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## Supplementary Material

**Validated age, growth and reproductive biology of *Carcharhinus melanopterus*, a widely distributed and exploited reef shark**

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**Table S1.** Growth functions used in age and growth studies of chondrichthyan fishes

Model	Description	Equation
Three parameter Von Bertalanffy (VB3)	A linear function where growth rate decreases as length (age) increases	$L(t) = L_{\infty} - (L_{\infty} - L_0)exp^{-kt}$
Two parameter Von Bertalanffy (VB2)	A linear function where growth rate decreases as length (age) increases, length at birth fixed at a known value ( $x$ )	$L(t) = L_{\infty} - (L_{\infty} - x)exp^{-kt}$
Three parameter Gompertz (GPZ3)	Growth rate decreases exponentially with increasing length (age)	$L(t) = L_{\infty} (exp[-L_0 exp^{-kt}])$
Two parameter Gompertz (GPZ2)	Growth rate decreases exponentially with increasing length (age), length at birth ( $x$ ) fixed at a known value	$L(t) = x exp(\log_e\{L_{\infty}/x\}\{1 - exp^{-kt}\})$
Logistic (Log)	Growth rate has a sigmoidal relationship to length (age) where growth rate gradually increases, peaks and then decreases with increasing length (age)	$L(t) = \frac{L_{\infty}L_0 exp(kt)}{L_{\infty} + L_0(exp\{kt\} - 1)}$

$L_{\infty}$  = maximum/asymptotic length (mm STL);  $L_0$  = length at birth (mm STL),  $k$  = relative growth rate (years<sup>-1</sup>)

Equations sourced from Caillet *et al.* (2006) and from Thorson and Simpfendorfer (2009).

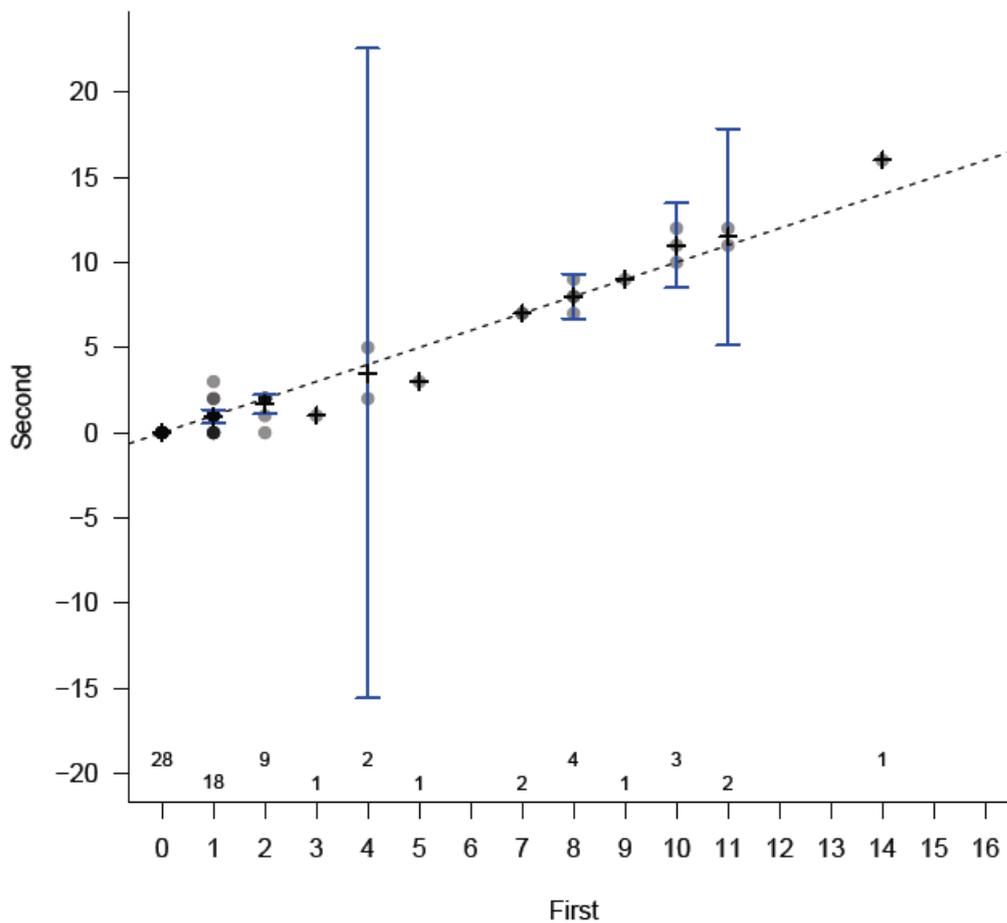
**Fig. S1.** Reader precision and bias for age estimation

Precision summary statistics

n	Percent agreement	Average Percent Error	Coefficient of variation
72	72.22	20.61	29.14

Bowker's (Hoenig's) test of Symmetry

df	Chi square	p
13	15.33333	0.28700



Intra-reader age bias plot showing age estimates determined by both two independent readers (first and second reader). Dots represent age estimates derived by both readers with darker shading indicating increasing overlap of estimates. Error bars represent the 95% confidence interval around the 1:1 agreement line (dotted grey line). Numbers above the x axis show the number of samples of each age.

**Fig. S2.**

Photograph of calcein marked vertebrae from blacktip reef shark J0340, an adult female measuring 1398 mm STL at first capture and 1422 mm STL when recaptured after 969 days at liberty. The calcein band was deposited close to the edge of the centrum and visible band pairs are difficult to distinguish after the calcein mark, even though the animal was at liberty for over three years.

