

Supplementary Table 1. Best random-effect structure fitted with full fixed-effect structure (*Age+AgeCap*) for jack mackerel (*Trachurus declivis*) and redbait (*Emmelichthys nitidus*) from waters off Kangaroo Island (KI) and New South Wales (NSW) in Australia. A|B indicates random slope term. df=degrees of freedom; AIC_c=Akaike information criterion corrected for small sample size; ΔAIC_c=difference in AIC_c between current and top model; LL=log likelihood; and AIC_cWt=the proportion of the total predictive power of the model set. *Italic type indicates the top-ranked model for each species and region.*

Model	<i>T. declivis</i>									
	KI					NSW				
	df	AIC _c	ΔAIC _c	LL	AIC _c Wt	df	AIC _c	ΔAIC _c	LL	AIC _c Wt
(Age FishID) + ((Age) Year)	10	138.46	0.00	-59.06	0.66	10	84.38	1.98	-31.92	0.20
(Age FishID) + ((Age) YearClass)	10	189.22	50.77	-84.44	<0.01	10	90.10	7.70	-34.78	0.01
(Age FishID) + (1 Year) + (1 YearClass)	9	152.35	13.89	-67.03	<0.01	9	82.40	0.00	-31.98	0.55
(Age FishID) + ((Age) Year) + (1 YearClass)	11	140.41	1.96	-59.00	0.25	11	86.49	4.09	-31.92	0.07
(Age FishID) + (1 Year) + ((Age) YearClass)	11	155.44	16.99	-66.52	<0.01	11	85.14	2.74	-31.25	0.14
(Age FishID) + ((Age) Year) + ((Age) YearClass)	13	142.28	3.82	-57.86	0.10	13	88.75	6.34	-30.92	0.02
Model	<i>E. nitidus</i>									
	KI					NSW				
	df	AIC _c	ΔAIC _c	LL	AIC _c Wt	df	AIC _c	ΔAIC _c	LL	AIC _c Wt
(Age FishID) + ((Age) YearClass)	10	61.52	1.63	-20.10	0.22	10	265.47	0.32	-122.46	0.29
(Age FishID) + ((Age) Year)	10	62.14	2.25	-20.41	0.16	10	265.15	0.00	-122.30	0.34
(Age FishID) + (1 Year) + (1 YearClass)	9	59.89	0.00	-20.41	0.50	9	267.14	2.00	-124.35	0.12
(Age FishID) + (1 Year) + ((Age) YearClass)	11	64.40	4.51	-20.40	0.05	11	267.58	2.43	-122.46	0.10
(Age FishID) + ((Age) Year) + (1 YearClass)	11	64.42	4.52	-20.41	0.05	11	267.26	2.11	-122.30	0.12
(Age FishID) + ((Age) Year) + ((Age) YearClass)	13	69.03	9.14	-20.40	0.01	13	269.68	4.54	-121.39	0.03