The following supplement accompanies the article

Green turtle somatic growth dynamics: distributional regression reveals effects of differential emigration

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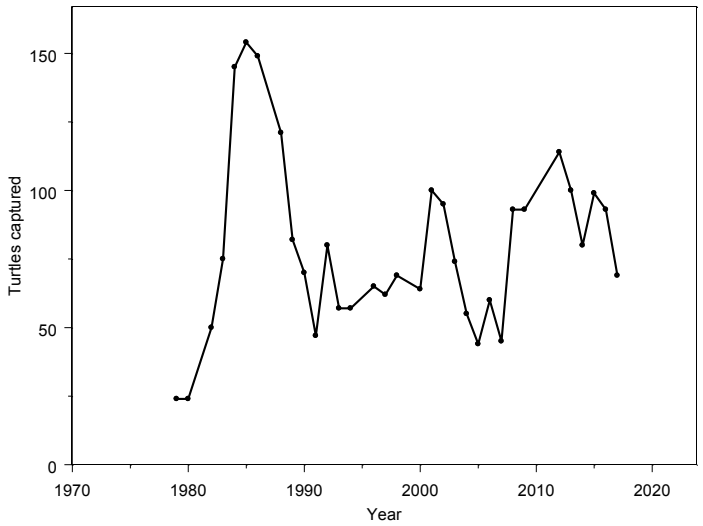

Figure S1. Number of green turtles captured each year (= relative density index) in Union Creek Reserve, Great Inagua, The Bahamas, from 1979 through 2017

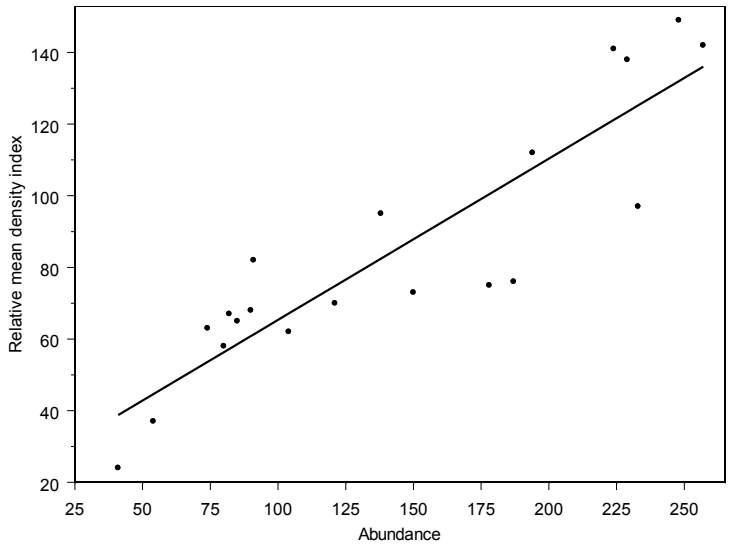

Figure S2. Relationship between relative mean density index and Horvitz-Thompson type estimate of abundance (*Ni*) based on capture-mark-recapture analyses for years 1979 through 2001 except 1981, 1995, 1999, when no field studies were conducted (Bjorndal et al. 2005). Linear regression is significant; $p < 0.0001$, $R^2 = 0.804$, $n = 20$

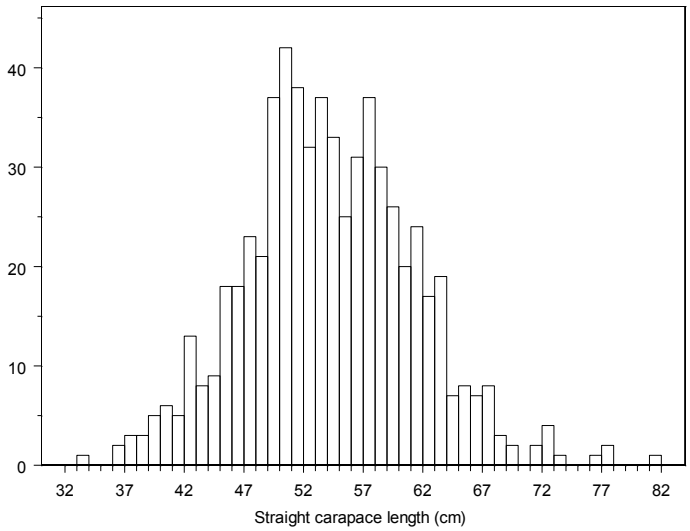

Figure S3. Size distribution of departure sizes estimated from last SCL value for all green turtles recaptured before 2015, n = 629

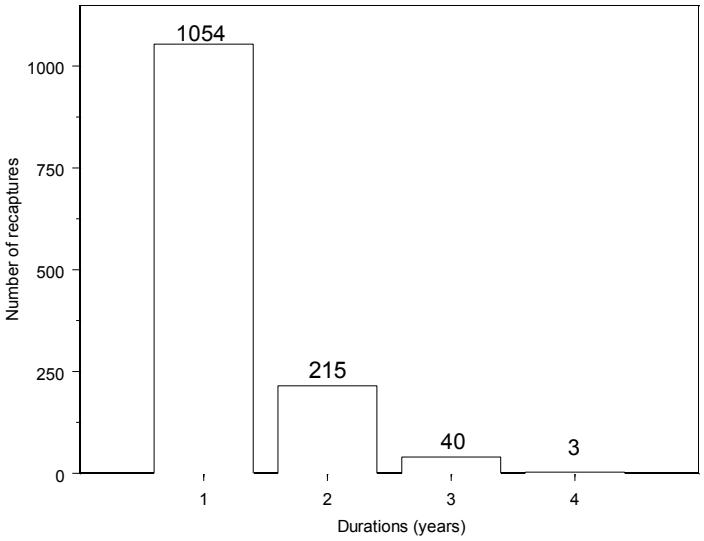

Figure S4. Distribution of 1312 recapture intervals (years) for green turtles in Union Creek Reserve. Number of intervals is placed above each bar and is greater than number of growth increments because intervals below the 330-day cut-off for growth increments are included

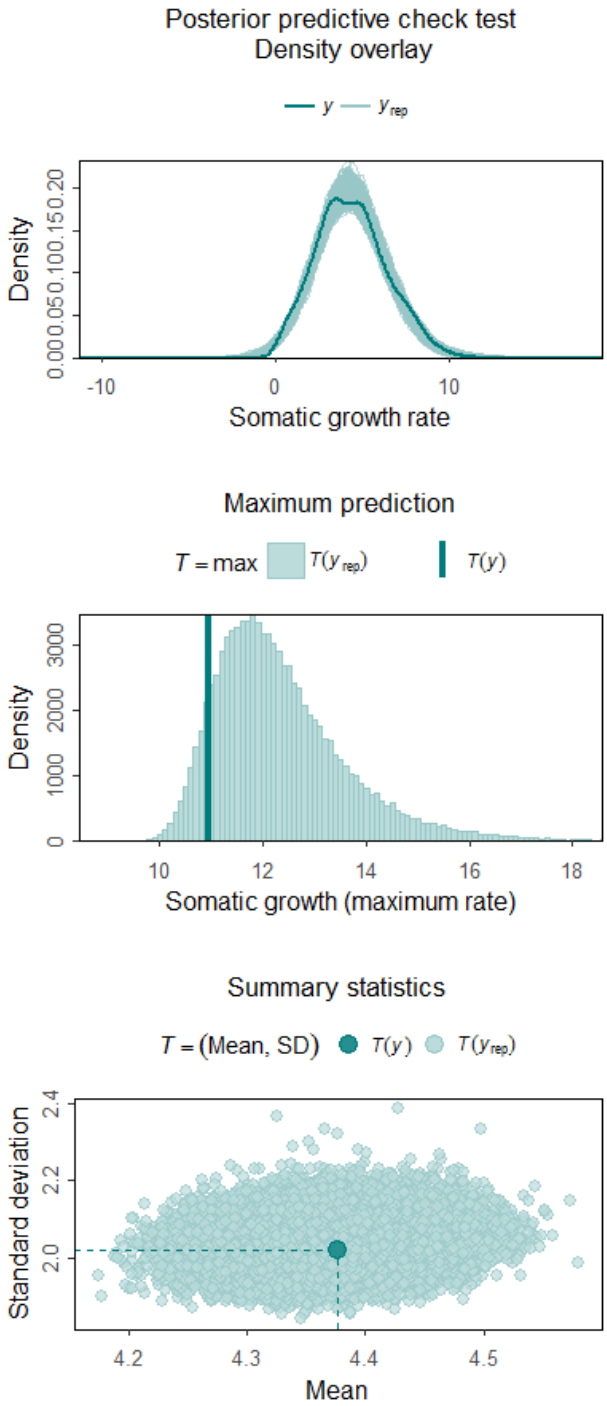

Figure S5. Results of three posterior predictive check tests (Gelman & Hill 2007, Gelman et al. 2014) for the model fit summarized in Figs. 2 and 3 (in the main article).

Top panel: Posterior predictive check of the response variable. Dark teal line shows the density curve summarizing the observed data, and the mass of lighter teal lines shows the density curve overlay for each of the 25,000 simulations of the fitted GAMMLSS model shown in Figs. 2 and 3. The fitted model makes realistic predictions of this parameter.

Middle panel: Posterior predictive check of the maximum response variable. Solid teal line shows the maximum growth rate of the observed data, and the light teal histogram summarizes the 25,000 simulations of the expected maximum for the fitted GAMMLSS model shown in Figs. 2 and 3. The fitted model makes realistic predictions of this parameter.

Bottom panel: Posterior predictive check of the two key summary parameters (the mean and standard deviation). Solid teal circle shows the summary parameters for the observed data and the mass of open teal circles shows the summary estimates for each of the 25,000 simulations of the model fit shown in Figs. 2 and 3. The fitted model makes realistic predictions of these summary parameters.

LITERATURE CITED

Bjorndal KA, Bolten AB, Chaloupka MY (2005) Evaluating trends in abundance of immature green turtles, *Chelonia mydas*, in the Greater Caribbean. Ecol Applic 15:304-314

Gelman A, Hill J (2007) Data analysis using regression and multilevel/hierarchical models. Cambridge University Press, New York

Gelman A, Hwang J, Vehtari A (2014) Understanding predictive information criteria for Bayesian models. Stat Comput 24:997–1016