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Effects of preservation on wing morphometry of the little brown bat (*Myotis lucifugus*)

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(With 3 figures in the text)

The effects of formalin fixation and subsequent alcohol preservation on various morphometric variables and their derivatives (lifting surface area, wingspan, mass, aspect ratio, wing loading and minimum power speed) and on the results of procedures that estimate lifting surface area of the little brown bat (*Myotis lucifugus*) are identified and quantified. Statistical analysis demonstrates that the values of all of the examined morphometric variables depends upon the specimen type from which they are obtained (live animal; freshly killed specimen; immediately following formalin fixation; or after 36 weeks in alcohol). Over the short term, the choice of preservation fluid is not important with respect to determination of the six variables studied. The fixation position of the wing is an important factor in the determination of all variables except mass. Although originally suggested for study skins and not fluid-preserved specimens, 'intermediate' and 'extended' wing positions are demonstrably better than the conventional 'compressed' position. The estimation procedures of both Pirlot (1977) and Blood & McFarlane (1988) significantly underestimate analogous lifting surface areas determined by tracing live bats. Smith & Starrett's (1979) procedure was found to yield accurate estimates occasionally: on live animals and preserved specimens with wings fixed in the extended position. Aldridge's (1988) method also yields accurate estimates of lifting surface area, but is limited to those museum specimens where the live or freshly-killed mass is known. Such conclusions permit recommendation of procedures that minimize changes arising through the fixation and preservation process in fluid-preserved museum specimens when compared to the live animal.

Contents

	Page
Introduction	142
Methods and materials	144
Specimen collection	144
Preparation of specimens	144
Definitions of morphological measurements	145
Tracing and measurement protocol	145
Definitions of morphological indices and flight speeds	147
Definitions of estimation procedures	147
pH of alcohols	148
Statistical analysis	148
Results	148
Effects on morphometry	148
Effects on estimation procedures	151
pH of alcohols	153

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