

From: Aaron Kornbluth [<mailto:AKornbluth@pewtrusts.org>]
Sent: Monday, April 20, 2015 4:12 PM
To: Dancy, Kiley
Subject: Recommended DSC discrete zone boundaries

Greetings Kiley,

On behalf of the undersigned groups and AP members, I respectfully submit to you our new, recommended methodology for delineating discrete zone boundaries in advance of the Deep-Sea Corals Workshop on April 29-30. We also generated four sample maps (of Norfolk, Washington, Baltimore, and Wilmington Canyons) illustrating how the application of our methodology would look. I have attached a zipped shapefile of these boundaries, too.

I hope that you will be able to share our proposed methodology paper as well as the sample maps/shapefile with the Council Members, AP members, and invited scientists that will attend the workshop. Please let me know if you have any questions.

Best,

Aaron Kornbluth

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Deep Sea Corals Amendment: Recommended Methodology for Alternative Discrete Zone Boundaries

April, 2015

The methodology described below was applied to produce alternative discrete zone boundaries for the four canyons (Norfolk, Washington, Baltimore, and Wilmington) for which Garden State Seafood Association (GSSA) proposed alternative boundaries prior to the February 2015 meeting of the Mid-Atlantic Council. In some places, we propose adopting the same boundaries as the GSSA alternatives.

We also utilized the discrete zones developed by the Fishery Management Action Team (FMAT) as a basis for our alternative zones. The FMAT discrete zones were intended generally to encompass (1) areas of “very high” and “high” predicted habitat suitability (from NOAA predictive habitat suitability model) for gorgonians and non-gorgonian Alcyonacean corals, (2) areas of high (>30 degrees) slope, and (3) a buffer of 2 grid cells or 0.4 nautical miles (nm). The buffer was intended to address the habitat suitability model’s resolution (370m on).

In addition to the FMAT discrete zones and the GSSA alternative discrete zones, we utilized the following in developing our alternative discrete zones:

- (1) Northeast Fisheries Observer Program observed bottom trawl hauls (gear type Trawl, Otter, Bottom, Fish), 2000-2013. These bottom trawl hauls were depicted in Figure 31 of the January 2015 Public Information Document (PID). Using a high-resolution version of this figure, we developed a GIS layer of the hauls. We recognize that their positional accuracy is limited given that we converted an image file into geospatial format instead of using the raw geodata because of privacy concerns.
- (2) High-resolution (25m) slope data from NOAA/ACUMEN and USGS.
- (3) For Norfolk Canyon, the tilefish Habitat Area of Particular Concern Gear Restricted Area (GRA), in which use of bottom-tending mobile gear is prohibited.
- (4) Coral observations from the Deep Sea Coral Research and Technology Program database and from 2012-2013 BOEM/NOAA/USGS surveys.

We developed our alternative discrete zones as follows:

- (1) To address varying levels of observed bottom trawl activity overlapping with the FMAT discrete zones, we modified the FMAT boundary lines as follows:

Observed fishing activity: None to very little

Modification: None

Observed fishing activity: Low

Modification: Buffer for both very high habitat suitability (red) and high suitability (yellow) cells reduced to between 0.4 and 0.2nm, depending upon fishing activity level.

Observed fishing activity: Moderate

Modification: Buffer for high suitability (yellow) cells and very high suitability (red) cells reduced to 0.2nm. In some cases, the GSSA boundary was adopted.

Observed fishing activity: High

Modification: Buffer for high suitability (yellow) cells eliminated or high suitability cells excluded from zone, depending upon fishing activity level. In some cases, the GSSA boundary was adopted.

- (2) Boundaries were modified slightly in some places to incorporate nearby high slope areas (>30 degrees).
- (3) Boundaries were modified slightly in some places to incorporate nearby observed corals, with a minimal buffer between 0 and 0.1 nm.
- (4) In the case of Norfolk Canyon, because no bottom trawling is allowed in the tilefish GRA and to create a common set of boundaries for the GRA and the coral protection zone for the canyon, the FMAT discrete zone was modified to incorporate the GRA boundaries where doing so would not reduce corals protection.
- (5) A few slight boundary adjustments were made to reduce complexity and enhance enforceability.

Sincerely,

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Merry Camhi, PhD
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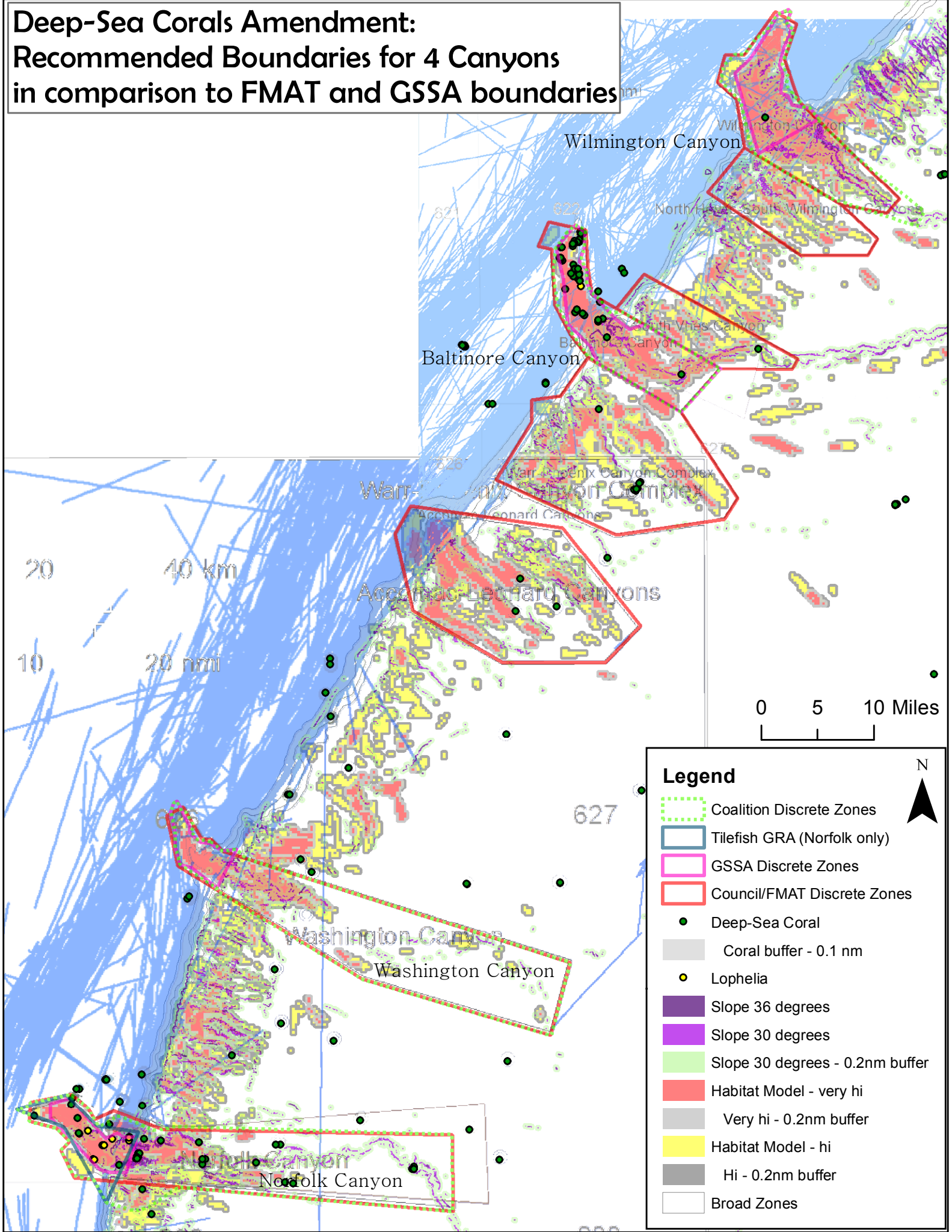
Gib Brogan
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Fred Akers
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Great Egg Harbor Watershed
Association
AP Member

Tim O'Brien
President
Tycoon Tackle Inc.
AP Member

Deep-Sea Corals Amendment: Recommended Boundaries for 4 Canyons in comparison to FMAT and GSSA boundaries



Legend

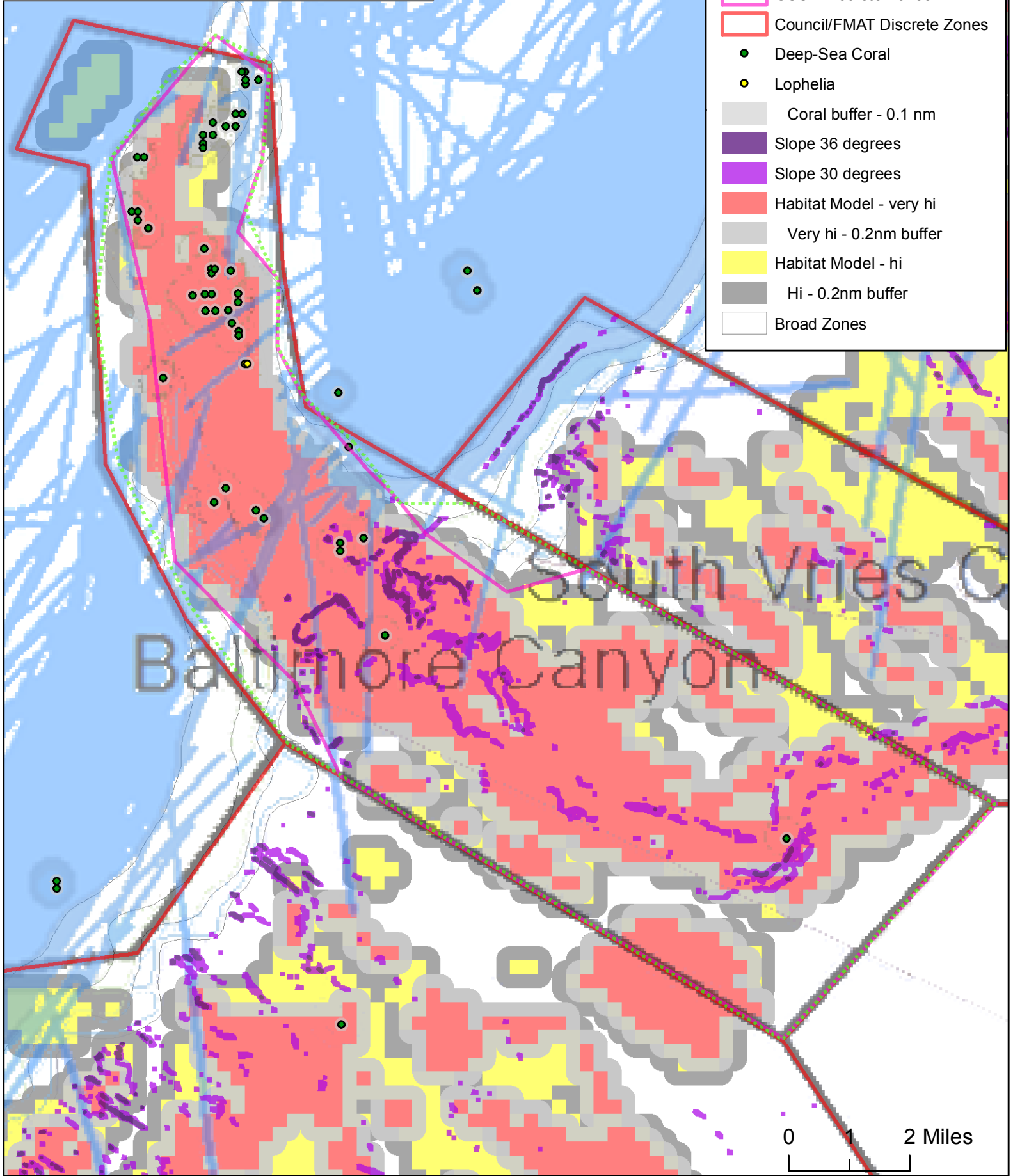
- Coalition Discrete Zones
- Tilefish GRA (Norfolk only)
- GSSA Discrete Zones
- Council/FMAT Discrete Zones
- Deep-Sea Coral
- Coral buffer - 0.1 nm
- Lophelia
- Slope 36 degrees
- Slope 30 degrees
- Slope 30 degrees - 0.2nm buffer
- Habitat Model - very hi
- Very hi - 0.2nm buffer
- Habitat Model - hi
- Hi - 0.2nm buffer
- Broad Zones

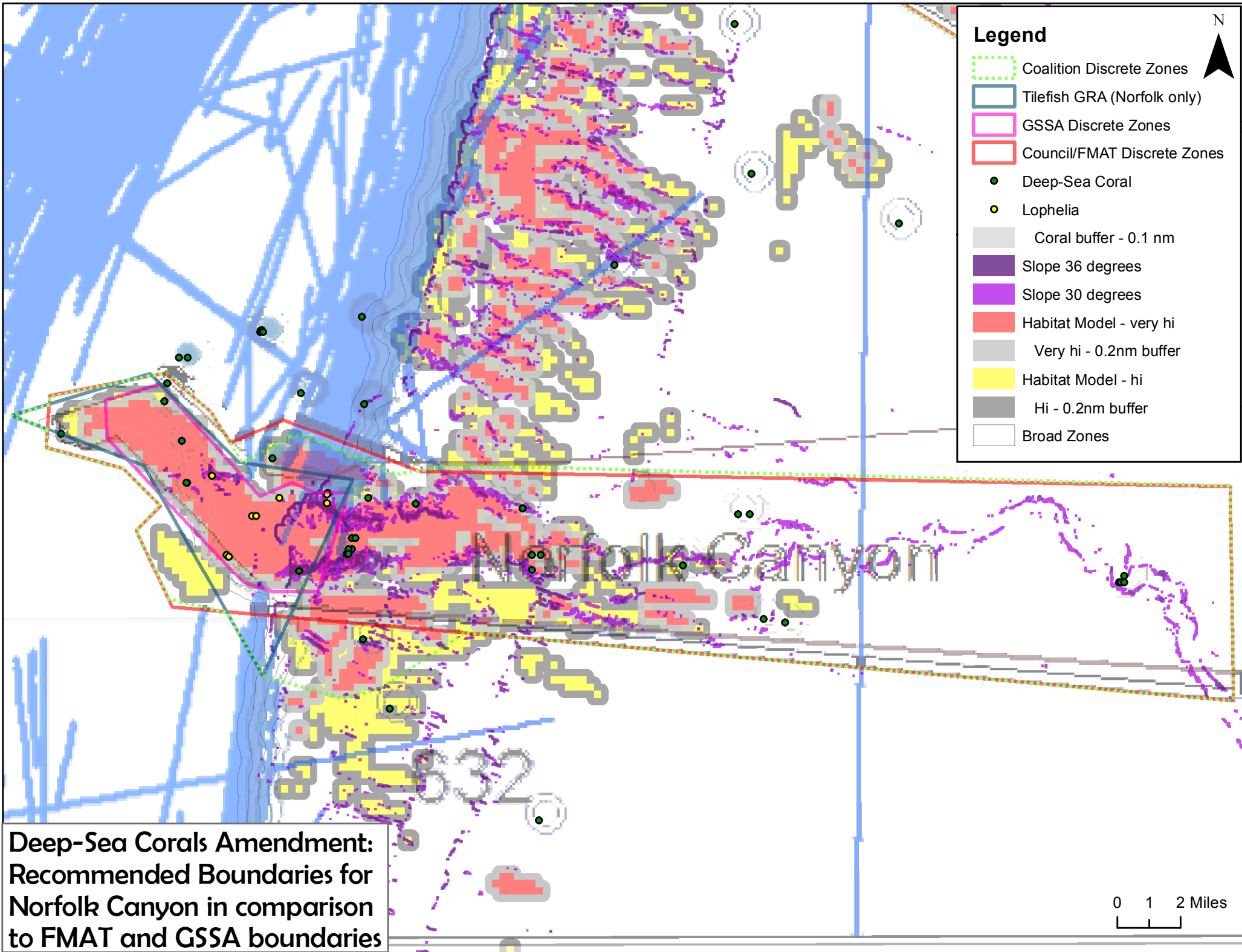


Deep-Sea Corals Amendment: Recommended Boundaries for Baltimore Canyon in comparison to FMAT and GSSA boundaries

Legend

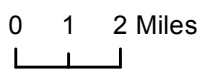
- Coalition Discrete Zones
- Tilefish GRA (Norfolk only)
- GSSA Discrete Zones
- Council/FMAT Discrete Zones
- Deep-Sea Coral
- Lophelia
- Coral buffer - 0.1 nm
- Slope 36 degrees
- Slope 30 degrees
- Habitat Model - very hi
- Very hi - 0.2nm buffer
- Habitat Model - hi
- Hi - 0.2nm buffer
- Broad Zones



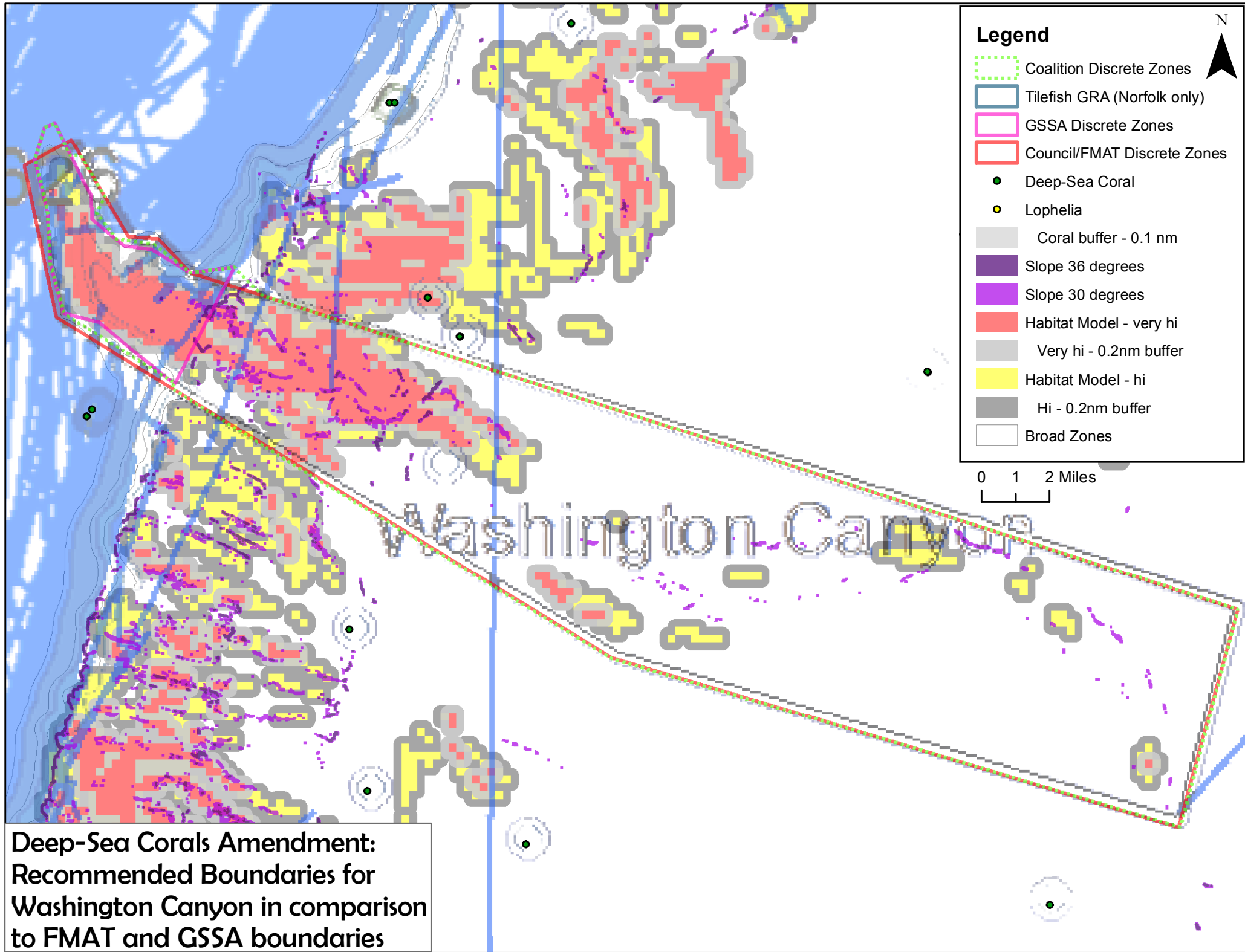


Legend

- Coalition Discrete Zones
- Tilefish GRA (Norfolk only)
- GSSA Discrete Zones
- Council/FMAT Discrete Zones
- Deep-Sea Coral
- Lophelia
- Coral buffer - 0.1 nm
- Slope 36 degrees
- Slope 30 degrees
- Habitat Model - very hi
- Very hi - 0.2nm buffer
- Habitat Model - hi
- Hi - 0.2nm buffer
- Broad Zones



**Deep-Sea Corals Amendment:
Recommended Boundaries for
Norfolk Canyon in comparison
to FMAT and GSSA boundaries**



Legend

- Coalition Discrete Zones
- Tilefish GRA (Norfolk only)
- GSSA Discrete Zones
- Council/FMAT Discrete Zones
- Deep-Sea Coral
- Lophelia
- Coral buffer - 0.1 nm
- Slope 36 degrees
- Slope 30 degrees
- Habitat Model - very hi
- Very hi - 0.2nm buffer
- Habitat Model - hi
- Hi - 0.2nm buffer
- Broad Zones

0 1 2 Miles



**Deep-Sea Corals Amendment:
Recommended Boundaries for
Washington Canyon in comparison
to FMAT and GSSA boundaries**

Deep-Sea Corals Amendment: Recommended Boundaries for Wilmington Canyon in comparison to FMAT and GSSA boundaries

Legend

- Coalition Discrete Zones
- Tilefish GRA (Norfolk only)
- GSSA Discrete Zones
- Council/FMAT Discrete Zones
- Deep-Sea Coral
- Lophelia
- Coral buffer - 0.1 nm
- Slope 36 degrees
- Slope 30 degrees
- Habitat Model - very hi
- Very hi - 0.2nm buffer
- Habitat Model - hi
- Hi - 0.2nm buffer
- Broad Zones

