Amendment 11

to the Fishery Management Plan for Spiny Lobster in the Gulf of Mexico and South Atlantic

SUMMARY
October 2011

Introduction

This Supplemental Environmental Impact Statement (SEIS) for Amendment 11 to the Fishery Management Plan for Spiny Lobster in the Gulf of Mexico and South Atlantic (Spiny Lobster FMP) would implement reasonable and prudent measures to protect threatened and endangered species. The Gulf of Mexico (Gulf) and South Atlantic Fishery Management Councils (Councils) jointly manage the Spiny Lobster FMP.

The Councils considered alternatives to meet these requirements in Amendment 10 to the Spiny Lobster FMP; however, they chose to take no action at that time to allow for additional stakeholder input. The Councils made clear they intend to quickly develop Amendment 11 to put these measures into place as required by the biological opinion (Bi Op) on the continued authorization of the Gulf of Mexico and South Atlantic spiny lobster fishery (NMFS 2009).

Background

The Endangered Species Act (ESA) of 1973 (16 U.S.C. Section 1531 et seq.) requires that federal agencies ensure actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species, or the habitat designated as critical to their survival and recovery. The ESA requires NOAA Fisheries Service to consult with the appropriate administrative agency (itself for most marine species and the U.S. Fish and Wildlife Service for all remaining species) when proposing an action that may affect threatened or endangered species or adversely modify critical habitat. Consultations are necessary to determine the potential impacts of the proposed action. Formal consultations are required when proposed actions may affect and are "likely to adversely affect" threatened or endangered species or adversely modify designated critical habitat. The result of a formal consultation is a Bi Op.

To satisfy the ESA consultation requirements, NOAA Fisheries Service completed a formal consultation and resulting Bi Op on the spiny lobster fishery in 2009. When making determinations on FMP actions, not only are the effects of the specific proposed actions analyzed, but also the effects of all discretionary fishing activity under the affected FMPs. Thus, the Bi Op analyzed the potential impacts to ESA-listed species from the continued authorization of the federal spiny lobster fishery. The Bi Op stated the fishery was not likely to adversely affect ESA-listed marine mammals, Gulf sturgeon, or designated critical habitat for elkhorn and staghorn corals. However, the Bi Op determined the spiny lobster fishery would adversely affect sea turtles, smalltooth sawfish, and elkhorn and staghorn corals, but would not jeopardize their continued existence.

An incidental take statement was issued for green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles, smalltooth sawfish, and both species of coral. Reasonable and prudent measures to minimize the impact of these incidental takes were specified, along with terms and conditions to implement them. Specific terms and conditions required to implement the prescribed reasonable and prudent measures include, but are not limited to creating new or expanding existing closed areas to protect coral and implementing trap line-marking requirements.

The branching morphology of elkhorn and staghorn corals causes colonies of any size to be susceptible to fragmentation/breakage and abrasion from fishing activity. Creating closed areas would reduce the likelihood of traps contacting colonies even if they are moved by storms. Trap line marking requirements would allow greater accuracy in identifying fishery interactions with protected species, leading to more targeted measures to reduce the level and severity of those impacts.

Purpose for Action

The purpose of this amendment is to comply with measures to protect endangered species established under the 2009 Biological Opinion for the Spiny Lobster Fishery.

Need for Action

The need for the proposed actions is to aid in the protection and recovery of endangered and threatened species.

Actions and Alternatives

2.1 Action 1: Limit Spiny Lobster Fishing in Certain Areas in the EEZ off Florida to Protect Threatened Staghorn (*Acropora cervicornis*) and Elkhorn Corals (*Acropora palmata*)

Alternative 1: No Action – do not limit spiny lobster fishing in certain areas in the exclusive economic zone (EEZ) off Florida to address Endangered Species Act concerns for threatened staghorn and elkhorn corals (*Acropora* spp.)

Alternative 2: Close all known hardbottom in the EEZ off Florida in water depths less than 30 meters (90 feet).
Option a. In the closed areas, spiny lobster trapping would be prohibited.
Option b. In the closed areas, <u>all</u> spiny lobster fishing would be prohibited.

Alternative 3: Create new closed areas in the EEZ off Florida consisting of identified *Acropora* spp. colonies with straight-line boundaries.
Option a. In the closed areas, spiny lobster trapping would be prohibited.
Option b. In the closed areas, <u>all</u> spiny lobster fishing would be prohibited.

Alternative 4: Create new closed areas in the EEZ off Florida consisting of identified *Acropora* spp. colonies with a 500 ft. buffer surrounding each colony.
Option a. In the closed areas, spiny lobster trapping would be prohibited.
Option b. In the closed areas, <u>all</u> spiny lobster fishing would be prohibited.

Note: Transit would be allowed for vessels traveling through a closed area. The term "transit" is defined as on a direct and continuous course through a closed area. See Figures 2.1.1-10 for the locations of proposed and existing closed areas.

Discussion: The 2009 biological opinion on the spiny lobster fishery (Bi Op) requires NOAA Fisheries Service and the Gulf of Mexico (Gulf) and South Atlantic Councils (Councils) to work together to protect areas of staghorn and elkhorn coral (*Acropora* spp.) by expanding existing or creating new closed areas for lobster fishing where colonies of these threatened species are present.

The areas proposed for closure in this amendment were selected using five general criteria: 1) protect all elkhorn coral because of their relative rarity in the Florida Keys, 2) protect areas where elkhorn and staghorn corals co-occur, 3) distribute areas throughout the Florida Keys (to the greatest extent practicable) to reduce disproportionate effects to one regions, 4) select areas that not only protect elkhorn and staghorn coral, but may also protect seven species of corals currently proposed for listing, 5) protect the largest colonies with the greatest sexual reproductive potential (super colonies).

Because super colonies are exceeding rare, they represent essential sources of gamete production. Elkhorn and staghorn corals can reproduce both sexual and asexually (Aronson and Precht 2001). However, the super colonies are valued for their sources of gamete production for sexual reproduction which may be more advantageous for resistance to diseases such as white pox, a lethal disease of the Caribbean elkhorn coral (Patterson et al. 2002).

The Florida Keys National Marine Sanctuary (FKNMS) has designated 15 Research Only (RO) or Sanctuary Preservation Areas (SPAs) in federal waters where all fishing is prohibited [15 CFR 922.164(d)(iii)]. *Acropora* spp. occur at relatively high densities in many of these areas. However, colonies of high conservation value and additional areas of high *Acropora* spp. density exist outside these closed areas. Creating new closed areas would reduce the likelihood of interactions between spiny lobster traps and coral colonies. The areas proposed in this amendment do not include the already existing FKNMS areas.

Concurrent to the development of this amendment, FKNMS is conducting an independent evaluation of its existing management areas and the activities (i.e., commercial fishing, recreational fishing/diving, research, etc.) authorized or prohibited in those zones. After that evaluation is complete, FKNMS may choose to implement new or modify the existing regulations on the activities allowed or prohibited in those management areas. One possible outcome could be a prohibition of all diving and trapping for spiny lobster inside some or all management zones.

More information about the Florida Keys National Marine Sanctuary can be found at http://floridakeys.noaa.gov/regs/welcome.html

Alternative 1 would have the least biological benefit to *Acropora* spp., and would perpetuate the existing level of risk of interaction between these species and the fishery because it would provide no additional protections. Existing closed areas would remain in place. Conversely, economic impacts would be lowest under **Alternative 1** because it would not close any new areas. However, this alternative would not meet the requirement established under the Bi Op. The Councils chose to take no action on this issue in Amendment 10 to consider additional data and information and to allow more time for input from stakeholders regarding which areas to close. The intent was to provide the greatest protection to *Acropora* spp. while leaving as much area open to fishing as possible. The Councils indicated they would quickly develop Amendment 11 to address this issue. On July 12-13, 2011, the Florida Keys Commercial Fishermen's Association held a meeting to provide industry input on the location of closed areas to protect *Acropora* spp. Other entities involved in this meeting included experts from the Florida Fish and Wildlife Conservation Commission (FWC) and the National Marine Sanctuary, and members of environmental organizations.

Alternative 2 would provide the greatest biological benefit to *Acropora* spp. and other hardbottom/coral resources. **Alternative 2** would prohibit spiny lobster fishing on all hardbottom areas in the Florida EEZ that support *Acropora* spp. This alternative would reduce the likelihood of interactions between spiny lobster gear in the EEZ and *Acropora* spp. to almost zero. **Alternative 2** would close approximately 73 mi^2 of the EEZ off Florida. The negative social and economic impacts of **Alternative 2** are likely to be significant. Closing all

hardbottom areas to trapping would significantly reduce the area available to trapping and may make trapping impractical.

The primary challenge with selecting closed areas is balancing benefits to the fishery and impacts to the environment. Relative to **Alternative 2**, **Alternatives 3** and **4** would be less biologically beneficial to *Acropora* spp. colonies, but would be less restrictive to fishermen. These two alternatives provide a reasonable buffer around *Acropora* spp. colonies without closing large areas of bottom suitable for trapping. Buffers are based on protecting colonies from movement of traps. Non-tropical storm systems can move traps 100 ft from their original locations (Lewis et al. 2009). However, stronger storms (i.e., tropical systems) can move traps many times farther.

From the Bi Op: NMFS, in cooperation with the Florida Keys National Marine Sanctuary, Gulf of Mexico and South Atlantic Fishery Management Councils, must work to establish new closed areas or expand the size of existing closed areas in waters under their jurisdiction where Acropora is present to prohibit spiny lobster trap fishing. This will reduce the likelihood of spiny lobster traps affecting Acropora.

Alternative 3 would establish straight-line boxes around identified *Acropora* spp. colonies or groups of colonies that encompass approximately 500 ft of buffer. The boundaries of all the closed areas only form right angles to improve compliance and support enforcement. Boxes were drawn around clusters of colonies, and oriented along the reef tract to reduce the amount of non-hardbottom (fishable) areas closed to fishing. Due to its relative scarcity, all identified elkhorn coral colonies were included in closed areas, but not all identified staghorn colonies. Because the locating of the boxes was focused around protection of elkhorn colonies, the sizes and shapes of these proposed closed areas are not identical. **Alternative 3** would close approximately 6.7 mi^2.

Alternative 4 would establish 500-ft diameter buffers around identified *Acropora* spp. colonies. Each colony would be designated by a single point, and fishermen would be responsible for remaining 500 ft from that point. This alternative was included because some fishermen indicated they would find it easier to enter the points in their navigation units than to keep track of boxes, as in **Alternative 3**. The area closed would be approximately 6.6 mi^2. Because some colonies are closer to each other than 500 ft, overlap of the buffers will occur. This overlap may cause some confusion to fishermen trying to determine what area is closed.

The amount of fishing area closed under **Alternatives 3** and **4** is essentially the same, but the actual areas and colonies protected would differ somewhat. For example, under **Alternative 3**, some boxes would include fishable areas between colonies that are grouped together. On the other hand, some individual colonies included under **Alternative 4** would not be included under **Alternative 3** because they are isolated and the resulting box would be too small to be effective. See Figure 2.1.8 for both of these examples.

Option b under each alternative would provide slightly more biological benefit to *Acropora* spp. colonies than **Option a** because it would prohibit all fishing for spiny lobster in the proposed closed areas. Although the impacts to *Acropora* spp. from diving for spiny lobster are unknown, other types of diving and associated anchoring are known to adversely affect *Acropora* spp.

Option b would provide additional benefits because it would reduce the likelihood that adverse effects from diving and anchoring could occur. The overall size of the proposed closed areas is less relevant when discussing the impacts from diving because divers must be in very close proximity to colonies to impact them. Thus, simply prohibiting the practice of diving for spiny lobster inside the proposed closed areas would help minimize any potential threat.

Although the FKNMS management zone review is unrelated to this amendment, the FKNMS Sanctuary Advisory Council (SAC) is aware of the actions proposed here, and has discussed this amendment during SAC meetings. As a result of those discussions, the SAC passed a resolution on August 16, 2011, regarding their preference on which alternative they would like to see selected for this action. Specifically, the resolution asked the FKNMS Superintendent to convey to the Councils and NOAA Fisheries Service that it would prefer the alternative that creates new or expands existing closed areas in which all spiny lobster fishing is prohibited (**Option b**). The SAC is an advisory body to the FKNMS superintendent, and the opinions and findings of the resolution do not necessarily reflect the position of FKNMS or NOAA.

Figures 2.1.1-11 show the proposed closed areas for **Alternatives 3-4** from west to east. Blue dots represent identified *Acropora* spp. colonies. Halos around those dots show the proposed 500-ft buffer (**Alternative 4**). Hash-marked boxes show the proposed straight-line closed areas (**Alternative 3**). In addition, hardbottom areas that would be closed under **Alternative 2** are shown on each map.

FKNMS SPAs and RO areas are shown in the figures. These areas are not being created by this amendment, but are existing areas that provide protection to *Acropora* spp.

With certain exceptions, the following activities are prohibited in SPAs:

- Discharging any matter except cooling water or engine exhaust.
- Fishing by any means; removing, harvesting, or possessing any marine life. Catch and release fishing by trolling is allowed in Conch Reef, Alligator Reef, Sombrero Reef, and Sand Key SPAs only.
- Touching or standing on living or dead coral.
- Anchoring on living or dead coral or any attached organism.
- Anchoring when a mooring buoy is available.
- Bait fishing is allowed in SPAs by Florida Keys National Marine Sanctuary permit

Similarly the following activities are prohibited in RO Areas:

- Entry or activity without a Florida Keys National Marine Sanctuary permit.
- Discharging any matter except cooling water or engine exhaust.
- Fishing by any means; removing, harvesting, or possessing any marine life.
- Touching or standing on living or dead coral.
- Anchoring on living or dead coral, or any attached organism

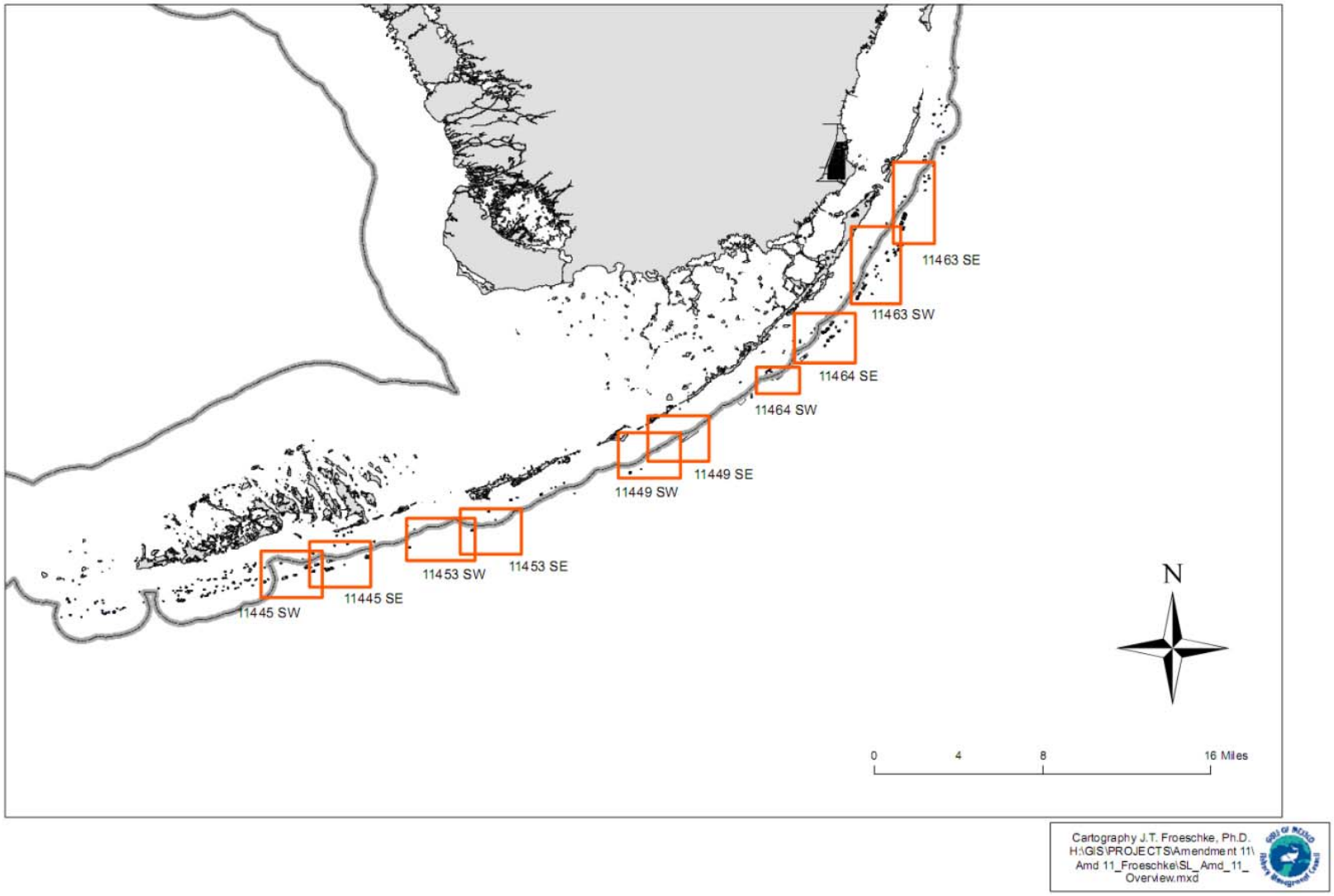

Figure 2.1.1. Overview of Florida Keys and maps showing proposed closed areas.

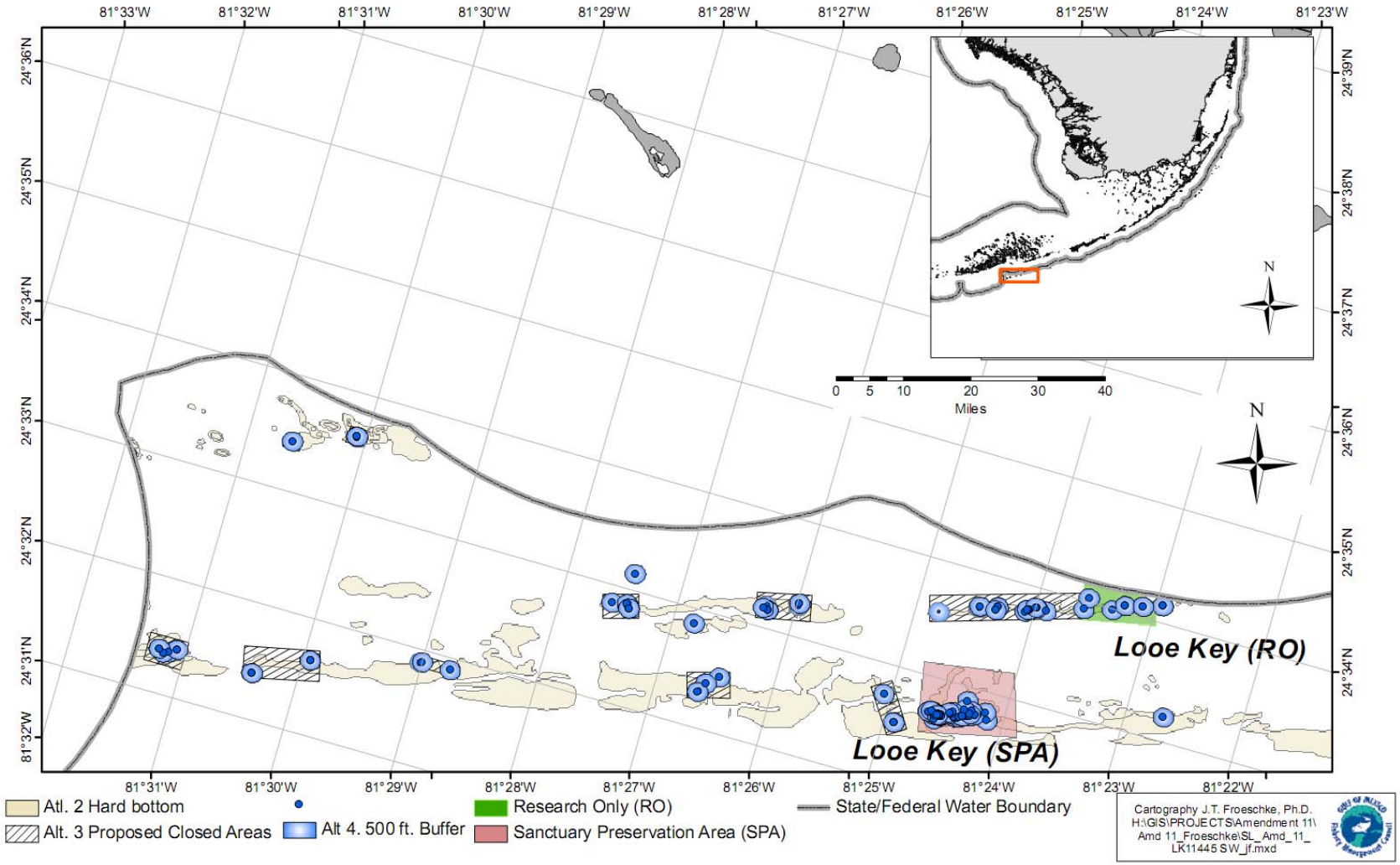

Figure 2.1.2. Map 11445 SW showing proposed closed areas.

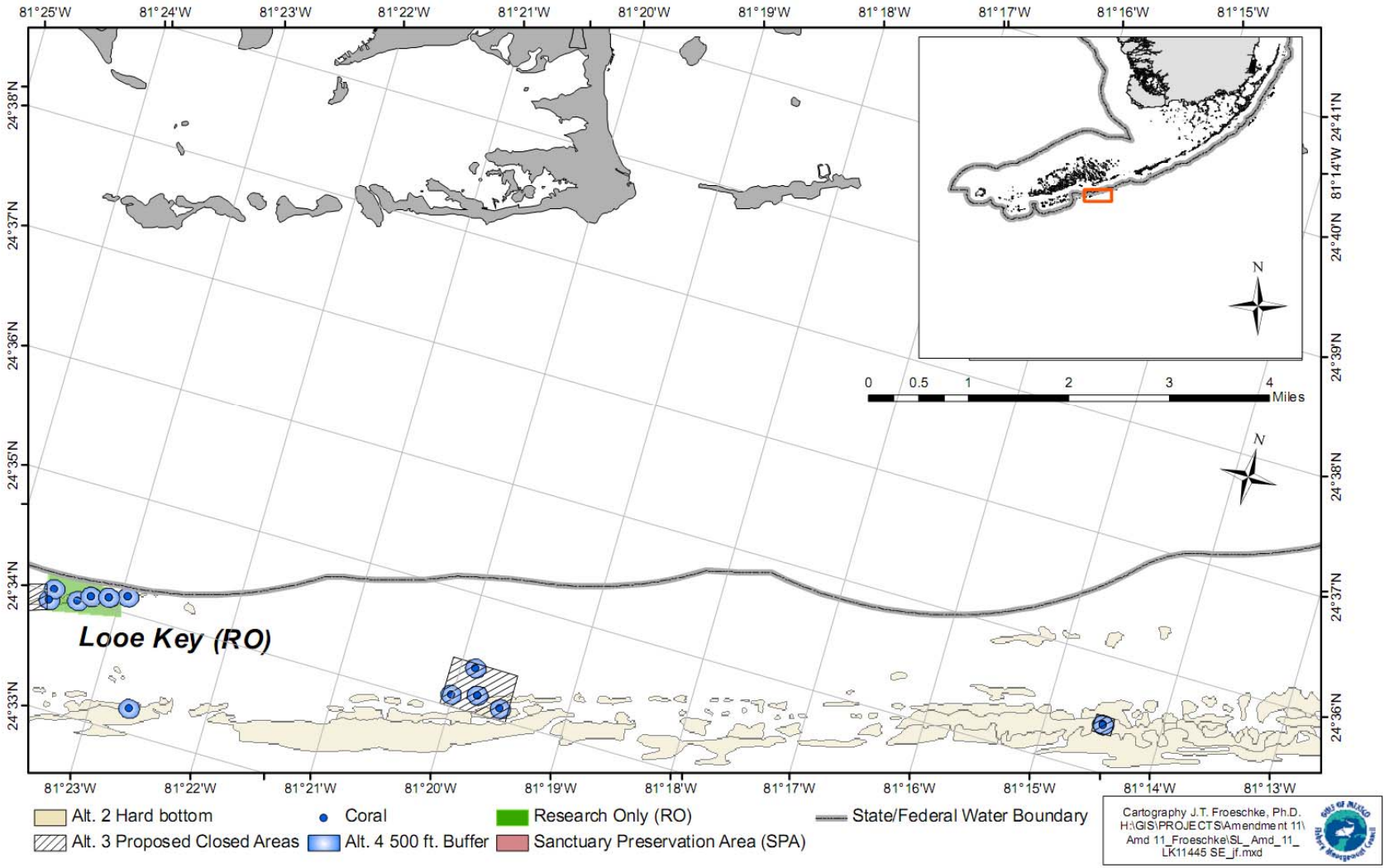

Figure 2.1.3. Map 11445 SE showing proposed closed areas.

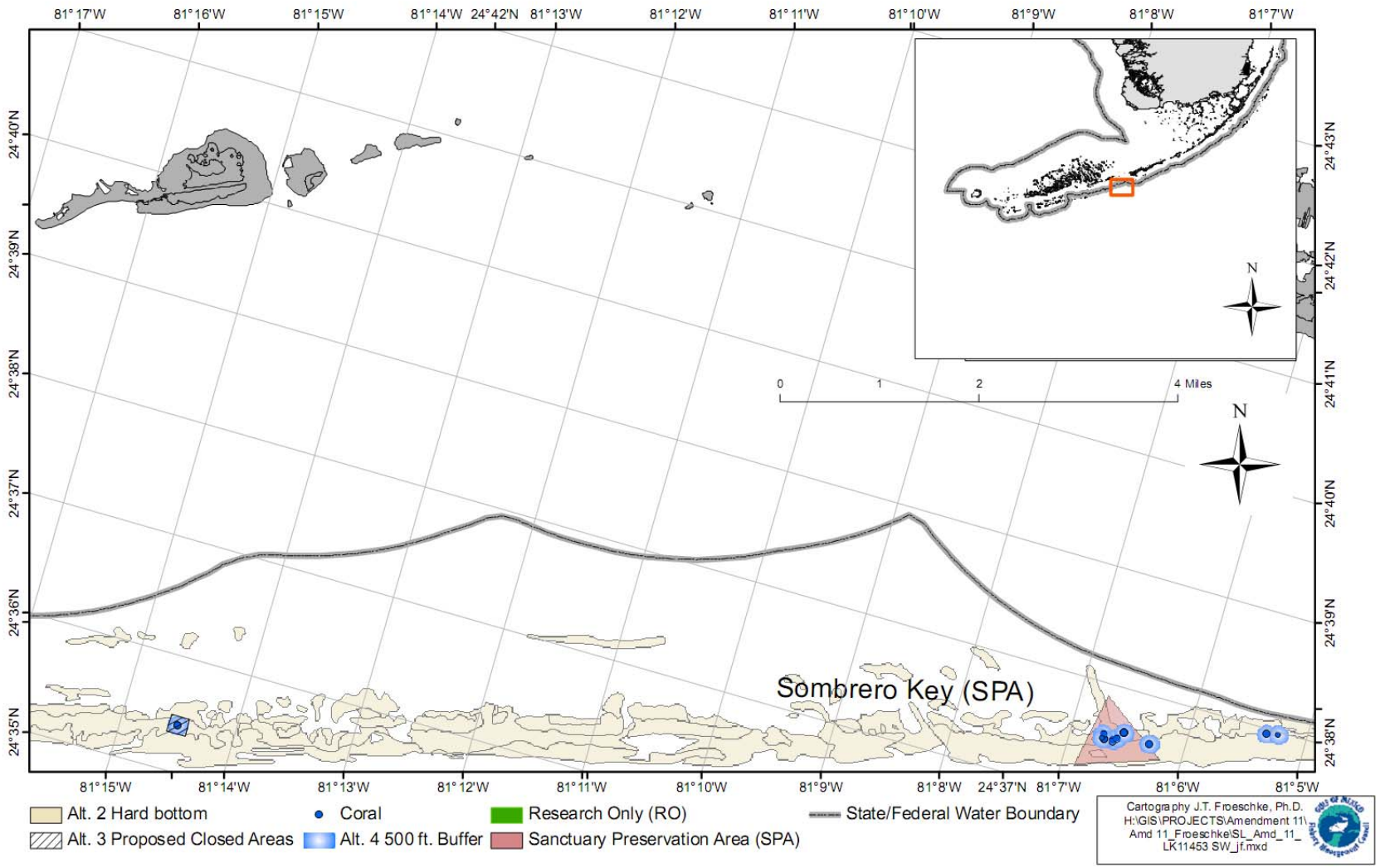

Figure 2.1.4. Map 11453 SE showing proposed closed areas.

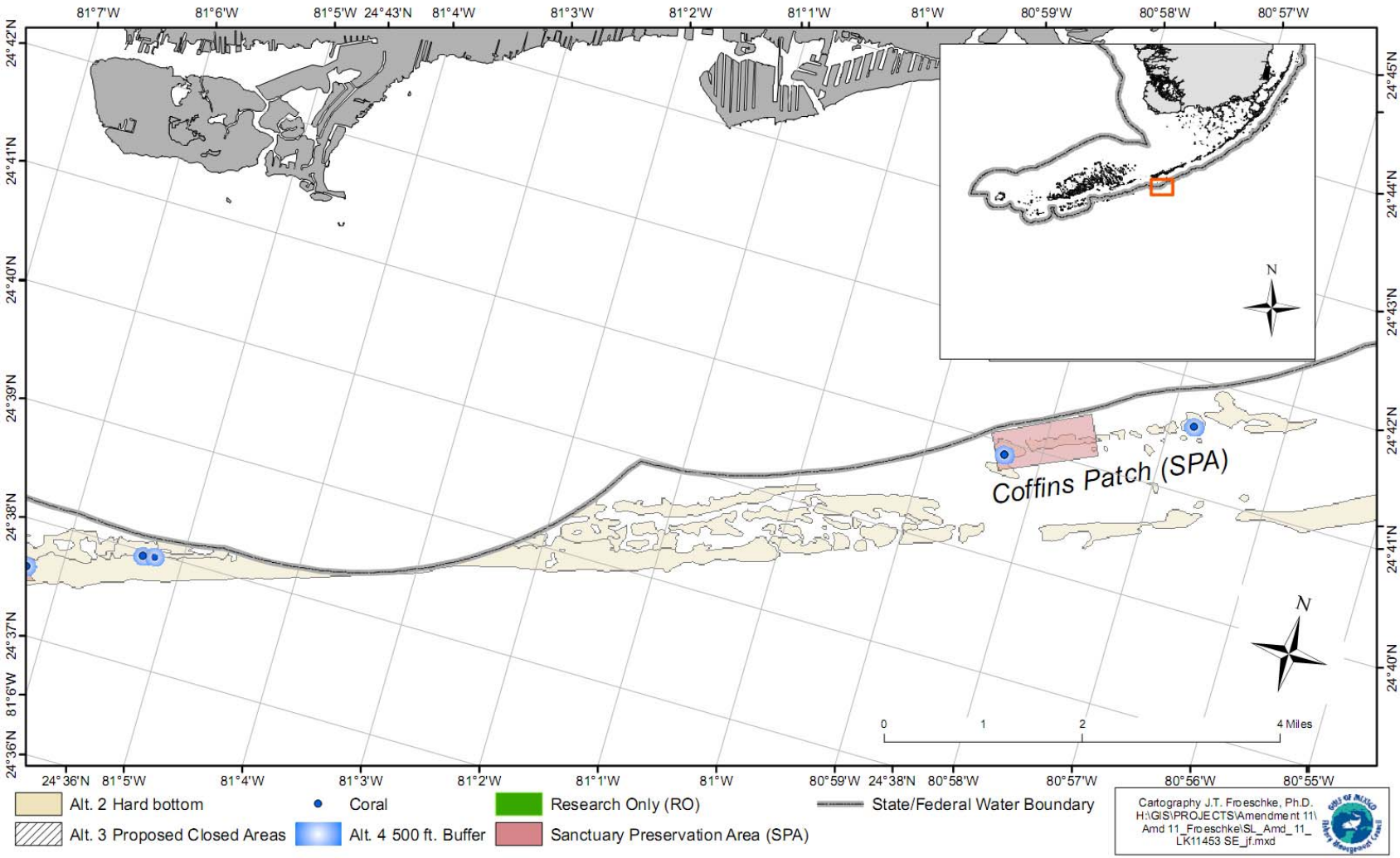

Figure 2.1.5. Map 11456 SE showing proposed closed areas.

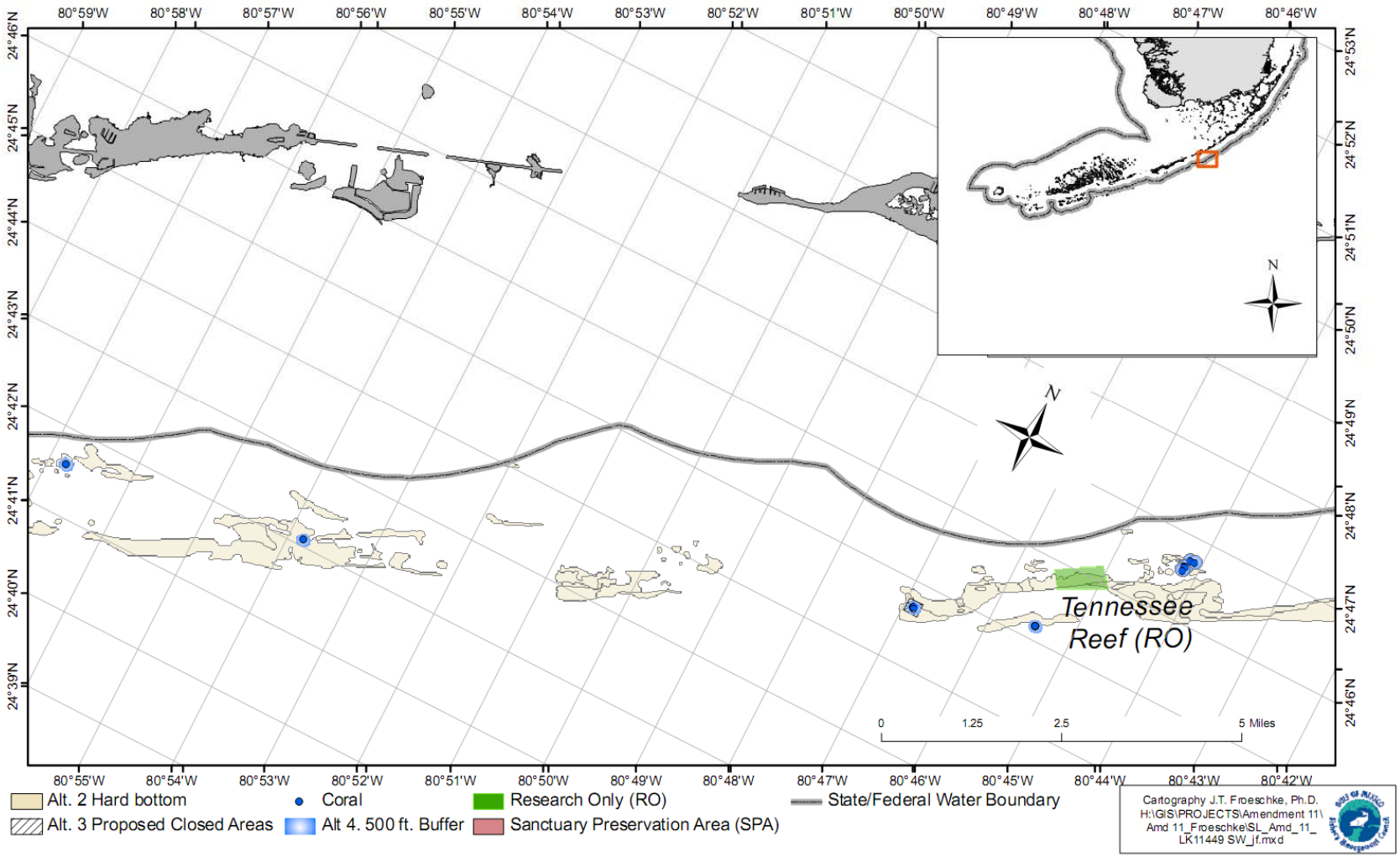

Figure 2.1.6. Map 11449 SW showing proposed closed areas.

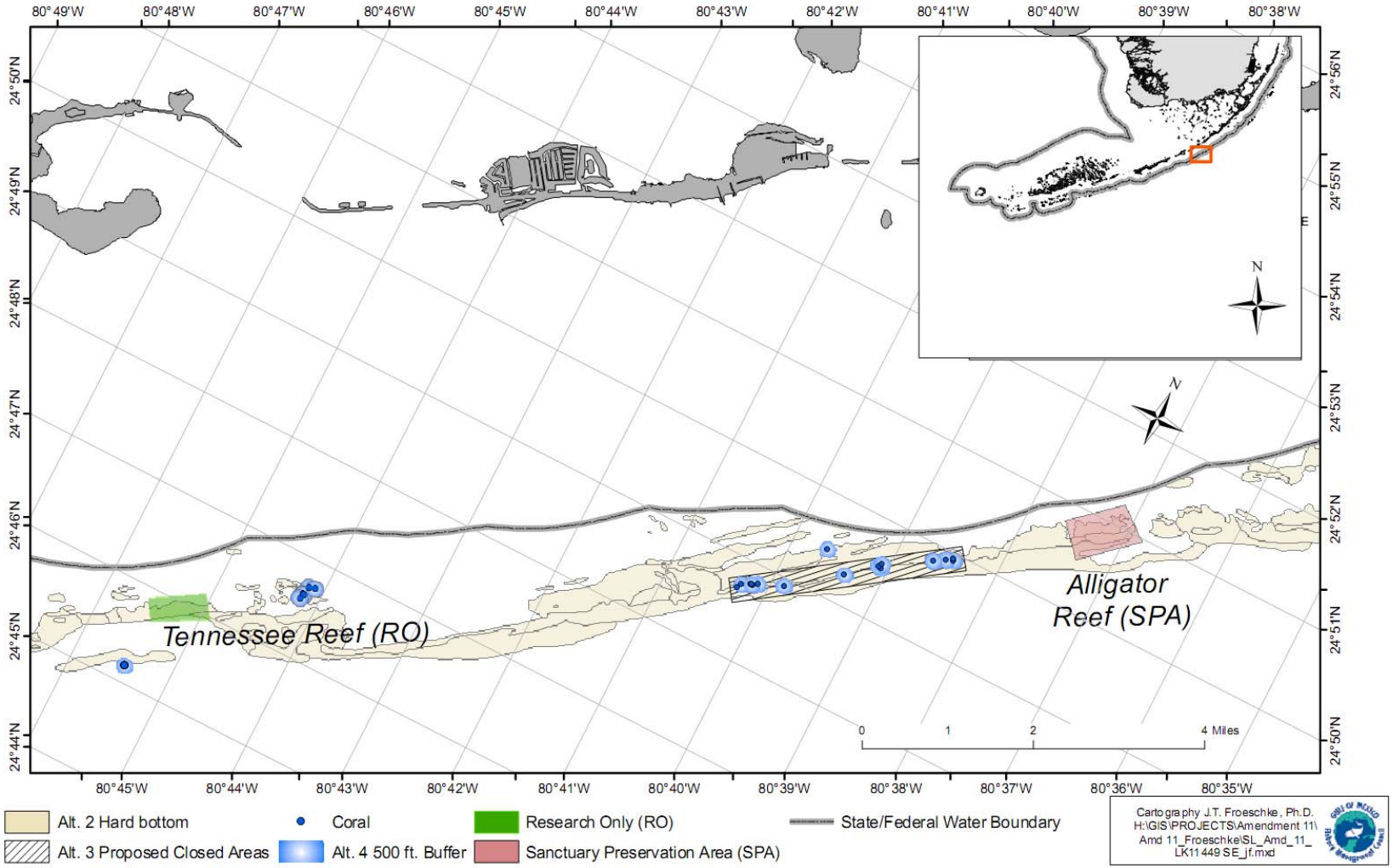

Figure 2.1.7. 11449 SE showing proposed closed areas.

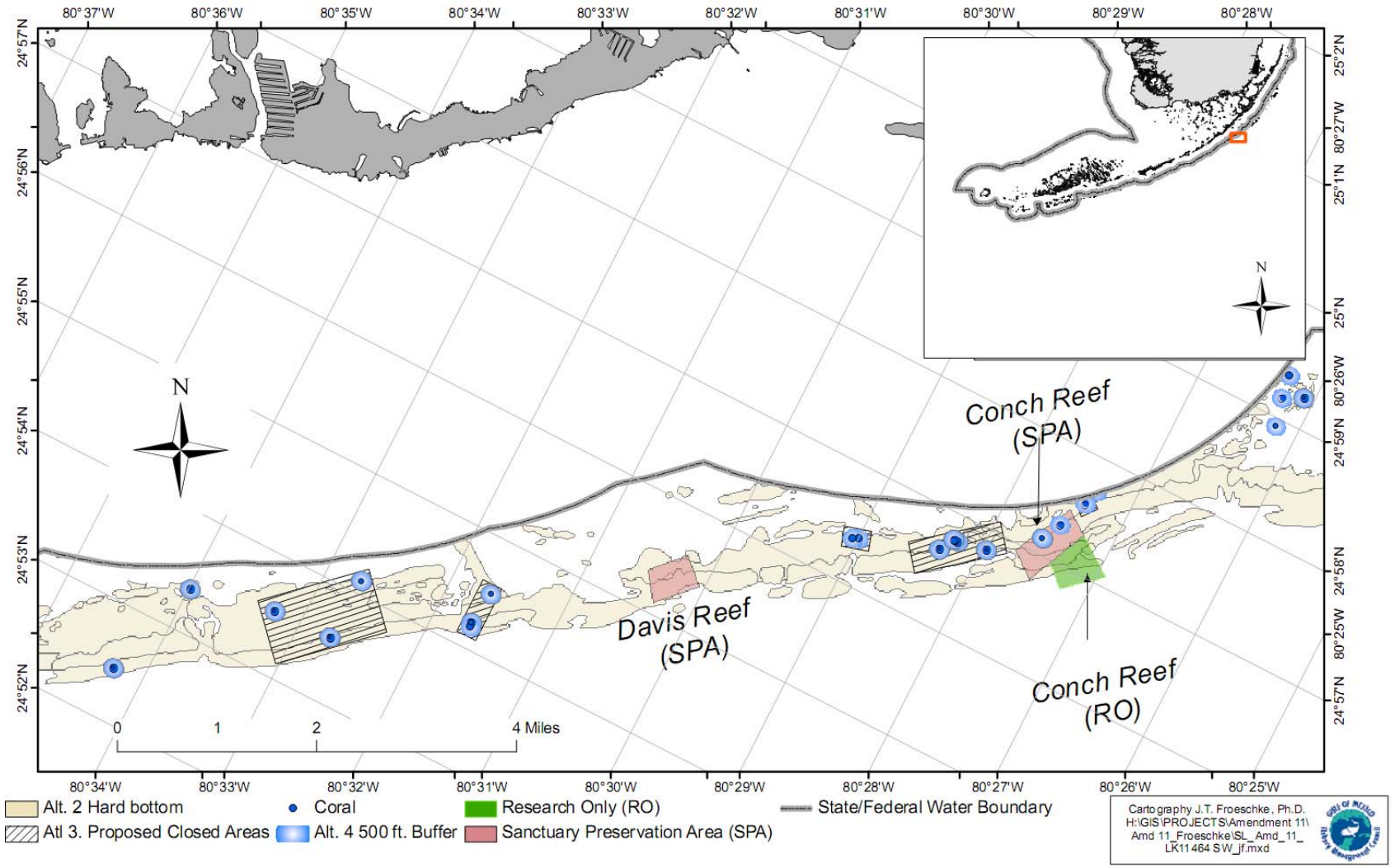

Figure 2.1.8. 11464 SW showing proposed closed areas.

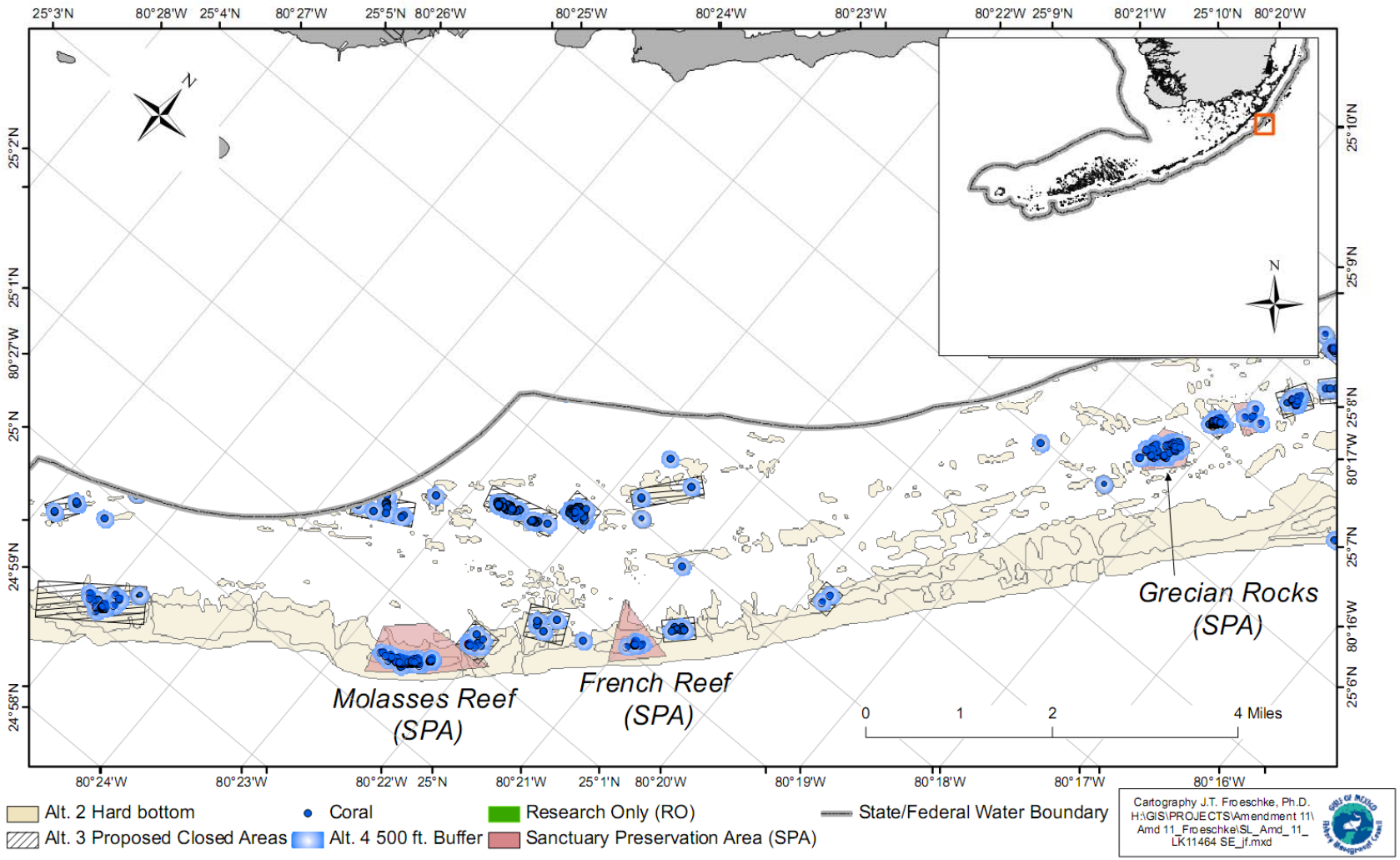

Figure 2.1.9. 11464 SE showing proposed closed areas.

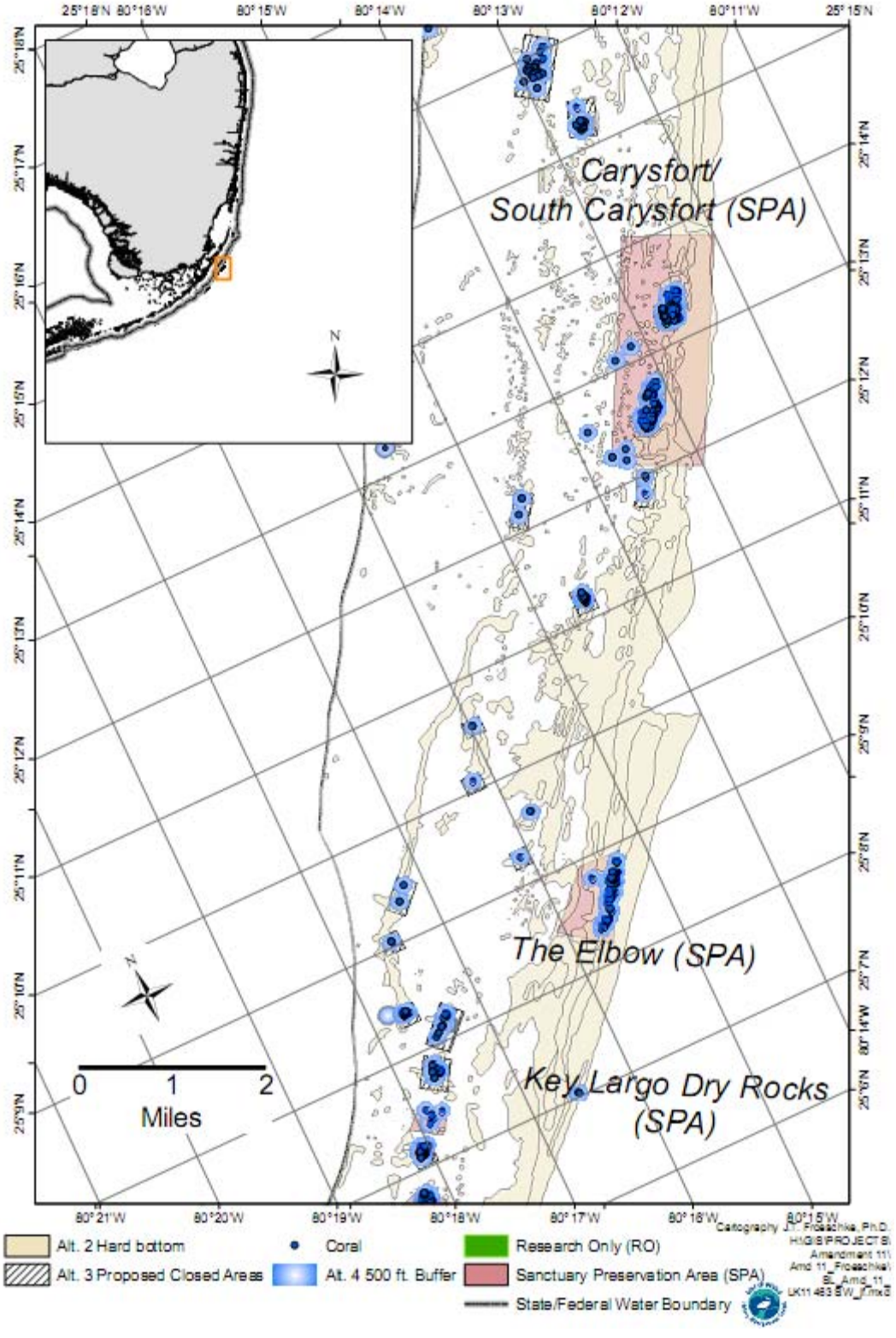

Figure 2.1.10. Map 11463 showing proposed closed areas.

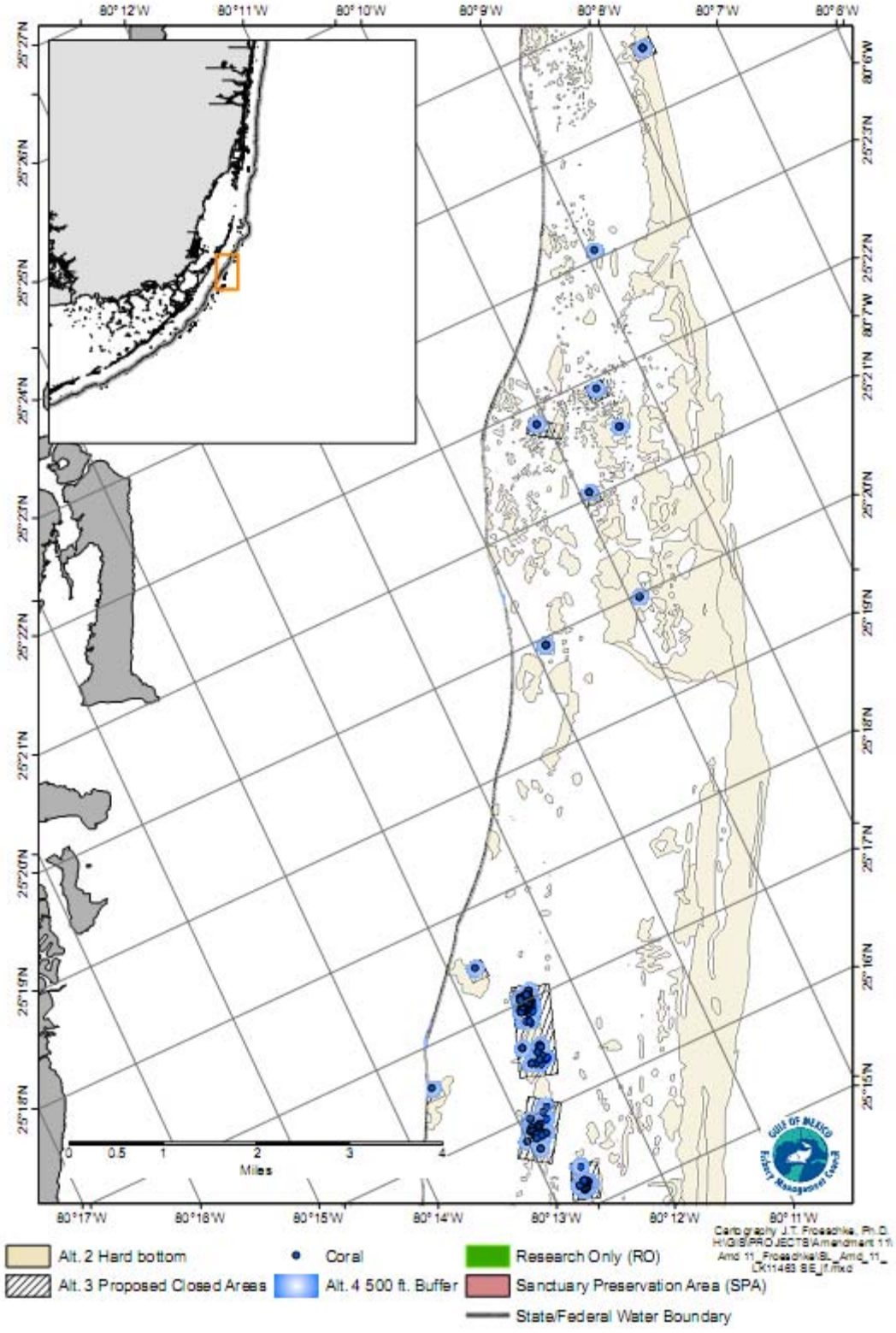

Figure 2.1.11. Map 11463 SE showing proposed closed areas.

Action 2: Require Gear Markings for Spiny Lobster Trap Lines in the EEZ off Florida

Alternative 1: No Action – do not require markings for spiny lobster trap lines.

Alternative 2: Require all spiny lobster trap lines in the EEZ off Florida to have a white marking along its entire length, such as an all white line or a white tracer throughout the line. The marking must be visible at all times when traps are in use. All gear must comply with marking requirements no later than August 6, 2017.

Alternative 3: Require all spiny lobster trap lines in the EEZ off Florida to have a permanently affixed white marking at least 4-inch wide spaced at least every 15 ft along the trap line, or at the midpoint if the line is less than 15 ft. The marking must be visible at all times when traps are in use. All gear must comply with marking requirements no later than August 6, 2017.

Discussion: Currently, all spiny lobster traps fished in the EEZ off Florida must follow the gear marking requirements established by Florida at 68B-24 in the Florida Administrative Code (FAC). Those regulations require a buoy or a time-release buoy to be attached to each spiny lobster trap or at each end of a weighted trap trotline. Each buoy must be a minimum of six inches in diameter and constructed of Styrofoam, cork, molded polyvinyl chloride, or molded polystyrene [FAC 68B-24.006(3)]. Additionally, each trap and buoy used must have the fishers' current lobster license or trap number permanently affixed in legible figures. On each buoy, the affixed lobster license or trap number shall be at least two inches high [FAC 68B-24.006(4)].

Lines are consistently found as marine debris and most frequently recovered without the buoys or traps still attached. Miller et al. (2008) reported lost pot/trap gear was the second most prevalent type of marine debris in the Florida Keys and the most damaging to benthic habitat. In all cases, lines were without buoys. Buoys are frequently dislodged from lines and the lines used in the spiny lobster fishery are also used in other fisheries and for other purposes. These conditions cause extreme difficulty when determining if line found in the environment, or entangling protected species, originated from the spiny lobster fishery. A lack of uniquely identifiable markings also makes monitoring incidental take in the fishery difficult. Trap line marking requirements would allow greater accuracy in identifying fishery interaction impacts to benthic habitats and protected species, leading to more targeted measures to reduce the level and severity of those impacts.

The Bi Op on the spiny lobster fishery mandated the establishment of trap line marking requirements no later than August 2014. In a memo dated September 2, 2011, the Regional Administrator for the Southeast Region of NOAA Fisheries Service amended the terms and conditions of the Bi Op to extend that deadline to August 6, 2017. This new date was based on the presumption that a rule to implement management measures in this amendment would be in

From the Bi Op: NMFS must work with the Gulf of Mexico and South Atlantic Fishery Management Councils, and the State of Florida, to implement measures requiring that all spiny lobster trap rope be a specific color or have easily identifiable patterns/markings, not currently in use in other fisheries, along its entire length. This will ensure any trap rope affects can be attributed to the appropriate fishery (e.g., stone crab, spiny lobster, or blue crab fisheries). Easily identifiable ropes must be phased into the federal fishery no later than five years after the finalization of this biological opinion.

place by the beginning of the 2012 fishing year. August 6, 2017, would be five years from the expected implementation of the requirement. Fishermen have indicated trap lines last five to seven years before needing to be replaced. The five-year time line would allow fishermen to replace worn trap lines with marked lines as they wear out, and thereby spread the cost and labor of compliance across multiple years.

The federal spiny lobster fishery has three management areas: the EEZ off Gulf states other than Florida, the EEZ off Florida, and the EEZ off southern Atlantic states other than Florida. Because little spiny lobster trap fishing occurs outside Florida, the Bi Op did not consider trap impacts to protected species anywhere else. Therefore, all measures required under the Bi Op only apply to spiny lobster fishing occurring in the EEZ off Florida.

Other fisheries in other regions have trap line marking requirements. Under the Atlantic Large Whale Take Reduction Plan, trap/pot fisheries in the Northeast and Mid-Atlantic regions must use red, orange, or black markings on their gear depending on the fishery. When the line in use is the same color as the required gear marking color scheme, those lines are marked with a white line. Because color marking schemes using red, orange, and black are currently in use, those colors would not be considered here. Requiring a white or colored tracer in the line (**Alternative 2**) would meet the requirements of the Bi Op (see Figure 2.2.1 for an example of a tracer).

Spiny lobster industry members requested only colors that were not likely to attract sea turtles be considered for gear marking requirements. Most sea turtles appear to have at least some color vision and most are able to see a color spectrum similar to what humans observe (Liebman and Granda 1971; Granda and O'Shea 1972; Liebman and Granda 1975; Levenson et al. 2004; Mäthger et al. 2007). Limited research has not yet identified any particular color that would be less likely to attract sea turtles. However, anecdotal evidence from sea turtle rehabilitation suggests that bright colors such as pinks, yellows, and bright greens can capture their attention (S. Schaf, FWC, pers. comm.).

Figure 2.2.1. Example of a color tracer line (orange) woven along the entire length of a black trap line. In the image, the trap line is coiled.

Three methods for marking gear were tested and found to work satisfactorily in the Northeast Region under normal conditions. At the top of Figure 2.2.2, colored twine is seized around the line and woven between the strands. In the center, the line was spray-painted; this method requires that the line be dry. At the bottom, colored electrical tape was wrapped in one direction and then back over itself to form two layers. All of these marking techniques and potentially others would be allowed under **Alternative 3**.

Figure 2.2.2. Examples of satisfactory gear markings for trap lines in the Northeast Region.

Florida could greatly improve the efficacy of gear marking requirements for spiny lobster gear fished in the EEZ off Florida by creating compatible gear marking requirements for spiny lobster trap gear in state waters. The selection of a gear marking scheme does not preclude non-spiny lobster fishers from using the same color. Florida could further improve the efficacy of gear marking requirements proposed under this action by instituting gear marking requirements for other state water trap fisheries (i.e., blue crab and stone crab).

Alternative 1 would have no benefit for protected species and would not satisfy the trap line marking requirements of the Bi Op. This alternative is unlikely to have any social or economic impact. The Councils chose to take no action on this issue in Amendment 10 to allow more time for input from stakeholders on the most appropriate and cost-effective ways to mark lines. However, the Councils indicated they would quickly develop Amendment 11 to address this issue.

On July 12-13, 2011, the FKCFA held a meeting to provide industry input on the location of closed areas in Action 1. Although some discussion was held on line marking techniques, no specific recommendations were made. Some participants did indicate they would prefer white line or line markings under **Alternatives 2** and **3**. In a letter to the South Atlantic Council dated September 11, 2011, the Florida Keys Commercial Fishermen's Association stated that white line is the second most preferable color to black because of its similar life expectancy (5-7 years) and availability.

Most fishers use black polyethylene rope for lobster trap lines because it is most resistant to UV degradation (Ornitz 2011). The addition of pigment to the rope keeps UV light from penetrating

very deep into the fibers and restricts degradation to the surface of the rope. Polyester rope is generally clear, so both black and white rope require the addition of pigment, making white rope "almost as good as black rope for long-term use" (Ornitz 2011). White rope is currently used by "trawl" fishermen who string multiple lobster traps together, generally in deeper water.

One concern with the use of white rope to identify lobster trap lines is that white rope is used in many applications associated with boating. However, trap line is polyethylene and, therefore, generally distinguishable from normal line used on recreational and commercial boats.

Marine debris surveys in the Florida Keys documented that 21% of trap lines found were less than 15 ft long, approximately 53% were between 15 and 45 ft in length, and the remainder were longer than 50 ft (Miller et al. 2008). The average length of line encountered was approximately 35 ft (Miller et al. 2008). Requiring marks along the entire length of the line (**Alternative 2**) or at least every 15 ft (**Alternative 3**) improves the likelihood that line found in the environment can be identified properly.

Both labor and costs would likely be less under **Alternative 3** than **Alternative 2**. Markings could be made in a number of ways, based on what would work best for the individual fisher. Trap lines marked under the Atlantic Large Whale Take Reduction Plan are coiled and then spray-painted over a section. This method is quick and economical as it does not require the purchase of special rope. The markings must be spaced at least every 15 ft, but could be closer, so exact measurements would not be necessary. Likewise each mark must be at least four inches, but could be larger.

An assessment of the financial implications of trap line replacement (Adams 2011) was based on the use of a blue tracer in black line. Because the tracer would degrade quicker than the rest of the line, the life expectancy of the line would be only around three years. In addition, the line with a blue tracer costs more than solid black line. Cost estimates to the entire fishery over a 15-year period were $8,577,000 more for the line with the blue tracer than the solid black line, due to a higher line price and more frequent replacement. Based on the Florida Keys Commercial Fishermen's Association letter, line with a white tracer should not need more frequent replacement. If the price of line with a white tracer is the same as the price of line with a blue tracer, the difference in cost to the fishery using Adams' (2011) calculations would be $1,059,480 over 15 years. Additionally, he based his calculations on the total number of traps owned by fishermen in Florida. This amendment only requires trap line markings for traps fished in the EEZ, which is less than half of the traps. However, if Florida implemented compatible regulations, all traps fished off Florida would need marked lines.

The assessment in Section 4.2.2 incorporates data from Adams (2011) and other sources, including Florida Trip Ticket data; it shows estimates on an annual basis for vessels fishing in the EEZ off Florida. Assuming a five-year replacement interval for 1,320 traps per vessel[1] and

[1] The total for traps "that could be fished" is the sum for all vessels of the number of traps used by each vessel on its high-trap trip in one year. The 99th percentile is used to define the high-trap trip for a vessel, not the maximum. It is assumed that the number of traps for each Florida Trip Ticket record is between 1 and 5,000 traps. However, this results in fewer vessels with such observations than the number shown with landings. The ratio of the two numbers for vessels is used to obtain the total for "traps that could be fished."

113 ft lines at 9 ¢ / ft, the estimated annual cost of trap replacement would be $2,685 per vessel for 271 vessels or $727,635 (see Table 4.2.1 and 4.2.2). Deducting the estimated annual cost of trap line replacement for **Alternative 1** ($462,055, see Section 4.2.2) the annual economic impact is $265,580 for vessels in the EEZ off Florida.