



SONG SPARROW MORPHOMETRIC STUDY

Master's Project – Jennifer McCabe

Variation in bird bill sizes is commonly thought to be determined by differences in foraging behavior and diet. However, recent research has shown bird bills may also be important as a thermoregulatory organ. Tattersall et al (2009) discovered toucans were using their large bills to dump excess heat during times of high temperatures, without a significant loss in body water. A researcher at the Smithsonian Migratory Bird Center has recently shown a relationship between tidal marsh sparrow bill size and breeding season high temperatures. Sparrows breeding in areas where average high temperatures are greater and available water is low have larger bills (unpublished data).

Bergmann's rule states as environmental temperatures increase vertebrate's body size decreases. Temperature is most often used as the climatic variable in studies of body size; I aim to determine if there are similar relationships between bill size and abiotic factors that may affect bird's thermoregulatory processes, such as altitude, average summer precipitation, average high breeding season temperatures, and humidity in the song sparrow across its range.

I choose the Song Sparrow as my focal species because they are found throughout the United States occupying a variety of habitats. Many have studied the geographic variation in body size and plumage according to climate and habitat, across their range. I hope, with the cooperation of IBP and independent MAPS stations across the country to gather enough measurements to determine if there is a pattern between bill size and climate.

Calipers are essential for bill and tarsus measurements and will be provided if needed.

Measurements Needed:

Bill length: Nare to tip

Head and bill: Back of skull to tip of bill

Bill depth: At nares

Bill width: At nares

Tarsus: Length between the intertarsal joint and the distal end of the last leg scale before toe (see diagram in Plye)

Wing length: Millimeters

Mass: Grams

Age and Sex: If known

For those interested in contributing data, an instructional video will be provided highlighting the correct methods for taking bill measurements.

Please contact me (Jennifer) if you are interested in participating or if you have additional questions, jennifer.mccabe@maine.edu.

Tattersall, G. J., D. V. Andrade, and A. S. Abe. 2009 Heat exchange from the toucan bill reveals a controllable vascular thermal radiator. *Science*. 325:468-470.