

**Summary  
Joint Meeting of the  
Special Coral Scientific and Statistical Committee  
and Coral and Shrimp Advisory Panels**

**Gulf of Mexico Fishery Management Council  
4107 W. Spruce Street Suite 200  
Tampa, FL 33607**

**Monday, September 16, 2019  
8:30 a.m. – 5:00 p.m.**

The Gulf of Mexico (Gulf) Fishery Management Council's (Council) Coral Scientific and Statistical Committee (SSC), Coral Advisory Panel (AP), and Shrimp AP met on September 16, 2019 in Tampa. The agenda was modified to include two discussion items under Other Business: decline of Kemp's Ridley sea turtle nests in Mexico, discussion on coral habitat. The agenda was approved as amended. Dr. Morgan Kilgour was elected as the Coral AP Chair and Captain Scott Hickman as Vice Chair. The minutes from the August 3–4, 2016 meeting were approved.

***Update on Flower Garden Banks National Marine Sanctuary Expansion***

Mr. Schmahl gave an update on the Flower Garden Banks National Marine Sanctuary (FGBNMS) expansion. The draft Environmental Impact Statement (EIS) was released on June 2016, with preferred Alternative 3 which included 15 reefs and banks and would increase the sanctuary area to 383 square miles. After receiving public input, the Sanctuary Advisory Council (SAC) recommended reducing the proposed expansion area by drawing boundaries more closely around benthic structures to provide protection to coral reef habitat. The Council provided recommendations during the public comment period for both the original preferred alternative and the SAC's recommended boundaries (Appendix A, B, C). The SAC's recommended boundaries will be included as part of the proposed rule, with the final EIS expected to be published in spring 2020. A 60-day public comment period will be held after the rule is published and public meetings will be arranged within during that time period. There are no changes to the fishing regulations proposed in the 2016 draft EIS. The current rules prohibit the possession of any spearfishing gear inside the FGBNMS. However, the SAC recommended to allow breath-hold only spearfishing in the expanded area of the FGBNMS, as public comment indicated high interest in recreational spearfishing of pelagic species. Based on comments received from the National Marine Fisheries Service Highly Migratory Species division, the sanctuary is requesting more information regarding regulations to exempt the use of pelagic longline gear to fish for highly migratory species.

The Shrimp AP inquired about the cost of enforcing the new regulations as part of the proposed expansion. Mr. Schmahl commented that there are no predicted increases in management costs; however, it was also mentioned that federal funding might be approved to increase patrolling for Illegal, Unreported and Unregulated (IUU) fishing out of Galveston which would also include

law enforcement within the sanctuary. Leann Bosarge expressed concern about the implications of delineating multiple “no activity zones” and how potential enforcement definitions might affect shrimp and reef fish vessels that transit through the area to reach their fishing spots. The Committee passed the following motion.

**Motion (Coral SSC, Coral AP, and Shrimp AP): to request that the NOAA sanctuary agency provide the language on transiting through the sanctuary.**

**Motion carried with no opposition.**

After the motion passed, Mr. Schmahl provided the regulatory language for the group to discuss. It was clarified that continuous transit—with prohibited gear that is properly stowed—is allowed.

**15 CFR 922.122(a) (10) Possessing or using within the Sanctuary, except possessing while passing without interruption through it or for valid law enforcement purposes, any fishing gear, device, equipment or means except conventional hook and line gear.**

The Shrimp AP recommended Council representation during the SAC meetings for the Flower Garden Banks and Florida Keys National Marine Sanctuary working groups. Dr. Kilgour participated in some of the SAC boundary expansion working group’s meetings for the FGBNMS expansion.

### ***Update on the Implementation Status of Coral 9***

Ms. Lauren Waters provided an update on the status of Coral Amendment 9. The proposed rule package will be sent to NOAA headquarters the week of September 16, 2019. This action had been delayed while the language from NMFS Highly Migratory Species regulations were modified to be compatible with the regulations proposed in Coral Amendment 9. A Fishery Bulletin about Coral Amendment 9 will be released soon. The Coral AP and SSC requested the link to the Bulletin be provided to them once available.

### ***Florida Keys National Marine Sanctuary Expansion***

Ms. Beth Dieveney, Florida Keys National Marine Sanctuary (FKNMS) staff, presented an overview of the proposed expansion of the sanctuary boundary. The draft EIS was released on August 2019 with a public comment period ending on January 31, 2020. The goal of this expansion is to protect not just coral cover, which has continued to decline, but other habitats important for restoration, foraging, and fish-spawning areas. The Council will have an opportunity to comment at its October 2019 Council meeting.

Advisory Panel and SSC members asked about how this expansion will account for issues related to poor water quality and nutrient load. It was stated that part of the proposal includes considerations for increased communications with the agencies responsible for water quality

monitoring within the FKNMS (e.g., Florida Department of Environmental Protection and U.S. Environmental Protection Agency).

Questions were raised about the difference between “idle/no wake” and “no motor” zones. Ms. Dieveney mentioned that when there was zone overlap with areas under other agencies’ jurisdiction, they tried to use language similar to what those other agencies were using. In areas designated as “no anchor”, there are plans to install mooring buoys. Captain Hickman asked if there have been any discussions about designating trolling speeds. Questions were also asked about the total coral area within the FKNMS. The response was provided in a follow-up email (Appendix D) which states that approximately 585 square miles are considered coral reef habitat within the sanctuary.

Members of the Shrimp AP had several requests for clarification regarding the proposed marine zones, regulations related to fishing/transit/anchoring, and the overall expansion of the sanctuary boundary itself. The Shrimp AP members requested that the data be presented in a way they could more easily identify which areas will still allow shrimping, and that incorporates a better visualization of the electronic logbook data used to monitor shrimp effort. Council staff will coordinate with FKNMS staff to prepare revised maps that could be considered during the Reef Fish AP and Council meetings scheduled in October which will clearly delineate areas where fishing is not allowed.

**Motion (Coral SSC, Coral AP, and Shrimp AP): to request that Council staff include all relevant information regarding shrimp effort point data for the FKNMS expansion, not just the point data in the GMFMC jurisdiction, for consideration for making recommendations about the FKNMS expansion.**

**Motion carried with no opposition.**

Although fishing is allowed in sanctuary waters (except in sanctuary preservation areas and conservation areas), the Shrimp AP was concerned about the sanctuary imposing more restrictive regulations in the future within these expansion areas. Members of the Coral SSC noted that more stringent regulations on shrimp harvest have not been implemented in the current sanctuary boundary in the last 20 years.

When asked about the rationale to expand the sanctuary boundary to include the northwest section of Dry Tortugas (i.e., area between the current Tortugas Ecological Reserves, North and South), FKNMS staff suggested that this decision was made to provide a simpler boundary that could be more easily managed by law enforcement, as well as to protect the biological connectivity between the areas. A similar discussion for the southern portion of the sanctuary boundary focused on the rationale to expand and align with “areas to be avoided” designation. Some members were concerned that this was not a strong rationale to justify the expansion.

The Shrimp AP also recommended Council representation at future FKNMS SAC meetings and working groups. FKNMS staff will present on the proposed expansion at the Reef Fish AP meeting and at the October 2019 Gulf Council meeting. The Shrimp AP made the following two motions.

**Motion (Shrimp AP Only): to oppose the proposed northwestern expansion of the FKNMS boundary.**

**Motion carried with no opposition.**

**Motion (Shrimp AP Only): the Shrimp AP is not in favor of the FKNMS southern boundary expansion.**

**Motion carried with no opposition.**

***Presentation of Stony Coral Tissue Loss Disease***

Mr. Rob Ruzicka, presented information on the Stony Coral Tissue Loss Disease (SCTLD) and the efforts of the state of Florida to treat and prevent the spread of the disease. His presentation provided information on SCTLD including transmission method and areas where corals were first identified with this disease. Mr. Ruzicka stated that the SCTLD is a water-borne disease and was first recorded on stony corals near Government Cut in Miami-Dade County in 2014. The disease has continued to spread southward, towards Key West and other reefs in the Caribbean, including Mexico, Jamaica, Belize, Dominican Republic, and the U.S. Virgin Islands. The direction of disease spread is opposite to the prevailing water currents (i.e., Loop Current, Florida Current, and Gulf Stream) suggesting that disease transport is not entirely dependent on prevailing ocean flows. To date, mostly shallow reefs in the Florida Keys and other Caribbean countries are affected, although lesions have been recorded on mesophotic corals adjacent to the USVI. The disease has not yet been reported in the Flower Garden Banks. A pathogen causing the infection has not been identified, but elevated sea surface temperatures, dredging of the Miami Port, and possible transport by divers, cruise and cargo-ships have been linked to the spreading trends of the disease. Of the approximate 50 coral species recorded in the Florida Keys, at least 20 have shown susceptibility to SCTLD, including species listed as threatened under Endangered Species Act.

Federal and state agencies along with other private partnerships are working to develop treatment methods. Additionally, wild corals have been harvested for cultivation and reproduction in captivity; the goal is to re-plant them in the Florida Keys to help restore reef structure and coral biodiversity. Members had questions about the types of environmental stressors that affect corals, such as elevated sea surface temperature, and inquired about the causes of coral bleaching events.

***Coral Reef Conservation Program Update***

Dr. Basher gave an overview of products and services produced as part of the current Coral Reef Conservation Program grant to the AP and SSC members. Members were encouraged to use available outreach materials and requested to provide feedback on products, services, and the new Coral Portal. Public release of the new Coral Portal will occur after an update is given at the Council meeting in October 2019.

***Discussion on the Decline of Kemp's Ridley Sea Turtle***

A presentation was provided outlining concerns about the decline in nesting activity of the Kemp's Ridley sea turtle over the last two years (2018 – 2019). Dr. Benny Gallaway noted that the last stock assessment for this species was conducted in 2013. The Shrimp AP recommended research on the stock status and possible causes of this decline.

**Motion (Coral SSC, Coral AP, and Shrimp AP):** Given the unexpected substantial declines in nesting activity in Mexico in 2018 and 2019, there is a critical need for a stock assessment update for Kemp's Ridley sea turtles performed by competent sea turtle experts. This stock assessment should address, among other things, if, how and to what degree density dependence, the 2010 Deep Water Horizon spill, and marine debris may be contributing to this decline.

**Motion carried with no opposition.**

***Discussion on Coral Habitat***

Captain Scott Hickman noted the importance of protecting coral habitat as this is linked to sustaining fish populations, thus leading a discussion about the status of Coral Amendment 10. Members of the Shrimp AP were concerned about the effects that zone closures, which could be included in Coral 10, would have on the shrimp industry.

**Motion (Coral AP and Coral SSC Only):** to have the Gulf Council start work on Coral Amendment 10.

**Motion carried with no opposition**

The meeting was adjourned at 5:10 pm.

**Participants**

**Coral AP**

Morgan Kilgour, *Chair*  
Scott Hickman, *VC*  
John Paul Brooker  
Shelly Krueger  
Rob Ruzicka  
Portia Sapp

**Special Coral SSC**

Sandra Brooke  
Paul Sammarco  
George Schmahl

**Shrimp AP**

William (Corky) Perret, *Chair*  
Steven Bosarge, *VC*  
Thu Bui  
Glenn Delaney (webinar)  
Gary Graham  
Harris Lasseigne  
Lance Naccio  
Franklin Parker  
Thomas Shultz  
John Williams

**Council Member**

Leann Bosarge

**Council Staff**

Natasha Mendez-Ferrer  
Zeenatul Basher  
Matthew Freeman  
Carrie Simmons  
John Froeschke  
Lisa Hollensead  
Camilla Shireman  
Charlotte Schiaffo  
Bernadine Roy  
Jessica Matos

**Others**

Lauren Waters, NMFS  
Beth Dieveney, FKNMS  
Stephen Werndli, FKNMS  
Sue Gerhardt, NMFS  
Frank Helies, NMFS  
Kelli O'Donnell, NMFS  
David Dale, NMFS  
Benny Gallaway, LGL  
Kenneth Daniels, S.O.F.A.

## Appendix A



# Gulf of Mexico Fishery Management Council

*Managing Fishery Resources in the U.S. Federal Waters of the Gulf of Mexico*

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August 18, 2016

006565 AUG 20 16

George Schmahl, Superintendent  
Flower Garden Banks National Marine Sanctuary  
4700 Ave. U, Bldg 216  
Galveston, Texas 77551

Re: Comments on the Draft Environmental Impact Statement: Sanctuary Expansion

Dear Mr. Schmahl:

Thank you for your presentation on the expansion of the Flower Garden Banks National Marine Sanctuary (FGBNMS) at the June 2016 Gulf of Mexico Fishery Management Council (Council) meeting. This letter focuses on the content and analyses contained in the Draft Environmental Impact Statement (DEIS) of the proposed expansion since the Council has until December to comment on the proposed regulations in the sanctuary; those will be submitted in a separate document. The Council supports examining regulations that may differ from traditional sanctuary regulations due to the significant size of this expansion. Additionally, the comments in this letter strictly pertain to the FGBNMS's preferred Alternative 3. The Council does not support the expansion proposed in Alternative 4 nor Alternative 5 as the Council agrees with the FGBNMS assertion that Alternative 4 and Alternative 5 are outside the current operational capacity of the FGBNMS.

The Council appreciates that there has been new information and emerging technology that have allowed for better identification of deep-water corals and deep-water features (anything greater than 100 m). The biological analyses contained in the document are thorough, and the Council recognizes that this was a tremendous effort from the sanctuary staff. Additionally, the methodological approach that the FGBNMS took when reviewing and determining the areas that were biologically significant is transparent and easily understandable.

The Council has some concerns over the extent of the proposed expansion. The FGBNMS is proposing to expand the sanctuary footprint over six times its current size. The proposed boundaries represent a preference towards straight lines which are outside of the recommendations of the FGBNMS Advisory Council. The Council has also received feedback from law enforcement preferring discrete straight-lined boundaries when potential boundaries for habitat areas of particular concern were discussed. However, in speaking with fisherman, because of advances in technology, it seems that irregular polygons are no longer the obstacles that they once were, and that an irregular shape that minimizes impact to fishing while maximizing protection for sensitive areas would be feasible and ideal. Three areas have already been identified as needing small boundary revisions by the Council's advisory panels. The Council requests that the northern boundary of MacNeil Bank, the northern boundary of Sonnier

Bank, and the northeastern boundary of the Bouma Bank complex be redrawn to minimize overlap of shrimp electronic logbook tracks that are not anticipated to impact corals and associated habitats. The Council recommends that the FGBNMS reconsider expanding Stetson Bank from its current sanctuary boundaries. In an effort for complete transparency, the Council recommends that the FGBNMS DEIS include the coordinates for all proposed alternatives. Without location coordinates, fishermen and other stakeholders will not be able to evaluate whether the borders of the proposed expansion affect them.

In the DEIS, it is presented that staff have documented fishing gear on several of the outlined banks in terms of debris or anchor scars. The Council would like to remind the FGBNMS that not all anchor scars are caused by fishing vessels and not all debris is deposited from fishing vessels. For example, on McGrail Bank, it was noted that there was fishing debris and damage (lost anchors and mechanically overturned coral heads, and a trawl scar) as well as marine debris that could very well be attributed to oil and gas exploration and storm surge. From the information provided in the appendix, Alderdice, Geyer, and Bright Banks were the only banks to not have a platform or pipeline running through the proposed boundaries. The Council feels that oil and gas exploration with the longevity of continuous extraction, large infrastructure placed on the seafloor, and constant to and fro of vessel traffic should not be disregarded though many of the regulations and analyses minimize these long-term effects in the DEIS. The Council is concerned that though this was mentioned, it could be interpreted that fishing is considered as the major threat to many of these areas. It seems that if these areas are sensitive, all potentially damaging extractive uses should be prevented, not just fishing.

The Council appreciates that the FGBNMS is trying to mitigate effects on fishing vessels by providing mooring buoys for boats. Unfortunately, anchoring mooring buoys may cause a hardship for many of the fisherman that currently use these areas. A mooring buoy restricts the access to the whole areas and instead concentrates all effort within a radius around the buoy which may not be in the ideal area for fishing. It may change the behavior of fishermen if they are unable to anchor resulting in the use of heavier fishing weights which may impact the seafloor and reefs. The Council urges the FGBNMS to use multiple buoys over large areas and to make the buoy installation a priority to help alleviate any hardship on stakeholders that may be displaced. Safety at sea is also a concern for both recreational and commercial fishermen as holding a vessel over a reef (as opposed to anchoring) increases chances of gear entanglement with propellers especially during rough sea conditions. As a result of this entanglement, fishing debris may increase on the sea floor and reefs.

The Council recommends the FGBNMS convene the FGBNMS Advisory Council as soon as possible to comment on the DEIS as the FGBNMS Advisory Council had last provided input on the proposed expansion in 2007. While the Council acknowledges that the preferred Alternative 3 takes the Advisory Council's recommended criteria and applies those criteria to a significantly larger body of scientific work, the Council has some hesitation about the fact that the FGBNMS Advisory Council was not convened to comment on the new information and the new proposed boundaries.

The Council acknowledges that many of these areas identified in the document are already considered HAPCs (though many without regulations). The Council also encourages the staff of the FGBNMS to share with Council staff any new information including coral and habitat information that the FGBNMS has compiled so that it may be included to the Council's coral portal. The Council is currently conducting its 5 year EFH review, and new information is helpful to make the most informed management decisions. It seems that the FGBNMS has much



data that could be useful in aiding the Council in this endeavor.

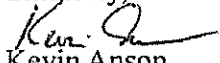
The Council recognizes the value of the economic and social use studies of the areas in proposed Alternative 3. However, the Council is concerned that while over 500 vessels were identified as being active in the proposed expansion during the 2003-2007 period, only 76 were surveyed post 2010. Additionally, the document is ambiguous regarding survey results. The Council is also concerned with the lack of analysis regarding recreational fishing activities within the FGBNMS expansion areas and requests that the sanctuary conduct this analysis. The Council appreciates the use of the "willingness to pay" survey, but also cautions that the closure of these areas may have several unforeseen consequences to the fishing industry that would outcompete a hypothetical willingness to pay.

The Council also has concerns on the summary of the anticipated impacts. It is not clear from the discussion how the expansion of the sanctuary will be economically and socially beneficial. It is unclear to the Council why the shrimp electronic logbook data were not considered in the expansion analyses beyond mere mention. The Council is also concerned that the FGBNMS determined that there would be less than significant adverse impacts on fisherman because of the determination there would be only a spatial substitution of fishers (i.e. they would just fish elsewhere). The Council cautions that this is only true if similarly biological areas with similar fish densities and ease of access are relatively near and that the displacement of said fishers doesn't create unnecessary hardship for access. Additionally, the DEIS states that the effects for commercial fishers would be beneficial, but the Council does not necessarily agree that this statement is substantiated by the information presented in the DEIS. The Council is very concerned that the displacement of commercial fishers in these areas was discounted and has concerns that the socioeconomic analyses were too limited in scope and conclusions.

The Council also feels that while there was sufficient rationale for excluding particular areas for consideration (distinct differences in threats and biology), there was a failure to consider alternate regulatory regimes for the proposed expanded areas.

Thank you for the opportunity to comment on the DEIS. The Council understands that this has been a tremendous effort and recognizes that the FGBNMS has significantly increased our understanding of the biological communities of the northwestern Gulf of Mexico.

Sincerely,



Kevin Anson  
Council Chairman

cc: Gulf Council  
Billy Causey  
Cindy Meyer  
Council staff

## Appendix B



# Gulf of Mexico Fishery Management Council

*Managing Fishery Resources in the U.S. Federal Waters of the Gulf of Mexico*

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November 08, 2016

006578NOV2016

George Schmahl, Superintendent  
Flower Garden Banks National Marine Sanctuary  
4700 Ave. U, Bldg 216  
Galveston, Texas 77551

Re: Comments on the Proposed Regulations for the Draft Environmental Impact Statement (DEIS):  
Sanctuary Expansion

Dear Mr. Schmahl:

Thank you for your attendance at the past three Gulf of Mexico Fishery Management Council (Council) meetings and providing information to the Council. This letter is accompanied by a white paper entitled "Evaluation of Regulations for the Expansion of the Flower Garden Banks National Marine Sanctuary" that includes the Council's recommendations and comments on the proposed regulations for the proposed Flower Garden Banks National Marine Sanctuary (FGBNMS) expansion. Additionally, the Council's recommendations on the regulations strictly pertain to the FGBNMS's Preferred Alternative 3. The Council does not support the expansion proposed in the DEIS for Alternative 4 nor Alternative 5 as the Council agrees with the FGBNMS assertion that Alternative 4 and Alternative 5 are outside the current operational capacity of the FGBNMS.

The Council urges the FGBNMS to consider a tiered approach to management of the FGBNMS as outlined in the attached white paper. The Council proposes that the first tier coincide with existing BOEM no activity zones and to make these areas into "no bottom tending gear" zones. Traditional hook-and-line fishing (including bandit rigs) would be allowable in these zones. The second tier would be the area outside the BOEM no activity zones but inside the boundaries of the proposed FGBNMS expansion. This tier would allow bottom tending gear and anchoring but would exclude bottom trawling, traps, and dredges. The third tier would be outside the boundaries of the proposed expansion and would not have any FGBNMS imposed regulations. The Council also recommends related endorsements, anchor restrictions, and mooring buoys.

The Council also requests that the FGBNMS include Council staff on any working groups regarding future regulatory or spatial analyses and welcomes further discussion of the regulations with the FGBNMS staff as noted, by you, at the October 2016 Council meeting.

Sincerely,

Leann Bosarge  
Council Chairman  
cc: Gulf Council  
Billy Causey  
Cindy Meyer  
Council staff



## Appendix C

# Gulf of Mexico Fishery Management Council

*Managing Fishery Resources in the U.S. Federal Waters of the Gulf of Mexico*

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November 7, 2018

006730NOV2019

George Schmahl, Superintendent  
Flower Garden Banks National Marine Sanctuary  
4700 Ave. U, Bldg 216  
Galveston, Texas 77551

Re: Revised Comments on the Proposed Regulations for the Draft Environmental Impact Statement (DEIS): Sanctuary Expansion

Dear Mr. Schmahl:

Thank you for your presentation on the Flower Garden Banks National Marine Sanctuary (FGBNMS) Advisory Council's (SAC) recommendation for sanctuary expansion at the August 2018 Gulf of Mexico Fishery Management Council (Council) meeting. The Council requested that its staff provide a summary of the fishing activity in the areas recommended by the SAC, as these boundaries were markedly different from the boundaries in the Draft Environmental Impact Statement (DEIS) on which the Council had previously provided recommendations. The Council supports the new SAC boundaries for the FGBNMS expansion and would also recommend an alternative set of fishing regulations to go along with these modifications. The Council's original fishing regulations recommendations for the proposed area used a tiered approach for the DEIS preferred alternative 3. These recommendations no longer seem sensible when applied to the new SAC recommended areas. Thus, this letter provides the Council's recommendations on fishing regulations for the areas outlined by the SAC.

The Council recommends that the current fishing regulations of the FGBNMS extend into the expanded area; however, with one major exception, that is spearfishing in the expanded area be allowed. This recommendation is consistent with the SAC recommendations. The Council still recommends related endorsements for fishing in the sanctuary, anchor restrictions, and placement of mooring buoys. Lastly, the Council discussed the use of bandit rig gear in the FGBNMS and some members advise that the FGBNMS investigate the potential impact that the weights used in bandit-rig fishing could have on coral.

The Council appreciates the opportunity to provide the FGBNMS with comment and your participation in the Council process. Should the FGBNMS move forward with preferred alternative 3 outlined in the DEIS, the Council maintains its recommendations in the letter dated November 8, 2016 for that alternative.

Sincerely,

A handwritten signature in black ink, reading "Thomas R. Frazer".

Tom Frazer, Ph.D.  
Council Chairman

cc: Gulf Council  
Council staff  
Sanctuary leadership

## Appendix D

**From:** [Stephen Werndli - NOAA Federal](#)  
**To:** [Sandra Brooke Ph. D. \(sbrooke@fsu.edu\)](#)  
**Cc:** [Natasha Mendez-Ferrer](#); [Beth Dieveney \(beth.dieveney@noaa.gov\)](#)  
**Subject:** Coral Reef Area within FKNMS  
**Date:** Wednesday, September 18, 2019 2:22:06 PM  
**Attachments:** [FKNMS Coral Reef Habitat.pdf](#)

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Hi Sandra,

During the meeting this week you asked how much coral reef area was within FKNMS and I indicated I would get back to you. Based on GIS data available from [FWC's Unified Reef Tract Map](#) there is approximately 585 square miles of coral reef habitat (see attached map). This is based on habitat designated in Unified Class Level 0 Coral Reef and Hardbottom. A detailed list of the specific habitat types included in that Class Level can be found [here](#) (page 4).

This is an underestimate due to the fact that the Unified Reef Tract Map does not cover most of the sanctuary to the north and west of the Marquesas Keys, including Tortugas Ecological Reserve North and South.

Unfortunately I don't have other processed or consolidated GIS data that would allow me to come up with a better estimate.

Please let me know if you have any questions or need additional information.

Thanks,

Steve

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**Stephen M. Werndli**

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[Stephen.Werndli@noaa.gov](mailto:Stephen.Werndli@noaa.gov)

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Unified Florida Reef Tract Unified Class Level 0  
Coral Reef and Hardbottom Habitat  
Version 2.0 December 2016

