

## PUCCINIA LASERPITII (UREDINALES), A NEW SPECIES FOR POLAND

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**Abstract.** *Puccinia laserpitii* Lindr. collected for the first time in Poland, is described, illustrated and compared with *P. pimpinellae* (Str.) Röhl. and *P. kreiselii* M. Scholler. Poland is the third country where this species was collected.

**Key words:** Uredinales, rust fungi, *Puccinia laserpitii*, distribution

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### INTRODUCTION

The present paper adds another rust fungus to the list of Uredinales in Poland: *Puccinia laserpitii* Lindr. collected on *Laserpitium archangelica* Wulfen. The host plant is a mountain species that occurs in Central and Southeastern Europe between the Hrubý Jeseník Mts (Eastern Sudetes) and the Carpathian Mts in the west, to the Balkan Peninsula in the southeast (Parusel 2001). In Poland it reaches its northern distribution limit, growing in natural locations only on the northern slope of Babia Góra Mt. (Parusel 2001) and in the Beskid Śląski Mts on the east slope of Malinowska Skała Mt. near Lipowa village (Wilczek 2004). Because it occurs in two isolated localities, with its range small and area limited, the plant is a critically endangered species (CR) (Parusel 2001). Rust fungi (Uredinales) have not been collected on representatives of the genus *Laserpitium* L. in Poland until now.

### MATERIAL AND METHODS

The infected host plants were collected, air-dried and then examined by standard light and scanning electron microscopy (Leo 1430 VP). Measurements were taken from 100 spores of each spore state, mounted in lactic acid after heating to boiling point. Majewski (1979) and Gäumann (1959) were

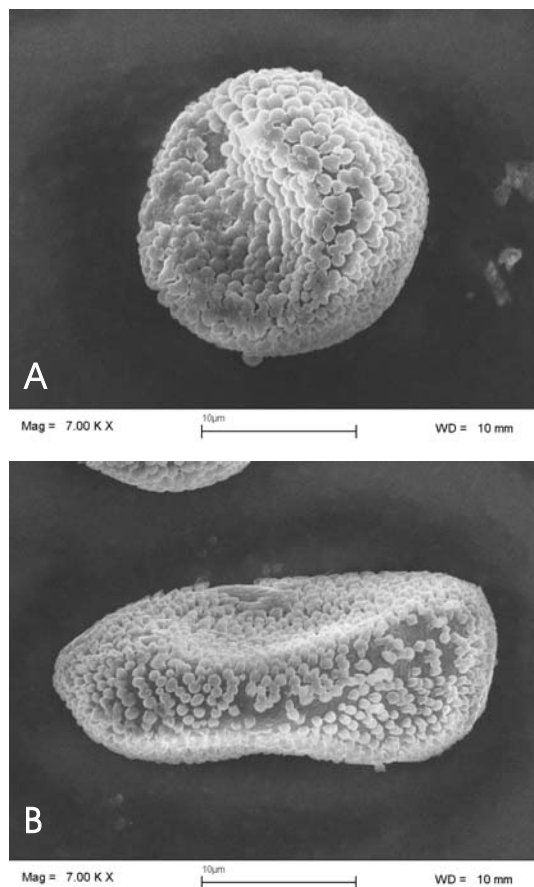
the main sources used for determination. The examined collections are deposited at LBL. The following specimens were used for comparison: *Puccinia pimpinellae* (Str.) Röhl. on *Pimpinella saxifraga* L., Przęślin Reserve near Czerwony Chotel, 16 May 1978, leg. J. Romaszewska-Sałata (LBL M-8635); *Puccinia pimpinellae* (Str.) Röhl. on *Pimpinella saxifraga* L., Mięćmierz near Kazimierz, 29 May 1980, leg. J. Romaszewska-Sałata (LBL M-8631); *Puccinia pimpinellae* (Str.) Röhl. on *Pimpinella saxifraga* L., Pełkowice near Bałtów, 30 May 1980, leg. J. Romaszewska-Sałata (LBL M-8638); *Puccinia pimpinellae* (Str.) Röhl. on *Pimpinella nigra* Mill., Serebryszcze near Chełm, 23 June 1970, leg. J. Romaszewska-Sałata (LBL M-8636); *Puccinia pimpinellae* (Str.) Röhl. on *Pimpinella nigra* Mill., Dobużek near Łaszczów, 30 Sept. 1971, leg. J. Romaszewska-Sałata (LBL M-8637). Spores were observed by light and scanning electron microscopy.

### RESULTS AND DISCUSSION

***Puccinia laserpitii* Lindr.**

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Pycnia well developed, amphigenous, scattered between aecia, diameter 80–110 µm. Aecia in lon-

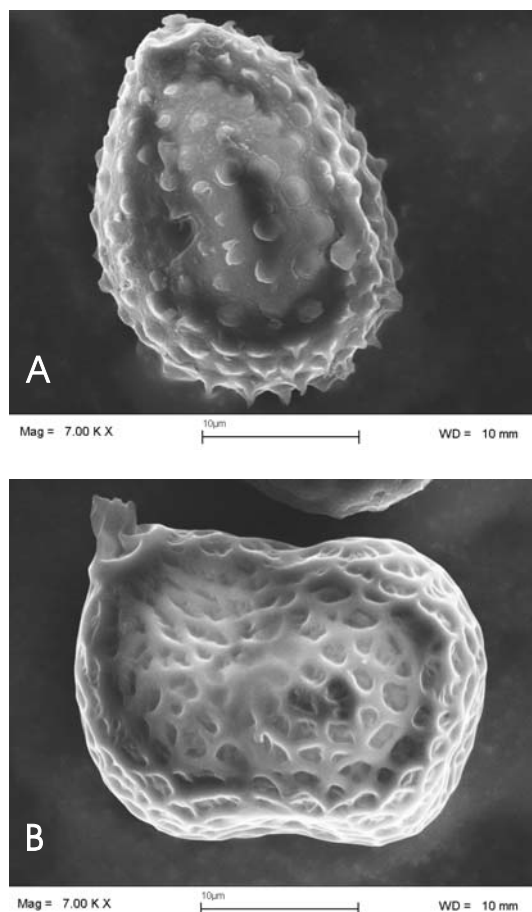


**Fig. 1.** A – aciospore of *Puccinia pimpinellae* (Str.) Röhl. on *Pimpinella saxifraga* L.; B – aciospore of *Puccinia laserpitii* Lindr. on *Laserpitium archangelica* Wulfen.

gitudinal groups up to 2 cm, along the nerves, usually hypophyllous on leaves and leaf petioles. Infected parts of host plant deformed. Cells of the peridium firmly connected, the outer wall verrucose, 2–4 µm, inner wall coarsely verrucose, 4–5 µm. Aeciospores ellipsoidal, clavate, rarely globose, (20–)24–34 × 17–22 µm, distinctly verrucose, spore wall 1–2 µm thick (Fig. 1B). Uredinia numerous, amphigenous, pulveraceous; small yellowish spots, usually limited by nerves, around uredinia on the leaf. Urediniospores ellipsoidal, obovoid, globose, 28–34 × 20–29 µm, wall brown-yellowish, 2.0–3.5(–4.0) µm thick, distinctly echinulate, spines set out 2.5–5.0 µm apart, germ pores 2(–3) equatorial (Fig. 2A). Telia amphig-

enous, dark brown or almost black, pulveraceous; small yellowish spots, usually limited by nerves, around telia on the leaf. Teliospores ellipsoidal, usually slightly fissioned at transverse septum, 27.0–37.5(–40.0) × 20–25 µm. Wall 2.0–2.5 µm thick, dentate, dentations forming a distinct net on the entire spore surface. Germ pore of upper cell on the top half, of lower on the bottom half; both without distinct papilla. Pedicel hyaline, broken, often laterally situated (Fig. 2B).

**SPECIMENS EXAMINED.** On *Laserpitium archangelica* Wulfen: POLAND. Beskid Żywiecki Mts, Zawoja, garden at the Management Office of the Babia Góra National Park, 24 May 2004, 12 June 2005, 30 June 2005, 6 July 2005, *leg. T. Lamorski* (LBL M-8497, 8502,



**Fig. 2.** *Puccinia laserpitii* Lindr. on *Laserpitium archangelica* Wulfen. A – urediniospore, B – teliospore.

**Table 1.** Comparison of *Puccinia laserpitii* Lindr., *P. kreiselii* M. Scholler and *P. pimpinellae* (Str.) Röhl.

Species / Spores	<i>Puccinia pimpinellae</i> (Majewski 1979)	<i>Puccinia kreiselii</i> (Scholler 1996)	<i>Puccinia laserpitii</i>
Aeciospores	ø 18–25 µm	wanting	(20–)24–34 × 17–22 µm
Urediniospores	25–30 × 20–25 µm	(23.5)23–32.5–37.5(36) × (18)19–21.5–24.5(25) µm	28–34 × 20–29 µm
Teliospores	25–34 × 20–25 µm	(32)32.5–28.5–45(44) × (20.5)21–25–29(29) µm	27–37.5(–40) × 20–25 µm

8578, 8579, 8580, 8581), 13 July 2004, *leg. A. Wolczańska* (LBL M-8582).

GENERAL DISTRIBUTION. *Puccinia laserpitii* was collected on *Laserpitium archangelica* in the Hrubý Jeseník Mts and Hostýnské vrchy Mts in the Czech Republic (Bubák 1898; Baudyš & Picbauer 1925; Hruby 1927; Picbauer 1944; Součková 1950; Gäumann 1959; Kokeš & Müller 2004) and near Korytnica (Nizke Tatry Mts) in Slovakia (Picbauer 1942a, b). No other findings of the species are reported in the available literature. Poland is the third country where the fungus was collected.

NOTES. Gäumann (1959) and Majewski (1979) supposed that *Puccinia laserpitii* Lindr. was very similar to *Puccinia pimpinellae* (Str.) Röhl. or even identical with it. Our observations indicate that these species differ from each other. Aeciospores of *Puccinia laserpitii* Lindr. are larger and more elongated (Table 1, Fig. 1A & B). The urediniospores are distinctly larger and the teliospores slightly larger than in the latter species, but the shape, the wall ornamentation of teliospores and the position of the pedicel resemble those in *Puccinia pimpinellae* (Str.) Röhl. (Table 1).

Lately *Puccinia kreiselii* M. Scholler has been described on *Laserpitium prutenicum* L. (Scholler 1996). The teliospores of this species are larger than those of *P. laserpitii* Lindr., and aecia were not noted (Table 1).

No rust fungi were found in natural populations of the host plant. The preserved plantation of *Laserpitium archangelica* Wulfen is under *ex situ* protection, and the plants were grown from seeds collected in natural populations. Year-old specimens of *Laserpitium archangelica* Wulfen

were 60% infected, and older ones 100%. On year-old host plants, *Sphaerellopsis filum* (Biv.-Bern. ex Fr.) Sutton [= *Darluca filum* (Biv.-Bern. ex Fr.) Berk.], a hyperparasite of rust fungi, was found in the uredinia.

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