



Teliospores in surface view and optical section. Scale =  $10\mu$ .

***Puccinia glacieri* Savile, sp. nov.**

PYCNIA, AECIA UREDINIAQUE desunt. TELIA hypophylla vel petiolicola, 0.2-0.6 mm diam., interdum confluentia, greges circulares vel elongatos facientia, sub lente hebetata vel vix nitida. TELIOSPORAE (27-)30-47(-49)  $\times$  (16.5-)18-28(-32) $\mu$ , haud vel leniter constrictae; parietes 1.2-2.5 $\mu$  crass., uniformiter flavobrunnei vel dilute castanei, verrucosi verrucis usque ad 0.4 $\mu$  alt. prope apicem sed ca. 0.2 $\mu$  alt. versus basem  $\times$  0.7-1.3 $\mu$  lat.; pori germinativi ab apice ad 1/4 depressi, papillis flavidis verrucosis 1.5-3.2 $\mu$  alt., et  $\pm$  ad septum, papillis minoribus vel nullis; pedicelli hyalini deciduique, ad basem vel versus septum leniter (vel modice) locati.

Etymology: For the type locality, Glacier, Glacier National Park, B.C.

HOST: *Viola glabella* Nutt.

DISTRIBUTION: Known only from the type locality, at or near Glacier, central Glacier National Park, Selkirk Mtns., B.C.

COLLECTION: B.C.: Glacier, segregated from *Puccinia ornatula* Holw., 3 Sept. 1902, DAOM 147534 (Holway, N. Am. Ured. 1058, TYPE; isotype PUR).

NOTES: The DAOM packet of Holway's N. Am. Uredinales 1058 is mixed, three of nine leaves and about one quarter of the sori bearing *P. glacieri* and the rest *P. ornatula* (Fungi Canadenses No. 77). This collection led Arthur (Manual of the Rusts, 1934) to describe *P. ornatula* erroneously as sometimes with evenly verrucose walls. The following table shows the main distinctions between the two rusts, which can be separated under the dissecting microscope in a focussed beam of light.

<i>Puccinia</i>	Sori	Spore width	Wall structure	Wall markings	Lower pore
<i>glacieri</i>	0.2-0.6 mm d., often confluent, matte in focussed light	16.5-32 $\mu$	Uniform, y-brown to l. chest.	Evenly scattered shallow-sided warts	septal-sl. dep.
<i>ornatula</i>	0.1-0.35 mm d., discrete, glinting in focussed light	15-26 $\mu$	Bilaminar, yellow outer, chestnut inner layer	Distant rows of steep- sided warts or short ridges	septal- 2/3 dep.

A second packet of this Holway collection in PUR containing *P. glacieri* was transferred by H.S. Jackson to *P. violae*; and an excerpt in the first packet (containing only *P. ornatula*) from a letter from Holway states that the collection is mixed with *P. effusa*. Both these determinations are plainly incorrect for *P. violae* and *P. effusa* have primary (grouped) aecia and scattered telia; whereas *P. glacieri* has primary telia, i.e. small round sori in nearly circular groups that simulate the habit of aecia. The teliospores of *P. effusa* also have thicker walls, somewhat coarser warts and frequently more depressed pores than those of *P. glacieri*.

Mixed collections of rusts are not very rare; and their occurrence emphasizes the importance of examining specimens under the dissecting microscope in a bright light to minimize the risk of confusion.

The true range of *P. glacieri* is even more obscure than that of *P. ornatula* on the same host. *Viola glabella* occurs from NE Asia through the North American Cordillera to California. Possibly climatic fluctuations have reduced the rust to a few relict sites in moist low-alpine areas. This rust and *P. ornatula* should be sought in areas of substantial snowfall in the B.C. Coast Mountains, areas that, unfortunately, are mostly very inaccessible. *P. glacieri* is quite distinct from other microcyclic *Viola* rusts in North America (Fungi Canadenses 56, 64, 77), especially in its spore sculpturing. The European *P. alpina* and *P. ruebelii* differ in having reticulate spore walls. *P. violae-glabellae* in Japan, actually on *V. brevistipulata* and *V. crassa*, is full-cycled with teliospores most readily distinguished by both germ pores generally being at the septum.

I thank Dr. J.H. Hennen for the loan of specimens in the Arthur Herbarium.

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