

An Updated Index of Relative Abundance for Red Grouper Captured During the NMFS Bottom Longline Survey in the Northern Gulf of Mexico

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This document serves to update the index of relative abundance for red grouper (*Epinephelus morio*) captured during the NMFS Bottom Longline Survey in the Gulf of Mexico (GOM) through 2021. Data were limited to those stations completed in the eastern GOM (east of 87° W) and at depths less than 118 m (Figure 1). To date, only four red grouper have been captured westward of this boundary and no red grouper have been captured in the western GOM (west of 89.15° W). The analysis follows the same methodology (delta-lognormal model) as outlined in Pollack et al. (2018).

The final delta-lognormal NMFS Bottom Longline Survey index of red grouper abundance retained year, area, and depth in the binomial submodel, and year and area in the lognormal submodel. The updated annual abundance index is shown in Table 1 and Figure 2. Figure 3 shows the comparison between the updated index and the index presented for SEDAR 61. Yearly distribution and catches of red grouper are shown in Appendix 1.

Literature Cited

Pollack, A.G., David S. Hanisko and G. Walter Ingram, Jr. 2018. An Index of Relative Abundance for Red Grouper Captured During the NMFS Bottom Longline Survey in the Northern Gulf of Mexico. SEDAR61-WP-02. SEDAR, North Charleston, SC. 19 pp.

Table 1. Index of red grouper abundance developed using the delta-lognormal (DL) model for 2001-2021 for the NMFS Bottom Longline Survey. The nominal frequency of occurrence, the number of samples (N), the DL Index (number per 100 hook hour), the DL indices scaled to a mean of one for the time series, the coefficient of variation on the mean (CV), and lower and upper confidence limits (LCL and UCL) for the scaled index are listed.

Survey Year	Frequency	N	DL Index	Scaled Index	CV	LCL	UCL
2001	0.21505	93	0.73605	0.82429	0.29073	0.46629	1.45714
2002							
2003	0.34188	117	0.9878	1.10621	0.20223	0.74121	1.65095
2004	0.41837	98	1.59799	1.78955	0.19302	1.22072	2.62344
2005	0.25	40	0.56222	0.62962	0.40612	0.28821	1.37547
2006	0.28205	39	0.52092	0.58336	0.39252	0.27362	1.24376
2007	0.19048	42	0.82971	0.92918	0.46469	0.38374	2.2499
2008	0.26667	60	0.58618	0.65645	0.32142	0.35063	1.22901
2009	0.34921	63	0.89534	1.00267	0.26384	0.59681	1.68456
2010	0.34328	67	1.16222	1.30154	0.25952	0.78109	2.16877
2011	0.40164	122	2.26713	2.5389	0.18099	1.77298	3.63571
2012	0.46939	49	2.194	2.457	0.25431	1.48925	4.05364
2013	0.34043	47	0.96714	1.08308	0.30412	0.59748	1.96334
2014	0.2619	42	0.56733	0.63534	0.38358	0.30283	1.33295
2015	0.25	52	0.72275	0.80939	0.35901	0.4034	1.62401
2016	0.19048	42	0.24923	0.2791	0.46289	0.11563	0.67372
2017	0.31818	44	0.71222	0.7976	0.34001	0.41162	1.54553
2018	0.1875	48	0.42422	0.47507	0.42635	0.20979	1.07579
2019	0.21053	38	0.44331	0.49646	0.46113	0.2063	1.19473
2020	0.31429	35	0.65615	0.73481	0.3847	0.34953	1.54476
2021	0.21622	37	0.7772	0.87037	0.44937	0.36914	2.05219

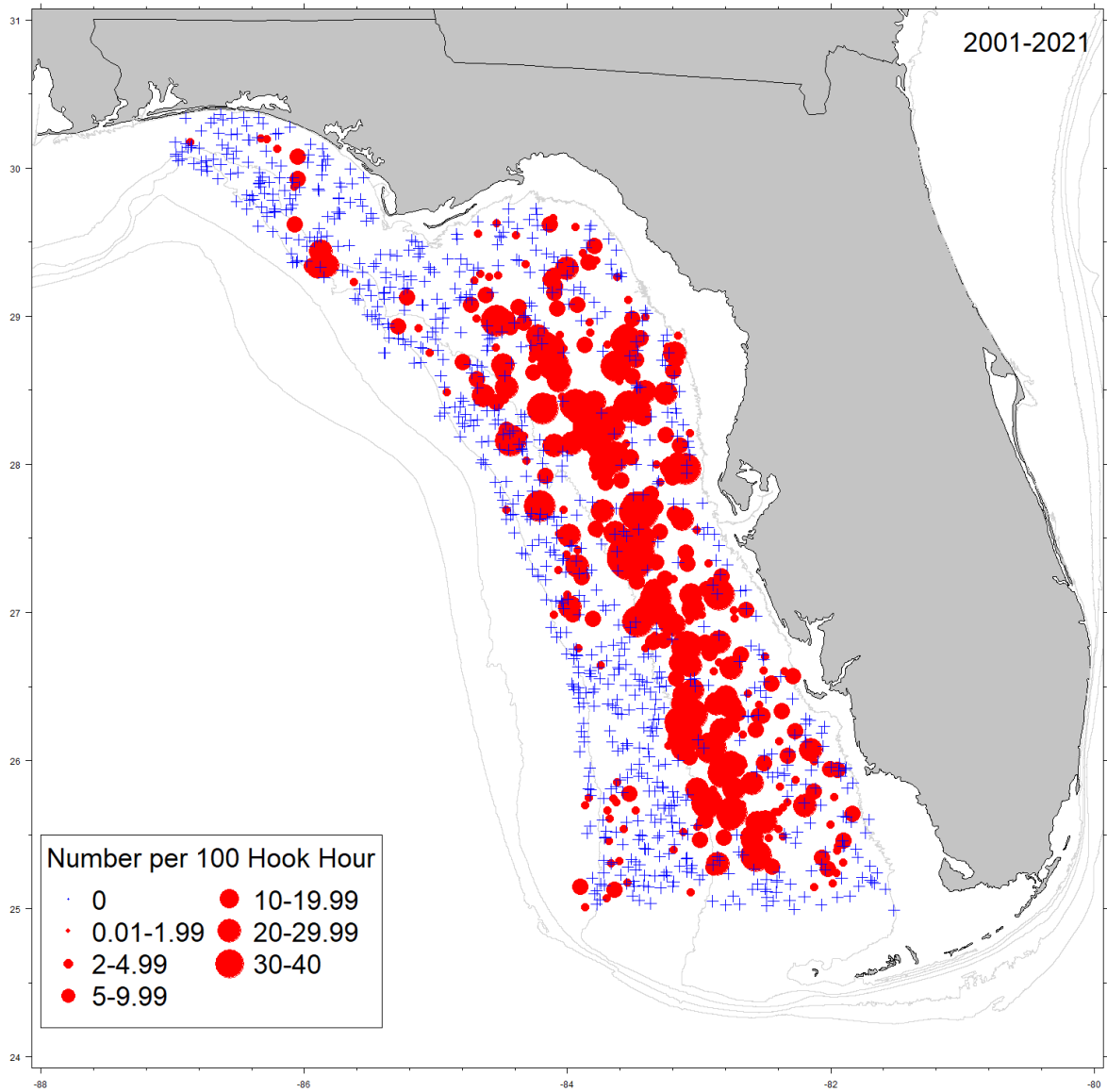


Figure 1. Stations sampled from 2001 to 2021 (limited to the area used for the index) during the NMFS Bottom Longline Survey with the CPUE for red grouper.

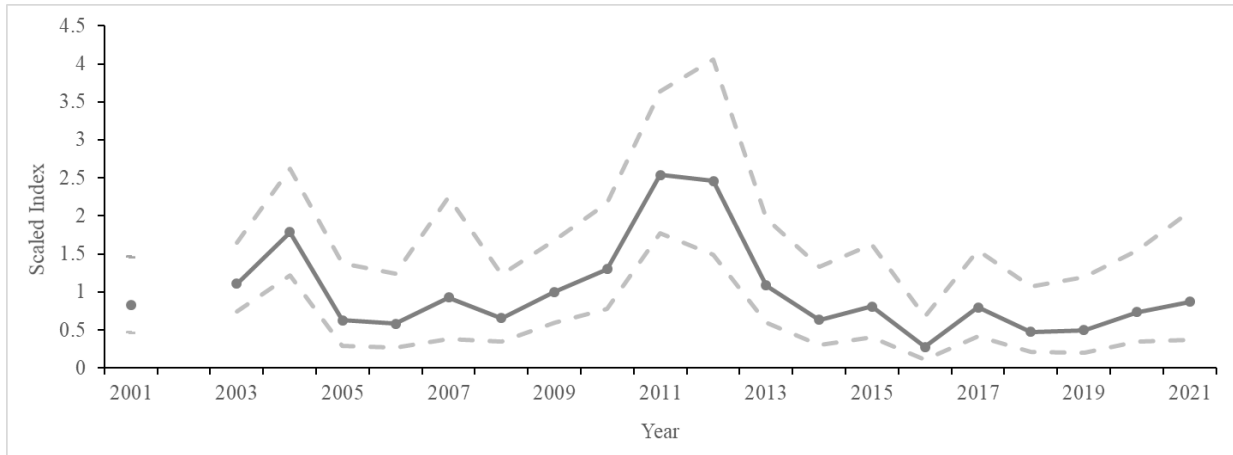


Figure 2. Annual index of abundance (solid line) with the 95% confidence interval (dashed lines) for red grouper from the NMFS Bottom Longline Survey from 2001 – 2021.

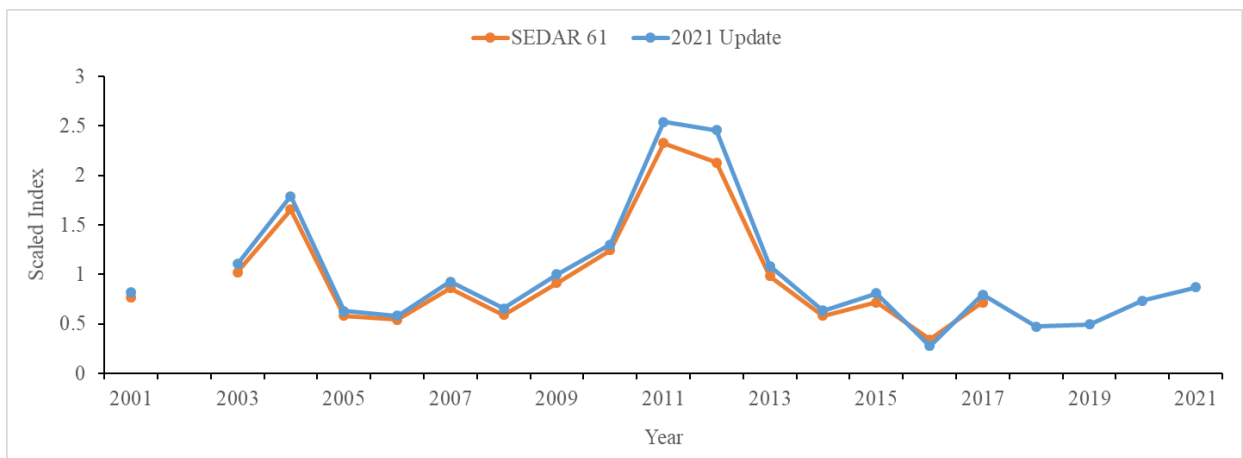


Figure 3. Annual index of abundance for red grouper from the NMFS Bottom Longline Survey from 2001 – 2021 compared to the index of abundance submitted for SEDAR 61.

Appendix

Appendix Figure 1. Annual survey effort and catch of red grouper from the NMFS Bottom Longline Survey (2001-2021).

