

SUPPLEMENTAL INFORMATION

**TO BE OR NOT TO BE ON THE TOP: EXAMINING EGG SURVIVAL AT
THE TOP OF THE CLUTCH FOR TWO SEA TURTLE SPECIES**

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SUPPLEMENTARY TABLES

TABLE S1. Loggerhead turtle nests (n = 10) assessing the suitability of marking eggs with India ink. Clutch size includes pipped dead/live at inventory (marked/unmarked eggs will not add up to clutch size all the time). Marked refers to India Ink eggs; UHE refers to unhatched eggs.

ID	Totals (orig; inventory)			Marked at inventory			Unmarked at inventory			
	Clutch	Marked	Unmarked	Hatched	UHE	Damaged	Hatched	UHE	Damaged	Pipped
F077	113; 111	56; 53	58; 57	47	5	1	43	7	7	0
F084	105; 105	53; 53	52; 52	50	3	0	52	0	0	0
F085	72; 74	36; 36	36; 38	27	7	2	27	9	2	0
F102	112; 110	56; 56	56; 54	28	24	4	33	15	6	0
F103	85; 88	43; 43	42; 46	35	8	0	39	6	1	0
F107	102; 103	51; 47	52; 56	36	2	9	35	8	13	0
F112	135; 135	68; 68	67; 67	0	68	0	0	66	1	0
F124	111; 107	56; 54	55; 53	50	2	2	49	2	2	0
F145	93; 95	49; 49	44; 35	28	5	16	16	3	16	11
F147	107; 104	54; 54	53; 50	28	16	10	17	17	16	0

TABLE S2. Green turtles nests (n = 10) assessing the suitability of marking eggs with India ink.

Clutch size includes pipped dead/live at inventory (marked/unmarked eggs will not add up to clutch size all the time). Marked refers to India Ink eggs; UHE refers to unhatched eggs.

ID	Totals (orig; inventory)			Marked at inventory			Unmarked at inventory			
	Clutch	Marked	Unmarked	Hatched	UHE	Damaged	Hatched	UHE	Damaged	Pipped
F207	123; 119	62; 60	61; 59	60	0	0	55	4	0	0
F211	148; 146	74; 73	74; 72	64	5	4	53	15	4	1
F212	118; 118	59; 59	59; 59	38	14	7	35	15	9	0
F213	141; 141	71; 71	70; 69	64	3	4	64	1	4	1
F218	138; 137	69; 69	68; 68	41	28	0	42	21	5	0
F219	60; 59	29; 29	30; 30	15	8	6	2	15	13	0
F220	123; 121	62; 62	61; 59	59	1	2	50	5	4	0
F227	131; 131	65; 65	65; 63	48	15	2	40	21	2	2
F228	126; 124	64; 64	62; 60	61	3	0	58	1	1	0
F231	111; 109	56; 56	55; 53	34	10	12	31	7	15	0

TABLE S3. Bayesian zero-inflated beta-binomial generalized linear mixed model summaries for Loggerhead (Cc) and Green Turtles (Cm).

		Estimate	Est.Error	l-95% CI	u-95% CI	Rhat	Bulk_ESS	Tail_ESS
Cc	Intercept	0.71	0.50	-0.24	1.69	1.0	5498	6741
	Zi_Intercept	-3.39	1.02	-6.10	-2.07	1.0	4024	4208
	PositionOther	-0.11	0.47	-1.06	0.78	1.0	7417	8945
	Season_thirdmid	0.03	0.69	-1.32	1.38	1.0	5741	6383
	Season_thirdlate	1.16	0.83	-0.45	2.84	1.0	5029	6099
	PositionOther: season_thirdmid	0.23	0.63	-1.00	1.47	1.0	8484	8855
	PositionOther: season_thirdlate	-0.71	0.77	-2.22	0.78	1.0	8784	8502
Cm	Intercept	1.38	0.59	0.23	2.54	1.0	2890	3991
	Zi_Intercept	-3.10	0.77	-4.93	-1.92	1.0	7152	4695
	PositionOther	1.06	0.38	0.27	1.80	1.0	5462	6165
	Season_thirdmid	-0.03	0.80	-1.58	1.54	1.0	2821	4449
	Season_thirdlate	-0.73	0.92	-2.58	1.08	1.0	2653	4017
	PositionOther:seaso n_thirdmid	-1.17	0.51	-2.16	-0.15	1.0	5706	7678
	PositionOther: season_thirdlate	-0.70	0.55	-1.79	0.39	1.0	6233	7085

TABLE S4. Pairwise contrasts (odds ratios) and 95% highest posterior density intervals (HPD) of egg survival between egg positions within each season third for Loggerhead and Green Turtles.

Significant results are in bold.

Contrast	Loggerhead Turtle		Green Turtle	
	Odds ratio	Lower-upper HPD	Odds ratio	Lower-upper HPD
Top early/Other early	1.09	0.34–2.50	0.34	0.13–0.67
Top mid/Other mid	0.88	0.29–1.88	1.11	0.48–2.03
Top late/Other late	2.21	0.35–6.43	0.69	0.26–1.39
Top early/Top mid	0.98	0.34–2.50	1.03	0.11–3.82
Top early/Other mid	0.87	0.11–3.03	1.15	0.12–3.88
Top early/Top late	0.32	0.11–2.45	2.03	0.08–9.64
Top early/Other late	0.70	0.02–1.20	1.43	0.08–6.28
Other early/Top mid	0.87	0.05–2.32	2.97	0.26–10.49
Other early/Other mid	0.78	0.12–2.53	3.34	0.35–10.42
Other early/Top late	0.29	0.02–1.03	5.93	0.26–25.68
Top mid/Top late	0.32	0.02–1.22	1.99	0.11–8.69
Top mid/Other late	0.72	0.10–2.39	1.38	0.12–5.56
Other mid/Top late	0.37	0.02–1.31	1.78	0.12–7.40
Other mid/Other late	0.81	0.11–2.59	1.24	0.11–4.78

TABLE S5. Green Turtle generalized linear model results for hatching success of marked eggs with the following formula, $hs_marked \sim season_third * (distance_dune + distance_ht + chamber_depth_top_cm)$

	Df	Deviance	F value	Pr(>F)
(Intercept)	-4.30	4.40	-0.92	0.37
Season third late	-3.74	8.14	-0.46	0.65
Season third mid	18.05	9.49	1.90	0.07
Distance to dune	-0.20	0.43	-0.45	0.66
Distance to high tide	0.24	0.22	1.12	0.28
Top of chamber depth at inventory	2.73	3.11	0.88	0.39
Season third late : distance to dune	0.24	0.47	0.51	0.61
Season third mid : distance to dune	-0.32	0.50	-0.65	0.52
Season third late : distance to high tide	-0.01	0.27	-0.05	0.96
Season third mid : distance to high tide	-0.74	0.36	-2.03	0.056
Season third late : Top of chamber depth at inventory	4.99	9.11	0.55	0.59
Season third mid : Top of chamber depth at inventory	-7.08	6.29	-1.12	0.27

SUPPLEMENTARY FIGURES

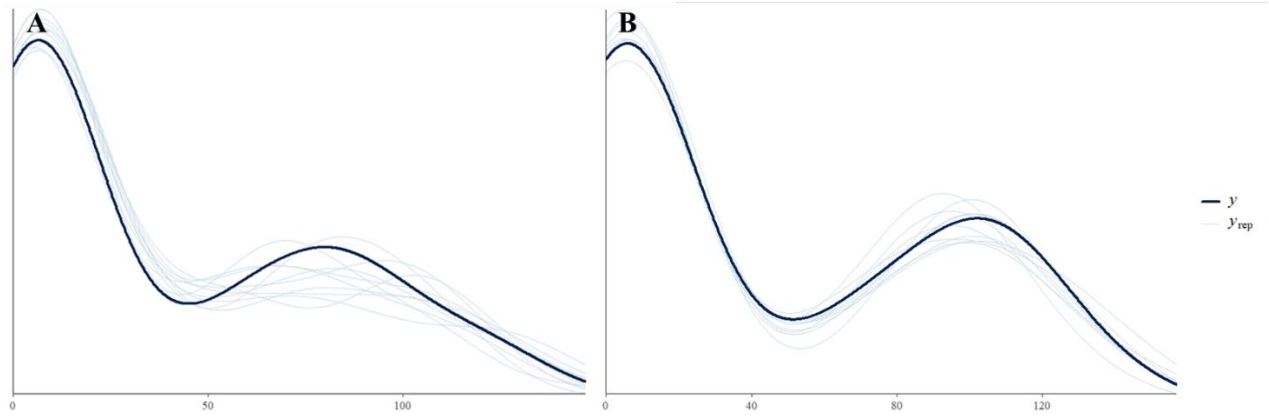


FIGURE S1. (A) Loggerhead and (B) green turtle posterior predictive checks to help assess the adequacy of the model by comparing model's simulations (y_{rep}) to the dataset (y).

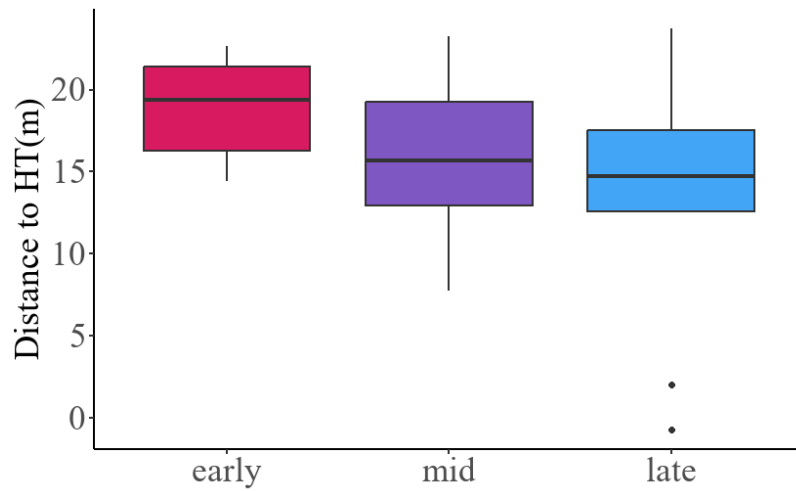


FIGURE S2. Green Turtle boxplot (median, quartile and range) of nest's distance to high tide (HT).

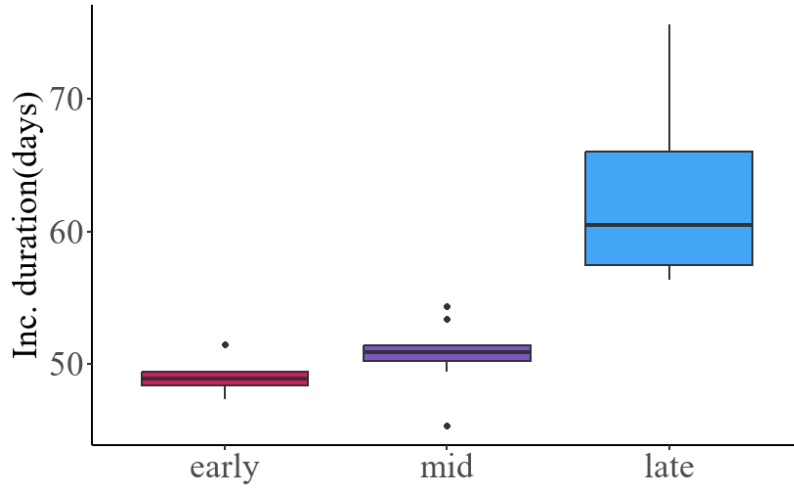


FIGURE S3. Green Turtle boxplot (median, quartile and range) of incubation duration (days) of early, middle and late season Green Turtle nests (n = 10, 10 and 7 nests, respectively).

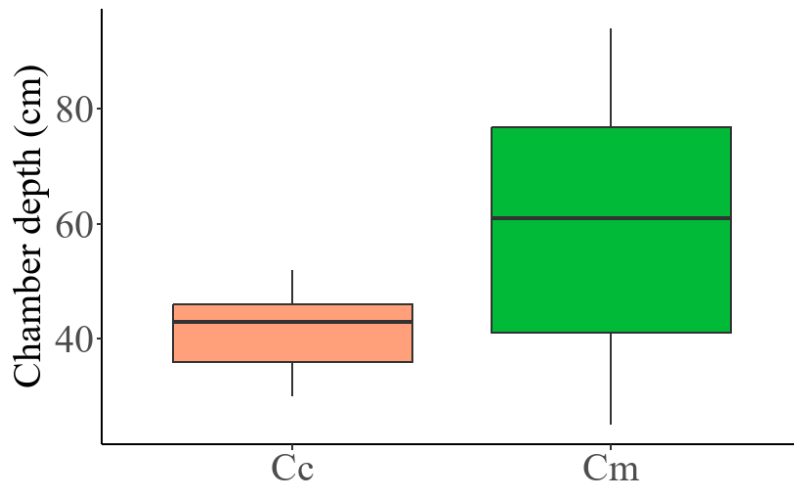


FIGURE S4. Loggerhead Turtle (Cc) mid-season and Green Turtle (Cm) early season boxplot (median, quartile and range) of top-of-clutch depth (cm).

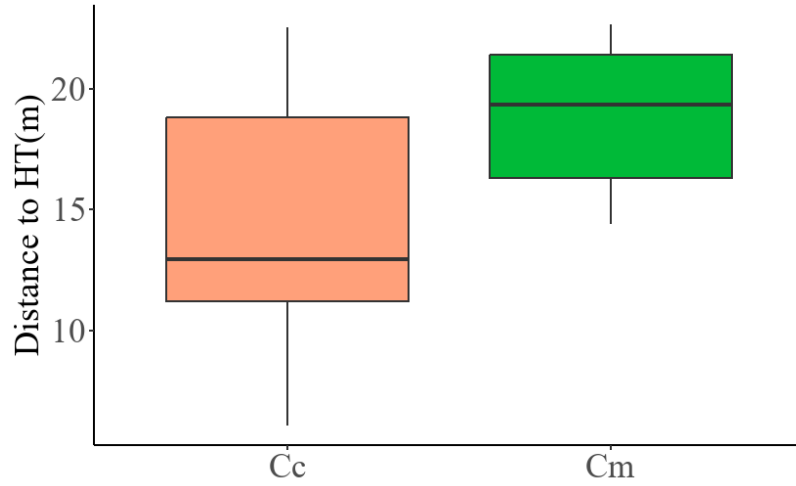


FIGURE S5. Loggerhead Turtle (Cc) mid-season and Green Turtle (Cm) early season boxplot (median, quartile and range) of nest's distance to high tide.