

Morphometry of the heart of elk, *Alces alces*

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Introduction: Most studies of heart morphometry applies to the man. These publications are the methodological base of measuring, weighing and calculating the relative weight of animals heart

Detailed morphometric research were also performed at the of heart of some domestic and wild animals.

Aim: The aim of this study was to conduct a detailed heart morphometry of an elk.



Methods: The study was conducted on 10 adult elk cadavers. Specimens were collected from the North-West Poland within the project "Strategy for the protection and management of elk population in Poland." The study was approved by the Minister of the Environment (DL decision. Gł-6713-5/4539L/10/PJ of 09/20/2010). Body weight was measured immediately after shooting. After isolation of the heart, detailed anatomical preparation was conducted. Pericardial sac was cut off at the point of attachment to the base of the heart and all vascular trunks were removed (ascending aorta, pulmonary trunk, pulmonary veins, cranial caval vein and caudal caval vein). Specimens were fixed in a solution of 10% formaldehyde and 0.25% ethanol for a period of approximately six weeks. The weight of the hearts were determined by using the electronic scales for animals MENSOR WM150P1. The measurements were performed using an electronic caliper (TESA - CAL IP67) with an accuracy of 0.01 mm. Height of the heart was defined as the maximum distance between the apex and base of the heart. The maximum width of the heart was measured between the left and right ventricular border. On the basis the data obtained the index specifying heart weight to body weight ratio was calculated.



Results: During the study, it was found that the height of the heart (14.40 cm - 18.90 cm) in all individuals is larger than the width (16.90 cm - 19.10 cm). In the studied group of elk average body weight was 197.89 kg, while the average heart weight was 1.43 kg. The relative heart weight to body weight was 0.55. So far, not much similar information on wild mammals has been published. Investigations carried out on bison hearts revealed that the ratio of heart weight to body weight in adult animals reaches 0.50. Similar analysis was done in horses. It was found that the average weight of the organ of this species is 4 kg which constitutes 0.7% of body weight. It was also noted that heart in horses is bigger and heavier well as. The proportion of the heart weight to body weight also varies depending on the condition of the horse. The ratio was about 0.4% in individuals with the higher body weight, whereas in lighter approximately 1%.