

Supplementary Material

Appendix S1. Black-fronted tern nest survival on vegetated and cleared islands in the lower Waitaki River in 2016/17. Successful nests refer to nests that had at least one chick hatch. The percentage of total nests monitored is presented in parentheses.

	Vegetated islands	Cleared islands
Nests monitored	108	77
Successful nests	48 (44.4%)	47 (61.0%)
Nests failed (Total)	60 (52.8%)	30 (39.0%)
Nests preyed upon	40 (37.0%)	25 (32.5%)
Nests deserted	9 (8.3%)	3 (3.9%)
Nests flooded	4 (3.7%)	0
Infertile or failed hatch	4 (3.7%)	2 (2.6%)
Unknown outcome	3 (2.8%)	0
Total number of nests estimated	126	176

Appendix S2. Comparison of different models using a) apparent hatching success, b) conditional hatching success, c) logistic-exposure) to explore variation in hatching success of black-fronted terns. All continuous variables are centred and scaled for effect size comparison.

a) AHS:

Model response: Successful nests (Vegetated $n = 108$; Cleared $n = 77$)

Intercept ^a	Vegetation	Colony Size	Timing	K	AICc	Δ AICc	AICc ω	Cum. ω	LL
X	X	X	X	4	183.81	0.00	0.64	0.64	-87.80
X	X		X	3	184.98	1.16	0.36	1.00	-89.42
X	X	X		3	214.02	30.20	0.00	1.00	-103.94
X	X			2	255.41	71.60	0.00	1.00	-125.67

b) CHS

Model response: Successful nest intervals (Vegetated $n = 347$; Cleared $n = 216$)

Intercept	Vegetation	Colony Size	Timing	K	AICc	Δ AICc	AICc ω	Cum. ω	LL
X	X	X	X	5	373.78	0.00	1.00	1.00	-181.83
X	X	X		4	398.56	24.78	0.00	1.00	-195.24
X	X		X	4	401.36	27.58	0.00	1.00	-196.64
X				2	481.29	107.51	0.00	1.00	-238.63
X	X			3	483.31	109.53	0	1	-238.63

c) Log-Exp^b

Model response: Successful nest intervals scaled by exposure (Vegetated $n = 240$; Cleared $n = 136$)

Intercept	Vegetation	Colony Size	Timing	K	AICc	Δ AICc	AICc ω	Cum. ω	LL
X	X	X	X	5	380.22	0.00	0.96	0.96	-185.03
X	X	X		4	386.42	6.20	0.04	1.00	-189.15
X	X		X	4	433.51	53.29	0.00	1.00	-212.70
X				2	503.31	123.09	0.00	1.00	-249.64
X	X			3	505.15	124.94	0.00	1.00	-249.54

^a Intercept constant, as colony intercept explained zero variance and was thus removed from the model;

^b only observations included where exposure > 0 , i.e. the nest observed was observed and at risk of failing; K = the number of parameters in a model; Δ AICc = delta AICc, i.e. the difference in AICc values between a given model and the best-supported model; AICc ω = Akaike weight; Cum. ω = cumulative weight of models; LL = log likelihood of model.