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Legal Protection of Animals in the Provision of Forensic Veterinary Opinions

Initial remarks

The development of the relationship between humans and animals has a history as long as the existence of humanity. People only began to treat animals as entities requiring legal protection¹ at the beginning of the 19th century. The development of human thought regarding the legal status of animals over the years has gradually led to the realization that human beings should respectfully participate in the world of nature surrounding them. The aims and content of animal protection regulations have been shaped according to human needs, changing in each historical era. Economics has played a significant role, and obligations and prohibitions affecting the animal species used by humans have been meant to safeguard the privileges of certain individuals and the material interests of owners and users of nature.²

The conviction that animals deserve more effective protection, as living beings constituting an equal element of biological diversity surrounding humans, has gradually taken shape. With the progressive development of civilization, science and culture, the exploitation of natural resources, and the associated increase in ecological hazards and awareness of its consequences, new standards of animal protection and status have taken shape and continue to develop. One manifestation of changing views and approaches to animals is the evolution and development of veterinary law, whose fundamental goal is to protect public health and create conditions for the welfare of animals coexisting with humans.

Veterinary protection

Veterinary protection is understood as protection of the health, life and welfare of animals, but it has no uniform scope or degree. On the basis of applicable legal provisions, the literature classifies and categorizes animal protection, referring to some extent to the classification of protective functions in the Environmental Protection Law. The division proposed by Ludwik Jastrzębski is of fundamental importance. It distinguishes the following:

- humanitarian protection,
- conservation, i.e. species protection,

¹ The oldest international regulations regarding environmental protection date back to ancient times in Egypt, India and Babylonia, about 4,000 years ago.

² In 1420, King Władysław Jagiełło, in the Statute of Warta, established the first game protection period in the history of hunting law: "(...) because the rabbit hunter has done serious damage to poor people, destroying their crops and grains, we order the cessation of all hunting henceforth from the day of St. Wojciech (23 April) until harvesting of winter and summer crops". For more, see A. Milke, *Miejsce ochrony prawnej zwierząt w obszarze wolności gospodarczej człowieka*, [in:] *Prawo ochrony przyrody a wolność gospodarcza*, red. M. Górski, Łódź 2011, p. 21.

– utilitarian protection of animals with regard to their intended use, distinguishing protection of wild game, fish, crayfish and lampreys in inland waters, as well as fish in marine waters.³

Veterinary protection and the animal protection system

Regulations on veterinary protection of animals focus on animal welfare, based on medical and veterinary knowledge. They constitute a coherent system of regulations, separated as a whole among animal protection regulations.

There are many issues within the concept of legal protection of animals. In addition to utilitarian, humanitarian, veterinary and species protection of animals, it also covers the effort to maintain the biological balance and natural living spaces of free-living animals, as the development of civilization has disturbed the functioning of many ecosystems and reduced their natural productivity. There are practically no natural biotopes that feature harmonious coexistence of diverse species of plants and animals. They are all more or less transformed by human activity.

Constitutional basis of veterinary protection of animals

In Poland, the legal framework for the protection of animals, including veterinary protection, is shaped by numerous legal acts belonging to various legal regimes and branches of law and with various positions in the hierarchy of the system of sources of law. Not all of them relate directly to animals, sometimes including them as part of the natural environment, biodiversity, ecosystems or natural resources.

The Polish Constitution does not explicitly refer to the protection of animals. The provisions of Art. 5, 31, 68, 74 and 86 of the Polish Constitution regulate issues of the protection and use of the natural environment. Starting from the principle of sustainable development (Art. 5), the Constitution recognizes environmental protection as a value that can justify the limitation of personal rights and freedoms (Art. 31), obliges public authorities to take actions necessary to protect health, including combating epidemics and preventing the negative effects of degradation of the environment (Art. 68) and environmental protection (Art. 74), and also imposes on all citizens the obligation to care for the environment and to take responsibility for damage caused (Art. 86). The inclusion of environmental protection in the Constitution meant that this issue acquired the position of one of the basic values protected by the legal order in Poland.⁴

³ L. Jastrzębski, *Prawo ochrony środowiska w Polsce*, Warszawa 1990, p. 106ff.

⁴ According to Michał Gabriel-Węglowski, in the rule of law there is no stronger justification for undertaking specific actions than placing guidelines regarding them in a normative act of the rank of the Constitution (*Przestępstwa przeciwko humanitarnej ochronie zwierząt*, Toruń 2008, p. 43).

The provisions of Art. 68, para. 1 and 4 of the Constitution, which imposes an obligation on public authorities to combat epidemic diseases and prevent negative effects of environmental degradation, is of fundamental importance.⁵ Article 68, para. 4 of the Constitution may constitute a justification and basis for assessing environmental protection laws, provided they affect individual or public health. Here, too, protection of animal health and the safety of food of animal origin relate to veterinary protection as a manifestation of public health protection measures.

It can be concluded from the remarks presented above regarding the constitutional protection of animals that it has been incorporated into the broad concepts of environmental protection and health protection.

Veterinary protection of animals in international law, EU law and national law – an outline

Acts of international law allow the regulation on protection of animals. What is more, animal protection as part of environmental protection was one of the earlier areas of international agreements, which has not lost its relevance and even now is one of the fastest growing areas of international law. Legal solutions regarding animal protection, developed in the course of international cooperation, reflect a compromise combining the interests of states and the right to development with the need to protect the environment.⁶ International law pertaining to environmental protection began to develop quite dynamically in the second half of the 20th century.⁷ The Universal Declaration of Animal Rights, adopted by the International League of Animal Rights on 21 September 1977 in London, was of particular importance for the protection of animals.⁸ According to Wojciech Radecki⁹ and Jan Białocerkiewicz,¹⁰ one of the most

⁵ Public authorities should take measures not only to prevent damage, but also to ensure that available protective measures are applied when the harmful environmental impact of certain activities has not been proven, but is likely (J. Boć, E. Samborska-Boć, *Postanowienia Konstytucji z zakresu ochrony środowiska*, [in:] *Ochrona środowiska*, red. J. Boć, K. Nowacki, E. Samborska-Boć, Wrocław 2008, p. 158).

⁶ Z. Bukowski, *Prawo międzynarodowe a ochrona środowiska*, Toruń 2005, p. 119.

⁷ The population of the Earth has doubled in the last century. In the 19th and 20th centuries, industrialization was very rapid, which had a very significant degrading impact on the natural environment. The effects of this process as the population on Earth grows are felt on a global scale. Examples of negative environmental impacts include pollution of the seas and oceans and ozone depletion (Z. Bukowski, *op. cit.*, p. 119).

⁸ UNESCO, Paris 1978.

⁹ W. Radecki, *Ustawy: o ochronie zwierząt, o doświadczeniach na zwierzętach – z komentarzem*, Warszawa 2007, p. 21.

¹⁰ J. Białocerkiewicz, *Status prawny zwierząt. Prawa zwierząt czy prawna ochrona zwierząt*, Toruń 2005, p. 233.

important elements of this document is the statement that an animal is not a thing.¹¹ The declaration was approved by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in October 1978, and despite the lack of binding force in the international community, it was important because it set ideas and trends in legal protection of animals that were further developed later on.¹²

In Europe, measures for legal protection of animals were initiated by the Council of Europe. The work of this organization resulted in extremely important conventions in the area of animal protection.¹³ These include the following:

- European Convention for the Protection of Animals during International Transport of 13 December 1968,¹⁴
- European Convention for the Protection of Animals kept for Farming Purposes of 10 March 1976,¹⁵
- European Convention for the Protection of Animals for Slaughter of 10 May 1976,¹⁶
- European Convention for the Protection of Vertebrate Animals used for Experimental and other Scientific Purposes of 18 March 1986,¹⁷
- European Convention for the Protection of Pet Animals of 13 November 1987.

By implementing the provisions of the Convention in the system of European and national law, a number of supervisory and control powers have been entrusted to the appropriate veterinary services. Due to the need to make use of the achievements of veterinary sciences and to exercise medical care over animals as well as feed and food products of animal origin, authority was also entrusted to the appropriate veterinary services, and medical care is the core of the implemented functions of treatment, care, supervision and prevention. Veterinary protection understood in this way is a reference point for regulations included in EU secondary legislation and national regulations.

¹¹ Until the Act of 21 August 1997 on the protection of animals came into force, animals were included in the category of things in civil law (A. Habuda, W. Radecki, *Przepisy karne w ustawach o ochronie zwierząt oraz o doświadczeniach na zwierzętach*, „Prokuratura i Prawo” 2008, nr 5, p. 21). Owing to this solution, the legal status of animals changed. The doctrine of civil law introduced the concept of dereification, meaning the exclusion of an object from the category of things, to which it had previously belonged (Z. Radwański, *Prawo cywilne. Część ogólna*. Warszawa 2011, p. 114).

¹² M. Gabriel-Węglowski, *op. cit.*, p. 34.

¹³ A. Przyborowska-Klimczak, *Ochrona zwierząt w świetle dokumentów międzynarodowych*, [in:] *Prawna ochrona zwierząt*, red. M. Mozgawa, Lublin 2002, pp. 95–113.

¹⁴ Council Decision of 21 June 2004 (2004/544/ EC) (Official Journal of the EU, L 241, 2004, p. 21).

¹⁵ European Convention for the Protection of Animals kept for Farming Purposes, drawn up in Strasbourg on 10 March 1976 (Official Journal of the EU of 2008, No. 104, item 665).

¹⁶ European Convention for the Protection of Animals for Slaughter, drawn up in Strasbourg on 10 May 1979 (Official Journal of the EU of 2008, No. 126, item 810).

¹⁷ European Convention for the Protection of Vertebrate Animals used for Experimental and other Scientific Purposes (Official Journal of the EU, L 222, 1999, p. 31, as amended).

Given that the criterion for distinguishing veterinary legislation is based on the objective of protecting the health, life and welfare of animals, as well as securing conditions for the protection of public health of humans, the above-mentioned provisions constitute the core of European law and, as a result of their implementation, are part of national veterinary law.

The adopted canon of acts shaping the legal status of animals in Poland includes numerous regulations. The following are of fundamental importance:

- Act of 18 April 1985 on Inland Fisheries,¹⁸
- Act of 21 December 1990 on the Profession of Veterinarian and Veterinary Chambers,¹⁹
- Act of 13 October 1995 – Hunting Law,²⁰
- Act of 21 August 1997 on the Protection of Animals,²¹
- Act of 29 January 2004 on Veterinary Inspection,²²
- Act of 11 March 2004 on the Protection of Animal Health and Controlling Infectious Diseases in Animals,²³
- Act of 29 June 2007 on the Organization of Breeding and Reproduction of Farm Animals,²⁴
- Act of 15 January 2015 on the Protection of Animals Used for Scientific or Educational Purposes.²⁵

This list does not include all the regulations that can be said to be covered by the concept of veterinary legislation. However, they fulfil its main goal to the greatest extent, i.e. protection of animal health, life and welfare, and they protect human public health.

Veterinarian as a profession of public trust

On 21 December 1990, the Sejm of the Republic of Poland passed the Act on the Profession of Veterinarian and Veterinary Chambers, under which persons practising the profession of veterinarian constitute a community forming a professional self-governing body.²⁶ Persons practising the profession of veterinarian are obliged by law to belong to the professional self-governing body.

¹⁸ Consolidated text, Journal of Laws of 2018, item 1476.

¹⁹ Consolidated text, Journal of Laws of 2016, item 1479.

²⁰ Consolidated text, Journal of Laws of 2017, item 1295, as amended.

²¹ Consolidated text, Journal of Laws of 2017, item 1840, as amended.

²² Consolidated text, Journal of Laws of 2018, item 1557.

²³ Consolidated text, Journal of Laws of 2017, item 1855, as amended.

²⁴ Consolidated text, Journal of Laws of 2017, item 2132.

²⁵ Consolidated text, Journal of Laws of 2018, item 1207.

²⁶ Pursuant to Art. 17 para. 1 of the Constitution of the Republic of Poland, persons practising a profession defined as a profession of public trust may establish a professional self-governing body. From a formal point of view, it is only after the adoption of an applicable law that a given pro-

Pursuant to Art. 10 of the Act of 21 December 1990 on the Veterinary Profession, the tasks of the veterinary self-governing body relate in particular to the supervision of proper and diligent performance of the profession, establishing the principles of veterinary ethics and deontology applicable to veterinarians, and efforts to ensure compliance with them. According to the Article, the veterinary self-governing body also takes positions on matters of animal health, veterinary protection of public health and the environment, and state policy in this area. Tasks of veterinary protection of animals are carried out in part by granting the right to practise the profession of veterinarian and by keeping registers of chamber members and lists of veterinarians authorized to practise the profession. The veterinary self-governing body cooperates in matters of professional specialization, giving opinions on draft laws and other legal acts regarding the protection of animal health, veterinary protection of public health, environmental protection and veterinary practice. The self-governing body of veterinary surgeons also issues opinions and puts forward motions in matters of training veterinary surgeons and auxiliary staff, organizing research on veterinary protection of public health and veterinary practice. The legislator has also entrusted the veterinary chambers with the exercise of professional administration of justice as regards the professional responsibility of veterinarians and arbitration. The wide range of tasks of the veterinary chambers, laid down by the provisions of the Act of 21 December 1990, also includes cooperation with administrative bodies of local government units, professional self-governing bodies, trade unions, and civic organizations, in matters of veterinary prevention and treatment as well as improvement of livestock farming conditions and sanitary conditions in rural areas. This is reflected in the method of controlling food of animal origin and the effectiveness of combating infectious and parasitic animal diseases and zoonotic diseases.

Due to the multifaceted nature of veterinary protection of animals, it is linked to the protection of public health. Proper exercise of certain aspects of veterinary protection influences the implementation of tasks of public health protection. An example of this connection is the issuing of passports for companion animals²⁷ and the keeping of records of veterinary establishments²⁸ by the veterinary chamber.

Article 2 of the Act on Veterinary Establishments²⁹ clearly defines the concept of veterinary service as an activity which the legislator has entrusted to veterinary surgeons having the right to practise the profession and, to some extent, to persons holding the title of veterinary technician, as part of the operation and activity of an

professional group is given the status of a profession of public trust, and its activities are organized into a specific legal framework (M. Rudy, *Wstęp do prawa sanitarnego i weterynaryjnego*, Wrocław 2010, p. 217).

²⁷ Article 24d–g of the Act of 11 March 2004 on the Protection of Animal Health.

²⁸ Article 16 para. 2 of the Act of 18 December 2003 on Veterinary Establishments.

²⁹ Act of 18 December 2003 on Veterinary Establishments (consolidated text, Journal of Laws of 2019, item 24).

appropriate veterinary establishment. The Act defines veterinary service as an activity serving to preserve, save or improve an animal's health and productivity. In addition, a veterinarian performing activities defined as veterinary services is entitled to issue opinions and rulings on the subject of his specialty, competence and best knowledge.

When there is a need to clarify facts related to veterinary matters during preparatory or judicial proceedings, when a case in civil, criminal, administrative or commercial proceedings has a direct relationship with an animal or if an animal itself has been involved in an incident, a veterinarian is then appointed as an expert witness.³⁰

Evidence from an expert opinion, due to the element of specialized knowledge, cannot be replaced by other evidence, e.g. by questioning a witness.³¹ Expert veterinarians often have the task of issuing an opinion after first analysing the material evidence contained in the case files received, or directly conducting veterinary activities based on which they draw up a protocol containing the answers to the questions posed to the expert.³² Forensic veterinary opinions by expert veterinarians may be written or oral.³³ Veterinarians, as persons with specialized knowledge in the field of veterinary medicine, are often appointed as expert witnesses by common courts, the public prosecutor's office, the police, or state administration authorities at various stages of the proceedings.³⁴

The diversity of cases involving the need to admit evidence from the opinion of a veterinary expert witness is very broad, but difficult to enumerate.³⁵ The most common circumstances for appointing veterinarians as expert witnesses include contracts for the sale of animals with physical defects (in particular major defects), the death of an animal,³⁶ an infectious disease occurring in animals,³⁷ errors in veterinary medicine associated with the treatment of animals, issues involving protection of animal

³⁰ Ordinance of the Minister of Justice of 21 January 2005 on Expert Witnesses (Journal of Laws of 2005, No. 15, items 132, 133).

³¹ Judgement of the Supreme Court of 24 November 1999, I CKN 223/98, LEX No. 39411.

³² For example, a post-mortem examination of the animal's body to answer the questions contained in the document received by the expert.

³³ In practice, however, most forensic and veterinary opinions are written. Oral opinions are usually issued to supplement previously issued written opinions in a given case or opinions originally issued during hearings by a procedural authority.

³⁴ See Art. 193 para. 1 of the Act of 6 June 1997 Code of Criminal Procedure (consolidated text, Journal of Laws of 2018, item 1987); Art. 278 para. 1 of the Act of 17 November 1964 Code of Civil Procedure (consolidated text, Journal of Laws of 2018, item 1360, as amended); Art. 84 para. 1 of the Act of 14 June 1960 Code of Administrative Procedure (consolidated text, Journal of Laws of 2018, item 2096).

³⁵ An example of circumstances in which procedural organs seek the opinion of expert veterinarians is the adulteration or sale of food of animal origin that is spoilt or harmful to health – see C. Kąkol, *Mięsne paragrafy*, „Rzeczpospolita”, 20 March 2013, p. C7.

³⁶ E.g. unexplained or sudden death, gunshot, or fatal intoxication in animals.

³⁷ Especially zoonotic diseases.

health³⁸ and hygiene, and safety of food of animal origin,³⁹ and thus situations that are important for the protection of public health of humans and animals, public order, and stable commerce conditions. In this sense it performs public functions.

When preparing a veterinary opinion, the expert witness is often obliged to examine a living animal or, in the event of the animal's death, to perform a post-mortem examination of the material provided to the expert by the appropriate authority. The person appointed to prepare the opinion, in addition to conducting the necessary examinations, is obliged to become familiar with the circumstances of the event that necessitate the examination. This information is obtained by interviewing the animal's owner or consulting with the employees of the judicial body commissioning the opinion. It also may be contained in the document delivered to the expert. In many cases it is not possible to obtain important information for forensic veterinary assessment, because, for example, the circumstances in which an animal has suffered a mechanical injury are not always known to either the judicial body or the animal's owner. In this case, the opinion is based solely on knowledge combined with the veterinarian's experience. Before proceeding with the examination of a living animal or an autopsy, there is an extremely important step that is fundamental to the accuracy of a forensic veterinary opinion: identification of the material evidence being examined, e.g. an animal. This is done by providing an accurate description of the animal in the introductory part of the forensic veterinary opinion.⁴⁰

Examination of a living animal is carried out according to the plan of a clinical examination, which determines the current condition of the animal with a thorough analysis of its external appearance. A detailed examination is conducted and, if necessary, additional tests are performed. In the case of a post-mortem examination, the veterinarian acts in accordance with the post-mortem examination procedure, drawing up a protocol specifying all pathological changes and stating the cause of the animal's death, which then serves as the basis for the veterinary opinion.

The expert witness should secure the material delivered by the authority or person commissioning the opinion, e.g. the animal's carcass and other items received or encountered during the post-mortem examination, as they constitute evidence, and they are to be disposed of by the authority or person ordering the opinion. After the post-mortem examination, they cannot be disposed of without obtaining consent. In the absence of consent, after the examination, the carcass should be secured and kept until the decision regarding it has been made by the competent authority or person.

³⁸ E.g. forensic veterinary examination of a living animal.

³⁹ Z. Michalski, *Weterynaria sądowa*, Wrocław 1993, p. 13.

⁴⁰ Species, gender, breed or resemblance to a breed, name, weight, coat colour and type, and distinguishing features, e.g. a tattoo, or a chip number.

Forensic veterinary service with regard to animal protection

The multifaceted nature of veterinary protection of animals in Poland is reflected in the scientific achievements of one of the disciplines of veterinary science, i.e. forensic veterinary medicine.⁴¹ This area of veterinary protection of animals constitutes a distinct and specific form of it.

The origins of the emergence and development of forensic veterinary medicine can be traced back to antiquity. Roman law, which has been a fundamental source for current legal systems in many countries of the world, was also the beginning of the emergence and development of veterinary law and the associated emergence and development of forensic veterinary medicine. At present, forensic veterinary medicine is an applied veterinary science, a scientific discipline closely related to forensic medicine. Its creation and development have been an inseparable element of the evolution of common law over the years, in particular veterinary law and veterinary medical knowledge. It stands out significantly from other scientific disciplines in veterinary medicine, as a combination of typical veterinary medical knowledge and legal sciences.

Forensic veterinary medicine as a scientific discipline does not cover animal protection issues. It is only its practical application that allows mainly judicial authorities and private individuals to implement animal protection, a significant part of which is veterinary protection. Forensic veterinary medicine as an applied science deals with the mechanism of action of various types of injuries to an animal's body and other factors; explaining the effects of these injuries and determining the circumstances in which they could have arisen; examining live and other material evidence related to veterinary medicine; the issue of animal death and changes occurring in the carcass after the death of the animal; veterinary toxicology; giving opinions in cases of suspected diagnostic or treatment error; and giving opinions on matters of food of animal origin.

The specific nature of veterinary protection of animals by forensic veterinary medicine is also influenced by the fact that its significance as an applied science has markedly increased in recent years. This is due to the development of veterinary legislation and legislation related to the protection of animals. Increased public awareness and associated demands regarding animal protection also contribute to the significant interest in forensic veterinary medicine.⁴²

⁴¹ Forensic veterinary medicine can be defined as a veterinary medical specialization forming a bridge linking biological veterinary knowledge and legal sciences. This discipline provides professional assistance primarily to criminal prosecution and judicial authorities. See T. Marcinkowski, *Medycyna sądowa dla prawników*, Warszawa 1993, p. 19.

⁴² Practice of the profession of veterinarian in the form of both animal treatment services and supervision of hygiene of food of animal origin may often give rise to conflict situations, whose resolution by a judicial authority necessitates the use of forensic veterinary knowledge.

Additional tests in forensic veterinary medicine

The dynamic development of forensic veterinary medicine as an applied science allows veterinarians to outline a highly probable course of the event about which an opinion is needed, which often requires additional specialized tests. Along with the increase in public awareness and associated demands regarding animal protection, there is a greater need for additional specialized tests, particularly modern imaging methods and toxicological and genetic tests. Analysis of gunshot injuries, because they affect numerous organs of the body, is a challenge for doctors of both human and veterinary medicine.

Adequate protection of the area of the entry wound, determination of the bullet trajectory in tissues, examination of the exit wound, and isolation of the bullet and all of its fragments are extremely important for subsequent analyses.⁴³ Additional histopathological, chromatographic and spectrometric tests, as well as imaging techniques, provide answers to a number of questions raised by judicial bodies. Given that animal carcasses are often among the major pieces of evidence in gunshot cases, well-conducted examinations are an essential element of forensic veterinary opinions.

The use of firearms always leaves numerous traces that provide great opportunities for examination, evidence, and more importantly – detection. These characteristic traces make it possible to carry out a series of tests whose results can be used to reconstruct the event. For accurate results, the material must be secured and the secured weapon,⁴⁴ bullets, shells and other traces⁴⁵ must be analysed as soon as possible. The abrasion collar, burn zone and fouling around the entry wound, the presence of unburned gunpowder particles (stippling) (powder tattoo) or products of its combustion, and the presence of any particles from the barrel, bullet and shell components are analysed. Visual examination of the mechanical damage to the soft tissues and the skeleton of the victim together with determination of the projectile path also provide a great deal of relevant information about the event.

The mechanism by which bullet injuries occur is extremely complex and depends on the type of weapon used, the type and speed of the projectile, and the distance from which the shot was fired. Examination of gunshot residues makes it possible to determine the position of the shooter relative to the victim and provides the basis for ballistics experts to identify individual weapons and dedicated ammunition used in the incident.

Modern imaging techniques, i.e. radiography and computed tomography, are important methods in the analysis of gunshot injuries, as they enable reconstruction of

⁴³ L. Bieliński, W. Miś, *Kryminalistyczno-procesowe zabezpieczenie śladów na miejscu zdarzenia*, Piła 2009, pp. 17–18.

⁴⁴ With fingerprints, biological traces, or GSR (gunshot residue).

⁴⁵ E.g. tissue that has been shot through, blood spatters, or the animal's skin with the hair coat.

the tracks of the wounds. This provides information about the position of the shooter, the distance from which the shot was fired, and the type of weapon and projectile. In veterinary medicine, radiography is a basic and obligatory examination when there is a suspicion that an animal has been shot with a firearm or pneumatic weapon. This applies to both animals injured during the incident and carcasses. Entire carcasses are X-rayed to determine the presence of contrasting foreign bodies in the material, i.e. gunshot residue in the area surrounding the track of the bullet.

A technique often used for analysis of gunshot wounds is post-mortem computed tomography (PMCT),⁴⁶ which owes its popularity to its non-invasiveness and effective imaging, especially for reconstruction of the track of the bullet. This method enables accurate bone analysis in terms of individual characteristics and injuries, such as fractures, which is the basis for the graphic 3D reconstructions.⁴⁷ Computed tomography can be used to define the spaces containing gases, which makes it possible to determine post-traumatic changes, and also to reconstruct the wound track, i.e. the path of the projectile in the body. Because PMCT is performed on a carcass, it is not limited in terms of the dose of radiation or exposure time, which in the case of living organisms is a major obstacle. PMCT makes it possible to obtain a significant number of cross-sections, and thus, high-quality reconstructions. Another unquestionable advantage of computed tomography imaging is that it enables examination in spite of advanced decomposition, when dissection of the body and removal of the internal organs would damage important structural elements of the body.

Conclusions

The considerations outlined above clearly indicate the significant role of the practical use of forensic veterinary knowledge in the legal protection of animals, mainly by judicial authorities. In particular, these considerations underscore the importance of additional tests, the results of which, in conjunction with the basic clinical or post-mortem examination, indicate the macroscopic nature of the pathological changes and the circumstances of their occurrence, thus enabling the competent authorities to discover the truth in proceedings associated with protection of animals.

⁴⁶ E. Scaparra, J. Grimm, M. Scherr, M. Graw, M. Reiser, O. Peschel, S. Kirchhoff, *Postmortem Computed Tomography (PMCT) and Autopsy in Deadly Gunshot Wounds – a Comparative Study*, “The International Journal of Legal Medicine” 2016, No. 130, pp. 819–826.

⁴⁷ K. Woźniak, A. Moskała, A. Urbanik, P. Kopacz, M. Kłys, *Pośmiertne badania obrazowe z rekonstrukcją 3D: nowa droga rozwoju klasycznej medycyny sądowej?*, „Archiwum Medycyny Sądowej i Kryminologii” 2009, Nr 59, pp. 124–130.

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Abstract: The development of the relationship between humans and animals has a history as long as the existence of humanity. The conviction that animals deserve more effective protection, as living beings constituting an equal element of biological diversity surrounding humans, has gradually taken shape. One manifestation of changing views and approaches to animals is the evolution and development of veterinary law. The multifaceted nature of veterinary protection of animals in Poland is reflected in the scientific achievements of one of the disciplines of veterinary science, i.e. forensic veterinary medicine. The dynamic development of forensic veterinary medicine as an applied science allows veterinarians to outline a highly probable course of the event about which an opinion is needed, which often requires additional specialized tests. Analysis of gunshot injuries, because they affect numerous organs of the body, is a challenge for doctors of both human and veterinary medicine. Given that animal carcasses are often among the major pieces of evidence in gunshot cases, well-conducted examinations are an

essential element of forensic veterinary opinions. The use of firearms always leaves numerous traces that provide great opportunities for examination, evidence, and more importantly – detection. Modern imaging techniques, i.e. radiography and computed tomography, are important methods in the analysis of gunshot injuries, as they enable reconstruction of the tracks of the wounds. This provides information about the position of the shooter, the distance from which the shot was fired, and the type of weapon and projectile.

Keywords: protection of animals; forensic veterinary; gunshot injuries; radiography; computed tomography