



**United States Department of the Interior  
U.S. Geological Survey  
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May 4, 2019

To: Andrew King, Mike Armstrong, and Robyn Niver

From: Mark Ford, Virginia Unit Leader *Mark*

Subject: 2019 BCID 2.8b

Below are the returned MLE p-values on the estimates of presence or absence of bat community composition datasets (also with runs of northern long-eared bats *Myotis septentrionalis*/MYSE removed or Indiana bats *Myotis sodalis*/MYSO removed) for default and the minimum discriminant probability setting of 0.35 over ten randomly generated test libraries as well as associated producer's and user's accuracy for the datasets that retained northern long-eared bats and Indiana bats. Both settings passed for Indiana bats and northern long-eared bat per the U.S. Fish and Wildlife Service standard. Some test sets show no reported values for northern long-eared bats or other species, meaning the program correctly noted their complete absence with no single file false positives. In addition to passing our test for MYSO and MYSE, I would note this version's remarkably good performance relative to the silver-haired bat (*Lasionycteris noctivagans*; LANO) and the eastern small-footed bat (*Myotis leibii*; MYLE).

cc: A. Silvis

# TEST SUMMARY: BCID version 2.8b

## SETTING: DEFAULT

TEST LIBRARY	MYSE			MYSO		
	Test Set			Test Set		
	ALL	NO MYSE	NO MYSO	ALL	NO MYSE	NO MYSO
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
No. Correct:	10	10	10	10	10	10
% Correct:	100%	100%	100%	100%	100%	100%

## SETTING: MIN DP = 0.35

TEST LIBRARY	MYSE			MYSO		
	Test Set			Test Set		
	ALL	NO MYSE	NO MYSO	ALL	NO MYSE	NO MYSO
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
No. Correct:	10	10	10	10	10	10
% Correct:	100%	100%	100%	100%	100%	100%
KEY:	PASS	FAIL				

Table 1. BCID 2.8b results at the default settings. For northern long-eared bats (*Myotis septentrionalis*; MYSE) and Indiana bats (*Myotis sodalis*; MYSO), green shading indicates correct classification whereas red shading represents incorrect classification, i.e., false positive or false negative relative to the U.S. Fish and Wildlife Service testing standard.

Discrim. 0.00

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	38	14	52	9	18	16	1	70	20	61	37	30	4	5
%	10.13	3.73	13.87	2.40	4.80	4.27	0.27	18.67	5.33	16.27	9.87	8.00	1.07	1.33
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1	1E-06	4.6E-05	1.2E-06	1E-06	1E-06	0.0386	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	38	14	52	9	17	17	2	67	2	57	37	30	4	5
%	10.83	3.99	14.81	2.56	4.84	4.84	0.57	19.09	0.57	16.24	10.54	8.55	1.14	1.42
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1	1E-06	1	1E-06	1E-06	1E-06	0.0276	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	38	14	52	9	18	16	2	63	20	23	37	30	4	5
%	11.48	4.23	15.71	2.72	5.44	4.83	0.60	19.03	6.04	6.95	11.18	9.06	1.21	1.51
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1	1E-06	4.5E-05	0.84519	1E-06	1E-06	0.0419	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	34	11	56	12	26	11	1	78	23	61	35	31	2	4
%	8.83	2.86	14.55	3.12	6.75	2.86	0.26	20.26	5.97	15.84	9.09	8.05	0.52	1.04
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	0.0012	1	1E-06	0.00018	0.00039	1E-06	1E-06	0.7671	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	34	11	56	12	26	12	1	76	3	59	35	30	2	4
%	9.42	3.05	15.51	3.32	7.20	3.32	0.28	21.05	0.83	16.34	9.70	8.31	0.55	1.11
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	0.0002	1	1E-06	1	0.00011	1E-06	1E-06	0.7184	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	34	11	56	12	25	12	1	71	23	23	35	30	2	4

%	10.03	3.24	16.52	3.54	7.37	3.54	0.29	20.94	6.78	6.78	10.32	8.85	0.59	1.18
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	0.0001	1	1E-06	2.9E-05	1	1E-06	1E-06	0.6646	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	40	5	60	13	15	18	58	23	65	41	28	1	5
%	10.75	1.34	16.13	3.49	4.03	4.84	15.59	6.18	17.47	11.02	7.53	0.27	1.34
MLE (p)	1E-06	0.0028	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	0.9253	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	40	5	60	13	15	17	56	4	60	41	28	1	6
%	11.56	1.45	17.34	3.76	4.34	4.91	16.18	1.16	17.34	11.85	8.09	0.29	1.73
MLE (p)	1E-06	0.0029	1E-06	1E-06	1E-06	1E-06	1E-06	1	1E-06	1E-06	1E-06	0.931	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	40	5	60	13	14	17	56	23	27	41	27	1	6
%	12.12	1.52	18.18	3.94	4.24	5.15	16.97	6.97	8.18	12.42	8.18	0.30	1.82
MLE (p)	1E-06	0.0028	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	0.08619	1E-06	1E-06	0.8766	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	38	9	51	12	22	14	1	65	20	64	38	29	1	4
%	10.33	2.45	13.86	3.26	5.98	3.80	0.27	17.66	5.43	17.39	10.33	7.88	0.27	1.09
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	5E-06	1	1E-06	0.00035	5.4E-06	1E-06	1E-06	1	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	38	9	50	12	22	14	1	63	2	62	38	29	1	4
%	11.01	2.61	14.49	3.48	6.38	4.06	0.29	18.26	0.58	17.97	11.01	8.41	0.29	1.16
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	2E-06	1	1E-06	1	1E-06	1E-06	1E-06	1	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	38	9	51	12	22	14	1	61	20	23	38	29	1	4
%	11.76	2.79	15.79	3.72	6.81	4.33	0.31	18.89	6.19	7.12	11.76	8.98	0.31	1.24
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	2E-06	1	1E-06	0.00017	1	1E-06	1E-06	1	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	UNKN
N	38	10	54	14	20	18	2	65	23	51	34	29	5
%	10.47	2.75	14.88	3.86	5.51	4.96	0.55	17.91	6.34	14.05	9.37	7.99	1.38
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1	1E-06	6.6E-06	0.00036	1E-06	1E-06	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	UNKN
N	38	10	54	14	20	18	1	64	3	47	34	29	5
%	11.28	2.97	16.02	4.15	5.93	5.34	0.30	18.99	0.89	13.95	10.09	8.61	1.48
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1	1E-06	1	0.00034	1E-06	1E-06	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	UNKN
N	38	10	54	14	20	18	2	60	23	21	34	29	5
%	11.59	3.05	16.46	4.27	6.10	5.49	0.61	18.29	7.01	6.40	10.37	8.84	1.52
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1	1E-06	2.5E-06	1	1E-06	1E-06	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	35	8	50	12	18	11	1	67	26	76	37	29	3	3
%	9.31	2.13	13.30	3.19	4.79	2.93	0.27	17.82	6.91	20.21	9.84	7.71	0.80	0.80
MLE (p)	1E-06	2.7E-06	1E-06	1E-06	1E-06	8E-05	1	1E-06	1E-06	1E-06	1E-06	1E-06	0.144	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	35	8	50	12	17	11	1	65	5	72	37	29	3	3
%	10.06	2.30	14.37	3.45	4.89	3.16	0.29	18.68	1.44	20.69	10.63	8.33	0.86	0.86
MLE (p)	1E-06	2.9E-06	1E-06	1E-06	1E-06	5E-05	1	1E-06	1	1E-06	1E-06	1E-06	0.1266	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	35	8	50	12	17	11	1	63	26	29	37	29	3	3
%	10.80	2.47	15.43	3.70	5.25	3.40	0.31	19.44	8.02	8.95	11.42	8.95	0.93	0.93
MLE (p)	1E-06	2.7E-06	1E-06	1E-06	1E-06	5E-05	1	1E-06	1E-06	0.18309	1E-06	1E-06	0.1289	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
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N	31	10	48	14	22	9	1	73	18	65	38	25	2	3
%	8.64	2.79	13.37	3.90	6.13	2.51	0.28	20.33	5.01	18.11	10.58	6.96	0.56	0.84
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	0.0043	1	1E-06	0.00199	4.4E-06	1E-06	1E-06	0.6114	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	31	10	49	14	22	9	1	72	2	59	37	25	2	3
%	9.23	2.98	14.58	4.17	6.55	2.68	0.30	21.43	0.60	17.56	11.01	7.44	0.60	0.89
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	0.0026	1	1E-06	1	5.8E-06	1E-06	1E-06	0.557	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	31	10	47	14	22	9	1	65	18	25	38	25	2	3
%	10.00	3.23	15.16	4.52	7.10	2.90	0.32	20.97	5.81	8.06	12.26	8.06	0.65	0.97
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	0.0037	1	1E-06	0.00145	1	1E-06	1E-06	0.6012	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	43	7	47	15	25	13	2	72	20	61	48	28	3	5
%	11.05	1.80	12.08	3.86	6.43	3.34	0.51	18.51	5.14	15.68	12.34	7.20	0.77	1.29
MLE (p)	1E-06	9.2E-05	1E-06	1E-06	1E-06	8E-05	1	1E-06	0.00154	0.00025	1E-06	1E-06	0.3164	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	43	7	47	15	25	13	1	69	3	58	48	28	3	5
%	11.78	1.92	12.88	4.11	6.85	3.56	0.27	18.90	0.82	15.89	13.15	7.67	0.82	1.37
MLE (p)	1E-06	9.5E-05	1E-06	1E-06	1E-06	4E-05	1	1E-06	1	8.8E-05	1E-06	1E-06	0.2686	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	43	7	47	15	25	13	2	66	20	17	48	28	3	5
%	12.68	2.06	13.86	4.42	7.37	3.83	0.59	19.47	5.90	5.01	14.16	8.26	0.88	1.47
MLE (p)	1E-06	9.2E-05	1E-06	1E-06	1E-06	2E-05	1	1E-06	0.00022	1	1E-06	1E-06	0.2277	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	42	9	53	7	25	11	1	63	17	61	40	28	2	8
%	11.44	2.45	14.44	1.91	6.81	3.00	0.27	17.17	4.63	16.62	10.90	7.63	0.54	2.18
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	0.0009	1	1E-06	0.01238	0.00016	1E-06	1E-06	0.7305	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	42	9	52	7	25	11	61	3	58	41	28	2	8
%	12.10	2.59	14.99	2.02	7.20	3.17	17.58	0.86	16.71	11.82	8.07	0.58	2.31
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	0.0005	1E-06	1	6.1E-05	1E-06	1E-06	0.6709	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	42	9	52	7	25	11	1	59	17	19	41	28	2	8
%	13.08	2.80	16.20	2.18	7.79	3.43	0.31	18.38	5.30	5.92	12.77	8.72	0.62	2.49
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	0.0003	1	1E-06	0.00343	1	1E-06	1E-06	0.637	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	39	11	54	10	18	15	1	69	26	63	42	28	2	6
%	10.16	2.86	14.06	2.60	4.69	3.91	0.26	17.97	6.77	16.41	10.94	7.29	0.52	1.56
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1	1E-06	1E-06	1E-06	1E-06	1E-06	0.4507	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	39	11	54	10	19	15	1	66	4	61	42	28	2	6
%	10.89	3.07	15.08	2.79	5.31	4.19	0.28	18.44	1.12	17.04	11.73	7.82	0.56	1.68
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1	1E-06	1	1E-06	1E-06	1E-06	0.4712	

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ID	EPFU	LANO	LABO	LACI	MYAU	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	39	11	54	10	17	15	1	63	26	22	42	28	2	6
%	11.61	3.27	16.07	2.98	5.06	4.46	0.30	18.75	7.74	6.55	12.50	8.33	0.60	1.79
MLE (p)	1E-06	1E-06	1E-06	1E-06	1E-06	1E-06	1	1E-06	1E-06	0.80146	1E-06	1E-06	0.4189	

Table 2. BCID 2.8b producer's and user's accuracy for results at the default setting using only datasets inclusive of both northern long-eared bats (*Myotis septentrionalis*; MYSE) and Indiana bats (*Myotis sodalis*; MYSO).

<b>Discrim</b>	<b>Producer's</b>		<b>Common</b>	<b>User's</b>		<b>Common</b>
<b>0.0</b>	<b>Accuracy</b>	<b>SD</b>	<b>Mis-ID</b>	<b>Accuracy</b>	<b>SD</b>	<b>Mis-ID</b>
CORA	0.5	0.29	NOID	0.64	0.5	MYLU/EPFU
EPFU	0.88	0.07	MYAU	0.63	0.48	NOID/LANO
LABO	0.59	0.05	NYHU	0.58	0.49	NYHU
LACI	0.57	0.19	NOID	0.44	0.5	NOID/LANO
LANO	0.6	0.07	EPFU	0.79	0.41	LACI
MYAU	0.02	0.03	LABO	0.02	0.14	MYGR
MYGR	0.4	0.14	MYAU	0.75	0.43	NOID/LANO
MYLE	0.41	0.09	MYSO/NOID	0.94	0.24	NONE
MYLU	0.52	0.06	MYSO/NYHU	0.73	0.44	MYAU/MYSE
MYSE	0.55	0.04	NOID	0.82	0.38	MYSO
MYSO	0.89	0.03	MYLU	0.55	0.5	MYLU/MYLE
NOID	0.91	0.01	LACI/PESU	0.9	0.3	MYSE/MYLU
NYHU	0.74	0.07	LABO	0.45	0.5	MYLU/LABO
PESU	0.79	0.06	LABO	0.63	0.48	NOID/MYAU



Table 3. BCID 2.8b results at the minimum discriminant probability setting of 0.35. For northern long-eared bats (*Myotis septentrionalis*; MYSE) and Indiana bats (*Myotis sodalis*; MYSO), green shading indicates correct classification whereas red shading represents incorrect classification, i.e., false positive or false negative relative to the U.S. Fish and Wildlife Service testing standard.

Discrim. 0.35

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	22	7	8	4	14	6	28	13	41	26	22	4	180
%	5.87	1.87	2.13	1.07	3.73	1.60	7.47	3.47	10.93	6.93	5.87	1.07	48.00
MLE (p)	1E-06	1E-06	0.0195	2E-06	1E-06	0.0173	1E-06	0.0032	0.0001	1E-06	1E-06	0.016	

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLE	MYLU	MYSO	NYHU	PESU	CORA	UNKN
N	22	7	8	4	14	7	1	26	38	26	22	4	172
%	6.27	1.99	2.28	1.14	3.99	1.99	0.28	7.41	10.83	7.41	6.27	1.14	49.00
MLE (p)	1E-06	1E-06	0.0141	2E-06	1E-06	0.003	1	1E-06	0.0001	1E-06	1E-06	0.012	

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	22	7	8	4	14	6	1	27	13	10	26	22	4	167
%	6.65	2.11	2.42	1.21	4.23	1.81	0.30	8.16	3.93	3.02	7.85	6.65	1.21	50.45
MLE (p)	1E-06	1E-06	0.013	2E-06	1E-06	0.0099	1	1E-06	0.0009	1	1E-06	1E-06	0.0105	

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	14	7	10	10	18	4	1	31	17	38	24	23	2	186
%	3.64	1.82	2.60	2.60	4.68	1.04	0.26	8.05	4.42	9.87	6.23	5.97	0.52	48.31
MLE (p)	1E-06	1E-06	0.0025	1E-06	1E-06	0.3101	1	1E-06	0.0007	0.01192	1E-06	1E-06	0.4592	

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	14	7	10	10	18	5	1	30	1	36	24	22	2	181
%	3.88	1.94	2.77	2.77	4.99	1.39	0.28	8.31	0.28	9.97	6.65	6.09	0.55	50.14
MLE (p)	1E-06	1E-06	0.0014	1E-06	1E-06	0.0968	1	1E-06	1	0.00545	1E-06	1E-06	0.405	

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	14	7	10	10	17	5	1	29	17	10	24	22	2	171
%	4.13	2.06	2.95	2.95	5.01	1.47	0.29	8.55	5.01	2.95	7.08	6.49	0.59	50.44
MLE (p)	1E-06	1E-06	0.0011	1E-06	1E-06	0.057	1	1E-06	5.1E-05	1	1E-06	1E-06	0.319	

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	20	4	13	11	11	12	24	17	42	30	23	1	164
%	5.38	1.08	3.49	2.96	2.96	3.23	6.45	4.57	11.29	8.06	6.18	0.27	44.09
MLE (p)	1E-06	0.0020	8E-05	1E-06	1E-06	1E-06	1E-06	7E-06	7.3E-06	1E-06	1E-06	0.703	

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSO	NYHU	PESU	CORA	UNKN
N	20	4	13	11	10	11	23	38	30	23	1	162
%	5.78	1.16	3.76	3.18	2.89	3.18	6.65	10.98	8.67	6.65	0.29	46.82
MLE (p)	1E-06	0.0021	3E-05	1E-06	1E-06	1E-06	1E-06	2E-06	1E-06	1E-06	0.5942	

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	20	4	13	11	11	11	23	17	10	30	23	1	156
%	6.06	1.21	3.94	3.33	3.33	3.33	6.97	5.15	3.03	9.09	6.97	0.30	47.27
MLE (p)	1E-06	0.0020	5E-05	1E-06	1E-06	1E-06	1E-06	2E-06	1	1E-06	1E-06	0.660	

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
					U								
N	21	6	7	9	18	9	23	16	41	32	22	1	163
%	5.71	1.63	1.90	2.45	4.89	2.45	6.25	4.35	11.14	8.70	5.98	0.27	44.29
MLE (p)	1E-06	1.9E-05	0.1272	1E-06	1E-06	0.0011	1E-06	0.0015	0.0027	1E-06	1E-06	1	
									3				

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSO	NYHU	PESU	CORA	UNKN
					U							
N	21	6	7	9	18	9	22	38	32	22	1	160
%	6.09	1.74	2.03	2.61	5.22	2.61	6.38	11.01	9.28	6.38	0.29	46.38
MLE (p)	1E-06	2E-05	0.0939	1E-06	1E-06	0.0005	1E-06	0.0012	1E-06	1E-06	0.9981	

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
					U								
N	21	6	7	9	18	9	23	16	11	32	22	1	148
%	6.50	1.86	2.17	2.79	5.57	2.79	7.12	4.95	3.41	9.91	6.81	0.31	45.82
MLE (p)	1E-06	1.9E-05	0.0891	1E-06	1E-06	0.0003	1E-06	0.0002	1	1E-06	1E-06	0.996	
													5

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	UNKN
					U								
N	21	5	9	10	15	11	1	30	17	33	26	22	163
%	5.79	1.38	2.48	2.75	4.13	3.03	0.28	8.26	4.68	9.09	7.16	6.06	44.90
MLE (p)	1E-06	0.0002	0.0084	1E-06	1E-06	1E-05	1	1E-06	0.0001	0.01127	1E-06	1E-06	
										1			

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	UNKN	
					U								
N	21	5	9	10	15	11	29	1	31	26	22	157	
%	6.23	1.48	2.67	2.97	4.45	3.26	8.61	0.30	9.20	7.72	6.53	46.59	
MLE (p)	1E-06	0.0002	0.005	1E-06	1E-06	6E-06	1E-06	1	0.0053	1E-06	1E-06		
													8

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	UNKN
					U								
N	21	5	9	10	15	11	1	28	17	7	26	22	156
%	6.40	1.52	2.74	3.05	4.57	3.35	0.30	8.54	5.18	2.13	7.93	6.71	47.56
MLE (p)	1E-06	0.0002	0.0045	1E-06	1E-06	2E-06	1	1E-06	7.4E-06	1	1E-06	1E-06	

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
					U								
N	22	6	11	10	15	5	28	20	48	32	22	3	154
%	5.85	1.60	2.93	2.66	3.99	1.33	7.45	5.32	12.77	8.51	5.85	0.80	40.96
MLE (p)	1E-06	2.5E-05	0.002	1E-06	1E-06	0.068	1E-06	5E-06	1.6E-05	1E-06	1E-06	0.090	

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
					U								
N	22	6	11	10	14	5	28	2	45	32	22	3	148
%	6.32	1.72	3.16	2.87	4.02	1.44	8.05	0.57	12.93	9.20	6.32	0.86	42.53
MLE (p)	1E-06	2.6E-05	0.0011	1E-06	1E-06	0.0444	1E-06	1	4.7E-06	1E-06	1E-06	0.066	

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
					U								
N	22	6	11	10	14	5	26	20	10	32	22	3	143
%	6.79	1.85	3.40	3.09	4.32	1.54	8.02	6.17	3.09	9.88	6.79	0.93	44.14
MLE (p)	1E-06	2.5E-05	0.001	1E-06	1E-06	0.0315	1E-06	1E-06	1	1E-06	1E-06	0.052	

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
					U								
N	13	6	6	11	16	5	32	14	43	29	20	2	162
%	3.62	1.67	1.67	3.06	4.46	1.39	8.91	3.90	11.98	8.08	5.57	0.56	45.13
MLE (p)	1E-06	3.7E-06	0.1815	1E-06	1E-06	0.0826	1E-06	0.0035	0.0003	1E-06	1E-06	0.370	

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ID	EPFU	LANO	LABO	LACI	MYA U	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	13	6	6	11	16	5	31	1	38	28	20	2	159
%	3.87	1.79	1.79	3.27	4.76	1.49	9.23	0.30	11.31	8.33	5.95	0.60	47.32
MLE (p)	1E-06	3.9E-06	0.1319	1E-06	1E-06	0.0615	1E-06	1	0.0005	1E-06	1E-06	0.326	1

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ID	EPFU	LANO	LABO	LACI	MYA U	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	13	6	6	11	16	5	30	14	11	29	20	2	147
%	4.19	1.94	1.94	3.55	5.16	1.61	9.68	4.52	3.55	9.35	6.45	0.65	47.42
MLE (p)	1E-06	3.7E-06	0.1341	1E-06	1E-06	0.048	1E-06	0.0008	1	1E-06	1E-06	0.293	2

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ID	EPFU	LANO	LABO	LACI	MYA U	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	21	4	10	13	16	8	1	31	13	44	36	20	3	169
%	5.40	1.03	2.57	3.34	4.11	2.06	0.26	7.97	3.34	11.31	9.25	5.14	0.77	43.44
MLE (p)	1E-06	0.0027	0.0096	1E-06	1E-06	0.0026	1	1E-06	0.0092	0.00032	1E-06	1E-06	0.113	3

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ID	EPFU	LANO	LABO	LACI	MYA U	MYGR	MYLU	MYSO	NYHU	PESU	CORA	UNKN
N	21	4	10	13	16	8	30	41	36	20	3	163
%	5.75	1.10	2.74	3.56	4.38	2.19	8.22	11.23	9.86	5.48	0.82	44.66
MLE (p)	1E-06	0.0027	0.0062	1E-06	1E-06	0.0012	1E-06	9E-05	1E-06	1E-06	0.0827	9

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ID	EPFU	LANO	LABO	LACI	MYA U	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	21	4	10	13	16	8	1	30	13	9	36	20	3	155
%	6.19	1.18	2.95	3.83	4.72	2.36	0.29	8.85	3.83	2.65	10.62	5.90	0.88	45.72

MLE (p) 1E-06 0.0027 0.0054 1E-06 1E-06 0.0008 1 1E-06 0.0018 1 1E-06 1E-06 0.0699  
 3 7

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	22	6	11	5	20	4	1	25	12	38	30	24	2	167
%	5.99	1.63	3.00	1.36	5.45	1.09	0.27	6.81	3.27	10.35	8.17	6.54	0.54	45.50
MLE (p)	1E-06	1.5E-05	0.0021	1E-06	1E-06	0.3993	1	1E-06	0.0732	0.02716	1E-06	1E-06	0.5397	

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ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSO	NYHU	PESU	CORA	UNKN
N	22	6	11	5	20	4	24	35	31	24	2	163
%	6.34	1.73	3.17	1.44	5.76	1.15	6.92	10.09	8.93	6.92	0.58	46.97
MLE (p)	1E-06	1.5E-05	0.0014	1E-06	1E-06	0.3036	1E-06	0.0137	1E-06	1E-06	0.4557	

c:/users/cnrcommonaccess/documents/usgs software testing/call library/software test sets/software test sets 2019-03-15 just zc for bcid\test 8\no MYSO\

ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLE	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	22	6	11	5	20	4	1	25	12	7	31	24	2	151
%	6.85	1.87	3.43	1.56	6.23	1.25	0.31	7.79	3.74	2.18	9.66	7.48	0.62	47.04
MLE (p)	1E-06	1.5E-05	0.001	1E-06	1E-06	0.2296	1	1E-06	0.0149	1	1E-06	1E-06	0.3843	

c:/users/cnrcommonaccess/documents/usgs software testing/call library/software test sets/software test sets 2019-03-15 just zc for bcid\test 9\all\

ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	21	8	10	6	12	7	27	20	39	34	22	2	176
%	5.47	2.08	2.60	1.56	3.13	1.82	7.03	5.21	10.16	8.85	5.73	0.52	45.83
MLE (p)	1E-06	1E-06	0.0059	1E-06	1E-06	0.0019	1E-06	1E-06	0.0001	1E-06	1E-06	0.227	

c:/users/cnrcommonaccess/documents/usgs software testing/call library/software test sets/software test sets 2019-03-15 just zc for bcid\test 9\no MYSE\

ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
N	21	8	10	6	13	7	25	1	38	34	22	2	171
%	5.87	2.23	2.79	1.68	3.63	1.96	6.98	0.28	10.61	9.50	6.15	0.56	47.77

c:/users/cnrcommonaccess/documents/usgs software testing/call library/software test sets/software test sets 2019-03-15 just zc for bcid\test 9\no MYSO\

ID	EPFU	LANO	LABO	LACI	MYA	MYGR	MYLU	MYSE	MYSO	NYHU	PESU	CORA	UNKN
MLE (p)	1E-06	1E-06	0.004	1E-06	1E-06	0.0019	1E-06	1	5.4E-05	1E-06	1E-06	0.231	
N	21	8	10	6	11	7	26	20	7	34	22	2	162
%	6.25	2.38	2.98	1.79	3.27	2.08	7.74	5.95	2.08	10.12	6.55	0.60	48.21
MLE (p)	1E-06	1E-06	0.0033	1E-06	1E-06	0.0004	1E-06	1E-06	1	1E-06	1E-06	0.143	8

Table 4. BCID 2.8b producer's and user's accuracy for results at the minimum discriminant probability setting of 0.35 using only datasets inclusive of both northern long-eared bats (*Myotis septentrionalis*; MYSE) and Indiana bats (*Myotis sodalis*; MYSO).

<b>Discrim 0.35</b>	<b>Producer's Accuracy</b>	<b>SD</b>	<b>Common Mis-ID</b>	<b>User's Accuracy</b>	<b>SD</b>	<b>Common Mis-ID</b>
CORA	0.3	0.29	NOID	0.64	0.5	MYLU/EPFU
EPFU	0.52	0.1	NOID	0.78	0.41	NOID/LANO
LABO	0.2	0.05	NYHU	0.65	0.48	NYHU
LACI	0.42	0.22	NOID	0.41	0.49	NOID/LANO
LANO	0.41	0.08	EPFU	0.95	0.22	LACI
MYAU	0.02	0.04	MYSO/PESU	0.03	0.17	MYGR
MYGR	0.2	0.1	MYAU	0.78	0.42	NOID
MYLE	0.28	0.08	NOID/MYSO	0.95	0.21	NONE
MYLU	0.25	0.06	NOID/MYSE	0.76	0.43	MYAU/MYSE
MYSE	0.45	0.04	NOID/MYSO	0.95	0.21	MYSO
MYSO	0.71	0.06	NOID	0.69	0.46	MYLU/MYLE
NOID	0.91	0.01	LACI/PESU	0.89	0.3	MYSE/MYLU
NYHU	0.43	0.07	LABO	0.4	0.49	MYLU/LABO
PESU	0.71	0.07	NOID	0.71	0.46	NOID/MYAU