

Appendix 1. Supplementary tables and figures

Table A1.1. Sample sizes for the different recording stations for both human and acoustic samples.

Station	Human samples	Acoustic samples
1	9	405
2	10	419
3	10	101
4	10	456
5	9	657
6	9	437
7	9	655
8	9	392

Table A1.2. Details on the configuration of the Band Limited Energy Detector in Raven.

SNRt: Sound to Noise Ratio. Occupancy: the minimum proportion of pixels that are above the SNR level. Block size: Width of block size used to calculate background noise. Hop size: Space between noise calculations. Percentage: Percentage of the ranked noise accounted as background.

Minimum frequency (Hz)	1800
Maximum frequency (Hz)	9500
Minimum time (s)	0.108
Maximum time (s)	1
Minimum delta time (s)	0.102
SNRt	6
Occupancy	30
Block size	2.0
Hop size	0.5
Percentage	20

Table A1.3. Model parameters and model-selection results for Hawai‘i ‘amakihi for human-based surveys (audio-only and audio+visual detections) and acoustic recorder surveys. Models were sorted by differences in second-order Akaike’s information criterion corrected for small sample size (ΔAICc) between each candidate model and the model with the lowest AICc value. Models examined included half-normal (HN) and hazard-rate (HR) key detection functions. None of the models incorporating series expansions converged. Preliminary analysis revealed that covariates did not improve AICc values. The number of estimated parameters (# Params), and negative log-likelihood (-LogL) are presented.

Detection function	# Params	-LogL	AICc	ΔAICc
Human-based Audio-only				
HR	2	830.76	1665.57	0
HN	1	836.66	1675.34	9.77
Human-based Audio+Visual				
HR	2	945.45	1894.96	0
HN	1	951.01	1904.04	9.08
Acoustic recorder-based				
HR	2	19810.26	39624.52	0
HN	1	20097.11	40196.22	571.7

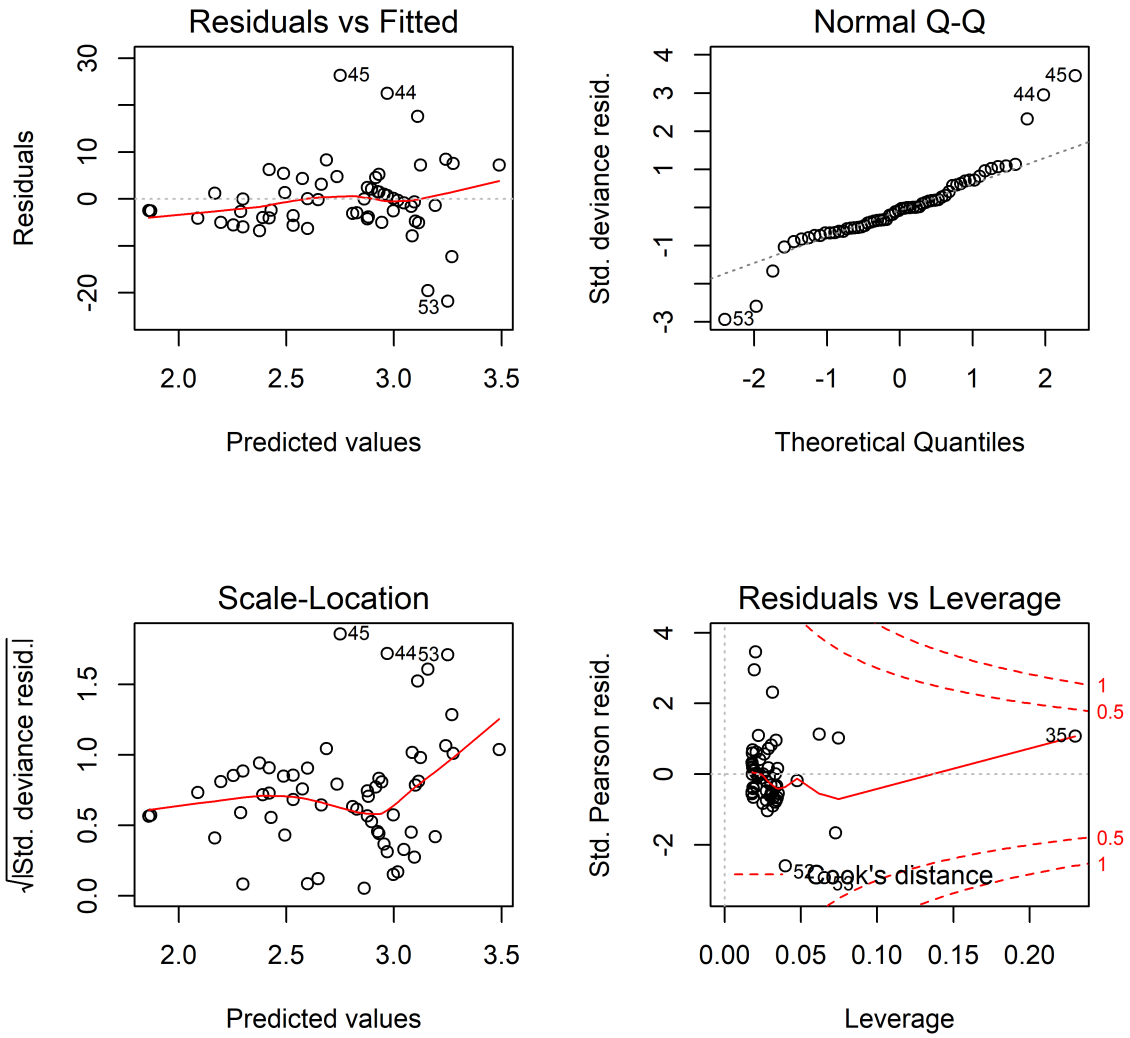


Fig A1.1. Model diagnostics for the relationship between the power of the sound (m) and the distance to the vocalizing bird (m) represented in Fig. 3.

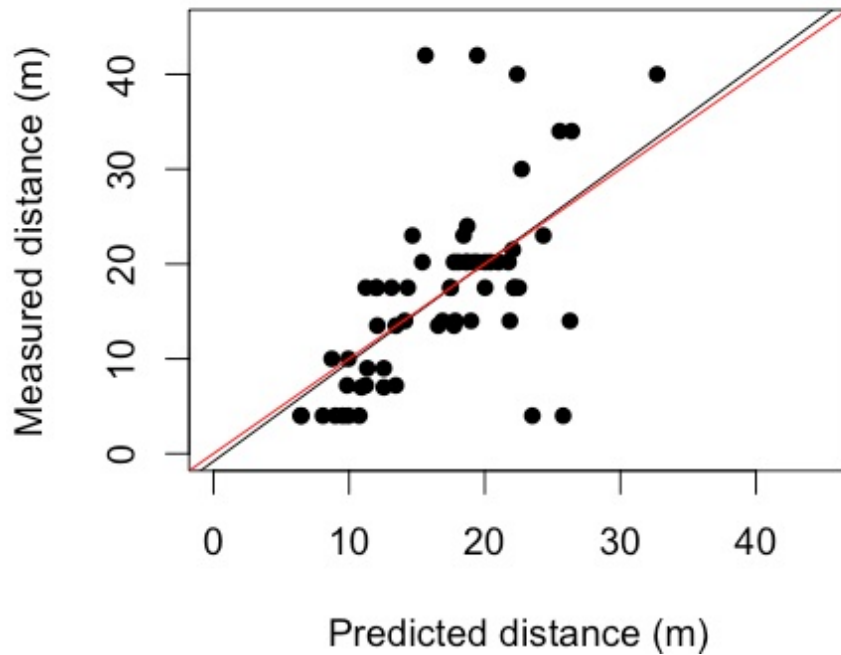


Figure A1.2. Graph showing the relationship between the measured distance from the recorder to the bird and the distance predicted by the model. We also show the regression between the two variables (black line) and the 1:1 relationship (red line).

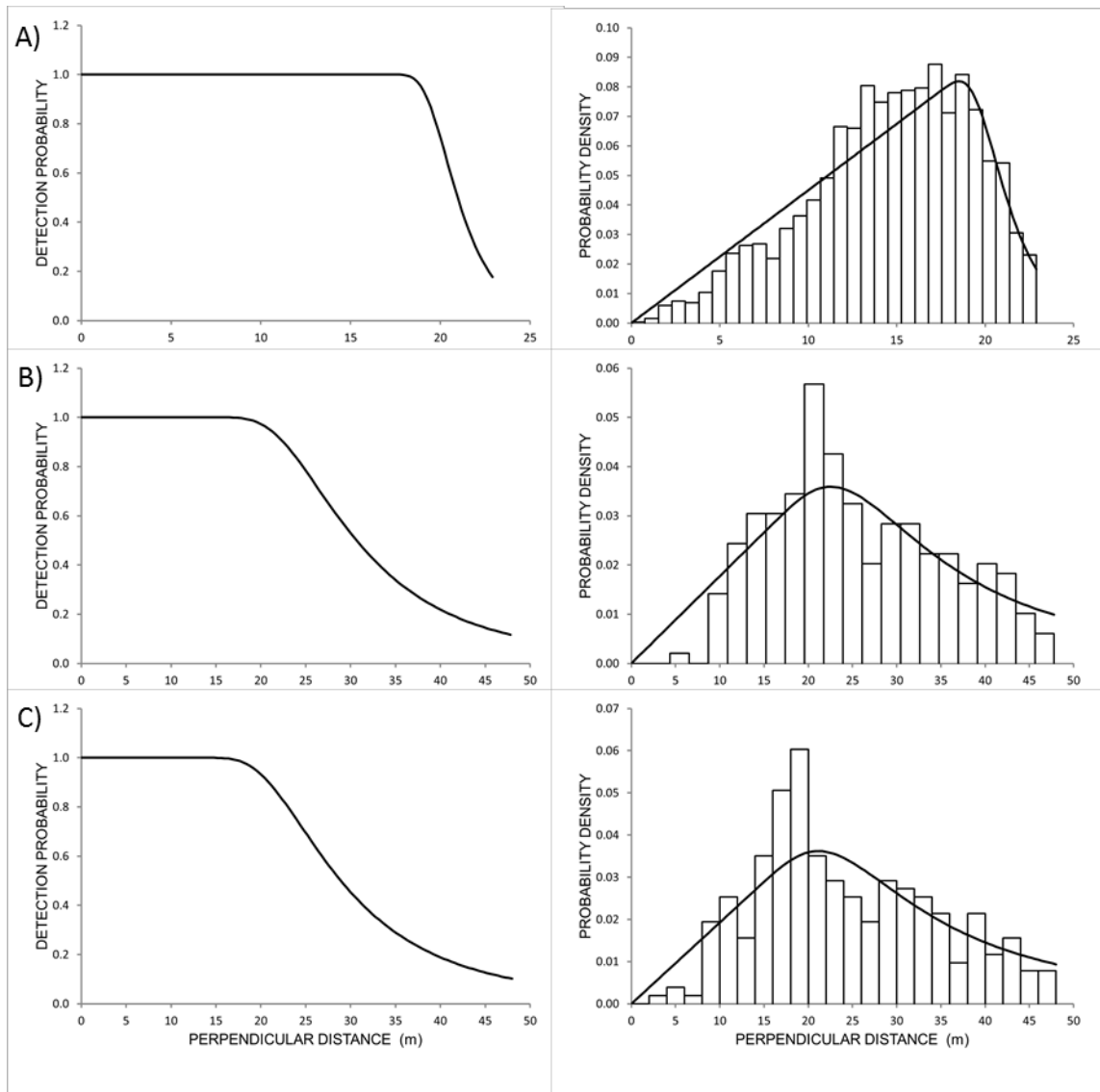


Figure A1.3. Detection probability and probability density plots overlaid on detection distance histogram for fitted detection function model to (A) acoustic-based with truncation at 22.9 m, (B) human-based audio-only with truncation at 47.8 m, and (C) human-based audio and visual data with truncation at 48.0 m. For each data set a hazard rate model without adjustment terms or covariates was selected (AICc values were 571.70, 9.77 and 9.06 units better than next best approximating model, respectively).