An Updated Index of Relative Abundance for Red Grouper from the SEAMAP Summer Groundfish Survey in the Northern Gulf of Mexico

Adam G. Pollack

NOAA Fisheries, Southeast Fisheries Science Center,
Trawl and Plankton Branch, Population and Ecosystems Monitoring Division,
Pascagoula, MS

This document serves to update the index of relative abundance for red grouper (*Epinephelus morio*) captured during the Southeast Area Monitoring and Assessment Program (SEAMAP) Summer Groundfish Survey in the Gulf of Mexico (GOM) through 2021. Data were limited to those stations completed in the eastern GOM (east of 86° W) (Figure 1). To date, no red grouper have been captured westward of this boundary in the eastern GOM 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 SEAMAP Summer Groundfish Survey index of red grouper abundance retained year, NMFS statistical zone, amount of sponge and depth in the binomial submodel, while year, NMFS statistical zone, and depth were retained 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.

Due to COVID-19, the SEAMAP Summer Groundfish Survey was not conducted in 2020. In addition, in the 2021, vessel breakdowns prevented the completion of trawling across the full survey area (Appendix Figure 1). However, since there was partial coverage through the area (statistical zones 2 – 5), which was in the area of historically higher abundances of red grouper, the estimate for 2021 should be representative of their relative abundance.

Literature Cited

Pollack, A.G., D.S. Hanisko and G.W. Ingram, Jr. 2018. Red Grouper Abundance Indices from SEAMAP Groundfish Surveys in the Northern Gulf of Mexico. SEDAR61-WP-12. SEDAR, North Charleston, SC. 12 pp.

Table 1. Index of red grouper abundance developed using the delta-lognormal (DL) model for 2009-2021 for the SEAMAP Summer Groundfish 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
2009	0.34711	121	1.48255	2.25368	0.2301	1.43088	3.54964
2010	0.31746	126	0.85167	1.29465	0.24608	0.79716	2.10263
2011	0.2439	123	0.79812	1.21326	0.27207	0.71096	2.07045
2012	0.2809	178	0.87256	1.32641	0.21654	0.86446	2.03522
2013	0.25	128	0.54391	0.82682	0.26432	0.49168	1.39038
2014	0.22619	168	0.56503	0.85892	0.24521	0.52975	1.39264
2015	0.16867	166	0.49509	0.75261	0.27837	0.4358	1.29975
2016	0.25175	143	0.65207	0.99124	0.24714	0.6091	1.61311
2017	0.16406	128	0.45902	0.69777	0.31197	0.37932	1.28358
2018	0.12766	141	0.23564	0.35821	0.33481	0.18664	0.68748
2019	0.14754	122	0.23353	0.35501	0.34212	0.1825	0.69058
2020							
2021	0.32895	76	0.70482	1.07142	0.29618	0.59992	1.9135

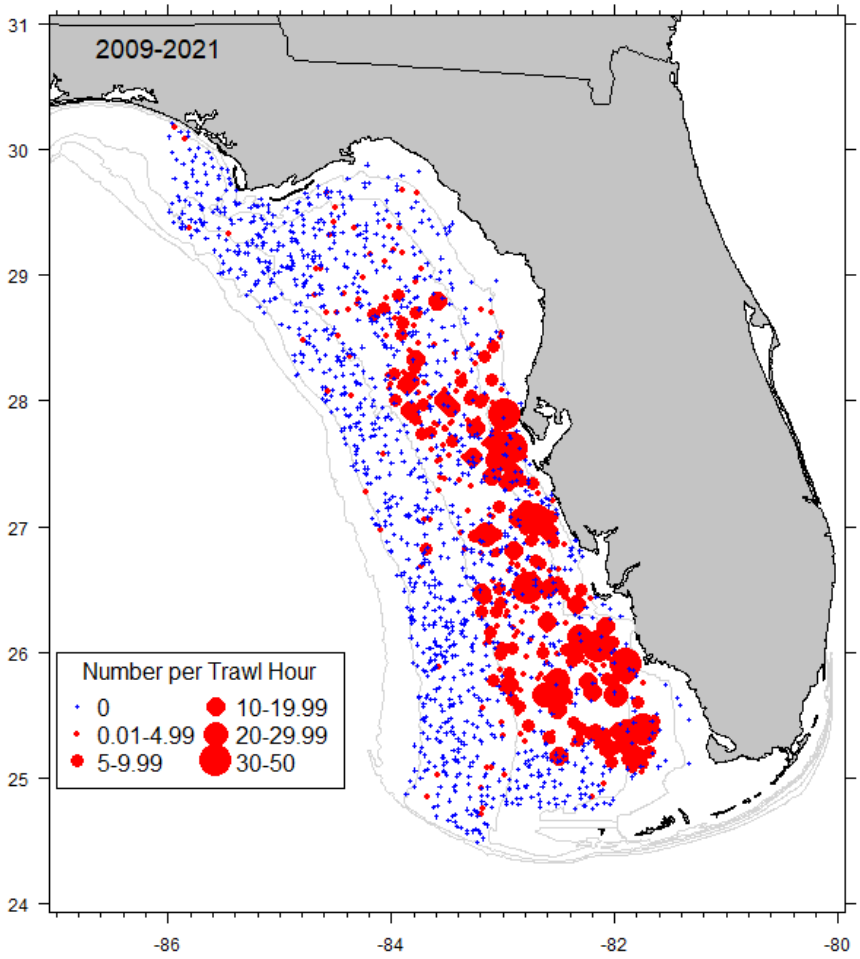


Figure 1. Stations sampled from 2009 to 2021 during the SEAMAP Summer Groundfish Survey with the CPUE for red grouper.

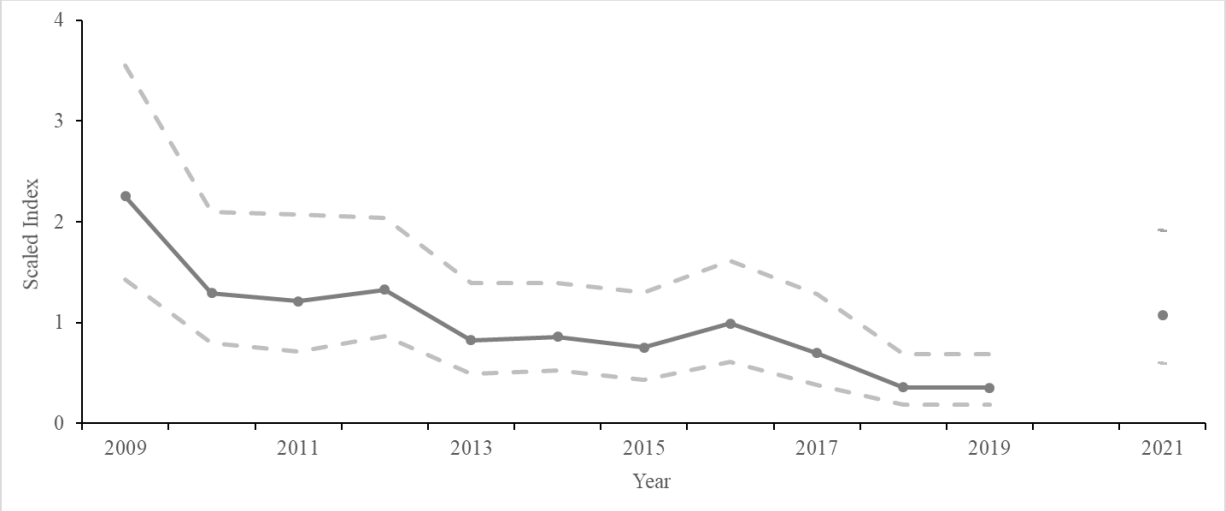


Figure 2. Annual index of abundance (solid line) with the 95% confidence interval (dashed lines) for red grouper from the SEAMAP Summer Groundfish Survey from 2009 – 2021.

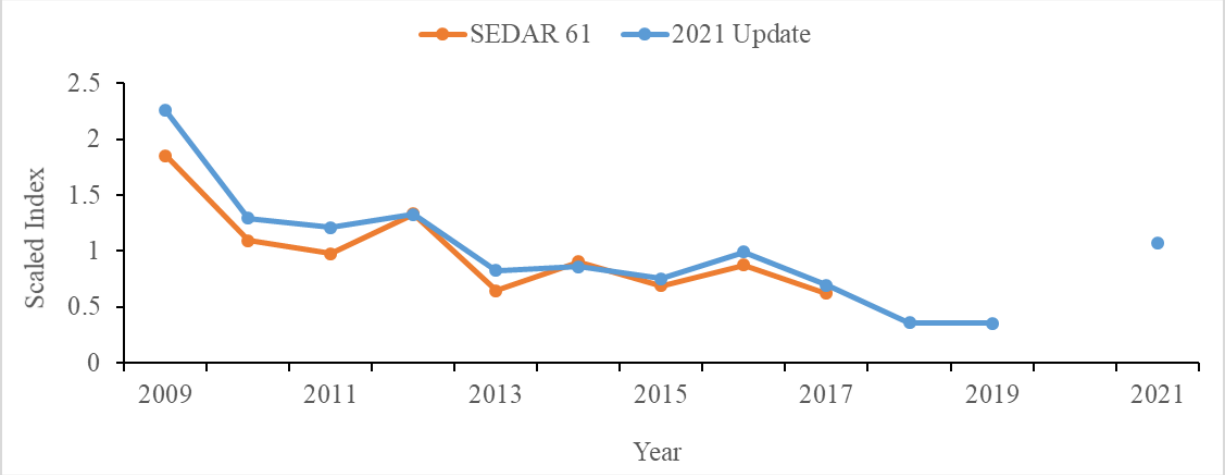
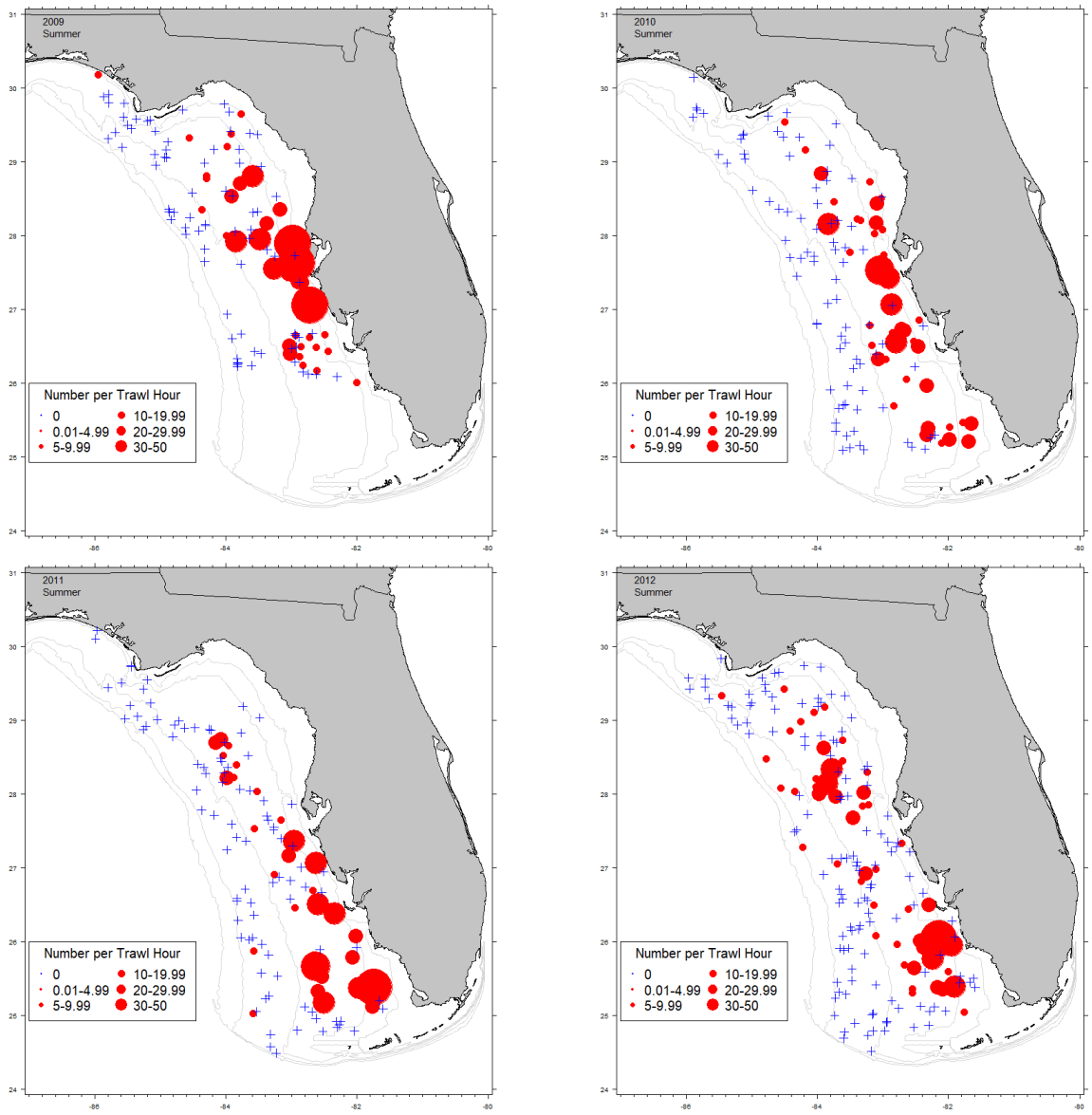
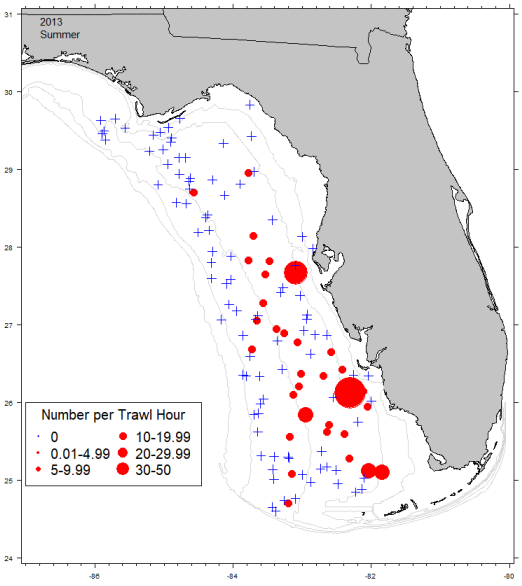


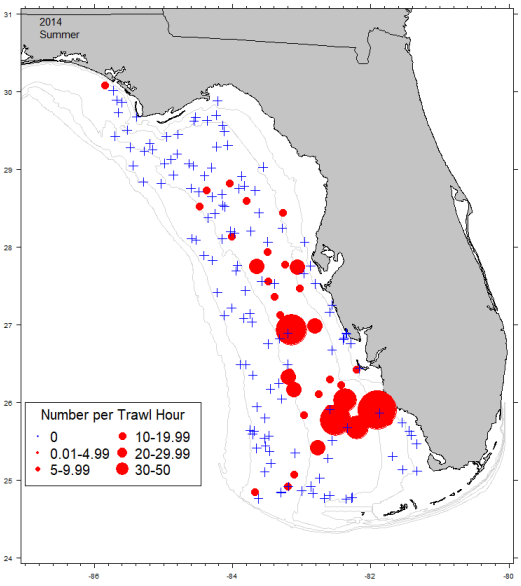
Figure 3. Annual index of abundance for red grouper from the SEAMAP Summer Groundfish Survey from 2009 – 2021 compared to the index of abundance submitted for SEDAR 61.

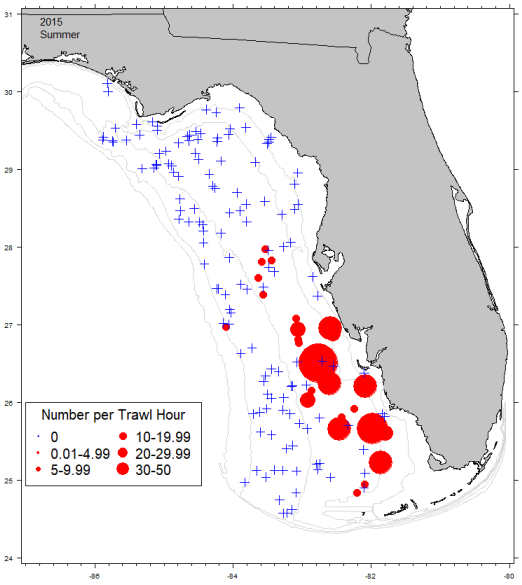
Appendix

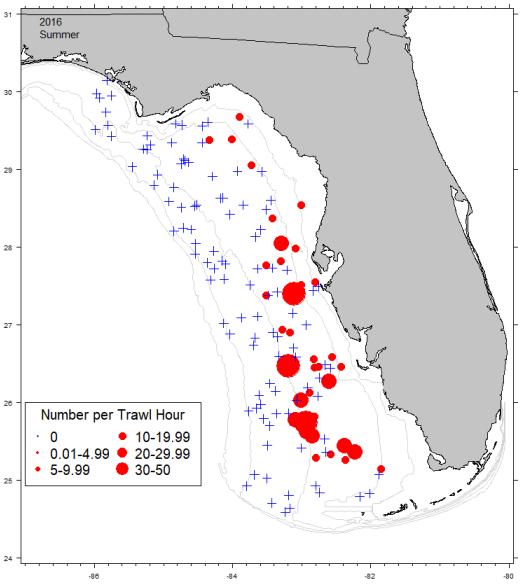
Appendix Figure 1. Annual survey effort and catch of red grouper from the SEAMAP Summer Groundfish Survey (2001-2021). Note that no survey was conducted in 2020.

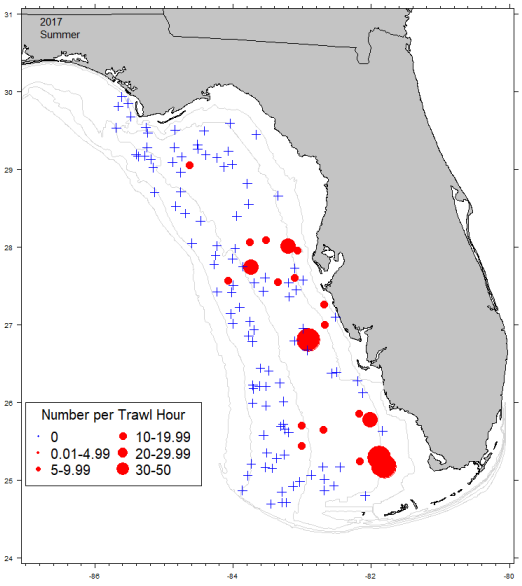


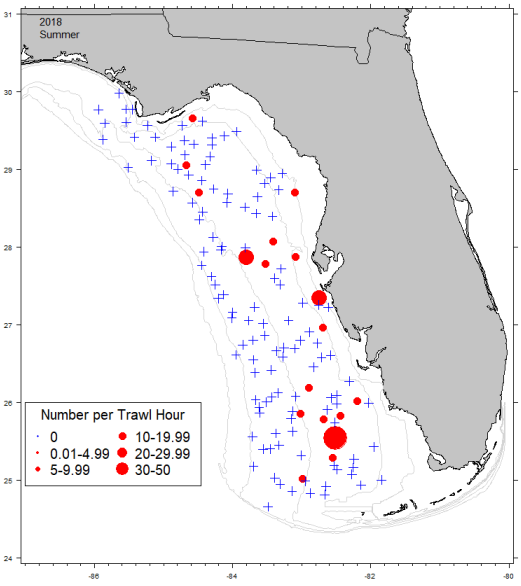

2013
Summer
Number per Trawl Hour
0
0.01-4.99
5-9.99
10-19.99
20-29.99
30-50

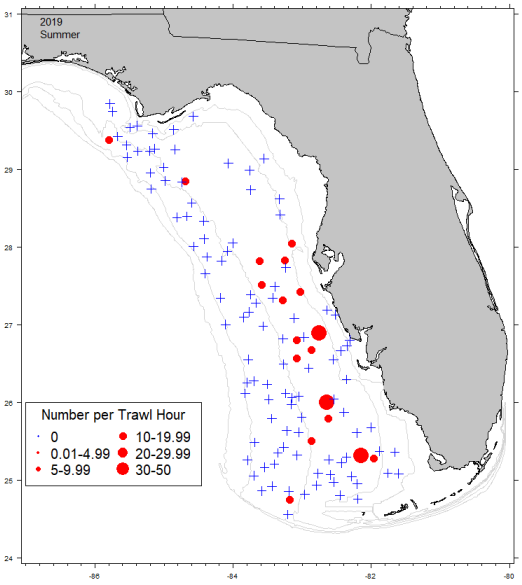

2014
Summer
Number per Trawl Hour
0
0.01-4.99
5-9.99
10-19.99
20-29.99
30-50

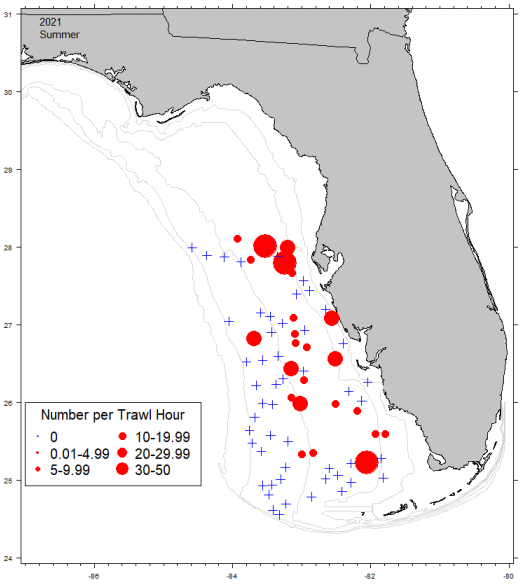

2015
Summer
Number per Trawl Hour
0
0.01-4.99
5-9.99
10-19.99
20-29.99
30-50


2016
Summer
Number per Trawl Hour
0
0.01-4.99
5-9.99
10-19.99
20-29.99
30-50


2017
Summer
Number per Trawl Hour
0
0.01-4.99
5-9.99
10-19.99
20-29.99
30-50


2018
Summer
Number per Trawl Hour
0
0.01-4.99
5-9.99
10-19.99
20-29.99
30-50


2019
Summer
Number per Trawl Hour
0
0.01-4.99
5-9.99
10-19.99
20-29.99
30-50


2021
Summer
Number per Trawl Hour
0
0.01-4.99
5-9.99
10-19.99
20-29.99
30-50