INTRASPECIFIC VARIATION IN THE BONE MICROSTRUCTURE OF *SCIURUS VULGARIS FUSCOATER* HUMERI

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As small and arboreal mammals, red squirrels (*Sciurus vulgaris*) are interesting representatives of rodents for ecological research. Their lifestyle, which includes living and moving on trees and preserving food for winter instead of hibernating, brings specific challenges regarding locomotion and metabolism, which could be reflected in bone microstructure. Researching intraspecific variation in squirrels can provide information regarding this species and help paleontological studies, where sample sizes are often small, and it is important to have an idea of intraspecific variation in extant relatives to assess whether observed interspecific variation might be due to coincidence. This study focuses on humeri of *S. v. fuscoater* from Germany to uncover intraspecific variation such as laterality, seasonal variation, growth stage, and sexual dimorphism. The proximal and distal epiphyses were analyzed separately. The analyses were conducted using the software ORS Dragonfly, which allows visualization and segmentation of bones and calculates various parameters, which for this study, include cortical area, cortical thickness, periosteal surface, and endosteal surface. Preliminary results of the statistical analyses do not show significant differences in laterality, whereas several parameters do so between seasons. These include both trabecular and cortical parameters and the bone-volume fraction. Bone mass may be fluctuating with the availability of nutrients, specifically Calcium, between seasons. Comparing sexes also did not show significant sexual dimorphism except in cortical area, which on average seems to be larger in females. Additionally, results indicate significant differences in the trabecular parameters of the distal and proximal epiphyses, which are expected to evolve differently given differing loads of mechanical stress generally applied to the opposing ends of the humerus. The findings of this study suggest that appreciable intraspecific variation in bone microstructure exists in *S. v. fuscoater*. If this extrapolates to other species, this might have consequences for the interpretation of microstructure in fossils.