

Article

Error Distribution Model to Standardize LPUE, CPUE and Survey-Derived Catch Rates of Target and Non-Target Species

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Table S5. Nominal and standardized LPUE (kg landing⁻¹ vessel⁻¹), CPUE (kg days at sea⁻¹ vessel⁻¹) and RPN (ind. 10⁻³ hooks) estimates for thornback ray *Raja clavata* (RJC), blackbelly rosefish *Helicolenus dactylopterus* (BRF), and common mora *Mora moro* (RIB) in the Azorean region. LCI and UCI indicate estimated 95% confidence limits. Standardization process was based on the best error distribution. The values are scaled to mean.

Year	LPUE				CPUE				RPN			
	Nominal	Standardized	LCI	UCI	Nominal	Standardized	LCI	UCI	Nominal	Standardized	LCI	UCI
RJC												
1985	0.12	0.22	-0.63	1.07								
1986	0.46	0.28	-0.75	1.31								
1987	0.34	0.47	-1.26	2.20								
1988	0.53	0.52	-1.46	2.51								
1989	0.53	0.27	-0.70	1.24								
1990	0.56	0.51	-1.39	2.41								
1991	0.33	1.11	-3.28	5.49	0.12	0.58	0.30	0.86				
1992	3.95	0.71	-2.09	3.51								
1993	0.13	0.18	-0.51	0.88	0.54	1.21	1.00	1.41				
1994	0.22	0.19	-0.48	0.85	0.12	1.01	0.86	1.16				

Year	LPUE				CPUE				RPN			
	Nominal	Standardized	LCI	UCI	Nominal	Standardized	LCI	UCI	Nominal	Standardized	LCI	UCI
1995	0.32	1.27	-3.89	6.44	0.18	0.60	0.51	0.69				
1996	0.36	0.67	-2.00	3.33	0.27	1.09	0.90	1.28	0.67	0.61	0.35	0.87
1997	0.42	0.81	-2.49	4.11	0.85	0.91	0.76	1.07	0.52	0.63	0.37	0.89
1998	1.12	2.11	-6.45	10.67	1.29	1.34	1.15	1.53				
1999	1.15	1.40	-4.16	6.96	3.71	1.39	1.18	1.60	0.55	0.84	0.38	1.30
2000	6.02	0.82	-2.53	4.18	2.11	1.19	1.03	1.35	0.41	0.44	0.26	0.61
2001	1.94	1.31	-4.33	6.95	1.25	0.99	0.86	1.12	0.39	0.52	0.28	0.76
2002	1.85	1.81	-5.74	9.37	1.00	1.30	1.16	1.45	2.09	1.71	0.98	2.45
2003	0.59	2.08	-6.74	10.89	1.43	1.16	1.03	1.30	3.05	1.88	1.14	2.63
2004	0.30	1.08	-3.36	5.52	1.33	1.25	1.10	1.39	1.48	0.82	0.44	1.20
2005	0.52	0.55	-1.77	2.87	0.83	0.89	0.80	0.98	1.93	1.77	1.01	2.52
2006	0.97	0.88	-2.86	4.62	0.57	0.76	0.69	0.83				
2007	0.93	0.82	-2.58	4.22	0.40	0.72	0.66	0.79	1.63	1.58	0.99	2.17
2008	0.23	0.74	-2.36	3.84	0.68	1.10	0.99	1.20	0.69	1.16	0.67	1.64
2009	2.90	0.83	-2.70	4.37	0.61	1.01	0.92	1.10				
2010	0.31	0.62	-1.75	3.00	0.65	0.96	0.88	1.04	0.60	0.66	0.40	0.92
2011	0.44	1.87	-5.82	9.57	0.92	1.05	0.96	1.13	0.42	0.37	0.18	0.55
2012	0.39	0.91	-2.69	4.50	1.15	1.07	0.97	1.17	0.55	0.48	0.28	0.68
2013	0.53	1.28	-4.24	6.80	1.01	0.99	0.91	1.07	0.73	0.66	0.38	0.94
2014	2.37	1.45	-4.90	7.80	1.61	1.08	0.97	1.18				
2015	1.38	1.39	-4.52	7.30	1.43	0.92	0.82	1.02				
2016	0.56	1.42	-4.85	7.68	1.22	0.83	0.74	0.92	0.44	0.77	0.44	1.09
2017	0.25	2.42	-7.92	12.76	0.73	0.59	0.53	0.66	0.97	1.27	0.75	1.79
2018									0.82	0.89	0.53	1.26
2019									1.06	1.94	1.21	2.66
BRF												
1985	0.36	2.07	0.37	3.77								
1986	0.68	1.49	0.18	2.79								



Year	LPUE				CPUE				RPN			
	Nominal	Standardized	LCI	UCI	Nominal	Standardized	LCI	UCI	Nominal	Standardized	LCI	UCI
1987	7.62	1.70	0.30	3.10								
1988	8.95	2.93	0.40	5.46								
1989	2.80	3.07	0.52	5.61								
1990	0.71	1.09	0.06	2.13	0.27	0.69	0.32	1.06				
1991	0.80	0.87	0.05	1.68	7.67	1.77	1.01	2.52				
1992	0.67	1.92	-0.48	4.32								
1993	1.07	0.60	0.02	1.18	0.72	1.03	0.93	1.13				
1994	1.23	1.05	0.08	2.03	1.19	1.02	0.93	1.11				
1995	0.38	1.65	0.28	3.01	1.17	1.13	1.02	1.24				
1996	1.08	1.08	0.10	2.07	1.28	1.27	1.11	1.43	1.23	0.71	-38.16	39.58
1997	0.67	0.88	0.04	1.72	0.77	1.34	1.21	1.48	0.58	0.75	-40.26	41.76
1998	0.56	0.64	0.03	1.25	1.09	1.36	1.25	1.46				
1999	1.14	0.77	0.06	1.49	1.98	1.81	1.69	1.93	1.07	1.54	-81.06	84.14
2000	0.64	0.55	-0.01	1.10	1.80	1.13	1.06	1.20	1.33	0.86	-46.52	48.25
2001	0.26	0.37	0.01	0.72	1.03	1.07	1.00	1.13	0.93	0.49	-26.49	27.47
2002	0.31	0.32	0.01	0.63	1.08	1.31	1.24	1.39	0.72	1.26	-66.24	68.75
2003	0.14	0.69	0.08	1.30	0.91	1.08	1.04	1.13	1.51	1.56	-83.12	86.23
2004	0.14	0.34	0.03	0.66	0.73	1.05	1.00	1.09	1.68	1.76	-93.29	96.80
2005	0.09	0.34	0.03	0.66	0.52	1.06	1.01	1.11	1.67	3.47	-178.23	185.17
2006	0.28	0.69	0.16	1.23	0.53	0.88	0.85	0.92				
2007	0.17	0.58	0.10	1.06	0.61	0.89	0.85	0.93	1.21	1.02	-54.92	56.96
2008	0.18	0.67	0.17	1.17	0.56	0.83	0.80	0.87	1.81	1.78	-94.68	98.24
2009	0.12	1.01	0.29	1.72	0.47	0.83	0.79	0.86				
2010	0.06	0.38	0.04	0.71	0.34	0.68	0.65	0.70	0.81	0.54	-29.02	30.09
2011	0.11	0.34	0.05	0.63	0.32	0.74	0.71	0.77	0.58	0.46	-25.20	26.13
2012	0.12	0.09	0.00	0.19	0.23	0.70	0.68	0.73	0.28	0.21	-11.66	12.09
2013	0.09	0.40	0.07	0.74	0.28	0.71	0.69	0.74	0.41	0.21	-11.69	12.11
2014	0.22	0.57	0.14	0.99	0.31	0.72	0.69	0.75				

Year	LPUE				CPUE				RPN			
	Nominal	Standardized	LCI	UCI	Nominal	Standardized	LCI	UCI	Nominal	Standardized	LCI	UCI
2015	0.38	0.82	0.25	1.39	0.27	0.66	0.63	0.68				
2016	0.32	0.65	0.15	1.16	0.33	0.62	0.59	0.64	0.59	0.38	-20.75	21.52
2017	0.68	2.36	0.61	4.12	0.52	0.63	0.60	0.66	0.97	0.72	-38.75	40.19
2018									0.84	0.62	-33.66	34.90
2019									0.78	0.66	-35.35	36.66
RIB												
1985	0.00	0.00	-0.67	0.67								
1986	0.00	0.00	-0.92	0.92								
1987	0.01	0.00	-0.63	0.63								
1988	1.01	0.00	-4.58	4.59								
1989	0.00	0.00	-0.45	0.45								
1990	0.00	0.00	-2.43	2.43								
1991	0.01	0.02	-19.92	19.96								
1992	0.99	0.27	-261.71	262.26								
1993					0.09	0.83	0.23	1.42				
1994					0.22	4.73	-14.12	23.58				
1995					0.39	1.00	0.40	1.61				
1996					0.76	1.26	0.76	1.76	0.66	0.22	-57.80	58.25
1997					0.05	0.36	-0.02	0.74	0.14	0.15	-37.57	37.87
1998					0.10	0.72	-0.86	2.30				
1999					0.04	0.98	-7.91	9.87	1.18	1.00	-255.75	257.75
2000					0.25	1.53	-7.23	10.28	1.21	1.63	-415.23	418.48
2001	0.00	0.00	-0.47	0.47	1.81	0.92	-1.07	2.91	0.91	0.93	-238.61	240.47
2002	3.72	0.53	-503.73	504.78	2.76	1.84	1.32	2.36	1.06	1.03	-263.64	265.70
2003	0.47	1.58	-1511.47	1514.63	3.02	1.37	1.13	1.60	1.24	1.98	-504.39	508.35
2004	0.54	0.93	-887.79	889.64	1.91	0.82	0.59	1.05	1.47	2.29	-583.05	587.62
2005	0.43	0.70	-670.53	671.93	1.93	0.87	0.54	1.21	2.33	2.37	-603.65	608.38
2006	0.49	1.61	-1543.81	1547.03	1.28	0.76	0.57	0.94				

Year	LPUE				CPUE				RPN			
	Nominal	Standardized	LCI	UCI	Nominal	Standardized	LCI	UCI	Nominal	Standardized	LCI	UCI
2007	0.60	0.62	-589.34	590.57	0.81	0.62	0.37	0.86	1.20	1.77	-450.63	454.16
2008	0.14	1.06	-1017.25	1019.37	0.40	0.41	0.31	0.50	1.73	1.24	-317.26	319.74
2009	0.20	1.76	-1685.04	1688.56	0.70	0.47	0.35	0.58				
2010	0.21	1.02	-979.87	981.92	0.58	0.52	0.39	0.65	0.67	0.47	-120.80	121.74
2011	0.56	0.34	-324.82	325.50	0.73	0.42	0.25	0.60	0.29	0.11	-28.75	28.98
2012	5.81	0.25	-238.40	238.90	0.37	0.53	-0.02	1.08	0.19	0.09	-22.84	23.02
2013	1.04	0.28	-266.65	267.21	0.70	0.73	0.04	1.42	0.38	0.15	-39.25	39.55
2014	1.63	0.31	-295.59	296.21	0.82	0.77	0.38	1.15				
2015	4.71	2.67	-2556.29	2561.62	0.46	0.69	0.42	0.97				
2016	0.93	0.41	-390.39	391.21	2.34	0.97	0.68	1.25	1.93	1.23	-315.58	318.05
2017	1.45	10.64	-10186.63	10207.92	2.46	0.90	0.70	1.10	0.85	1.34	-342.88	345.57
2018									1.13	0.64	-165.02	166.31
2019									0.44	0.36	-91.92	92.64