ADDITIONAL RECORDS OF MYCODIPLOSIS LARVAE (DIPTERA: CECIDOMYIIDAE) FEEDING ON RUST FUNGI

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Abstract

Mycodiplosis larvae were found feeding on various spore states of the following rust fungi: *Chrysomyxa pirolata* Wint., *Chrysomyxa woroninii* Tranz., *Coleosporium asterum* (Diet.) Syd., *Coleosporium vernoniae* Berk. & Curt., *Cronartium coleosporioides* Arth., *Cronartium comandrae* Pk., *Endocronartium harknessii* (J.P. Moore) Y. Hiratsuka, *Melampsora epitea* Thüm., *Puccinia caricis-shepherdiae* J.J. Davis, *Pucciniastrum epilobii* Otth., and *Pucciniastrum sparsum* (Wint.) E. Fisch. The larvae occurred on the pine stem rusts *Cronartium coleosporioides* and *Cronartium comandrae* on pine as well as on alternate hosts and appeared to markedly reduce the amount of rust inoculum available for dispersal.

A list of rusts and other fungi that are attacked by *Mycodiplosis* spp. was recently published (3). Only two of these records pertained to reports of *Mycodiplosis* spp. on rusts from North America. Berkenkamp (1) recently reported *Mycodiplosis impatientis* Felt feeding on the uredospores of *Uromyces trifolii* (Hedw. f. ex. DC) Lev. on various species of clover (*Trifolium*) in central and northern Alberta, but I am unaware of any other report of *Mycodiplosis* spp. feeding on rust fungi in Canada, other than that briefly mentioned in a paper by the author (4).

During surveys for pine stem rust fungi between 1965 and 1967 in southern Alberta, over 25 collections were made of *Mycodiplosis* larvae feeding on spores of the pine stem rusts. After receiving a comment from R.J. Gagne (personal communication, 1970) that all true *Mycodiplosis* feed on rusts, I made a preliminary search for other *Mycodiplosis* larvae in some of the rust material held in the mycological herbarium of the Canadian Forestry Service, Edmonton (CFB).

Table 1 lists *Mycodiplosis* material from 11 different rust fungi, in some cases on several host plants, none of which are recorded by Nijveldt (3). *Mycodiplosis* were collected on the spermogonial and aecial states of *Cronartium coleosporioides* and *Cronartium comandrae* on *Pinus contorta*, and on the uredial and telial states of these rusts on the alternate hosts. Most larval collections on the pine stem rusts were made in July and August, although some were collected as early as June 12 and others as late as September 28. Collections on the other rusts were made over a similar period of the year (Table 1).

Up to 250 *Mycodiplosis* larvae were often present on individual cankers of *C. comandrae*. Between 25 and 75% of the cankers at two locations south of the Kananaskis Forest Experiment Station, near Seebe, Alberta, contained *Mycodiplosis* larvae in the years 1965 to 1968. The larvae were observed eating large numbers of spores and often caused the aeciospores to become aggregated in a mass of fine silk, which gave a mealy bleached appearance to the spores. The larvae took on the color of the spores. The larvae found on *C. coleosporioides* f. *album* were white, but they were various shades of orange and yellow when feeding on spores of *C. coleosporioides*, *C. comandrae*, *E. harknessii* and *P. caricis-shepherdiae*. The larvae did not pupate on the rusts but in the soil or duff layers. Rearings from duff material, collected around the base of *C. comandrae*-infected trees at one location, produced adults of *Mycodiplosis fungiperda* Felt and *M.* sp. nr. *tsugae* Felt, which suggests a specific connection with the larvae on the cankers of pine stem rusts.

Larvae of *Mycodiplosis* spp. appear to be important agents in reducing the amount of pine stem rust inoculum available for dispersal, and presumably play a similar role on the other rusts. Golenia (2) surmised that *Mycodiplosis* spp. may play a part in the biological control of *Puccinia menthae* Pers. and *Uromyces valerianae* Fuck. Nijveldt (3) stated that more investigation is needed to establish the value of gall midge larvae in the control of fungi. Most cecidomyiids, whose larvae are associated with fungi and especially the rusts, belong to the genus *Mycodiplosis* (3). Further investigation would probably show that larvae of this genus may be associated with many more rust fungi in North America.

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Washington, D.C., for identifying the larvae and adults as Mycodiplosis and for information on the genus.

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4. Powell, J.M. 1971. The arthropod fauna collected from the comandra blister rust, Cronartium comandrae, on lodgepole pine in Alberta. Can. Entomol. 103:908-918.

Table 1. Rust fungi and plant hosts from which larvae of *Mycodiplosis* were collected

Rust	Host	Spore state*	Collections	
			Location	Date
Chrysomyxa pirolata Wint.	*Pyrola asarifolia* Michx.	II	Alta.; Yukon	June 15, 23
Chrysomyxa pirolata	*Pyrola virens* Schweigg.	II	Alta.	June 21
Chrysomyxa woroninii Tranz.	*Ledum groenlandicum* Oeder	III	Yukon	July 27
Coleosporium asterum (Diet.) Syd.	*Aster conspicuus* Lindl.	II, III	Alta.	Aug. 19
Coleosporium asterum	*Aster* sp.	II, III	Alta.	Aug. 17, Sept. 17
Coleosporium asterum	*Solidago decumbens* Greene	II	N.W.T.	July 28
Coleosporium vernoniae Berk. & Curt	*Vernonia ?altissima* Nutt.	II, III	Ohio	Sept. 1
Cronartium coleosporioides Arth.	*Castilleja miniata* Dougl.	II, III	Alta.	Aug. 13
Cronartium coleosporioides	*Pinus contorta* Dougl. var. *latifolia* Engelm.	0 , I	Alta.	June 19-July 11
Cronartium coleosporioides f. *album* Ziller	*Pinus contorta* var. *latifolia*	I	Alta.	July 11
Cronartium comandrae Pk.	*Comandra umbellata* (L.) Nutt. ssp. *pallida* (A.DC.) Piehl	II, III	Alta.; B.C.	Aug. 17-Sept. 10
Cronartium comandrae	*Pinus contorta* var. *latifolia*	0 , I	Alta.	June 19-Sept. 28
Endocronartium harknessii (J.P. Moore) Y. Hiratsuka	*Pinus contorta* var. *latifolia*	III^I	Alta.	June 12
Melampsora epitea Thüm.	*Salix* sp.	II	Alta.	July 20-Aug. 30
Puccinia caricis-shepherdiae J.J. Davis	*Shepherdia canadensis* (L.) Nutt.	I	Alta.	July 30
Pucciniastrum epilobii Otth.	*Epilobium angustifolium* L.	II, III	Alta.	Aug. 11
Pucciniastrum epilobii	*Epilobium glandulosum* Lehm.	II, III	Alta.	July 29
Pucciniastrum sparsum (Wint.) E. Fisch.	*Arctostaphylos rubra* (Rehd. & Wils.) Fern.	II	N.W.T.	July 27

* 0 = spermogonial; I = aecial; II = uredial; III = telial; III^I = aecidioid teliospores.