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COMMENTS ON "FIELD IDENTIFICATION OF *MYOTIS YUMANENSIS* AND *MYOTIS LUCIFUGUS:* A MORPHOLOGICAL EVALUATION"

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Rodhouse et al. (2008) addressed the problem of distinguishing between *Myotis yumanensis* and *Myotis lucifugus* in the field. They rightly indicated these 2 species are exceedingly difficult to distinguish; however, certain aspects of their paper deserve critical comments.

Although Rodhouse et al. (2008:437) did not use echolocation calls to identify the bats to species, they contended that sonograms are "widely recognized as an important diagnostic tool for identification of bats." When a new species is named, a type specimen is designated and deposited in an accredited museum collection. It must exhibit the diagnostic characteristics of that species; thus, all species identifications must ultimately relate back to the characteristics of that type specimen. Recordings of their echolocation calls are not associated with the type specimens for either *M. yumanensis* or *M. lucifugus.* Further, as yet, analyses of echolocation calls have not been identified positively with either species. The absence of this connection means there is no assurance that echolocation calls with specific characteristics are associated with either *M. yumanensis* or *M. lucifugus.* For the sake of argument, I will grant that the 2 species have different echolocation calls. But, evidence that the calls have been used to demonstrate convincingly which of their features can be used to distinguish the 2 species does not exist.

Rodhouse et al. (2008) stated they determined 3 subspecies (*alascensis*, *carissima*, and *lucifugus*) of *M. lucifugus* were present at their study site in the John Day Fossil Beds, Wheeler and Grant counties, Oregon. This was based on sequences of the Mysp1/Mysp2 and Mysp3/Mysp4 fragments as outlined by Zinck et al. (2004). However, Rodhouse et al. (2008) failed to present any documentation of the data used to support the identifications they reported. Readers are left with the impression that Zinck et al. (2004) documented genetic differences between the 3 subspecies (*alascensis*, *carissima*, and *lucifugus*). Although, Zinck et al. (2004) found considerable variation within *M. lucifugus,* they did not relate any of the variants to these 3 subspecies.

By definition, subspecies of a species are not sympatric. Distributions of subspecies may abut, interdigitate, or merely be ecologically segregated; although, I allow some leeway for wide-ranging volant species. *Myotis l. lucifugus* has never been documented to occur any closer to the John Day Fossil Beds than southern Alberta, Canada (Hall 1981). Rodhouse et al. (2008) failed to explain the occurrence of this subspecies so far from its known range. If indeed 3 subspecies were present in the John Day Fossil Beds, how they can occur sympatrically at a rather restricted locality was not explained.

Rodhouse et al. (2008) did not report if any tissues were deposited in an accredited museum collection to document their research. Also, they failed to mention where the results of the genetic analyses were archived. These 2 oversights make it impossible for someone to duplicate the work or confirm the conclusions.

Rodhouse et al. (2008:442) stated, "Collection of voucher specimens for museum preservation also would be of value, although given the longevity of bats and their uncertain conservation status, we strongly caution against this becoming a widespread practice. We also suspect that adequate numbers of museum specimens are already available to support a broader investigation." Preservation of voucher specimens for documentation of the results of particular research projects has nothing to do with how many specimens are all ready 'suspected' to be present in museum collections.

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Nor do voucher specimens have anything to do with the longevity of individuals. What is the basis for the author's suspicion that an 'adequate number of specimens all ready are available' and just what defines an 'adequate number of . . . specimens'? Certainly, the latter depends on the research being conducted by scientists in the future which cannot be known *a priori* by anyone. The purpose of voucher specimens is to validate research and to allow ". . . for the possibility that identifications of the involved organisms could change and the research be reinterpreted based on new information" (Carraway 2007:414).

The potential difficulty of associating details of echolocation calls with a specific individual is well known. However, the work of Rodhouse et al. (2008) illustrates the need for even a small series of specimens of *M. yumanensis* and *M. lucifugus* with their associated genetic profiles and recordings of their echolocation calls to be deposited in an accredited museum collection for use by researchers in the future.

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