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INVOLVEMENT OF LOCAL AND NON-LOCAL HUNTERS IN THE TASKS OF THE HUNTING CLUB AS EXEMPLIFIED BY WKŁ 294 HUBERTUS IN BYDGOSZCZ IN THE PERIOD OF TIME BEFORE AND DURING THE COVID-19 PANDEMIC

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Abstract

In Poland, hunting can be practiced only by a member of the Polish Hunting Association (PZŁ). Hunting club (basic unit of PZŁ) members include people residing on the club's premises, as well as non-local hunters. An analysis of hunter involvement in the club's tasks was carried out, on example of the Military Hunting Association no. 294 and covering hunting seasons from the 2018/2019 to the 2021/2022. The research was based on the data available in the PZŁ club system and the club's documentation. Local hunters show greater interest and efficiency during individual hunts. Membership in more than one club does not reduce involvement in the club's activities. Hunters prefer to pay the contribution for the development of the club rather than work it off. Local hunters engage in conducting the animal inventory. The impact of the COVID-19 social restrictions on the increase in hunting activity was ambiguous.

Introduction

In Poland, hunting can be practiced only by members of the Polish Hunting Association (PZŁ). The Association was founded in 1923 and is one of the older ones in Europe (DZIEDZIC 2014). As of 2021, there were 2761 hunting clubs and 127 897 hunters in Poland, including 107 779 (84.27%) hunters who were members of a hunting club and 20 118 (15.73%)

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unaffiliated hunters (CODROW et al. 2021). The number of hunters in Poland has been growing steadily since the founding of the Second Polish Republic (DZIEDZIC 2014, KOŚCIELNIAK-MARSZAŁ 2020, KOZŁOWSKI et al. 2018). Despite this fact, Poland is a country with a small number of hunters compared to other European countries. Hunters constitute 0,4% of the Polish society, whereas the European average is 1% (KROKOWSKA-PALUSZAK et al. 2020).

The basic organizational units within the Polish Hunting Association as well as economic entities of the hunting industry in Poland are hunting clubs. This constitutes one of the most essential features of the Polish hunting model. The hunting clubs have legal personality and are economically independent. Every year, the clubs allocate large sums of money for game management. The members of hunting clubs are natural persons and the clubs are the basic organizational units of the PZŁ implementing hunting objectives and tasks (KOZŁOWSKI et al. 2018). Hunting clubs operate within one or more hunting districts. The supreme authority of the club is the general meeting and day-to-day work is managed by the club's board. All field activities regarding game management, including hunting, are carried out in hunting districts. The districts are leased out for a period of ten years, for which an annual lease fee is charged (DZIEDZIC 2014, Law 1995). Annual hunting plans serve as the basis for game management in the districts. The basic information included in the plan is game species abundance, the acquisition plan for the following management year and a game harvest report for the last management year. The plan is drawn up by the board of the hunting club and then approved by the local forest district. The culled game is the property of the leaseholder or the manager of the hunting district, but the hunter has the right to purchase the carcass of the culled game by paying a fixed amount to the leaseholder or the manager (DZIEDZIC 2014).

RUDY (2020) found that in most hunting clubs, 30–35% of the members hunt systematically. It has not been examined how this involvement is distributed among hunters living on the premises of the leased districts or in their vicinity and those living further away from them. Apart from the hunts, social ties between the hunters are very important in hunting clubs (DANIŁOWICZ 2014), culture, music, painting, collecting and trophy hunting all play an important role in hunting itself (DZIEDZIC 2014). It can thus be assumed that membership in a hunting club goes beyond the implementation of game acquisition plans and involves the social life in the club's community – canoeing, carnival balls, practicing together at the shooting range.

The results of a study by BARANOWSKA et al. (2021) suggest that, especially during a pandemic, the forest may be a particularly popular place for strolls due to the need to avoid crowded places. On 11 March 2020, the World Health Organization declared the SARS-Cov-2 virus outbreak a pandemic. The COVID-related restrictions led to substantial changes in people's lives in all areas, making their situation difficult. According to TALAROWSKA et al. (2020), higher levels of experienced stress were caused by the inability to achieve one's social, cognitive, emotional and spiritual goals. Furthermore, the lower frequency of social contact during this period promoted feelings of loneliness and reduced life satisfaction (KOSOWSKI and MRÓZ 2020). The COVID-19 pandemic may have temporarily disrupted or blocked the fulfilment of some of the developmental needs and the accomplishment of short-term goals, causing frustration, fear and uncertainty, which may lead to increased emotional stress reflected in depressive and anxiety symptoms. Different age groups perceived these disruptions to a different extent. According to the researchers, people in middle (45–59 years) and late adulthood (over 60 years), who have typically achieved economic, professional and personal stability, may experience fewer changes and less frustration regarding meeting their needs during a pandemic than those in younger age groups. Moreover, these age groups may have more resources and experience in dealing with crises and change. Finally, another factor which varies across age groups and may influence the level of anxiety and depressive symptoms, is the risk to life and health posed by COVID-19, which increases at older age (APPLEGATE and OUSLANDER 2020, GAMBIN et al. 2021). As the hunters are of different ages (CODROW et al. 2021, KOWALEWSKI 2011, POTAPIUK 2010), their approach to hunting during a pandemic may differ. Stressed, frustrated, lonely and anxious people seek different ways to cope with the tension they experience. Many people seek solace in nature, by fishing or hunting (KARPIŃSKI 2022).

Therefore, we decided to examine the involvement of local and non-local hunters in the activity of a hunting club before and during the pandemic, as exemplified by a hunting club which leases two hunting districts located far away from each other and differing significantly in terms of forest cover. Research questions: (1) Which group (local ver. non-local) of hunters participate in hunting more often? (2) How pandemic changed hunters involvement in hunting activities? (3) Is type of hunting district (forest, fields) factor influencing involvement of hunters? (4) Is belonging to more than one hunting club affecting hunter involvement?

Materials and Methods

An analysis of the hunters' involvement was carried out taking as an example the Military Hunting Club (WKŁ) no. 294 Hubertus in Bydgoszcz. The analysis covered four hunting seasons from the 2018/2019 to the 2021/2022. The hunting club holds a lease on two hunting districts, numbered 22/BY "Zalesie" and 210/BY "Świątkowo" and located in the Kujawsko-Pomorskie Voivodeship, which fall under the management of the Regional Board of the Polish Hunting Association in Bydgoszcz (ZO PZŁ). For the purpose of the study, club members residing on the premises of the leased hunting districts and within 30 km from their borders were defined as local hunters. Hunters living further than 30 km from borders of hunting districts are define as non-local hunters.

The analysis was based on data available in the system of the Hunting Clubs of the Polish Hunting Association, including the Electronic Book of Hunting Records, as well as the club's documentation. As engagement or involvement we understand: participation in individual hunts, the number of game animals culled during these hunts, the participation in maintenance work. The hunters' involvement was analyzed with respect to the following areas: participation in individual hunts (number of outings per district per year), implementation of acquisition plans during individual hunts (number of animals per district per year), participation in group hunts (battue) (number of hunters per one hunt). Maintenance work was generally made by outsourcing and hunters pay contribution for it so we skip it in analysis. Local hunters for one district were classified as non-local hunters for the other district. A year-by-year analysis was carried out to examine the impact of COVID-19 restrictions on the hunting activity. As of 31 March 2022, the club has 42 members, including: 6 hunters (14.3%) who reside outside the territory under the management of the Regional Board of the Polish Hunting Association in Bydgoszcz and 9 hunters (21.4%) who reside in Bydgoszcz, amounting to a total of 15 non-local hunters. 19 hunters (45.2%) reside on the premises of the hunting district no. 22 and within 30 km of its borders and 8 hunters (19.0%) reside on the premises of the hunting district no. 210 and within 30 km of its borders. A total of 27 hunters resides on the premises of and around the hunting districts up to 30 km from their borders, which accounts for 61.9% of the total number. 13 hunters are also members of other hunting clubs. Six hunters joined the club during the period of analysis: four local hunters, all from district no. 22, two of whom are members of another club, and two non-local hunters residing on territories under the management of a regional board other than the ZO PZŁ in Bydgoszcz, one of whom is also

a member of another club. In the same period, two hunters left the club. One of them, resident on the premises of district no. 22, left in 2018 and was not a member of another club, the other one, a non-local hunter who was also a member of another club, left in 2019. Furthermore, two hunters have gone on three-year leave, one from district no. 22 in 2021 and one from district no. 210 in 2022. Both are not members of other clubs (PZŁ EKEP).

The obtained data was analyzed based on descriptive statistics and statistical inference (ŁOMNICKI 2010, STANISZ 2006; 2007). Basic statistical descriptors included means and standard deviations (±SD). The normality of the distribution of features was tested with the Kolmogorow-Smirnov test, and the equality of variances in different groups with the Levene test. Multivariate analysis of variance and Tukey's post-hoc test were used to determine significant differences in activities taken by local and non-local hunters in general, comparing time before and during pandemic, and comparing hunting districts. The level of statistical significance for all analyzes was assumed to be the minimum $\alpha = 0.05$. Statistical calculations were performed using MS Excel 2019 software (MICROSOFT, REDMOND, WA, USA), STATISTICA 13.3 package (Dell, Round Rock, TX, USA, 2021).

Study site

The hunting district no. 22 is located around 60 km north of Bydgoszcz. It has an area of 9486.00 ha, including the woodland area of 6086.00 ha, its area after exclusions referred to in Article 26 of the Act of 13 October 1995 – Hunting Law amounts to 8392.00 ha (*Bank Danych o Lasach* 2023). During the period of analysis, the club harvested an average of 31.75 red deer; 32.75 roe deer; 64.50 wild boar; 35.50 predators (foxes, raccoon dogs and badgers – two ind. per four seasons) and 17.75 game birds (mallards, green-winged teal and wood pigeons) yearly in this district. Compensation for game and hunting damage averaged 14 356.44 PLN per year (PZŁ EKEP).

The hunting district no. 210 is located around 60 km to the south-west of Bydgoszcz. It has a total area of 4485.00 ha, with woodlands covering an area of 41.00 ha. The area after exclusions is 4185.00 ha (*Bank Danych o Lasach* 2023). During the period of the analysis, the hunters killed, on average, 5.00 red deer; 31.25 roe deer; 11.25 wild boar; 25.25 predators (foxes and raccoon dogs) and 6.50 game birds (mallards, graylag geese and male common pheasants) in the district per year. Compensation for game and hunting damage averaged PLN 1450.00 per year (PZŁ EKEP). In the

period of analysis, hares were not hunted in either district despite the presence of this species in both districts. The distance between the districts is about 120 km.

Results

Local hunters participate more frequently in individual hunts and culled more animals than non-local hunters, the results are statistically significant. At the same time, the attendance of non-local hunters at group hunts is higher, but statistically insignificant (Table 1).

Table 1

Number of participants in group hunting, number of individual hunts, number of animals culled during individual hunts, divided into: local hunters and non-local hunters

Hunters	Attendance on group hunts (no. of hunters per one hunt)		Number of individual hunting (per hunting district per hunting season)		Number of animals killed during individual hunting (per hunting district per hunting season)	
	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
Local hunters	11.4a*	12.5**	322.4*a*	247.3	33.6*a*	21.6
Non-local hunters	13.8*a*	12.1	90.9*b*	63.2	10.7*b*	8.9
F	0.3		13.2		15.4	
p	0.590		0.001		<0.001	

*, **Mean values ± standard deviation (SD) in the columns, followed by different letters indicating significant differences between hunters at $p \leq 0.05$

Comparing time before and during pandemic we can observe significantly higher attendance in group hunts in years 2018–2020 for both groups. Number of individual hunts was higher during pandemic but difference is not significant (Table 2). Comparing involvement of local and non-local hunters in two periods of time we can observe as follow: before pandemic of COVID-19 attendance on group hunts was almost the same, and local hunters were almost four times more often on individual hunts and culled four times more animals. For second period of time (years 2020–2022) non-local hunters were more active for group hunts but difference is not statistically significant. Involvement in individual hunts of non-local hunters incised but still local hunters were more often on individual hunt and culled much more animals (Table 3). To answer research question no. 3 we compared activities of two hunters groups in hunting districts.

Table 2

Activity of individual groups of hunters in collective and individual hunting in the years before and during the pandemic

Hunting season	Hunters type	Attendance on group hunts (no. of hunters per one hunt)		Number of individual hunting (per hunting district per hunting season)		Number of animals killed during individual hunting (per hunting district per hunting season)	
		$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
PP_2018–2020	local hunters	17.4*a**	13.6**	305.9*a*	252.2	38.5*a*	24.5
P_2020–2022		5.5*b*	8.5	338.9*a*	258.4	28.6*a*	18.6
	F	4.39		0.07		0.83	
	p	0.014		0.799		0.379	
PP_2018–2020	non-local hunters	18.3*a*	11.8	81.5*a*	63.8	10.9*a*	8.8
P_2020-2022		9.4*b*	11.5	100.4*a*	65.4	10.5*a*	9.5
	F	2.32		0.34		0.01	
	p	0.044		0.568		0.935	

*, **Mean values ± standard deviation (SD) in the columns, followed by different letters indicating significant differences between hunters at $p \leq 0.0$

Table 3

Activity of individual groups of hunters in collective and individual hunting in the years before and during the pandemic according to time periods

Hunting season	Hunters type	Attendance on group hunts (no. of hunters per one hunt)		Number of individual hunting (per hunting district per hunting season)		Number of animals killed during individual hunting (per hunting district per hunting season)	
		$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
PP_2018–2020	local hunters	17.4*a**	13.6**	305.9*a*	252.2	38.5*a*	24.5
	non-local hunters	18.3*a*	11.8	81.5*b*	63.8	10.9*b*	8.8
	F	0.02		5.95		9.01	
	p	0.892		0.028		0.009	
P_2020–2022	local hunters	5.5*a*	8.5	338.9*a*	258.4	28.6*a*	18.6
	non-local hunters	9.4*a*	11.5	100.4*b*	65.4	10.5*b*	9.5
	F	0.59		6.40		6.05	
	p	0.457		0.024		0.028	

*, **Mean values ± standard deviation (SD) in the columns. followed by different letters indicating significant differences between hunters at $p \leq 0.05$

In field district (no. 210) local hunters were more often on individual hunt and culled more animals, when non-local hunters were more often participated in group hunts but differences were not significant. In forest hunting district (no. 22) attendance on group hunts was almost the same for both groups of hunters, local hunters were significantly more often on individual hunt and culled significantly more animals (Table 4).

Table 4

Activities of local and non-local hunters within hunting districts

Hunting district	Hunters type	Attendance on group hunts (no. of hunters per one hunt)		Number of individual hunting (per hunting district per hunting season)		Number of animals killed during individual hunting (per hunting district per hunting season)	
		$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD
O_22	local hunters	17.0*a**	14.2**	519.3*a*	166.3	48.9*a*	15.0
	non-local hunters	16.3*a*	15.5	139.8*b*	35.4	12.9*b*	7.3
F		0.01		39.8		37.5	
p		0.921		<0.001		<0.001	
O_210	local hunters	5.9*a*	8.1	125.5*a*	121.6	18.3*a*	15.5
	non-local hunters	11.4*a*	8.0	42.1*a*	43.1	8.5*a*	10.2
F		1.9		3.3		2.2	
p		0.191		0.089		0.159	

*, **Mean values ± standard deviation (SD) in the columns. followed by different letters indicating significant differences between hunters at $p \leq 0.05$

To answer to the question: is belonging to more than one hunting club affecting hunter involvement? We divided previous two groups to two more: (1) member of one hunting club, (2) member of two hunting clubs. Non-local hunters hunting in only one club showed the highest attendance at group hunts (19.6 ±14.4) but difference was non-significant in comparison to three other groups. On other hand local hunters hunting in one hunting club were significantly more often on individual hunts (430.9 ±230.2, $F = 9.34$, $p < 0.001$). In both districts, local hunters hunting in only one club constituted the group with the highest number of individual hunts, the difference being statistically significant ($F = 40.25$, $p < 0.001$). In district no. 22, local hunters hunting in more than one club constituted the second most active group with respect to individual hunting activity, while in district no. 210, non-local hunters hunting in more than one club partici-

pated in the hunts more frequently. The highest number of animals in district no. 210 was culled by local hunters hunting in one club. This number was higher, however not statistically significant, than in the remaining three research groups.

Discussion

Studies on the efficiency of recreational hunters have been carried out by, DZIĘCIOŁOWSKI (1992, 2010), KOWALEWSKI (2011), MATTSON (1990a, b), POTAPIUK (2010) and WILL (1973), among others. POTAPIUK (2010) analyzed the data of 862 hunters from east-central Poland, who went on 16 290 individual hunts in the 2006/2007 season. The typical hunter averaged 18.8 outings per year. DZIĘCIOŁOWSKI and MIKOŁAJCZYK (1993) report an average of 50 trips per year for the region of Kielce. ROGERS (1996) reports that in 1991, the average hunter in the USA spent 17 days hunting, and 18 days in 1986. According to MATTSON (1990a), the average Swedish hunter spends 20 days per year hunting. In a study carried out in the region of the Great Masurian Lakes, hunting efficiency was examined over a three-year period (2004–2006). The average number of hunting club members at the study site is 63 and the district area per hunter amounts to 268 ha. The study found that hunters with 31–40 years' hunting experience hunt most frequently, they go on a hunt 28 times a year on average. On the other hand, hunters with more than 50 years of experience go hunting only 9 times a year on average (KOWALEWSKI 2011). In most cases, a recreational hunter spends between 17 and 20 days per year hunting (DZIĘCIOŁOWSKI 2013). The study of hunters from WKŁ 294 Hubertus found that the average number of outings in district no. 22 was 31.4, which corresponds with the values reported in the literature, while in district no. 210 it was 8.0 outings, much less than the numbers reported in the literature.

In addition, POTAPIUK (2010) found that hunter activity, as measured by the number of outings per year, declines with age. Hunters aged 20–29 averaged 21 individual hunting outings per year, three of which were successful. By contrast, hunters over 70 averaged 16 outings per year, of which only one was successful. Hunters with a maximum of 9 years of experience, thus relatively young hunters, were the most efficient group, as two out of their 20 outings were successful. As for species preferences, according to the study by POTAPIUK (2010), wild boar hunts were the most popular (52% of all hunts), followed by roe bucks (13%), foxes (9%), does (8%) and wild ducks (7%). Such preferences were not studied among hunters hunting in the districts leased by WKŁ 294 Hubertus, however,

given the greater (at a statistically significant level) hunting participation of hunters in district no. 22, which has a much larger wild boar population than district no. 210, species preferences similar to those of the hunters from east-central Poland may be assumed.

In the study by POTAPIUK (2010), the average distance travelled by a hunter for a single hunt was 58 km, with local hunters travelling 17 km and non-local hunters travelling 102 km. In the case of WKŁ 294 Hubertus, the study showed statistically lower participation in individual hunts among non-local hunters compared to local hunters. This results from the difference in the distance that non-local hunters are required to travel for hunting. At the same time, the analysis showed that non-local hunters participate more frequently in group hunts and that the hunting district no. 22 (with the Tuchola Forest, a large hunting lodge, high forest cover and bigger acquisition plans) is visited more frequently than district no. 210 (with farming monocultures, low acquisition plans, very low forest cover, an area unattractive to tourists and a small hunting lodge). The possible reasons for this include the hunters' desire to socialize and to hunt in more attractive areas, both in terms of hunting and nature, as well as better accommodation. The study also corroborates the conclusions reached by other researchers, which is the fact that recreational hunting is generally inefficient in terms of game acquisition, as game acquisition is not its goal. The goal is to provide recreation to the participants (DZIĘCIOŁOWSKI 2010). In addition, recreational hunting is understood as a long-term use of a natural resource such as wildlife and it goes hand in hand with nature conservation (PALUCH 2006). During the period of the study, non-local hunters constituted a statistically significant proportion of the participants in group hunts which underlines the social aspect of this type of hunting. No difference in hunting involvement was found between members of one or more hunting clubs. Local hunters were found to hunt less frequently during the COVID-19 pandemic and the period of COVID-related social restrictions, and non-local hunters hunted more frequently. This confirms the findings of other studies indicating that the forest is an important site of leisure for people in times of a pandemic (BARANOWSKA et al. 2021, KIKULSKI 2021), as some non-local hunters live in big cities. The activity of local hunters may, on the other hand, support the claims of researchers who believe that the COVID-19 pandemic did not have as much impact on mental health as initially assumed, and that most people experienced a low intensity of anxiety and depressive symptoms in response to it (KIMHI et al. 2021, SAUNDERS et al. 2021, SHEVLIN et al. 2021). However, the study did not examine whether hunters used the forest in other ways during the period of analysis.

Conclusion

Local hunters show greater interest and efficiency when hunting individually than non-local hunters, for whom group hunts seem more attractive. Membership in more than one club does not lead to a decrease in the involvement in the tasks of a club compared to membership in only one club. The hunters show little interest in working off the fee for hunting ground management in the form of maintenance work, they prefer to bear the financial costs instead. Mainly local hunters, engage in keeping the animal inventory, making them a group of people who can help with large-scale monitoring of game populations. The impact of the COVID-19 social restrictions on the increase in hunting activity was ambiguous. The presented study is a pilot study and more detailed analysis of the hunters' activities is needed especially taking into consideration the time and financial requirements for catching one piece of cloven-hoofed game.

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