

## Species of anamorphic fungi rare and new for Poland

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*Morinia pestalozzioides*, *Seimatosporium hypericinum*, *Septoria artemisiae*, *S. artemisiae-maritimae*, *S. achilleicola* and *S. symphyti*, fungi not recorded in Poland before, are described and illustrated. The species were found during studies on the occurrence of parasitic fungi conducted in selected sites in the Słowiński National Park and in the Western Pomerania between 2001 and 2004.

**Key words:** *Morinia*, *Seimatosporium*, *Septoria*, Słowiński National Park, parasitic fungi

### INTRODUCTION

*Achillea ptarmica*, *Artemisia vulgaris*, *Hypericum perforatum*, and *Symphytum officinale* are plants of considerable pharmaceutical importance in the climatic zone of Poland. Their green parts (*A. ptarmica*, *Ar. vulgaris* and *H. perforatum*), roots (*A. ptarmica* and *S. officinale*), and capitula (*A. ptarmica*) are used in drug and cosmetic production (Podbielkowski, Sudnik-Wójcikowska 2003). These plants may be encountered in shrubs and meadows, on hills, and riverbanks, and occur commonly in the lowland part of Poland.

During studies conducted in the Słowiński National Park (SNP) and the Western Pomerania (WP), *Achillea ptarmica*, *Artemisia vulgaris*, *Ar. campestris* subsp. *sericea*, *Hypericum perforatum*, and *Symphytum officinale* were frequently recorded to be infected by parasitic fungi. Among the fungi identified, *Morinia pestalozzioides*, *Septoria achilleicola*, *S. artemisiae*, *S. artemisiae-maritimae* and *S. symphyti* occurred, fungi previously not reported from Poland. The species are described and illustrated below.

## MATERIAL AND METHODS

In the years 2001 to 2004, diseased stems and leaves of plants growing in the *Diantho-Armerietum elongatae* Krausch 1959, *Helichryso-Jasionetum litoralis* Libb. 1940, *Myrico-Salicetum auritae* (Allg. 1922) R. Tx. et Pass. 1961, and *Fraxino-Alnetum* W. Mat. (1952) 1987 plant associations of the SNP and WP were collected.

In the laboratory, they were first air dried and then placed into paper envelopes. To identify the parasitic fungi associated with the plant parts collected, thin cuttings were taken from a transverse section of the fungal structures revealed and the plant tissue infected using a safety razor. Subsequently, the cuttings were mounted in a drop of lactic acid placed on a microscopic slide, covered with a cover slip, and observed under the Axiolab Zeiss compound microscope. The structures of the fungi found were measured with a micrometric eyepiece and a screwmicrometer.

The nomenclature of plant associations is according to Matuszkiewicz (2001), and that of plant species follows Mirek et al. (2002). The plant species sampled were identified according to Szafer, Kulczyński, Pawłowski (1969). The fungi found were determined after Brandenburger (1985), Ellis and Ellis (1987), Sutton (1980).

All the specimens of plants and fungi discussed below are deposited at the Department of Plant Pathology University of Agriculture in Szczecin.

## RESULTS AND DISCUSSION

Six anamorphic fungal species new and rare for Poland were found. They colonised leaves of *Hypericum perforatum*, *Artemisia campestris* subsp. *sericea*, *A. vulgaris*, *Achillea ptarmica*, and *Symphytum officinale*.

Symbols:

*CaEn* – *Carici arenariae-Empetretum nigri*

*DAe* – *Diantho-Armerietum elongatae*

*HeJl* – *Helichryso-Jasionetum litoralis*

*MSa* – *Myrico-Salicetum auritae*

*FrAl* – *Fraxino-Alnetum*

*Morinia pestalozzioides* Berl. & Berk.

Spots on dead stems, subcircular, grey to brown, 2-4 mm diam. Acervuli circular, dark brown to black, 150 µm diam. Conidia muriform, with 5 transverse septa and 2-3 vertical septa, 18-25 x 9-12 µm. Medial cells brown, terminal cells light-olive to hyaline. Apical cell with 2-3 unbranched, hyaline setulae, 10-12 µm long. On *Artemisia campestris* L. subsp. *sericea*: SPN, Łeba, *CaEn* VI 2002 (Figs 1 A-C).

The conidial dimensions in the material found in the SNP slightly diverged from those given by Saccardo (1892; conidia 22-24 x 8-10 µm; apical setulae 14-20 x 1 µm) and Sutton (1980; conidia 16-22 x 5-7 µm; apical setulae 12-19 µm long).

DISTRIBUTION. *Morinia pestalozzioides* has so far been reported from Italy (Sutton 1980).

REMARKS. According to Sutton (1980), *A. camphorata* Vill. is another host plant of *M. pestalozzioides*.

*Seimatosporium hypericinum* (Ces.) B. Sutton

Spots randomly distributed on the upper leaf side, irregular, grey to pale brown, 3-6 mm diam. Acervuli brown to black, 200-250  $\mu\text{m}$  diam. Conidia curved, falcate, 4-celled conidia, 14-15 x 6.5-7.5  $\mu\text{m}$ . Two medial cells 4-5  $\mu\text{m}$  long, olive to light-olive. Terminal cells 1-2  $\mu\text{m}$  long, hyaline, with 2 unbranched, straight or curved, hyaline setulae, 12-14  $\mu\text{m}$  long. On *Hypericum perforatum* L.: WP, Karkowo near Kołobrzeg, *DAe* VI 2002 (Figs 1 D-F).

The acervular diameter of the specimen found by the present author was convergent with that given by Sutton (1980; diameter above 200  $\mu\text{m}$ ). The conidial dimensions in the material found in the SNP slightly diverged from those given by Ellis and Ellis (1987; 15-19 x 4.5-5.5  $\mu\text{m}$ ) and Sutton (1980; 15-18 x 4.5-5.5  $\mu\text{m}$ ).

The colour of medial cells in the conidia found in the material collected in the SNP slightly diverged from that given by Ellis and Ellis (1987) and Sutton (1980). According to these authors, these cells were light-brown, while they were lighter, mostly olive, in the material collected in the SNP.

DISTRIBUTION. POLAND. *Seimatosporium hypericinum* has already been reported to occur in the Lublin region (Zimowska 2002, 2004; Zimowska, Machowicz-Stefaniak 1999, 2004) and in the Western Pomerania (Adamska 2006). OTHER REGIONS. *Seimatosporium hypericinum* has so far been reported from Italy, Sweden, Germany, Great Britain, France (Sutton 1980), and Australia (Farr et al. 2007).

REMARKS. Apart from *H. perforatum*, another host plant of *S. hypericinum* is *H. tetrapterum* Fries (Ellis, Ellis 1987).

*Septoria achilleicola* Melnik

Spots on the upper leaf side, ovoid to circular, pale brown to dark brown, 3-5 mm diam. Pycnidia globose, brown to dark brown, 125  $\mu\text{m}$  diam., with a circular ostiolum (15-20  $\mu\text{m}$ ), immersed in the leaf tissue. Conidia hyaline, filamentous, 4-7 celled, 32-37.5 x 2-2.5 (-4)  $\mu\text{m}$ . On *Achillea ptarmica* L.: SPN, Kluki, *MSa* VIII 2001.

The conidial dimensions were within the range given by Teterevnikova-Babajan (1987; 14-40 x 1-2  $\mu\text{m}$ ); however, the conidia of the specimen collected in the SNP were slightly shorter than those described by Brandenburger (1985; 36-60 x 1.5-1.8  $\mu\text{m}$ ). The number of septa in the conidia was greater than that given by Teterevnikova-Babajan (1987; 1-2-septate), but close to that given by Brandenburger [1985; 2-4-(6)-septate].

DISTRIBUTION. *Septoria achilleicola* has been reported from the European part of Russia, Kazakhstan, and Asia (Teterevnikova-Babajan 1987).

REMARKS. According to Teterevnikova-Babajan (1987), another host plant of *S. achilleicola* is *A. salicifolia* Besser.

Other fungal species of the genus *Septoria* infecting plants of the genus *Alchemilla* are *S. moschatae* F. Mangenot (Brandenburger 1985), *S. millefolii* (Oudem.) Grove, and *S. ptarmicae* Pass. (Teterevnikova-Babajan 1987).

*Septoria artemisiae* Pass.

Spots distributed on the upper leaf side, subcircular, yellow to pale brown. Pycnidia numerous, globose, brown, 120-150  $\mu\text{m}$  diam., with a circular ostiolum (35  $\mu\text{m}$  diam.), immersed in the leaf tissue. Conidia hyaline, filamentous, aseptate, 35-

40 x 1-2  $\mu\text{m}$ . On *Artemisia campestris* L. subsp. *sericea*: SPN, Łeba, *HeJl* VIII 2002, *A. vulgaris* L.: SPN, Gać, *FrAl* IX 2001.

The conidial dimensions of the specimens found by the author of this paper were similar to those given by Brandenburger (1985; 30-33 (57) x 1-1.5  $\mu\text{m}$ ), Cejp and Jechova (1967; 19.5-57 x 1-1.5  $\mu\text{m}$ ), and Teterevnikova-Babajan (1987; 20-45 x 1-1.5  $\mu\text{m}$ ).

DISTRIBUTION. *Septoria artemisiae* has been observed in the European part of the former Soviet Union, the Netherlands, Germany, Romania, the Czech Republic, Slovakia, Hungary, Italy, the US, Asia (Teterevnikova-Babajan 1987), as well as in Bulgaria, Korea, China and India (Farr et al. 2007).

REMARKS. Apart from *A. vulgaris*, other plant hosts of *S. artemisiae* are *A. austriaca* Jacq., *A. dracuncululus* L., and *A. scoparia* W. et K. (Teterevnikova-Babajan 1987).

According to Brandenburger (1985), plants of the genus *Artemisia* are infected by three species of the genus *Septoria* (i. e., *S. artemisiae* Pass., *S. artemisiae-maritimae* Lobik, and *S. globosa* Strasser), and not by five (*S. artemisiae*, *S. artemisiae-maritimae*, *S. artemisiana* Garb., *S. moeszii* Smarods, *S. tabacina* Died. var. *tabacina*, and *S. tabacina* Died. var. *dracunculina* D. Bab.) as Teterevnikova-Babajan (1987) found. Brandenburger (1985) considered *S. moeszii* and *S. artemisiana* to be synonyms of *S. globosa*. According to Teterevnikova-Babajan (1987), *A. vulgaris* is sometimes also affected by *S. artemisiana* and *S. tabacina* var. *tabacina*.

#### *Septoria artemisiae-maritimae* Pass.

Spots on the upper leaf side, circular, grey to pale brown, 1-2 mm diam. Pycnidia flattened, pale brown to brown, 65-95  $\mu\text{m}$  diam., with a circular ostiolum (20-28  $\mu\text{m}$  diam.), immersed in the leaf tissue. Conidia narrowly cylindrical, hyaline, aseptate or 3-5-celled, 25-30 (-35) x 2.5-4  $\mu\text{m}$ . On *Artemisia campestris* L. subsp. *sericea*: SPN, Łeba, *HeJl* IX 2002 (Figs 1 G-I).

The conidial dimensions of the specimens found by the author of this paper were similar to those given by Brandenburger (1985; 20-26 x 2.2-3.6  $\mu\text{m}$ ) and Teterevnikova-Babajan (1987; 19.8-26.3 x 3-4  $\mu\text{m}$ ).

DISTRIBUTION. *Septoria artemisiae-maritimae* has already been observed in the European part of the former Soviet Union and Asia (Teterevnikova-Babajan 1987).

REMARKS. According to Teterevnikova-Babajan (1987), another host plant of *S. artemisiae-maritimae* is *A. maritima* L. var. *salicina*.

#### *Septoria symphyti* Cejp

Spots on the upper leaf side, ovoid to irregular, brown to dark brown, 5-15 mm diam. Pycnidia globose, brown, 80-135  $\mu\text{m}$  diam., immersed in the leaf tissue. Conidia filamentous, hyaline, 4-septate, 37.5 x 1-1.5  $\mu\text{m}$ . On *Symphytum officinale* L.: SPN, Gać, *FrAl* IX 2004.

The pycnidium diameter and the conidial length in the material collected in the SNP were similar to those of the specimens described by Brandenburger (1985; 90-110  $\mu\text{m}$  diam and 24-48  $\mu\text{m}$  long, respectively). The conidial length and the number of septa in the conidia (3-4-septate) also were similar to those given by Brandenburger (1985); however, the conidia in the material collected in the

SNP were narrower ( $37.5 \times 1-1.5 \mu\text{m}$ ) than those characterized by Brandenburger (1985;  $24-48 \times 1.7-2.6 \mu\text{m}$ ).

DISTRIBUTION. *Septoria symphyti* has been observed in the Czech Republic, Slovakia, and Bulgaria (Farr et al. 2007).

REMARKS. According to Brandenburger (1985), *S. symphyti* is the only species of the genus *Septoria* occurring on plants of the genus *Symphytum* in Europe.

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## Rzadkie i nowe dla Polski gatunki grzybów anamorficzných

## Streszczenie

W latach 2001-2004 w wybranych stanowiskach Słowińskiego Parku Narodowego i Pomorza Zachodniego prowadzono badania nad występowaniem grzybów pasożytniczych. W trakcie badań znaleziono *Morinia pestalozzioides*, *Seimatosporium hypericinum*, *Septoria artemisiae*, *S. artemisiae-maritimae*, *S. achilleicola* i *S. symphyti*, gatunki nowe dla Polski. W artykule opisano i zilustrowano znalezione gatunki grzybów.

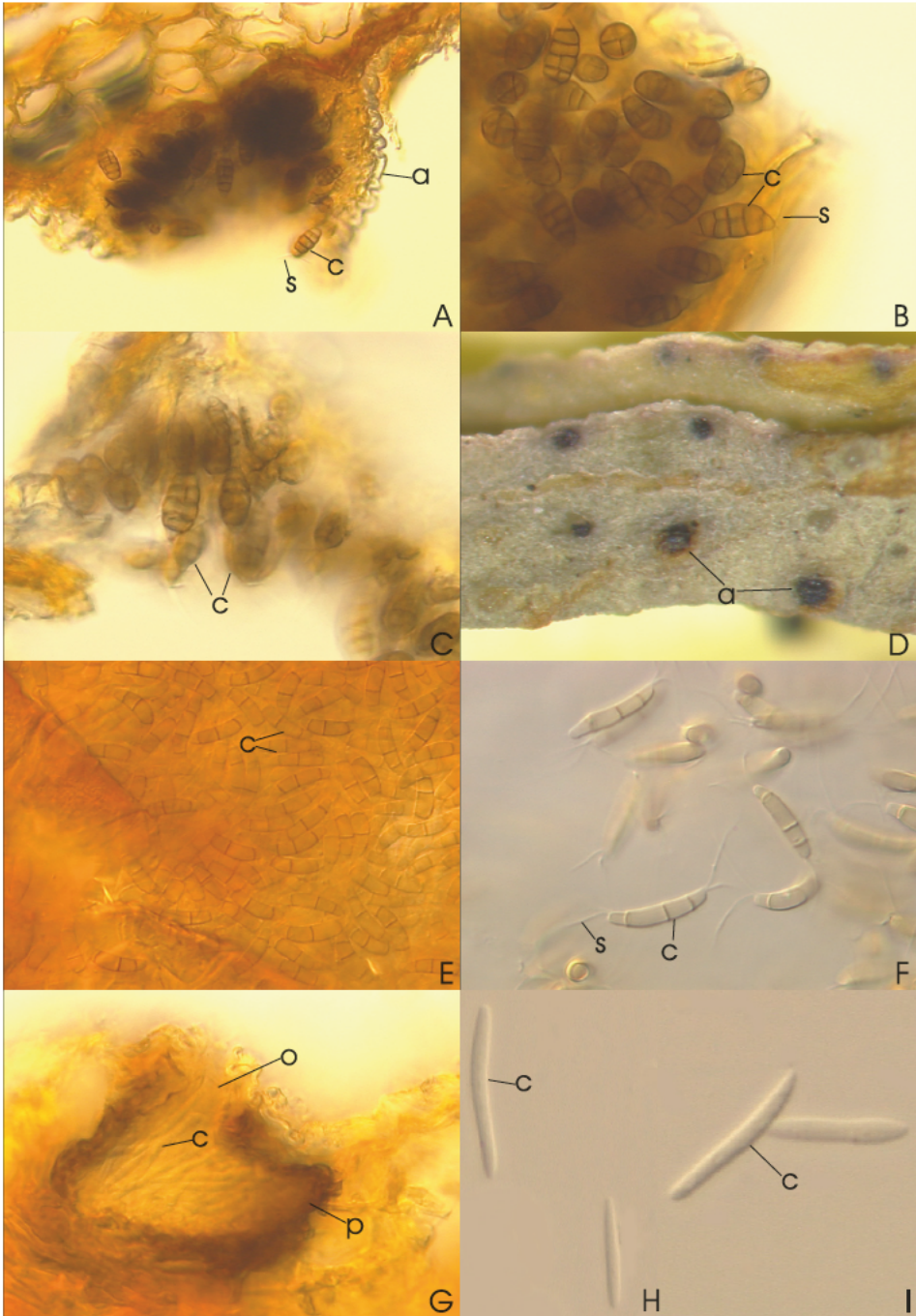


Fig. 1. *Morinia pestalozzioides*: acervulus (a) with conidia (c; A), conidia (c) with setulae (s; B-C); *Seimatosporium hypericinum*: acervuli (a) on a leaf of *Hypericum perforatum* (D), acervulus (a) with conidia (c; E), conidia (c) with setulae (s; F); *Septoria artemisiae-maritimae*: pycnidium (p) with ostiolum (o) and conidia (c; G), conidia (c; H-I).