Elasmobranch Olfactory Organ Morphology

Demircan, Ayse

Elasmobranchs - commonly known as sharks, skates, and rays - are known to possess highly acute olfactory sensitivity, with large variation of the morphological structures across all species. The surface area of the olfactory rosette does not correlate with olfactory sensitivity, however it may be related to optimizing flow of odors through the organ. This study tests the effects of morphological variation in the olfactory rosette by quantifying the morphological variation present in the olfactory rosette of several different species. I expect to see differences in the olfactory organ features that I measure, such a organ width, length, and other factors. Results show there is wide variation both across species and within species. For example, I found that for almost all species, the width of the rosette was half of the length of the rosette. S. lewini (scalloped hammerhead sharks) have the longest rosette length relative to the total length of the shark, while A. vulpinas (common thresher) has the shortest rosette length relative to the total length. Implications of this study include insight on the key roles that morphological structures elasmobranchs possess, and explain the variation present both across and within species.

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