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***PINUS ULIGINOSA* G.E. NEUMANN EX WIMM., A NEW TAXON FOR THE UKRAINIAN FLORA**

Key words: *Pinus uliginosa*, *Oxycocco-Sphagnetea*, *Gorgany Mts.*,
Eastern Carpathians, Ukraine

In June 2008, during an expedition for studying the dendroflora of the Ukrainian Carpathians, specimens that appeared to be *Pinus uliginosa* G.E. Neumann ex Wimm. were found on the oligotrophic peat bog with stunted trees in a valley of the Mshana River near the village of Osmoloda (Gorgany Mts., N 48°40'33.2" E 23°55'19.4"; 832 m a. s. l.). This is the first find of this taxon of hybrid origin in Ukraine. The same locality was surveyed by Businský in May 1990, and only *P. mugo* Turra was reported (Businský 2008). We provide here a brief description of the specimens and habitat.

Taxonomic position

Pinus uliginosa G.E. Neumann ex Wimm. was first described as a distinct species from Batorów (Poland, Sudety Mts.) 170 years ago (Neumann 1837, Wimmer 1937). It was treated as a taxon exhibiting characters intermediate between *Pinus sylvestris* L. and *P. mugo* (Staszkiwicz 1985), or as a putative hybrid between *P. mugo* and *P. uncinata* (Christensen 1987). It is considered to show strong differentiation from *P. sylvestris* and *P. mugo* (Siedlewska, Prus-Głowacki 1995). The fairly widespread opinion that *P. uliginosa* is a marginal population of *P. uncinata* (Krzakowa et al. 1984) was later rejected in tests because of the different genetic structure of this pine (Prus-Głowacki et al. 1998, Lewandowski et al. 2000). Lewandowski et al. (2002) confirmed that based on the studies of 15 allozyme loci. The taxon was treated as a synonym of *P. × rhaetica* Brügger in the *Red List of Plants and Fungi in Poland* (Staszkiwicz 2001) and the *Flora of Poland, Atlas of Protected Plants* (Piękoś-Mirkowa, Mirek 2003). Skalnická and Skalický (1988) and Businský (2002) used the name *P. rotundata* Link. for the same taxon. In the last revision (Businský, Kirschner, 2006, see also Businský, 2008) a new combination *Pinus uncinata* Ramond ex DC. subsp. *uliginosa* (Neumann) Businský was proposed.

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Range

Jalas and Souminen (1973) reported this taxon as being present in Austria, the Czech Republic, Germany, and Poland. In Poland it is found in the Sudety Mts. and two lowland localities (Boratyński 1994, Boratyńska et al. 2008). In the Czech Republic it occurs in the Třeboňsk and Šumava heaths (near Rašeliniště Kapličky), Morava (Rejvízu) and Hrubý Jeseník (Businský 2004). Haeupler and Schönfelder (1989) incorporated the bog pine into the *P. mugo* complex, and so the range of this group covers the Schwarzwald, Alpine Foreland, the Bavarian Forest, the Franconian Jura and isolated localities near Göttingen and Salzgitter. Staszkiwicz (1985) mentioned the likely presence of *P. uliginosa* in Romania, and possibly in Bulgaria.

There are only limited data on about the possible occurrence of *P. uliginosa* in Ukraine. Windakiewicz (1873) reported the presence of *P. × rotundata* in a peat bog near Dolina, and in a description of the range of plant communities of *P. mugo* in the Gorgany Mts. Trampler (1937) mentioned *P. uncinata rotundata gibba* Wilk. (on the basis of cone traits). These data were not confirmed either by herbarium material or further field expeditions (Tsaryk et al. 2006).

Morphological characteristics

Pinus uliginosa Neumann is a monocormic or polycormic tree, usually 3 to 7 m tall. It has a simple or sometimes arch-like tree trunk, and is distinguished by a dark, brownish-gray or black bark (cortex) (Staszkiwicz 1985, Boratyński 1994), peeled shells similar in shape. Dwarf shoots two-needled. Needles dark green; about 32 to 47 mm long (Boratyńska et al. 2003). Needle anatomy was described by Szweykowski (1969) and the reported traits were later confirmed by Staszkiwicz and Tyszkiewicz (1972), Boratyńska et al. (2003), Boratyńska (2004), Boratyńska and Boratyński (2007), Boratyńska et al. (2008), and Boratyńska and Lewandowska (2009). The cones have characters that are intermediate between *Pinus sylvestris*, *P. mugo*, and *P. uncinata* (Staszkiwicz, Tyszkiewicz 1972, Marcysiak et al. 2003). They are rather short, with short and not very numerous scales, a conical shape and an intermediate length apophyse, of the *uncinata* type (Staszkiwicz and Tyszkiewicz 1972, Businský 2008).

Description of trees from the locality

During the expedition we found 16 trees that were identified as *P. uliginosa* based on morphological features. Primarily monocormic to 4.5 m high with dark shoots, they were clearly distinguished from the surrounding *P. mugo*. The needles were rather short, dark-green, and not older than 3 years; always two in one short shoot (Table 1). The trees had only a few cones, and these were similar to cones of *P. mugo*.

Site characteristics

The species was found on an oligotrophic peat bog supporting a stunted forest belt. The area is surrounded by a spruce forest. *P. uliginosa* grows in the peripheral parts of the bog. The tree stand is formed by *Picea abies* (10—15 %), *P. uliginosa* (5—10 %), *P. mugo* (5—30 %) and *Betula pendula* Roth (single specimens). Coverage of the herb layer amounts

Table 1. Description of trees from Osmoloda locality

Individual	Hight [cm]	Diameter [cm]	Number of trunks	Age of needles
1	370	25.0	I	3
2	410	29.5	I	3
3	320	16.0	I	2
4	420	31.5	II	3
5	240	16.0	polycormic	3
6	375	26.5	I	3
7	240	24.0	II	3
8	450	30.0	II	3
9	300	17.0	I	3
10	312	16.0	I	2
11	227	12.0	I	2
12	425	29.0	III	3
13	450	24.0	polycormic	3
14	275	18.0	I	1
15	300	30.0	I	1
16	220	14.0	polycormic	2

to 50—70 %, with *Empetrum nigrum* subsp. *hermaphroditum* (Hagerup) Böcher (20—25 %) and *Eriophorum vaginatum* L. (10—20 %) prevailing. Species from the *Ericaceae* family (*Oxycoccus palustris* Pers. (5—10 %), *O. microcarpus* Turcz. ex Rupr. (1—3 %), *Vaccinium myrtillus* L. (1—5 %), *V. uliginosum* L. (up to 10 %) and *V. vitis-idaea* L. (rare)) are well represented. *Drosera rotundifolia* L., *Carex pauciflora* Lightf. and *Dactylorhiza majalis* (Rchb.) P.F. Hunt et Summerhayes provide small amounts of coverage. The moss layer is well-developed (95—100 % coverage) and multicolored due to the growth of different peat-moss species. *Sphagnum fuscum* (50—80 %), *S. angustifolium* (10—45 %), *S. magellanicum* (up to 90 %) and *S. russowii* are prevalent; *Pleurozium schreberi* provides insignificant coverage (from 1—5 to 10 %), along with *Polytrichum strictum* and *Aulacomnium palustre* (Table 2).

The establishment of the syntaxonomical positions of plant communities in which *P. uliginosa* occurs is very interesting for ecological and conservational reasons. In Central Europe (Poland, the Czech Republic, Slovakia) *P. uliginosa* is a component of different communities from the classes *Oxycocco-Sphagnetea* Br.-Bl. et Tx. ex Westhoff et al. 1946 and *Vaccinio-Piceetea* Br.-Bl. in Br.-Bl. et al. 1939 (*Vaccinio uliginosi-Pinetum rotundatae* Oberdorfer 1934 from the alliance *Dicrano-Pinion* (Libbert 1933) Matuszkiewicz 1962) (Chytrý et al. 2001, Matuszkiewicz 2001, Potocka 1999, Valachovič 2001).

The described coenoses belong to the class *Oxycocco-Sphagnetea*, which form the plant communities of oligotrophic and oligomesotrophic peat bogs, consisting mainly of *Sphagnum* mosses and dwarf-shrub ericoids (Mucina 1997, Rodwell et al. 2002). In Ukraine communities of this class reach the southern limit of their distribution and were reported mainly from Polissia (the northern forest zone) and the Carpathians (Solomakha 2008). In the investigated locality *P. uliginosa* forms communities with the following syntaxonomical position:

Table. 2. Communities of *Pinetum rotundatae* association

Relevé number	1	2	3
Field relevé number	16	17	18
Relevé area, m ²	100	100	625
Shrub layer density	0.1	0.2	0.05
Dwarf-shrubs — herbs layer cover, %	70	50	60
Mosses layer cover, %	95	100	100
Number of vascular plant species	12	11	11
Number of moss species	5	4	4
D.s. Ass. <i>Pinetum rotundatae</i>			
<i>Pinus uliginosa</i>	1	1	2
D.s. Cl. Oxycocco-Sphagnetea:			
<i>Empetrum nigrum subsp. hermaphroditum</i>	3	3	3
<i>Oxycoccus microcarpus</i>	1	1	1
<i>Oxycoccus palustris</i>	1	2	2
<i>Drosera rotundifolia</i>	1	+	1
<i>Eriophorum vaginatum</i>	2	2	3
<i>Carex pauciflora</i>	•	1	•
D.s. Cl. Vaccinio-Piceetea:			
<i>Pinus mugo</i>	1	4	2
<i>Picea abies</i>	2	2	3
<i>Vaccinium myrtillus</i>	1	1	1
<i>Vaccinium vitis-idaea</i>	1	+	•
Other species:			
<i>Betula pendula</i>	1	•	1
<i>Vaccinium uliginosum</i>	2	•	•
<i>Dactylorhiza majalis s.l.</i>	•	•	1
Moses:			
<i>Sphagnum magellanicum</i>	5	•	•
<i>Sphagnum russowii</i>	1	•	•
<i>Spagnum fuscum</i>	1	5	5
<i>Sphagnum angustifolium</i>	•	4	2
<i>Polytrichum strictum</i>	2	•	•
<i>Pleurozium schreberi</i>	1	1	1
<i>Aulacomnium palustre</i>	•	1	1

Oxycocco-Sphagnetea Br.-Bl. et Tx. ex Westhoff et al. 1946

Sphagnetalia magellanici Kästner et Flössner 1933

Sphagnion medii Kästner et Flössner 1933

Pinetum rotundatae Kästner et Flössner 1933 corr. Mucina 1993 (syn. *Pino rotundatae-Sphagnetum* (Kästner et Flössner 1933) Neuhäusl 1969).

Summary and perspectives

A new locality of *Pinus uliginosa* was found near the village of Osmoloda in the Gorgany Mts., Ukraine. A more detailed description of the taxonomic position of these specimens on the basis of morphological and anatomical traits will be reported in another article.

There are reports in the literature about a few oligotrophic peat bogs with *Pinus sylvestris* f. *litwinowii* in the Limnytsia catchment area and adjoining territories in the Gorgany Mts. (Andrienko, 1968, 1970, Milkina, 1974). It is possible that new populations of *P. uliginosa* will be found there as well.

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PINUS ULIGINOSA G.E. NEUMANN EX WIMM. —

НОВИЙ ТАКСОН ДЛЯ УКРАЇНСЬКОЇ ФЛОРИ

Наводяться короткі відомості про знахідку нового для флори України таксону гібридного походження — *Pinus uliginosa* G.E. Neumann ex Wimm. на оліготрофному болоті в долині р. Мшана в околицях с. Осмолода (Горгани, Івано-Франківська обл.). Описано основні морфологічні параметри дерев. Подано ценотичну характеристику місцезростання, вперше для України наводяться описи асоціації *Pinetum rotundatae* Kästner et Flössner 1933 corr. Mucina 1993 класу *Oxycocco-Sphagnetea* Br.-Bl. et Tx. ex Westhoff et al. 1946.

Ключові слова: *Pinus uliginosa*, *Oxycocco-Sphagnetea*, Горгани, Східні Карпати, Україна.

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PINUS ULIGINOSA G.E. NEUMANN EX WIMM. —

НОВИЙ ТАКСОН ДЛЯ УКРАЇНСЬКОЇ ФЛОРИ

Приведена краткая информация о находке нового для флоры Украины таксона гибридного происхождения — *Pinus uliginosa* G.E. Neumann ex Wimm. на олиготрофном болоте в долине р. Мшана в окрестностях с. Осмолода (Горганы, Ивано-Франковская область). Описано основные морфологические параметры деревьев. Дана ценотическая характеристика локалитета, впервые для Украины приводятся описания ассоциации *Pinetum rotundatae* Kästner et Flössner 1933 corr. Mucina 1993 класса *Oxycocco-Sphagnetea* Br.-Bl. et Tx. ex Westhoff et al. 1946.

Ключевые слова: *Pinus uliginosa*, *Oxycocco-Sphagnetea*, Горганы, Восточные Карпаты, Украина.