December 4, 2023

To: Administrator@safmc.net
Re: SAFMC Meeting, Dec 2023
Habitat and Ecosystem Report
Guidance for Resubmission of Amendment 10
NOAA-NMFS-2021-0126; Coral_Amendment10_Nov21_508
Public Comment- Comment 3

From:
John K. Reed
Research Professor (retired)
Harbor Branch Oceanographic Institute
5600 U.S. 1, North, Fort Pierce, Florida 34946
Email- johnkreed49@gmail.com

Comment: Trawling- Historical Impacts to Deep-water Oculina Reefs
I am a retired senior research scientist and Research Professor at Harbor Branch Oceanographic Institution, who has studied the deep-water Oculina coral reefs off Florida since their discovery in the 1970s. My research and that of many other scientists have provided data on the associated grouper/snapper fish and invertebrate communities associated with Oculina ecosystem showing the importance of protecting this truly unique ecosystem.

For the past 10 years (2010- 2021) I also have been a Co-Principal Investigator along with NOAA Fisheries scientists on surveys documenting the shelf-edge MPAs with ROV and multibeam sonar from south Florida to North Carolina, including the Oculina coral reefs and OHAPC. In fact, it was on our surveys in 2011 when we documented that the Oculina habitat extended north of Cape Canaveral and nearly up to St. Augustine.

- The trawlers have presented these items to the SAFMC in support of their position to have access to the OHAPC for bottom trawling (Amendment 10 NMFS- SAFMC EA Report Aug 2021.pdf; 5.1.2 Coral AP Comments and Recommendations):
  "Fishermen indicate they 1) often drag very close to obstructions; 2) know how to keep equipment safe and not damage bottom habitat; and 3) want to fish in areas where there is no coral."

  Response: It appears this is not factual based on historical records showing trawling impacts within the OHAPC outlined below.

- Typically, fishers rely on standard chart packs for their navigation. The NOAA multibeam charts and NOAA regional bathymetric charts are not available for their navigation. In other words, they are trawling blind as to what is on the bottom.

- The OHAPC ecosystem consists of various habitat, not just the high relief mounds. The ecosystem consists of high relief coral rubble mounds, individual live coral colonies, standing dead coral, rock pavement, sand, mud, rubble. At night when the trawlers often fish, some species move off the reefs onto the flats. The simple idea that the fishers should only avoid the high relief bottom shown on Multibeam maps is a fallacy. All the habitat within HAPCs and MPAs needs protected.

- 1984- The Oculina HAPC was designated by NOAA specifically to protect the habitat from bottom trawling, long lines, and traps.

- Longlines, fishing lines, trawl nets, and trawl damage were found in the coral habitat in the late 1970s when the first sub surveys were made.

- One trawler stated that they pulled up a 70-pound piece of white branching coral (Oculina) off Daytona (joint meeting of GOM and South Atlantic Fishery Management Councils, Jacksonville, Florida, 1981).

- Roger Pugliese (SAFMC) can verify how 'goat trails' were made by trawlers dragging doors and chain (without) nets to open up habitat (i.e, knock the coral down into rubble) for trawling. This was verified by the trawlers in the first meetings of the original 1984 HAPC discussions. One of the trawlers (who is on the deep shrimp AP), actually told how her family started rock shrimp trawling around 1970 and how they made these goat trails through the coral habitat (Oculina Workshop in Canaveral; pers. comm., A. Shepard, G Gilmore).

- During NOAA funded ROV surveys (2001-2003), observations indicated that poachers (illegal bottom trawlers) continued to trawl illegally within the Oculina HAPC, and illegal bottom fishing continued within the OECA (A. Shepard, NOAA NURC). This included visual sightings of trawlers during the surveys; evidence of recent fishing lines and bottom longlines wrapped around coral colonies and remnants of bottom trawl nets; damaged artificial reef modules; and apparent trawl tracks in the coral rubble.

- Reef modules (reef balls, and pavers with live coral attached) had been damaged or destroyed after 2000 since their placement on coral rubble habitat within the HAPC. It was clear that something had been dragged over them (pers. comm., Sandra Brooke, Chris Koenig).

- Coast Guard (at Coral and Shrimp AP meeting, Oct 2012)- Stated that 20 cases of illegal trawlers were inside OHAPC.

- Coast Guard (Oct 2012)- Stated that prior to the VMS (2003) there were 'all kinds of entries' by trawlers into the OHAPC.

- One of these illegal shrimp trawlers were caught off Fort Pierce by the Coast Guard who impounded the shrimp trawl boat; their plotting gear proved they were trawling inside of the OECA and over coral habitat. A colony of Oculina varicosa coral was found hidden in the stacks of the ship which John Reed identified for the Coast Guard. The haul of the boat was filled with bags of shrimp but also included hard-bottom species such as fish and lobster.

- Historical photographic transects, taken in the 1970s with the *Johnson-Sea-Link* submersibles, provide crucial evidence of the status and health of the reefs prior to heavy fishing and trawling activities. Over 50,000, 35-mm photographs were taken during manned submersible transects in the late 1970s. Portions of these transects were over reefs and were compared to manned submersible video transects of the same areas completed 25 yrs later in 2001. Quantitative analyses of photographic images by point count data reveal drastic loss of live coral cover between 1975 and 2001, and up to 100% loss on some of the reefs (Reed, Koenig, and Shepard. 2007. "Impacts of Bottom Trawling on a Deep-Water Oculina Coral Ecosystem off Florida").

- Since 2000, when the boundaries of the OHAPC were expanded from Sebastian northward to Cape Canaveral, shrimp bottom trawlers have been caught poaching within the boundaries of the original OHAPC (OECA) and in the vicinity of Chapman's Reef and Jeff's Reef, the only remaining live, high-relief coral reefs. Recent dives completed with ROVs within the OHAPC have documented coral reefs wrapped with fishing lines, piles of bottom longlines, discarded trawl nets, and anchor lines (Reed et al., 2005). Bottom trawling within the Oculina ecosystem has been primarily for rock shrimp and brown shrimp.

- Trawling continues to be the primary threat to the ecosystem as evident from recent photographs of trawl nets found on the bottom, destroyed reefball modules, the documented destruction of the Cape Canaveral Oculina bioherm, and evidence of trawl scars in the rubble (Reed et al., 2005). We contend that the original boundaries of the northern OHAPC remain intact to give these threatened reefs the greatest chance for survival.

- Impact in the southeastern U.S. on the Oculina reefs has been documented by:
  Reed, J.K., A. Shepard, C. Koenig, K. Scanlon, and G. Gilmore. 2005. Mapping, habitat characterization, and fish surveys of the deep-water Oculina coral reef Marine Protected Area: a review of historical and current research. Pp. 443-465, In (A. Freiwald, J. Roberts, Ed.), Cold-water Corals and Ecosystems, Proceedings of Second International Symposium on Deep Sea Corals, Sept. 9-12, 2003, Erlanger, Germany, Springer-Verlag, Berlin Heidelberg.

  Koenig, C.C., A.N. Shepard, J.K. Reed, F.C. Coleman, S.D. Brooke, J. Brusher, and K.M. Scanlon. 2005. Habitat and fish populations in the deep-sea Oculina coral Ecosystem of the western Atlantic. American Fisheries Society Symposium 41: 795-805.

  Reed, J. K., C. C. Koenig, and A. N. Shepard, 2007. Impacts of bottom trawling on a deep-water Oculina coral ecosystem off Florida. Bulletin of Marine Science 81: 481–496.

- Worldwide, bottom trawling has severely impacted deep-sea coral reef habitat and continues to be a major concern and threat (Rogers, 1999; Butler and Gass, 2001; Morgan et al., 2003; Barnes and Thomas, 2005; Mortensen et al., 2005).

- Bottom trawling causes severe mechanical damage as evident on deep-water Lophelia coral reefs in the northeast Atlantic (Rogers, 1999; Fosså et al., 2002), hard bottom habitats off the southeastern United States (Van Dolah et al., 1987), and deep-water seamounts off New Zealand and Tasmania (Jones, 1992; Koslow et al., 2001).

- A single pass of a bottom trawl removed 1000 kg of Primnoa coral off Alaska and resulted in the detachment of 27% of the corals (Krieger, 2001).

- ROV surveys of extensive deep-water Lophelia coral reefs off Norway found that 30%–50% of the reefs were damaged from bottom gear; at some sites almost all corals were crushed or dead (Fosså et al., 2002).

References:

Erftemeijer, P. L. A., R. Bernhard, B. W. Hoeksema, and P. A. Todd. 2012. Environmental impacts of dredging and other sediment disturbances on corals: a review. Marine Pollution Bulletin. 64 (9): 1737-1765.

Fourney, F. and J. Figueiredo. 2017. Additive negative effects of anthropogenic sedimentation and

warming on the survival of coral recruits. Scientific reports. 2017 Sep 28;7(1):1-8.

Hoskin C. M., J. K. Reed, and D. H. Mook. 1987. Sediments from a living shelf-edge coral reef and adjacent area off central eastern Florida. Symposium on South Florida Geology Miami Geological Society, Memoir 3. 17pp.

Koenig, C.C., A.N. Shepard, J.K. Reed, F.C. Coleman, S.D. Brooke, J. Brusher, and K.M. Scanlon. 2005. Habitat and fish populations in the deep-sea Oculina coral Ecosystem of the western Atlantic. American Fisheries Society Symposium 41: 795-805.

Miller, M. W., J. Karazsia, C. E. Groves, S. Griffin, T. Moore, P. Wilber, and K. Gregg. 2016. Detecting sedimentation impacts to coral reefs resulting from dredging the Port of Miami, Florida USA. PeerJ 4:e2711, https://doi.org/10.7717/peerj.2711.

Pollock, F. J., J. B. Lamb, S. N. Field, S. F. Heron, B. Schaffelke, G. Shedrawi, and B. L Willis. 2014. Sediment and Turbidity Associated with Offshore Dredging Increase Coral Disease Prevalence on Nearby Reefs. PLoS One 9(7), e102498. [Correction issued 1 November 2016: https://doi.org/10.1371/journal.pone.0165541].

Reed and Farrington, 2011. A Proposal for Extension of the Boundaries of the Oculina Coral Habitat Area of Particular Concern (OHAPC), submitted to South Atlantic Fishery Management Council, 21 pp.

Reed, J.K. and C.M. Hoskin. 1987. Biological and geological processes at the shelf edge investigated with submersibles. Pp. 191-199, In: Scientific applications of current diving technology on the U.S. Continental Shelf, NOAA Symposium Series for Undersea Research, Vol. 2.

Reed, J. K., C. C. Koenig, and A. N. Shepard, 2007. Impacts of bottom trawling on a deep-water Oculina coral ecosystem off Florida. Bulletin of Marine Science 81: 481–496.

Reed, J.K., A. Shepard, C. Koenig, K. Scanlon, and G. Gilmore. 2005. Mapping, habitat characterization, and fish surveys of the deep-water Oculina coral reef Marine Protected Area: a review of historical and current research. Pp. 443-465, In (A. Freiwald, J. Roberts, Ed.), Cold-water Corals and Ecosystems, Proceedings of Second International Symposium on Deep Sea Corals, Sept. 9-12, 2003, Erlanger, Germany, Springer-Verlag, Berlin Heidelberg.