

## **OCCURRENCE OF *Phellinus pini* (BROT.) BONDARSTSER ET SINGER IN SELECTED SCOTS PINE STANDS OF NORTHERN POLAND**

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**Abstract.** *Phellinus pini* is the most frequent cause of the development of red ring rot creating great economic losses in the felling product. *Phellinus pini* remains a constant threat and it causes significant losses in timber raw material. It affects the functioning of the forest ecosystem and its stability from the economic point of view. The main purpose of the presented work was to make an inventory of *Phellinus pini* fruit bodies in stands in the age of over 100 years on the area of forest division of North Poland. For the estimation of red ring rot fruit bodies, 30 forest divisions were selected with pine being the dominating species in the age of 100-170 years. In results of the presented estimations, one can state that only one of the observed stands did not show any red ring rot fruit bodies.

**Key words:** *Phellinus pini*, red ring rot, Scots pine

### **INTRODUCTION**

*Phellinus pini* is the most frequent cause of the development of red ring rot creating great economic losses in the felling product. Mańka [2005] reported that about 8% of the felling product consists of timber infected by red ring rot. In the available publications, there is not enough information referring to the occurrence of red ring rot and the economic losses caused by it. Forest Research Institute publishes information referring to this problem in the prognoses of the occurrence in Poland of important forest pests and diseases which may be expected in the successive years. However, these data refer only to the general occurrence of long and trunk diseases. In the report for the year 2006, only two Regional Directorates of State Forest reported data referring to the forest acreage where red ring rot occurred (Regional Directorate Białystok – 30 055 ha and Regional Directorate Olsztyn – 4825 ha). In the period before the II World War, red ring rot was recorded in 80% of forest divisions causing great economic losses [Filipowski 1937, after Sierota 1998]. *Phellinus pini* remains a constant threat and it causes signifi-

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cant losses in timber raw material. It affects the functioning of the forest ecosystem and its stability from the economic point of view [Sierota 1998].

The main purpose of the presented work was to make an inventory of *Phellinus pini* fruit bodies in stands in the age of over 100 years on the area of forest division of North Poland.

## MATERIAL AND METHODS

For the estimation of red ring rot fruit bodies, 30 forest division were selected with pine being the dominating species in the age of 100-170 years, in 21 forest district. In each compartment, 1-ha plots were selected and each tree was provided with a number and it was macroscopically estimated.

## RESULTS

Results of the performed inventory are presented in Table 1. The smallest number of fruit bodies was found in Directorate Gdańsk (1.5%), then followed Directorate Szczecinek (1.7%), Olsztyn (3.75%), Toruń (5.4%), Piła (6.6%) and Szczecin (7%). Analysis of fruit bodies occurrence in relation to the habitats indicated that pines are most threatened on fresh mixed broadleaved forest habitats (6.7%). On the remaining habitats, the averaged value of fruit bodies occurrence was the following: fresh coniferous forest – 4.1%, fresh mixed coniferous forest – 3.5%, boggy mixed broadleaved forest – 0.9%.

Table 1. Occurrence of red ring rot fruit bodies in the inspected stands  
Tabela 1. Występowanie owocników huby sosny w lustrowanych drzewostanach

No Lp.	District Nadleśnictwo	Regional Directorate of State Forest RDLP	Compartment Wydział	Age Wiek	Site type Siedliskowy typ lasu	Number of trees with fruit body Liczba drzew z owocnikami	Trees with fruit body Drzewa z owocnikami %
1	2	3	4	5	6	7	8
1	Kartuzy	Gdańsk	44a	104	fresh mixed broadleaved forest LMśw	2	1.0
2	Lipusz	Gdańsk	319i	170	fresh mixed broadleaved forest LMśw	3	2.0
3	Lubichowo	Gdańsk	148c	138	fresh coniferous forest Bśw	3	1.4
4	Dwukoły	Olsztyn	319d	107	fresh mixed coniferous forest BMśw	11	5.4

Table 1 – cont.  
Tabela 1 – cd.

1	2	3	4	5	6	7	8
5	Ilawa	Olsztyn	102d	115	fresh mixed coniferous forest BMśw	3	1.5
6	Ilawa	Olsztyn	190l	111	fresh mixed broadleaved forest LMśw	15	7.1
7	Wielbark	Olsztyn	326j	113	fresh coniferous forest Bśw	3	1.0
8	Jastrowie	Piła	229w	155	fresh mixed coniferous forest BMśw	20	17.4
9	Kaczory	Piła	180d	115	fresh mixed broadleaved forest LMśw	17	18.0
10	Kaczory	Piła	375c	111	fresh coniferous forest Bśw	5	4
11	Okonek	Piła	149p	112	fresh coniferous forest Bśw	5	4.2
12	Okonek	Piła	26a	107	fresh coniferous forest Bśw	3	0.6
13	Tuczno	Piła	144i	105	fresh mixed coniferous forest BMśw	4	0.7
14	Zdrojowa Góra	Piła	254f	110	fresh mixed coniferous forest BMśw	2	1.0
15	Kłodawa	Szczecin	65j	126	fresh mixed broadleaved forest LMśw	23	12.6
16	Kłodawa	Szczecin	81i	132	fresh mixed broadleaved forest LMśw	4	2.6
17	Łobez	Szczecin	150g	123	fresh mixed coniferous forest BMśw	13	5.7
18	Gościno	Szczecinek	229j	115	fresh mixed coniferous forest BMśw	5	2.0
19	Gościno	Szczecinek	94p	112	fresh mixed broadleaved forest LMśw	5	3.4
20	Manowo	Szczecinek	9h	110	fresh mixed coniferous forest BMśw	3	1.2
21	Manowo	Szczecinek	117j	145	fresh coniferous forest Bśw	12	3.4

Table 1 – cont.  
Tabela 1 – cd.

1	2	3	4	5	6	7	8
22	Manowo	Szczecinek	15s	135	boggy mixed broadleaved forest LMb	3	0.9
23	Miastko	Szczecinek	143g	105	fresh mixed coniferous forest BMśw	0	0
24	Niedźwiady	Szczecinek	147g	110	fresh mixed coniferous forest BMśw	3	1.0
25	Dąbrowa	Toruń	50b	100	fresh mixed coniferous forest BMśw	5	2.8
26	Gniewkowo	Toruń	351b	120	fresh mixed coniferous forest BMśw	11	4.3
27	Gniewkowo	Toruń	216b	135	fresh coniferous forest Bśw	22	8.0
28	Rytel	Toruń	87b	136	fresh mixed coniferous forest BMśw	3	2.7
29	Rytel	Toruń	56d	130	fresh coniferous forest Bśw	14	9.5
30	Solec Kujawski	Toruń	224i	126	fresh coniferous forest Bśw	21	5.0

## DISCUSSION OF RESULTS

In the results of the presented estimations, one can state that only one of the observed stands did not show any red ring rot fruit bodies. The greatest number of fruit bodies was found in compartment 65j of Forest District Kłodawa in the stand habitat LMś. According to Mańka and Żebrowska [1997], stands growing on better habitats have more developed branches and during pruning, there remain wounds after the removed branches and then, the heartwood is uncovered on a significant tree surface leaving thereby an “open door” for the fruit bodies. However, the determination of the real degree of tree infection is very difficult to estimate. Fruit body appears when the rot of the heartwood is very advanced. Sometimes, it may also happen that the fruit body had already fallen off (it usually takes place after 50 years), or it has not yet developed. In the studies carried out by Mańka and Łakomy [1991], in the Experimental Forest District Zielonka, 13% of infected pines in the age of 110 years had shown *Ph. pini* fruit bodies. In the pine stand in the Wielkopolski National Park, only 17% with red ring rot were found [Mańka and Żebrowska 1997]. In compartment 102d of Hawa Forest District, after stand removal, it was found that red ring rot affected 7.7% of trees, fruit bodies occurred on 20% of trees showing red ring rot symptoms. With the increasing tree age,

the threat of red ring rot occurrence increases as well [Bernadzki 2003], and the extent of red ring rot grows as well stands on the area in Northern Poland. However, one must realize that there are also some positive aspects of red ring rot occurrence, because trees with hollows which remain in the stands provide good nesting conditions for birds.

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## WYSTĘPOWANIE OWOCNIKÓW HUBY SOSNY [*Phellinus pini* (Brot.) Bondarstser et Singer] W WYBRANYCH DRZEWOSTANACH SOSNOWYCH PÓŁNOCNEJ POLSKI

**Streszczenie.** *Phellinus pini* (Brot.) Bondarstser & Singer jest najczęstszą przyczyną powstawania zgnilizny strzały sosny, przyczyniając się do dużych strat ekonomicznych w użytkach rębnych. Grzyb *Phellinus pini* stanowi stałe zagrożenie i powoduje straty surowcowe, wpływając na funkcjonowanie ekosystemu leśnego i na jego trwałość z gospodarczego punktu widzenia. Głównym celem pracy było zinventaryzowanie występowania owocników *Phellinus pini*, a przez to określenie zagrożenia drzewostanów sosnowych zgnilizną białą jamkowatą sosny w drzewostanach ponad 100-letnich na terenie nadleśnictwa północnej Polski. Do przesłedzenia występowania owocników huby sosny wybrano 30 wydzieleń, gdzie gatunkiem panującym była sosna zwyczajna, w 21 nadleśnictwach, w wieku od 100 do 170 lat. W wyniku przeprowadzonych badań można stwierdzić, że tylko w jednym z obserwowanych drzewostanów nie stwierdzono występowania owocników huby sosny.

**Słowa kluczowe:** *Phellinus pini*, zgnilizna biała jamkowata sosny, sosna

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