The following supplement accompanies the article

Thirty years of leatherback turtle *Dermochelys coriacea* nesting in Espírito Santo, Brazil, 1988–2017: reproductive biology and conservation

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Supplemental methods

Regarding the generalised additive model (GAM) used to analyse the trend in the annual number of nests: this is a kind of nonparametric regression where the shape of the trend curve is not predetermined but is estimated from the data (Wood 2017). This function allows for the existence of autocorrelation in a time series, a characteristic of nesting data that is sometimes readily observed (e.g. Bjorndal et al. 1999) and which has been considered in other studies of temporal nesting patterns of sea turtles (e.g. Chaloupka et al. 2008, Weber et al. 2014). Using loess regressions (Cleveland et al. 1993) with second order local polynomials and different values for the span parameter, we detrended the time series of annual number of nests; partial autocorrelation graphs of the different detrended series indicated the possible existence of second-order autocorrelation in the original time series. Thus, using the *gamm* function, we constructed different GAM models with negative binomial error distribution (with link function = log) and cyclic cubic regression splines, with combinations of different values for the dimension of the basis that is to represent the smooth term and of two different values for the order of the autocorrelation, 1 and 2. There seems to exist no established method for the assessment of goodness-of-fit of GAM models constructed with the *gamm* function, which could serve as a basis for model selection (Gilman et al. 2012; see also the mgcv.FAQ help page of the R-package *mgcv*). The function *gamm* operates internally by transforming the GAM model into another statistical model, a parametric mixed model (see Wood 2017), for which an approximate AIC statistic (Akaike information criterion; Anderson 2008) can be calculated. As our selection criteria, first we followed Zuur et al. (2009) and selected among the different GAM models those two models with the smallest AIC values; their AIC were nearly the same, and both GAM models included autocorrelation terms of second order. Second, we made a graphical diagnostic of the residuals of the two models (see Wood 2017), and chose the one with the best properties in that analysis, although in fact little difference was observed between the two models in that respect.

Regarding the local polynomial regression used to analyse the variation of the curved carapace length (CCL) over the years: the regression employed second degree polynomials. The method used allowed the construction of a simultaneous confidence band for the regression curve. The final smoothing parameter was selected by visual comparison of different regression curves obtained each with a different value for that parameter, so as to avoid both under- and over-smoothing of the data.

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