Brief Summary – Habitat and Developing Spatial Species Information for Blueline Tilefish in the South Atlantic Region

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SEDAR50-DW01

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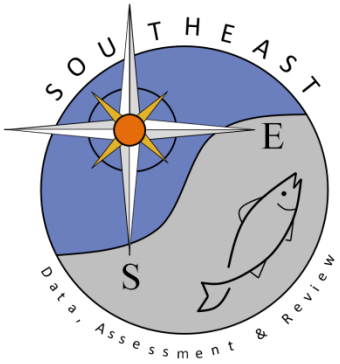

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Brief Summary – Habitat and Developing Spatial Species Information for Blueline Tilefish in the South Atlantic Region:

Roger Pugliese, SAFMC May 9, 2016

Blueline Tilefish in the Snapper Grouper Species Complex

SAFMC Habitat Plan (SAFMC, 1998a) and Comprehensive EFH Amendment (SAFMC, 1998b)

3.3.3.3.2 Snapper Grouper Species and the Deepwater Community (summarized from Parker and Mays, In press)

There are 19 economically important species of reef fish in the deepwater (100-300 m) fishery of the southeastern United States (Figure 42). The five species that make up over 97% of the catch by weight are tilefish, Lopholatilus chamaeleonticeps, snowy grouper, Epinephelus niveatus, blueline tilefish, Caulolatilus microps, warsaw grouper, Epinephelus nigritus, and yellowedge grouper, E. flavolimbatus. Less is known of the life histories of deep reef fishes than for any other group supporting a major fishery. The depth and strong currents, often to 3 knots, preclude observations by SCUBA divers and make submersible observations difficult. Distance from shore of these open ocean habitats and usually inclement weather make incidental and anecdotal observations and reports about the fish and their habitat extremely rare. Although hook and line and longline gear have been used successfully to capture some deepwater reef fishes, little is known about rare or hard to catch species. "Overall, the deep reef fish community probably contains less than 100 species. From submersible operations off NC, Parker and Ross (1986) observed 34 species of deepwater (98 to 152 m) reef fishes representing 17 families and described the behavior of species from eight families. Gutherz et al. (1995) observed 27 species of deepwater (185 to 220 m) reef fishes from submersibles off South Carolina in 1982. There were obvious differences (probably depth related) in abundance of the most common species of fish observed from the submersible from North Carolina to South Carolina. Parker and Mays (In press) present life history summaries including species composition, distribution, preferred habitat, spawning periodicity, and associated fishes and benthos for 14 species. Observations during three submersible dives in May 1992 on the abundance and distribution of deepwater reef fishes important to fisheries were compared to the above surveys. At the Big Rock or Charleston Lumps there were apparent increases in abundance (fish/ha) over time of scamp, Mycteroperca phenax (5 to 45), blueline tilefish (23). Also in the Charleston Bump area, there was an apparent decrease in snowy grouper (9 to 2). Although the recent data are sparse, they show that at least seven of nine economically important species, previously observed from submersibles, have survived intense fishing pressure at these locations. Twenty active or retired fishermen (headboat operators and commercial fishermen who employed vertical hook and line or longline gear) from Cape Hatteras, NC to Key West, FL described the deep reef fishery in their areas. According to fishermen, coast wide stocks (usually at depths between 100 and 175 m) of yellowedge grouper, Epinephelus flavolimbatus, warsaw grouper, bigeye, and barrelfish were

depleted before snowy grouper. Snowy grouper were most often caught between 110 and 155 m, but were sometimes taken from shallow water (<30 m) as they spawned off the Florida Keys. Tilefish usually produced monospecific catches from deeper waters, 175 to 300 m. Three areas have been unproductive for tilefish: the areas from 1) just below Cape Hatteras, NC to Cape Romain, SC, 2) Bellville, GA to St. Augustine, FL, and 3) Marathon, FL to Key West, FL. Some fishermen believe this is because they have not yet determined when tilefish migrate through these areas, although tagging studies and submersible observations of tilefish and their burrows do not give evidence of migration (Grimes et al., 1983). There is little commercial fishing by United States fishermen for deepwater species between Ft. Pierce and Homestead, FL because the area is congested with domestic recreational and Bahamian (commercial and recreational) fishermen. Florida fishermen feared revealing "secrets" and were particularly vague about descriptions of the fishery in their area."

Designated EFH and EFH for the Snapper Grouper Complex

"3.3.3.4 Essential Fish Habitat and Environmental Requirements Essential fish habitat for snapper-grouper species includes coral reefs, live/hard bottom, submerged aquatic vegetation, artificial reefs and medium to high profile outcroppings on and around the shelf break zone from shore to at least 600 feet (but to at least 2000 feet for wreckfish) where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including Sargassum, required for larval survival and growth up to and including settlement. In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse snapper grouper larvae. For specific life stages of estuarine dependent and nearshore snapper-grouper species, essential fish habitat includes areas inshore of the 100-foot contour, such as attached macroalgae; submerged rooted vascular plants (seagrasses); estuarine emergent vegetated wetlands (saltmarshes, brackish marsh); tidal creeks; estuarine scrub/shrub (mangrove fringe); oyster reefs and shell banks; unconsolidated bottom (soft sediments); artificial reefs; and coral reefs and live/hard bottom.

3.3.3.5 Essential Fish Habitat-Habitat Areas of Particular Concern for the Snapper Grouper Species Complex Areas which meet the criteria for essential fish habitat-habitat areas of particular concern (EFH-HAPCs) for species in the snapper-grouper management unit include medium to high profile offshore hard bottoms where spawning normally occurs; localities of known or likely periodic spawning aggregations; nearshore hard bottom areas; The Point, The Ten Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump (South Carolina); mangrove habitat; seagrass habitat; oyster/shell habitat; all coastal inlets; all state-designated nursery habitats of particular importance to snapper grouper (e.g., Primary and Secondary Nursery Areas designated in North Carolina); pelagic and benthic Sargassum; Hoyt Hills for wreckfish; the Oculina Bank Habitat Area of Particular Concern; all hermatypic coral habitats and reefs; manganese outcroppings on the Blake Plateau; and Council-designated Artificial Reef Special Management Zones (SMZs)."

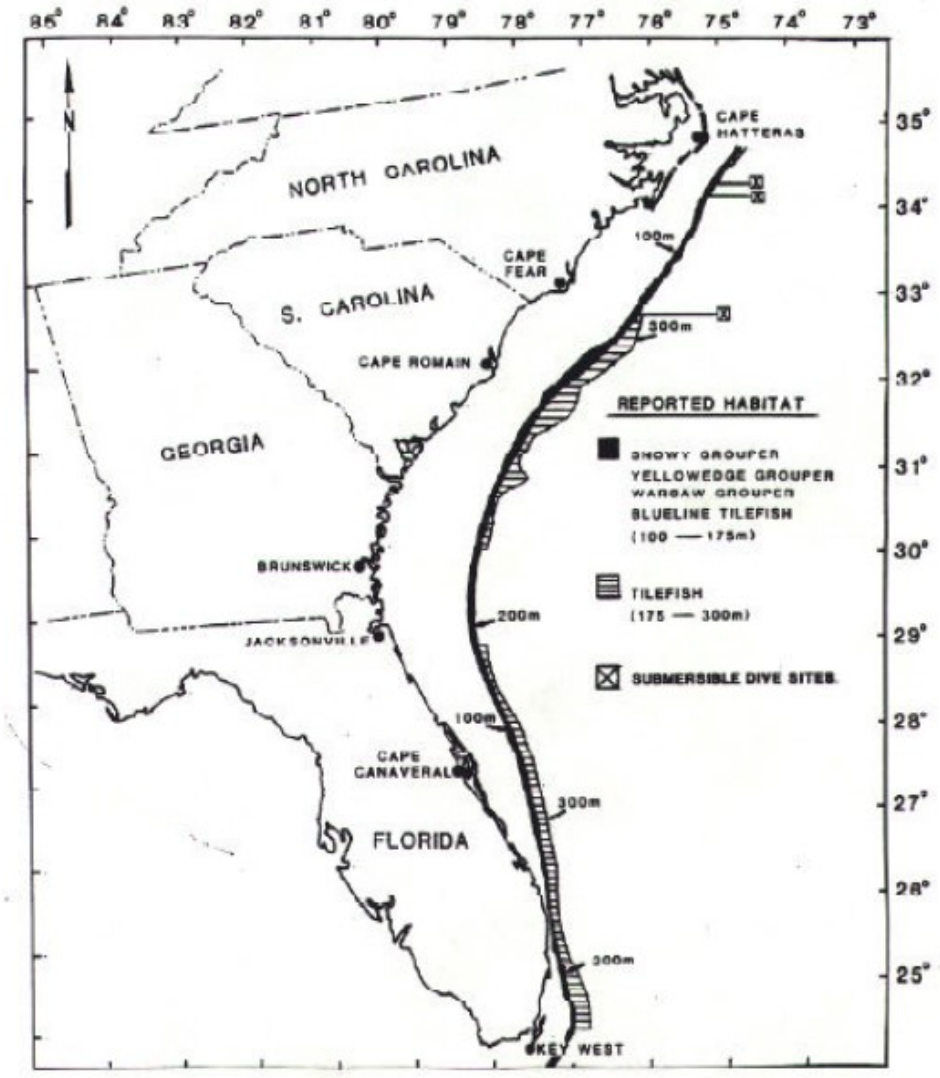


Figure 42. Deep Reef Fish Habitat (Source: Parker and Mays, In press).

Fishery Ecosystem Plan (FEP) - SAFMC 2009a

Information on Blueline Tilefish in FEP Volume ll South Atlantic Habitat and Species

Online Link to Volume: http://safmc.net/EcosystemLibrary/FEPVolumeII

Online Link to Section: http://safmc.net/sites/default/files/habitat-ecosystem/pdf/FEP/VolumeII/VolII_SnapperGrouper.pdf

Blueline tilefish

Blueline tilefish, *Caulolatilus microps*, occurs in the Western Atlantic Ocean, North Carolina to southern Florida and Mexico, including the northern (and probably eastern) Gulf of Mexico (Dooley 1978). Blueline tilefish are found along the outer continental shelf, shelf break, and upper slope on irregular bottom with ledges or crevices, and around boulders or rubble piles in depths of 30-236 m (98-774 ft) and temperatures ranging from 15 to 23°C (59-73.4° F) (Ross 1978; Ross and Huntsman 1982; Parker and Mays 1998).

Maximum reported size is 90 cm (35.7 in) TL and 7 kg (15 lbs) (Dooley 1978). Maximum reported age is 42 years. The SEDAR group estimated M is between 0.04 and 0.17 (SEDAR 4 2004). Spawning occurs at night, from February to October, with a peak in May at depths of 48-232 m (157-761 ft) (Harris et al. 2004). This species feeds primarily on benthic invertebrates and fishes (Dooley 1978).

South Atlantic Habitat Information - Blueline Tilefish

Comprehensive Ecosystem Based Amendment 2 - SAFMC 2011

Action, References and Spatial Presentation for Blueline Tilefish in CEBA 2

Action 6. Amend the Snapper Grouper FMP to designate new EFH-HAPCs

Sub-alternative 2b. Designate EFH-HAPC for blueline tilefish to include irregular bottom habitats along the shelf edge in 45-65 meters depth; shelf break; or upper slope along the 100-fathom contour (150-225 meters); hardbottom habitats characterized as rock overhangs, rock outcrops, manganese-phosphorite rock slab formations, or rocky reefs in the South Atlantic Bight; and the Georgetown Hole (Charleston Lumps) off Georgetown, SC.

References:

Dooley J.K. 1978. Systematic and biology of the tilefishes (Perciformes: Branchiostegidae and Malacanthidae), with description of two new species. NOAA Tech. Rep. NMFS 411. NOAA, National Marine Fisheries Service. 78 p.

Harris, P.J. and D.J. Machowski. 2004. Data Report On The Status of Some Reef Fish Stocks off the Southeast United States, 1983-2004. Marine Resources Research Institute, South Carolina Department of Natural Resources, Charleston.

Parker, Jr., R.O. and R.W. Mays. 1998. Southeastern U.S. deepwater reef fish assemblages, habitat characteristics, catches, and life history summaries. NOAA Tech. Report, National Marine Fisheries Service 138.

Ross, J.L. 1978. Life history aspects of the gray tilefish Caulolatilus microps (Goode and Bean, 1878). Master's Thesis, College of William and Mary, Williamsburg, VA, 125 p.

Ross, J.L. and G.R. Huntsman. 1982. Age, growth, and mortality of blueline tilefish of North Carolina and South Carolina. Transaction of the American Fisheries Society 11: 585-592

Sedberry, G. personal communication; NOAA, NOS, Grays Reef National Marine Sanctuary, GA. June 29, 2010

Sedberry, G. personal communication; NOAA, NOS, Grays Reef National Marine Sanctuary, GA. June 30, 2010

Supporting Background: Designation of Essential Fish Habitat (EFH) and EFH-HAPCs

The Magnuson-Stevens Act defines EFH as "all waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity." The Magnuson-Stevens Act directs Regional Fishery Management Councils to describe and identify EFH for each federally managed species, to minimize the extent of adverse effects on habitat caused by fishing and non-fishing activities, and to identify actions to encourage conservation and enhancement of those habitats. It is required that EFH designations be based on the best available scientific information.

EFH designations may include habitat for an individual species or an assemblage of species, whichever is appropriate within a particular Fishery Management Plan. Under the definition of EFH:

• "Waters" includes aquatic areas and their associated physical, chemical, and biological properties that are utilized by fish. When appropriate this may include areas used historically.

• "Necessary" means the habitat required to support a sustainable fishery and a healthy ecosystem, while "spawning, breeding, feeding, or growth to maturity" covers the full life cycle of a species.

• "Substrate" includes sediment, hardbottom, structures underlying the waters, and associated biological communities. Councils should obtain information to describe and identify EFH from the best available sources. Information should be analyzed and organized as follows, striving to describe habitat based on their highest level of detail:
• Level 1: species distribution data for all or part of its geographic range;

• Level 2: data on habitat-related densities or relative abundance of the species;
• Level 3: data on growth, reproduction, and survival rates within habitats; and
• Level 4: production rates by habitat

In addition to EFH, the Councils may identify EFH- HAPCs as a subset of EFH. In determining which areas should be designated as HAPCs, the area must meet one or more of the following criteria:

• Importance of the ecological function provided by the habitat;
• Extent to which the habitat is sensitive to human-induced environmental degradation;
• Whether, and to what extent, development activities are, or will be, stressing the habitat type; and
• Rarity of the habitat type

Figure 1. Spatial Presentation of Northern Portion of Tilefish EFH-HAPC (Generated from SAFMC EFH Viewer: http://ocean.floridamarine.org/SA_Fisheries/) .

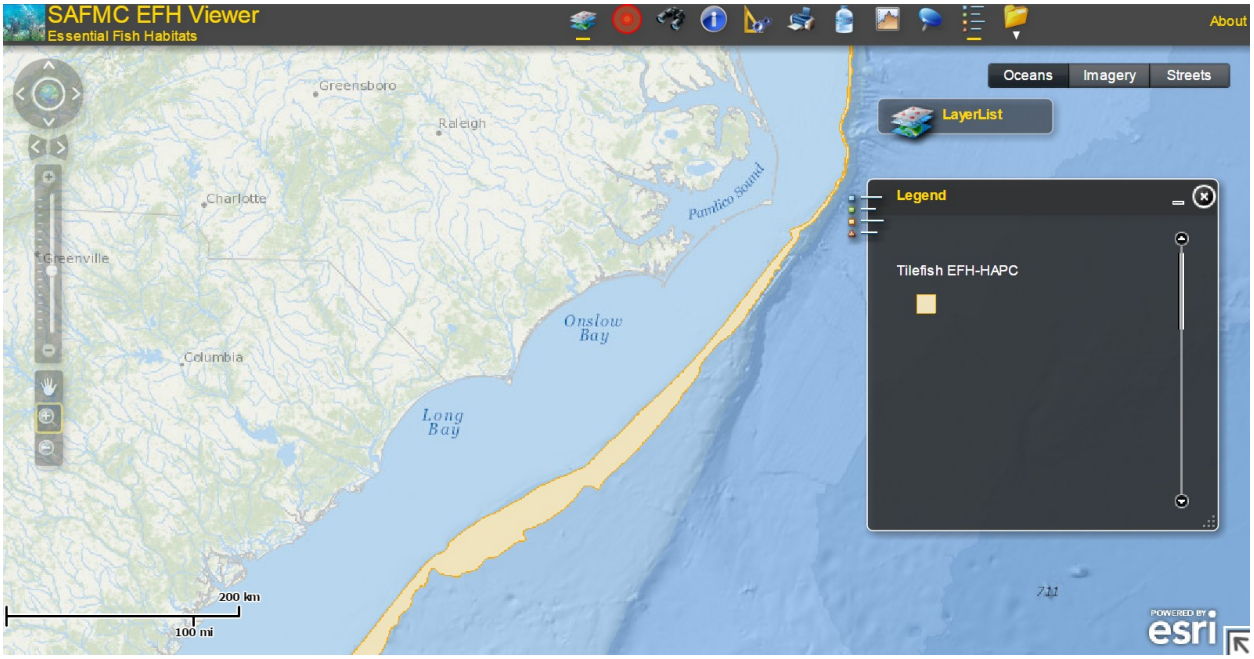


Figure 2. Spatial Presentation of Southern Portion of Tilefish EFH-HAPC (Generated from SAFMC EFH Viewer: http://ocean.floridamarine.org/SA_Fisheries/) .

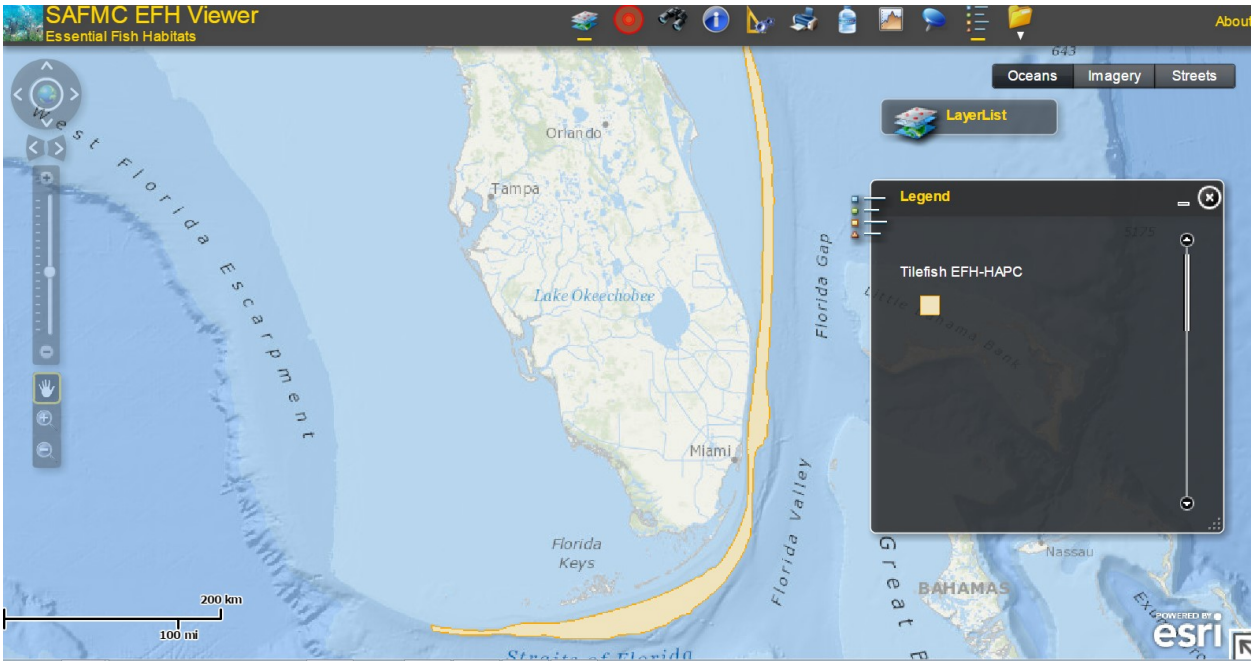


Table 4-6. Summary evaluation of the existing and proposed EFH-HAPC for snapper grouper as it relates to the criteria (SAFMC, 2011).

EFH-HAPC and Criteria Evaluation	Ecological Function	Sensitivity to Environmental Degradation	Threat from Development Activities	Rarity of Habitat
The Point, NC	Medium	Low	Medium	High
The Ten Fathom Ledge, NC	High	Low	Low	High
Big Rock, NC	High	Low	Medium	High
Charleston Bump, SC	High	Low	Medium	High
Mangrove habitat	High	High	High	High
Seagrass habitat	High	High	High	High
Oyster/shell habitat	High	Medium	High	High
All coastal inlets	Medium	Low	Medium	Medium
All state-designated nursery habitats	High	High	High	High
Pelagic and benthic *Sargassum*	High	Low	Low	High
Hoyt Hills (wreckfish)	High	Low	Medium	High
Oculina HAPC, FL	High	Medium	Low	High
All hermatypic coral habitats and reefs	High	High	Low	High
Manganese outcroppings of the Blake Plateau	High	Low	Medium	High
Artificial reef SMZs	Medium	Low	Low	High
Golden Tilefish Habitat	High	Low	Medium	High
Blueline Tilefish Habitat	High	Low	Medium	High
Deepwater Marine Protected Areas	High	Low	Medium	Medium

Conclusion for Action from SAFMC, 2011.

In reviewing the South Atlantic Council's existing EFH-HAPC designations, South Atlantic Council staff and NOAA Fisheries Service Habitat Conservation staff determined that while the original Habitat Plan highlighted the unique characteristics of tilefish habitat as potential EFH-HAPC, the wording was not included in the final designation for the snapper grouper FMP. In addition, the Ecosystem Committee, at their meeting in June 2010, indicated a desire to designate the deepwater MPAs for snapper grouper species as EFH-HAPCs to enhance protection of the habitat complex contained in the MPAs. In September 2010, NOAA Fisheries Service engaged regional deepwater fishery scientists in the development of definitions of EFH-HAPC for blueline tilefish and golden tilefish. The Habitat Advisory Panel, in November 2010, recommended inclusion of the tilefish definitions and the Deepwater MPAs in CE-BA 2 as EFH-HAPCs under the Snapper Grouper FMP. The South Atlantic Council approved CE-BA 2 for public hearing in December 2010. Hearings were held in February 2011 and the South Atlantic Council adopted ***Alternative 2, sub-Alternatives 2a*** *and* ***2b,*** *and* ***Alternative 3*** *as preferred in March 2011. The preferred alternatives also best meet the objectives of the Snapper Grouper Fishery Management Plan, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.*

Creation of preliminary general / spawning area distribution maps

Figure 3. Blueline Tilefish Distribution in the Northern Portion of the South Atlantic Region General Range and Spawning Area based on life history parameters (Generated from SAFMC SA Fisheries Viewer: http://ocean.floridamarine.org/SA_Fisheries/)

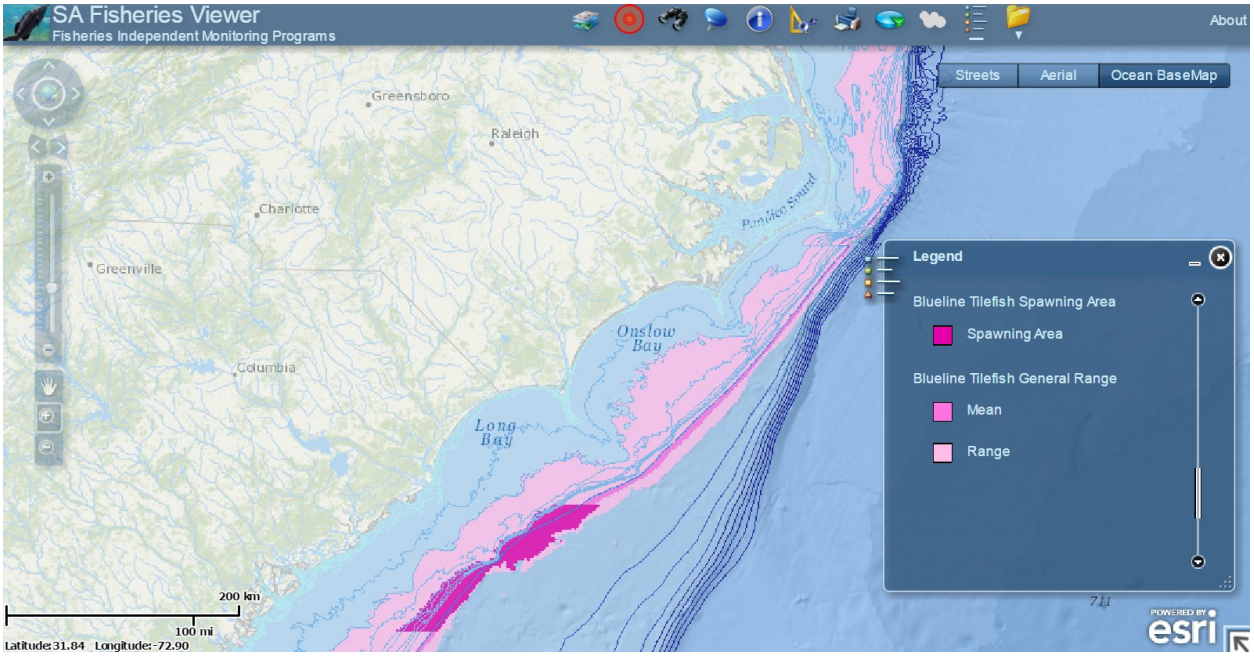


Figure 4. Blueline Tilefish Distribution in the Central Portion of South Atlantic Region General Range and Spawning Area based on life history parameters (Generated from SAFMC SA Fisheries Viewer: http://ocean.floridamarine.org/SA_Fisheries/) .

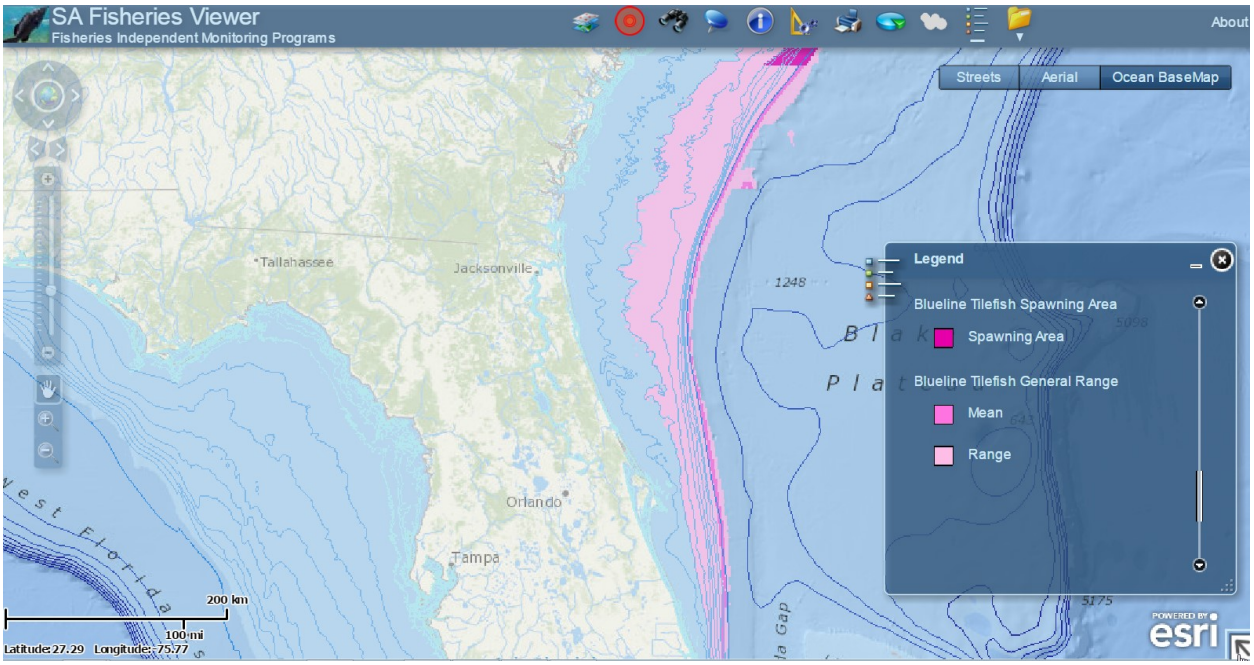
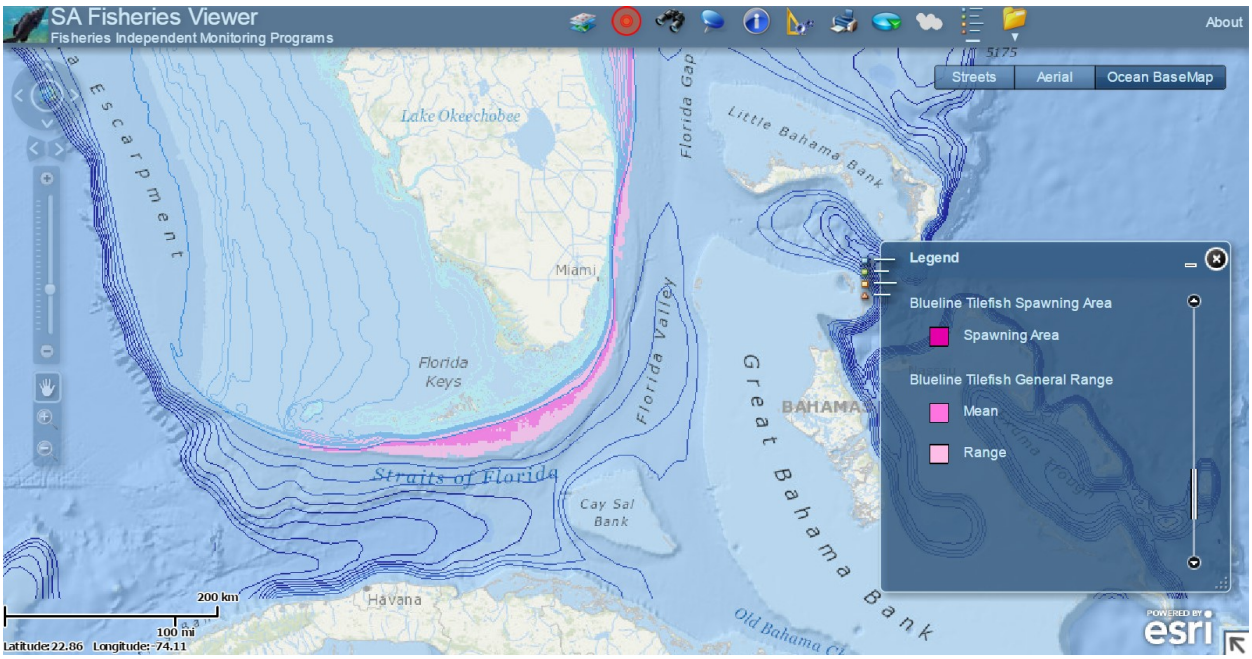


Figure 5. Blueline Tilefish Distribution in Southern Portion of South Atlantic Region General Range and Spawning Area based on life history parameters (Generated from SAFMC SA Fisheries Viewer: http://ocean.floridamarine.org/SA_Fisheries/) .



As part of the ongoing development of species distribution maps for presentation on the SAFMC Habitat and Ecosystem Atlas, Fishery Independent data collections are to be considered in adjusting boundary lines.

Figure 6. Blueline Tilefish Collections from SERFS (MARMAP/SEAMAP/SEFIS)1977-2012 (Generated from data extracted from SEAMAP SA Data System (http://www.seamap.org/datapage.html).

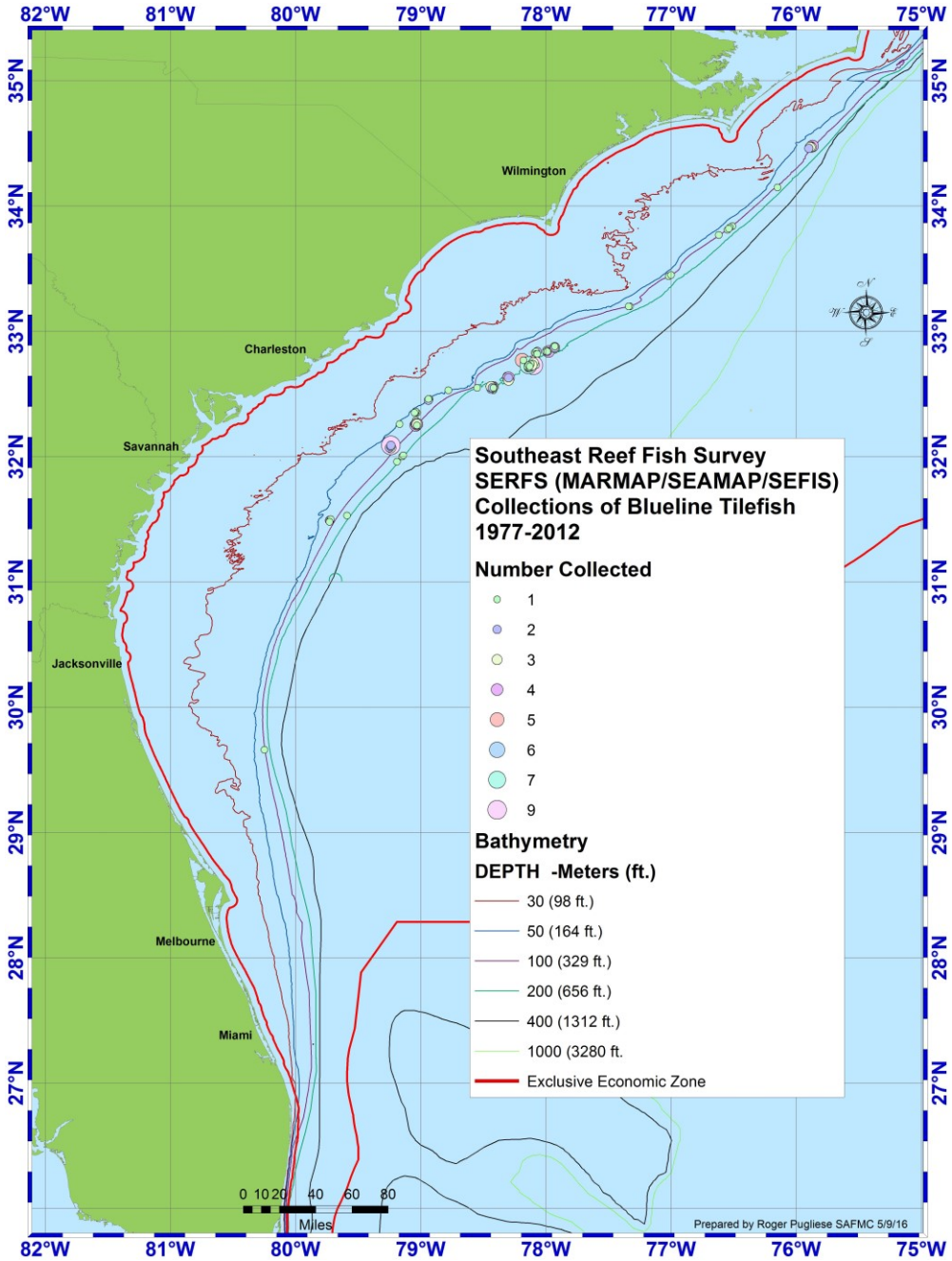
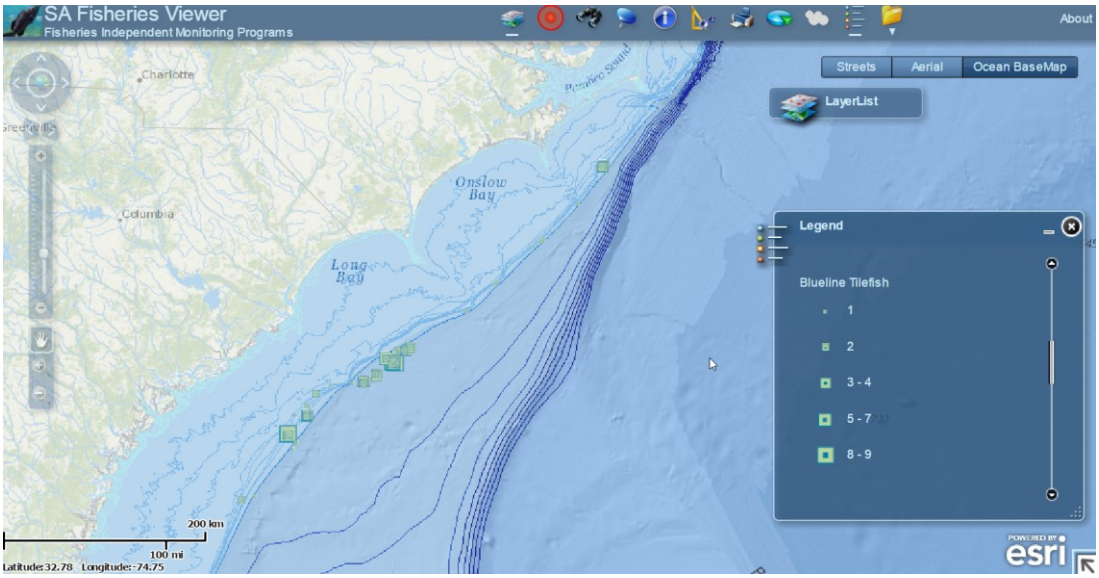


Figure 6. Blueline Tilefish Fishery Independent Survey 2012 Collections in the South Atlantic Region (Generated from SAFMC SA Fisheries Viewer: http://ocean.floridamarine.org/SA_Fisheries/) .



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