwest from Stavelly.
- Dryopteris fragrans* (L.) Schott JNP: Geraldine Lakes trail 52°37'N 117°55'W (IC s.n. 23 Jul 75), Maligne L. Rd. 52°52'N 117°45'W (JM s.n. 24 Jul 77), extension of 190 km northwest from Baseline Lookout (52°10'N 115°25'W). Previously known in Alberta from one collection at Baseline Lookout and otherwise on the Canadian Shield in the north-eastern corner of Alberta.
- Epilobium luteum* Pursh JNP: Lynx Ck. 52°19'N 117°29'W (IC s.n. 4 Sep 76), extension of 95 km northwest from Bow Pass (51°43'N 116°29'W).
- Erigeron flagellaris* Gray JNP: Mina L. 52°53'N 118°07'W (IC s.n. 9 Jul 75), extension northwest 510 km from Lonesome L., Waterton Lakes National Park.
- Festuca subulata* Trin. BNP: Molar Mtn. 51°37'N 116°11'W (PA 7158), extension of 290 km northwest from Castle R.
- Gaultheria humifusa* (Grah.) Rydb. BNP: Glacier L. 51°54'N 116°59'W (PA 8168). JNP: Amethyst Lakes 52°43'N 118°16'W (JM 7072), Trapper Ck. 52°39'N 117°41'W (IC s.n. 13 Sep 77), Divergence Ck. 52°32'N 118°00'W (IC s.n. 20 Sep 77), Windy Castle 52°38'N 117°41'W (IC s.n. 21 Sep 77), Blue Ck. 53°25'N 118°55'W (IC 9051, LC 9165), Mt. Knight 53°04'N 118°26'W (IC 9079), Resthaven Icefield 53°27'N 119°25'W (IC s.n. 18 Jul 79), Smoky R. warden cabin 53°22'N 119°15'W (IC 9102), Miette Pass 53°01'N 118°38'W (IC s.n. 29 Jul 79), Mt. Davidson 52°26'N 117°29'W (PLA 3725), extension of 35-275 km northwest from Bow Pass (51°43'N 116°29'W).
- Mimulus lewisii* Pursh JNP: Snaring R. 53°05'N 118°45'W (JE s.n. 11 Aug 79), extension of 460 km northwest from Crowsnest Pass area (49°45'N 114°35'W).
- Minuartia nuttallii* (Pax) Briq. JNP: Corral Ck. 53°05'N 118°09'W (IC s.n. 8 Jun 77), Pyramid Mtn. 52°57'N 118°09'W (IC 7010), extension of 450 km northwest from Crowsnest Pass (49°37'N 114°36'W).
- Osmorhiza chilensis* Hook. & Arn. BNP: Mt. Murchison 51°56'N 116°42'W (PA s.n. 7 Jul 77). JNP: Maligne L. Rd. 52°52'N 117°38'W (IC s.n. 1 Sep 75), Mt. Christie 52°33'N 117°49'W (IC s.n. 11 Sep 75), extension of 400 km northward from Crowsnest Pass area (49°45'N 114°35'W).
- Pteridium aquilinum* (L.) Kuhn var. *pubescens* Underw. JNP: Short Ck. 53°26'N 119°16'W (IC 9092), extension of 355 km northwest from Banff (51°10'N 115°34'W).
- Ranunculus verecundus* B.L. Robins. JNP: Rocky R. 53°00'N 117°52'W (SJ 8046), extension northwest 285 km from Bryant Ck. (50°54'N 115°31'W).
- Rorippa tenerrima* Greene BNP: Owl L. 50°52'N 115°32'W (KS s.n. 11 Sep 76), extension of 150 km northwest from Crowsnest Pass.
- Salix lanata* L. ssp. *calcicola* (Fern. & Wieg.) Hult. BNP: Malloch Ck. 51°51'N 116°05'W (JC 8028.2). JNP: Whirlpool R. 52°37'N 118°01'W (JM s.n. 19 Sep 78, PA 9124). Extension of 110 km northwest and 50 km east from Saskatchewan R. Crossing (51°58'N 116°45'W).
- Salix reticulata* L. ssp. *reticulata*. JNP: Isaac Ck. 52°30'N 117°08'W (SJ 8036.2), Restless R. 52°46'N 117°22'W (IC 8046.3), Southesk L. 52°38'N 117°10'W (PA 9120), Waterfalls warden cabin 52°26'N 117°17'W (JE 9160), extension of 55 km south from Cardinal R. divide (52°55'N 117°22'W).
- Saxifraga nivalis* L. BNP: Sentinel Pass 51°20'N 116°14'W (KS s.n. 20 Aug 74), Sunset Pass 52°07'N 116°53'W (CC s.n. Jul 76), JNP: Wilcox Pass 52°15'N 117°13'W (IC s.n. 13 Jul 76), extension of 200 km southeast from Maligne Range.
- Sorbus sitchensis* Roemer JNP: Lynx Ck. 52°19'N 117°29'W (IC s.n. 4 Sep 76), Blue Ck. 53°20'N 118°38'W (IC s.n. 24 Jun 79), Smoky R. warden cabin 53°22'N 119°15'W (IC s.n. 23 Jul 79), extension of 235 km northwest from Bow Pass (51°43'N 116°29'W).

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