

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 2019. Data was limited to those stations completed in the eastern GOM (east of 87° W) and at depths less than 118 m. To date, only four red grouper have been captured westward of this boundary (Figure 1) 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, time of day 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.

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 2001-2019 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	0.76388	0.82706	0.29006	0.46846	1.46018
2002							
2003	0.34188	117	1.00505	1.08817	0.20228	0.72905	1.6242
2004	0.41837	98	1.62519	1.75962	0.19276	1.20092	2.57822
2005	0.25	40	0.55932	0.60558	0.40735	0.27659	1.32588
2006	0.28205	39	0.53043	0.57431	0.39235	0.26945	1.22408
2007	0.19048	42	0.84164	0.91125	0.46517	0.37602	2.20833
2008	0.26667	60	0.5819	0.63003	0.32262	0.33577	1.18217
2009	0.34921	63	0.89705	0.97125	0.26438	0.57752	1.63342
2010	0.32836	67	1.23109	1.33291	0.26584	0.79037	2.24788
2011	0.40164	122	2.30998	2.50104	0.18146	1.74494	3.58477
2012	0.46939	49	2.11043	2.28499	0.25466	1.38406	3.77235
2013	0.34043	47	0.97891	1.05988	0.30573	0.58293	1.92708
2014	0.2619	42	0.56758	0.61453	0.38336	0.29302	1.28879
2015	0.24528	53	0.70594	0.76433	0.36131	0.37934	1.54006
2016	0.18367	49	0.33919	0.36724	0.43636	0.15934	0.84641
2017	0.31818	44	0.70142	0.75943	0.34201	0.39048	1.47698
2018	0.18367	49	0.42752	0.46288	0.42713	0.20412	1.04963
2019	0.20513	39	0.44841	0.4855	0.46053	0.20195	1.16714

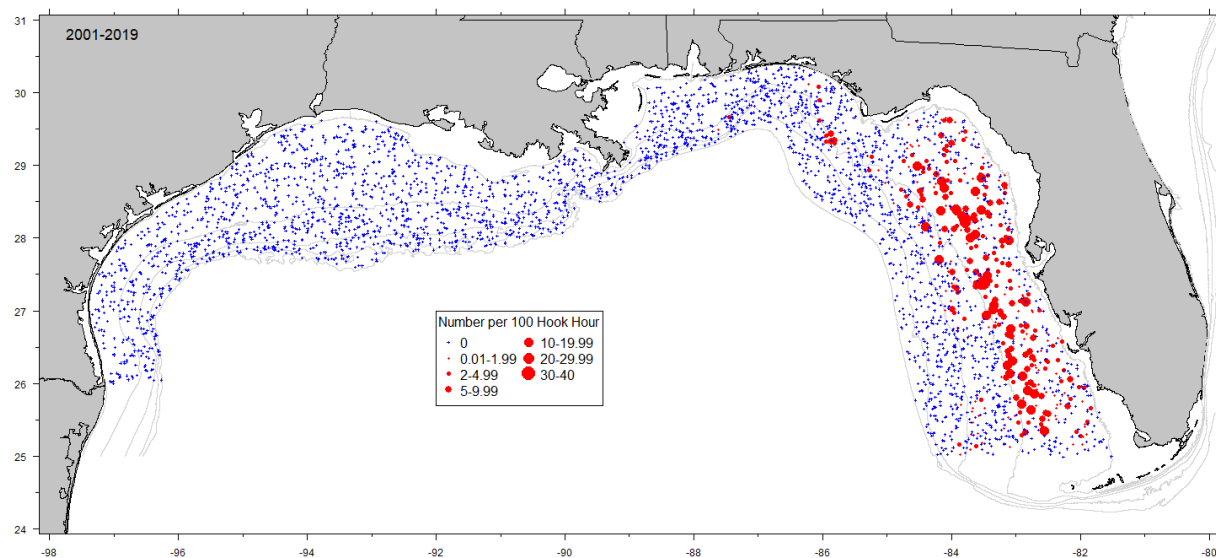


Figure 1. Stations sampled from 2001 to 2019 during the NMFS Bottom Longline Survey with the CPUE for red grouper.

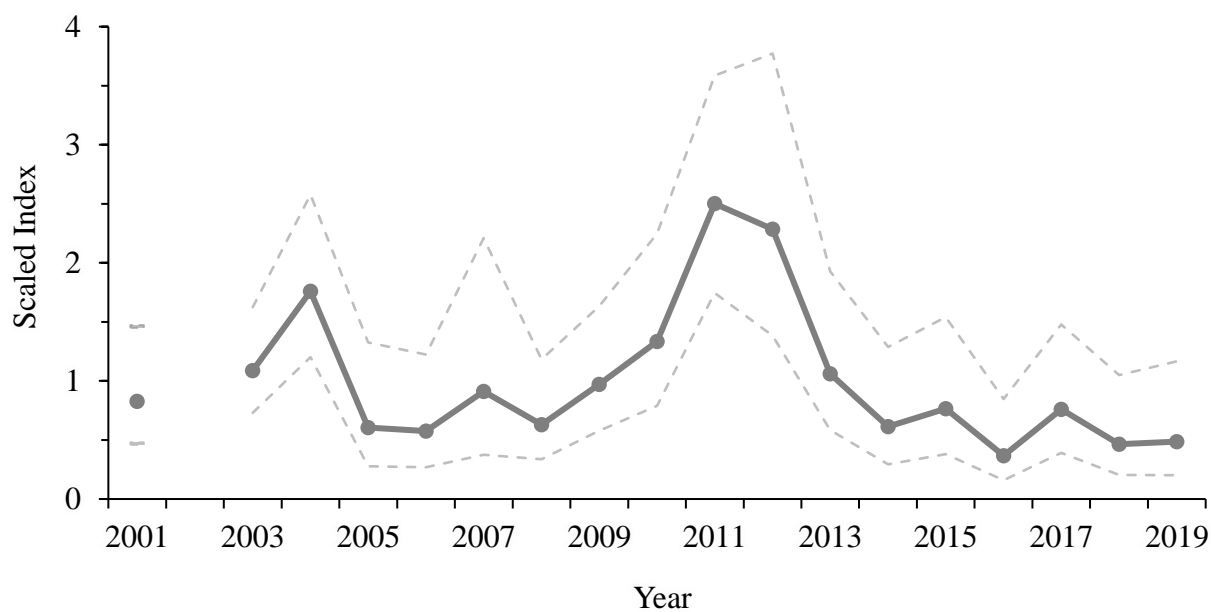


Figure 2. Annual index of abundance for red grouper from the NMFS Bottom Longline Survey from 2001 – 2019.

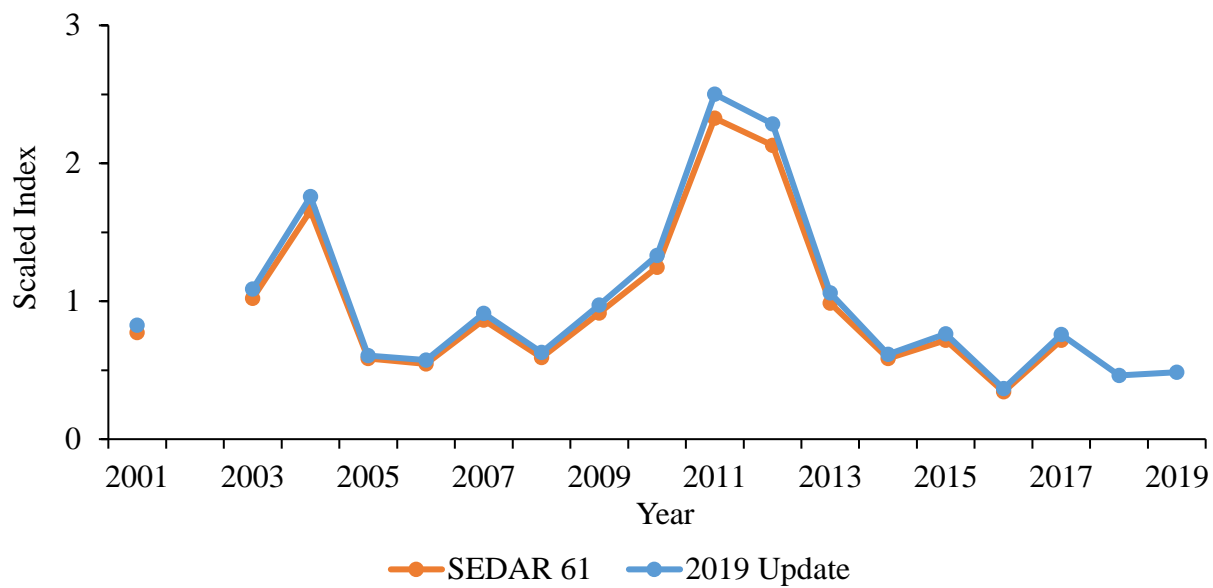


Figure 3. Annual index of abundance for red grouper from the NMFS Bottom Longline Survey from 2001 – 2019 compared to the index of abundance submitted for SEDAR 61.