Table S1. GLMM model selection process and AIC of the hatching success and embryonic development at mortality (divided into three categories: stages 21-24, stages 25-27 and stages 28-30) of hawksbill turtles from controlled incubation treatments and natural nests.

GLMM selection process	R^2	AIC	ΔAIC
Hatching success			
H1 <- glmer (hatching ~ Treatment * nest + (1 | idays), data = hawksbill, family = gaussian)	0.864	404.06	0.0
H2 <- glmer (hatching ~ Treatment * nest + (1 | idays), data = hawksbill, family = gaussian)	0.838	407.34	3.29
H3 <- glm (hatching ~ Treatment + nest, data = hawksbill)	0.819	434.78	30.73
H4 <- glm (hatching ~ Treatment, data = hawksbill)	0.822	432.56	28.50
No visible embryonic development			
WED1 <- glmer (WED ~ Treatment * nest + (1 | idays), data = hawksbill, family = gaussian)	0.559	457.99	0.0
WED2 <- glmer (WED ~ Treatment * nest + (1 | idays), data = hawksbill, family = gaussian)	0.566	458.93	0.93
WED3 <- glm (WED ~ Treatment + nest, data = hawksbill)	0.563	463.22	5.22
WED4 <- glm (WED ~ Treatment, data = hawksbill)	0.566	461.08	3.09
Embryonic development (Stage 21-24)			
S1a <- glmer (S1 ~ Treatment * nest + (1 | idays), data = hawksbill, family = gaussian)	0.098	415.33	0.0
S1b <- glmer (S1 ~ Treatment * nest + (1 | idays), data = hawksbill, family = gaussian)	0.063	416.06	0.73
S1c <- glm (S1 ~ Treatment + nest, data = hawksbill)	0.084	417.56	2.24
S1d <- glm (S1 ~ Treatment, data = hawksbill)	0.063	416.43	1.1
Embryonic development (Stage 25-27)			
S2a <- glmer (S2 ~ Treatment * nest + (1 | idays), data = hawksbill, family = gaussian)	0.093	389.43	2.99
S2b <- glmer (S2 ~ Treatment * nest + (1 | idays), data = hawksbill, family = gaussian)	0.091	387.27	0.83
S2c <- glm (S2 ~ Treatment + nest, data = hawksbill)	0.094	388.53	0.87
S2d <- glm (S2 ~ Treatment, data = hawksbill)	0.091	386.44	0.0
Embryonic development (Stage 28-30)			
S3a <- glmer (S3 ~ Treatment * nest + (1 | idays), data = hawksbill, family = gaussian)	0.113	425.42	0.081
S3b <- glmer (S3 ~ Treatment * nest + (1 | idays), data = hawksbill, family = gaussian)	0.090	425.34	0.0
S3c <- glm (S3 ~ Treatment + nest, data = hawksbill)	0.029	428.53	3.19
S3d <- glm (S3 ~ Treatment, data = hawksbill)	0.029	426.16	0.82

*idays= observed incubation days

Table S2. GLMM model selection process and AIC of the hatchling weight, size, and performance from relative sand humidity incubation treatments and natural nests.

GLMM selection process	R^2	AIC	ΔAIC
Hatchling weight			
W1 <- glmer (weight ~ RSH + (1 | idays) + (1 | RSH / nest), data = hatchling, family = gaussian)	0.689	469.11	0.0
W2 <- glmer (weight ~ RSH + (1 | idays) + (1 | nest / RSH), data = hatchling, family = gaussian)	0.657	476.71	7.60
W3 <- glmer (weight ~ RSH + (1 | idays) + (1 | nest), data = hatchling, family = gaussian)	0.699	492.99	23.89
W4 <- glmer (weight ~ RSH * nest + (1 | idays), data = hatchling, family = gaussian)	0.665	494.51	25.41
Hatchling size			
S1 <- glmer (size ~ RSH + (1 | idays) + (1 | RSH / nest), data = hatchling, family = gaussian)	0.778	1398.72	0.00
S2 <- glmer (size ~ RSH + (1 | idays) + (1 | nest / RSH), data = hatchling, family = gaussian)	0.759	1402.53	3.81
S3 <- glmer (size ~ RSH + (1 | idays) + (1 | nest), data = hatchling, family = gaussian)	0.728	1446.40	47.68
S4 <- glmer (size ~ RSH * nest + (1 | idays), data = hatchling, family = gaussian)	0.747	1430.73	32.01
Hatchling performance			
P1 <- glmer (performance ~ RSH + (1 | idays) + (1 | RSH / nest), data = hatchling, family = gaussian)	0.612	590.05	0.00
P2 <- glmer (performance ~ RSH + (1 | idays) + (1 | nest / RSH), data = hatchling, family = gaussian)	0.524	595.77	5.72
P3 <- glmer (performance ~ RSH + (1 | idays) + (1 | nest), data = hatchling, family = gaussian)	0.444	604.87	14.82
P4 <- glmer (performance ~ RSH * nest + (1 | idays), data = hatchling, family = gaussian)	0.451	610.05	19.99

*idays= observed incubation days

Table S3. GLMM model selection process and AIC of the hatchling size (HS), and mother size (MS) from relative sand humidity incubation treatments (RSH) and natural nests (nest).

GLMM selection process	R^2	AIC	ΔAIC
Hatchling size			
HMS1 <- glmer (HS ~ MS + (1 | nest) + (1 | RSH) + (1 | idays), data = HMS, family = gaussian)	0.778	1420.62	0.0
HMS2 <- glmer (HS ~ MS + (1 | nest) + (1 | RSH), data = HMS, family = gaussian)	0.703	1421.13	0.51
HMS3 <- glmer (HS ~ MS + (1 | RSH) + (1 | idays), data = HMS, family = gaussian)	0.725	1429.97	9.35
HMS4 <- glmer (HS ~ MS + (1 | RSH), data = HMS, family = gaussian)	0.602	1432.01	11.38

*idays= observed incubation days