DOI: 10.21005/AAPZ2020.53.1.01

FOLIA POMERANAE UNIVERSITATIS TECHNOLOGIAE STETINENSIS
Folia Pomer. Univ. Technol. Stetin., Agric., Aliment., Pisc., Zootech. 2020, 354(53)1, 5–16

Received: 7 Jan 2020
Revised: 7 Feb 2020
Accepted: 10 Feb 2020

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THE EVALUATION OF SANITARY AND VETERINARY INSPECTION RESULTS OF DEER IN POLAND IN 2015–2018

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Abstract. The aim of the study was to analyze the frequency of lesions and qualitative changes in deer in Poland in 2015–2018. The results of the sanitary and veterinary examination of roe deer, fallow deer and red deer carried out by the Veterinary Inspectorate were analyzed. In 2015–2018, 719 916 roe deer, 27 540 fallow deer and 290 424 red deer were subjected to sanitary and veterinary examinations. The analysis included: emaciation, putrefaction, septicaemia and pyemia and other changes. It was found that in Poland in 2015–2018 the number of acquired deer increased. The number of roe deer, fallow deer and red deer in which lesions were found shows an upward trend. In the years 2015–2018 there was a significant increase in the percentage of occurrence of qualitative changes in deer in the form of putrefaction. In most cases, these changes were the reason why the carcasses were declared unfit for consumption. In the analyzed period there was a systematic increase in the percentage of deer carcasses deemed unfit for consumption in comparison to all examined. In recent years, quite frequent cases of hunters delivering carcasses with signs of improper handling of hunted game in the hunting ground and during transport have been registered. This is mainly due to the non-cleaning of gunshot wounds, improper and inaccurate eviscerating and bleeding, as well as the occurrence of local infusions. This may increase the number of carcasses declared unfit for consumption. The quality of the raw game meat supplied for processing depends on the skills of hunters. It is therefore advisable to increase the requirements and enforce hunters' knowledge of the procedures in force when dealing with venison in the hunting ground. It is also important that collection centers provide proper conditions for storing carcasses.

Key words: wild game, sanitary and veterinary examination, lesions, qualitative changes, deer.

INTRODUCTION

The consumption of wild game meat in Poland is low and amounts to about 0.08 kg/person per year (Kwiecińska et al. 2015). In Western Europe the per capita consumption of game meat is 0.7–1 kg/person/year. In Europe, the share of venison in the total meat production is in the range of 0.2–0.4% (Simińska et al. 2011). Factors limiting the consumption of venison are: high price, high supply of other types of meat and conservation periods of game species (Kniżewska et al. 2016). World trade of venison meat is estimated of around two million tonnes annually. Poland has been one of the major European game exporters for years. Its main sources are game species such as: red deer (*Cervus elaphus L.*), roe deer (*Capreolus capreolus L.*), wild boar (*Sus scrofa L.*) and fallow deer (*Dama dama L.*) (Bertolini et al. 2005; Kudrnačova et al. 2018; UNECE 2018).

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In the light of epidemiological studies, game meat has a positive effect on human health, and its consumption may contribute to a reduction in the number of people suffering from diet-related diseases or circulatory system diseases (Battaglia-Richi et al. 2015; Briggs et al. 2017). Venison also has valuable taste and nutritional qualities (Hoffman and Wiklund 2006). It is characterized by low fat content, high protein content and a proper ratio of unsaturated to saturated fatty acids (Bekker et al. 2011; Razmaite et al. 2015). At the same time, it should be remembered that game, as a raw material included in human food, may cause threats to health and even life, resulting from the fact that many diseases of viral, bacterial or parasitic etiology are present in free-living animals (Atanassova et al. 2008). Slaughter and marketing of meat and meat products originating from free-living animals must therefore be subject to health and veterinary supervision (Kautto et al. 2017).

Among viral diseases, more than twenty diseases may occur in free-living animals, including rabies, foot-and-mouth disease, leukemia, swine fever, Aujeszky's disease, Teschen disease, smallpox, myxomatosis and others (Boadella et al. 2012; Bombik et al. 2014). Diseases of bacterial etiology include more than thirty units, including: tuberculosis, brucellosis, leptospirosis, salmonellosis, tularemia, pasteurellosis, listeriosis, anthrax, tetanus and blackleg (Maichak et al. 2009; Paulsen et al. 2012). The microbiological quality of the game meat is highly dependent on operating procedures put in place by the hunters (Gill 2007; Giuggioli et al. 2017). The correctness of obtaining game, hygiene of gutting, proper cooling and proper handling of the carcass during transport and at the collection point guarantee the health safety of venison.The hunter must gut the deer correctly after slaughter. After evisceration, the carcass should be hung in a shaded place or laid on a slope and the abdominal cavity should be wide open to allow blood to drain from the chest and abdomen. Before dispatching, the carcass of the game should be thoroughly cooled to avoid brewing (Council Directive 92/45/EEC; European Parliament and Council Regulation No. 853/2004; Polish Law Gazette 2005, No. 61, item 548).

Parasitic invasions caused by protozoa, flukes, tapeworms, nematodes, arthropods and arachnids were also found (Flis et al. 2017). In addition, fungal infections, organ diseases, developmental defects, tumors, as well as poisoning and wounds were recorded in game animals (Kautto et al. 2017). Many zoonotic diseases can occur in both farm and free-living animals at the same time (Mörner et al. 2002). Game can undergo unwanted processes (rotting) and contamination, becoming harmful to human health (Parker et al. 2013).

An evaluation of the epizootiological situation of free-living animals is of interest for the annual sessions of the International Office of Epizootics in Paris (Leighton 1994). The OIE has an information network since 1994, supported by an international working group of experts specialized in the field of free-living animals. Members of the working group assess information related to the incidence of specific diseases, their severity and course. This applies to free-living animals, animals kept on farms, living in captivity, having contact with pastures and watering, which are used by breeding flocks and free-living animals (Artois et al. 2001). Venison testing often effectively interrupts the epizootic or epidemiological chain, with carcasses showing quality deviations affecting their nutritional value eliminated from consumption (Stärk et al. 2014).

Lesions and qualitative changes found during the sanitary and veterinary examination affect food safety (Górski and Kondracki 2019). The purpose of this work is to analyze the results of the post-mortem inspection of roe deer, fallow deer and red deer in 2015–2018 carried out by the Veterinary Inspection in Poland.

MATERIAL AND METHODS

The analysis covered the data from a sanitary and veterinary study from annual reports drawn up by the Chief Veterinary Inspectorate (RRW-6) in 2015–2018. Data on numbers of European roe deer (*Capreolus capreolus L.*), fallow deer (*Dama dama L.*) and red deer (*Cervus elaphus L.*) were presented on the basis of reporting by the Central Statistical Office (2015–2018). The numbers of animals were given for the beginning of a specific hunting season, according to estimates made in March (Table 1).

Table 1. The number of wild deer species in Poland in 2015–2018 (in thousand heads)

Specification	Roe deer	Fallow deer	Red deer
2015	870.6	27.5	213.5
2016	887.1	28.3	218.3
2017	945.6	29.0	285.6
2018	922.4	29.0	275.7

In 2015–2018, 719 916 roe deer, 27 540 fallow deer and 290 424 deer were subjected to sanitary and veterinary examinations (Table 2). Post mortem examination of slaughtered health animals was carried out due to the Regulation (EC) No. 854/2004. The post mortem inspection includes visual examination of the organs and the carcass and their palpation. The incision of organs or lymph nodes must be carried out only if necessary. The lung examination consisted of external examination, lymph node examination, examination of the lung cross-section and trachea. On examination of the liver, attention was paid to edema, ecchymosis and necrotic foci. Hepatic lymph nodes were examined. When examining the heart, attention was paid to inflammation of the pericardium and pericardial sac. The epicardium and myocardium were then examined for ecchymosis, blackheads and degeneration. When examining the spleen, attention was paid to its enlargement, swelling, ecchymosis and foci of infectious diseases. Genitals were examined to exclude infectious diseases. While examining the carcasses, attention was paid to the condition of the outer cover (coat, surface of the skin), the condition of natural holes, the area of the hoof gap and a gunshot wound. Peritoneal and pleural wall and the condition of superficial inguinal and medial iliac lymph nodes were examined. The condition of the subcutaneous tissue as well as the muscles of the groin and abdominal wall was assessed.

An evaluation of causes of lesions and unfit for human consumption of deer carcasses was also carried out. The assessment of causes of lesions and unfit for human consumption included such diseases and qualitative changes as: emaciation, putrefaction, septicaemia and pyemia and other changes. The test result analysis covered the number of tested animals, number of carcasses in which lesions were found and number of carcasses that are unfit for human consumption.Carcasses were assessed as unfit for consumption when it was found: signs of natural death of the animal, diseases spreading to humans and animals,

cancer, disseminated parasite infestation, intoxication, extensive wounds and watery infiltrates, putrefaction, significant changes in colour, smell and taste, significant consistency changes (e.g. emaciation), dirt that cannot be removed by thorough cleaning (Tropiło and Kiszczak 2008).The collected specimens were compiled according to the frequency of pathological changes found in the sanitary and veterinary examination of roe deer, fallow deer and red deer in particular voivodeships in Poland, and then their percentage structure was determined. An analysis of lesion and disease symptom frequency of free-living animals was carried out in 2015–2018.

RESULTS AND DISCUSSION

In 2015–2018, over 1.2 million deer were shot in Poland. The roe deer constituted the highest percentage in this group (67%) (Central Statistical Office 2015–2018). In 2015–2018, there was an considerable increase in the number of deer that was shot. In 2018, the number of deer animals was assessed at 1.2 million (Central Statistical Office 2015–2018) (Table 1). In 2015–2018 more than 719 thousand of roe deer, 27 thousand of fallow deer and 290 thousand of red deer underwent sanitary and veterinary examination in Poland. The total number was 1 037 880 deer (Table 2).

During the examination 3605 animals (0.35%) had lesions or disease symptoms. 3303 animals were found unfit for human consumption. It is 0.32% of all animals that underwent the post-mortem inspection. In individual years of the analysed period the number of deer that underwent the post-mortem inspection was at the level close to 280 thousand animals. The deviation from that correctness was found in 2015, when almost 192 thousands of animals were examined. The percentage of roe deer carcasses with lesions was averagely 0.28% and changed from 0.12% in 2015 to 0.38% in 2018. The percentage of roe deer carcasses found unfit in relation to all inspected animals changed from 0.12% in 2015 to 0.38% in 2018. The percentage of fallow deer and red deer carcasses with lesions in relation to all inspected animals changed from 0.29% to 0.72%. In turn, the percentage of fallow deer and red deer carcasses found unfit in relation to all inspected animals was 0.29% to 0.65% (Table 2 and Table 3).

Table 3 presents data showing the frequency of disease changes in particular species of game animals in 2015–2018 according to the type of changes. This data shows that, by health and veterinary examination in the carcasses of roe deer, fallow deer and red deer, cases of emaciation, putrefaction, septicaemia and pyemia and other changes have been found in all these species. Data in Table 3 shows that in 2015–2018 there was a gradual increase of percentage of roe deer, fallow deer and red deer with lesions. Particularly alarming is the presence of putrefaction in a significant number of animals. The number of carcasses unfit for human consumption has also sharply increased. Comparing the examination results with the results from 2010, it can be observed a significant increase in the number of roe deer, fallow deer and red deer with symptoms or lesions. In the case of red deer and fallow deer it was an increase from 0.31% to 0.51% (Lis and Iwanina 2012). Comparing the examination results with similar observations from 2000–2011, it can be observed a decrease in the number of fallow deer, red deer and roe deer with disease symptoms and lesions from 1.94% to 0.35%. The percentage of animals found unfit for human consumption increased slightly from 0.25% to 0.32% (Szkucik et al. 2012).

Table 2. Results of post-mortem examination of roe deer, fallow deer and red deer in Poland in 2015–2018

Species	2015			2016			2017		
	number of examined animals	number and percentage of animals with lesions or pathological symptoms	number and percentage of carcasses unfit for consumption	number of examined animals	number and percentage of animals with lesions or pathological symptoms	number and percentage of carcasses unfit for consumption	number of examined animals	number and percentage of animals with lesions or pathological symptoms	number and percentage of carcasses unfit for consumption
Roe deer	135 329	168 (0.12)	168 (0.12)	189 250	501 (0.26)	416 (0.22)	197 012	573 (0.29)	559 (0.28)
Fallow deer	3 817	165 (0.29)	165 (0.29)	6 437	459 (0.53)	362 (0.41)	8 988	379 (0.42)	345 (0.38)
Red deer	52 810			80 675			81 350		
Total	191 956	333 (0.17)	333 (0.17)	276 362	960 (0.35)	778 (0.28)	287 350	952 (0.33)	904 (0.31)

Species	2018			2015–2018		
	number of examined animals	number and percentage of animals with lesions or pathological symptoms	number and percentage of carcasses unfit for consumption	number of examined animals	number and percentage of animals with lesions or pathological symptoms	number and percentage of carcasses unfit for consumption
Roe deer	198 325	755 (0.38)	744 (0.38)	719 916	1997 (0.28)	1887 (0.26)
Fallow deer	8 298	605 (0.72)	544 (0.65)	27 540	1608 (0.51)	1416 (0.45)
Red deer	75 589			290 424		
Total	282 212	1360 (0.48)	1288 (0.46)	1 037 880	3605 (0.35)	3303 (0.32)

Table 3. Frequency of disease lesions in 2015–2018 by lesion type

Type of lesions	2015		2016		2017		2018		2015–2018	
	roe deer	fallow deer and red deer	roe deer	fallow deer and red deer	roe deer	fallow deer and red deer	roe deer	fallow deer and red deer	roe deer	fallow deer and red deer
	number and percentage of animals with lesions or pathological symptoms in relation to the number of examined animals									
Emaciation	63 (0.050)	21 (0.040)	164 (0.090)	37 (0.04)	140 (0.0700)	50 (0.060)	153 (0.080)	40 (0.050)	520 (0.070)	148 (0.050)
Putrefaction	84 (0.060)	77 (0.140)	226 (0.120)	253 (0.29)	373 (0.1900)	120 (0.130)	508 (0.260)	343 (0.410)	1 191 (0.170)	793 (0.250)
Septicaemia and pyemia	4 (0.003)	1 (0.002)	7 (0.004)	17 (0.02)	1 (0.0005)	5 (0.006)	3 (0.002)	4 (0.005)	15 (0.002)	27 (0.008)
Other changes	17 (0.010)	66 (0.120)	104 (0.050)	152 (0.17)	59 (0.0300)	204 (0.230)	91 (0.050)	218 (0.260)	271 (0.040)	640 (0.200)
Total	168 (0.120)	165 (0.290)	501 (0.260)	459 (0.53)	573 (0.2900)	379 (0.420)	755 (0.380)	605 (0.720)	1 997 (0.280)	1 608 (0.500)

The most frequently found lesion in roe deer carcasses was putrefaction (0.17%). The first group of lesions in fallow deer and red deer carcasses was also putrefaction (0.25%). It can be assumed that the reason for these results may be improper proceeding of hunters with slaughtered animals in the hunting ground or during the transport of carcasses to the collection point. The occurrence of putrefaction may be influenced by improper conduct of the hunter during evisceration and cooling (Giuggioli et al. 2017). Normally, wild ungulates are bled and eviscerated in the field, often in areas with difficult access with a consequent delay of the evisceration process after killing. Within a few hours intestinal bacteria pass through the intestinal barrier and contaminate muscle tissue. The swelling of intestines might increase the probability of the gut being damaged during its removal (Deutz et al. 2000). Inadequate skill and lack of hygiene during evisceration might greatly influence microbial contamination of the carcass (Gill 2007). Moreover, if death is delayed after wounding, microbial infections will spread from gut spilling. Badly placed shot in the gut might cause rapid microbial contamination of the carcass (Urquhart and Mc Kendrick 2006; Gill 2007).

One of the most common conditions found in post-mortem meat inspection was emaciation. Emaciation was diagnosed in 520 roe deer (0.07%) and 148 fallow deer and red deer (0.05%). The reason for these results may be the deterioration of the health condition of the deer acquired. This applies especially to older animals. These animals are most likely to suffer during harsh winters and on bad pasture. What is more, emaciated carcasses may have indications of systemic illness (Aguirre et al. 1999). Septicaemia or pyaemia was found in 15 roe deer (0.002% of examined) and 27 fallow deer and red deer (0.008% of examined). The group of lesions included unnamed „other causes" were recorded in 271 roe deer (0.04%) and 640 fallow deer and red deer (0.20%) (Table 3). A positive observation is an absence of tuberculosis belongs to infectious diseases, often applicable to free-living animals. These animals are a vector for the transmission of infectious diseases such as *M. bovis* and *M. caprae* (Phillips et al. 2003).

The frequency of disease conditions and changes of game animals in Poland varies depending on the territory. The data enabling the analysis of the occurrence of the most important conditions and changes in the disease of deer animals in specific regions of Poland are presented in Table 4. The most common pathological changes in deer animals in Poland were putrefaction. Such lesions were found in 2015–2018 in 10 voivodeships. The largest number of cases of putrefaction in carcasses of deer was recorded in Lubelskie (923), Kujawsko-Pomorskie (527) and Lubuskie (286) voivodeships. In total, 1736 putrefaction cases were found in Lubelskie, Kujawsko-Pomorskie and Lubuskie voivodeships, which accounted for 87.5% of all cases of these changes found in 2015–2018 in Poland.

Table 5 shows the number and percentage structure of game animal carcasses unfit for consumption, including specific voivodeships in 2015-2018. In the analyzed period, 0.32% of all deer carcasses tested were found unfit for consumption. It constituted 3303 carcasses in the country. Most deer carcasses deemed unfit for consumption was found in Lubelskie (1217) and Kujawsko-Pomorskie (1099) voivodeships. The total number of carcasses deemed unfit for consumption in these two voivodeships was 2316, which accounted for over 70% of all deer carcasses disqualified in Poland in 2015–2018.

Table 4. The incidence of putrefaction by voivodeships in 2015–2018

Voivodeship	2015		2016		2017		2018		2015–2018	
	roe deer	fallow deer and red deer	roe deer	fallow deer and red deer	roe deer	fallow deer and red deer	roe deer	fallow deer and red deer	roe deer	fallow deer and red deer
	number and percentage of animals with putrefaction in relation to the number of examined animals									
Dolnośląskie	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.000)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.000)	0 (0.000)
Kujawsko-pomorskie	0 (0.00)	0 (0.00)	116 (0.17)	127 (0.450)	140 (0.22)	16 (0.06)	123 (0.18)	5 (0.02)	379 (0.190)	148 (0.190)
Lubelskie	55 (0.32)	55 (1.02)	72 (0.38)	74 (1.210)	186 (0.97)	75 (1.31)	260 (1.21)	146 (1.98)	573 (0.740)	350 (1.420)
Lubuskie	0 (0.00)	3 (0.03)	10 (0.04)	1 (0.010)	11 (0.06)	2 (0.02)	89 (0.63)	170 (1.52)	110 (0.120)	176 (0.420)
Łódzkie	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.000)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.000)	0 (0.000)
Małopolskie	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.000)	9 (0.05)	0 (0.00)	0 (0.00)	0 (0.00)	9 (0.050)	0 (0.000)
Mazowieckie	1 (0.31)	1 (0.66)	0 (0.00)	0 (0.000)	0 (0.00)	3 (1.01)	0 (0.00)	0 (0.00)	1 (0.040)	4 (0.530)
Opolskie	0 (0.00)	3 (0.16)	0 (0.00)	0 (0.000)	0 (0.00)	3 (0.16)	0 (0.00)	3 (0.17)	0 (0.000)	9 (0.120)
Podkarpackie	0 (0.00)	0 (0.00)	4 (0.02)	1 (0.010)	0 (0.00)	1 (0.01)	2 (0.01)	4 (0.05)	6 (0.007)	6 (0.020)
Podlaskie	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.000)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.000)	0 (0.000)
Pomorskie	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.000)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.000)	0 (0.000)
Śląskie	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.000)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.000)	0 (0.000)
Świętokrzyskie	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.000)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.000)	0 (0.000)
Warmińsko-mazurskie	0 (0.00)	1 (50.00)	0 (0.00)	0 (0.000)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.10)	0 (0.000)	2 (0.100)
Wielkopolskie	23 (0.08)	14 (0.08)	18 (0.05)	49 (0.280)	9 (0.03)	20 (0.11)	16 (0.04)	12 (0.07)	66 (0.050)	95 (0.130)
Zachodniopomorskie	5 (0.02)	0 (0.00)	6 (0.03)	1 (0.007)	18 (0.08)	0 (0.00)	18 (0.08)	2 (0.01)	47 (0.050)	3 (0.006)

Table 5. Percentage of carcasses considered unfit for consumption by voivodeships in 2015–2018

Voivodeship	2015	2016	2017	2018	2015–2018
	number and percentage of carcasses unfit for consumption in relation to the number of examined carcasses				
Dolnośląskie	0 (0.000)	0 (0.00)	0 (0.000)	0 (0.00)	0 (0.00)
Kujawsko-pomorskie	0 (0.000)	374 (0.38)	361 (0.390)	364 (0.40)	1099 (0.39)
Lubelskie	173 (0.760)	221 (0.88)	328 (1.310)	495 (1.72)	1217 (1.20)
Lubuskie	3 (0.007)	11 (0.03)	14 (0.040)	276 (1.09)	304 (0.23)
Łódzkie	0 (0.000)	1 (0.09)	0 (0.000)	0 (0.00)	1 (0.05)
Małopolskie	0 (0.000)	0 (0.00)	0 (0.000)	0 (0.00)	0 (0.00)
Mazowieckie	2 (0.002)	3 (0.37)	12 (1.050)	0 (0.00)	17 (0.58)
Opolskie	4 (0.060)	0 (0.00)	3 (0.040)	3 (0.05)	10 (0.03)
Podkarpackie	7 (0.030)	6 (0.02)	1 (0.003)	8 (0.03)	22 (0.02)
Podlaskie	0 (0.000)	0 (0.00)	0 (0.000)	0 (0.00)	0 (0.00)
Pomorskie	0 (0.000)	0 (0.00)	0 (0.000)	0 (0.00)	0 (0.00)
Śląskie	0 (0.000)	3 (0.05)	10 (0.150)	13 (0.19)	26 (0.11)
Świętokrzyskie	0 (0.000)	0 (0.00)	0 (0.000)	0 (0.00)	0 (0.00)
Warmińsko-mazurskie	6 (37.500)	0 (0.00)	5 (0.180)	5 (0.18)	16 (0.29)
Wielkopolskie	45 (0.090)	72 (0.14)	37 (0.070)	37 (0.07)	191 (0.09)
Zachodniopomorskie	93 (0.260)	87 (0.24)	133 (0.380)	87 (0.24)	400 (0.28)

CONCLUSIONS

To summarize, in Poland in 2015–2018 the number of acquired deer increased. The number of roe deer, fallow deer and red deer in which lesions were found shows an upward trend. In the years 2015–2018 there was a significant increase in the percentage of occurrence of qualitative changes in deer in the form of putrefaction. In most cases, these changes were the reason why the carcasses were declared unfit for consumption. In the analyzed period there was a systematic increase in the percentage of deer carcasses deemed unfit for consumption in comparison to all examined. In recent years, quite frequent cases of hunters delivering carcasses with signs of improper handling of hunted game in the hunting ground and during transport have been registered. This is mainly due to the non-cleaning of gunshot wounds, improper and inaccurate eviscerating and bleeding, as well as the occurrence of local infusions. This may increase the number of carcasses declared unfit for consumption. The quality of the raw game meat supplied for processing depends on the skills of hunters. It is therefore advisable to increase the requirements and enforce hunters' knowledge of the procedures in force when dealing with venison in the hunting ground. It is also important that collection centers provide proper conditions for storing carcasses.

ACKNOWLEDGMENT

Research was financed by Siedlce University of Natural Sciences and Humanities – research task no 6/19/B.

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OCENA WYNIKÓW BADANIA SANITARNO-WETERYNARYJNEGO ZWIERZYNY PŁOWEJ W POLSCE W LATACH 2015–2018

Streszczenie. Celem badań była analiza wyników badania poubojowego zwierzyny płowej w Polsce w latach 2015–2018. Analizie poddano wyniki urzędowego badania sanitarno-weterynaryjnego saren, danieli i jeleni, przeprowadzonego przez Inspekcję Weterynaryjną. W ocenie uwzględniono takie zmiany, jak: wychudzenie i wodnicę, rozkład gnilny, posocznicę

bądź ropnicę oraz inne zmiany. Stwierdzono, że w Polsce w latach 2015–2018 wzrosła liczba pozyskanej zwierzyny płowej. Liczba saren, danieli i jeleni, u których stwierdzono zmiany chorobowe, wykazuje tendencję wzrostową. W latach 2015–2018 nastąpił znaczny wzrost odsetka występowania u zwierzyny płowej odchyleń jakościowych w postaci rozkładu gnilnego. W większości przypadków zmiany te były powodem uznania tusz za niezdatne do spożycia. W analizowanym okresie nastąpił systematyczny wzrost odsetka tusz zwierzyny płowej uznanych za niezdatne do spożycia, w stosunku do wszystkich zbadanych.

Słowa kluczowe: zwierzęta łowne, badanie sanitarno-weterynaryjne, zmiany chorobowe, odchylenia jakościowe.