

Appendix S3 – Full candidate model set and model selection results:

**Table S1.** Full candidate model set and selection results for analyses relating the state-space model estimates of bank cormorant numbers to indices of West Coast rock lobster availability within four distance intervals (5, 10, 20 and 30 km) at each of the three breeding colonies separately (Jutten Island, Dassen Island, Stony Point).

Model	Model Number	<i>K</i>	AICc	$\Delta$ AICc	AICc $\omega$	GCV score	% Deviance explained
<i>Jutten Island</i>							
R	J17	3	163.1	0	0.318	942.2	69.5
TCL 20 + R	J3	3	165.1	2.03	0.115	998.0	70.8
TCL 30 + R	J4	4	165.2	2.19	0.106	1005.4	70.6
TCL 10 + R	J2	4	165.7	2.69	0.083	1006.3	72.1
TCL 5 + R	J1	4	165.9	2.8	0.078	1033.6	69.8
CPUE 10 + R	J10	4	165.9	2.84	0.077	1035.6	69.7
CPUE 20 + R	J11	3	165.9	2.87	0.076	1036.9	69.7
CPUE 5 + R	J9	4	165.9	2.89	0.075	1037.7	69.6
CPUE 30 + R	J12	4	166	2.99	0.071	1042.4	69.5
TCL 10	J6	3	186.2	23.11	0.00	2693.3	12.7
Intercept only	J18		186.5	23.39	0.00	2798.3	NA
CPUE 20	J15	3	187.9	24.85	0.00	2866.2	11.9
TCL 20	J7	3	188.3	25.27	0.00	2972.0	3.7
CPUE 5	J13	2	188.4	25.32	0.00	2978.3	3.5
TCL 30	J8	3	188.5	25.44	0.00	2994.2	3.0
CPUE 30	J16	3	189	25.91	0.00	3025.3	5.4
CPUE 10	J14	7	192.5	29.46	0.00	2764.7	45.8
TCL 5	J5	10	198.5	35.47	0.00	2832.0	27.2
<i>Dassen Island</i>							
<i>TCL 30 + R</i>	<i>D4</i>	<i>4</i>	<i>159.6</i>	<i>0.00</i>	<i>0.278</i>	<i>351.3</i>	<i>47.1</i>
<i>TCL 20 + R</i>	<i>D3</i>	<i>4</i>	<i>159.6</i>	<i>0.03</i>	<i>0.273</i>	<i>351.9</i>	<i>47.0</i>
<i>TCL 10 + R</i>	<i>D2</i>	<i>3</i>	<i>161.6</i>	<i>2.01</i>	<i>0.102</i>	<i>384.9</i>	<i>42.0</i>
CPUE 5 + R	D9	5	161.8	2.23	0.091	370.1	50.3
<i>CPUE 5</i>	<i>D13</i>	<i>4</i>	<i>162.9</i>	<i>3.31</i>	<i>0.053</i>	<i>405.2</i>	<i>40.2</i>
TCL 5 + R	D1	3	163.2	3.63	0.045	414.4	37.6
R	D17	3	163.2	3.63	0.045	429.0	28.4
CPUE 30 + R	D12	5	163.5	3.90	0.040	379.7	53.6
CPUE 20 + R	D11	5	163.9	4.27	0.033	389.1	51.8
<i>TCL 30</i>	<i>D8</i>	<i>3</i>	<i>165.4</i>	<i>5.79</i>	<i>0.015</i>	<i>473.17</i>	<i>21.0</i>
<i>TCL 20</i>	<i>D7</i>	<i>3</i>	<i>166.1</i>	<i>6.48</i>	<i>0.011</i>	<i>488.22</i>	<i>18.5</i>
Intercept only	D18	2	167.9	8.27	0.004	543.3	NA
TCL 10	D6	2	168.4	8.75	0.004	541.27	9.6
CPUE 30	D16	3	170.1	10.47	0.001	585.5	2.3
CPUE 20	D15	2	170.1	10.52	0.001	586.8	2.0
TCL 5	D5	3	170.3	10.67	0.001	590.7	1.4
CPUE 10	D14	3	170.6	10.95	0.001	598.2	0.1
CPUE 10 + R	D10	9	173.7	14.05	0	378.1	72.8

<i>Stony Point</i>							
<i>TCL 30 + R</i>	S3	5	162.4	0.00	0.787	408.3	80.5
TCL 20 + R	S2	4	166.6	4.16	0.098	548.6	67.3
R	S13	3	167.7	5.27	0.057	597.2	60.6
TCL 10 + R	S1	4	168.8	6.35	0.033	610.0	63.9
CPUE 20 + R	S8	3	170.7	8.26	0.013	660.9	60.6
CPUE 10 + R	S7	4	170.7	8.29	0.012	632.6	66.1
CPUE 30 + R	S9	8	179.5	17.05	0.00	666.7	77.9
CPUE 30	S12	3	184.9	22.52	0.00	1308.1	13.7
Intercept only	S14	1	185.5	23.05	0.00	1374.6	NA
TCL 20	S5	3	187.0	24.59	0.00	1421.1	9.6
TCL 10	S4	3	187.4	24.98	0.00	1463.1	3.5
CPUE 10	S10	2	188.0	25.56	0.00	1502.6	0.9
TCL 30	S6	6	190.7	28.32	0.00	1457.2	32.2
CPUE 20	S11	8	197.1	34.72	0.00	1476.9	51.3

The explanatory variables were the proportion of traps containing lobsters (TCL), the Catch Per Unit Effort (CPUE) at the four different distances (5, 10, 20 and 30 km) from each colony and Regime (R) a binary covariate to account for a shift in the underlying environmental conditions coded 0 for 1993–2004 and 1 for 2005–2015. The number of parameters in each model ( $K$ ), the AICc value, the AICc difference to the best supported model ( $\Delta\text{AICc}$ ), relative model support or AICc weigh ( $\text{AICc } \omega$ ), the generalised cross validation (GCV) score and the deviance explained (%) by the model are shown in each case. Models are ranked by AICc  $\omega$ . Models with significant effects of lobster availability are shown in italics.