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DOWNY WILLOW (*Salix lapponum* L.) AS A COMPONENT OF DIFFERENT PHYTOCOENOSES IN POLESIE NATIONAL PARK

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A b s t r a c t

The aim of this study was to make an evaluation of the current stands of a relict species, *Salix lapponum*, within the area of the Polesie National Park, to determine the population size and condition of downy willow as well as to analyse biocenotic conditions in its stands.

The study, conducted in the years 2001–2003, allowed to establish that the number of *S. lapponum* stands had decreased significantly and that its population size in the confirmed stands in the Polesie National Park was substantially lower than 50 years ago.

Salix lapponum was a component of different phytocoenoses, but its highest population size and a high degree of development were noted at the sites with the *Betulo-Salicetum repentis* and *Thelypteridi-Phragmitetum* communities. The character of the phytocoenoses in which *Salix lapponum* occurred in greatest numbers may evidence the wide range of tolerance of downy willow with respect to habitat conditions.

There is a probability that not only the changes in its habitat conditions, which were noted over the last half-century, had a significant effect on the reduction in the number of stands and in the population size of this species. An essential problem appears to be the fact of the absence of flowering in individuals in many of the studied populations, which may result in an insufficient degree of adaptation of *S. lapponum* to changing habitat conditions

Key words: *Salix lapponum*, Polesie National Park, phytocoenoses, change in population size

INTRODUCTION

The Polesie National Park (with an area of 9647.73 ha) was established in 1990 in order to protect the aquatic-bog ecosystems. The Park is located in the central part of the Łęczyńsko-Włodawskie Lakeland (the Polesie Lubelskie Region), where hydraulic improvements of this area, related to the construction of the Wieprz-Krzna Canal, had been carried out since the 50's of the 20th century. Alongside grassland (about 665 km^2) and arable land (380 km^2; M i c h a l c z y k , 1991), the peatlands, being the habitat for boreal flora, were also included in the drained land. Changes in water relations in this area disturbed the water discharge rate, resulting in the absence of water stagnation (C h m i e l e w s k i and R a d w a n , 1993), and the allochthonous water conveyed through the Canal, characterised by different trophism and chemical composition, contributed to the change in habitat conditions (W i l g a t , 1991; M i c h a l c z y k and T u r c z y ń s k i , 1998; T u r c z y ń s k i et al. 2000).

In connection with the intensification of anthropopressure, the habitats of many species of the relict boreal flora became fragmented in the area in question, which contributed to a drastic decline in their population size until the time of the establishment of the Polesie National Park. Downy willow (*Salix lapponum*) was also among the abovementioned, extremely valuable species.

Salix lapponum is a common species in the peatlands of the subarctic-boreal areas of Eurasia; it also grows at detached sites in Scotland as well as in some mountains of Central and Southern Europe (K a c , 1975; B o l l i g e r et al.1998; P o d b i e l k o w s k i , 2002). The south-western limit of the species range runs through the territory of Poland (K r u s z e l n i c k i , 2001).

The largest number of lowland stands of this species in Poland has been preserved in the Polesie Lubelskie Region, within the area of the Łęczyńsko-Włodawskie Lakeland (F i j a ł k o w s k i , 1996; S o ł t y s and Różycki, 1996; F i j a ł k o w s k i and L o r e n s , 1998; W o j c i e c h o w s k i and F i j a ł k o w s k i , 1998; U r b a n and W a w e r , 2001; F i j a ł k o w s k i and I z d e b s k i , 2002; N o w i c k a - F a l k o w s k a , 2002; U r b a n and G a w l i k , 2003).

In its natural stands in the Łęczyńsko-Włodawskie Lakeland, *S. lapponum* grows on fens

and transitional bogs, among the communities of the class *Scheuchzerio-Caricetea fuscae*, sporadically – of the order *Molinietalia;* sometimes it encroaches into *Betulo-Salicetum repentis* birch thickets. Downy willow shoots usually grow individually or in small groups (Fijałkowski, 1994; Fijałkowski and Lorens, 1998).

The reasons for the decline in *Salix lapponum* population size and the reduction in the number of its natural stands in Poland are mainly attributed to the changes in habitat conditions related to drainage and succession processes at its sites (Jasnowska and Jasnowski, 1977; Podbielkowski and Tomaszewicz, 1977; Kruszelnicki, 2001; Pięknoś-Mirkowa and Mirek, 2003).

The aim of this study, conducted in the years 2001–2003, was to make an evaluation of the current stands of this species within the area of the Polesie National Park, to determine the current population size of *Salix lapponum* and the characteristics of biocenotic conditions in the habitats of this species.

MATERIALS AND METHODS

The field study was carried out in the Polesie National Park in the years 2001–2003. The first stage of the study (in 2001) involved the exploration of the area on foot and site visits of the downy willow stands known from literature (Fijałkowski, 1958; Chmielewski et al. 1995; Wojciechowski and Fijałkowski, 1998). In the confirmed *S. lapponum* stands, permanent study plots of different size were established (from 4 to 400 m^2). Their selection was based on the location, distribution and different population sizes of downy willow within the study area, as linked to biocenotic variations in the habitats.

In total, 8 study plots were set up: two (Nº 1, 2) on the peat bog surrounding Lake Moszne (in the W and N parts of the bog); two (Nº 3, 4) on the peat bog adjacent to the eastern shore of Lake Długie (in the S and S-E parts of the bog); three (5, 6, 7) on the peat bog adjacent to Lake Karaśne (in the S-E and E parts of the bog); one study plot (8) on the mid-forest peat bog "Blizionki" (in the western part of the bog) in the complex "Orłowskie Bagno" (marsh) (Fig. 1).

Each year, the number of *Salix lapponum* individuals on each study plot was determined, measurements were made of the length of the above-ground parts of shoots as well as the development degree (condition) of individuals was determined using an original, comparative, three-level classification of shoot condition, which took into account the characteristic habit and the general health condition of plants:

1. A fully-developed plant, sparsely foliated, slender, a significant amount of dry or wilted leaves, with symptoms of activity of pathogens or pests.
2. A fully-developed plant, fruiting or flowering, with symptoms of wilting or activity of pathogens, but growing properly.
3. A fully-developed plant, fruiting or flowering, with standard morphometric traits (i.e., consistent with the data in Rutkowski 1998), correctly growing, with dense foliage, no disease or wilting symptoms.

The quantitative ratio of female to male individuals was also documented (in the flowering period, at the turn of March and April 2003).

In 2002 the condition of the phytocoenoses in the study plots was documented by making and analysing floristic lists which included the percentage shares of particular species in the studied phytocoenoses.

The species occurring in the investigated phytocoenoses were identified using the key of Rutkowski (1998), species nomenclature followed Mirek et al. (2002), the assignment of particular species to syntaxonomic units followed Matuszkiewicz (2005). During office investigations, *Ecological indicator values of vascular plants of Poland* (Zarzycki et al. 2002) was also used to determine specific habitat conditions, based on the affinity of plant species of particular phytocoenoses with characteristic ecological groups, as well as Jaccard's formula (Wysocki and Sikorski, 2002) in order to calculate the index of species similarity between particular phytocoenoses in which *S. lapponum* occurred. The probability index value may be within the range from 0 to 1, where 0 means the lack of similarity between the phytocoenoses, whereas 1 means one hundred percent similarity of the species composition.

RESULTS

During the exploration of the study area on foot, the following *Salix lapponum* stands were confirmed on the peat bogs located within the Polesie National Park: on Moszne Lake (Fig. 2), Karaśne Lake, Długie Lake as well as on the mid-forest bog "Blizionki". No other stands of this species known from literature were found (Tab. 1).

The investigated downy willow populations in the Polesie National Park were generally characterised by their small population size. *S. lapponum* occurred in greatest numbers on the peat bogs on Karaśne and Moszne Lakes, where an increase in the number of shoots was additionally noted over the successive three years of study, as well as the best condition of the investigated specimens. The largest decline in population size of the studied species was noted at the site on Długie Lake, where the condition of the specimens was also the poorest. The flowering of *S. lapponum* was noted in the population living on Długie Lake (only

Table 1
The number of *S. lapponum* specimens' comparison in its stands in Polesie National Park – 1950's and present state.

***S. lapponum* stands in PPN**	***S. lapponum occurrence* in 1950's***	***S. lapponum* occurrence in 2001-2003**
Moszne	about 1000 specimens	about 100 individuals
Długie	about 2000 specimens	abort 50 individuals
N-E Długie Lake	conglomeration over 100 shrubs	unconfirmed station
Karaśne	conglomeration about 10 shrubs	about 60 individuals
Blizionki	conglomeration about 10 shrubs	4-5 individuals
Łukie	conglomeration 10-50 shrubs	unconfirmed station
Wąskie (presently Bagno Wąskie)	conglomeration about 10 shrubs	unconfirmed station
Bagno Staw	conglomeration about 10 shrubs	unconfirmed station

* information included as a description in text and on the map; names 'specimens' and 'shrubs' according to original (Fijałkowski 1958)

Table 2
Salix lapponum on plots in Polesie National Park.

Stations	**Year**	**Moszne**		**Długie**		**Karaśne**			**Blizionki**
Plots		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Plot's size (m¸)		20	100	100	100	10	400	144	4
Number of shoots	2001	13	30	46	5	9	33	11	5
	2002	4	30	26	5	10	39	12	5
	2003	8	34	8	5	6	47	8	4
Max. height of shoots (cm)	2001	50	50	85	40	40	70	60	39
	2002	50	50	30	30	60	50	55	40
	2003	55	50	30	25	50	70	50	45
Individual condition (1-3)	2001	2	3	1	2	2	3	2	2
	2002	1	3	1	2	2	3	2	2
	2003	1	3	1	2	2	3	2	2
Ratio of female to male blooming shoots ♀:♂		?	?	1:0	?	0:1	3:1	?	?

male individuals) and on Karaśne Lake (both male and female individuals; Tab. 2).

Based on the floristic lists of the phytocoenoses of each study plot, it was found that the phytocoenosis of study plot Nº 2, located on the peat bog on Moszne Lake, was characterised by the greatest species richness (39 species), whereas the lowest number of vascular plant species was recorded within the boundaries of study plot Nº 8 (on the peat-bog Blizionki – 13 species; Tab. 3).

Vascular plant species most frequently co-occurring with *Salix lapponum* in its stands were as follows (in alphabetic order): *Betula pubescens, Carex rostrata, Comarum palustre, Lysimachia vulgaris, Menyanthes trifoliata, Oxycoccus palustris* and *Thelypteris palustris.* The botanical family Cyperaceae was represented in the greatest number in the phytocoenoses with downy willow (14 species; Tab. 3).

Species characteristic for the syntaxonomic classes *Phragmitetea* and *Scheuchzerio-Caricetea ni-*

Table 3
Floristic composition of phytocoenoses with *Salix lapponum* in Polesie National Park, included syntaxonomic view and percent participation of each plant species ('+' single individuals).

Stations	**Moszne**		**Długie**		**Karaśne**			**Blizionki**
Plots	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Number of vascular plants	30	39	26	26	26	25	24	13
Layer a density (%)	10	1	-	-	-	-	-	-
Layer b density (%)	50	40	-	1	20	60	60	10
Layer c coverage (%)	80	60	90	70	90	50	50	60
Layerd coverage (%)	90	90	60	90	90	80	100	100
Cl. Phragmitetea								
Calla palustris					+			
Carex acutiformis	20	30		30	50			+
Carex appropinquata	10	30			20			
Carex elata							+	
Carex pseudocypeus	20							
Carex rostrata	20	10	10		+	10	10	60
Carex vesicaria					10			
Equisetum fluviatile			+	+	20	10	10	
Lysimachia thyrsiflora			+	+				
Peucedanum palustre	+	10	+	10		+		
Phragmites australis		10	70	20				
Ranunculus lingua						+	+	
Typha angustifolia	20	20					10	
Cl. Scheuchzerio-Caricetea nigrae								
Carex davalliana	10	30				+		
Carex echinata	+					+		
Carex flava		10					+	
Carex limosa		+					+	
Carex nigra			20	10				
Comarum palustre	20	20	+	+	+	10	20	+
Eriophorum angustifolium			+	+				
Epipactis palustris		+			+	+		
Juncus articulatus	+							
Menyanthes trifoliata		20	20	10	+	+		+
Scheuscheria palustris	+							
Triglochin palustre		+						
Viola palustris	+	+		+			10	
Cl. Oxycocco-Sphagnetea								
Andromeda polifolia	+	+		+				
Drosera rotundifolia	10	10	+	+	+	+	+	
Eriophorum vaginatum	+		+		+		+	20
Oxycoccus palustris	40	60	40	50	30	30	30	40
Cl. Molinio-Arrhenatheretea								
Carex panicea			20			+		
Cirsium palustre		+			+	10	+	
Epilobium palustre					+			+
Galium uliginosum	+	+		+	+	+		
Lysimachia vulgaris	10	+	20	10	+	10	20	
Lythrum salicaria	+	+	+		+	+	+	
Molinia coerulea		+						
Ranunculus acris		+	+					
Sanguisorba officinalis						+		
Cl. Alnetea glutinosae								
Alnus glutinosa						20	20	
Betula humilis. **b**				+	20	60	20	+
Calamagrostis canescens	20	+	+		30			
Salix cinerea **b**	30	30	+					
Salix rosmarinifolia ***b***	+	10	+	10	+			
Salix aurita **b**		10			+		+	
Salix pentandra **b**	+	+						
Thelypteris palustris	80	40	30	20	20	30	+	+
Other species								
Betula pendula **b**		+		10				
Betula pubescens **a**	50	30						
Betula pubescens ***b***		+	10	20	20	10	20	10
Dactylorhiza incarnata		+		+				
Frangula alnus **b**	10	10	+	10		10	20	+
Pleurozium schreberi **d**		30	40					
Pinus sylvestris **a**		10						
Pinus sylvestris ***b***		10		+				
Polytrichum strictum **d**			10	20				
Potentilla erecta						+	+	
Salix lapponum **b**	+	10	+	+	+	+	+	+
Salix myrtilloides **b**	+							
Sphagnum sp. **d**	90	70	90	60	90	80	100	100
Stratiotes aloides	10							
Utricularia vulgaris					10			

Table 4
Species similarity (by Jaccard's formula) between particular phytocoenoses in plots (1-8).

Plots	2	3	4	5	6	7	8
1	0,59	0,35	0,36	0,38	0,35	0,31	0,27
2		0,42	0,57	0,42	0,35	0,37	0,24
3			0,52	0,37	0,39	0,35	0,35
4				0,37	0,37	0,25	0,34
5					0,42	0,41	0,44
6						0,53	0,40
7							0,37

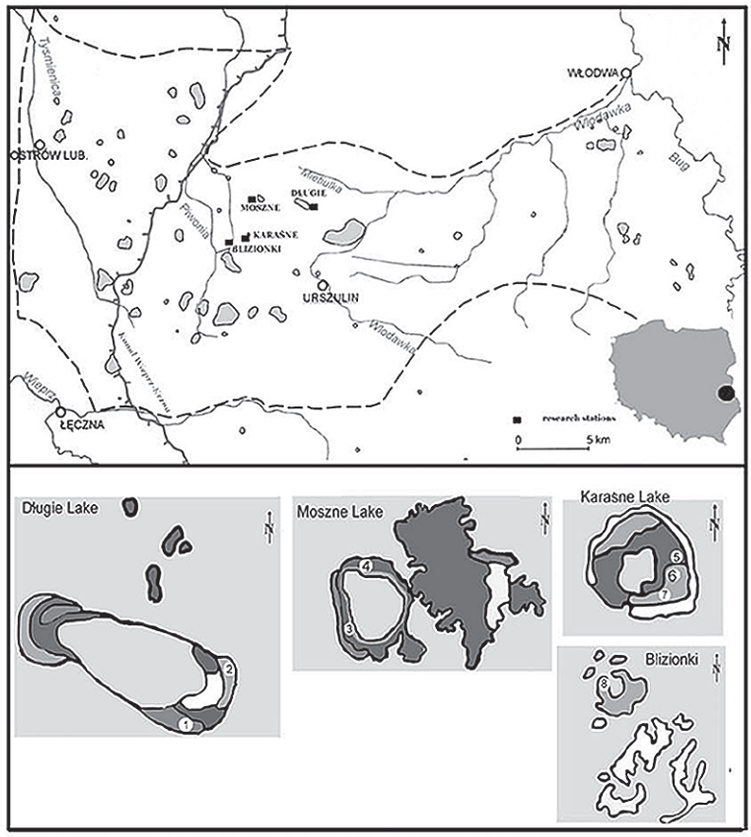

Fig. 1. Plots location on peat-bogs of Łęczna-Włodawa Lakeland (in Polesie National Park).

gre co-occurred most frequently with *Salix lapponum.* Based on the floristic lists and the quantitative characteristics of the phytocoenosis components, it can be stated that the study plots situated on Lake Długie and Lake Moszne were most similar in floristic terms to the community *Thelypteridi-Phragmitetum*; on Lake Karaśne – *Caricetum acutiformis* (plot N^{o} 5) and *Betulo-Salicetum repentis* (plots N^{o} 6 and 7), whereas on the peat bog Blizionki – *Caricetum rostratae* (Tab. 3).

The index of species similarity of the studied phytocoenoses (according to Jaccard) ranged between 0.24 and 0.59, but the largest similarity was demonstrated between plots N^{o} 1 and 2, which are located on the same peat bog on Lake Moszne (Tab. 4).

Table 5
Percentage of plant species with different habitat requirements in plots' phytocoenosis (using the ecological indicator values of vascular plants).

Selected indicators	Plots	Indicator values					
		1	**2**	**3**	**4**	**5**	**6**
L – light value	**1**	0	3,4	17,2	82,8	13,8	0
	2	0	2,9	14,2	97,1	8,6	0
	3	0	4,3	17,4	91,3	8,7	0
	4	0	3,8	15,4	96,1	11,5	0
	5	0	4,2	16,7	95,8	0	0
	6	0	4,2	16,7	91,6	4,2	0
	7	0	4,4	13,0	91,3	4,4	0
	8	0	8,3	25,0	91,6	8,3	0
T – temperature value	**1**	0	17,2	82,8	96,5	0	0
	2	0	17,1	77,1	94,3	0	0
	3	0	26,1	86,9	96,5	0	0
	4	0	23,1	84,6	96,1	0	0
	5	0	25,0	83,3	95,8	0	0
	6	0	20,8	83,3	95,8	0	0
	7	0	34,8	78,3	95,6	0	0
	8	0	33,3	83,3	83,3	0	0
K – continentality value	**1**	0	0	100	0	0	0
	2	0	2,9	100	2,9	0	0
	3	0	0	100	0	0	0
	4	0	0	96,1	7,7	0	0
	5	0	0	95,8	4,2	0	0
	6	0	0	95,8	4,2	0	0
	7	0	8,7	91,3	4,4	0	0
	8	0	0	91,6	8,3	0	0
W – soil moisture value	**1**	0	0	0	37,9	96,5	6,9
	2	0	2,9	11,4	48,6	82,8	8,6
	3	0	8,7	39,1	91,3	8,7	0
	4	0	3,8	11,5	53,8	88,5	7,7
	5	0	0	0	33,3	91,6	12,5
	6	0	0	8,3	41,6	66,6	8,3
	7	0	0	13,0	34,8	86,9	8,7
	8	0	0	8,3	25,0	100,0	8,3
TR – trophy value	**1**	13,8	13,8	72,4	41,4	0	0
	2	11,4	22,8	74,3	42,8	0	0
	3	4,3	26,1	73,9	47,8	0	0
	4	15,4	30,8	80,8	34,6	0	0
	5	12,5	16,7	70,8	45,8	0	0
	6	8,3	20,8	75,0	45,8	0	0
	7	13,0	30,4	65,2	43,5	0	0
	8	16,6	41,6	66,6	41,6	0	0
R – soil (water) acidity (pH) value	**1**	17,2	24,1	41,4	44,8	20,7	0
	2	17,1	20,0	40,0	62,8	25,7	0
	3	17,4	30,4	47,8	60,8	8,7	0
	4	19,2	26,9	53,8	57,7	11,5	0
	5	12,5	20,8	37,5	62,5	16,7	0
	6	12,5	25,0	45,8	62,5	16,7	0
	7	17,4	30,4	43,5	56,5	13,0	0
	8	25,0	41,6	58,3	41,6	0	0
H – organic matter content value	**1**	3,4	13,8	96,5	0	0	0
	2	11,4	37,1	82,8	0	0	0
	3	0	26,1	95,6	0	0	0
	4	7,7	26,9	96,1	0	0	0
	5	0	20,8	95,8	0	0	0
	6	0	29,2	95,8	0	0	0
	7	8,7	30,4	91,3	0	0	0
	8	0	8,3	100	0	0	0

Fig. 2. *Salix lapponum* on the peat-bog near Lake Moszne in Polesie National Park.

An analysis of the flora, made using ecological indicator values (Zarzycki et al. 2002), demonstrated that, in the phytocoenoses of all the study plots, species neutral to continentality were predominant, characteristic for areas with moderately cool or moderately warm climatic conditions, preferring moderate light at their sites. There was a predominance of plant species characteristic for wet and humid habitats, moderately poor soils (mesotrophic) with the neutral or moderately acid reaction of the substrate, as well as species encountered on organogenic soils (Tab. 5).

DISCUSSION

In 1958 D. Fijałkowski wrote that downy willow was a species frequently occurring in the Łęczyńsko-Włodawskie Lakeland. He described this species as one growing on peatlands in the form of single individuals or clusters composed of several, several dozen or even several hundred shrubs on relatively small patches which were often not more than several hundred square meters in area (Fijałkowski, 1958).

The original study carried out in the Polesie National Park in the years 2001-2003 showed that the number of stands and the population size of downy willow in this area had drastically decreased. Most of the stands known in the 1950's do not exist any more, whereas those which have survived until now are less densely populated. Sites in which this species occurs in clusters of several hundred shrubs are not currently encountered in this area. The absence of flowering of specimens in five out of the eight populations was also noted; therefore, unfortunately, an increase in population size cannot be expected.

Based on a comparison of the results of the 2001-2003 study with the data from the 1950's (Fijałkowski, 1959), it can be stated that many sites meeting the habitat requirements of *Salix lapponum* have been changed irrevocably over the last 50 years. The bog ecosystems have become overgrown as a result of accelerated succession or have been drained and radically changed their biocenotic structure. *Salix lapponum* has been preserved only at the sites in which habitat conditions have not changed to a large extent or at those in which such changes are taking place more slowly.

Biocenotic conditions at the *Salix lapponum* stands were characterised by Fijałkowski in the 1950's based on the floristic lists made by him. The synthesis of these results allowed him to find that the development of downy willow was the most abundant basically in the communities similar to the *Caricion fuscae* alliance (original nomenclature), where the investigated species reached an optimum of its development. *Salix lapponum* reached the upper limit of its ecological amplitude in eutrophic and relatively dry habitats, in the communities with the *Molinion coeruleae* alliance (original nomenclature), and its lower limit in oligothrophic and humid habitats, in the *Rhynchosporion albae* alliance (original nomenclature; Fijałkowski, 1958).

Urban and Wawer (2001) described the conditions of occurrence of *Salix lapponum* within the area of the Sobibór Landscape Park. The studied species occurred there in mid-forest transitional bogs and on difficult-to-access lake shores. Downy willow grew in the associations *Caricetum lasiocarpae*, *Caricetum limosae*, *Sphagno-Caricetum rostratae*, *Betulo-Salicetum repentis* and *Salicetum pentandro-cinereae*.

The results of my own study conducted in the years 2002-2003 showed that *Salix lapponum* was a component of different plant associations. Downy willow specimens in the phytocoenoses similar in their character to the communities *Betulo-Salicetum repentis* and *Thelypteridi-Phragmitetum* were distinguished by the largest population size and a high degree of development.

Betulo-Salicetum repentis is a phytocoenosis with distinctly boreal-continental character, whereas *Thelypteridi-Phragmitetum* is probably a succession stage, depending on habitat conditions, leading to very different alder carr, turf-bog and raised-bog associations, (Matuszkiewicz, 2005; Wysocki and Sikorski, 2002).

The species composition of the phytocoenoses with downy willow was characterised (during the study conducted in the years 2001-2003) by a large share of species typical for wet, mesotrophic habitats, with soils rich in organic matter, with the reaction of the substrate ranging between 5 and 7 pH, as well as for habitats with moderate light. Downy willow (according to Zarzycki et al. 2002) prefers in its habitat similar abiotic conditions as other species of vascular plants accompanying it.

The results of the analysis of the study plots' flora confirm the results of the investigation of abiotic factors in the downy willow habitats. Downy willow occurs in the Łęczyńsko-Włodawskie Lakeland at waterlogged sites (where the water level reaches up to 10 cm), mesotrophic, with the water pH ranging from 4.16 up to 6.17 (Pogorzelec, 2008).

The character of the phytocoenoses in which *Salix lapponum* occurred in greatest numbers may evidence the rather wide amplitude of habitat requirements of this species relative to other species of peat bog plants as well as it may prove that downy willow is a species which may participate in different succession stages. In the light of such conclusions, one may presume that it is not only habitat conditions that currently affect negatively the development of the downy willow population. It seems that intra-population processes also affect the continually deteriorating condition of this species' population within the study area.

CONCLUSIONS

- The number of *S. lapponum* stands has decreased significantly, and its population size in the confirmed stands in the Polesie National Park is substantially lower than 50 years ago.
- The condition and size of particular downy willow populations in the Polesie National Park vary, but based on the information about the absence of flowering of individuals in most of the studied sites, a significant increase in this species' population cannot be expected.
- The species composition of the phytocoenoses with *Salix lapponum* is characterised by a large share of species characteristic for wet, mesotrophic habitats, with soils rich in organic matter, with the reaction of the substrate ranging between 5 and 7 pH, as well as for habitats with moderate light, hence, with habitat requirements similar to those of downy willow.
- *Salix lapponum* is a component of different phytocoenoses, but its largest population size and its best condition were noted at the sites of the communities similar to *Betulo-Salicetum repentis* and *Thelypteridi-Phragmitetum.* The character of the phytocoenoses in which *Salix lapponum* occurs in greatest numbers may evidence the wide amplitude of requirements of downy willow with respect to habitat conditions and the participation of this species in different succession stages.
- Not only changes in habitat conditions, which were noted over the last half-century, probably have a significant effect on the decrease in the number of stands and species population size, but the lack of possibility of sexual reproduction may also play an important role, and what follows, the poorer adaptation of individuals to changing environmental conditions.

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Wierzba lapońska (*Salix lapponum* L.) jako składnik różnych fitocenoz Poleskiego Parku Narodowego

S t r e s z c z e n i e

Celem pracy była waloryzacja aktualnych stanowisk gatunku reliktowego *Salix lapponum* na terenie Poleskiego Parku Narodowego, określenie liczebności i kondycji populacji wierzby lapońskiej oraz analiza warunków biocenotycznych w jej stanowiskach.

Badania przeprowadzone w latach 2001–2003 pozwoliły stwierdzić, że znacznie zmalała liczba stanowisk *S. lapponum,* a liczebność jej populacji w potwierdzonych stanowiskach w Poleskim Parku Narodowym jest znacznie mniejsza niż przed 50. laty.

Salix lapponum była składnikiem różnych fitocenoz, ale największą jej liczebność i wysoki stopień dorodności zanotowano w stanowiskach ze zbiorowiskami *Betulo-Salicetum repentis* i *Thelypteridi-Phragmitetum.* Charakter fitocenoz, w których najliczniej występowała *Salix lapponum* może świadczyć o szerokim zakresie tolerancji wierzby lapońskiej w stosunku do warunków siedliskowych.

Istnieje prawdopodobieństwo, że nie tylko zmiana warunków siedliskowych, jakie odnotowano w ostatnim półwieczu miała istotny wpływ na zmniejszanie się liczby stanowisk i liczebności populacji gatunku. Istotnym problemem jawi się fakt braku kwitnienia osobników w wielu badanych populacjach, czego wynikiem może być niedostateczny stopień dostosowania *S. lapponum* do zmieniających się warunków środowiska.