

Certain factors influencing the condition of free-ranging Konik Polski horses (*Equus caballus*) in the Bierzka National Park

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The objective of the study was to analyze certain factors influencing the condition of free-ranging Konik Polski horses in a fenced area measuring 200 ha located in the Bierzka National Park (Bierzka NP). The Body Condition Scoring system (BCS) was used not only as means of assessment of health and fitness of the horses but also for evaluation of the quality and productivity of the grazing area selected for horses, as well as stocking rate. Body Condition Scoring was determined with a 9-point scale by averaging the scores that were assigned to each of the six body areas that are most responsive to changes of body fat (Hennecke, 1983). The condition of horses was assessed 7 times from February 2009 to December 2011 on a total of 59 horses (3 stallions (n= 12 observations), 21 females 3–8 year olds (n=81) and 35 youngsters (up to 2 year olds) (n=88)). The number (from 1 to 3) and composition of family bands varied throughout the period of investigation. The horse population in the Bierzka NP consist of horses from 3 different breeding centers. The analysis of variance (GLM) was used to investigate the effects of the fixed factors - weather conditions, family band, breeder of the horses, age and sex, on the mean of BCS points of horses (SPSS, version 19.0). The most important factor influencing the condition of free-ranging Konik Polski horses in the Bierzka NP were weather conditions, what is shown by the data concerning temperature from 3-month period preceding condition scoring ($P < 0.01$). This factor influenced not only animals, but also vegetation characteristics. The highest BCS means of horses (5.09) were achieved when average temperature during the 3-month period preceding condition scoring amounted between +1 to +8°C, and was better than obtained when average temperature amounted +18°C (4.80). The last temperature seems too high for horses and can be connected also with other factors, like high incidence of insects which could deteriorate grazing activity of animals. The lowest BCS means (4.56) were obtained when mean temperature was below 0°C. Other factors had no significant effect on the BCS means. As concern to breeder, the highest BCS means achieved mares from Popielno (5.08) – the oldest

Polish free-ranging population of Konik Polski horses, which confirms that horses from this breeding center are justly considered to be the toughest and well adapting to difficult environmental conditions. The horses from the Bierzka NP achieved also high BCS means (4.79) which prove that they were well suited to the specific conditions of this habitat, which is overgrown mostly with forest – 73,7%, and willow and birch shrubs - 13,3% of area. The grazing area measures about 40 hectares and consists of wetlands dominated by sedges (*Carex* sp.). The horses moved from the Seven Island Reservation to Bierzka NP achieved the poorest results as far as adaptation to the conditions of the new habitat, and reached the lowest BCS means (4.57). The youngest horses (up to 2 year olds), 3-5 year olds, and 6-8 year olds had similar BCS means (respectively 4.94, 4.83, 4.68) which indicates good acclimatization of horses from different age categories to the grazing resources in the Bierzka NP. The highest means achieved by youngest horses indicate important trait of Konik Polski horses – mare's careful care of offspring. The BCS means of horses from different family groups show the highest value of horses from family group of the most experienced stallion – Mrok (4.97). In every BCS scoring, stallions achieved the highest means, which was the reason to exclude their results from analysis. The results of this study suggest that the Body Condition Scoring of horses in the Bierzka National Park depends primarily on the acclimatization of horses to harsh environmental conditions and less importantly to belonging to a specific breeder, family band, age or sex. Key words: Body Condition Scoring, free-ranging, Konik Polski horses, Bierzka National Park

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