

## USING AUTO-CLASSIFIERS FOR ACOUSTIC SURVEYS: DO RESULTS REFLECT REALITY?

– OR –

## A BAT IN THE HAND IS WORTH HOW MANY DETECTORS IN THE BUSH?

John D. Chengler and Janet D. Tyburec. *Bat Conservation and Management*, 220 Old Stonehouse Road North, Carlisle PA 17015 [jchengler@batmanagement.com](mailto:jchengler@batmanagement.com) (JDC); JT Consulting, P.O. Box 86493, Tucson AZ 85754. [jtyburec@mac.com](mailto:jtyburec@mac.com) (JDT)

(Oral Presentation)

The development of automatic classifiers for analyzing both full-spectrum and zero-cross bat echolocation recordings has added much-needed efficiency to the tedious process of extracting call parameters and verifying species by hand. But how can we measure the accuracy of results from our auto-classifiers when there is no way to verify which species were echolocating over the microphone when the recordings were made? Also most of the call characteristics which unknown files are measured against, were collected under ideal or controlled conditions, not at all like those encountered during typical deployments conducted during surveys. This presentation considers the following questions: (1) How do results from acoustic inventories compare to those from physical capture records? (2) Does species richness affect our expectations of accuracy from acoustic surveys? (3) How do results from different auto-classifiers compare to each other when applied to the same data set? Answers will come from reviewing over 30,000 acoustic recordings, collected from over 100 survey sites, in three regions of North America: central Pennsylvania, the Mississippi River area of central Illinois and Missouri, and southeastern Arizona. Recordings were post-processed using appropriate regional classifiers from the current leading software packages including: BCID, EchoClass, and SonoBat. Each acoustic site was also paired with physical capture sites where nets and traps confirmed species presence. Results will show that neither inventory method alone presents an accurate picture of bat presence. Additionally, each classifier returned different results on the same data set. This has important implications for the interpretation of acoustic surveys across the continent. As such, the use of bat detectors to determine bat presence in a habitat should be viewed as just one tool for bat surveys and should likely never be relied upon as the sole, definitive proof of bat presence without confirmation from “a bat in the hand.”