

Supplementary Material

Table A 1. Classification, description and frequency range [Hz] of bowhead whale calls within the call library; *n* refers to the number of exemplars in each call type. Values in the description column are given as means.

Call type ID	Call type	Description	Frequency range [Hz]	<i>n</i>
01	Up-down call	Tonal up-down call of 0.7 s duration and a bandwidth of 37 Hz	200-700	144
02	Moan	Constant call of 0.6 s duration and a bandwidth of 14 Hz	300-600	132
03	Downsweep 1	Single downsweeping unit of 0.8 s duration and a bandwidth of 58 Hz	300-600	488
04	Downsweep 2	Single downsweeping unit of 0.6 s duration and a bandwidth of 38 Hz	200-400	145
05	Downsweep 3	Single downsweeping unit of 0.8 s duration and a bandwidth of 104 Hz	300-600	554
06	Steep Downsweep	Single steeply downsweeping unit of 0.7 s duration and a bandwidth of 204 Hz	200-800	101
07	Curved Downsweep	Constant call transitioning into a downsweep of 1.2 s duration and a bandwidth of 117 Hz	400-600	75
08	Upsweep	Single upsweeping unit of 0.8 s duration and a bandwidth of 65 Hz	600-700	60
09	Up- and Downsweep 1	Slight upsweep followed by downsweep of 1.0 s duration and a bandwidth of 172 Hz	400-700	181
10	Up- and Downsweep 2	Slight upsweep followed by downsweep of 0.8 s duration and a bandwidth of 122 Hz	300-600	154
11	Up- and Downsweep 3	Slight upsweep followed by downsweep of 1.6 s duration and a bandwidth of 292 Hz	300-600	37
12	Up- and Downsweep 4	Slight upsweep followed by downsweep of 1.4 s duration and a bandwidth of 403 Hz	300-800	24
13	"Wave"	Up-down-upsweep, resembles a wave, of 1.1 s duration and a bandwidth of 36 Hz	400-600	71

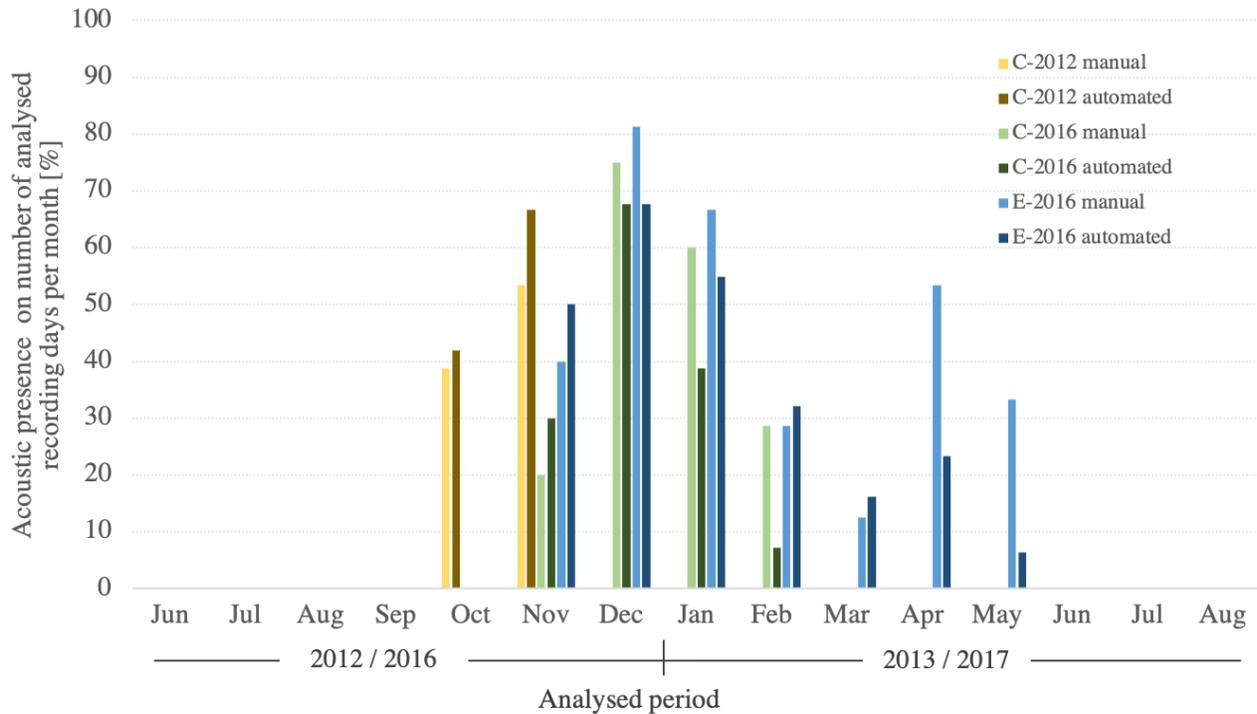


Figure A 1. Comparison of automated LFDCS detection and manual analysis of passive acoustic monitoring data from C-2012, C-2016 and E-2016 for the daily acoustic presence of bowhead whales. Results from automated analysis for hourly acoustic presence were also converted to represent acoustic presence on a daily basis to enable direct comparability between both approaches. Please note, that data from C-2012 stem from recording period June 2012 to November 2012, with no data available from December 2012 onwards, while data from C-2016 and E-2016 each cover the period from July 2016 to July 2017.

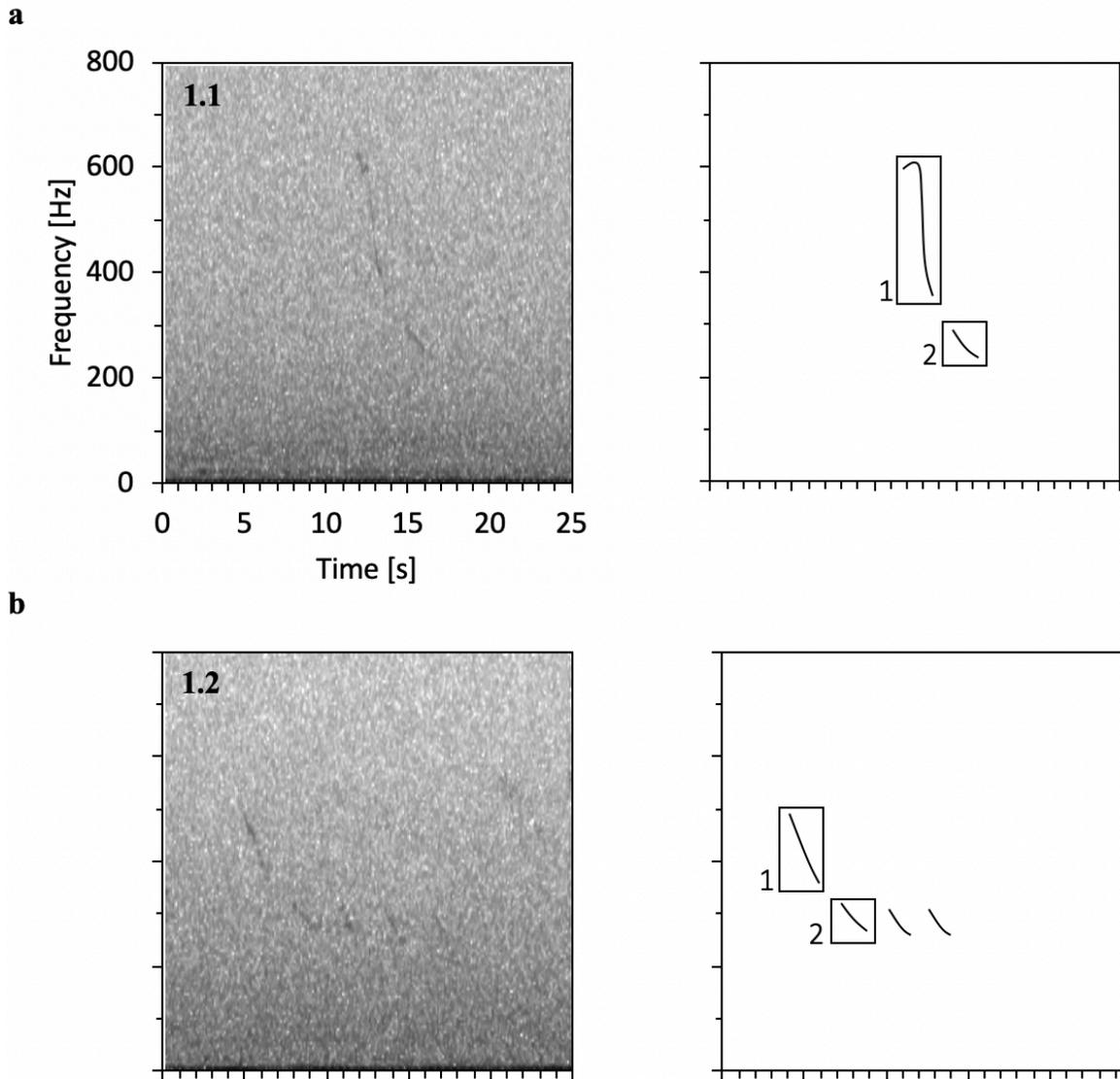


Figure A 2. Bowhead whale song types, including variants, recorded by SV1088 in eastern Fram Strait (79° 00.02' N, 5° 40.12' E) between November and May 2016/17. Each spectrographic example (left panels, spectrogram settings: FFT 1,024, overlap 90 %, contrast 55, Hann window) is supplemented by an idealized representation (right panels) of the corresponding song type. Different song units are encompassed by different boxes. For each panel, the x-axis comprises a time interval of 25 s and the y-axis a bandwidth of 0-800 Hz for every song type.

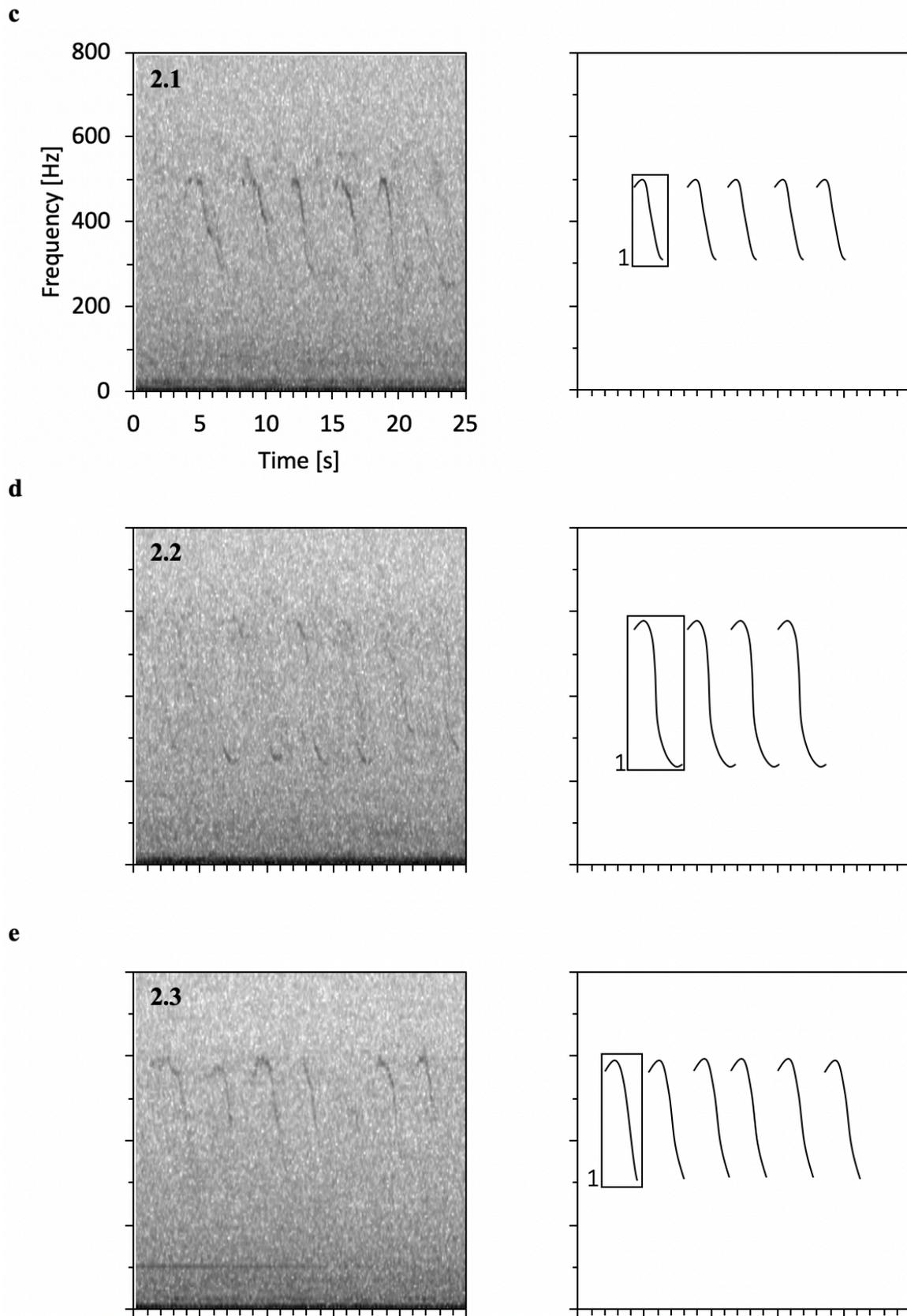
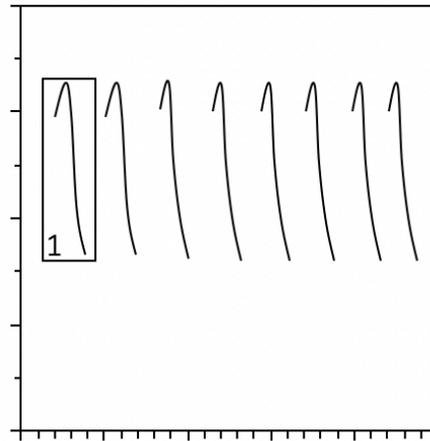
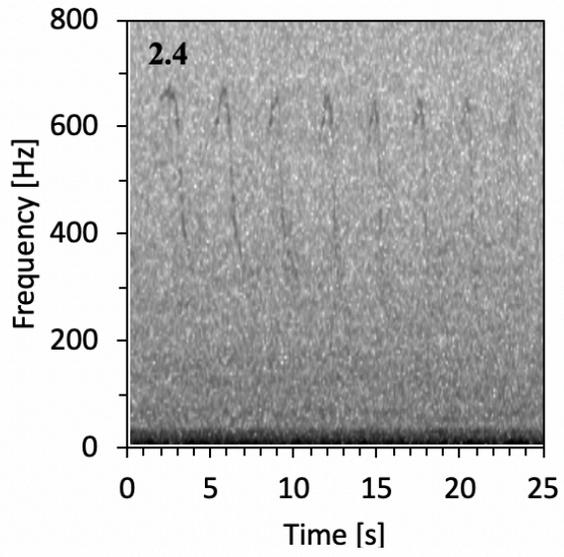
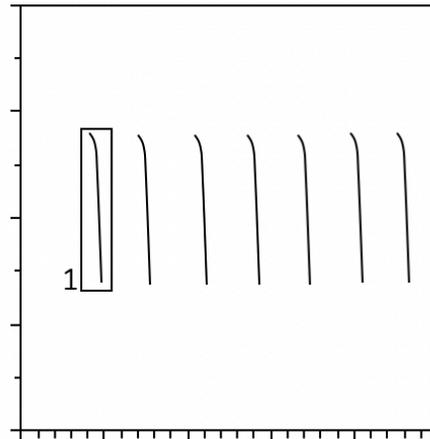
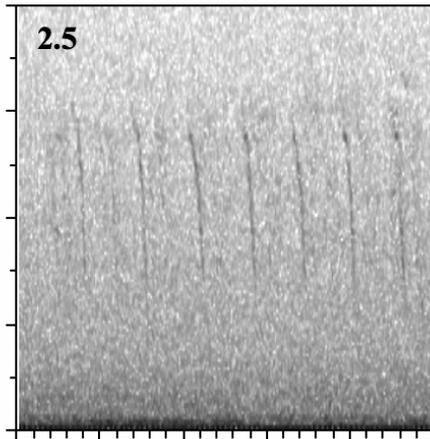


Figure A 2, continued.

f



g



h

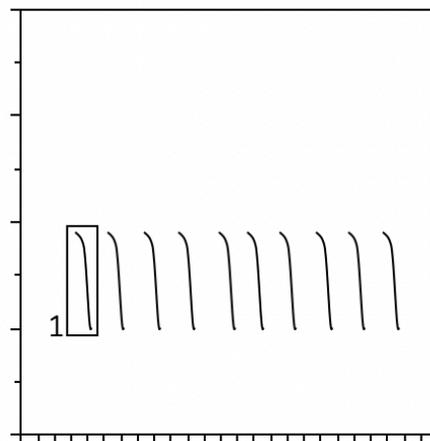
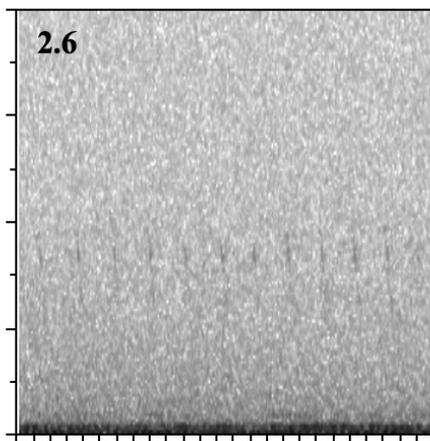
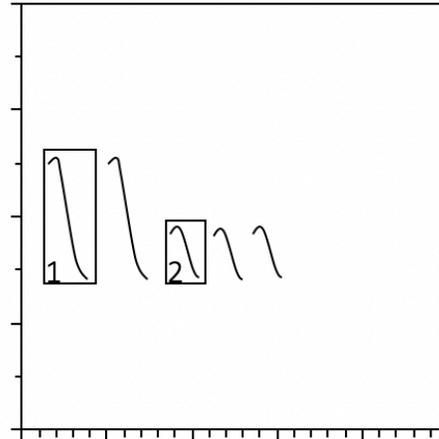
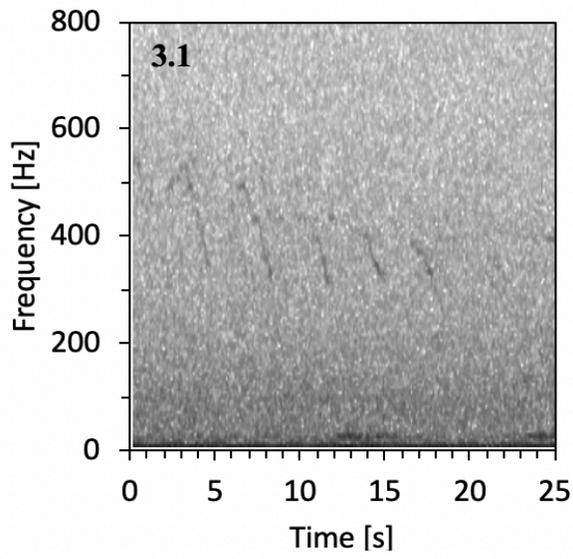
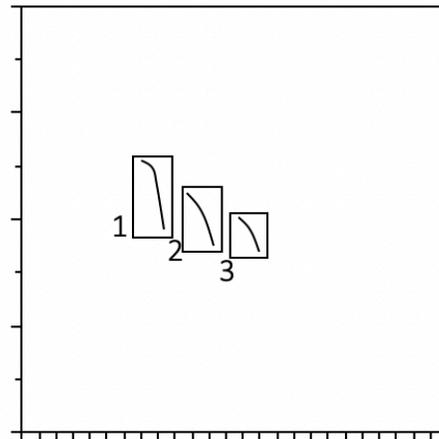
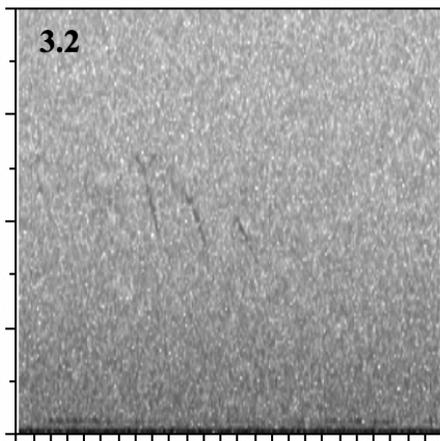


Figure A 2, continued.

i



j



k

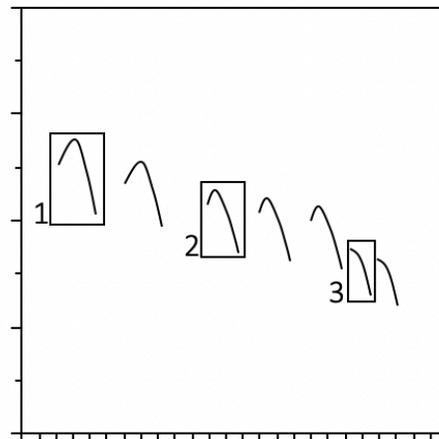
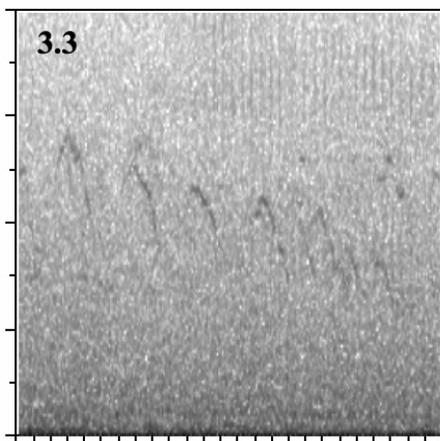
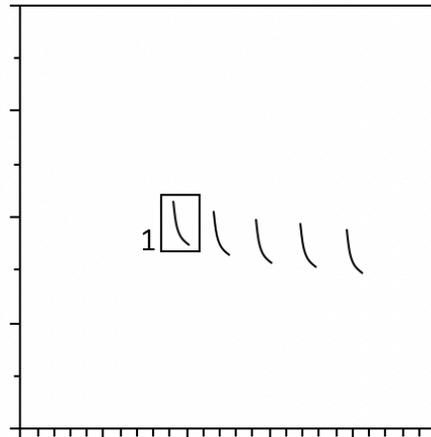
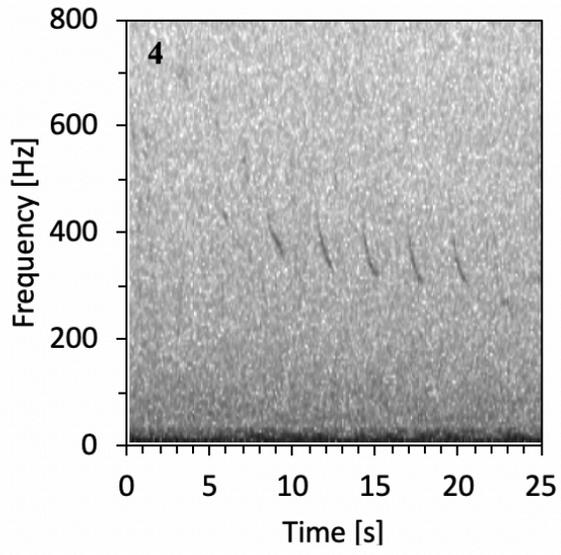
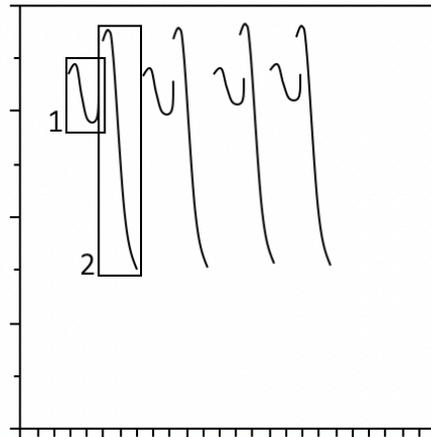
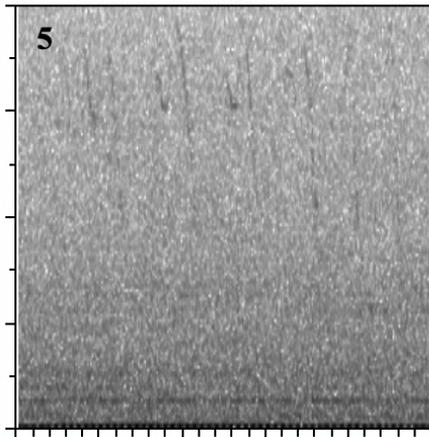


Figure A 2, continued.

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m



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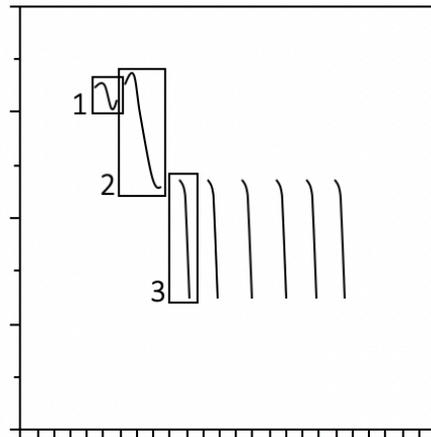
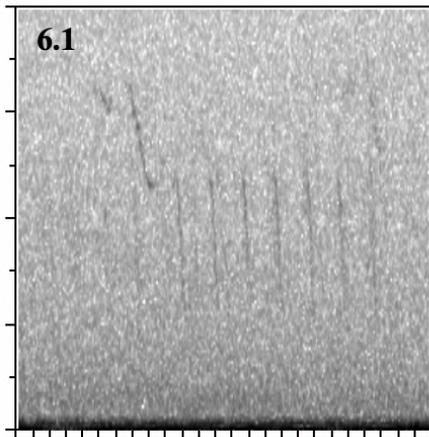
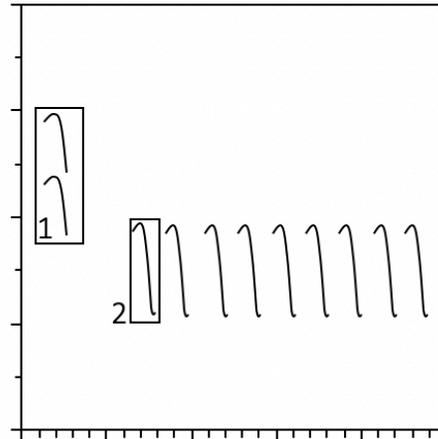
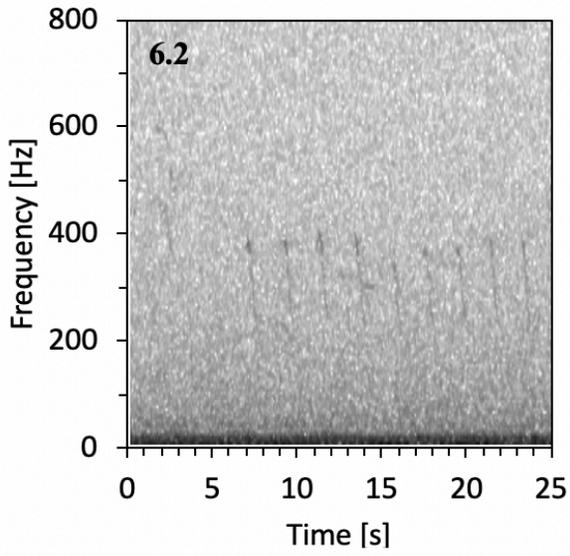
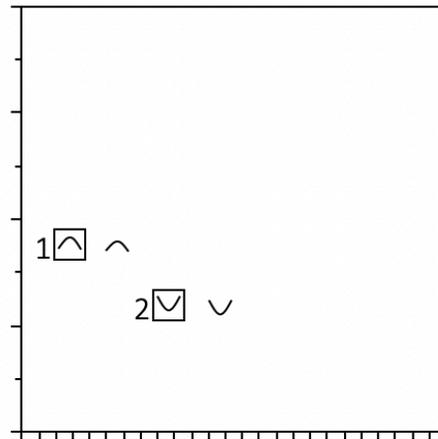
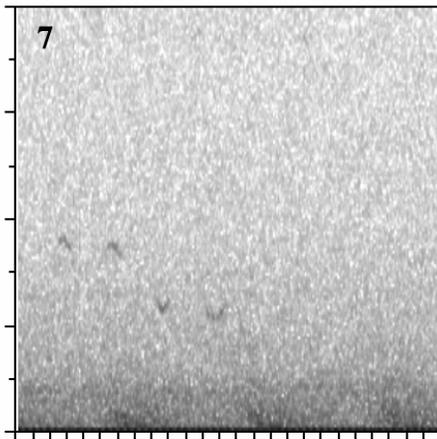


Figure A 2, continued.

o



p



q

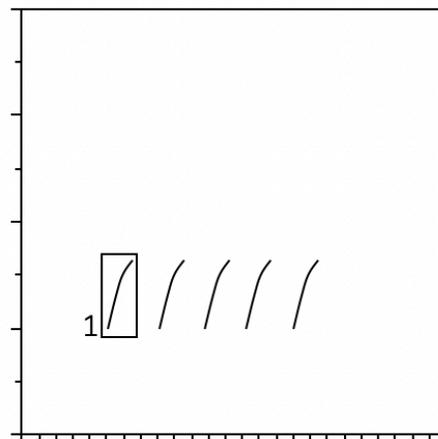
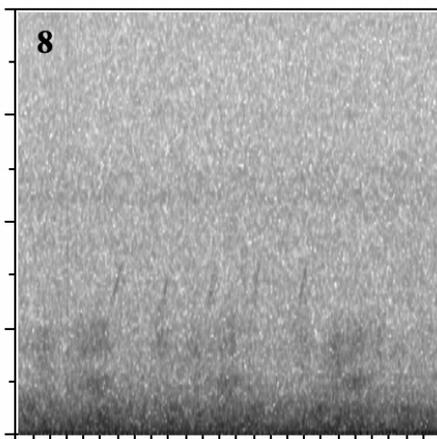


Figure A 2, continued.