

WILD BOAR SEASONAL FARROWING PATTERN ANALYSIS BASED ON THE HARVEST DATA OF THE PIGLETS AND YEARLINGS SHOT IN THE ZIELONKA GAME INVESTIGATION CENTRE IN 2005-2008

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Abstract. The analysis of the lower jaws of 265 wild boars, including 143 piglets and 122 yearlings, harvested in Zielonka Game Investigation Centre showed that farrowing took place most often in March (43.3%), February (23.8%), April (17.5%) and January (11.2%). Piglets were also born in May, June and July. The percentages for yearlings were a little different.

Key words: wild boar, piglet, yearling, lower jaw

INTRODUCTION

Thanks to Poland's physiographical conditions, our fauna comprises fairly numerous game species, wild boar being one of the most notable. This is a common species throughout the whole area of Poland, and its population densities vary with regions.

As with most big ungulates, the wild boar sexual activity is stimulated by a shortening period of a day light. Although some males are capable of fertilizing females for most part of the year, the mating season depends on sows' ovulation period. Most sows ovulate from November to mid-December.

During a belated mating season, the active sows are those which were earlier in poor health condition, as well as some female piglets. They mate in late winter, in February, and even in March. Many authors claim that females attain sexual maturity at the age of 8-10 months, while males attain it at the age of 12-14 months. As the percentage of males aged over three years in our hunting grounds is low, it is not rare for a male to attain sexual maturity earlier. This was evidenced by an observation in the Zielonka Game Investigation Centre on the 6th of March of a regular mating in a pack comprised

of only young wild boars; the young females and males were apparently already sexually mature [Fruziński 1992].

The time of an intensified mating season depends on individuals' health condition, which is affected by the food abundance in a given year. In greater part of our hunting grounds, the supply of forest food depends on the size of acorn production. In line with the examples from the Zielonka GIC, many authors also provide specific data to prove this simple relation. It is the bounty of acorns, and also the maize fields, that is the main factor to be linked with piglets' ability to survive winter and to attain sexual maturity earlier.

The opinions concerning the intensified farrowing period diverge greatly. Hence, any research data relevant as both the source and comparative material regarding environmental factors are valuable.

STUDY AREA, MATERIAL AND METHODS

The research was carried out in a selected area, being a fairly contiguous, large forest complex, being to a large extent representative for both Wielkopolska lowlands and other regions of the country that are similar in terms of physiography. Most part of the research area was located in the Zielonka Game Investigation Centre (Zielonka GIC), 15 to 35 km north-east of Poznań. The Zielonka GIC is ca. 13,000 ha in area which includes 7,500 ha of forest. With respect to hunting, it is managed by the Department of Game Management and Forest Protection, Poznań University of Life Sciences. According to the regional nature classification, the Zielonka GIC lies within the 3rd Region 'Wielkopolska-Pomorze'. As far as climate is concerned, the Zielonka GIC is characterised by diverse climatic conditions. The annual average temperature is 8.2°C; the vegetation season lasts for 220 days. The aquatic conditions in the area can be considered good, if one takes into account the number of lakes, rivers, ditches and other watercourses. Habitat conditions support the development of Scots pine and mixed coniferous forests. In the Zielonka GIC one can find most lowland forest stand types. Such a structure enables many tree, shrub, dwarf shrub and herbage species to grow and constitute a rich food base for game. According to the habitat classification, the largest area falls to the fresh mixed broadleaved forest (63%), with Scots pine (*Pinus sylvestris* L.) as the dominant species and oak (*Quercus robur* L.) as the main admixture. Oak presence is important for such consumers as wild boar. The agro-forest boundary accounts for ca. 70% of the total border length, while the relatively small distance between the forest centre and the border allows wild boar to move quickly from the heart of the forest to the arable land.

The research material comprised 265 wild boars, including 143 piglets and 122 yearlings, harvested in the Zielonka GIC during the following hunting seasons: 2004/05, 2005/06, 2006/07, and 2007/08.

Apart from in-depth field observations, one can identify wild boar farrowing patterns by precisely estimating the age of the individuals killed. The estimation is enabled by a detailed lower jaw dentition analysis, especially regarding individuals at the age of up to 24-26 months. The analysis consists in determining the order of each tooth type development, the degree of crown wear, as well as the milk and definite teeth. This was the method used in this research. After identifying an individual's age, the number

of months was subtracted from the killing date to obtain the approximate date of birth. The birth dates were then compared with regard to the piglets and yearlings killed in each hunting season.

RESULTS AND COMMENTS

The following Tables (1-4) and Figures (1-4) show the number, percentage and graphic structure of the farrowing patterns in each hunting season.

Table 1. Seasonal farrowing pattern of the wild boar piglets harvested during the 2004/05 hunting season and the yearlings harvested during the 2005/06 hunting season

Tabela 1. Chronologia wyproszeń warchlaków pozyskanych w sezonie łowieckim 2004/05 oraz przelatków pozyskanych w sezonie łowieckim 2005/06

Year Rok 2004	Q'ty Liczba %	Month – Miesiąc												Total Razem
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Piglets Warchlaki	n	5	22	30	7			1						65
	%	7.7	33.8	46.2	10.8			1.5						100%
Yearlings Przelatki	n	5	6	28	8	3								50
	%	10.0	12.0	56.0	16.0	6.0								100%
Total Razem	n	10	28	58	15	3		1						115
	%	8.7	24.3	50.4	13.0	2.6		1.0						100%

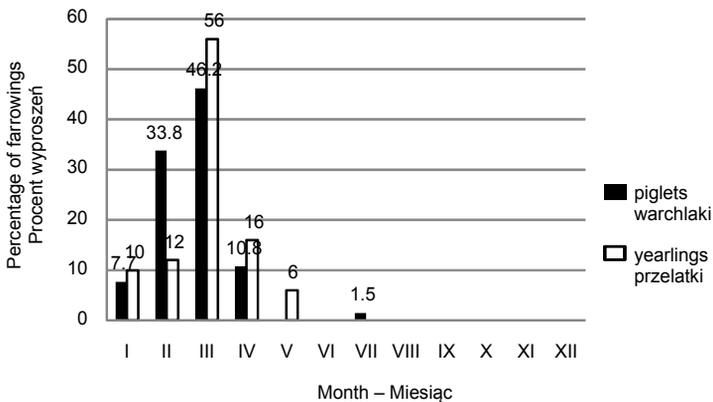


Fig. 1. Seasonal farrowing pattern of the wild boar piglets harvested during the 2004/05 hunting season and the yearlings harvested during the 2005/06 hunting season

Rys. 1. Chronologia wyproszeń warchlaków pozyskanych w sezonie łowieckim 2004/05 oraz przelatków pozyskanych w sezonie łowieckim 2005/06

Table 2. Seasonal farrowing pattern of the wild boar piglets harvested during the 2005/06 hunting season and the yearlings harvested during the 2006/07 hunting season

Tabela 2. Chronologia wyproszzeń warchlaków pozyskanych w sezonie łowieckim 2005/06 oraz przelatkiw pozyskanych w sezonie łowieckim 2006/07

Year Rok 2005	Q'ty Liczba %	Month – Miesiąc												Total Razem	
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII		
Piglets Warchlaki	n	3	5	13	12	2	1								36
	%	8.3	13.9	36.1	33.3	5.6	2.8								100%
Yearlings Przelatki	n		3	8	14	2								27	
	%		11.1	29.6	51.9	7.4								100%	
Total Razem	n	3	8	21	26	4	1							63	
	%	4.8	12.7	33.3	41.3	6.3	1.6							100%	

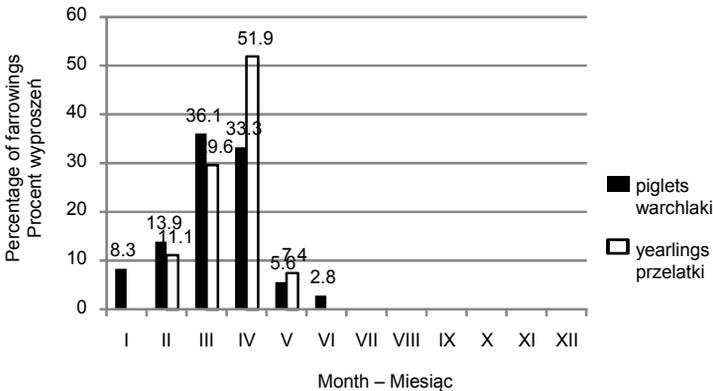


Fig. 2. Seasonal farrowing pattern of the wild boar piglets harvested during the 2005/06 hunting season and the yearlings harvested during the 2006/07 hunting season

Rys. 2. Chronologia wyproszzeń warchlaków pozyskanych w sezonie łowieckim 2005/06 oraz przelatkiw pozyskanych w sezonie łowieckim 2006/07

The changeability and flexibility of some wild boar population's biological attributes have been already recognized. Mid-aged and older wild boars most often have their mating season in November and December. The pregnancy lasts about 18 months. The litter size varies and is mainly linked with a sow's age. Unfortunately, as young individuals (one-year-old and often those which are nearly two-year-old) often participate in the reproduction, the farrowing periods are strongly dispersed throughout the year. Also, the litter quality, especially with respect to the youngest sows, is not satisfactory. The young born very early (e.g. in January) and very late (in summer, with piglets not reaching physical maturity before winter) are usually susceptible to elimination by one of the so-called environment resistance factors. The resulting high death rate among the piglets

Table 3. Seasonal farrowing pattern of the wild boar piglets harvested during the 2006/07 hunting season and the yearlings harvested during the 2007/08 hunting season

Tabela 3. Chronologia wyproszzeń warchlaków pozyskanych w sezonie łowieckim 2006/07 oraz przelatków pozyskanych w sezonie łowieckim 2007/08

Year Rok 2005	Q'ty Liczba %	Month – Miesiąc												Total Razem
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Piglets Warchlaki	n	8	7	19	6		2							42
	%	19.0	16.7	45.2	14.3		4.8							100%
Yearlings Przelatki	n	1	18	12	11	2	1						45	
	%	2.2	40.0	26.7	24.5	4.4	2.2						100%	
Total Razem	n	9	25	31	17	2	3						87	
	%	10.4	28.7	35.6	19.6	2.3	3.4						100%	

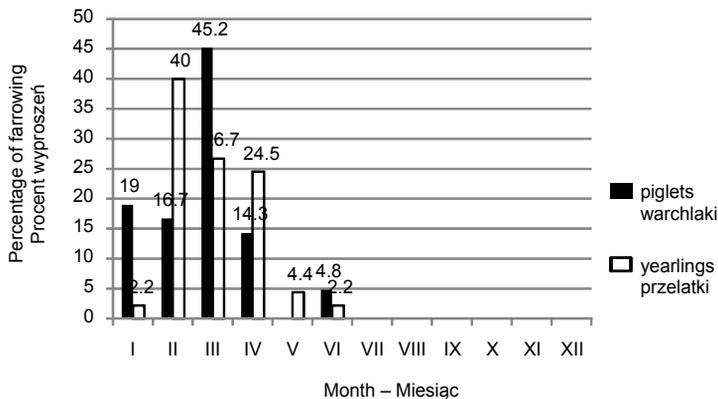


Fig. 3. Seasonal farrowing pattern of the wild boar piglets harvested during the 2006/07 hunting season and the yearlings harvested during the 2007/08 hunting season

Rys. 3. Chronologia wyproszzeń warchlaków pozyskanych w sezonie łowieckim 2006/07 oraz przelatków pozyskanych w sezonie łowieckim 2007/08

– even despite their low breeding qualities – strongly weakens the potential and natural growth of wild boar populations.

The research revealed that the largest percentage of farrowing took place in March (43.3%), February (23.8%), April (17.5%) and – unfortunately – January (11.2%). Sows farrowed also in May (1.4%), June (2.1%), and even in July (0.7%). Whether the piglets born in January will survive depends mostly on winter conditions. Sometimes, despite harsh winter and a thick snow layer, most piglets may survive winter if they can find enough acorns under the snow layer; also attempts are made to provide feed, especially maize seed, near sow's lairs.

Table 4. Seasonal farrowing pattern of the wild boar piglets and yearlings harvested from 2004 to 2007

Tabela 4. Chronologia wyproszzeń warchlaków i przelatków pozyskanych łącznie w latach 2004-2007

Year Rok 2005	Q'ty Liczba %	Month – Miesiąc												Total Razem
		I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	
Piglets Warchlaki	n	16	34	62	25	2	3	1						143
	%	11.2	23.8	43.3	17.5	1.4	2.1	0.7						100%
Yearlings Przelatki	n	6	27	48	33	7	1						122	
	%	4.9	22.1	39.4	27.1	5.7	0.8						100%	
Total Razem	n	22	61	110	58	9	4	1					265	
	%	8.3	23.0	41.5	21.9	3.4	1.5	0.4					100%	

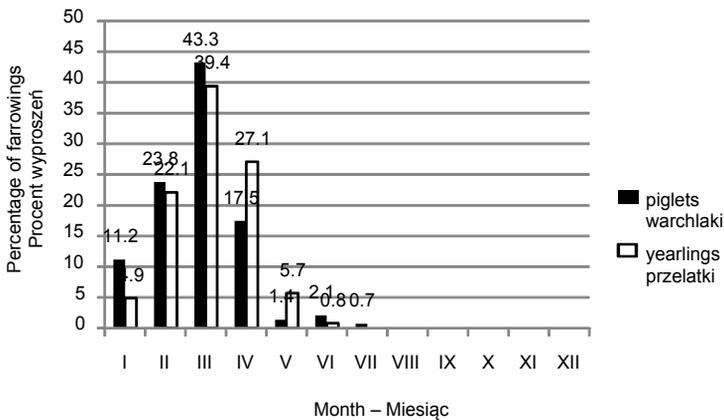


Fig. 4. Seasonal farrowing pattern of the wild boar piglets and yearlings harvested from 2004 to 2007

Rys. 4. Chronologia wyproszzeń warchlaków i przelatków pozyskanych łącznie w latach 2004-2007

Also among yearlings, sows mostly farrowed in March (39.4%) and April (27.1%). However, slightly fewer young were born in February – 22.1%. The number of yearlings born in January (4.9%) was half the number of piglets born in the same period, while as much as 5.7% of yearlings were found to be born in May.

In the research period, no individual was found to be born in the study area from August to December. Although the three subsequent hunting seasons did not essentially vary with respect to weather conditions or the supply of field and forest food, the dispersion of farrowing periods with varying intensity throughout seven months of a year seems a kind of a biological disruption in the wild boar reproduction. Undoubtedly, the reasons for a similar or even worse situation in other Poland's regions may include:

the inappropriate and irrational harvest structure (e.g. too low percentage of piglets and yearlings were killed); the mast years of oak and beech; and the access to abundant and attractive field crops (maize, lupin), which are rich in protein and of high caloric value. Accompanied by changeable weather conditions (in winter in particular), these reasons clearly affect the period and course of the mating season, and hence the disproportionate participation of the youngest individuals in the reproduction [Łabudzki and Wlazelko 1991].

Under normal conditions, females attain sexual maturity already at the age of 8 to 10 months, while males at the age of 12 to 14 months [Briedermann 1990]. In years with moderate food resources in a hunting ground, young females first mate at the age of 18 to 20 months, while males often not until they are over three years old [Heptner et al. 1966]. On the other hand, even the overgrown female piglets at the age of 8 to 11 months mate in years when there is plenty of high-calorie food [Haber 1969]. Observations made decades ago [Oloff 1952] indicated that in many Western European regions about 50% of females born the same year mated in good oak and beech mast years; in a year with moderate food supply only 10% of the female piglets born the same year mated, and in a year with poor food supply they did not participate in the mating season.

The detailed data on farrowing patterns in Zielonka GIC in 2005-2008 were used to determine the average weight of the killed piglets' carcasses in relation to the date of their birth. The sample comprised the same number of the piglets harvested, i.e. 143, which were shot from early autumn to the end of the hunting season, i.e. by the end of February.

In line with the species biology and the development of the young, the later the piglets were born, the smaller their average weight was. Thus, the individuals which were born at the earliest, i.e. in January, and managed to survive despite the unfavourable winter conditions reached their average carcass weight – 31.6 kg (regardless of their killing date). Those born in February weighed 26.5 kg, in March 21.6 kg, in April 18.6 kg, and in May and June only 13.2 kg. The average carcass weight of the piglets killed in the study area, regardless of their birth date, varied little in each hunting season: it was 21.8 kg in 2004/05, 22.4 kg in 2005/06, and 23.7 kg in 2006/07.

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**ANALIZA CHRONOLOGII WYPROSZEŃ DZIKÓW
NA PODSTAWIE ODSTRZAŁU WARCHLAKÓW I PRZELATKÓW
W OŚRODKU HODOWLI ZWIERZYNY „ZIELONKA” W LATACH 2005-2008**

Streszczenie. Analizując zuchwy 265 dzików, w tym 143 warchlaków i 122 przelatki pozyskanych w OHZ „Zielonka”, okazało się, iż wśród warchlaków łącznie największy procent wyproszeń wystąpił w marcu (43,3%), a następnie w lutym (23,8%), kwietniu (17,5%) oraz w styczniu (11,2%). Zdarzały się także wyproszenia w maju, czerwcu, a nawet w lipcu. Nieco odmienne relacje procentowe dotyczyły grupy przelatki.

Słowa kluczowe: dzik, warchlak, przelatek, zuchwa

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