

ECOCARDIOGRAPHIC AND ELECTROCARDIOGRAPHIC STUDY OF TWO ADULT BEAR MALES (URSUS ARCTOS ARCTOS) UPON AWAKENING FROM HIBERNATION



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- The population of European brown bear (*Ursus arctos*) present in the Alps, counts just over a hundred individuals and is the result of a reintroduction project carried out two decades ago, given that the historic native population, at the end of the last century counted only three subjects and for this reason it had been defined functionally extinct¹. The reintroduced subjects belong to the nearby Slovenian population and are of the same subspecies as the native one (*Ursus arctos arctos*). The subjects reintroduced in the territory of the Adamello Brenta Natural Park between 1999 and 2001 were 10 (3 males and 7 females)¹⁻². Of these specimens, only 2 males and 4 females reproduced. The small number of founders poses a problem of high consanguinity of the Ursina population in Trentino, given the lack of exchange of genetic flow with other European populations, too far away for a phylopatric species such as the brown bear²⁻³. This inbreeding could compromise the functionality of systems and organs so as to compromise the survival of the species in the Alps. For this reason, the constant medical monitoring of the population of Trentino bears³⁻⁴ is important.

Due to the important size and athletic performance of the species, the cardiac evaluation of the population was placed as fundamental, and therefore as the purpose of this study, and to this end, bears of the Trentino population⁵⁻⁶⁻⁷⁻⁸ were subjected for the first time to echocardiographic examination and electrocardiographic examination. The study in question is carried out on wild adult specimens of the Alps, temporarily housed in a special provincial structure waiting for reintegration into the wild. The bears, at the time of the examination, were respectively, the first 5 years with a weight of 220 Kg and the second 3 years with a weight of 160 Kg. The examinations were carried out after anesthesia of both subjects. A portable ultrasound device with Phased Array multifrequency probes and a 6-lead portable wi-fi electrocardiograph with atraumatic pliers were used. Echocardiography was carried out in the right axillary region of both specimens, after adequate trichotomy (with portable clipper) with the subjects in sternal decubitus on a special natural straw bed. Electrocardiographic derivatives were placed in the region of the alcoholized elbows and folds of the grassella to improve the contact of the pliers. The evaluation of both specimens did not reveal any anomalies of electrical conduction⁵⁻⁸: both bears presented a sinus rhythm⁸. Echocardiographic examinations showed, in both specimens, values in the reference ranges compared to what emerged in the previous studies⁵⁻⁶⁻⁷⁻⁸. Unlike previous studies, in both specimens, a slight aortic insufficiency was evaluated with a low-velocity retrograde flow⁵⁻⁶⁻⁷⁻⁸; no evidence of other abnormalities either in the valve systems or at the level of the working myocardium⁵⁻⁶⁻⁷⁻⁸. In conclusion, it can be said that, in the two bears under study, no significant cardiac alterations have emerged that could compromise their reintegration into nature.



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