

Table S1: Results of pilot study for the south-eastern red-tailed black-cockatoo, *Calyptorhynchus banksii graptogyne*. The performance of each template at its optimal score cut-off is shown. Performance was calculated as $TP + TN / n$ where TP is the number of true positive survey files, TN is the number of true negative survey files and n is the total number of survey files tested. Template names state the associated amplitude cut-off (prefix), the call type, and the unique ID (suffix) of the nest from which the call was recorded. Templates with an asterisk (*) are those that were selected to form the final recognizer.

Template	TP	TN	n	Score cut-off	TP + TN / n
-29_Flight3_Alan.wav *	14	18	39	17.6	0.8205
-31_Flight3_Alan.wav	14	18	39	16.8	0.8205
-33_Flight3_Alan.wav	12	20	39	18.4	0.8205
-30_Flight2_Fourbird.wav *	13	18	39	19.2	0.7949
-26_Flight2_Fourbird.wav	14	16	39	18.8	0.7692
-28_Flight2_Fourbird.wav	12	18	39	19.4	0.7692
-22_Flight2_Alan.wav	15	14	39	19.6	0.7436
-22_Nestling1_Loner.wav	17	12	39	19.6	0.7436
-24_Nestling1_Loner.wav	17	12	39	20	0.7436
-28_Perch1_Loner.wav	15	14	39	17.8	0.7436
-30_Perch1_Loner.wav	15	14	39	17.2	0.7436
-30_Perch2_Loner.wav	16	13	39	17.4	0.7436
-32_Perch1_Loner.wav	15	14	39	16.6	0.7436
-23_Nestling2_Loner.wav	18	10	39	18.4	0.7179
-26_Nestling1_Loner.wav	18	10	39	18	0.7179
-26_Perch2_Loner.wav	17	11	39	16.4	0.7179
-27_Nestling2_Loner.wav	18	10	39	18.6	0.7179
-28_Perch2_Loner.wav	18	10	39	15.6	0.7179
-30_Flight2_Loner.wav	16	12	39	18.8	0.7179
-24_Flight2_Alan.wav	15	12	39	18.8	0.6923
-25_Nestling2_Loner.wav	18	9	39	17.4	0.6923
-26_Flight3_Loner.wav	14	13	39	22.6	0.6923
-26_Nest1_Loner.wav	15	12	39	19.4	0.6923
-26_Nestling3_Loner.wav	18	9	39	18.2	0.6923
-28_Flight3_Loner.wav	14	13	39	22	0.6923
-28_Nestling3_Alan.wav	14	13	39	22.6	0.6923
-28_Nestling3_Loner.wav	18	9	39	17.4	0.6923
-30_Nestling3_Alan.wav	14	13	39	22	0.6923
-30_Nestling3_Loner.wav	18	9	39	17	0.6923
-32_Flight2_Loner.wav	17	10	39	17.2	0.6923
-32_Nestling3_Alan.wav	12	15	39	22	0.6923
-42_Flight3_Fourbird.wav	9	18	39	22.8	0.6923
-26_Flight2_Alan.wav	8	18	39	22	0.6667
-28_Nest1_Loner.wav	16	10	39	17.2	0.6667
-29_Perch3_Loner.wav	17	9	39	16.6	0.6667
-30_Nest1_Loner.wav	16	10	39	16.4	0.6667
-31_Perch3_Loner.wav	17	9	39	15.6	0.6667
-34_Flight2_Loner.wav	17	9	39	16.6	0.6667

Template	TP	TN	<i>n</i>	Score cut-off	TP + TN / <i>n</i>
-40_Flight1_Loner.wav	13	13	39	21.4	0.6667
-44_Flight3_Fourbird.wav	16	10	39	18.6	0.6667
-46_Flight3_Fourbird.wav	15	11	39	18.4	0.6667
-47_Flight1_Fourbird.wav	8	18	39	24	0.6667
-20_Nest3_Loner.wav	17	8	39	17	0.6410
-22_Nest3_Loner.wav	18	7	39	16.6	0.6410
-24_Nest3_Loner.wav	16	9	39	16.6	0.6410
-27_Perch3_Loner.wav	16	9	39	17.6	0.6410
-30_Flight3_Loner.wav	17	8	39	17.8	0.6410
-38_Perch1_Fourbird.wav	7	18	39	25	0.6410
-40_Perch1_Fourbird.wav	8	17	39	24	0.6410
-42_Perch1_Fourbird.wav	10	15	39	22.4	0.6410
-45_Flight1_Fourbird.wav	7	18	39	25	0.6410
-24_Flight1_Alan.wav	10	14	39	23.2	0.6154
-26_Flight1_Alan.wav	5	19	39	24.8	0.6154
-28_Flight1_Alan.wav	7	17	39	23.4	0.6154
-36_Flight1_Loner.wav	9	15	39	24.4	0.6154
-38_Flight1_Loner.wav	13	11	39	21.6	0.6154
-45_Perch2_Fourbird.wav	13	11	39	19.8	0.6154
-27_Nest1_Alan.wav	4	19	39	24.2	0.5897
-30_Nestling2_Fourbird.wav	18	5	39	16.6	0.5897
-30_Perch2_Alan.wav	4	19	39	24.4	0.5897
-31_Perch1_Alan.wav	4	19	39	22.6	0.5897
-33_Perch1_Alan.wav	4	19	39	23	0.5897
-41_Perch2_Fourbird.wav	16	7	39	18.4	0.5897
-43_Flight1_Fourbird.wav	16	7	39	18.2	0.5897
-43_Perch2_Fourbird.wav	16	7	39	17.4	0.5897
-45_Perch3_Fourbird.wav	8	15	39	24.6	0.5897
-21_Nestling1_Fourbird.wav	18	4	39	14.6	0.5641
-23_Nest2_Loner.wav	14	8	39	23.4	0.5641
-23_Nestling1_Fourbird.wav	18	4	39	14.4	0.5641
-25_Nest1_Alan.wav	3	19	39	25	0.5641
-25_Nest2_Loner.wav	14	8	39	22.2	0.5641
-26_Nestling1_Alan.wav	17	5	39	16	0.5641
-26_Nestling2_Fourbird.wav	17	5	39	16.6	0.5641
-26_Perch2_Alan.wav	9	13	39	22.6	0.5641
-27_Nest2_Loner.wav	14	8	39	20.2	0.5641
-28_Nestling2_Fourbird.wav	17	5	39	16.4	0.5641
-28_Perch2_Alan.wav	5	17	39	24.6	0.5641
-29_Perch1_Alan.wav	2	20	39	23.4	0.5641
-29_Perch3_Alan.wav	2	20	39	24.2	0.5641
-30_Nestling1_Alan.wav	18	4	39	14.6	0.5641
-31_Perch3_Alan.wav	3	19	39	23.6	0.5641

Template	TP	TN	<i>n</i>	Score cut-off	TP + TN / <i>n</i>
-36_Nest3_Fourbird.wav	19	3	39	16.4	0.5641
-37_Nestling3_Fourbird.wav	19	3	39	15.4	0.5641
-38_Nest3_Fourbird.wav	19	3	39	15.6	0.5641
-40_Nest1_Fourbird.wav	19	3	39	15.8	0.5641
-41_Perch3_Fourbird.wav	11	11	39	22.8	0.5641
-43_Perch3_Fourbird.wav	9	13	39	24	0.5641
-21_Nest2_Alan.wav	19	2	39	12.6	0.5385
-23_Nest1_Alan.wav	5	16	39	24.2	0.5385
-23_Nest2_Alan.wav	19	2	39	12.8	0.5385
-24_Nest3_Alan.wav	17	4	39	17	0.5385
-25_Nest2_Alan.wav	4	17	39	24	0.5385
-25_Nestling1_Fourbird.wav	19	2	39	9	0.5385
-26_Nest3_Alan.wav	3	18	39	24.8	0.5385
-27_Nestling2_Alan.wav	19	2	39	10	0.5385
-27_Perch3_Alan.wav	2	19	39	23.8	0.5385
-28_Nest3_Alan.wav	2	19	39	24.4	0.5385
-28_Nestling1_Alan.wav	19	2	39	9	0.5385
-29_Nestling2_Alan.wav	19	2	39	9.4	0.5385
-31_Nestling2_Alan.wav	19	2	39	9.4	0.5385
-33_Nestling3_Fourbird.wav	19	2	39	10.8	0.5385
-34_Nest3_Fourbird.wav	19	2	39	12.2	0.5385
-35_Nestling3_Fourbird.wav	19	2	39	10.6	0.5385
-36_Nest1_Fourbird.wav	19	2	39	11	0.5385
-38_Nest1_Fourbird.wav	19	2	39	11	0.5385
-39_Nest2_Fourbird.wav	19	2	39	13.2	0.5385
-41_Nest2_Fourbird.wav	19	2	39	12.4	0.5385
-37_Nest2_Fourbird.wav	19	1	39	14	0.5128

Table S2: Results of pilot study for the Kangaroo Island glossy black-cockatoo, *Calyptorhynchus lathamii halmaturinus*. The performance of each template at its optimal score cut-off is shown. Performance was calculated as $TP + TN / n$ where TP is the number of true positive survey files, TN is the number of true negative survey files and n is the total number of survey files tested. Template names state the associated amplitude cut-off (prefix), the call type, and the unique ID (suffix) of the nest from which the call was recorded. Templates with an asterisk (*) are those that were selected to form the final recognizer.

Template	TP	TN	n	Score cut-off	$TP + TN / n$
-20_Nestling1_Huntsman.wav *	16	22	46	15.8	0.8261
-23_Nestling2_Amy.wav *	15	23	46	19.2	0.8261
-25_Nestling2_Amy.wav	15	23	46	18.8	0.8261
-26_Flight1_Huntsman.wav	15	23	46	15.2	0.8261
-27_Nestling1_Amy.wav	15	23	46	17.4	0.8261
-27_Nestling2_Amy.wav	15	23	46	18.4	0.8261
-20_Flight3_Huntsman.wav	18	19	46	17.6	0.8043
-22_Flight3_Huntsman.wav	16	21	46	17.2	0.8043
-22_Nest3_Amy.wav	16	21	46	17.6	0.8043
-23_Nestling1_Amy.wav	15	22	46	17	0.8043
-24_Nest3_Amy.wav	16	21	46	17.4	0.8043
-25_Nestling1_Amy.wav	15	22	46	16.8	0.8043
-26_Nest2_NE1.wav	16	21	46	18.8	0.8043
-26_Nestling1_NE1.wav	18	19	46	18.2	0.8043
-26_Perch3_Huntsman.wav	15	22	46	18.2	0.8043
-28_Nest2_NE1.wav	16	21	46	18.2	0.8043
-28_Nestling1_NE1.wav	18	19	46	17.6	0.8043
-30_Nest1_Huntsman.wav	15	22	46	16.6	0.8043
-30_Nest2_NE1.wav	16	21	46	18	0.8043
-30_Nestling1_NE1.wav	18	19	46	17.2	0.8043
-32_Nest1_Huntsman.wav	15	22	46	16	0.8043
-19_Flight2_Huntsman.wav	19	17	46	13.6	0.7826
-20_Nest3_Amy.wav	15	21	46	17.8	0.7826
-21_Flight2_Huntsman.wav	14	22	46	15.6	0.7826
-22_Nest3_NE1.wav	19	17	46	17.2	0.7826
-22_Nestling1_Huntsman.wav	18	18	46	14.2	0.7826
-22_Nestling2_Huntsman.wav	16	20	46	17.2	0.7826
-23_Nestling2_NE1.wav	17	19	46	18.6	0.7826
-24_Flight3_Huntsman.wav	19	17	46	15.4	0.7826
-24_Flight3_NE1.wav	13	23	46	21.2	0.7826
-24_Nest3_NE1.wav	17	19	46	17.4	0.7826
-24_Nestling1_Huntsman.wav	18	18	46	14	0.7826
-24_Nestling2_Huntsman.wav	17	19	46	16.8	0.7826
-25_Nest1_Amy.wav	15	21	46	17.4	0.7826
-26_Flight3_NE1.wav	17	19	46	18.8	0.7826
-26_Nest3_NE1.wav	17	19	46	17	0.7826
-27_Nest1_Amy.wav	17	19	46	16.8	0.7826
-27_Nestling3_NE1.wav	16	20	46	20.6	0.7826

Template	TP	TN	<i>n</i>	Score cut-off	TP + TN / <i>n</i>
-28_Flight1_Huntsman.wav	16	20	46	13.4	0.7826
-28_Flight1_NE1.wav	19	17	46	18	0.7826
-28_Flight3_NE1.wav	17	19	46	18.4	0.7826
-28_Nest1_Huntsman.wav	15	21	46	17	0.7826
-28_Perch3_Huntsman.wav	15	21	46	17	0.7826
-29_Perch3_NE1.wav	13	23	46	19.4	0.7826
-30_Flight1_Huntsman.wav	16	20	46	13.2	0.7826
-30_Perch3_Huntsman.wav	16	20	46	16	0.7826
-31_Perch3_NE1.wav	13	23	46	19.2	0.7826
-20_Nestling2_Huntsman.wav	14	21	46	17.4	0.7609
-21_Flight3_Amy.wav	14	21	46	17.2	0.7609
-21_Nestling2_NE1.wav	18	17	46	18.2	0.7609
-22_Flight2_NE1.wav	19	16	46	16.6	0.7609
-22_Nestling3_Amy.wav	16	19	46	18.2	0.7609
-23_Flight3_Amy.wav	18	17	46	14.8	0.7609
-23_Nest1_Amy.wav	15	20	46	17.8	0.7609
-23_Nest1_NE1.wav	16	19	46	18.4	0.7609
-23_Nestling3_Huntsman.wav	12	23	46	20.6	0.7609
-23_Nestling3_NE1.wav	18	17	46	20.4	0.7609
-23_Perch1_Huntsman.wav	20	15	46	16.8	0.7609
-24_Flight2_NE1.wav	17	18	46	18	0.7609
-24_Nestling3_Amy.wav	15	20	46	18.2	0.7609
-25_Nestling3_Huntsman.wav	19	16	46	16.6	0.7609
-25_Nestling3_NE1.wav	17	18	46	20.4	0.7609
-25_Perch1_Huntsman.wav	19	16	46	16.4	0.7609
-27_Nestling3_Huntsman.wav	19	16	46	16.2	0.7609
-27_Perch1_Huntsman.wav	19	16	46	15.2	0.7609
-30_Flight1_NE1.wav	19	16	46	16.8	0.7609
-30_Nest3_Huntsman.wav	13	22	46	16.2	0.7609
-31_Perch2_NE1.wav	19	16	46	15.8	0.7609
-32_Flight1_NE1.wav	18	17	46	16.6	0.7609
-19_Flight2_Amy.wav	18	16	46	15	0.7391
-19_Nestling2_NE1.wav	18	16	46	17	0.7391
-19_Perch3_Amy.wav	17	17	46	15.4	0.7391
-20_Nest2_Amy.wav	14	20	46	15.6	0.7391
-23_Nest2_Huntsman.wav	12	22	46	15.2	0.7391
-24_Perch1_NE1.wav	11	23	46	23.6	0.7391
-25_Flight3_Amy.wav	17	17	46	14.6	0.7391
-25_Nest1_NE1.wav	16	18	46	17.8	0.7391
-25_Nest2_Huntsman.wav	14	20	46	14.2	0.7391
-26_Flight2_NE1.wav	18	16	46	15	0.7391
-26_Nestling3_Amy.wav	15	19	46	17.8	0.7391
-26_Perch2_Huntsman.wav	18	16	46	15.2	0.7391

Template	TP	TN	<i>n</i>	Score cut-off	TP + TN / <i>n</i>
-28_Nest3_Huntsman.wav	13	21	46	16	0.7391
-28_Perch2_Huntsman.wav	17	17	46	15	0.7391
-33_Perch2_NE1.wav	19	15	46	14.6	0.7391
-33_Perch3_NE1.wav	18	16	46	15	0.7391
-35_Perch2_NE1.wav	19	15	46	14.4	0.7391
-21_Flight2_Amy.wav	14	19	46	16	0.7174
-21_Perch1_Amy.wav	18	15	46	14	0.7174
-22_Nest2_Amy.wav	19	14	46	13.2	0.7174
-24_Nest2_Amy.wav	19	14	46	12.8	0.7174
-24_Perch2_Huntsman.wav	13	20	46	18.8	0.7174
-26_Nest3_Huntsman.wav	12	21	46	16.4	0.7174
-26_Perch1_NE1.wav	17	16	46	15.6	0.7174
-27_Nest1_NE1.wav	16	17	46	17.4	0.7174
-27_Nest2_Huntsman.wav	14	19	46	14.4	0.7174
-28_Perch1_NE1.wav	11	22	46	19.6	0.7174
-19_Perch1_Amy.wav	19	13	46	13.8	0.6957
-23_Flight2_Amy.wav	20	12	46	12.8	0.6957
-23_Perch1_Amy.wav	18	14	46	13.8	0.6957
-21_Perch3_Amy.wav	20	11	46	13.4	0.6739
-19_Perch2_Amy.wav	19	10	46	12.6	0.6304
-23_Perch3_Amy.wav	20	9	46	12.2	0.6304
-20_Flight1_Amy.wav	15	13	46	13.2	0.6087
-21_Perch2_Amy.wav	14	14	46	14.8	0.6087
-22_Flight1_Amy.wav	15	13	46	13.2	0.6087
-23_Perch2_Amy.wav	15	13	46	14	0.6087
-24_Flight1_Amy.wav	15	13	46	14	0.6087