SOME INTERESTING NEPALESE RUST FUNGI

Halvor B. Gjærum¹ and Erik Steineger²

Norway

Judging from the literature, the fungal flora of Nepal is poorly known. In his paper dealing with Himalayan fungi, Balfour-Browne (1955) published records of Nepalese fungi, among them also new species, belonging to different orders. Later Khadka & Shah (1967, 1968) and Khadka, Shah and Lawad (1968) recorded plant diseases in Nepal, mainly on cultivated plants, while Singh (1968) reported on parasitic fungi from the Kathmandu Valley. Recently Durrieu (1975) described two new rust species of the genus Hemaspota, and he (Durrieu 1975 a) also gave an account on the biogeography of the Nepalese fungal flora.

Information given here is on material collected by one of us (ES) during a visit to the Rolwaling Valley in East Nepal in 1973. The specimens are preserved at the Botanical Museum of Oslo.

Aecidium montanum Butl. Indian Forester 31: 676, 1905. On
Berberis sp.
Rolwaling, between Beding and Nangaon, 3800 m, 26 IX 1973 (E.S.
177/1), 0+I.

This rust species occurs in two different forms, one with pycnia and aecia in localized infections, and one with pycnia and aecia developing from a systemic mycelium. Joshi and Payak (1963, see also Cummins 1971) showed from infection experiments that the localized type belonged to Puccinia brachypodi Otth var. poae-nemoralis (Otth) Cumm. and H. C. Greene. Jörstad (1959) indicated that the systemic type belonged to the var. arrhenatheri (Kleb.) Cumm. and H. C. Greene. Both types are common in the Himalayas where they occur on several Berberis spp. Balfour-Browne (1955) reported it on B. chitra Lindl. from Dozam near Simikot in Nepal. In the material considered here, pycnia and aecia occur in small, localized groups and thus belong to the var. poae-nemoralis.

¹ The Norwegian Plant Protection Institute, N 1432 Aas-NLH, Norway.
² Botanical Laboratory, University of Oslo, Blindern, Norway.
On Sorbus ursina Decaisne.
Rolwaling, near Beding, 3800 m, 20 IX 1973 (E. S. 97/1) 0+I.

The rust is widespread in North America and Europe, and also in Siberia, China, Japan and Korea. Sharif and Ershad (1966) reported the rust from Iran, but from other areas south of the Himalayas we have seen no record on this rust. Kern (1973) also mentioned Africa in the distribution area without giving a more exact locality. The rust species is new to Nepal, and the host seems to be new for this rust.

Compared with aeciospores from the same species on S. aucuparia L. from Norway, the aeciospores in the Nepalese specimen are more delicately verrucose.

On Rosa sericea Lindley.
Rolwaling, between Beding and Nangaon, 3850 m, 20 IX 1973 (E. S. 89/1), III.

This rust, which is common in Europe and Siberia, has been reported from Pakistan by Jörstad (1952) and S. Ahmad (1956 a). It is also known from Kamchatka and China, and from the Americas, Africa and New Zealand, but has not been reported earlier from Nepal. The host is new for this rust species.

On Deyeuxia pulchella (Griseb.) Hook. f. (syn. Calamagrostis pulchella Griseb.)
Rolwaling, Jomoi Gul Chhu, 3850 m, 5 x 1973 (E. S. 238/1), II +III.

Uredinia oval to oblong, light brown to brown. Paraphyses abundant, clavate, straight or curved. 12-18 um in diameter (Fig. 1a). Wall hyaline, 3-4 um thick, sometimes tapering at the base. Urediniospores ovoid to subglobose, 22-25 (-35) 14-23 um. Wall hyaline, c. 1 um thick, echinulate. Telia covered by epidermis, dark brown to black, loculate. Teliospores (Fig. 1b) clavate, rounded or truncate, rarely attenuated at apex, the lower cell longer than the upper, mostly 2-celled, but 3-celled teliospores occur, 36-59 13-19 um. Wall smooth, light brown, darker at the apex, c. 1 um thick, at apex thickened to 4(-6) um. Pedicels short, brownish.

The present host represents a new host genus for this widespread rust.
Fig. 1. *Puccinia brachypodii* var. *arrhenateri*; a uredinial paraphyses, b teliospores.

On Agrostis munroana Aitch. & Hemsl. Rowlaling, Beding, 3700 m, 25 IX 1973 (E. S. 165/1), II.

Uredinial paraphyses (Fig. 2) clavate or capitate, often bent and with a pronounced neck, wall hyaline, 2–4 µm thick.

Fig. 2. Puccinia brachypodii var. poae-nemoralis, uredinial paraphyses.

S. Ahmad (1956) reported this rust on the same host from Kagan Valley in Pakistan.


On Fagopyrum cf tataricum (L.) Gaerth. Rowlaling, Simigaon, 2000 m, 26 X 1973 (E. S. 349/1), II.

The buckwheat rust fungus of which F. esculentum Moench is the host for the type, has been reported several times from India, China and Korea. On F. tataricum it has been reported from Mussoori in India by Sydow, Mitter and Tandon (1937). The rust is new to Nepal.


On Mentha × piperita L.

Kathmandu, 8 IX 1973 (E. S. 10), II.

This mint rust which has a world wide distribution is not only found on Mentha spp., but also on several species of other genera of the Lamiaceae.
Pandotra and Sastry (1969) have reported *M. × piperita* from Kashmir in the N.W. Himayalas. *P. menthae* is new to the Nepalese flora.

Cruchet (1906) who made cross infection experiments with this rust, found 8 biological forms. *M. × piperita* was infected only by the form occurring on *M. aquatica* L.


On *Roscoea purpurea* Smith.

Rolwaling, near Dharidunga, 2550 m, 12 IX 1973 (E. S. 30/1), II+III.

This rust has been reported several times from India on *Roscoea* spp., among them also on *R. purpurea* (Sydow, Mitter and Tandon 1937). Sydow and Mitter (1933) also recorded *Globba clarkei* Bak. as a host. From Yunnan in China Tai (1947) reported *R. intermedia* Gagnep. and *Camptandra yunnanensis* Loes. as hosts. The rust is new to the flora of Nepal.


Kultur p. 117, 1875.

On *viola pilosa* Blume.

Rolwaling, in a meadow near Simigaon, 2700 m, 30 x 1973 (E. S. 372/1).

In the Central European mountains this interesting rust species is common only on its type host *V. biflora* L.; on this host it also has been reported from the Japanese Rebun Island (Sydow, H. and P. 1913). It has also been reported from Japan on several other *Viola* spp. (e.g. Ito 1950), while in India *V. serpens* Wall. is the only known host (Sydow, Mitter and Tandon. 1937). *V. pilosa* is a new host for this rust species which is new to the Nepalese rust flora.

Dietel (1916) first pointed out that this rust species has two different types of urediniospores, a thin-walled spring and summer type, and a thicker-walled autumn type. In the present material only the latter type occurs (Fig. 3).

![Uredo alpestris](image)

Fig. 3. *Uredo alpestris*.

This dimorphism in the urediniospores indicates relationships to the fern rust genera *Uyalopsora* and *Uredinopsis*. 
On Geranium sp.
Rolwaling, Shakpa, NE of Simigaon, 2700 m, 30x 1973 (E. S. 373/1),
(II+) III.
This rust, which is new to the rust flora of Nepal, is widespread in the
northern hemisphere.
Urediniospores were scarce so late in the season.

REFERENCES

graph No. 1, Lahore.


Cruchet, M. P. 1907. Contribution à l'étude biologique et quelques Puccinias

Cummins, G. B. 1971. The rust fungi of cereals, grasses and bamboos. Berlin-
Heidelberg-New York.

Dietel, P. 1916. Uber die systematische Stellung Uredo alpestris

— — 1975 a. Les champignons phytopathognes de Népal. Aspects

Ito, S. Mycological flora of Japan. II Basidiomycetes, No. 3.
Uredinales–Pucciniaceae, Uredinales imperfecti. Tokyo.

Joshi, L. M. and Payak, M. M. 1963. A Berberis acidium in Lahaul Vally,

Jörstad, I. 1952. Parasitic fungi, chiefly uredineae, from Tirich Mir in
7:129–144.

Pennsylvania State University Press.

Khadka, B. B. and Shah, S. M. 1967. Preliminary list of Plant diseases recorded


