

On the sex and age structure of the Stone Marten (*Martes foina*) population from Sarnena Sredna Gora Mts. (Central Bulgaria)

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Abstract. The sex and age structure of the Stone Marten (*Martes foina* Erxleben, 1777) population from Sarnena Sredna Gora Mts. (Central Bulgaria) was studied. A total of 67 skulls were divided into three age groups using different methods. The population structure showed a male-biased sex ratio with adults predominating over yearlings.

Key words: stone marten, population structure, age ratio.

Introduction

The parameters that define demographic characteristic of animal species are birth rate, mortality, life expectancy, density and population dynamics. The sex and age compositions of individuals in a population can provide important insights into the dynamics of the population (Beckmann & Berger 2003). The effects of management of population and accurate estimates of population structure are critical to understanding animal population ecology (Meffe & Carroll 1997). Sex and age ratios are dynamic and vary temporally and spatially and “characteristic” ratios may be difficult to define (Feldhamer *et al.* 2003).

Close monitoring of the American Marten population is important for the conservation and sustainable management of this species (Flynn & Shumacher 2009). The Stone Marten (*Martes foina* Erxleben, 1777) is a medium-sized carnivore widely distributed in Bulgaria. Studies on its population parameters on the Balkans are scarce.

The aim of the study is to obtain some information on the sex and age ratios in a Stone Marten population from Sarnena Sredna Gora Mts. (Central Bulgaria).

Material and Methods

A total of 67 skulls of specimens of Stone Martens (49 males and 18 females) were examined. Most of the samples were provided by hunters and gamekeepers between 1st of November and 1st of March (2013-2015), using different hunting methods from Sarnena Sredna Gora region. Other part of the samples was obtained from road killed animals in the same region.

The age-groups classification was made by the shape of the temporal ridges on the skull (Albayrak *et al.* 2008), the size of the pulp cavity in canine teeth (Foresman 2012) and by the maxillary teeth attrition and the number of dentinum annuli according to Klevezal (2007). After the examination specimens were divided into three age groups: yearlings (7-11 months), between one and two years (19-23 months) and older than two years (31+ months), taking into account Stone Marten’s bearing offspring in spring - early March to the middle of April (Canivenc *et al.* 1981).

Results and Discussion

The data revealed that males prevailed in the three age groups: yearlings – 26.9% M vs 13.4% F; between one and two years – 23.95% M vs 10.4% F and older than two years – 22.4% vs 3% respectively (Fig. 1).

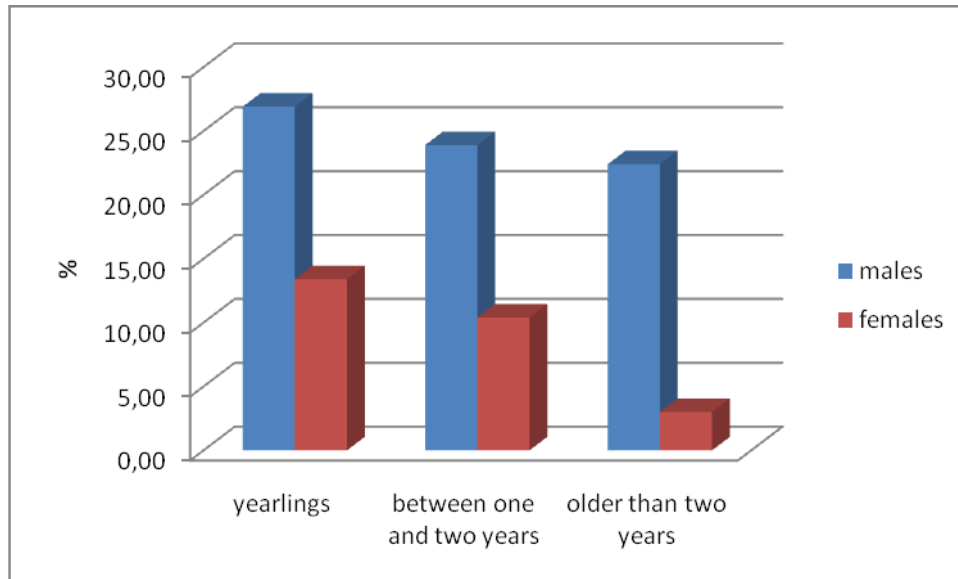


Fig. 1. Sex-age classes of Stone Marten population from Central Bulgaria, %.

The yearling males were numerous (26.9%) and their number declined gradually with age. The same but stronger tendency was observed for females. The oldest animals detected were 4 and 5 years old. The average age for males was 1.6 years and 1.3 years for females. The sex ratio varied with age. It was 2M : 1F in yearlings; changed to 2.3M : 1F in group between one and two years old and 7.5M : 1 F in older than two years. Average sex ratio was 2.7M : 1F.

Even this sample is showing sex and age ratio of a sample of killed animals providing data more on the mortality and not for a population group, some conclusions can be made, and some questions can be raised.

Male biases in samples of various mustelid species were described by Buskirk & Lindstedt (1989) and interpreted as resulting from sex-specific home range sizes and higher locomotor activity in males. Such mechanisms might explain the high percentage of males in the present study. Otherwise, males are more exposed to trapping pressure (Larroque *et al.* 2016). Contrary, Stankevičiūtė *et al.* (2013) have found that the number of closely relative yearling pine marten females in Lithuania was larger than the yearling males. The reason for that was because young females get entrapped more often due to the lack of experience (Grakov 1981).

Highly variable sex ratios for closely relative mustelids were described. Sex ratio for the American Marten is higher but similar than that in present study. It has been 3.5 : 1 with male biased (Flynn & Shumacher 2009) and it changed with the years and depended on sampling method. Live trapping showed sex ratios of 1.5M : 1F whereas carcasses showed 3M : 1F (Clark *et al.* 1989). The average proportion of males collected in kill traps has been usually around 75% in common weasels and around 60% to 65% in stoats (King 1975).

The Stone Marten population from Central Bulgaria is with a male-biased sex ratio which may indicate the population serves as a sink as Beckmann & Berger (2003) described for mammals. This statement is supported by the fact that adults predominate over

yearlings. Otherwise, it can be speculated that the males and the yearlings are the groups of higher mortality in this population.

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