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U.S. Geological Survey
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Memo to: Mike Armstrong, Andrew King and Robyn Niver

From: Mark Ford *Mark*

Subject: Kaleidscope 3.1.4

Contained are the results of the Kaleidscope version 3.1.4 modification for the New York and West Virginia echolocation datasets designed to fix the perceived issue of the MLE terminating within the analytical run prematurely. Per the request of the vendor, we ran this program only on the -1 "most sensitive" setting. Based on U.S. Fish and Wildlife standards set forth for testing on the simulated full community New York dataset and West Virginia dataset, the more sensitive -1 setting of 3.1.4 **passed** for northern long-eared bats(*Myotis septentrionalis*) and Indiana bats (*Myotis sodalis*; Table 1). Moreover, the *p*-value comparison between the last approved version of 3.1.0 and the new version 3.1.4 indicated only minor differences in computed output. It is unlikely in most scenarios that a switch to version 3.1.4 would change species identification acceptance or rejection outcomes over version 3.1.0. However, because this could occur for very large datasets, particularly where species acceptance was at or near the U.S. Fish and Wildlife *p*-value thresholds, we recommend that users should upgrade to version 3.1.4 if possible.

cc: A. Silvis

Table 1. Comparison of post-identification per species confidence (p) from maximum likelihood estimator (see program specifications for details) of known echolocation pulses for Kaleidoscope 3.1 and Kaleidoscope 3.1.4 on the more sensitive setting (-1) for simulated New York and West Virginia datasets based on Ford et al. (2011, 2005).

Species New York dataset	3.1 *p*-value	3.1.4 *p*-value	N	Species West Virginia dataset	3.1 *p*-value	3.1.4 *p*-value	N
EPFU	0	0	28	EPFU	0	0	26
LABO	0	0	51	LABO	0	0	58
LACI	0	0	21	LACI	0	0	22
LANO	1	1	9	LANO	0.9998451	1	6
MYLE	0.0004554	0.000453	7	MYLE	0.0127159	0.012863	5
MYLU	0	0	68	MYLU	0	0	54
MYSE	0.0000256	0.0000253	14	MYSE	0	0	19
MYSO	0	0	32	MYSO	0	0	31
PESU	0.0015369	0.001466	8	PESU	0.0000212	0.0000212	11