

**Supplementary material**

**Life-history characteristics of the eastern shovelnose ray, *Aptychotrema rostrata* (Shaw, 1794), from southern Queensland, Australia**

*Matthew J. Campbell*<sup>A,B,C</sup>, *Mark F. McLennan*<sup>A</sup>, *Anthony J. Courtney*<sup>A</sup> and *Colin A. Simpfendorfer*<sup>B</sup>

<sup>A</sup>Queensland Department of Agriculture and Fisheries, Agri-Science Queensland, Ecosciences Precinct, GPO Box 267, Brisbane, Qld 4001, Australia.

<sup>B</sup>Centre for Sustainable Tropical Fisheries and Aquaculture and College of Science and Engineering, James Cook University, 1 James Cook Drive, Townsville, Qld 4811, Australia.

<sup>C</sup>Corresponding author. Email: [matthew.campbell@daf.qld.gov.au](mailto:matthew.campbell@daf.qld.gov.au)

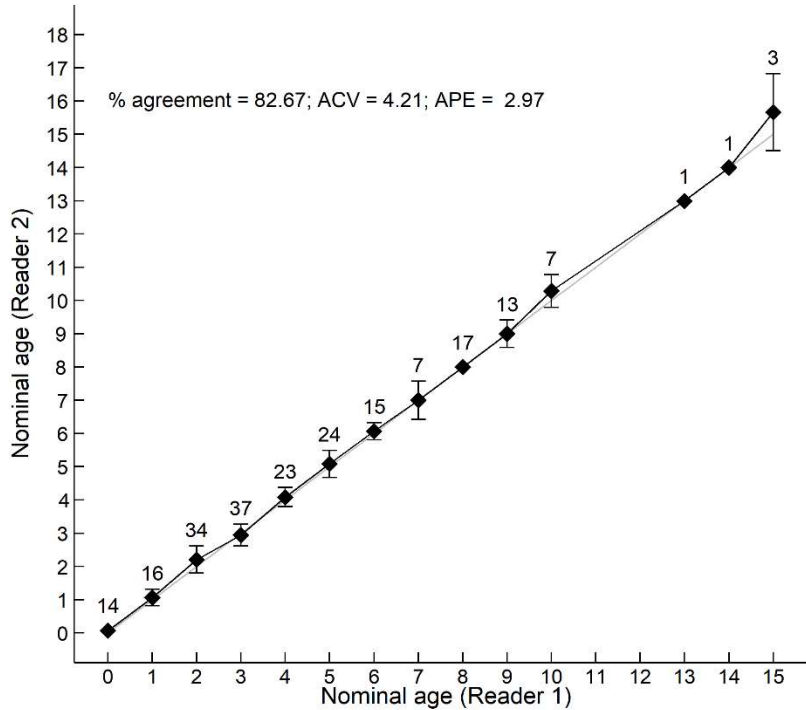


Figure S1: Age bias plot for two readers of 212 *Aptychotrema rostrata* centra. Also shown are relevant indices of agreement between the two readers. The grey line represents the line of equivalence. Numbers atop each point are the number of animals assigned the respective nominal ages.

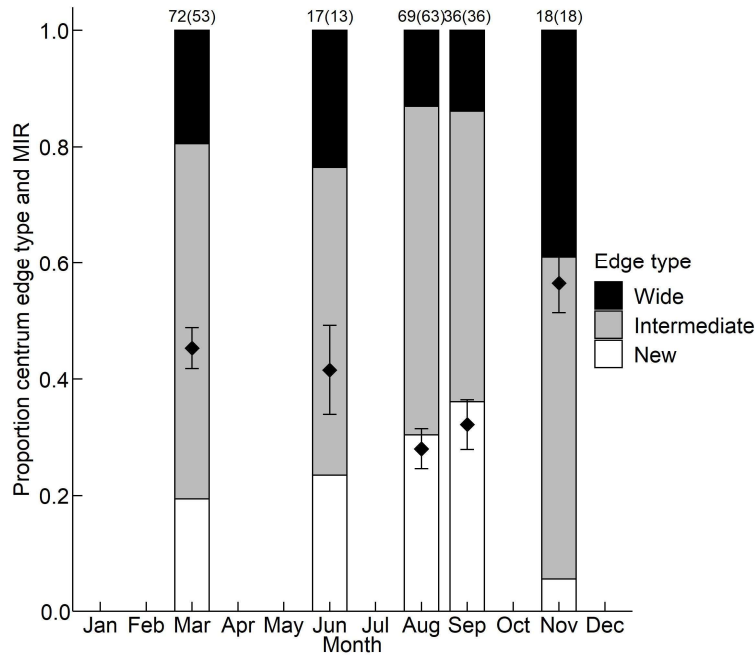


Figure S2: Variation in edge type and mean marginal increment ratio (MIR,  $\pm$ s.e.) as a function of month for *Aptychotrema rostrata* caught in southeast Queensland, Australia, between April 2016 and November 2017. The number above each bar is the sample size for edge classification (total  $n = 212$ ). The number in parentheses is the monthly sample size to assess MIR quantified for animals  $\geq 2$  years of age.

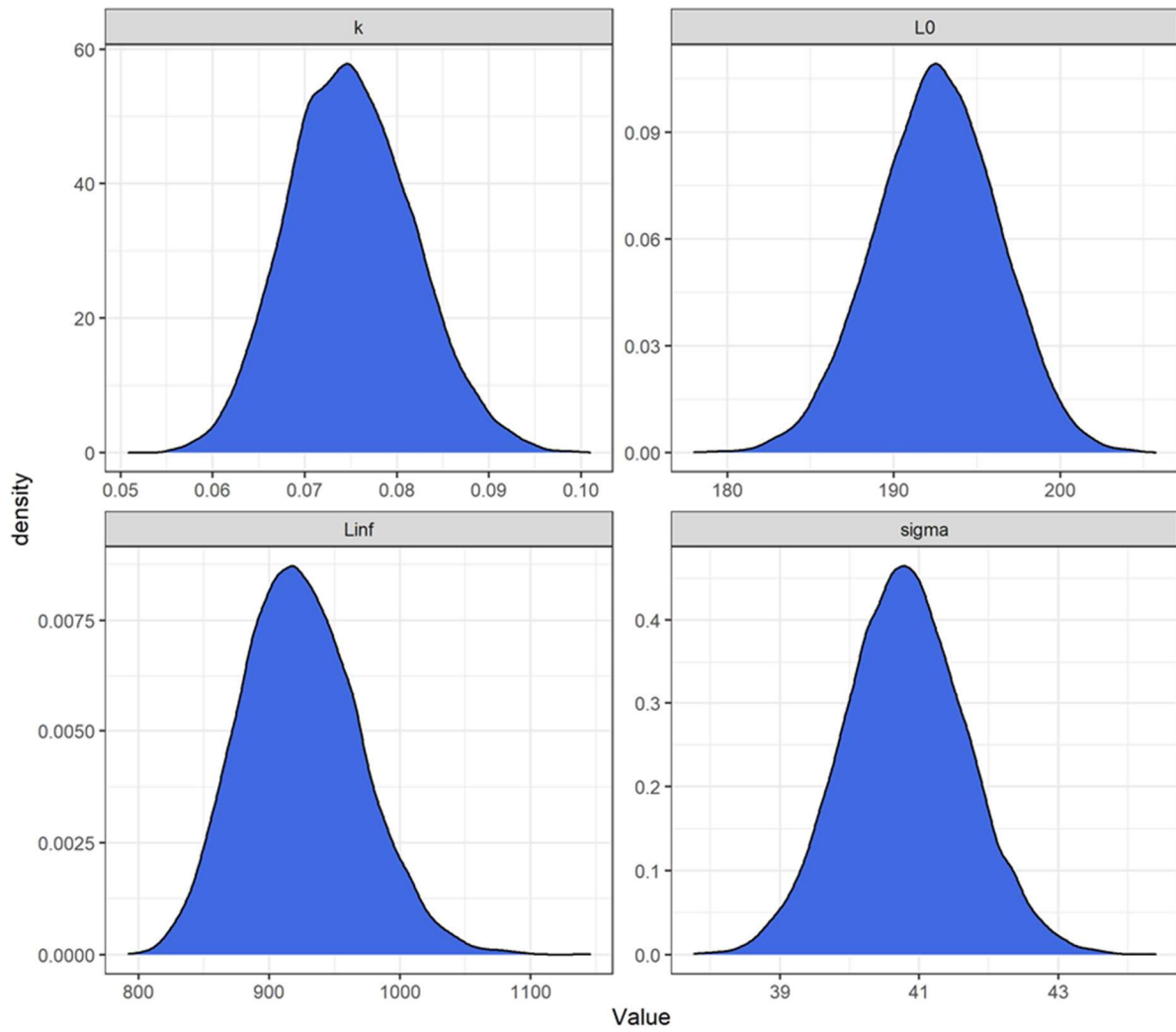


Figure S3: Posterior distributions of the VBGF parameter estimates. Priors were set at  $L_{\infty} \sim N(1200, 50)$  and  $L_0 \sim N(140, 10)$ . A non-informative prior was used for  $\sigma$  (maximum value of  $\sigma = 100$ ) and  $k$  (maximum value of  $k = 0.3 \text{ year}^{-1}$ ).

**Table S1: Comparison of mean observed and mean back calculated lengths-at-age for individuals aged between one and ten**

Those centra where a ‘wide’ edge occurred were excluded from this analyses. Note:  $n$  is the sample size; and  $t$  and  $P$  are the  $t$ -statistic and the  $P$ -value ( $\alpha = 0.05$ ) respectively from the two-sample  $t$ -tests where the hypothesised difference between the two means was zero

Age	Observed		Back calculated		$t$	$P$
	$n$	mean	$n$	mean		
1	15	260.1	175	245.3	1.543	0.121
2	30	328.6	175	307.6	1.869	0.063
3	24	352.6	144	343.7	1.132	0.257
4	16	411.2	111	391.6	1.089	0.278
5	19	439.6	87	420.5	1.683	0.095
6	14	480.6	64	455.3	1.456	0.149
7	4	499.5	48	481.2	0.649	0.519
8	14	510.4	39	512.8	-0.139	0.89
9	9	522.1	22	539.9	-0.784	0.44
10	6	652.2	11	590	0.838	0.415