

Supporting Information: Drone monitoring of endangered scalloped hammerhead shark *Sphyrna lewini* movements and habitat use on a dynamic urbanised coastline in Australia

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Online Resource 1: Parametric coefficients from a Generalised Additive Model (GAM) examining operational, environmental, and biotic predictors of scalloped hammerhead shark sightability.

Predictor	Estimate	SE	z value	p-value
(Intercept)	-7.455	1.150	-6.482	<0.001
Cloud cover (oktas)	-0.030	0.049	-0.613	0.540
Glare	-0.035	0.137	-0.252	0.801
All non-shark fauna	1.315	0.243	5.406	<0.001
Flight number 2	-0.320	0.321	-0.996	0.319
Flight number 3	-0.468	0.349	-1.342	0.180
Flight number 4	-0.827	0.388	-2.131	0.033
Flight number 5	-1.211	0.459	-2.640	0.008
Flight number 6	-1.775	0.644	-2.755	0.006
Flight number 7	-0.979	0.593	-1.651	0.099
Flight number 8	-1.615	1.074	-1.504	0.133
Sea state 2	-0.459	0.280	-1.641	0.101
Sea state 3	-0.992	0.492	-2.014	0.044
Sea state 4	-1.944	1.027	-1.894	0.058
Sea state 5	-0.137	0.647	-0.212	0.832
Sea state 6	-0.674	1.052	-0.641	0.521
Tide (High)	-1.040	0.613	-1.697	0.090
Tide (Low)	0.079	0.372	0.212	0.832
Tide (Rising)	-0.348	0.258	-1.350	0.177
Location – Burleigh Heads	2.922	1.029	2.839	0.005
Location – Noosa	2.898	1.043	2.778	0.005
Location – Stradbroke Island	1.901	1.077	1.764	0.078
Location – Bribie Island	1.224	1.244	0.984	0.325
Location – Southport	0.231	1.243	0.186	0.852

18 **Online Resource 2:** Variance inflation factors (VIF/GVIF) for predictor variables included in the Generalised
 19 Additive Model assessing factors influencing scalloped hammerhead shark sightability.

Predictor	Df	GVIF ^{1/(2*Df)} *
Month	11	1.06
All non-shark fauna	1	1.07
Turbidity	1	1.13
Location	8	1.04
Flight number	7	1.02
Sea state	5	1.03
Moon illumination	1	1.01
Cloud cover (oktas)	1	1.10
Glare	1	1.15
Rainfall	1	1.02
Temperature (°C)	1	1.68
Atmospheric pressure	1	1.27
Tide	3	1.01

20 **All GVIF values < 3 indicate no evidence of multicollinearity among predictors.*

21 **Online Resource 3:** Model comparison using Akaike's Information Criterion (AIC).

Model	Description	AIC value	ΔAIC
Final GAM	Model with strongest support	792.69*	0.00
Full GAM	All predictors including smooth terms	796.79	4.10
GAM without tidal stage	Removes tidal effect	797.76	5.07
GAM without lunar illumination	Removes moon effect	798.56	5.87
Equivalent GLM	All predictors linear (no smooths)	860.43	67.74

22 ** lower AIC indicates better model fit.*

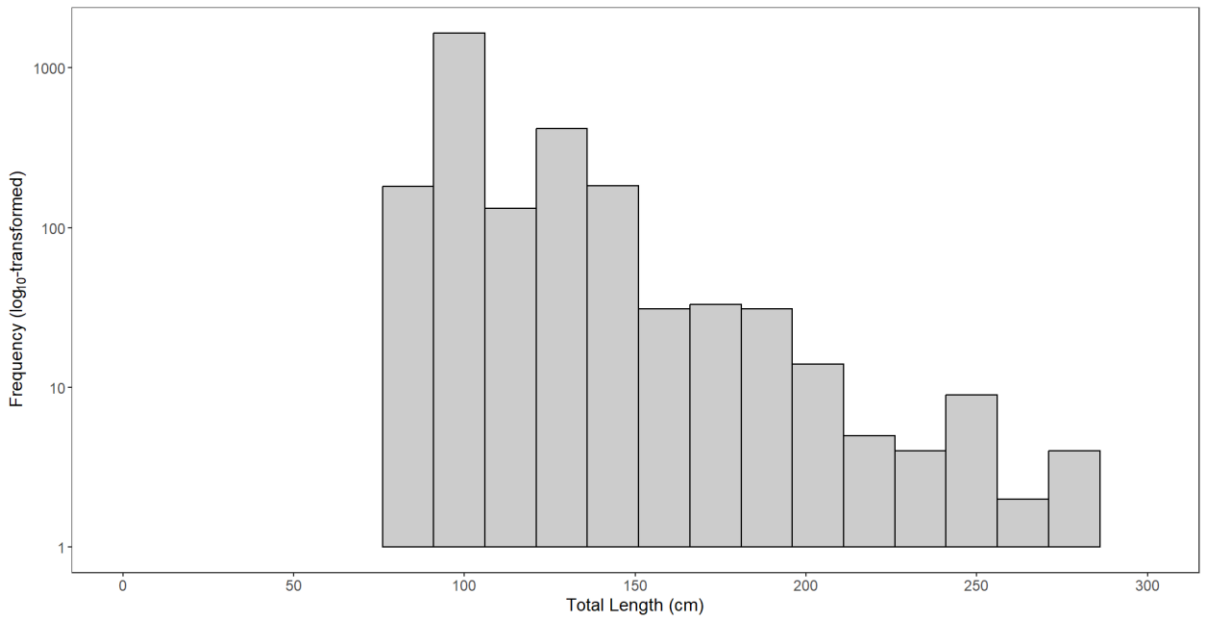
23 **Online Resource 4:** Model comparison examining the influence of anthropogenic activity and location on
 24 scalloped hammerhead shark aggregation size using Akaike's Information Criterion (AIC).

Model	Description	AIC value	ΔAIC
Location only	Location as predictor of aggregation size	693.37*	0.00
Location + anthropogenic activity	Location and log(number of people and vessels + 1)	694.98	1.61
Anthropogenic activity only	Log(number of people and vessels + 1)	735.15	41.78

25 ** lower AIC indicates better model fit.*

Online Resource 5: Seasonal metrics of scalloped hammerhead shark sightings, including the number of sighting events, mean group size, median group size, and maximum group size.

Month	No. of hammerhead sighting events	Mean group size	Median group size	Maximum group size
January	2	1.5	1.5	2
February	2	1.5	1.5	2
March	3	2.33	2	3
April	36	47.78	55	100
May	12	39.58	45	80
June	16	29.65	32.5	80
July	1	1	1	1
August	1	1	1	1
September	5	1	1	1
October	1	2	2	2
November	1	1	1	1
December	4	1	1	1



Online Resource 6: Total length frequency distribution of scalloped hammerheads plotted using a log₁₀-transformed Y-axis to accommodate wide variation in counts.

36 **Online Resource 7:** Smooth terms from a Generalised Additive Model (GAM) examining environmental
 37 predictors of scalloped hammerhead shark sightability.

Term	EDF*	Ref.df	Chi-square	p-value
Month	4.61	10.00	70.95	<0.001
Moon illumination	2.52	3.01	6.07	0.106
Rainfall	2.25	2.65	3.43	0.196
Turbidity	1.00	1.00	16.41	<0.001
Temperature (°C)	1.00	1.00	1.01	0.315
Atmospheric pressure	1.00	1.00	0.09	0.770

38 **EDF = effective degrees of freedom; values near 1 indicate approximately linear relationships.*