MARINE RESOURCES ASSESSMENT FOR THE GULF OF MEXICO

FINAL REPORT

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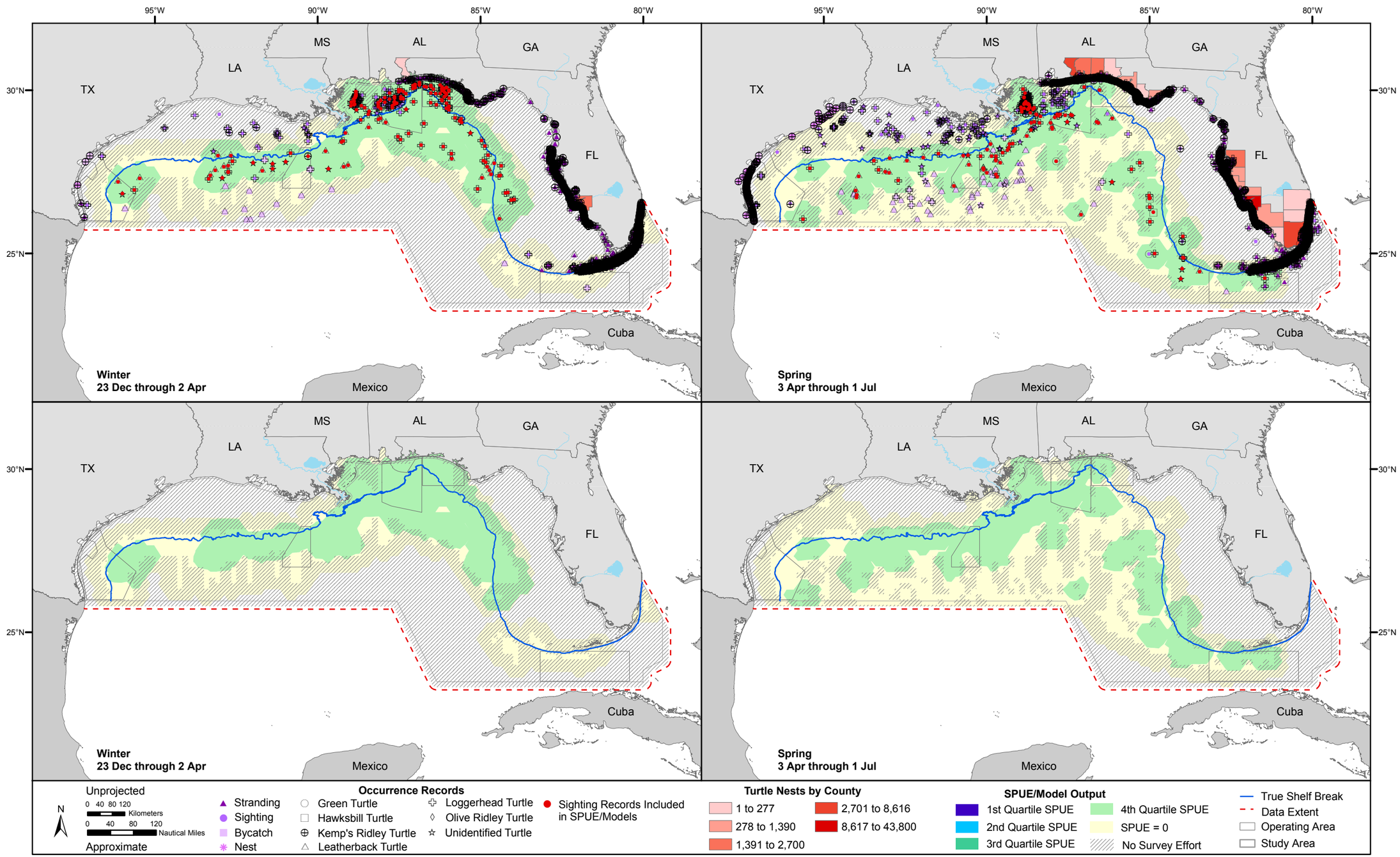
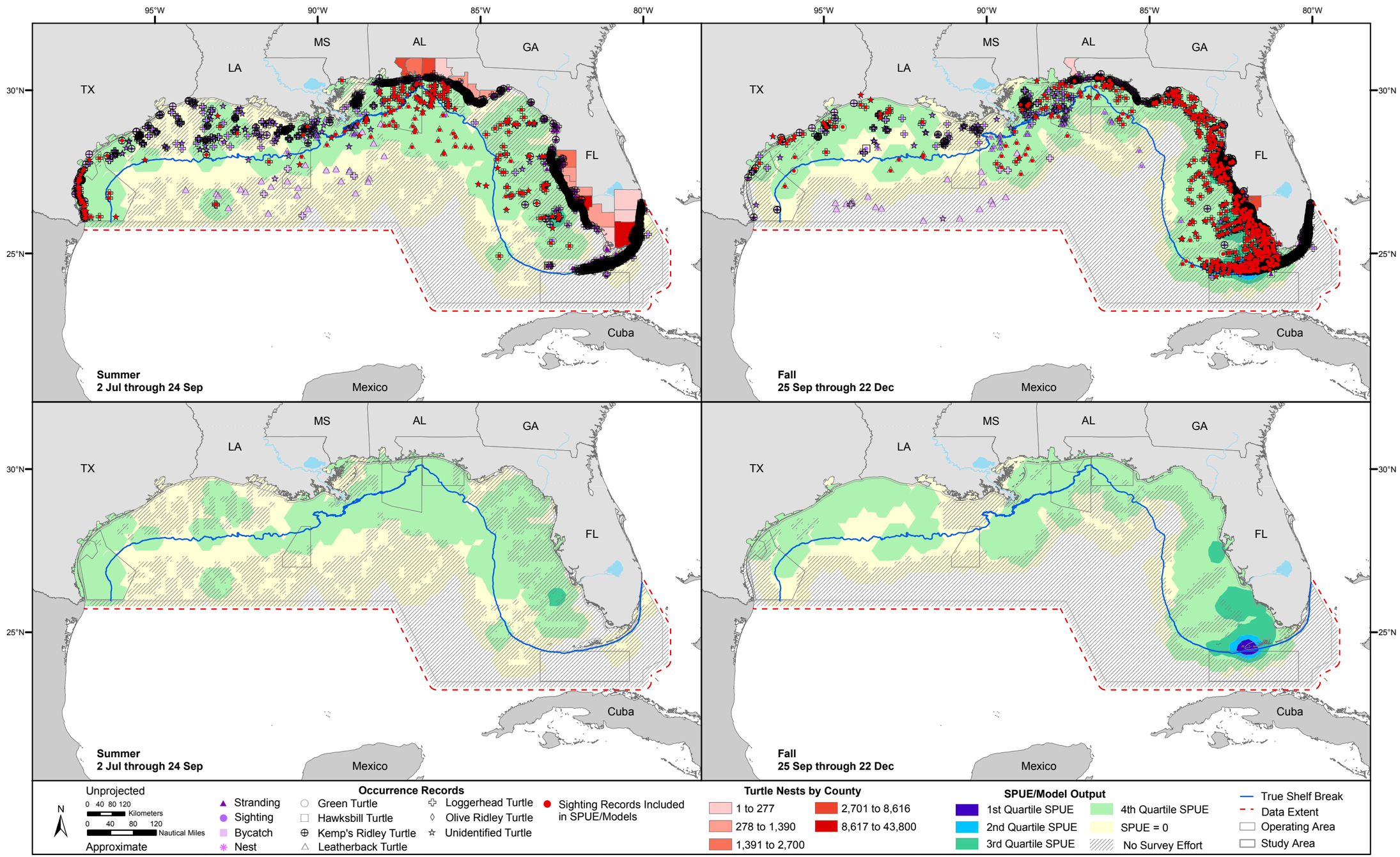


Figure C-1. Occurrence of all sea turtles, all of which are listed as threatened or endangered, in the GOMEX study area. Available sighting, stranding, incidental fisheries bycatch, and nest records are represented by season. Model output was derived using sighting-per-unit-effort (SPUE) data, which were calculated from only dedicated sighting data. Source data: refer to Table A-1.



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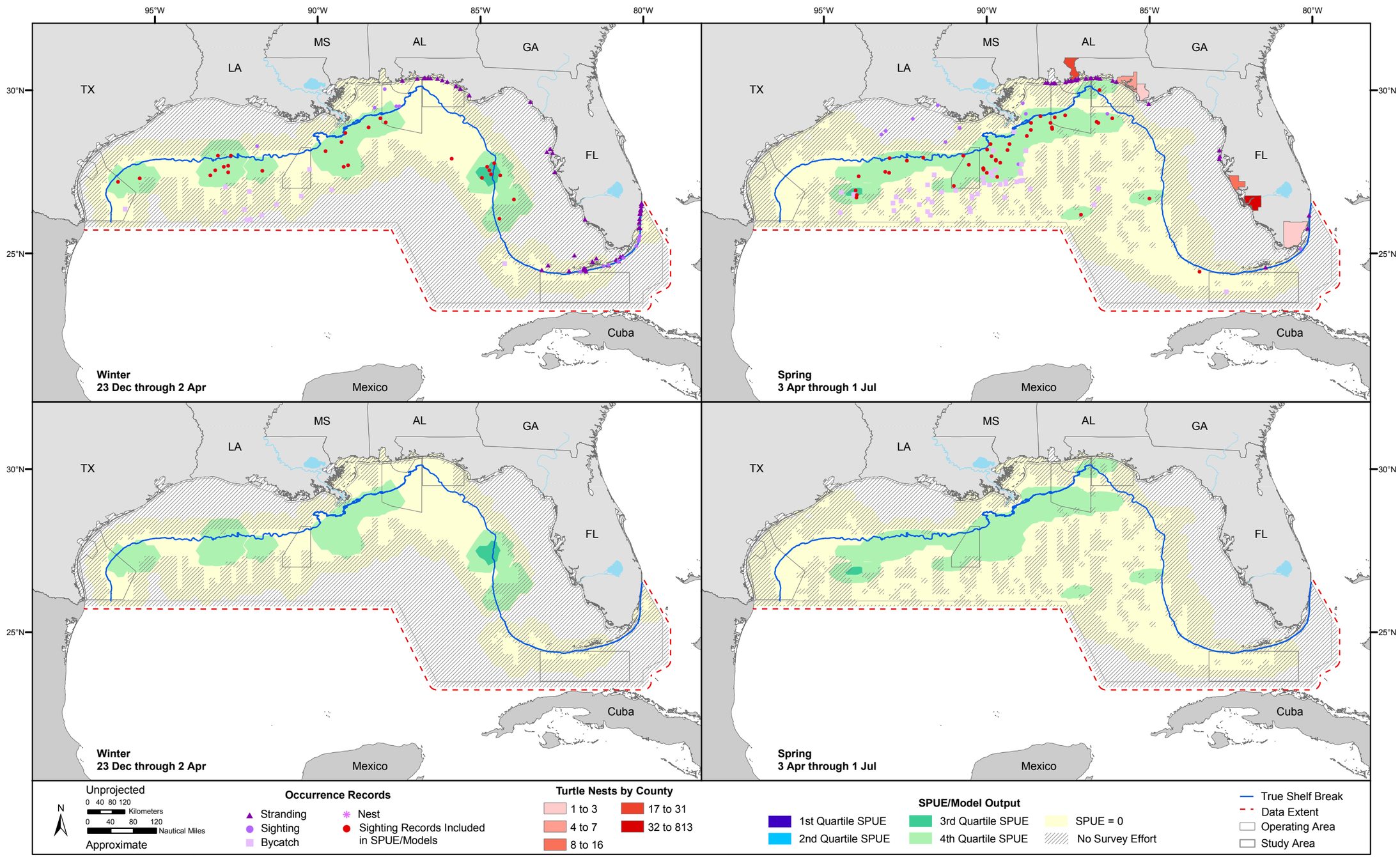

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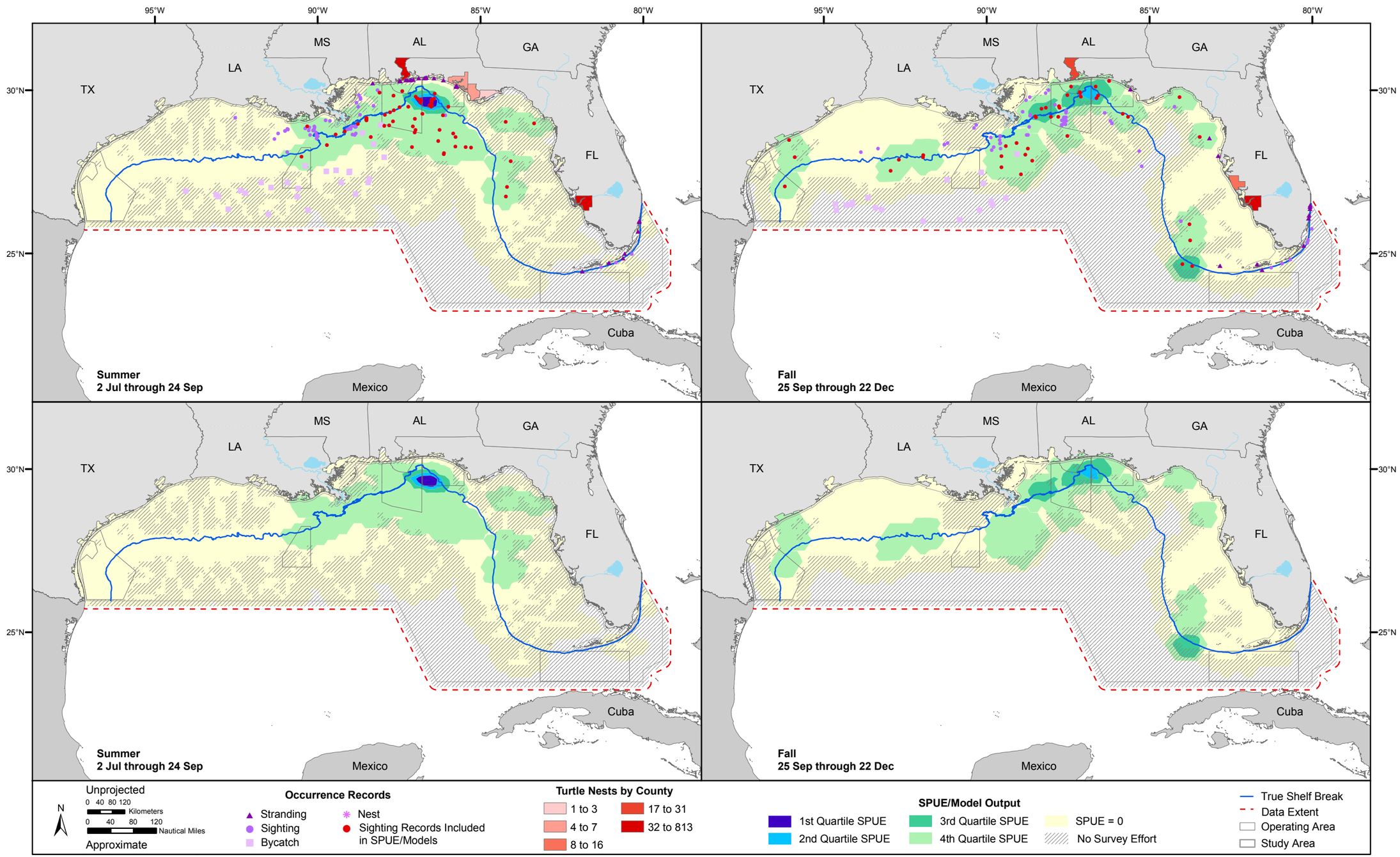

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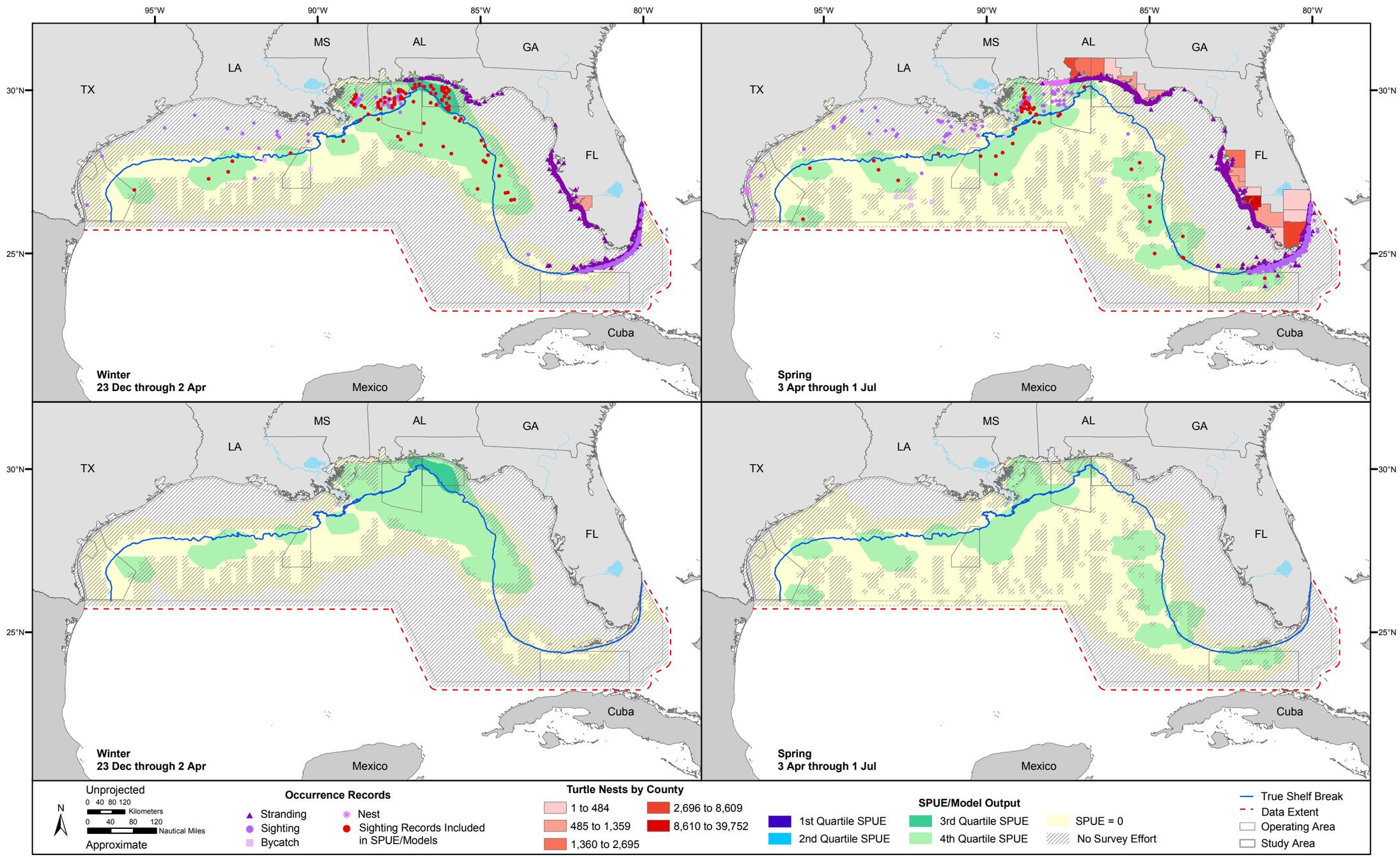

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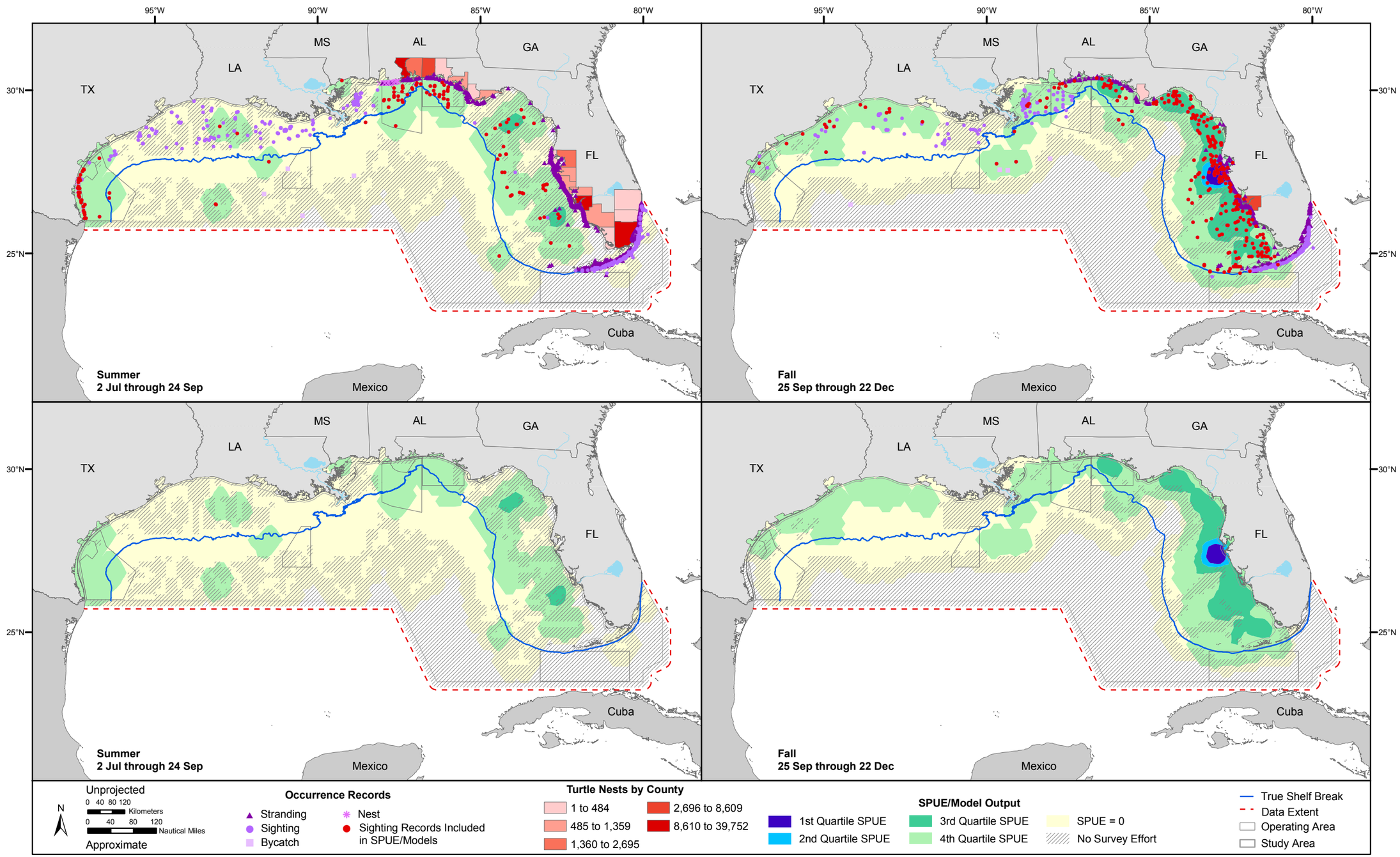

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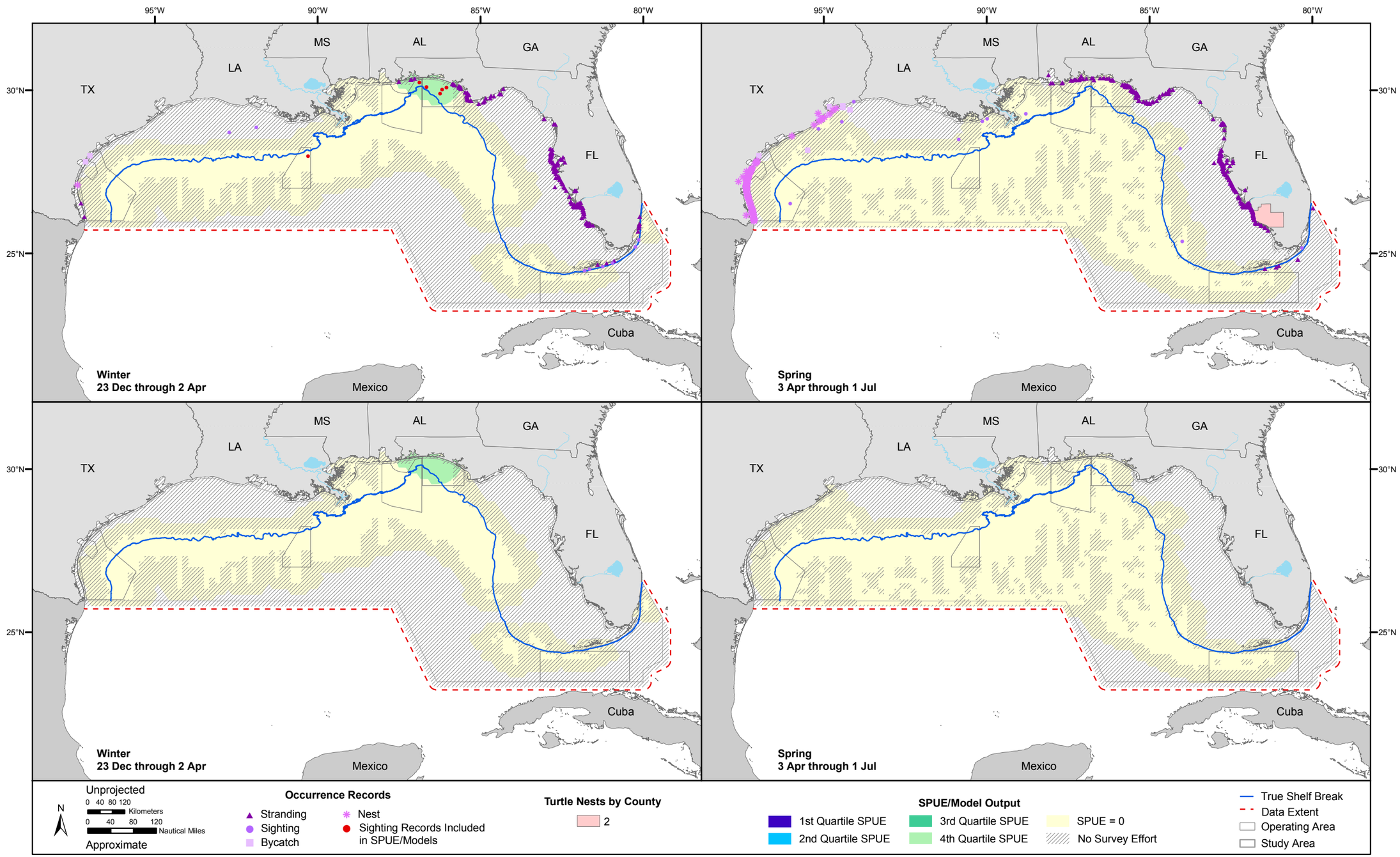

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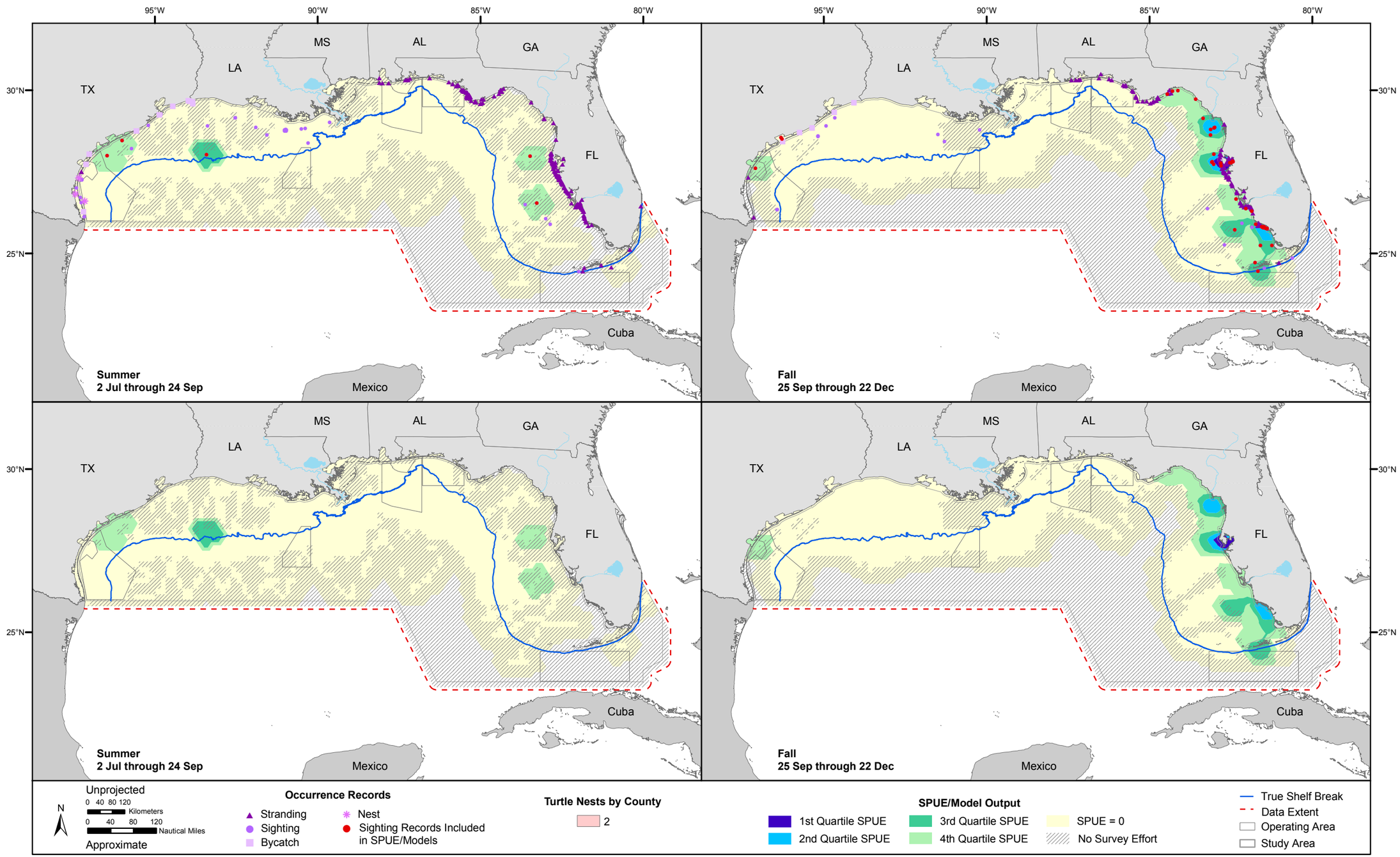

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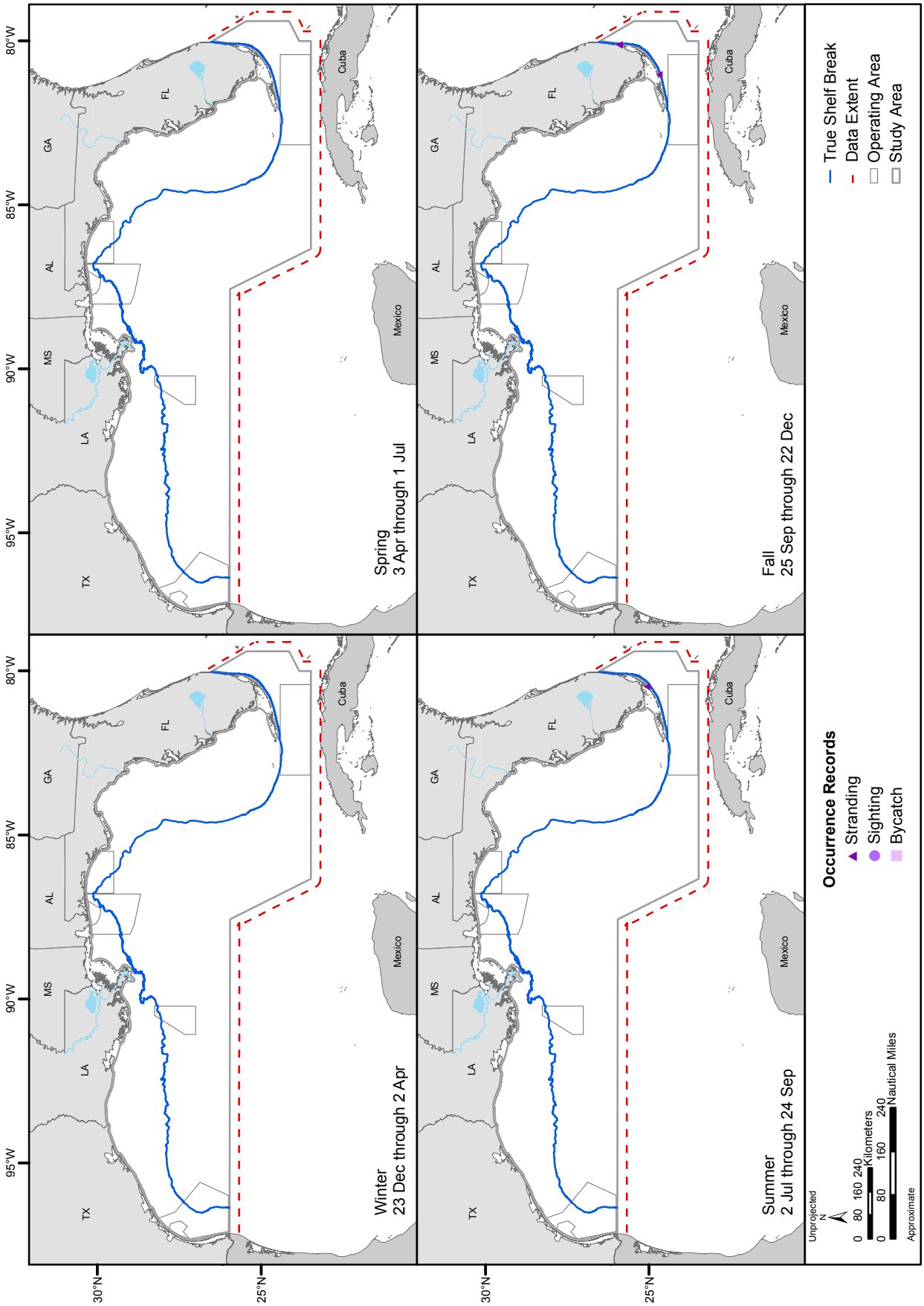

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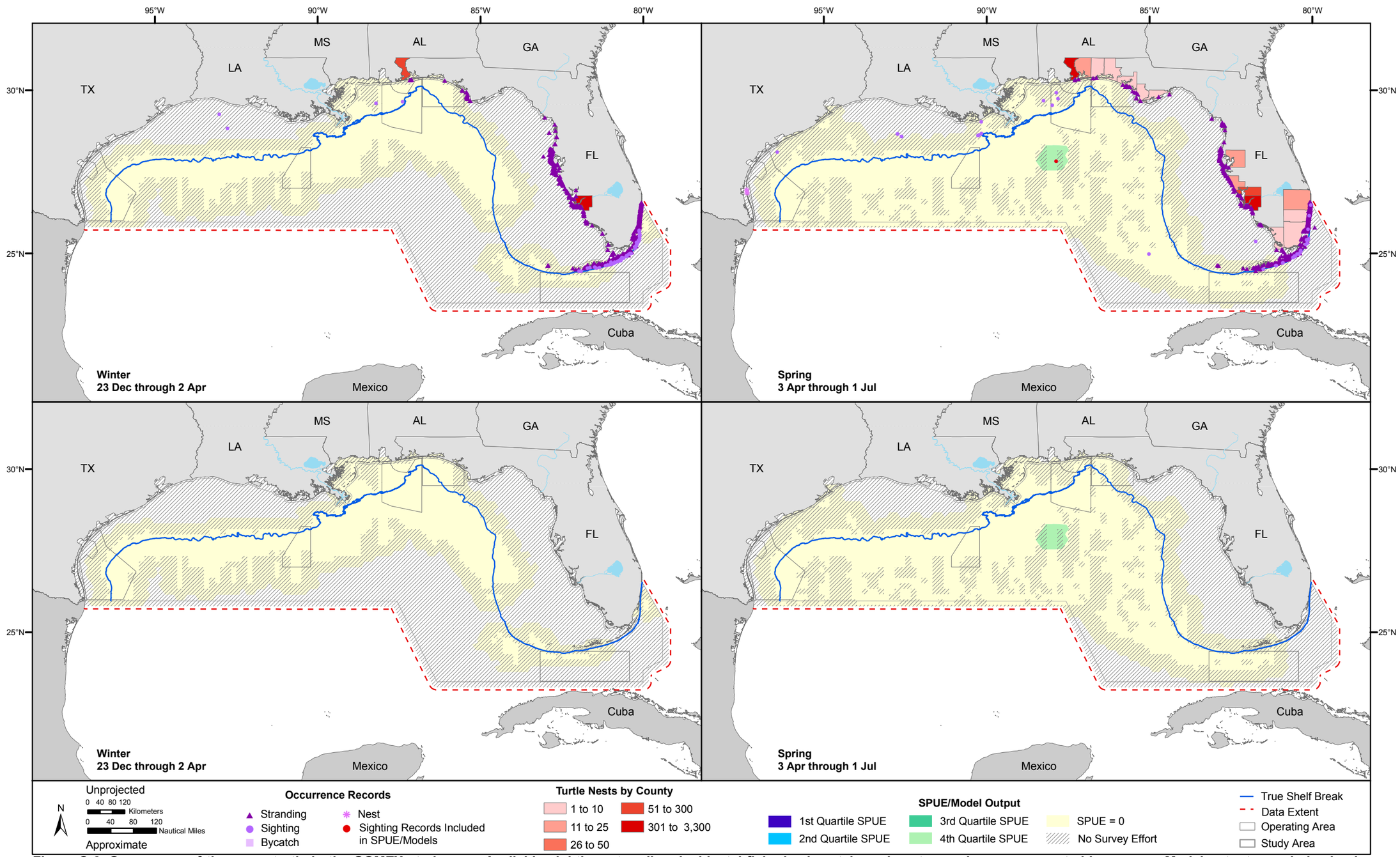

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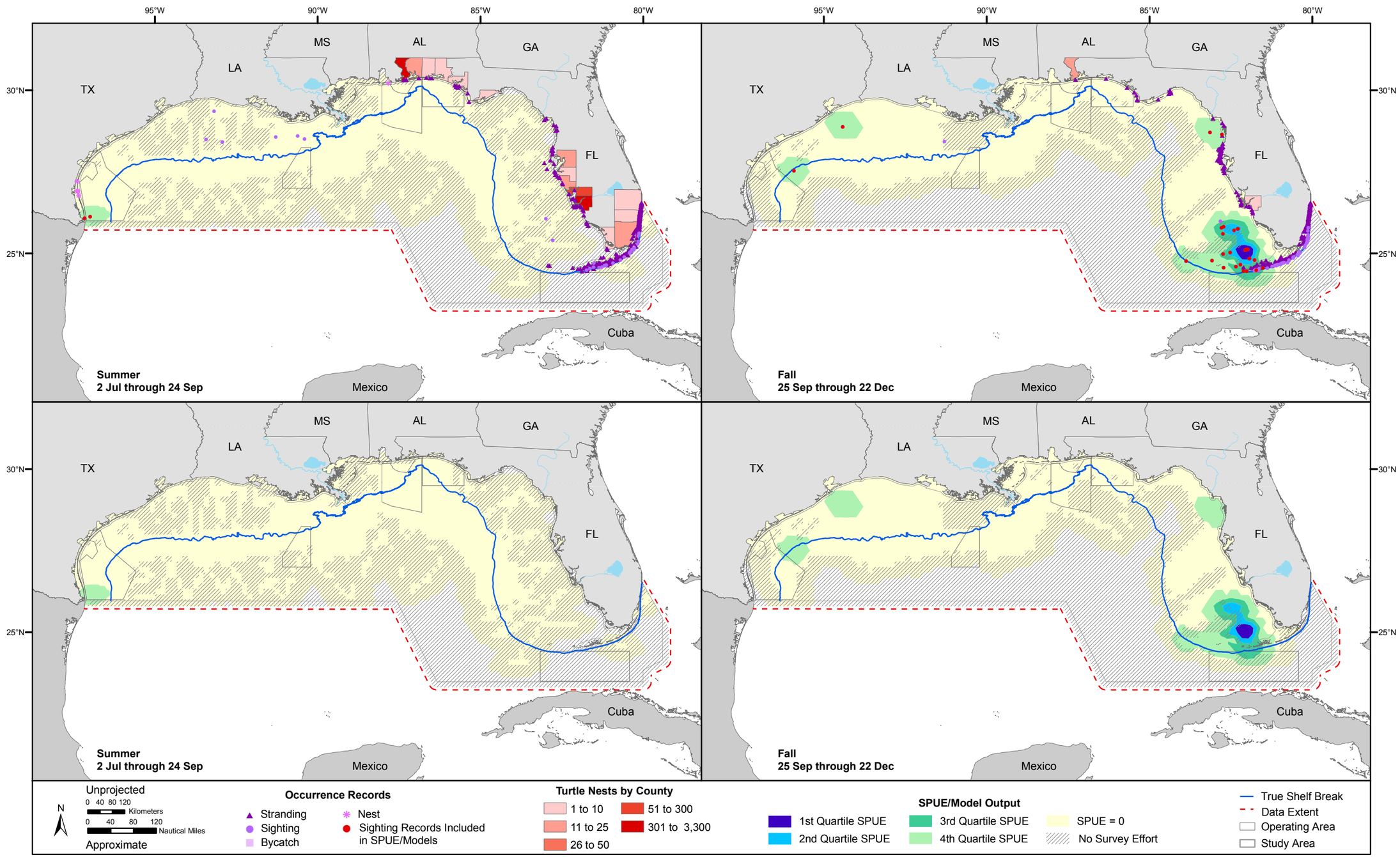

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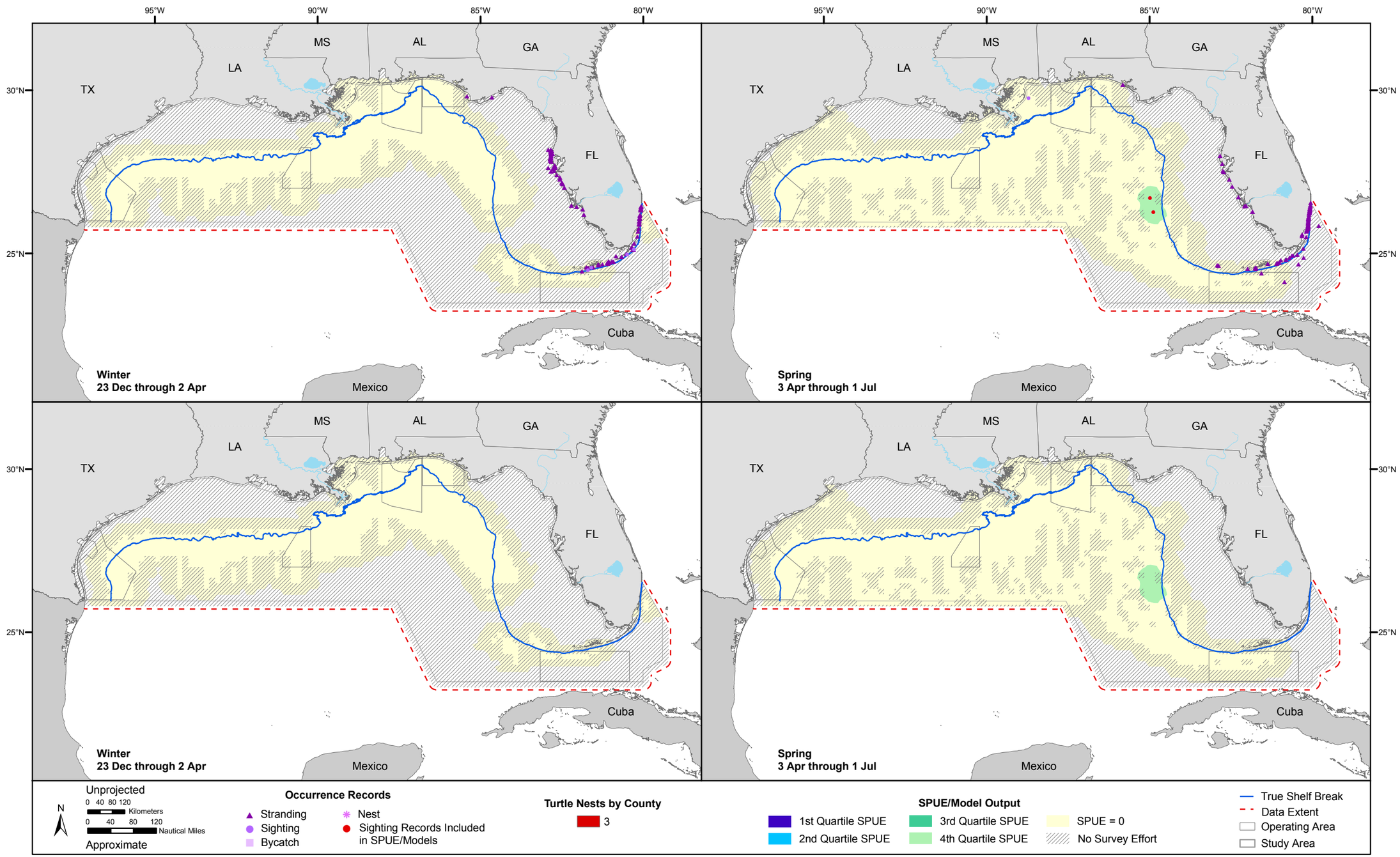

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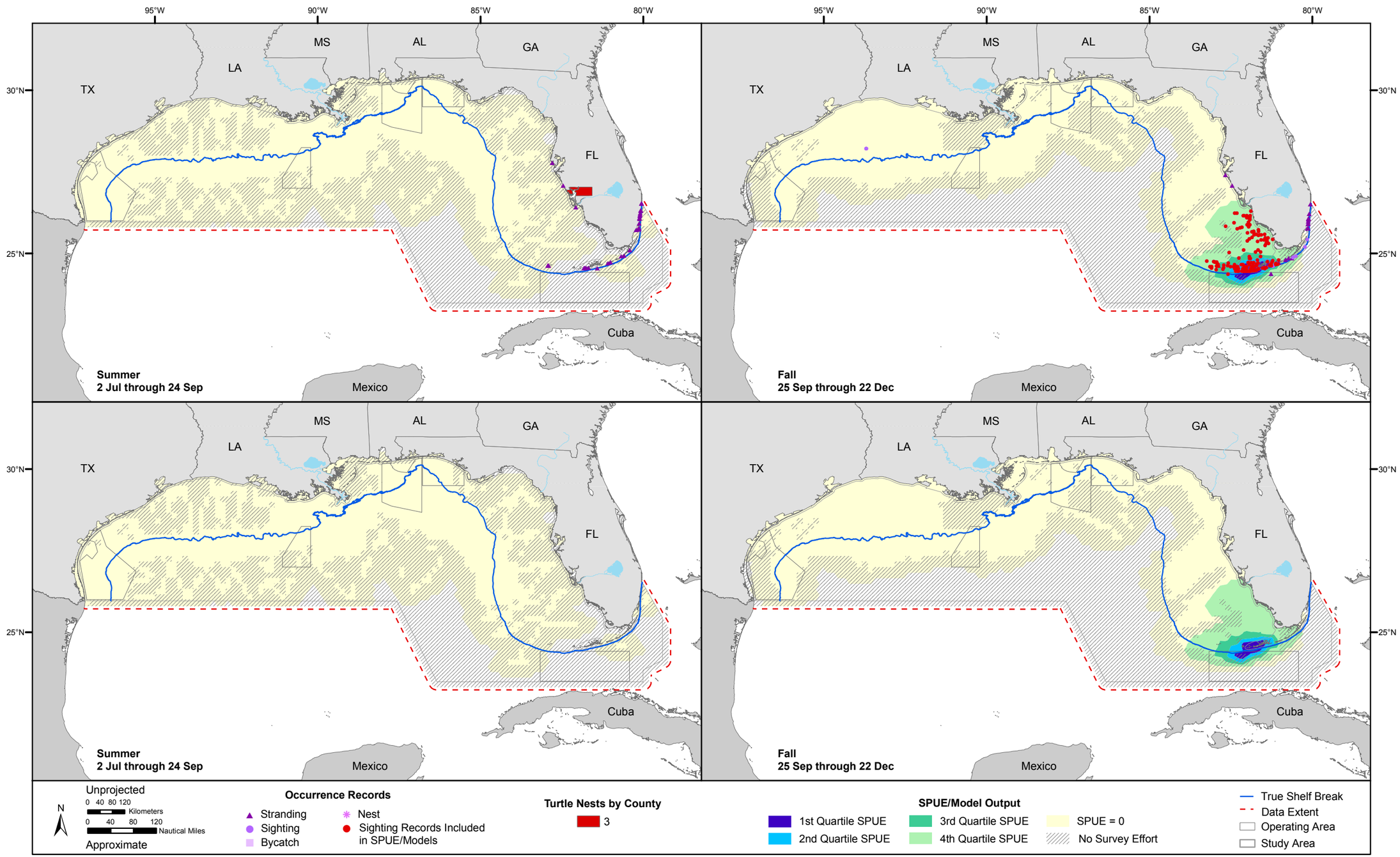

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Table D-1. Source data, source maps, and source information used to map EFH and HAPC for the subtropical-tropical managed species in the GOMEX study area.

Figure Number	Species	Sources
D-8	Blackfin snapper	Source data: NOAA (1996a, 1998), SEAMAP (2001), Sheridan and Caldwell (2002), FFWCC (2003), and GDAIS (2005). Source map (scanned): Jaap and Hallock (1990). Source information: NOAA (1996b).
D-9	Blueline tilefish	Source data: NOAA (1996a, 1998), USGS (2000), and Sheridan and Caldwell (2002), FFWCC (2003), and GDAIS (2005). Source map (scanned): Jaap and Hallock (1990). Source information: NOAA (1996b).
D-11	Brown shrimp	Source data: NOAA (1998), USGS (2000), Sheridan and Caldwell (2002) and GDAIS (2005). Source information: NOAA (1996b).
D-12	Caribbean spiny lobster	Source data: NOAA (1998), USGS (2000), SEAMAP (2001), Sheridan and Caldwell (2002), FFWCC (2003), and GDAIS (2005). Source maps (scanned): Jaap and Hallock (1990). Source information: NOAA (1996b).
D-13	Cobia, king mackerel, and Spanish mackerel	Source data: NOAA (1998), FFWCC (2003), GDAIS (2005), and SAFMC (2005). Source map (scanned): Zale and Merrifield (1989). Source information: NOAA (1996b).
D-15	Dolphinfishes and wahoo	Source data: NOAA (1998), GDAIS (2005), NOAA and SAFMC (2005). Source information: NOAA (1996b).
D-17	Goliath grouper	Source data: NOAA (1996a, 1998), FFWCC (2003, 2005), and GDAIS (2005). Source map (scanned): Jaap and Hallock (1990). Source information: NOAA (1996b).
D-18	Gray snapper	Source data: NOAA (1996a, 1998), SEAMAP (2001), Sheridan and Caldwell (2002), FFWCC (2003, 2005e), and GDAIS (2005). Source maps (scanned): Jaap and Hallock (1990). Source information: NOAA (1996b).
D-19	Greater amberjack	Source data: NOAA (1996a, 1998), FFWCC (2003, 2005e), GDAIS (2005), and Sedberry (2005). Source maps (scanned): Jaap and Hallock (1990). Source information: NOAA (1996b).
D-20	Mutton snapper	Source data: NOAA (1996a, 1998), USGS (2000), SEAMAP (2001), Sheridan and Caldwell (2002), FFWCC (2003), and GDAIS (2005). Source map (scanned): Jaap and Hallock (1990). Source information: NOAA (1996b).
D-21	Pink shrimp	Source data: NOAA (1998), USGS (2000), Sheridan and Caldwell (2002) and GDAIS (2005). Source information: NOAA (1996b).
D-22	Red drum	Source data: NOAA (1998), USGS (2000), Sheridan and Caldwell (2002), FFWCC (2003, 2005), and GDAIS (2005). Source information: NOAA (1996b).
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Table D-1. Source data, source maps, and source information used to map EFH and HAPC for the subtropical-tropical managed species in the GOMEX study area (cont'd).

Figure Number	Species	Sources
D-24	Red snapper	Source data: NOAA (1996a, 1998), SEAMAP (2001), Sheridan and Caldwell (2002), FFWCC (2003), and GDAIS (2005). Source maps (scanned): Jaap and Hallock (1990). Source information: NOAA (1996b).
D-25	Royal red shrimp	Source data: NOAA (1998), USGS (2000), Sheridan and Caldwell (2002), and GDAIS (2005). Source information: NOAA (1996b).
D-26	Scamp	Source data: NOAA (1996a, 1998), FFWCC (2003), and GDAIS (2005). Source maps (scanned): Jaap and Hallock (1990). Source information: NOAA (1996b).
D-27	Silk snapper	Source data: NOAA (1996a, 1998), SEAMAP (2001), FFWCC (2003), and GDAIS (2005). Source map (scanned): Jaap and Hallock (1990). Source information: NOAA (1996b).
D-28	Snowy grouper	Source data: NOAA (1996a, 1998), USGS (2000), SEAMAP (2001), Sheridan and Caldwell (2002), FFWCC (2003), and GDAIS (2005). Source map (scanned): Jaap and Hallock (1990). Source information: NOAA (1996b).
D-29	Speckled hind	Source data: NOAA (1996a, 1998), SEAMAP (2001), Sheridan and Caldwell (2002), FFWCC (2003), and GDAIS (2005). Source map (scanned): Jaap and Hallock (1990). Source information: NOAA (1996b).
D-30	Tilefish	Source data: NOAA (1996a, 1998), USGS (2000), Sheridan and Caldwell (2002), FFWCC (2003), and GDAIS (2005). Source maps (scanned): Jaap and Hallock (1990). Source information: NOAA (1996b).
D-31	Vermilion snapper	Source data: NOAA (1996a, 1998), SEAMAP (2001), Sheridan and Caldwell (2002), FFWCC (2003), and GDAIS (2005). Source maps (scanned): Jaap and Hallock (1990). Source information: NOAA (1996b).
D-32	Warsaw grouper	Source data: NOAA (1996a, 1998), SEAMAP (2001), Sheridan and Caldwell (2002), FFWCC (2003), and GDAIS (2005). Source map (scanned): Jaap and Hallock (1990), Source information: NOAA (1996b).
D-33	White grunt	Source data: NOAA (1996a, 1998), SEAMAP (2001), Sheridan and Caldwell (2002), FFWCC (2003), GDAIS (2005). Source map (scanned): Jaap and Hallock (1990). Source information: NOAA (1996b).
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Table D-1. Source data, source maps, and source information used to map EFH and HAPC for the subtropical-tropical managed species in the GOMEX study area (cont'd).

Figure Number	Species	Sources
D-36	Bluefish	Source data: NOAA (1998) and GDAIS (2005). Source information: Leaman et al. (1989) and NOAA (1996b).

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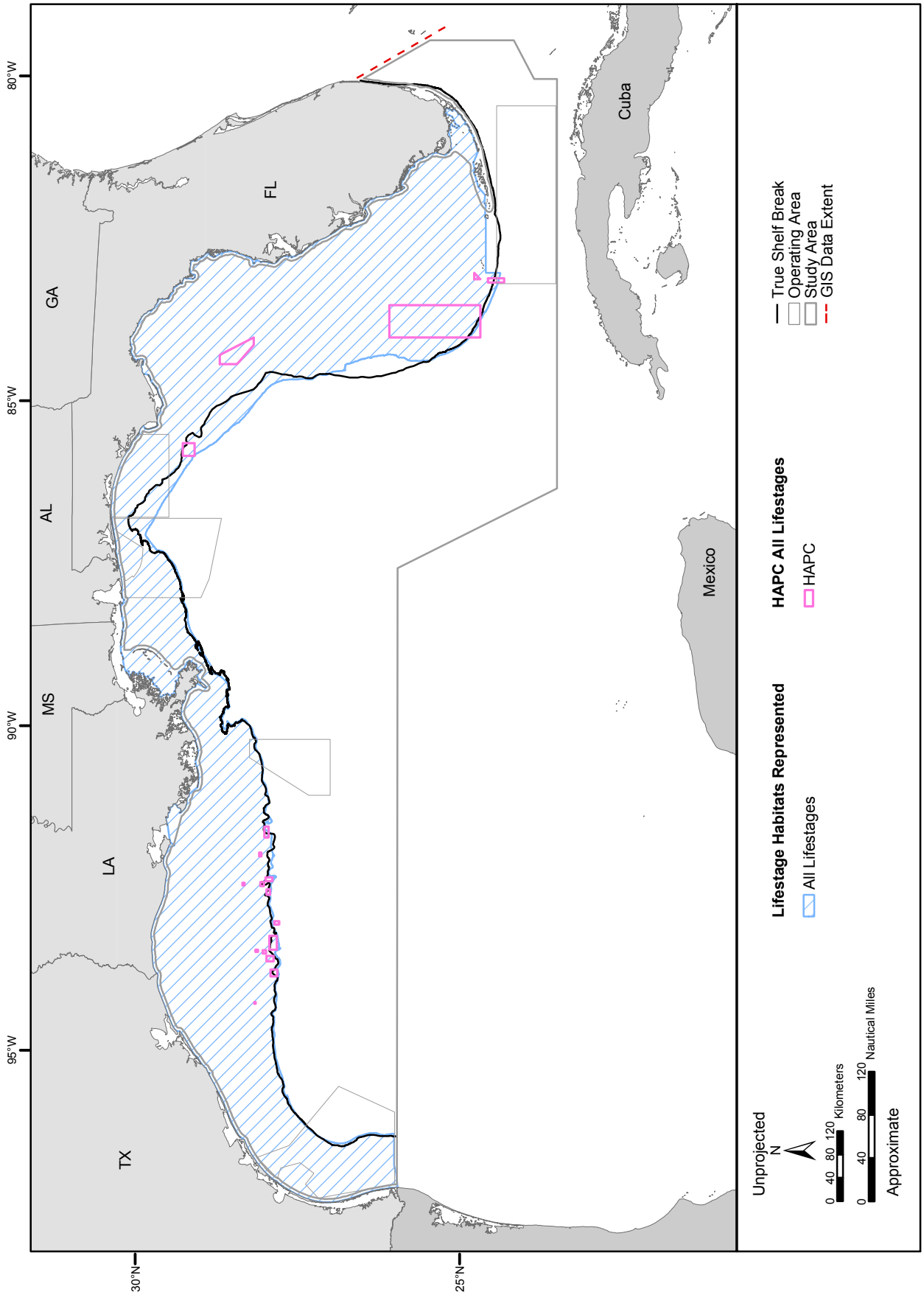


Figure D-1. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the GMFMC for all lifestages of all managed species from the coastal migratory pelagics FMP and reef fish FMP in the GOMEX study area. Source data: NOAA (1998) and GMFMC (2005). Source information: NOAA (1996b).

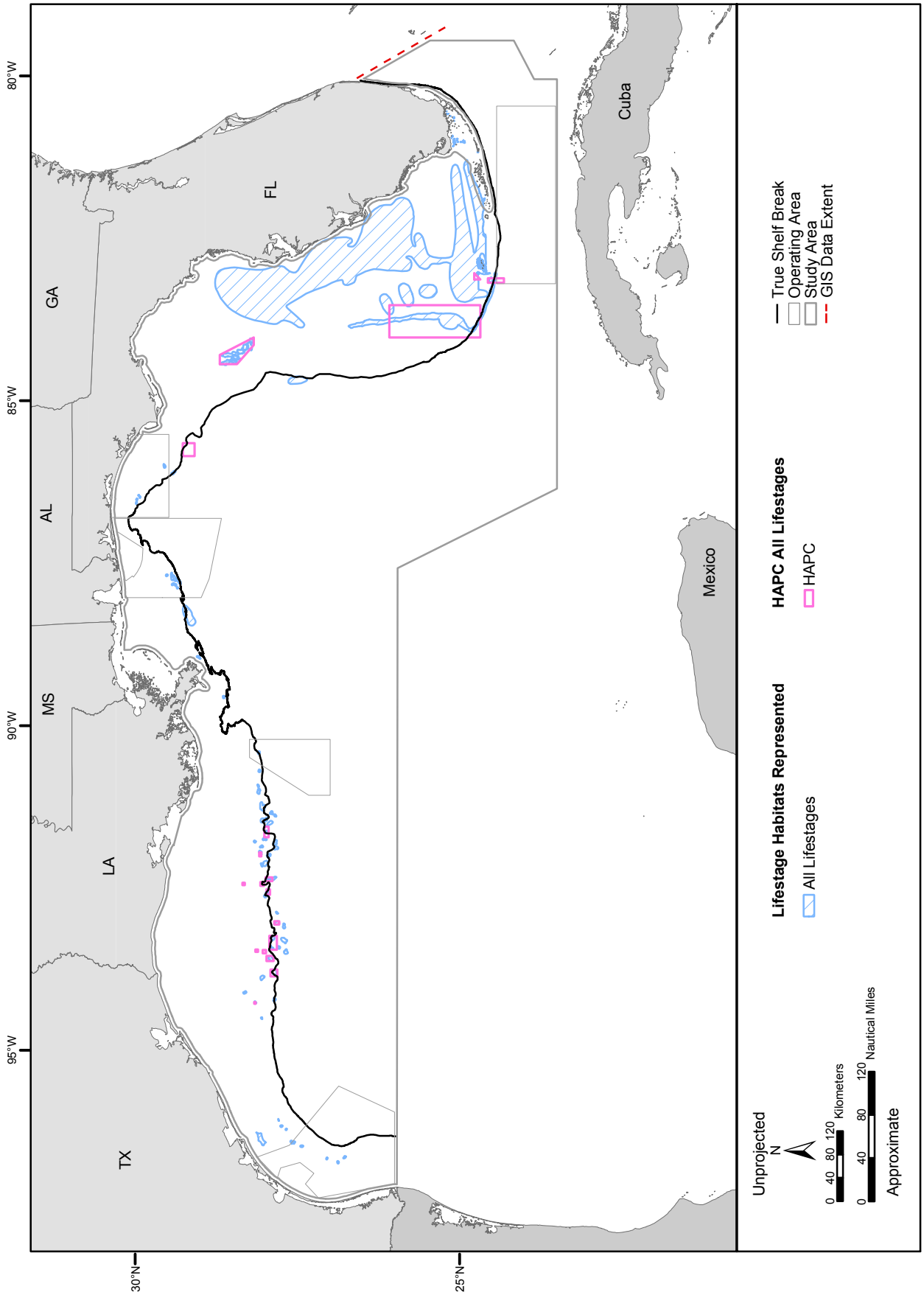


Figure D-2. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the GMFMC for all lifestages of all managed species from the coral and coral reef FMP in the GOMEX study area. Source data: NOAA (1998) and GMFMC (2004c, 2005). Source information: NOAA (1996b).

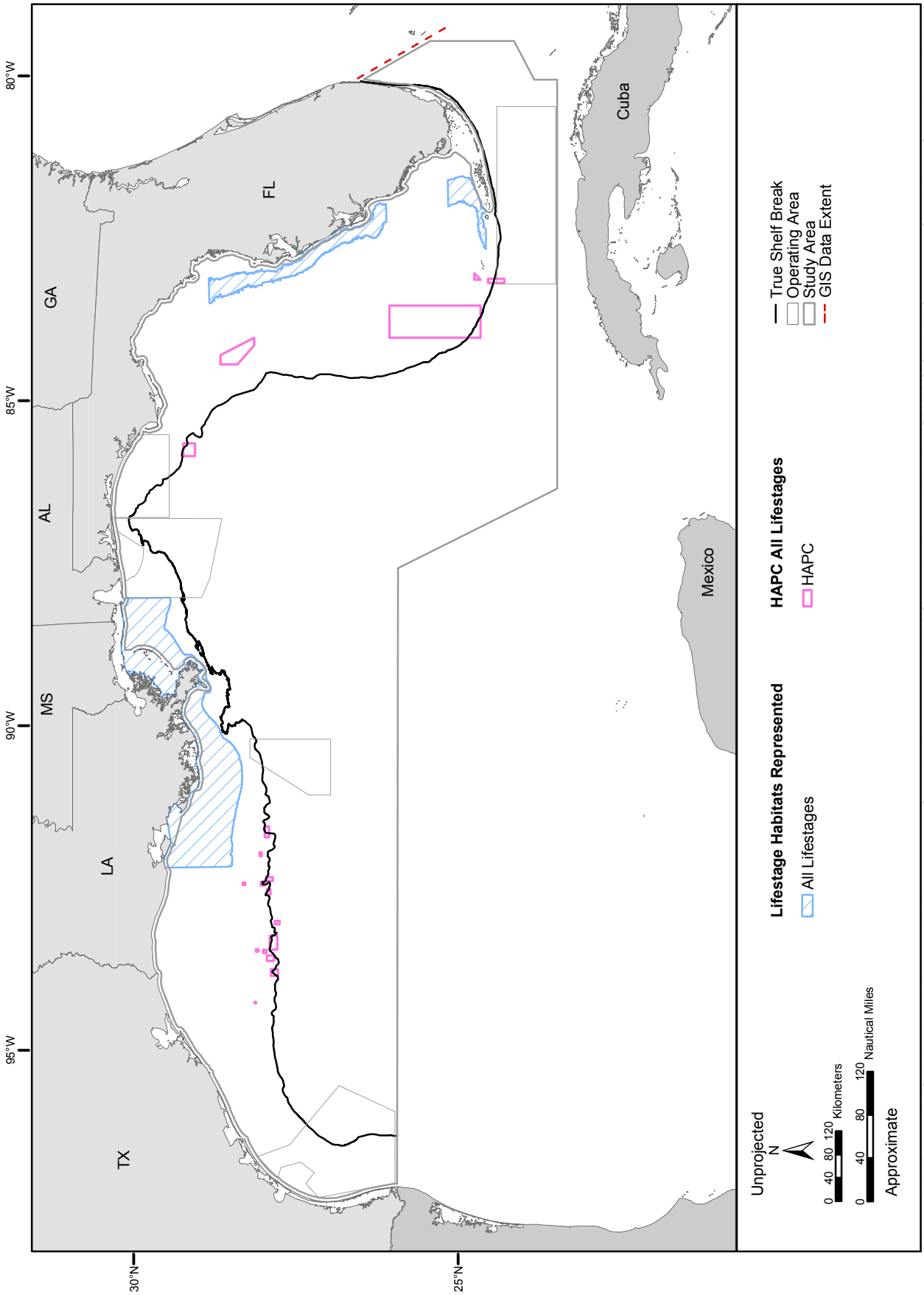


Figure D-3. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the GMFMC for all lifestages of red drum from the red drum FMP in the GOMEX study area. Source data: NOAA (1998) and GMFMC (2005). Source information: NOAA (1996b).

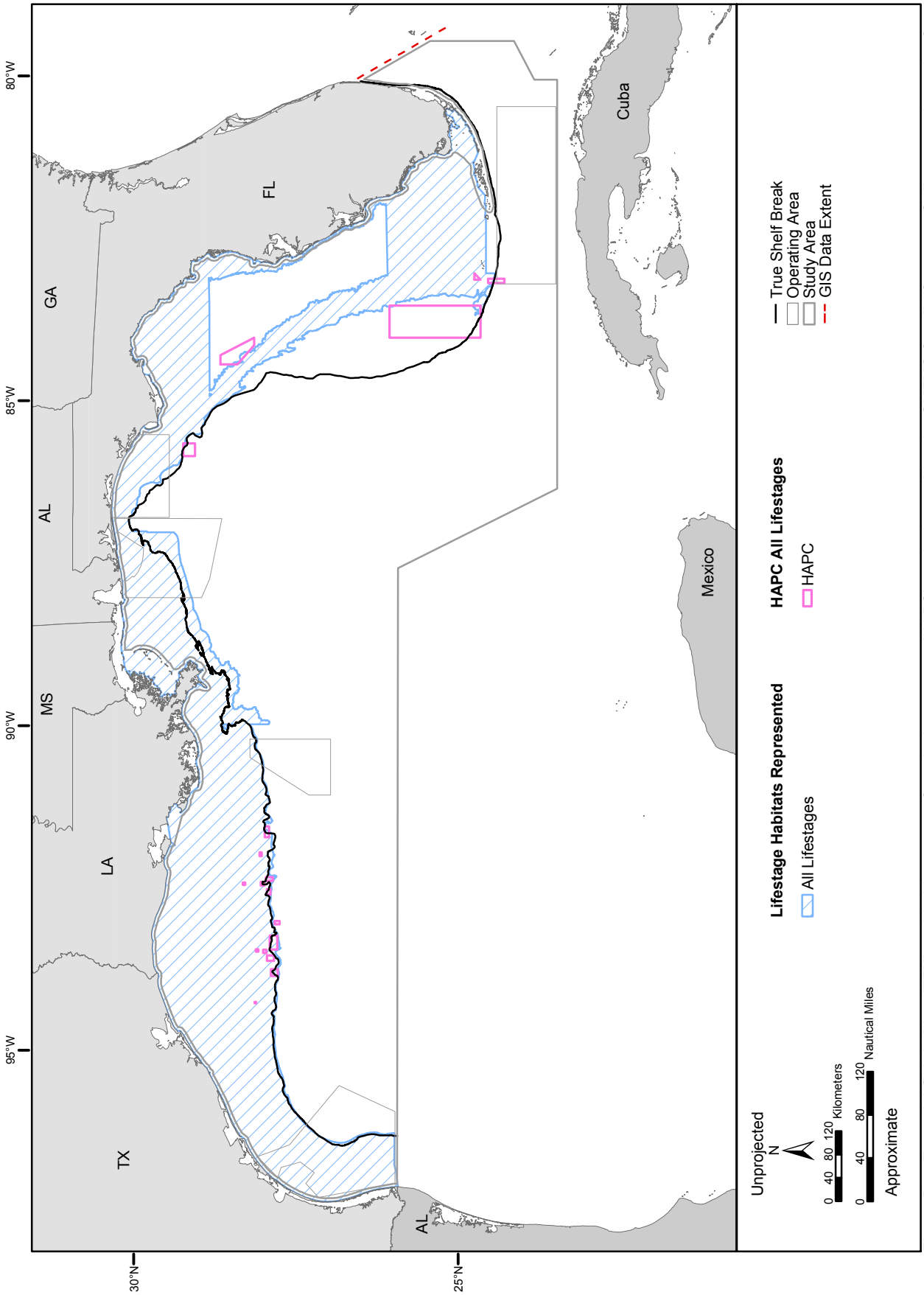


Figure D-4. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the GMFMC for all lifestages of all managed species from the shrimp FMP in the GOMEX study area. Source data: NOAA (1998) and GMFMC (2005). Source information: NOAA (1996b) and Ruebsamen (2006b).

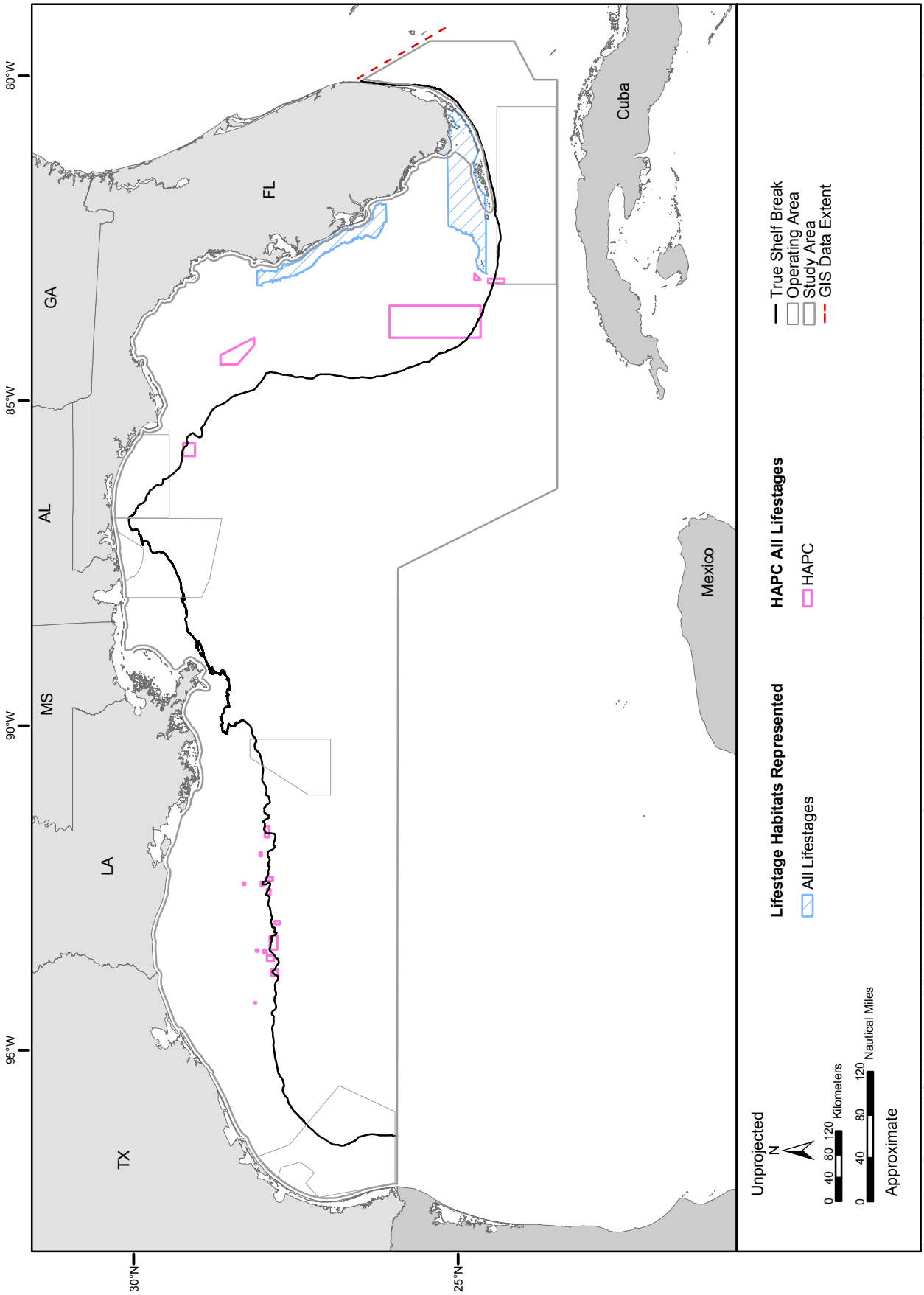


Figure D-5. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the GMFMC for all lifestages of all managed species from the spiny lobster FMP in the GOMEX study area. Source data: NOAA (1998) and GMFMC (2005). Source information: NOAA (1996b).

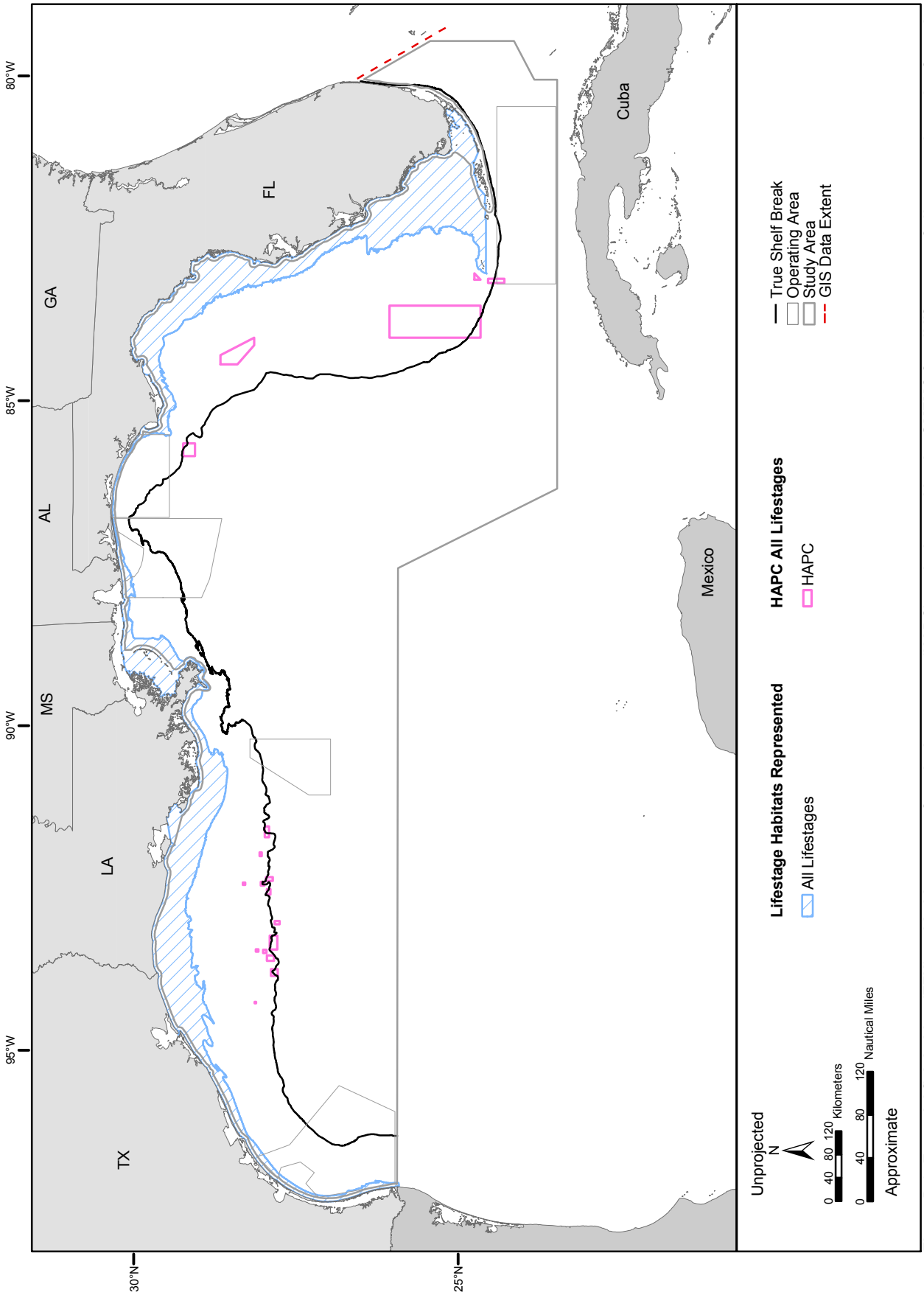


Figure D-6. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the GMFMC for all lifestages of all managed species from the stone crab FMP in the GOMEX study area. Source data: NOAA (1998) and GMFMC (2005). Source information: NOAA (1996b).

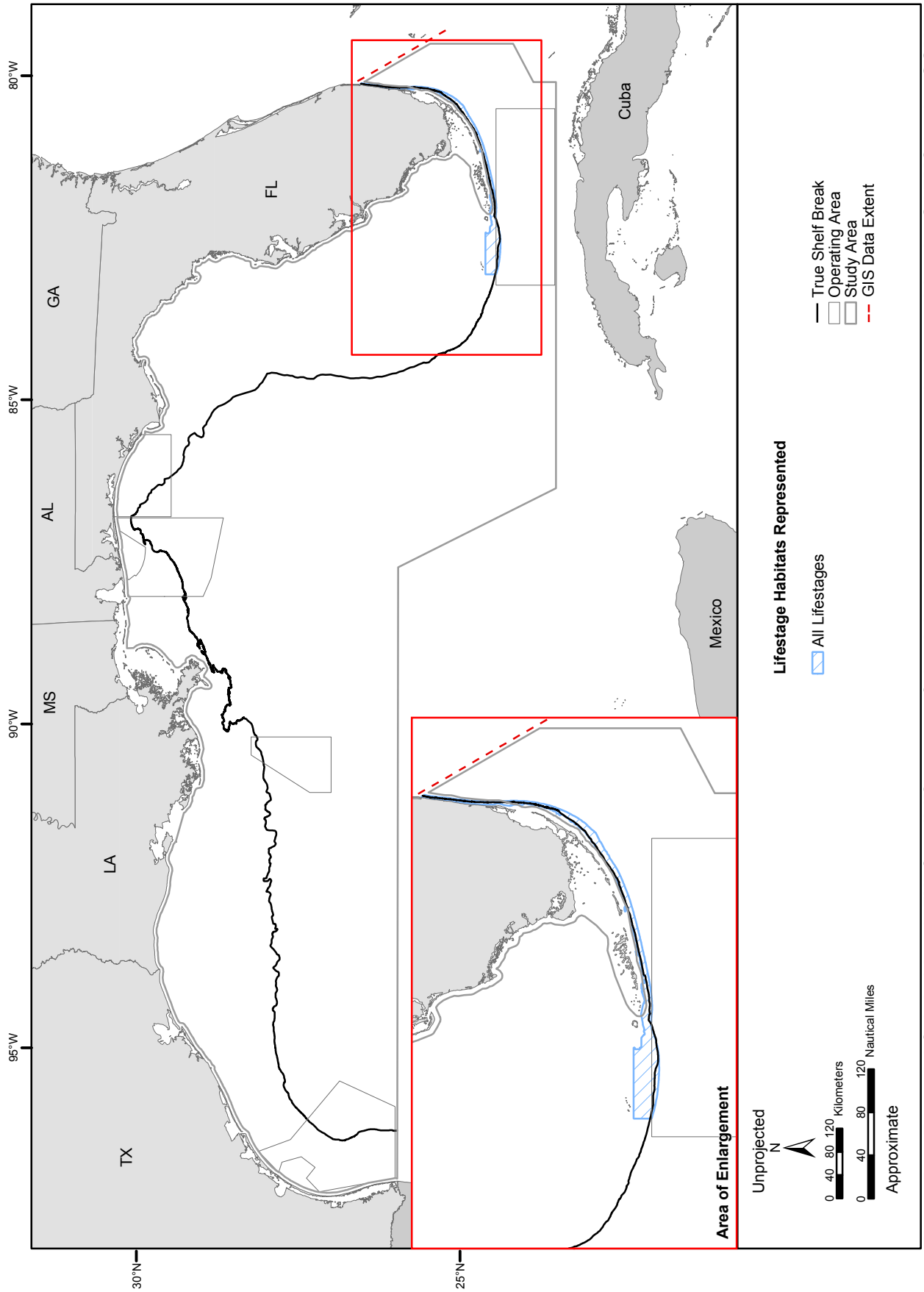


Figure D-7. Essential fish habitat (EFH) for all lifestages of the Atlantic calico scallop as designated by the SAFMC in the GOMEX study area. Source data: NOAA (1998). Source information: NOAA (1996b).

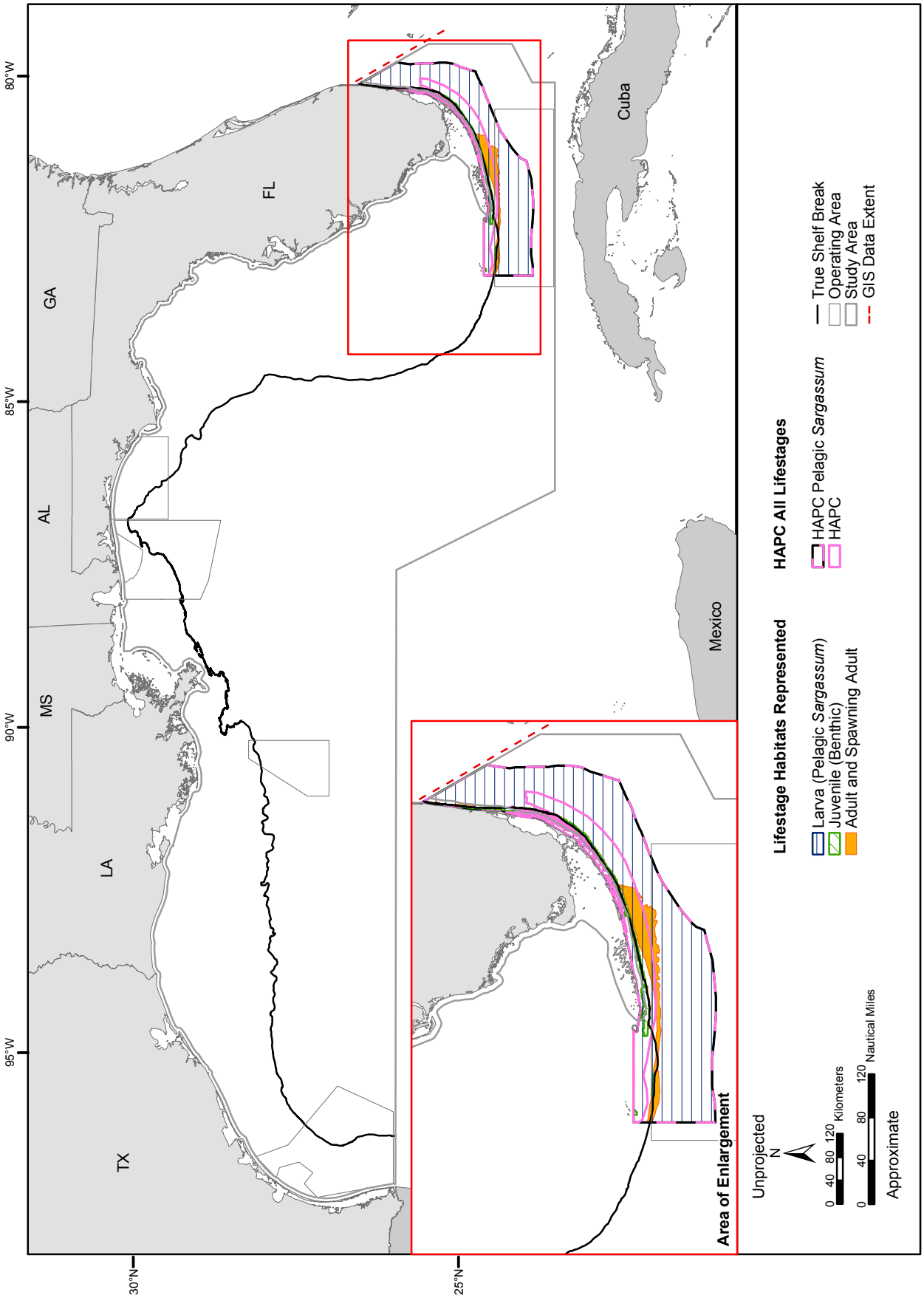


Figure D-8. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the blackfin snapper in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the reef fish FMP. Source data/maps/information: refer to Table D-1.

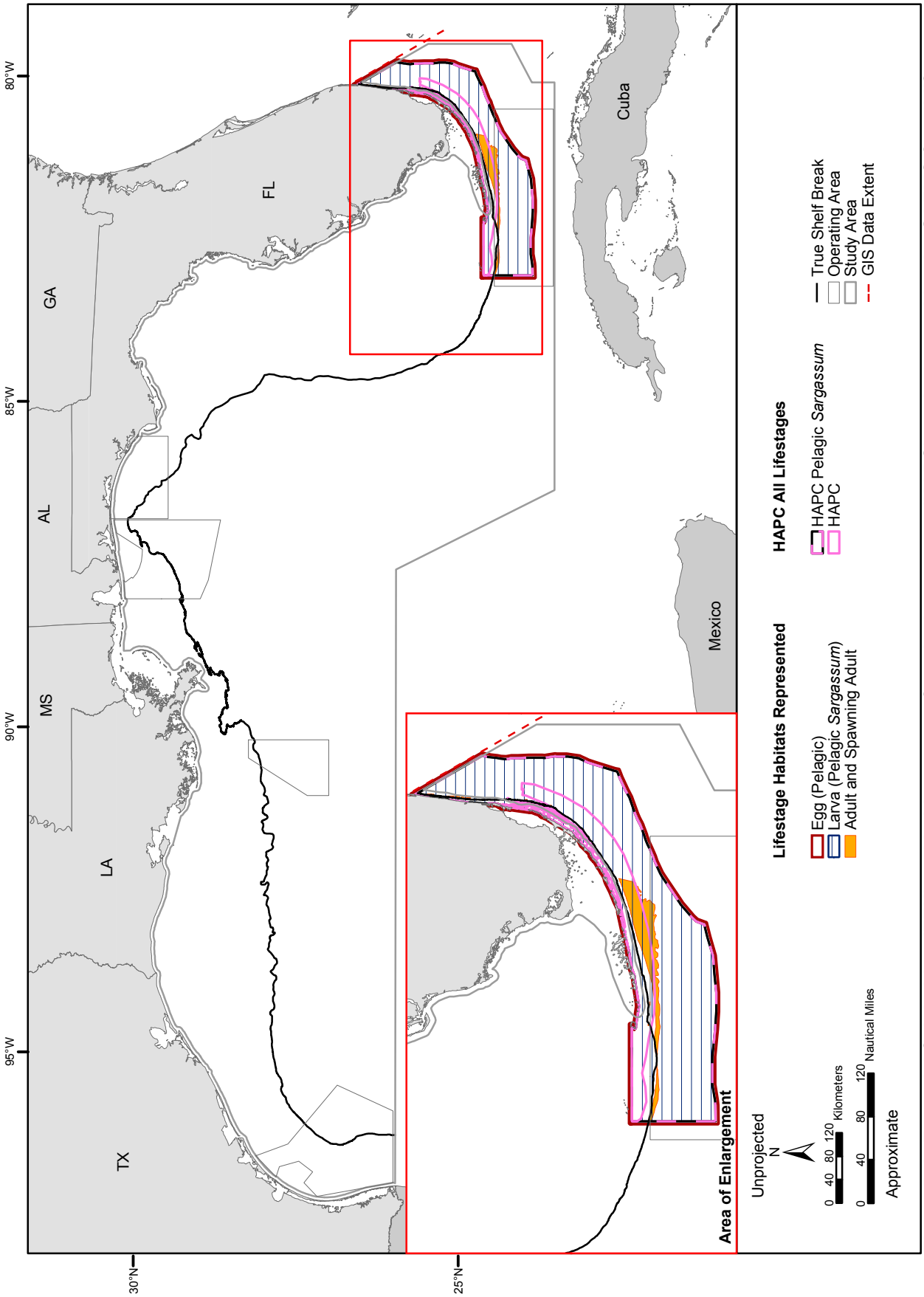


Figure D-9. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the blueline tilefish in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the reef fish FMP. Source data/maps/information: refer to Table D-1.

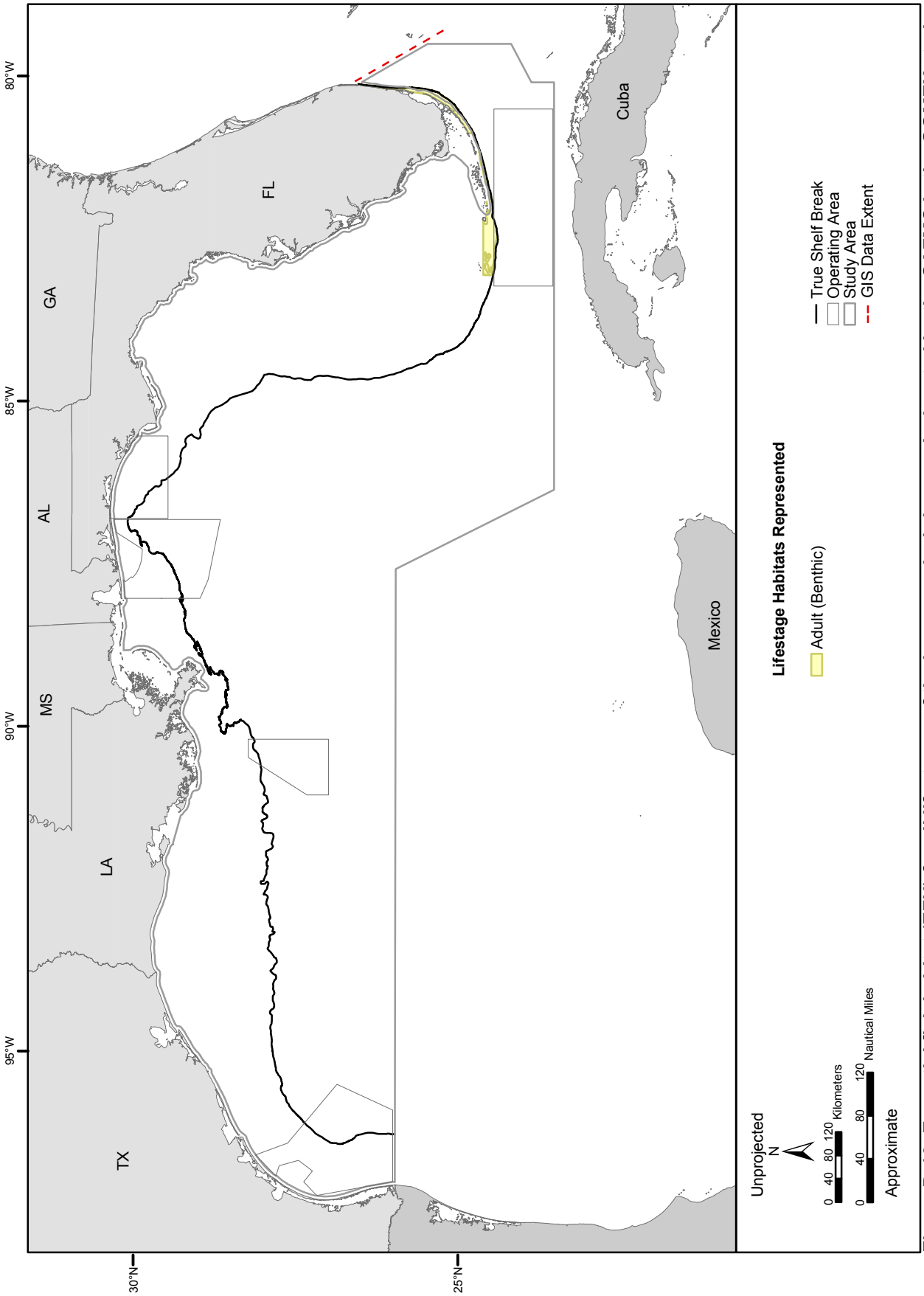


Figure D-10. Essential fish habitat (EFH) for all lifestages of the brown rock shrimp as designated by the SAFMC in the GOMEX study area. Source data: NOAA (1998), USGS (2000), and Sheridan and Caldwell (2002). Source information: NOAA (1996b).

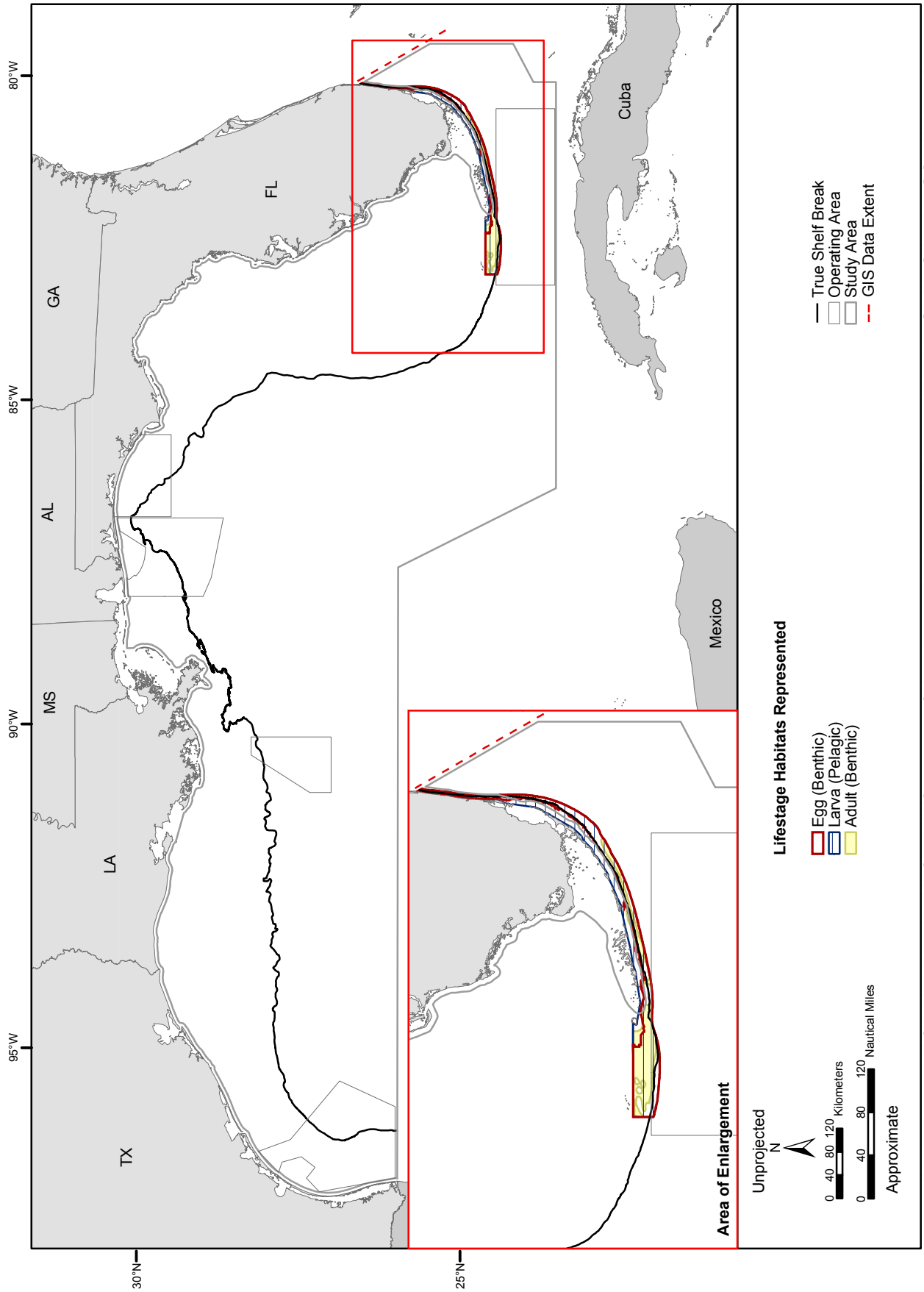


Figure D-11. Essential fish habitat (EFH) for all lifestages of the brown shrimp as designated by the SAFMC in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the shrimp FMP. Source data/source information: refer to Table D-1.

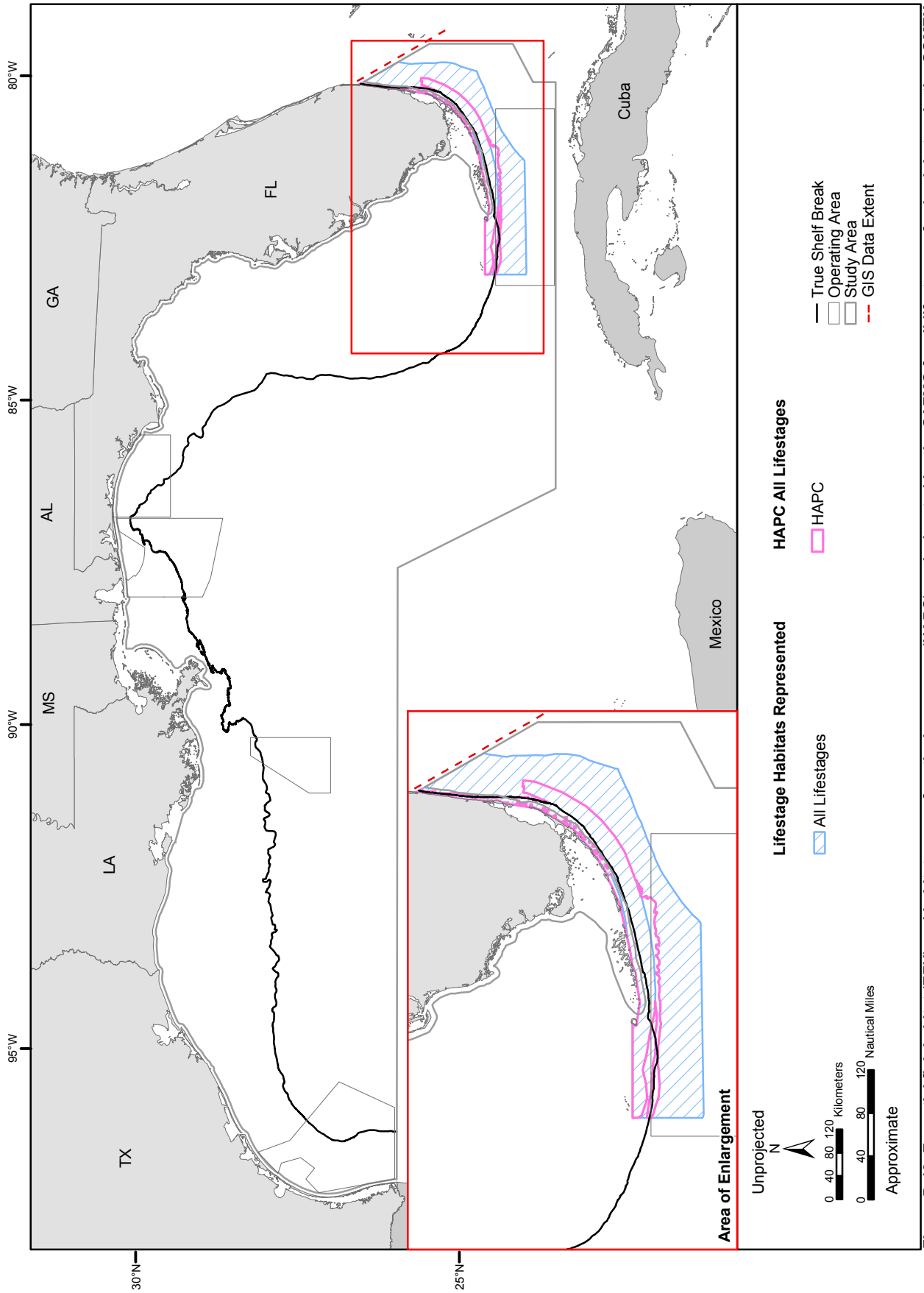


Figure D-12. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of spiny lobsters in the GOMEX study area. Sponges are also designated as EFH for all lifestages but this habitat is not depicted. This species has additional EFH/HAPC designated by the GMFMC through the spiny lobster FMP. Source data/source map/source information: refer to Table D-1.

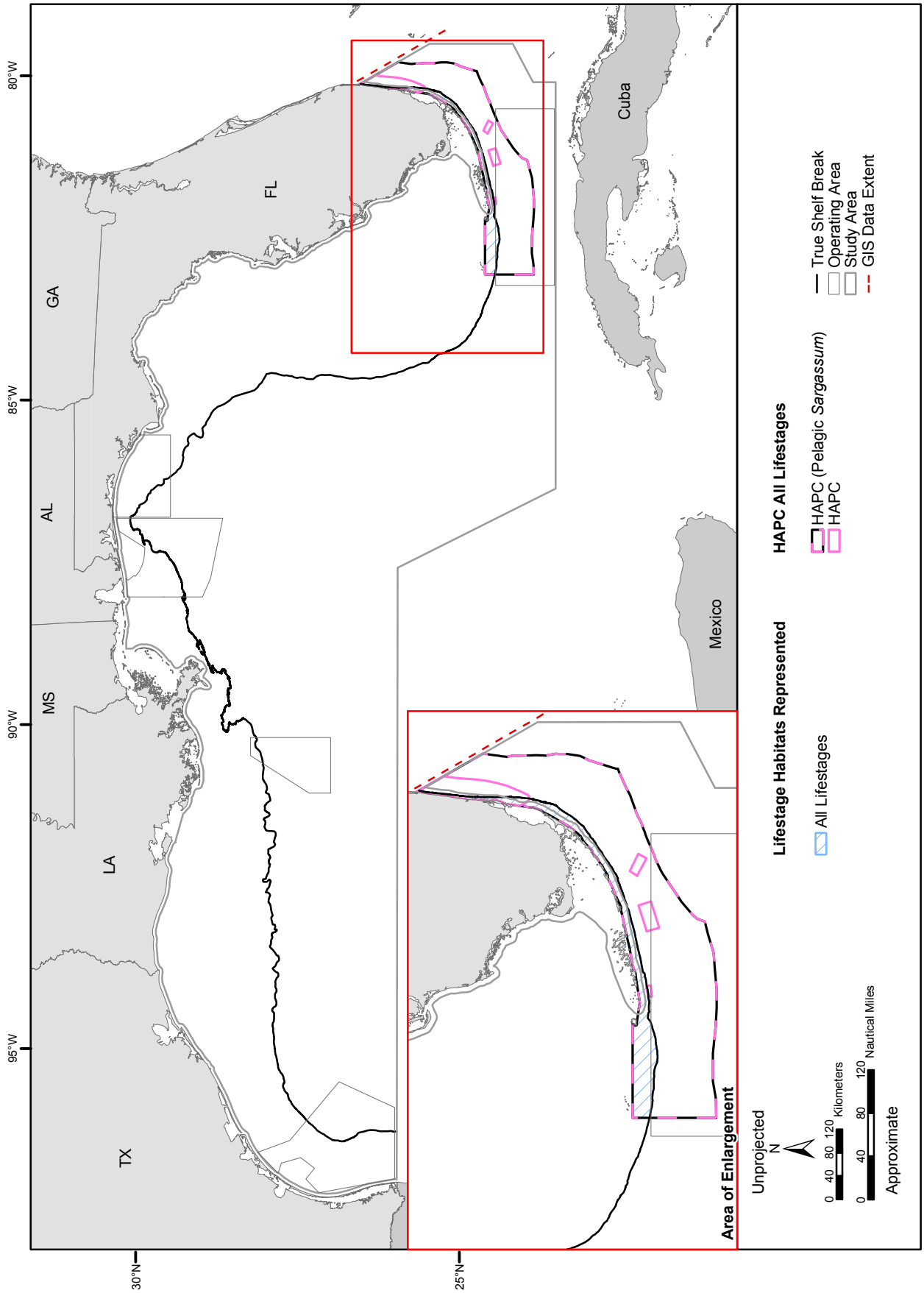


Figure D-13. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the cobia, king mackerel, and Spanish mackerel in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the coastal migratory pelagics FMP. Source data/maps/information: refer to Table D-1.

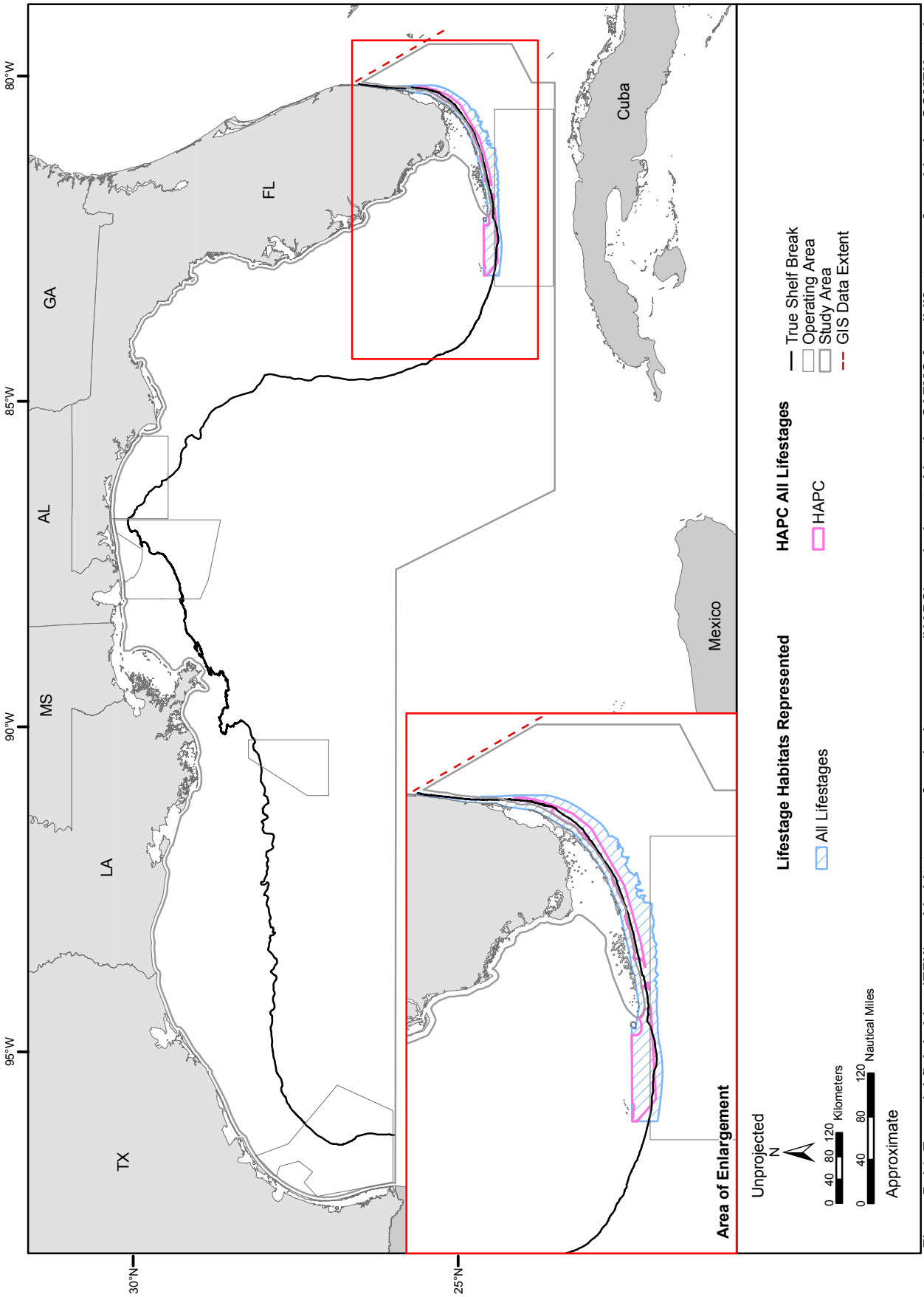


Figure D-14. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of coral in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the coral and coral reef FMP. Source data: NOAA (1998). Source map (scanned): Zale and Merrifield (1989) and Jaap and Hallock (1990).

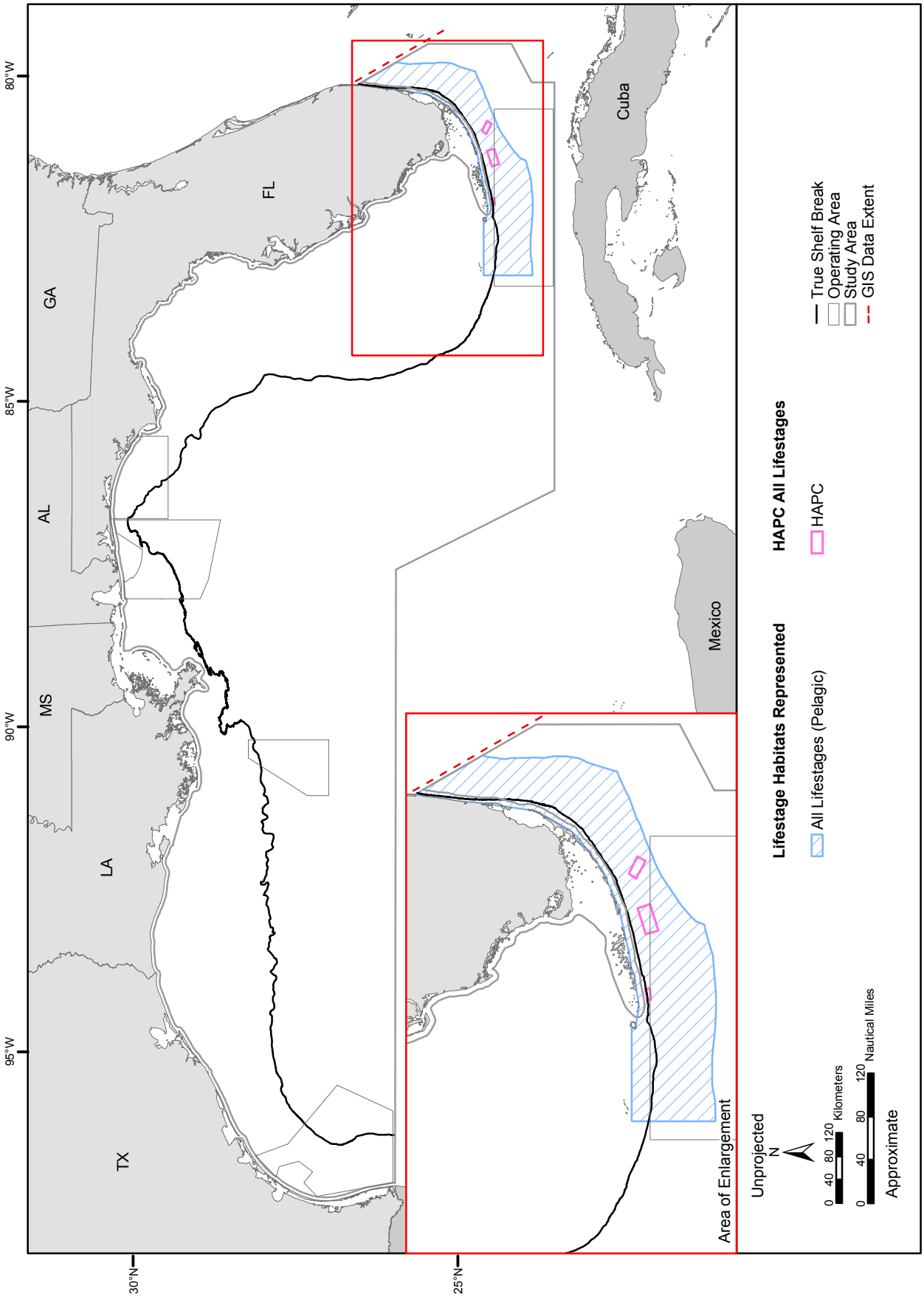


Figure D-15. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the wahoo, dolphinfish, and pompano dolphinfish in the GOMEX study area. Source data/maps/information: refer to Table D-1.

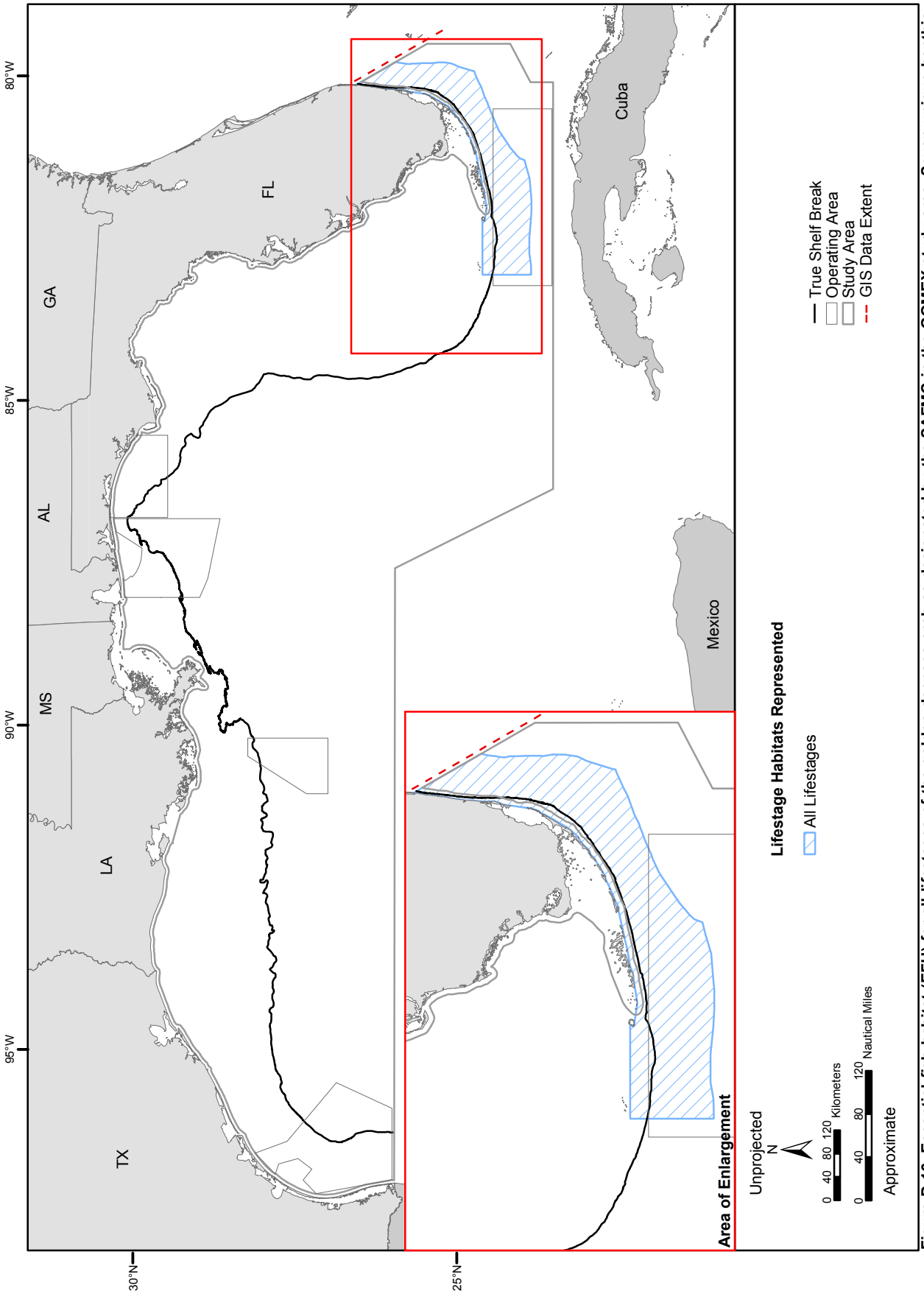


Figure D-16. Essential fish habitat (EFH) for all lifestages of the golden deepsea crab as designated by the SAFMC in the GOMEX study area. Seven unique benthic habitats designated as EFH are not included on this map as the areal extent of the habitats was not designated. Source data: NOAA (1998). Source information: NOAA (1996b).

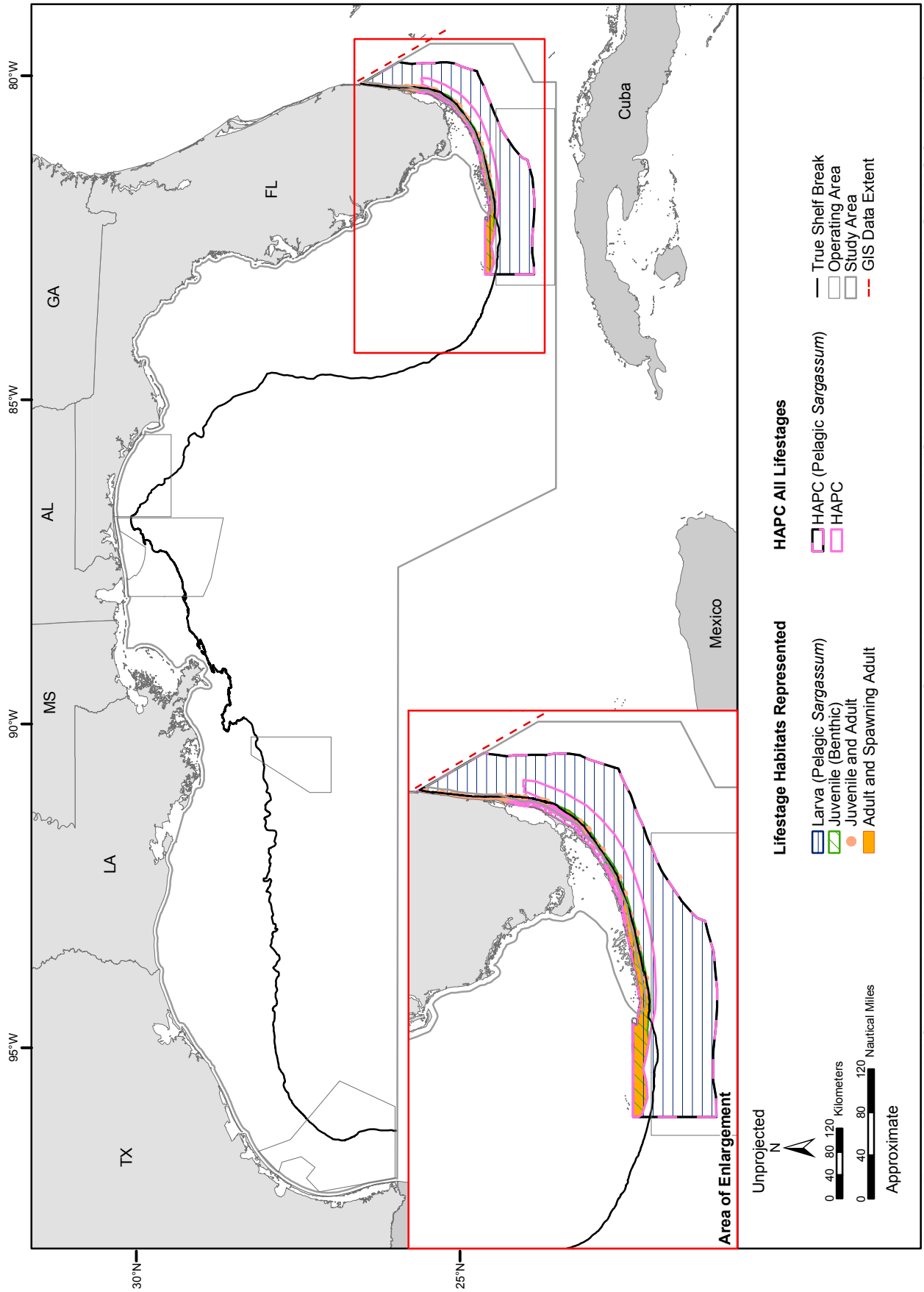


Figure D-17. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the goliath grouper in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the reef fish FMP. Source data/maps/information: refer to Table D-1.

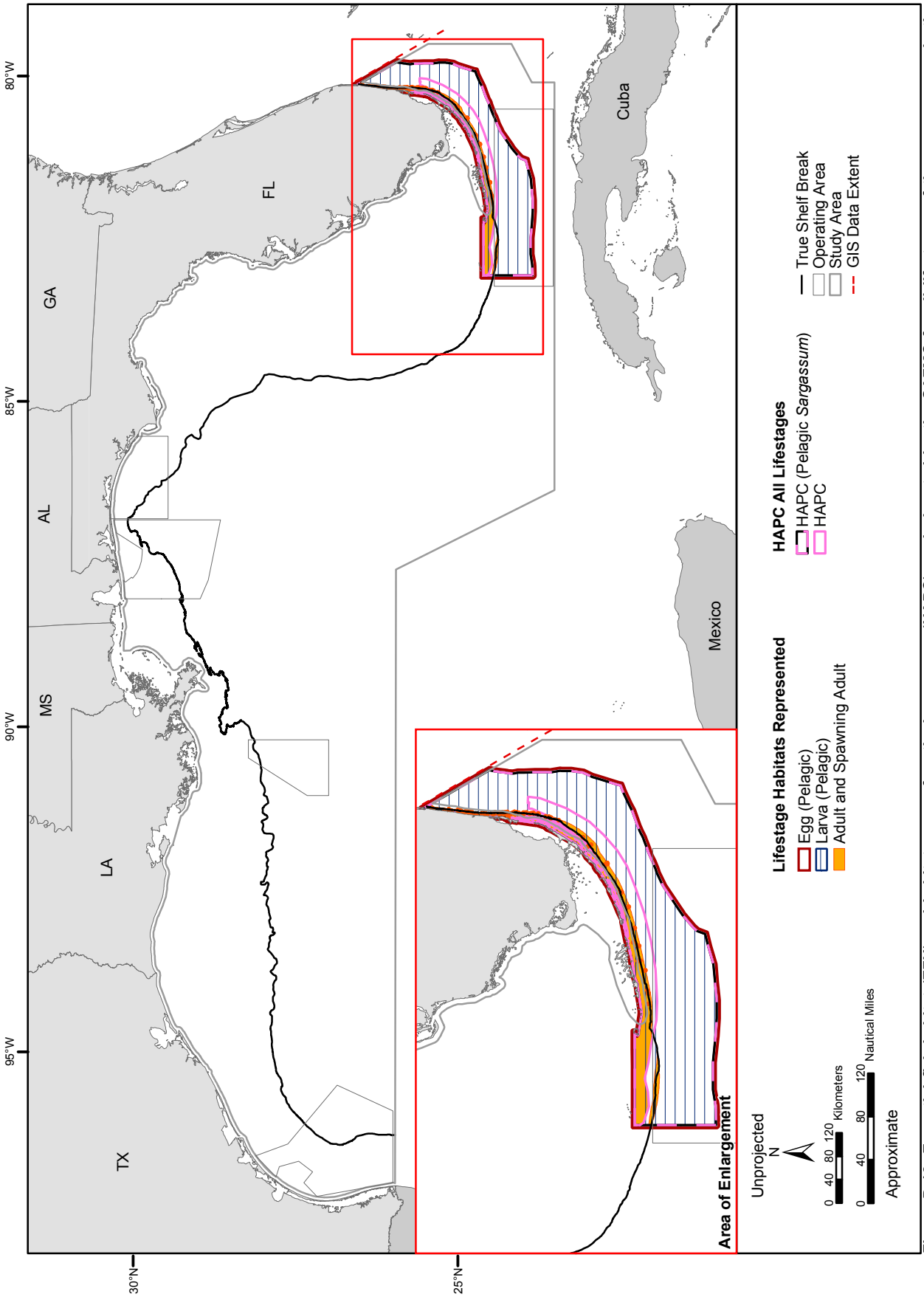


Figure D-18. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the gray snapper in the GOMEX study area. Sponges are also designated as EFH for juveniles in the SAFMC's jurisdiction but are not depicted on the map. This species has additional EFH/HAPC designated by the GMFMC through the reef fish FMP. Source data/maps/information: refer to Table D-1.

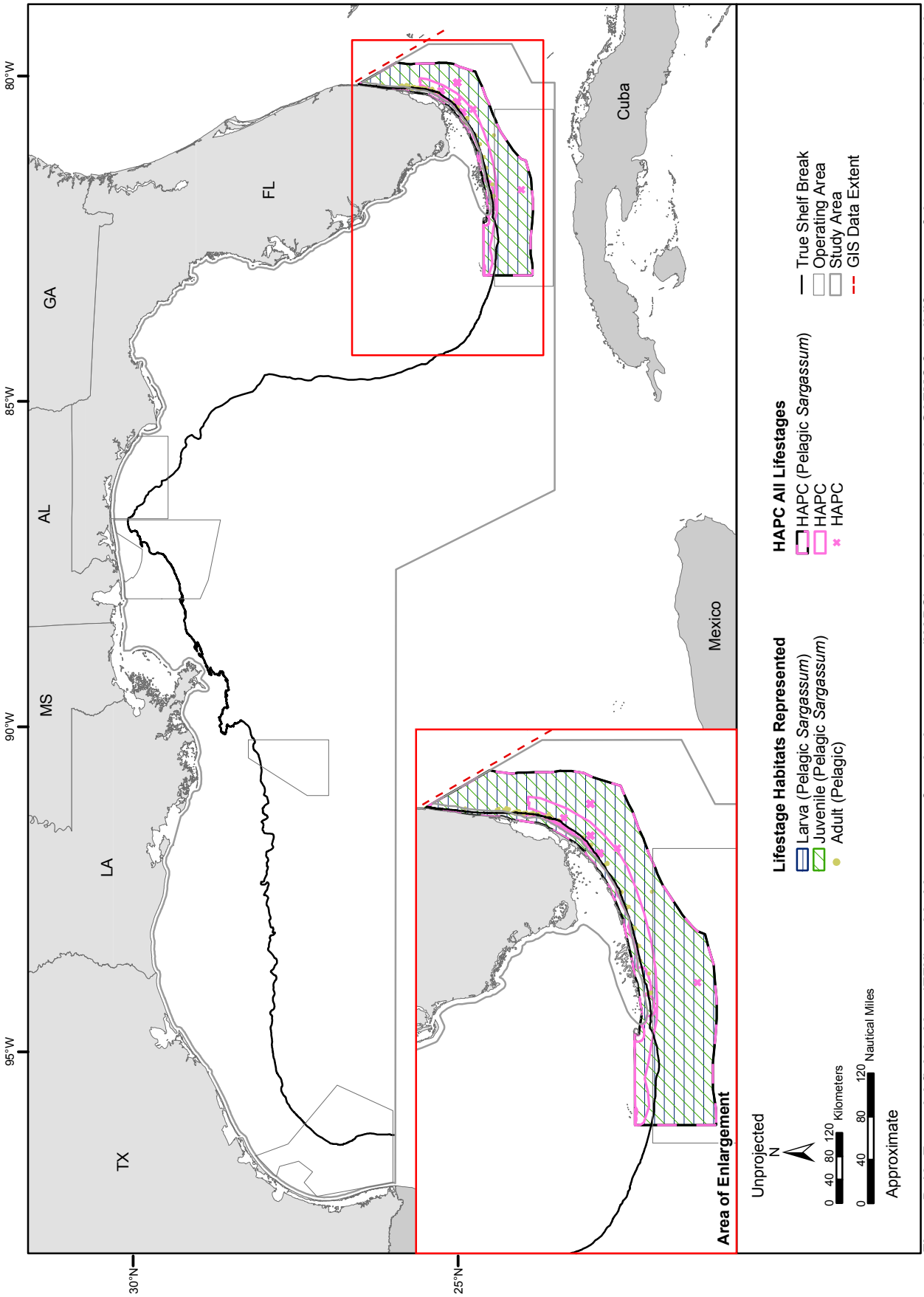


Figure D-19. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the greater amberjack in the GOMEX study area. Floating debris is designated as EFH for juveniles in the SAFMC jurisdiction but was impossible to depict graphically. This species has additional EFH/HAPC designated by the GMFMC through the reef fish FMP. Source data/maps/information: refer to Table D-1.

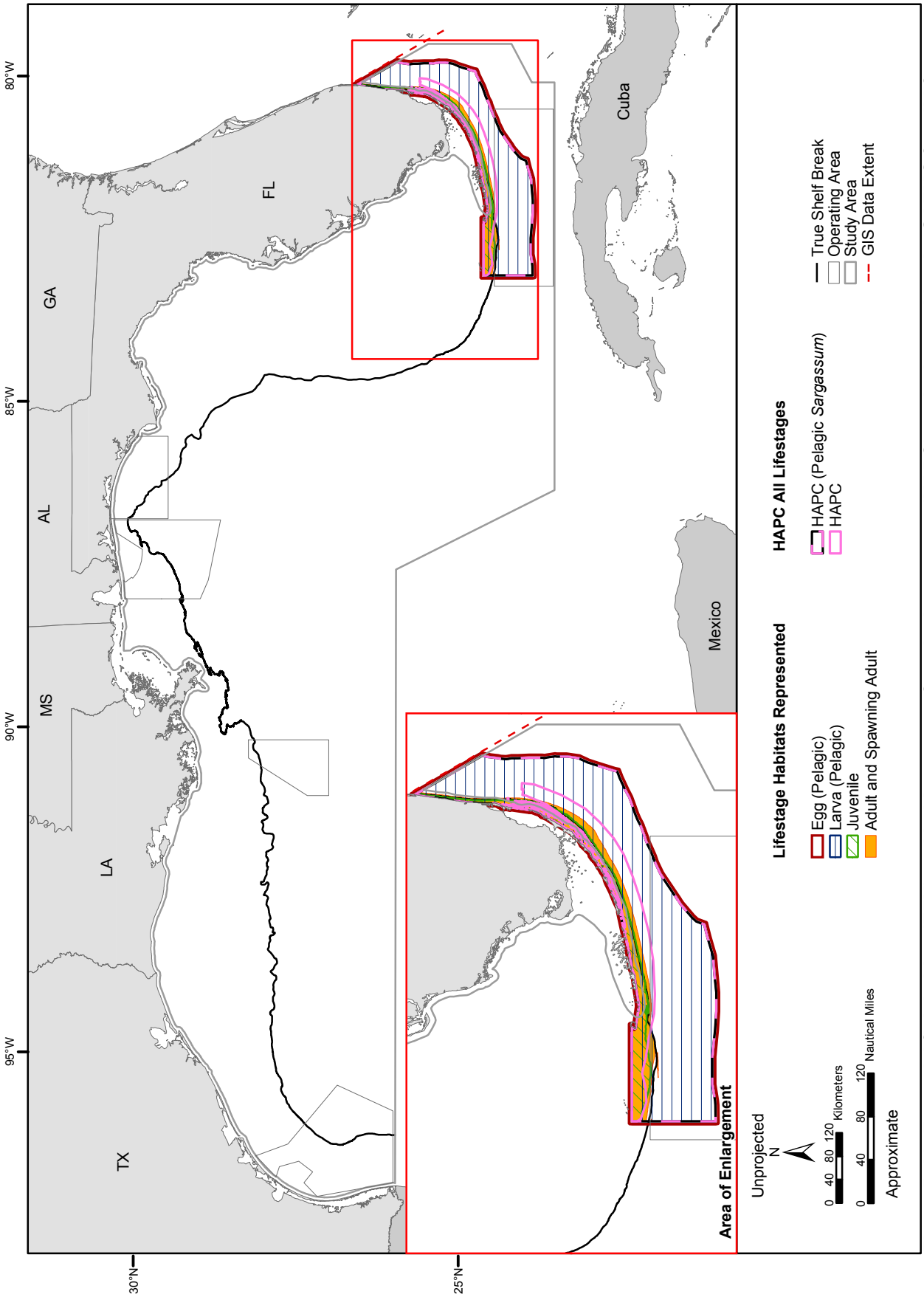


Figure D-20. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the mutton snapper in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the reef fish FMP. Source data/maps/information: refer to Table D-1.

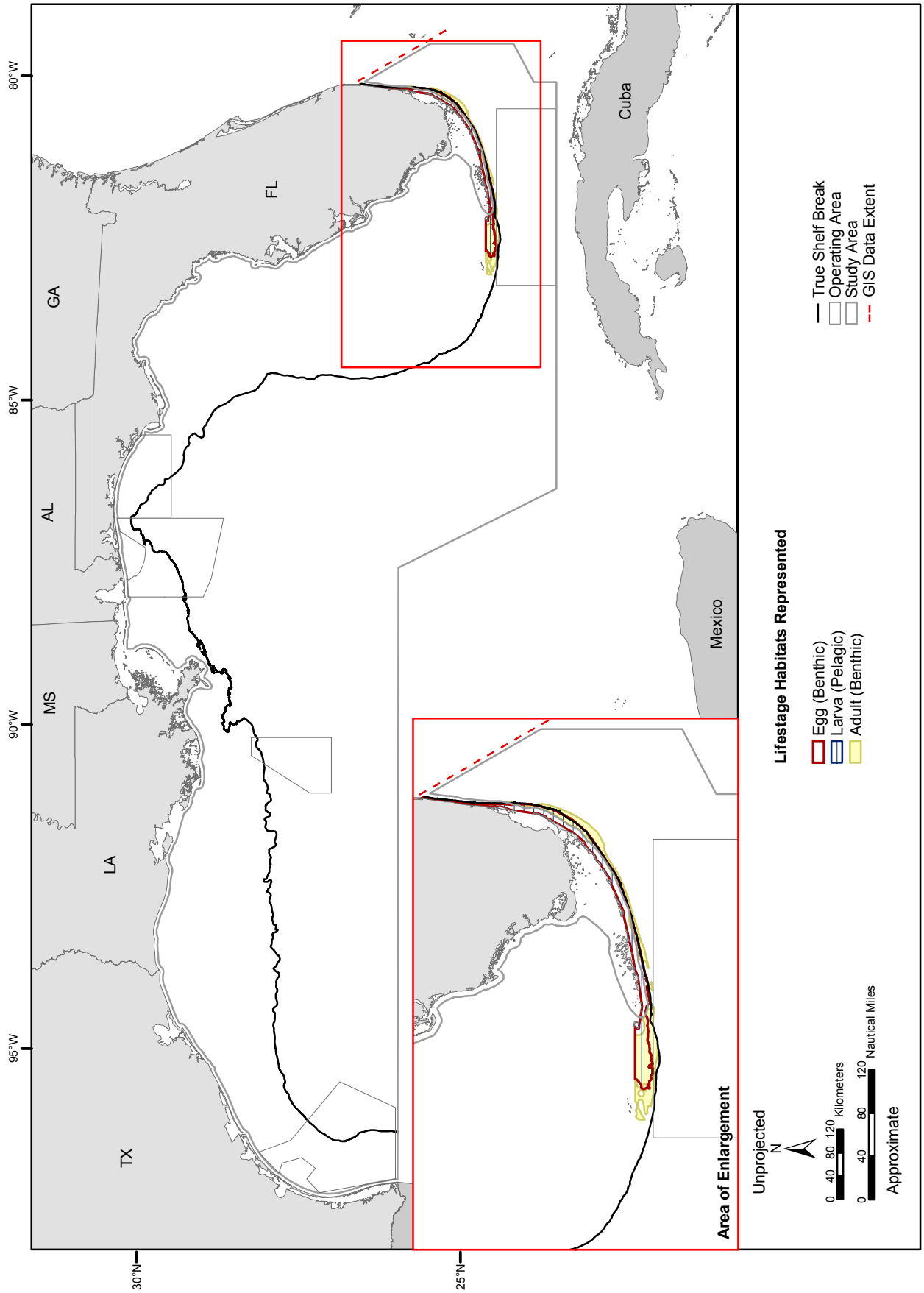


Figure D-21. Essential fish habitat (EFH) for all lifestages of the pink shrimp as designated by the SAFMC in the GOMEX study area. This species has additional EFH/habitat areas of particular concern (HAPC) designated by the GMFMC through the shrimp FMP. Source data/source information: refer to Table D-1.

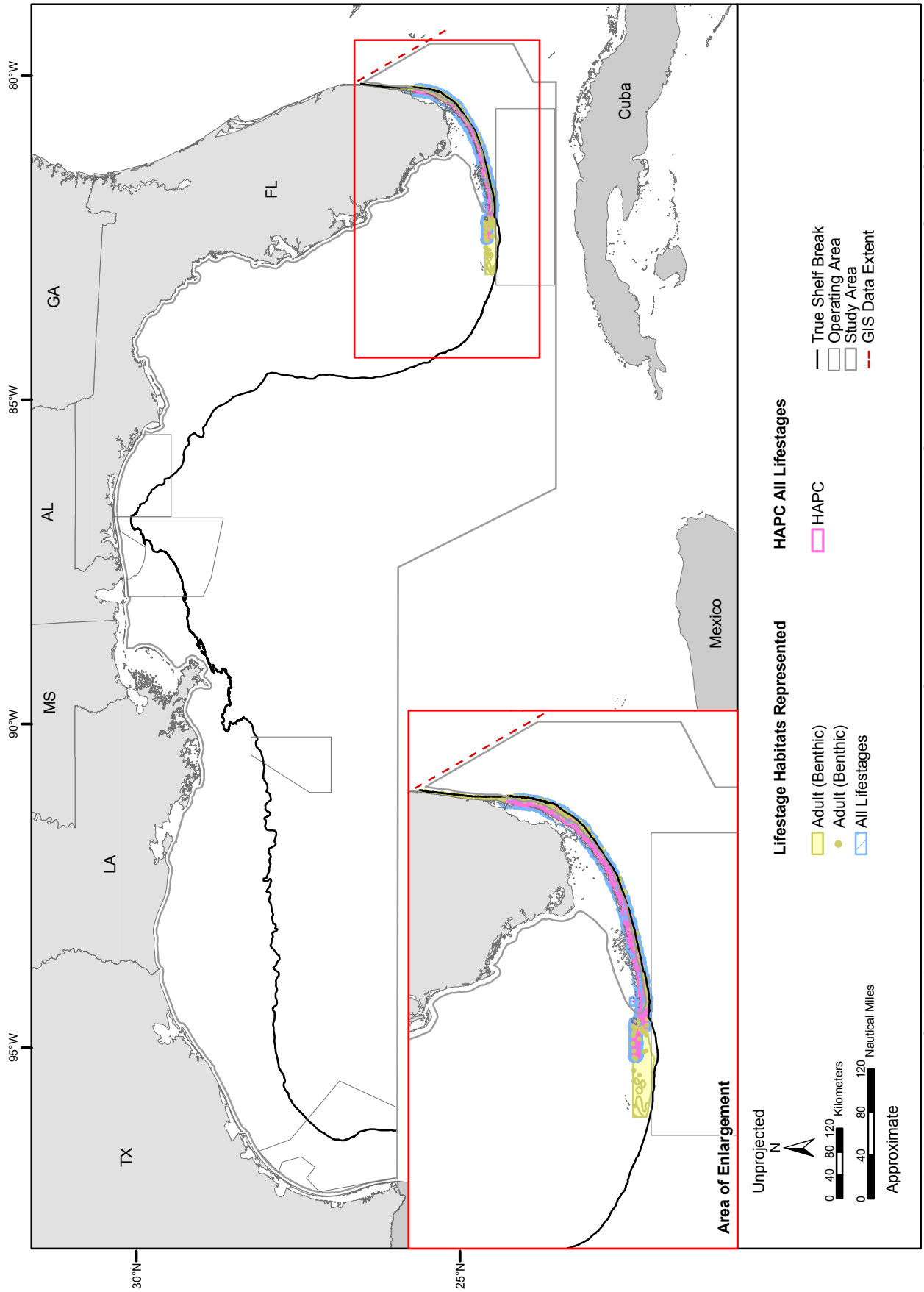


Figure D-22. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the red drum in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the red drum FMP. Source data/maps/information: refer to Table D-1.

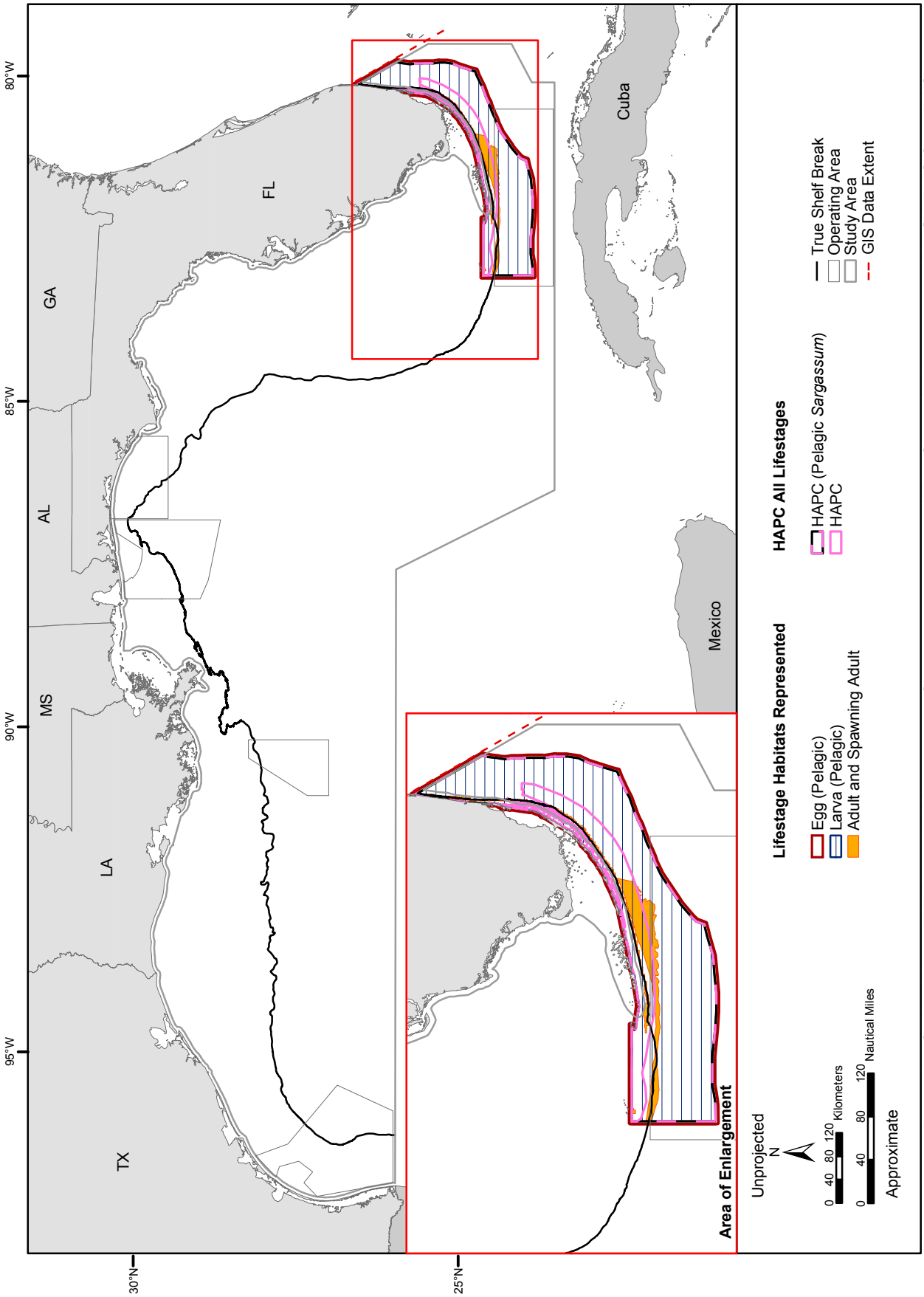


Figure D-23. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the red porgy in the GOMEX study area. Source data/maps/information: refer to Table D-1.

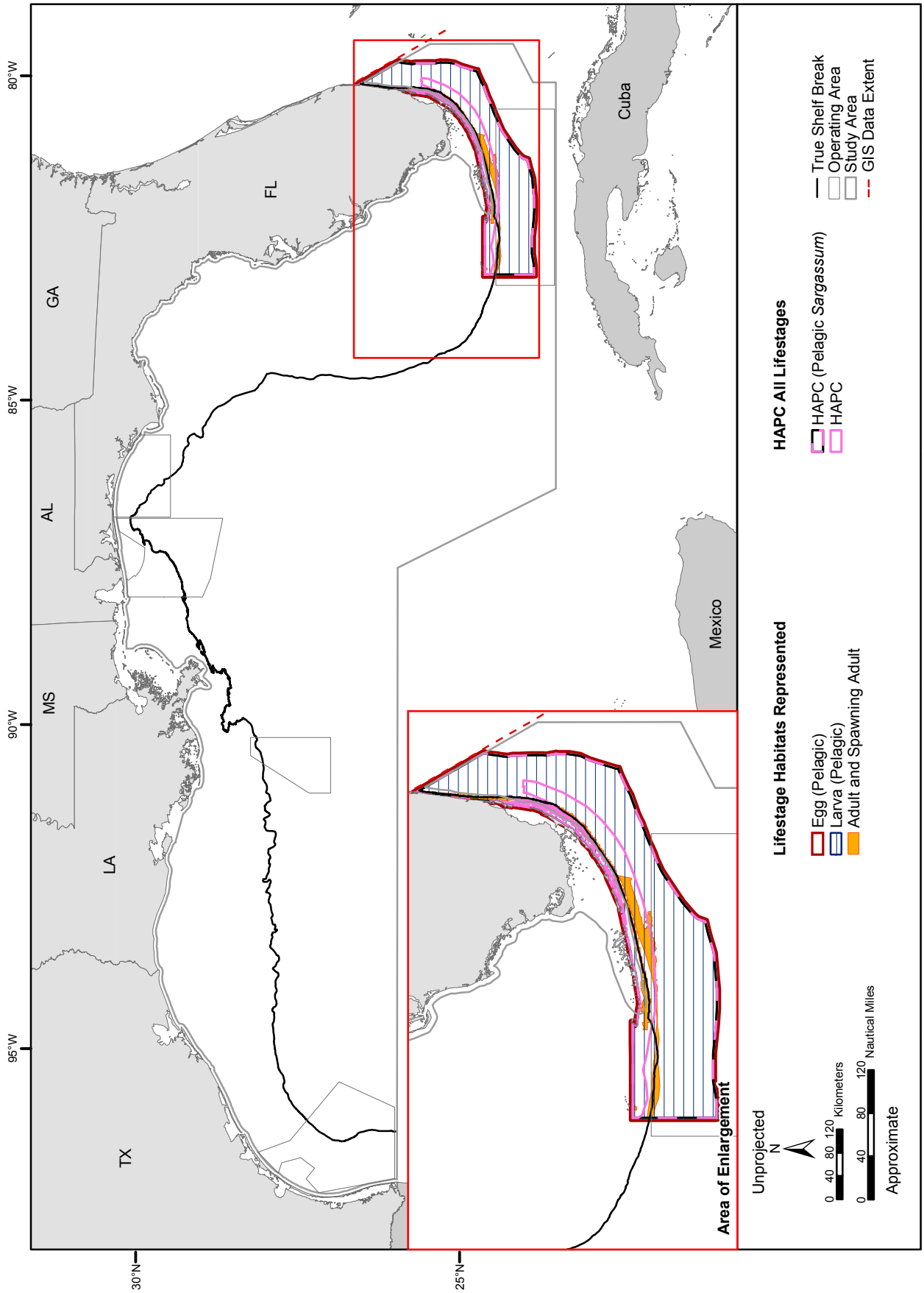


Figure D-24. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the red snapper in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the reef fish FMP. Source data/maps/information: refer to Table D-1.

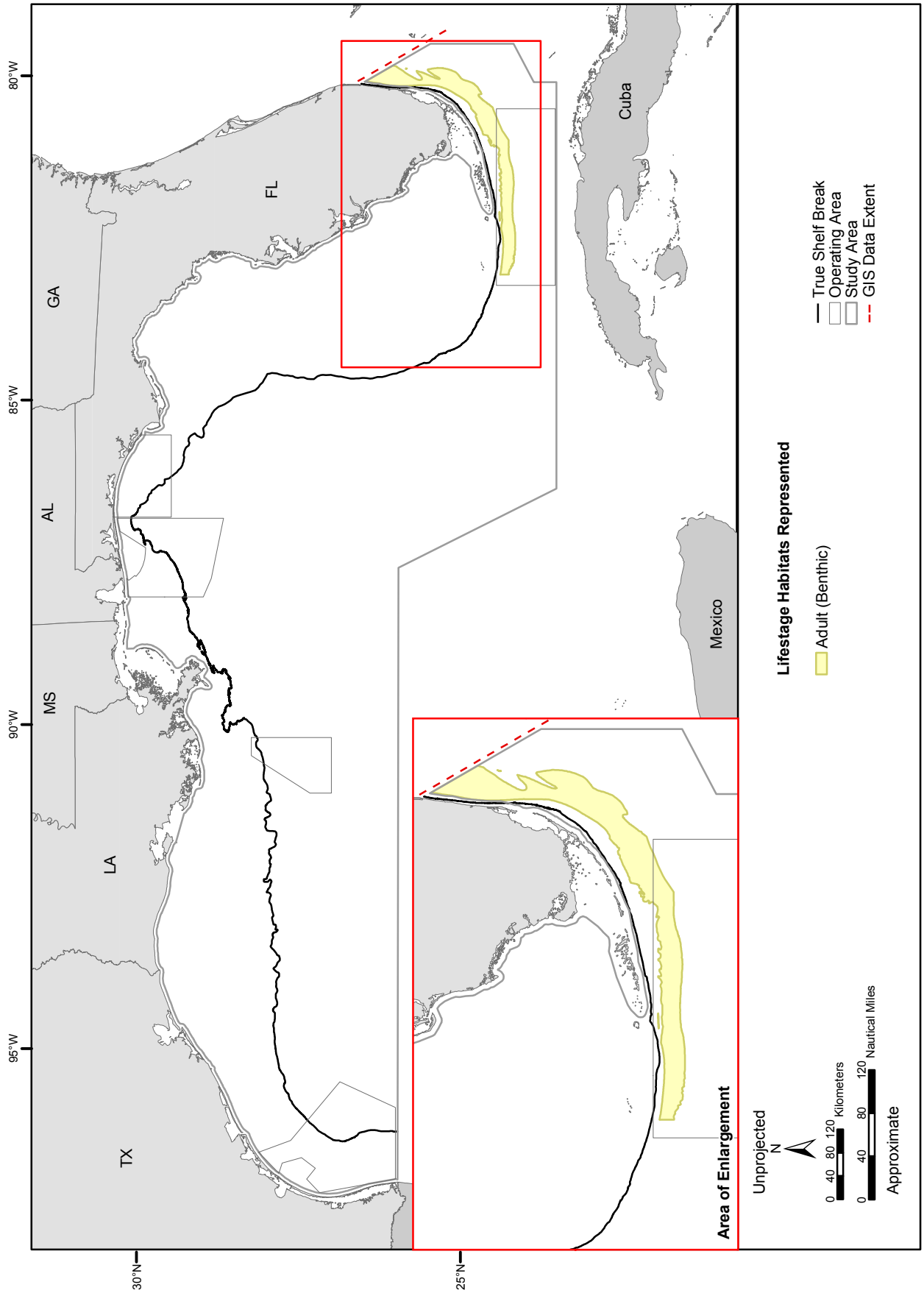


Figure D-25. Essential fish habitat (EFH) for all lifestages of the royal red shrimp as designated by the SAFMC in the GOMEX study area. This species has additional EFH/habitat areas of particular concern (HAPC) designated by the GMFMC through the shrimp FMP. Source data/source information: refer to Table D-1.

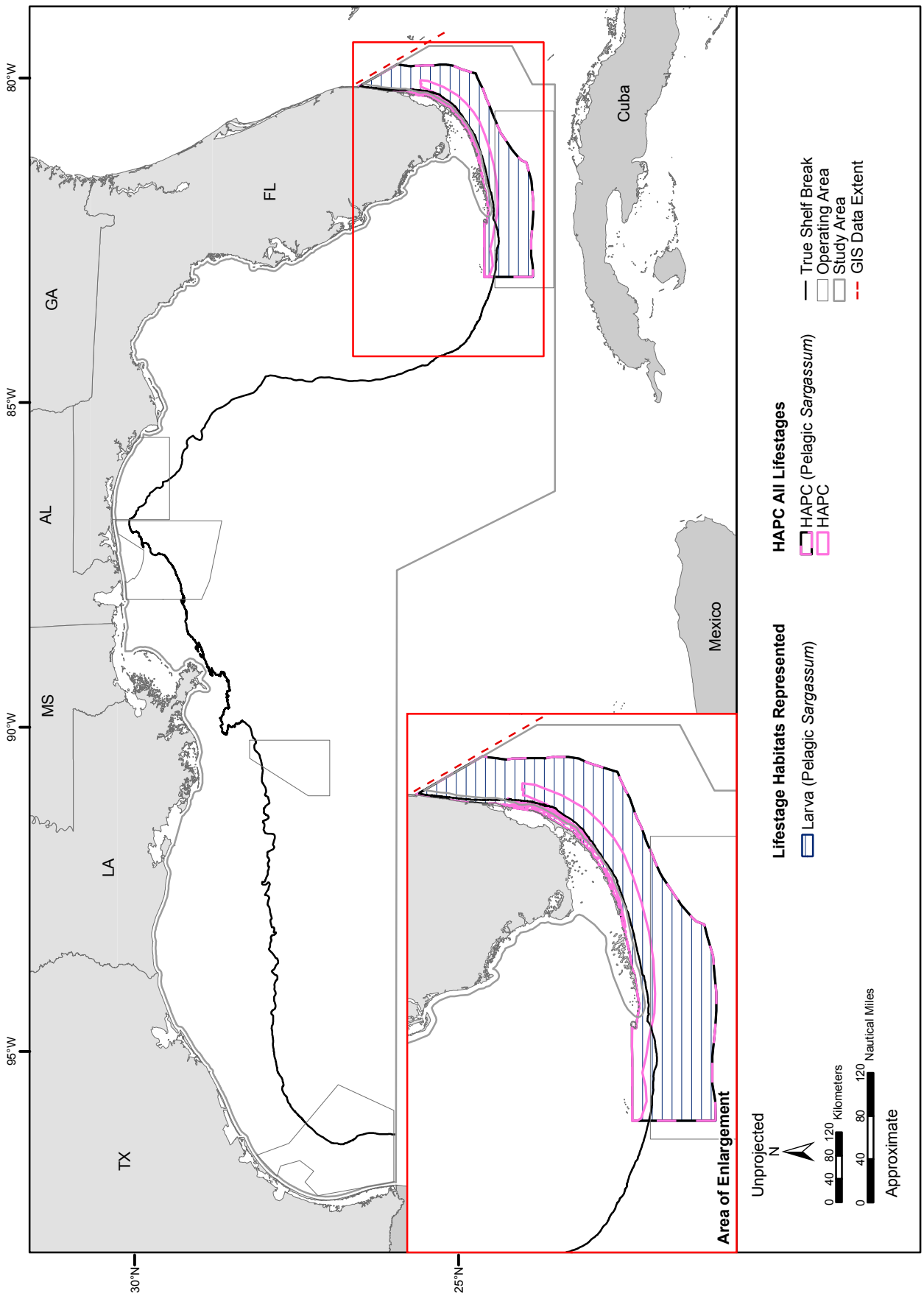


Figure D-26. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the scamp in the GOMEX study area. EFH for the adult and spawning adult lifestages in the SAFMC jurisdiction could not be mapped due to lack of data. This species has additional EFH/HAPC designated by the GMFMC through the reef fish FMP. Source data/maps/information: refer to Table D-1.

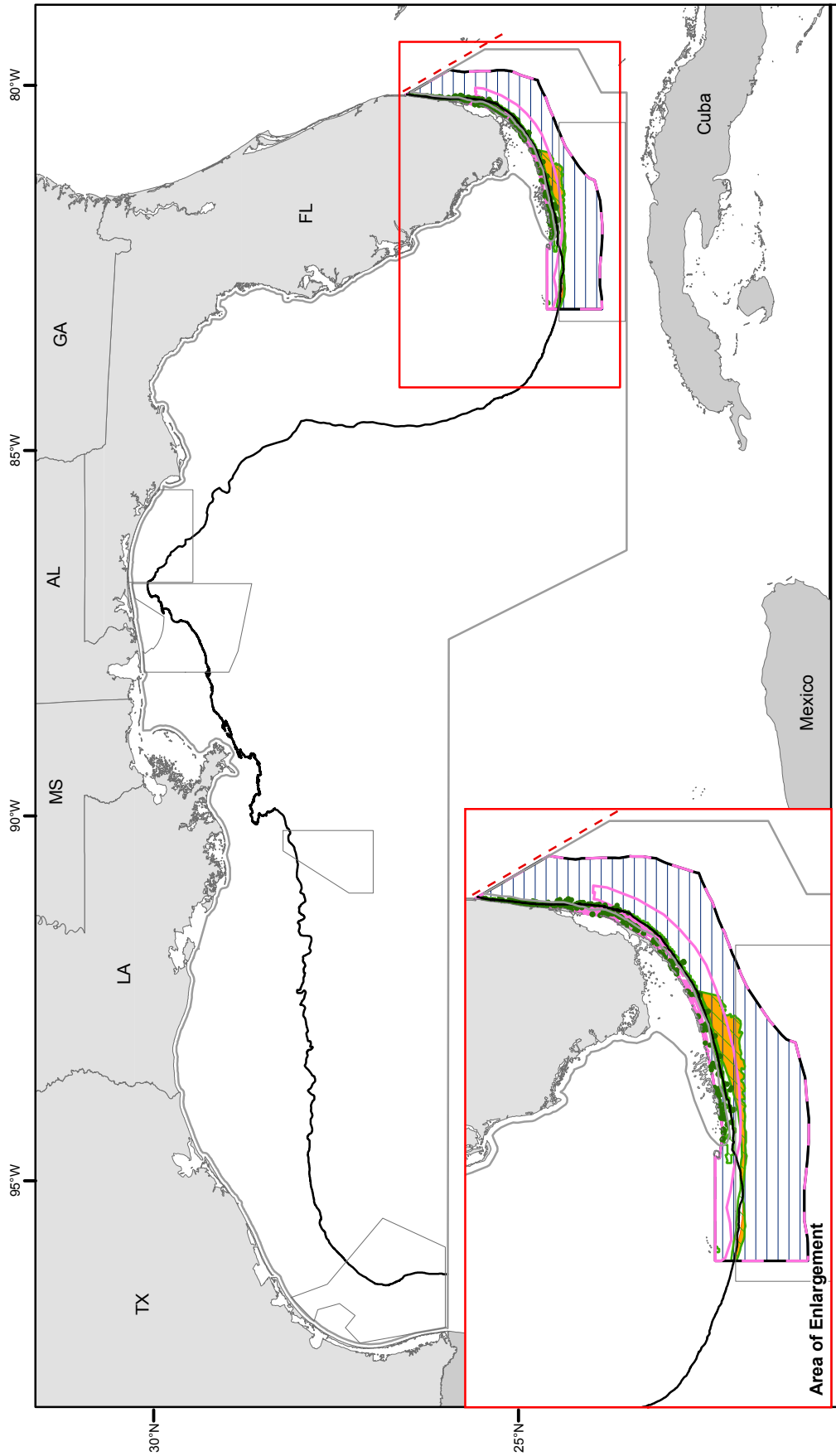


Figure D-27. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the silk snapper in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the reef fish FMP. Source data/maps/information: refer to Table D-1.

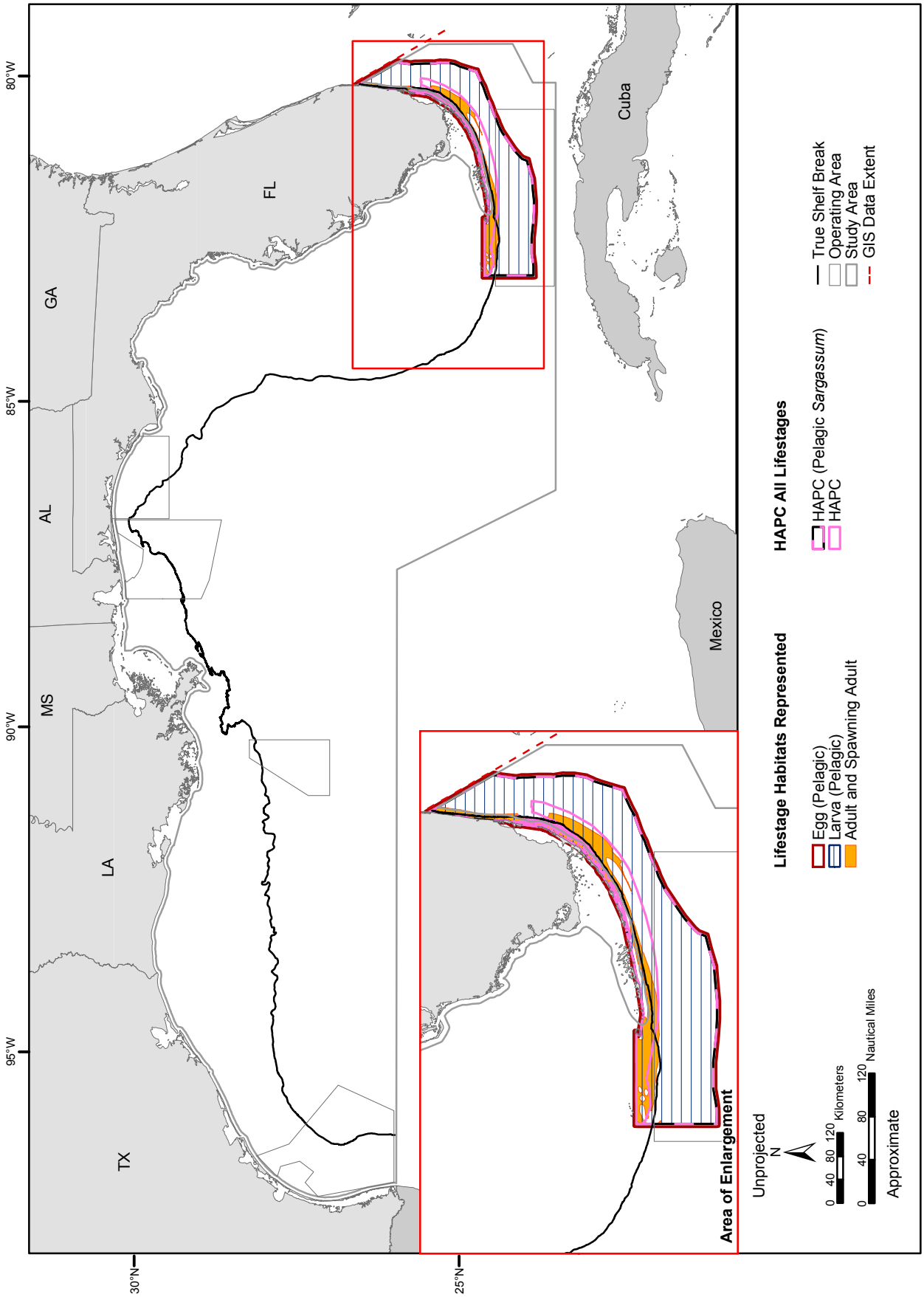


Figure D-28. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the snowy grouper in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the reef fish FMP. Source data/maps/information: refer to Table D-1.

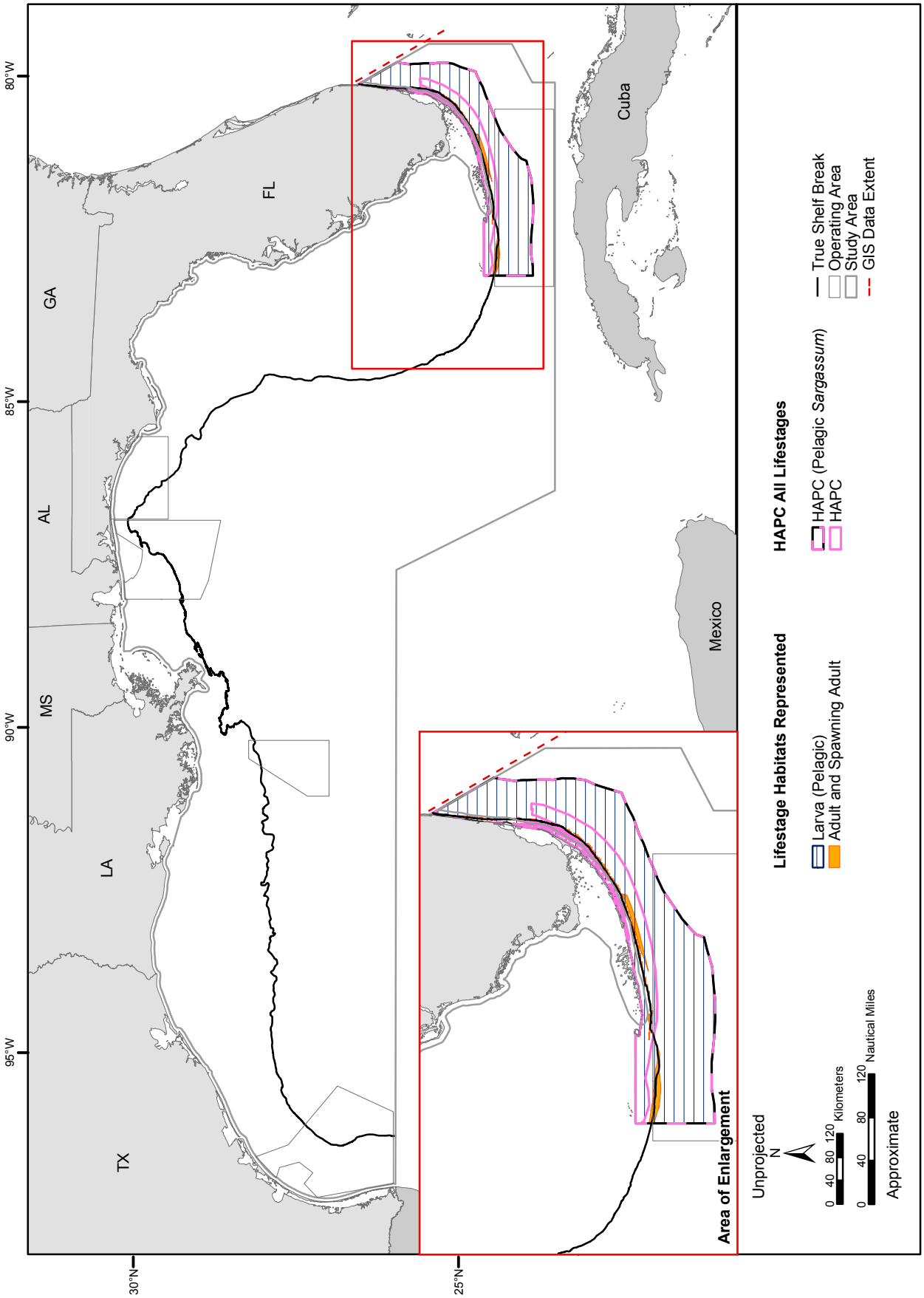


Figure D-29. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the speckled hind in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the reef fish FMP. Source data/maps/information: refer to Table D-1.

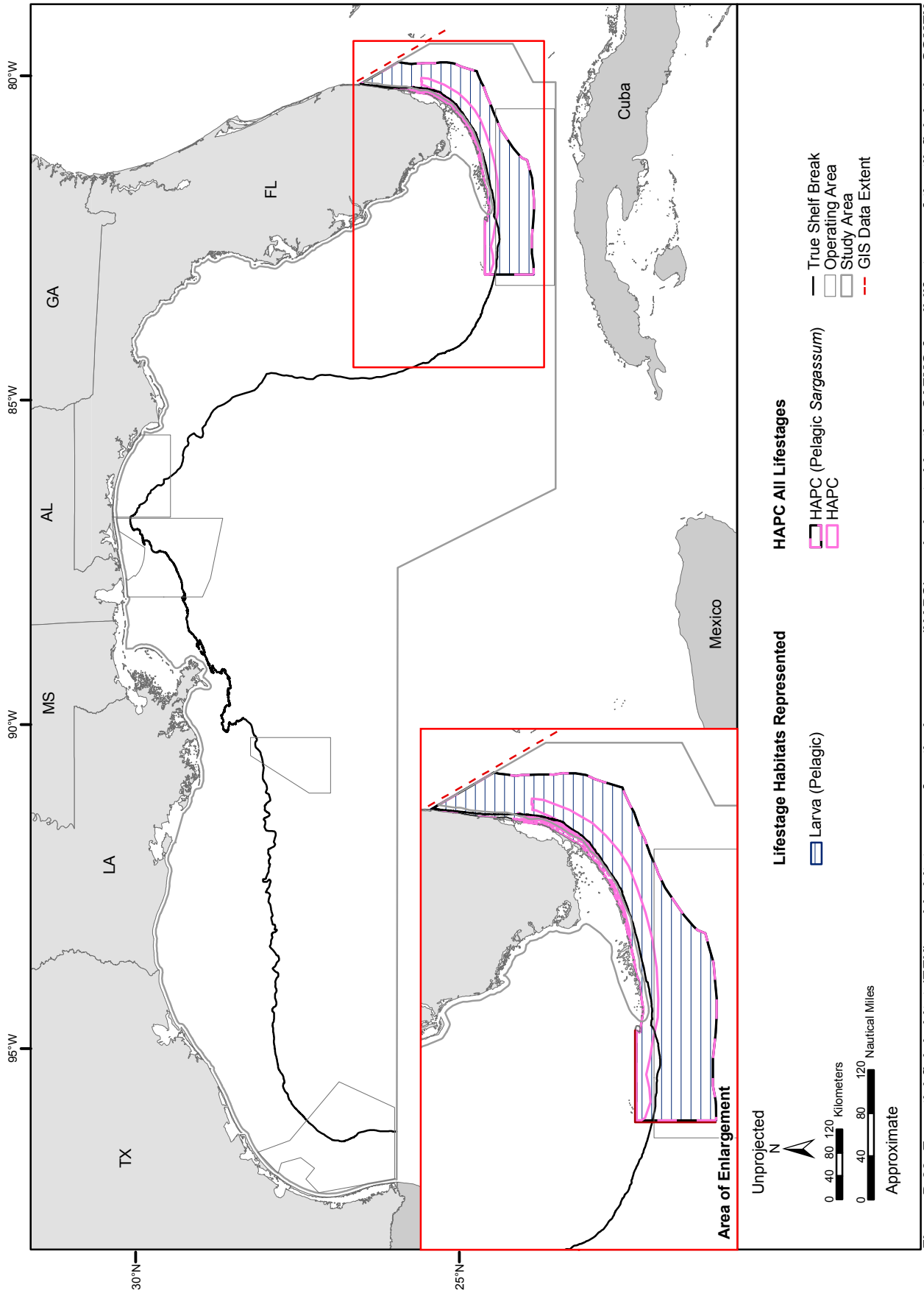


Figure D-30. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the tilefish in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the reef fish FMP. Source data/maps/information: refer to Table D-1.

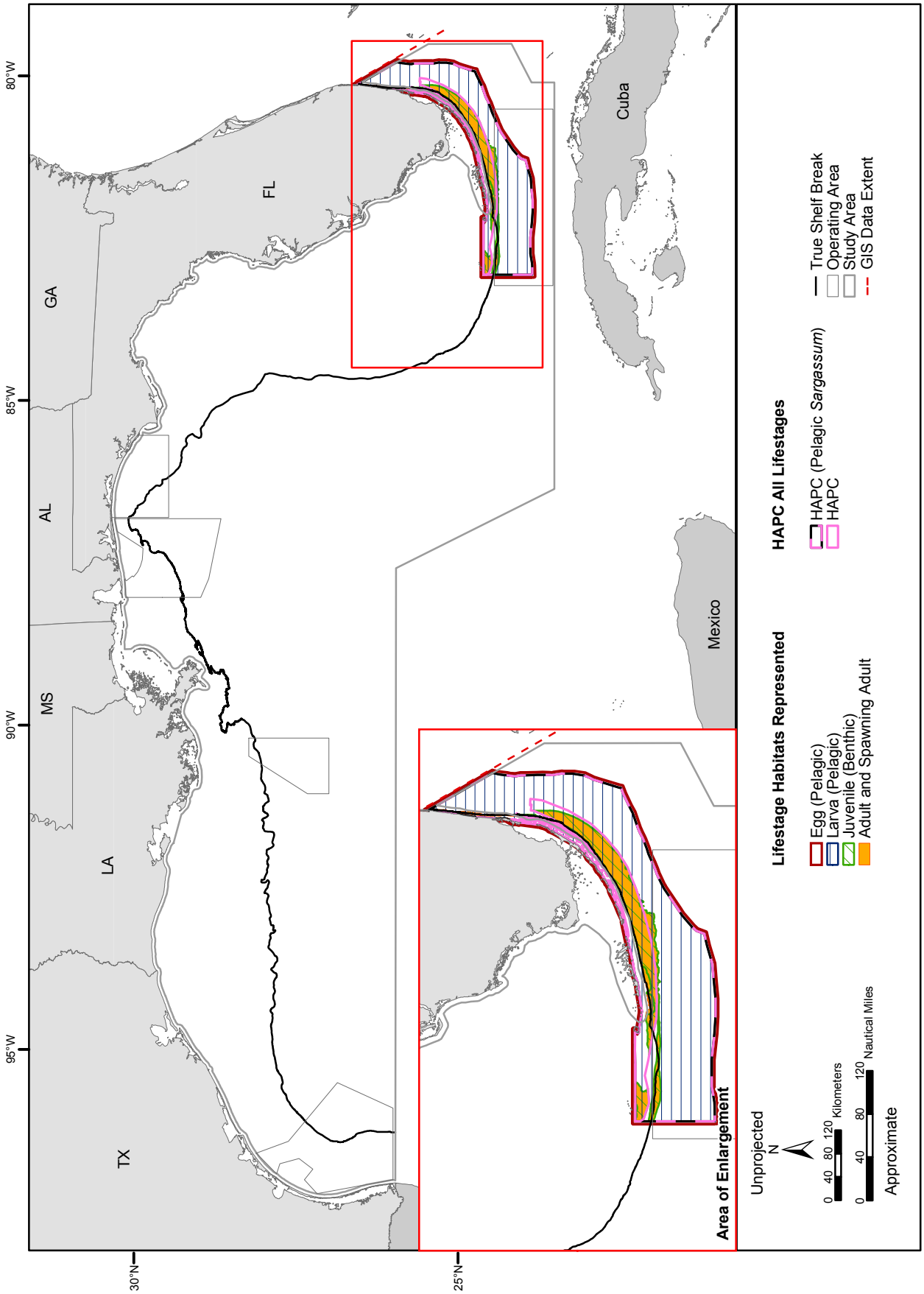


Figure D-31. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the vermilion snapper in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the reef fish FMP. Source data/maps/information: refer to Table D-1.

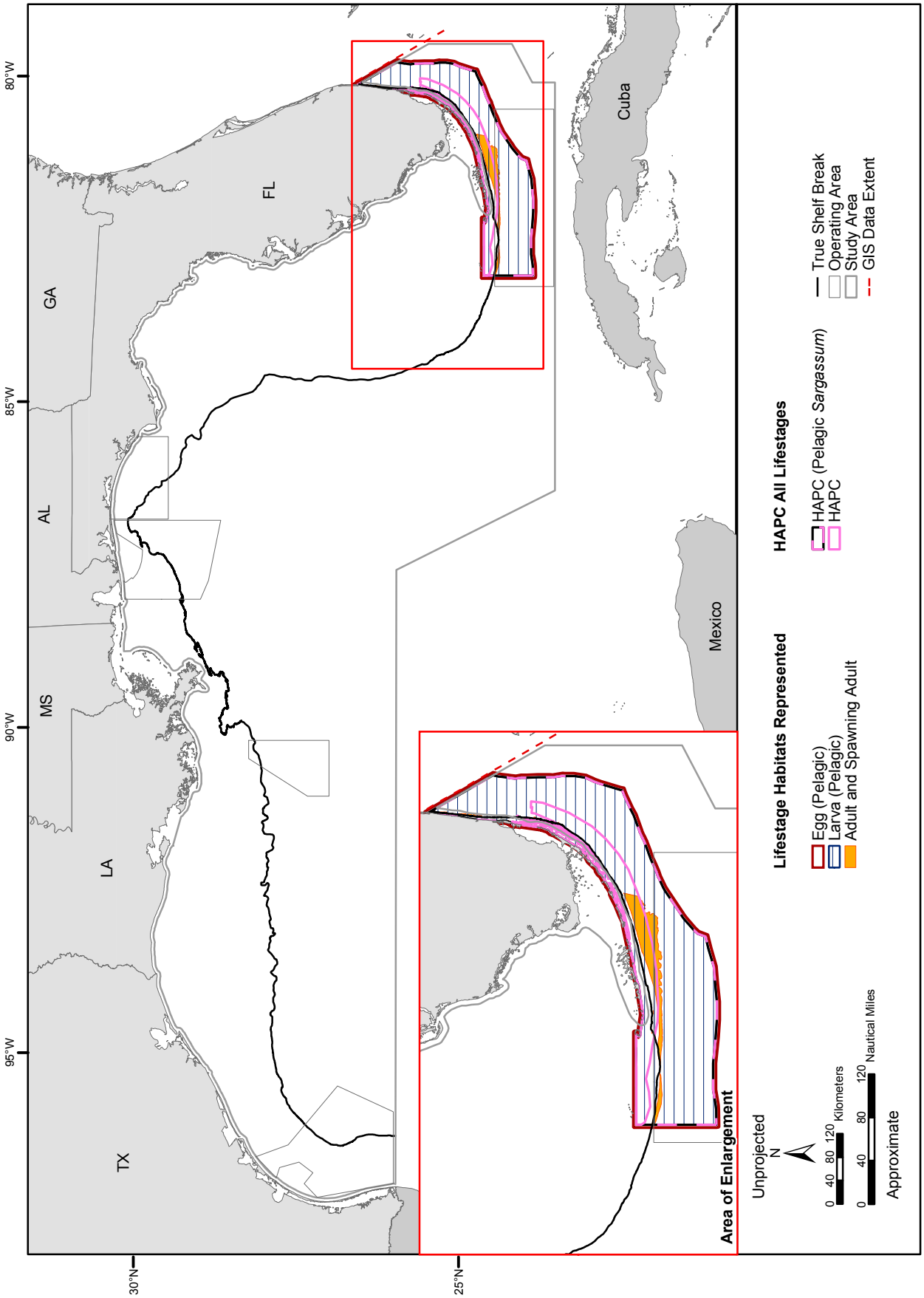


Figure D-32. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the warsaw grouper in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the reef fish FMP. Source data/maps/information: refer to Table D-1.

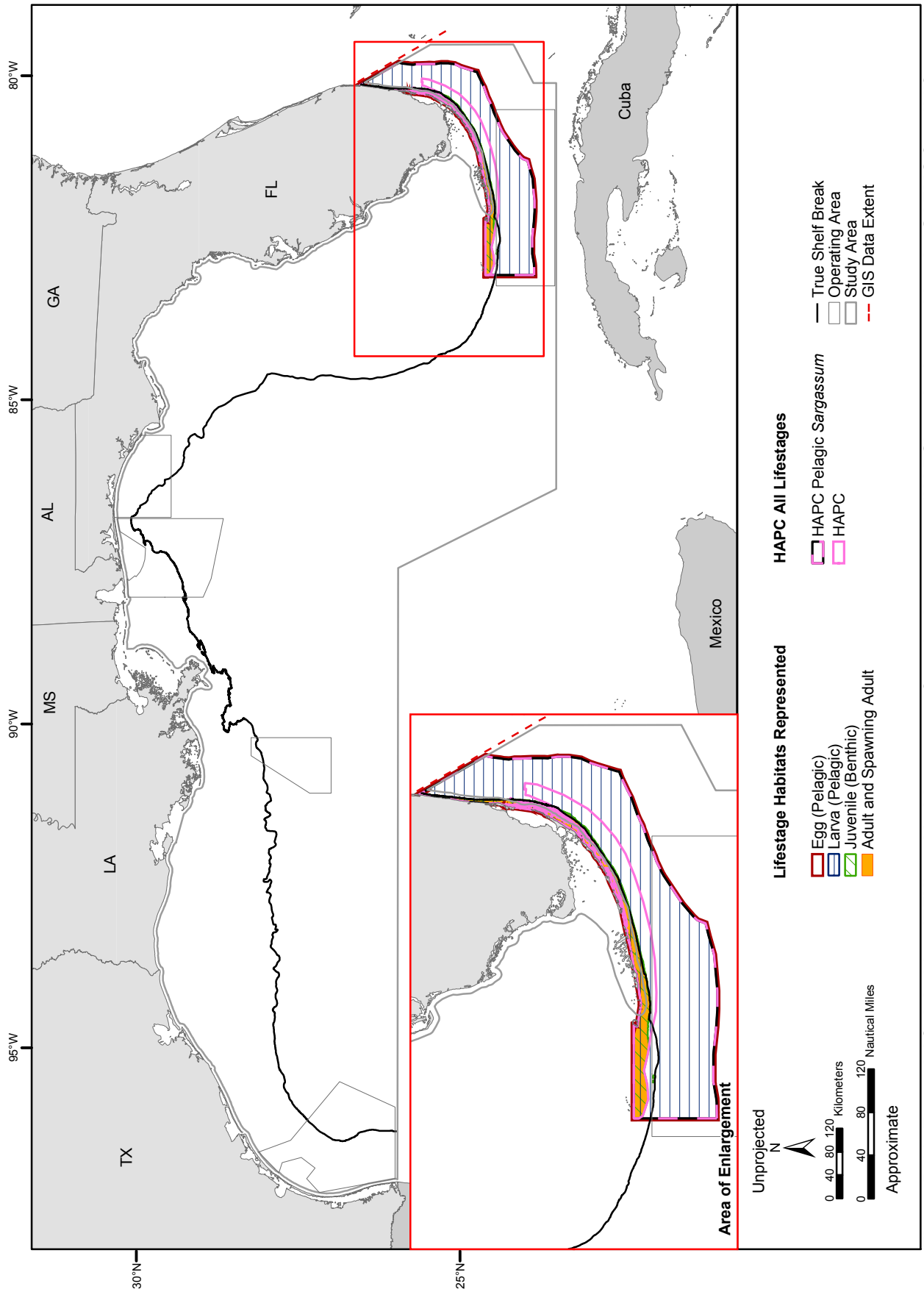


Figure D-33. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the white grunt in the GOMEX study area. Source data/maps/information: refer to Table D-1.

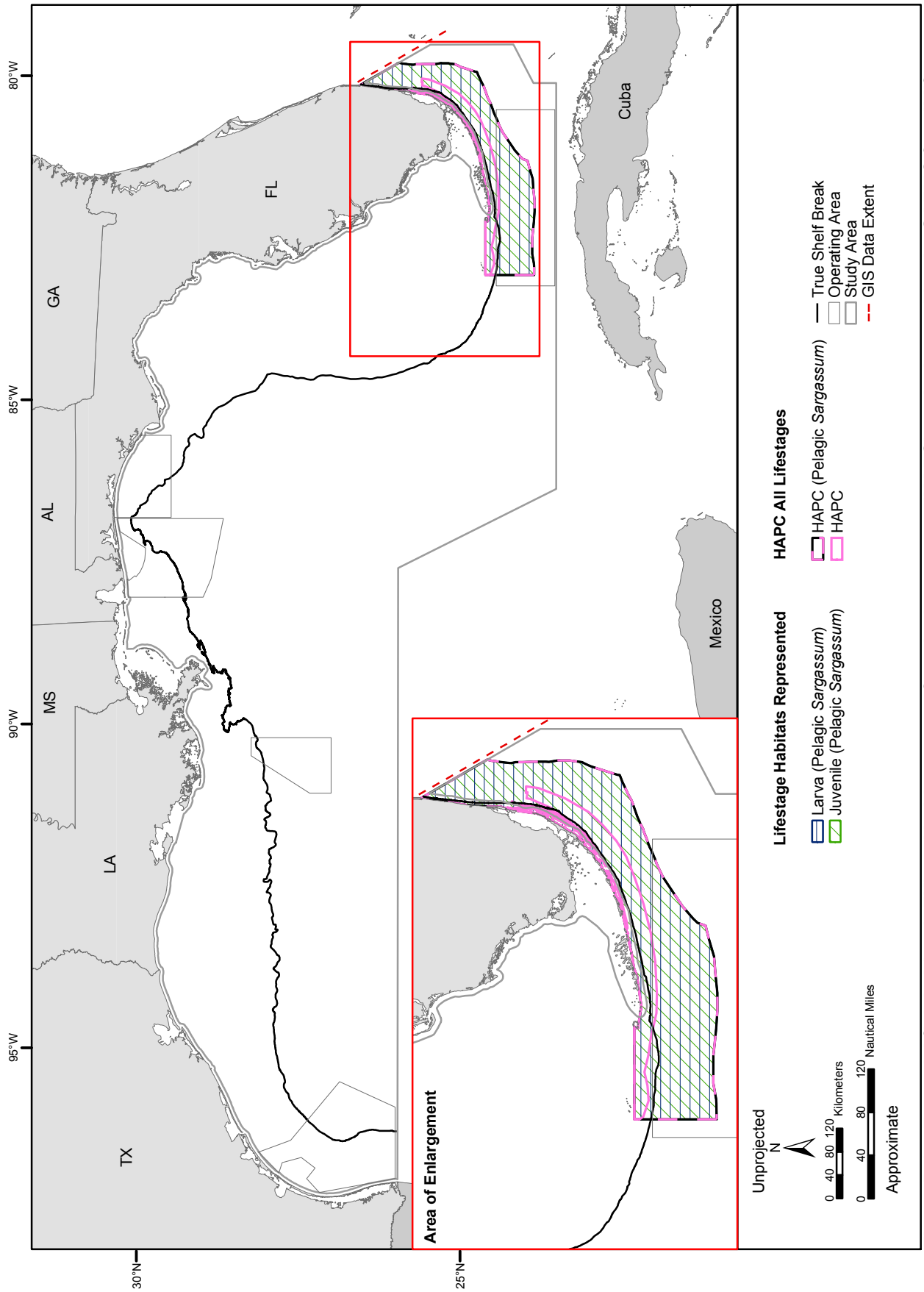


Figure D-34. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the wreckfish in the GOMEX study area. Source data/maps/information: refer to Table D-1.

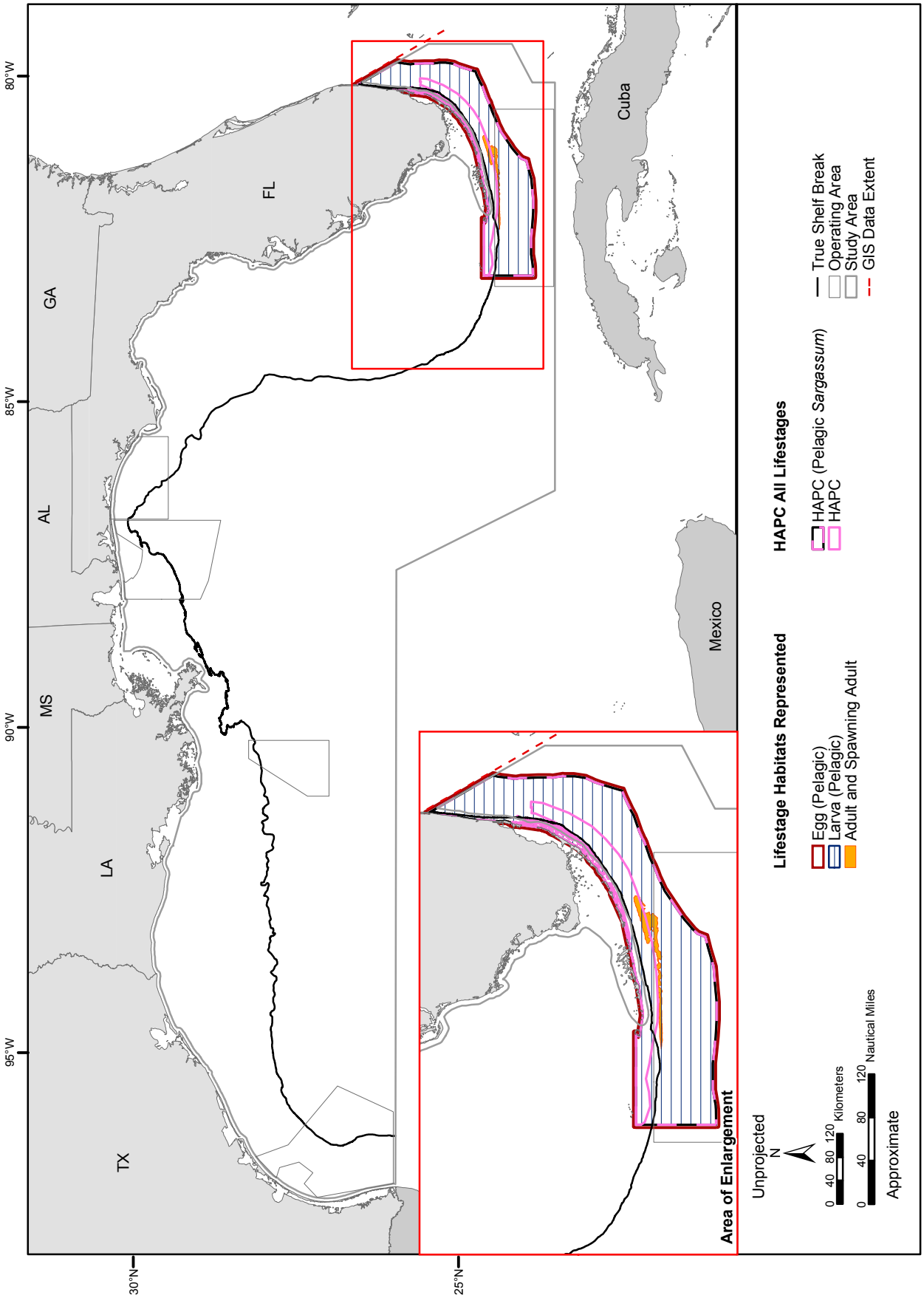


Figure D-35. Essential fish habitat (EFH) and habitat areas of particular concern (HAPC) as designated by the SAFMC for all lifestages of the yellowedge grouper in the GOMEX study area. This species has additional EFH/HAPC designated by the GMFMC through the reef fish FMP. Source data/maps/information: refer to Table D-1.

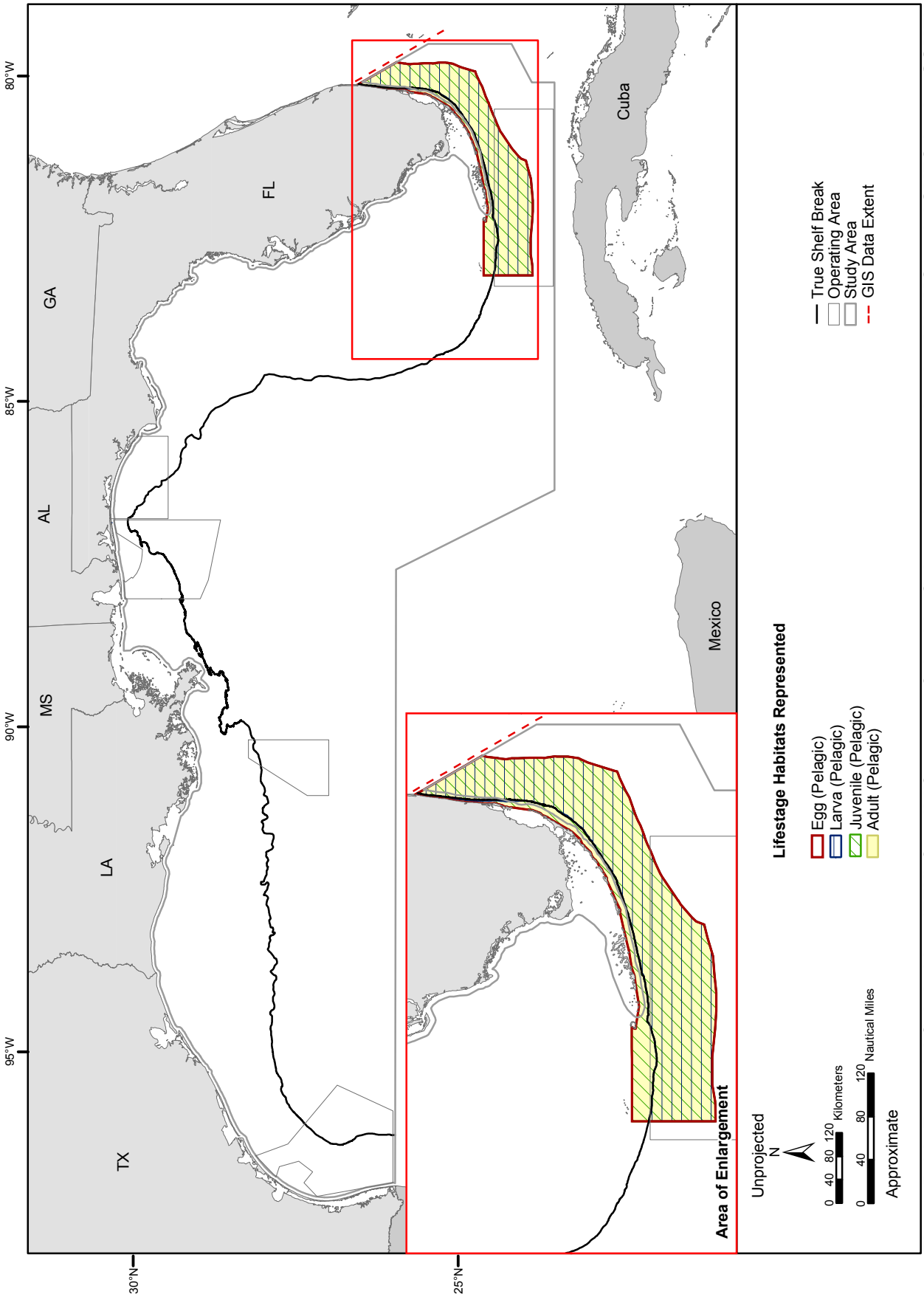


Figure D-36. Essential fish habitat (EFH) for all lifestages of the bluefish as designated by the MAFMC and ASMFC in the GOMEX study area. Source data/maps/information: refer to Table D-1.

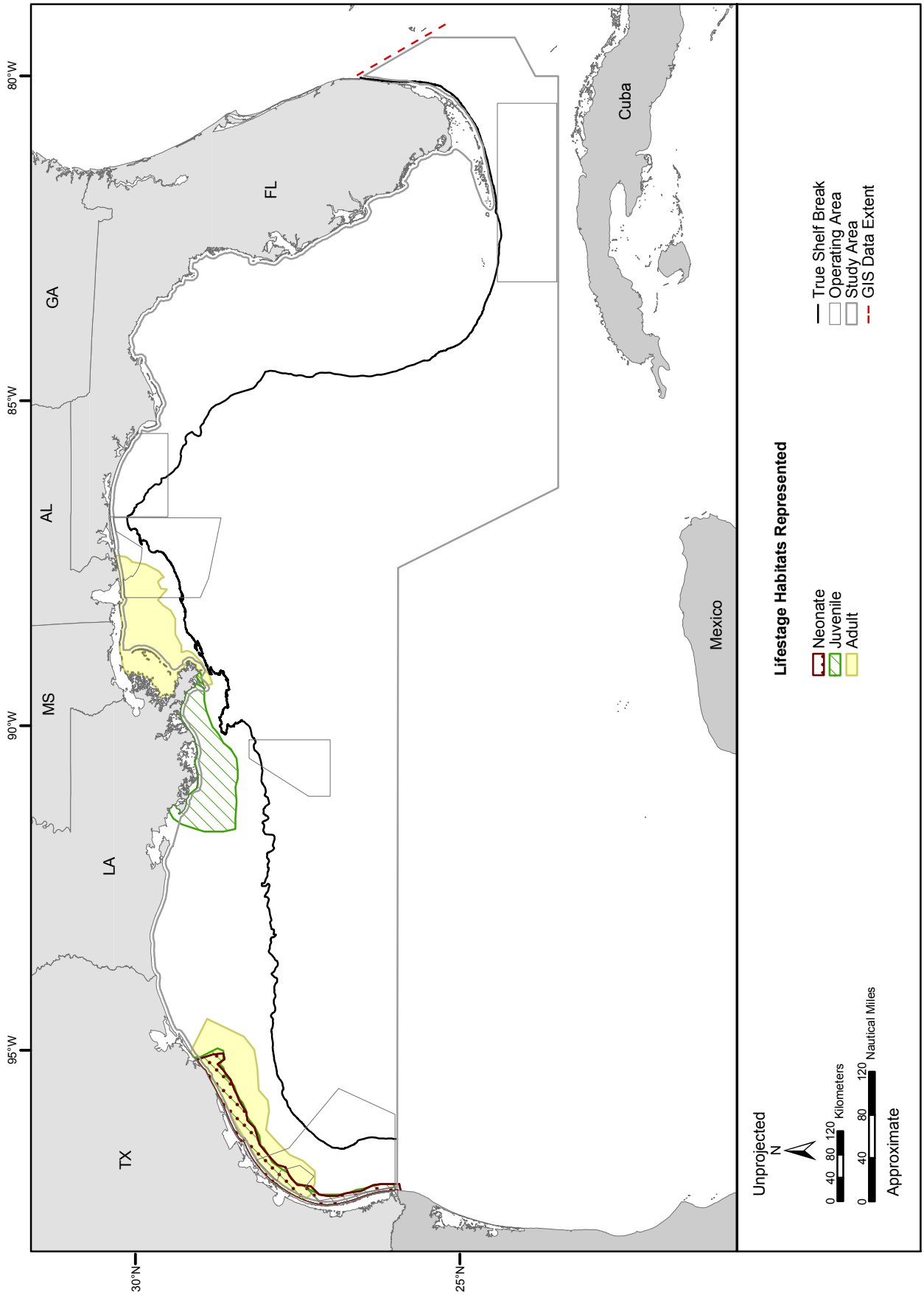


Figure D-37. Essential fish habitat (EFH) for all lifestages of the Atlantic sharpnose shark designated in the GOMEX study area. The graphical representation of the EFH designation for the neonate and the juvenile lifestage does not match the EFH text designation. Source data: NMFS (1999d). Source information: Rilling (2007).

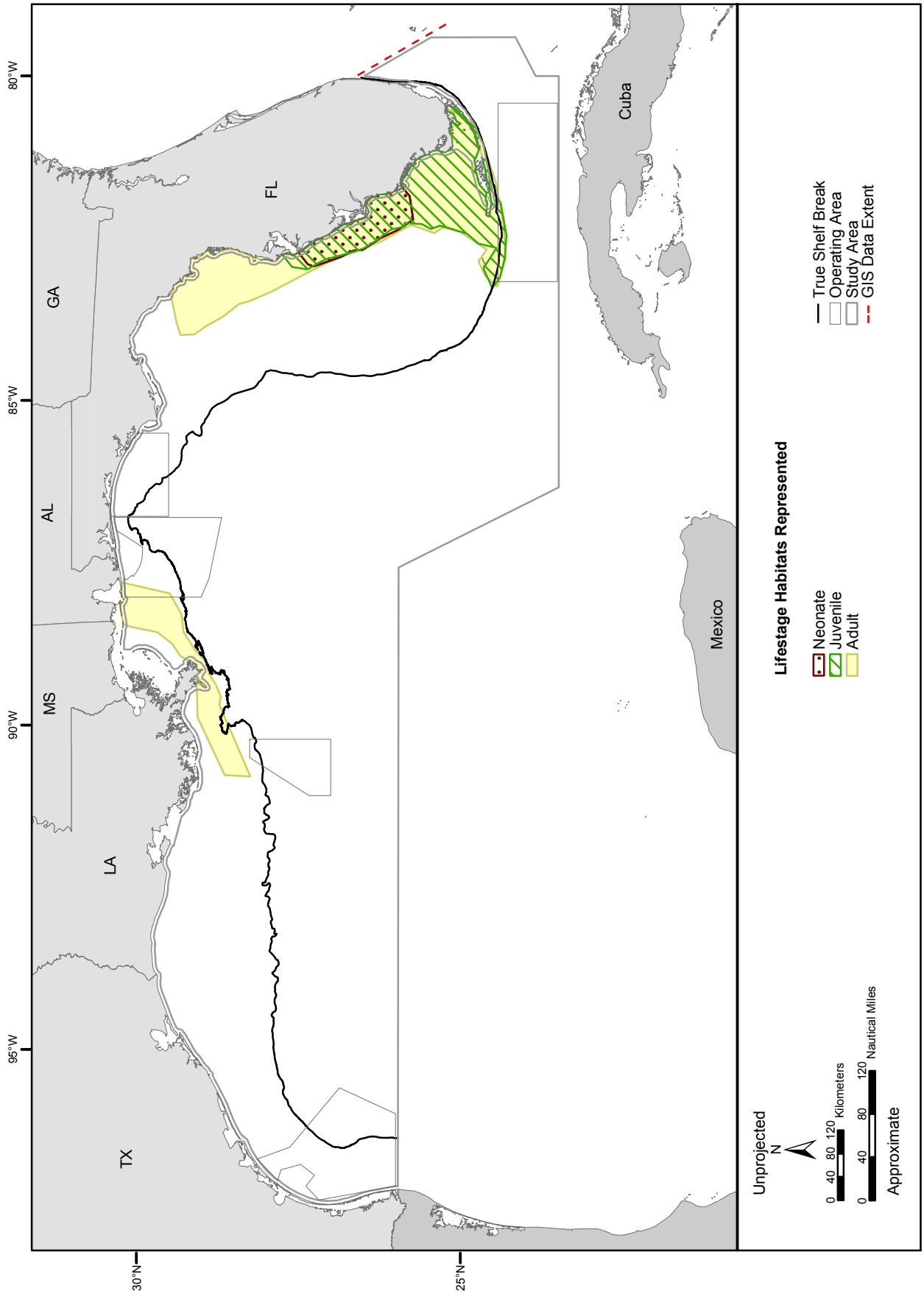


Figure D-38. Essential fish habitat (EFH) for all lifestages of the blacknose shark designated in the GOMEX study area. Source data: NMFS (1999d). Source information: Rilling (2007).

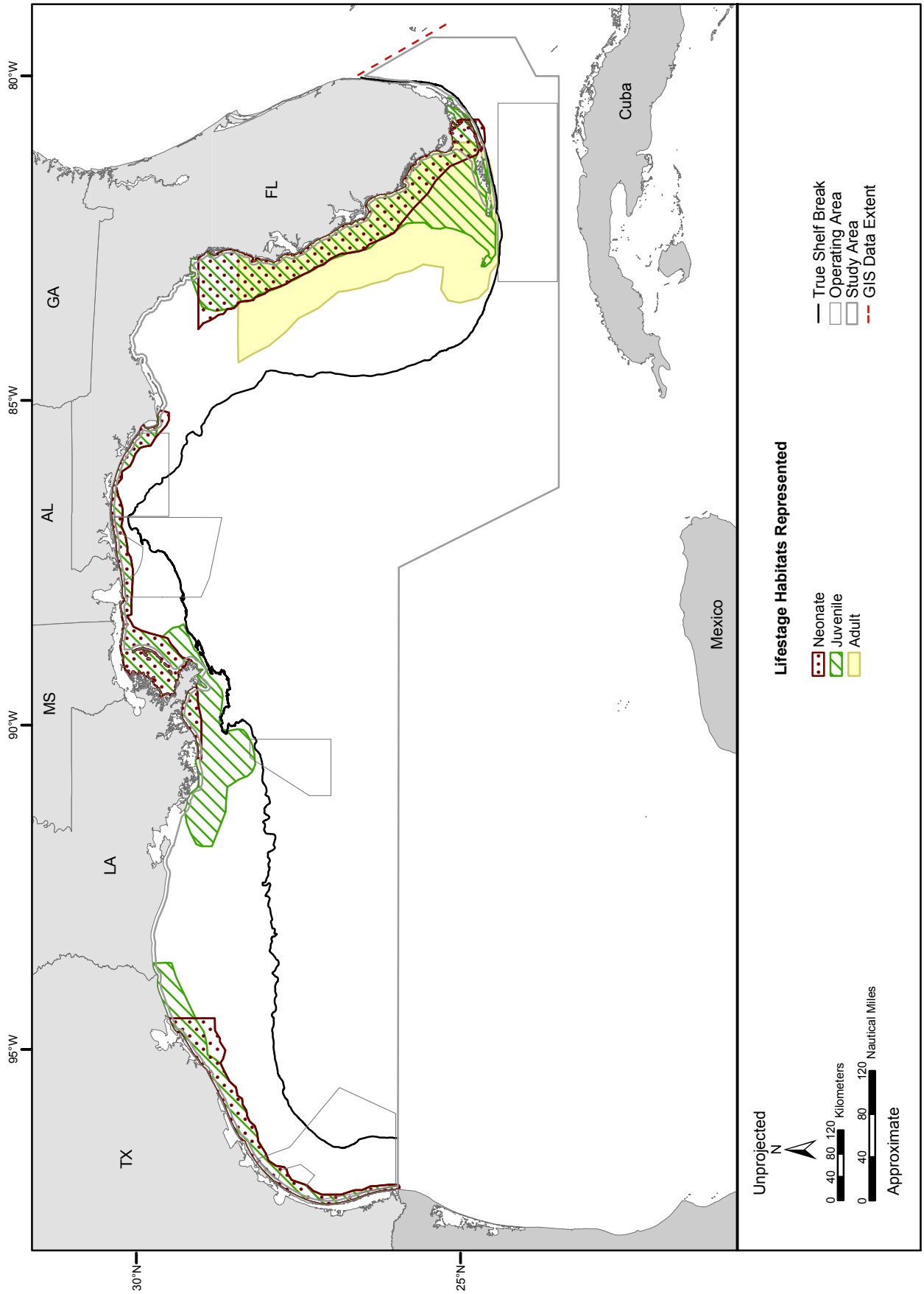


Figure D-39. Essential fish habitat (EFH) for all lifestages of the blacktip shark designated in the GOMEX study area. Source data: NMFS (2003d).

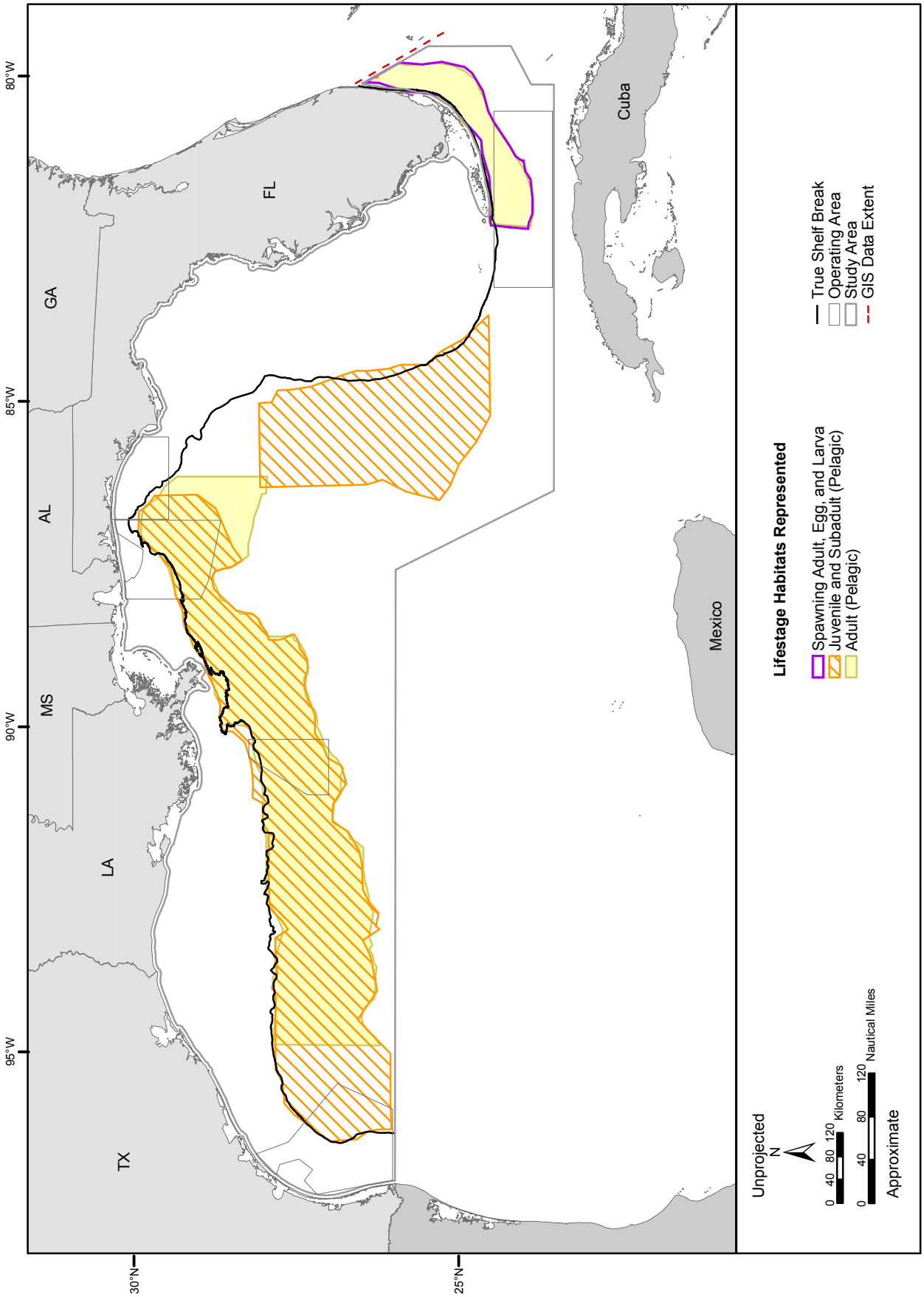


Figure D-40. Essential fish habitat (EFH) for all lifestages of the blue marlin designated in the GOMEX study area. The graphical depiction of the EFH designation for the juvenile and subadult lifestage and the adult lifestage depicted here do not match the text designation. Source data: NMFS (1999d).

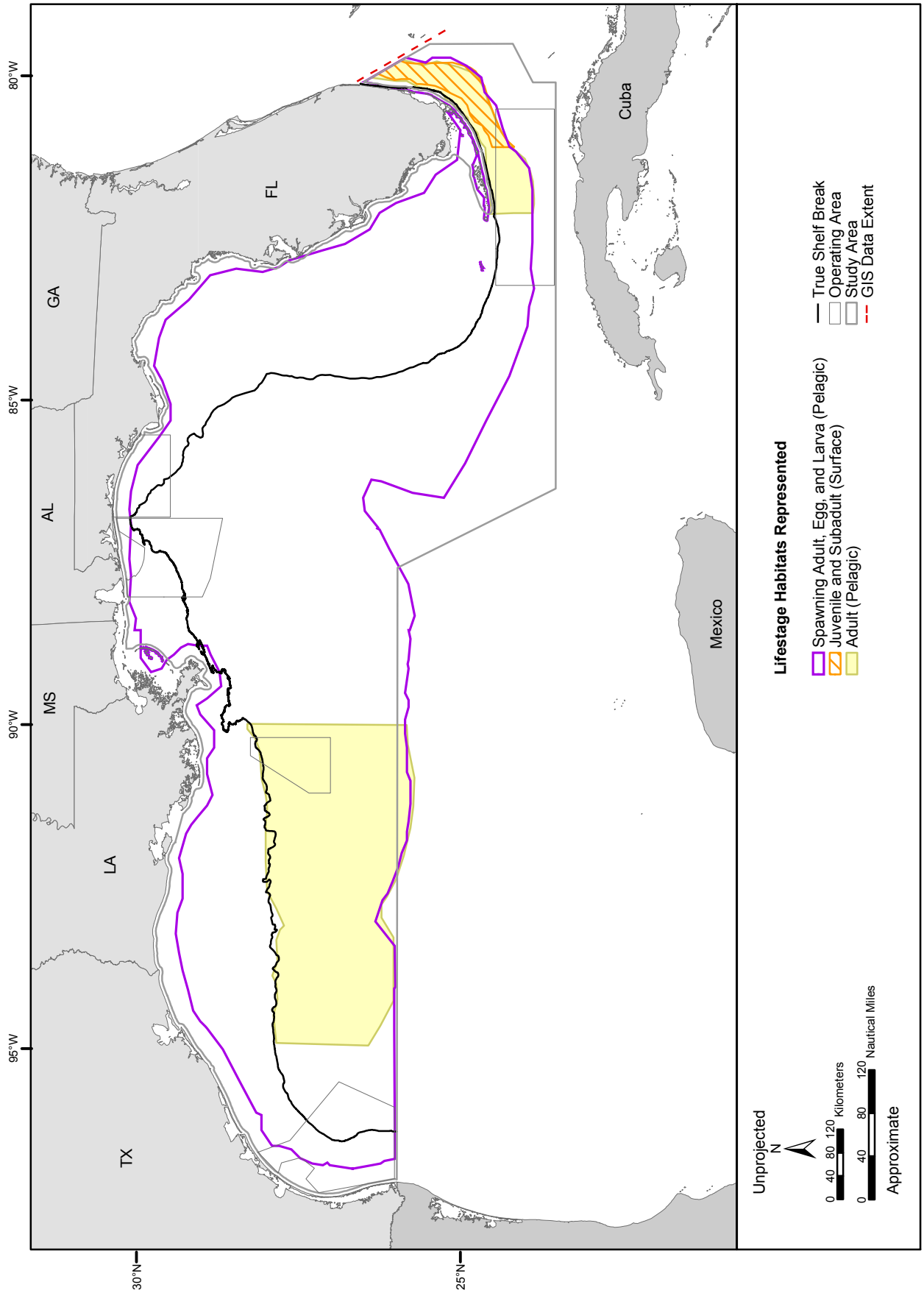


Figure D-41. Essential fish habitat for all lifestages of the bluefin tuna designated in the GOMEX study area. Source data: NMFS (1999d).

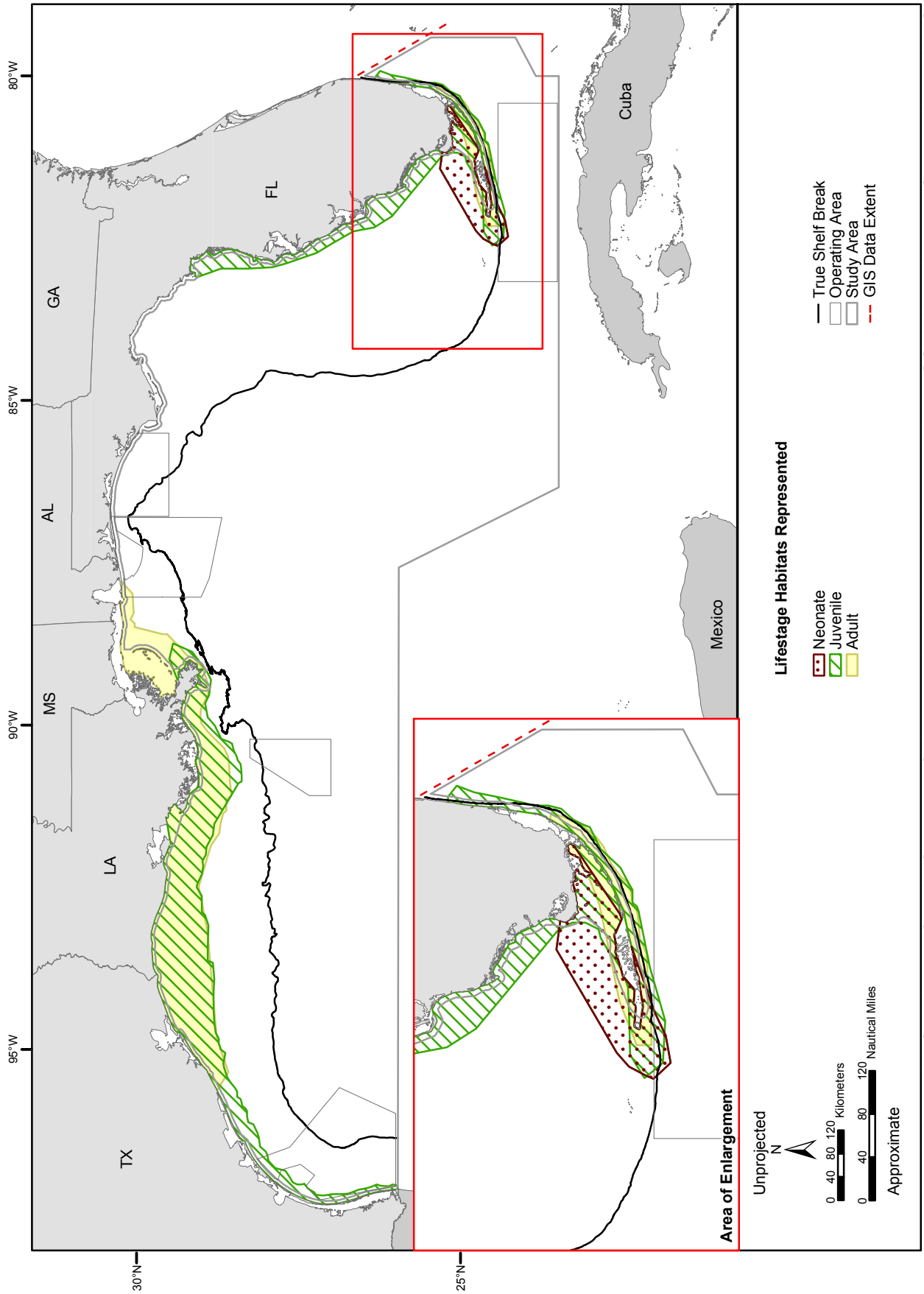


Figure D-42. Essential fish habitat for all lifestages of the bonnethead shark designated in the GOMEX study area. Source data: NMFS (1999d).

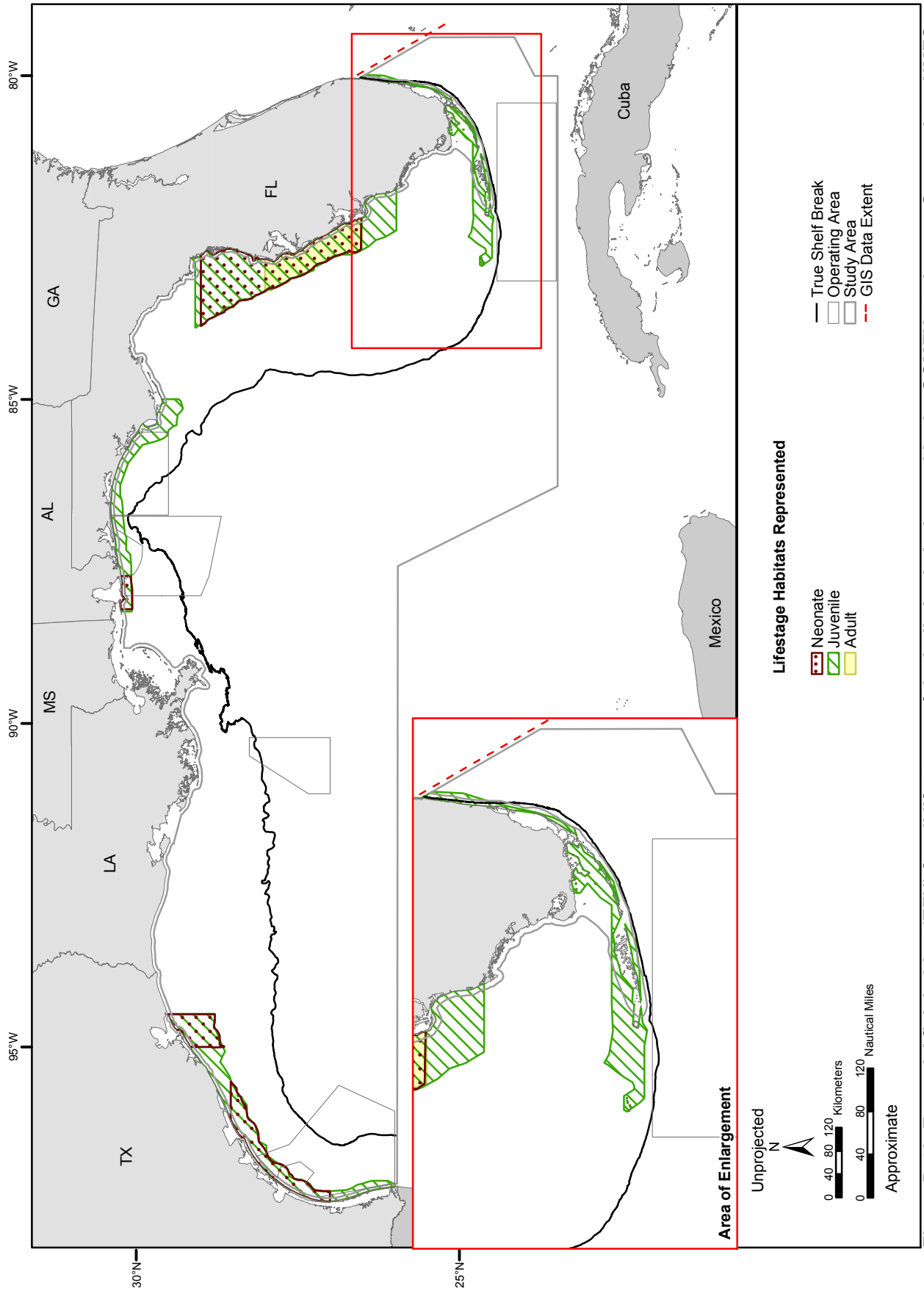


Figure D-43. Essential fish habitat (EFH) for all lifestages of the bull shark designated in the GOMEX study area. Source data: NMFS (1999d). Source information: Rilling (2007).

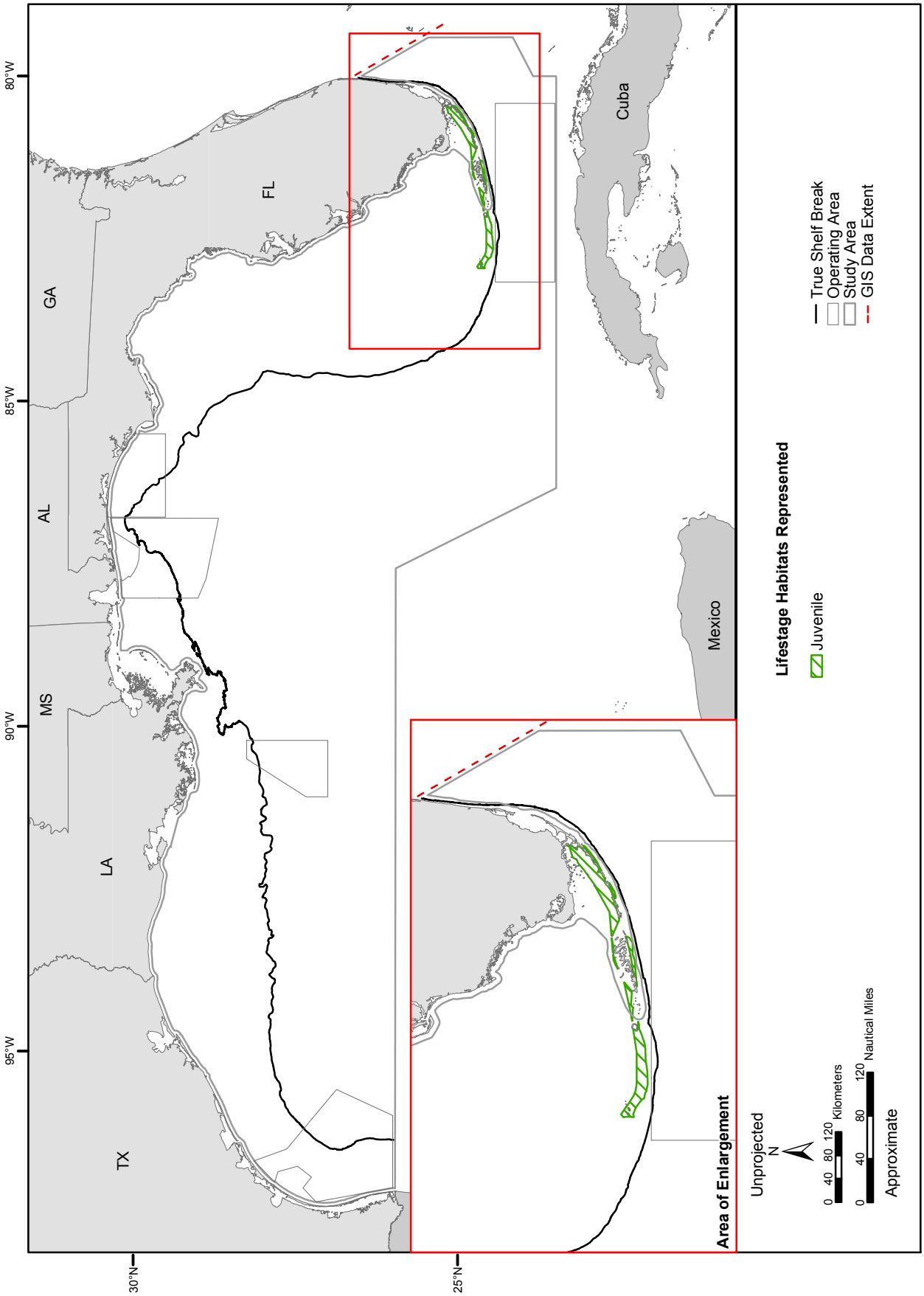


Figure D-44. Essential fish habitat (EFH) for all lifestages of the Caribbean reef shark designated in the GOMEX study area. Source data: NMFS (1999d). Source information: Rilling (2007).

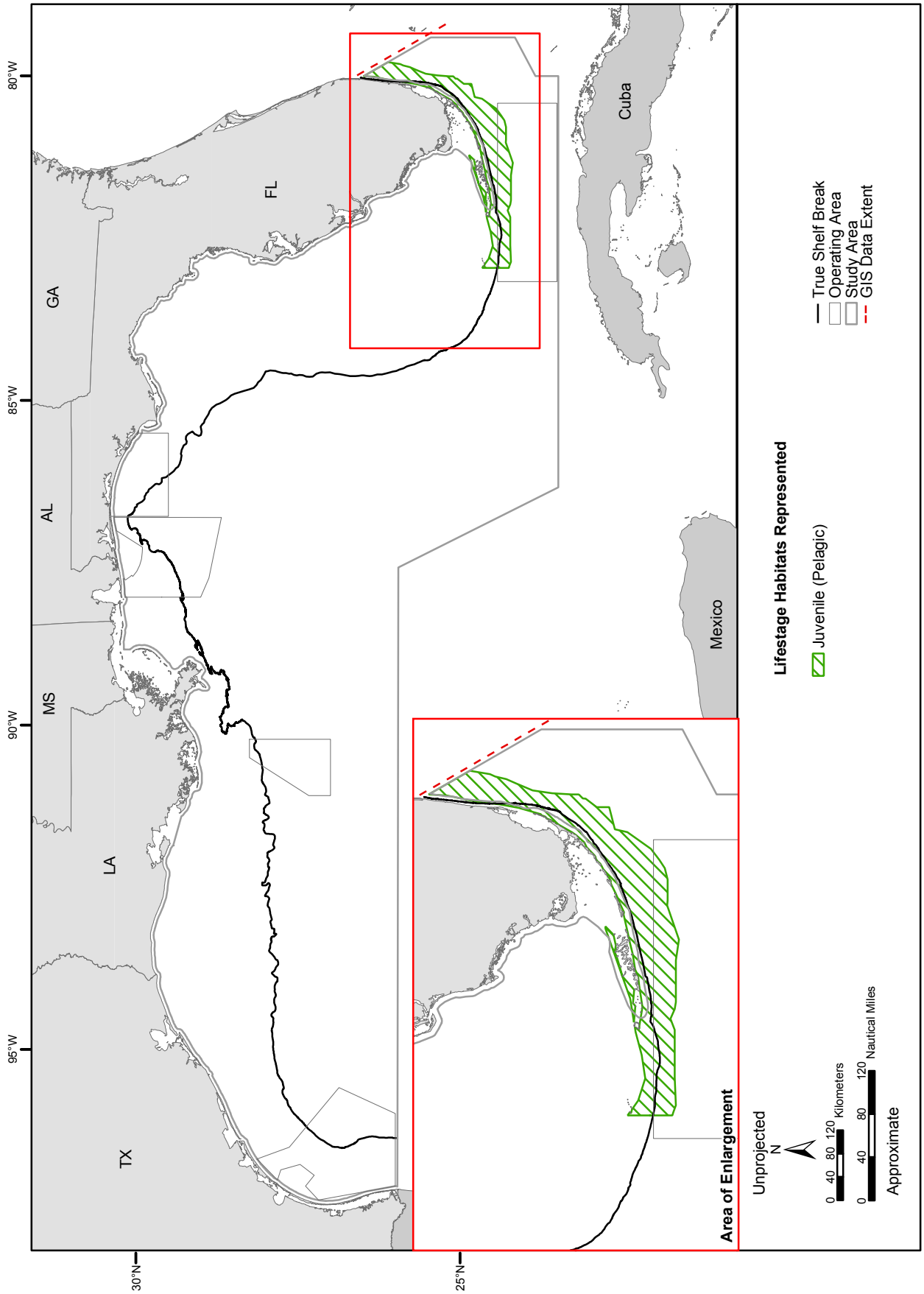


Figure D-45. Essential fish habitat (EFH) for all lifestages of the dusky shark designated in the GOMEX study area. Source data: NMFS (2003d).

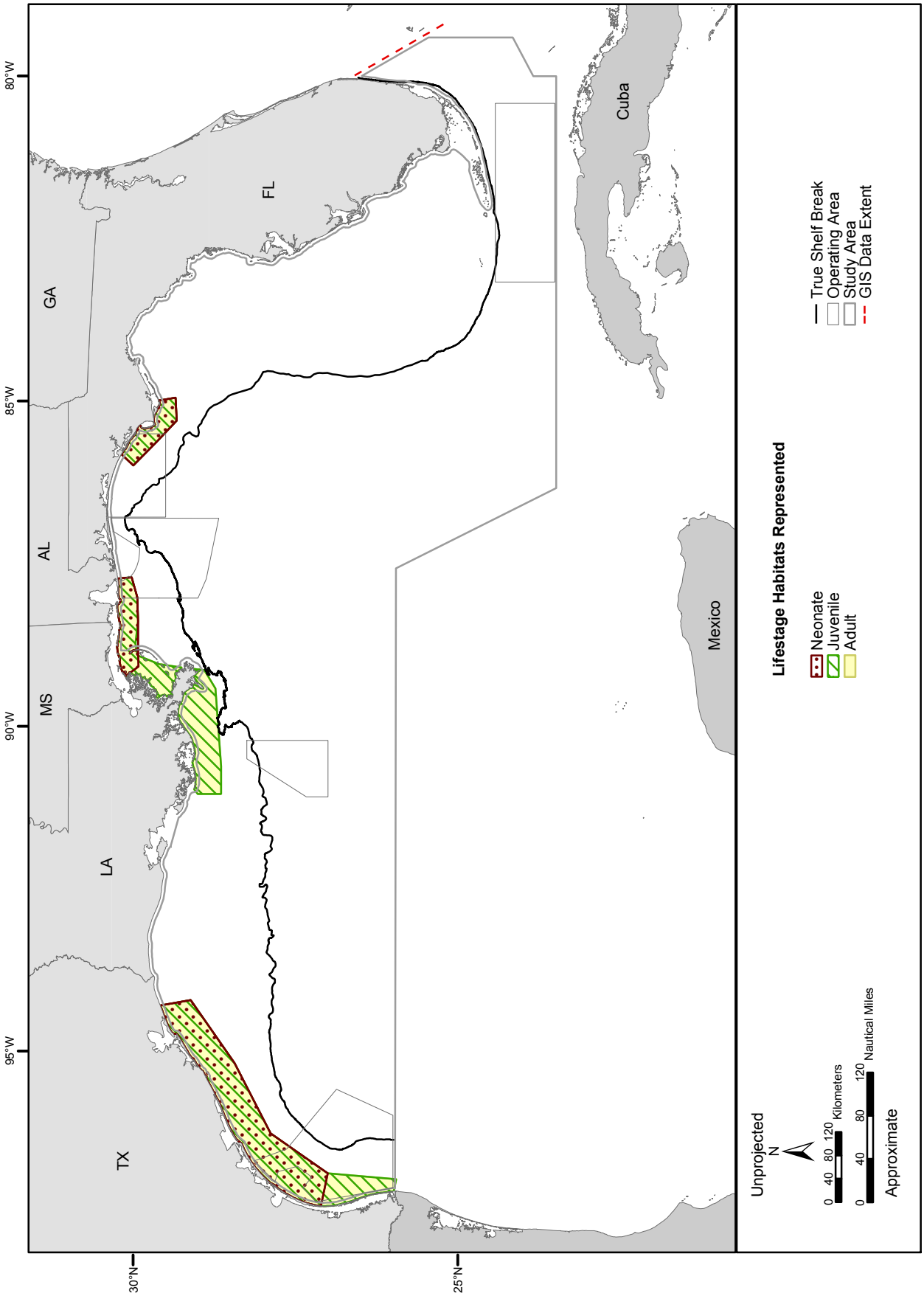


Figure D-46. Essential fish habitat (EFH) for all lifestages of the finetooth shark designated in the GOMEX study area. The graphical depiction of EFH for the neonate lifestage does not match the text designation. Source data: NMFS (2003d).

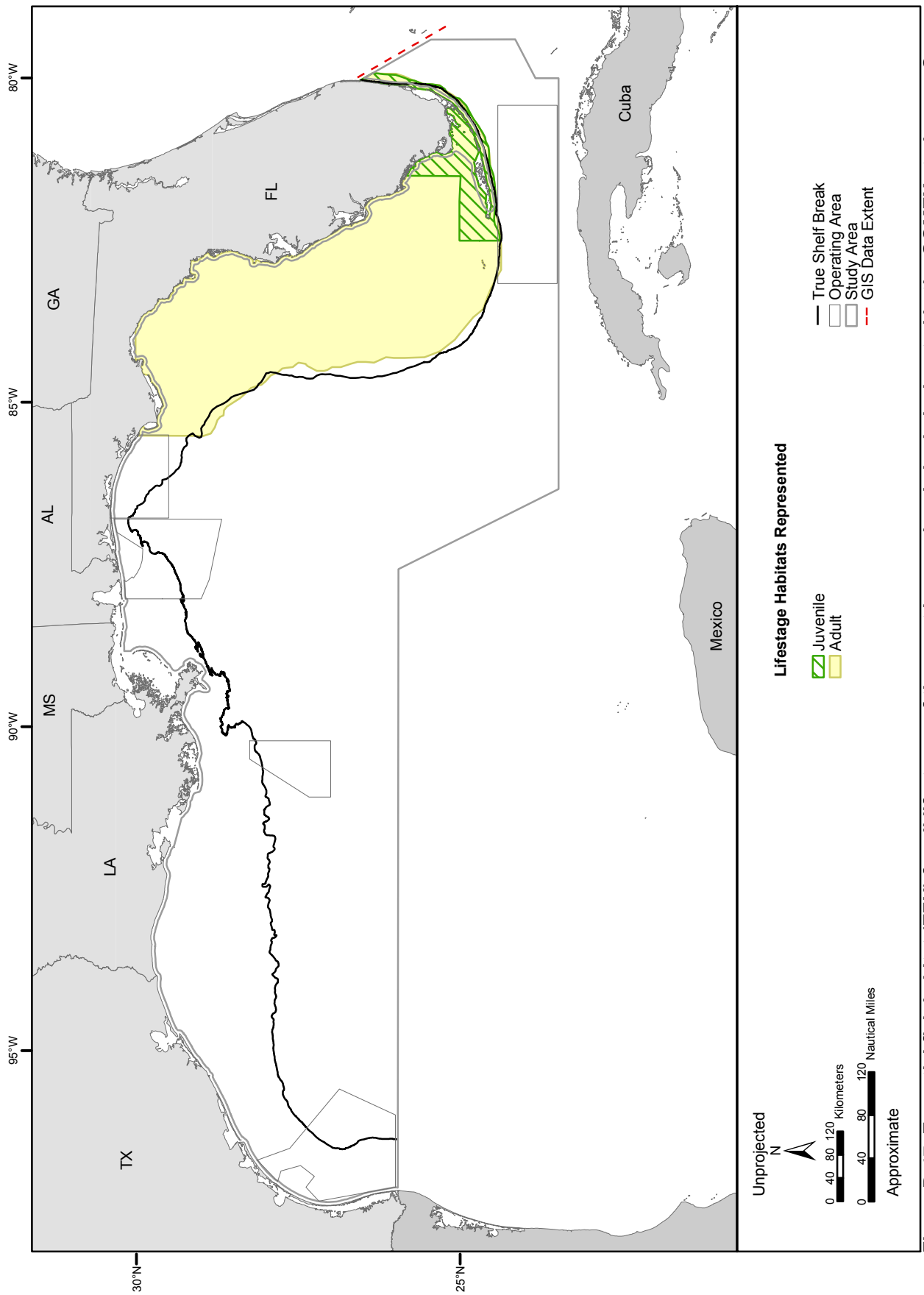


Figure D-47. Essential fish habitat (EFH) for all lifestages of the great hammerhead shark designated in the GOMEX study area. Source data: NMFS (1999d). Source information: Rilling (2007).

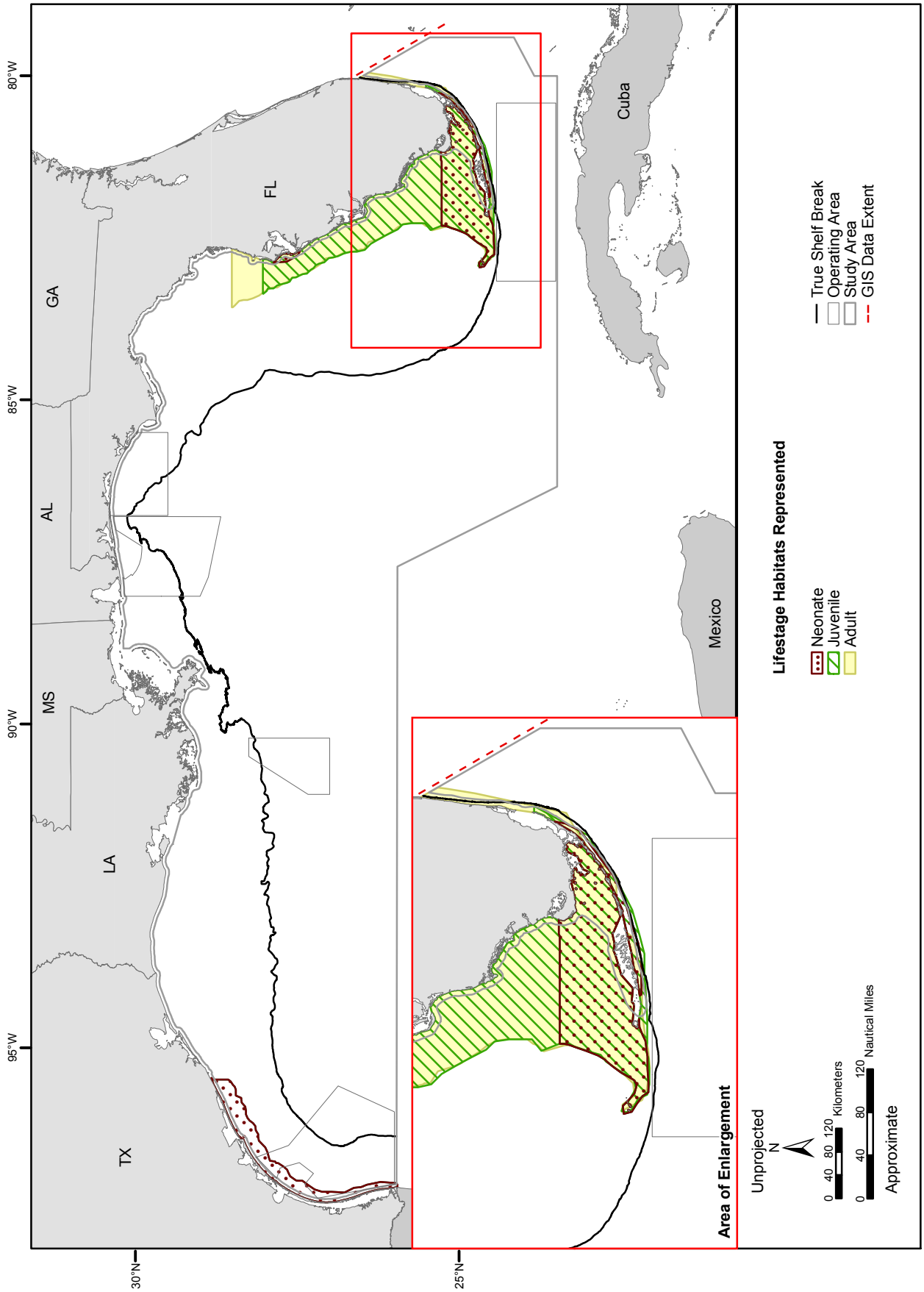


Figure D-48. Essential fish habitat (EFH) for all lifestages of the lemon shark designated in the GOMEX study area. Source data: NMFS (1999d). Source information: Rilling (2007).

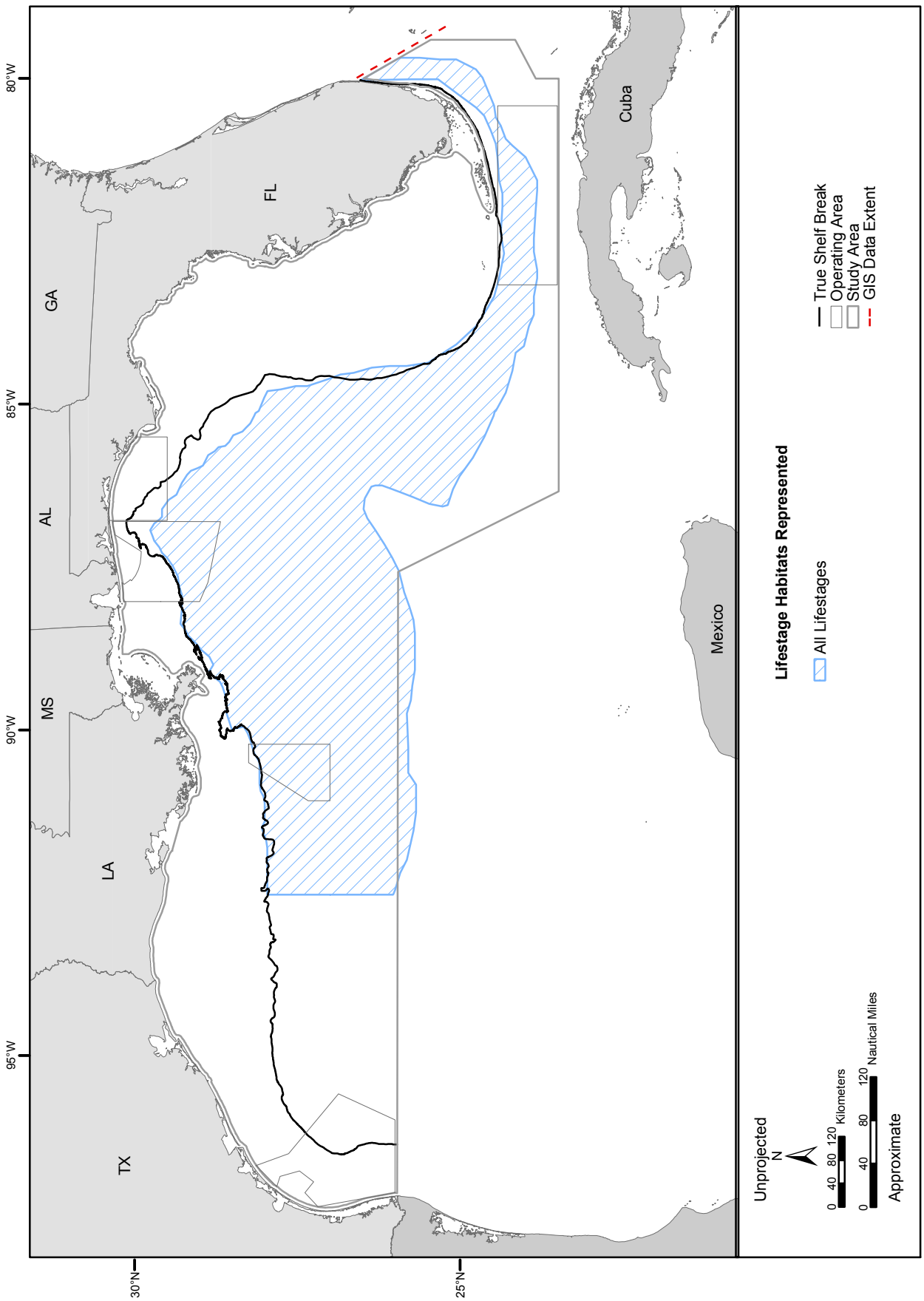


Figure D-49. Essential fish habitat (EFH) for all lifestages of the longfin mako shark designated in the GOMEX study area. Source data: NMFS (1999d).

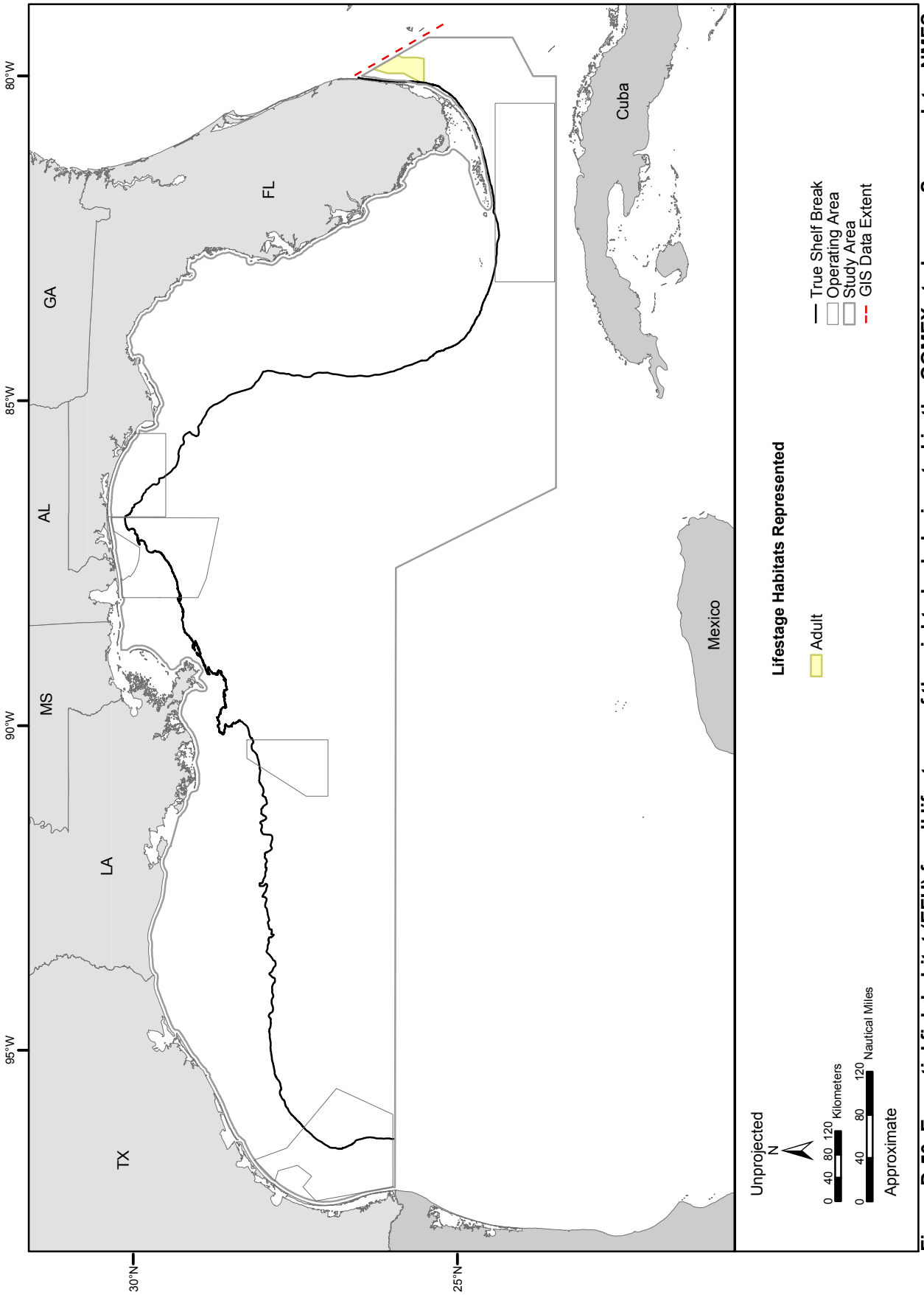


Figure D-50. Essential fish habitat (EFH) for all lifestages of the night shark designated in the GOMEX study area. Source data: NMFS (1999d).

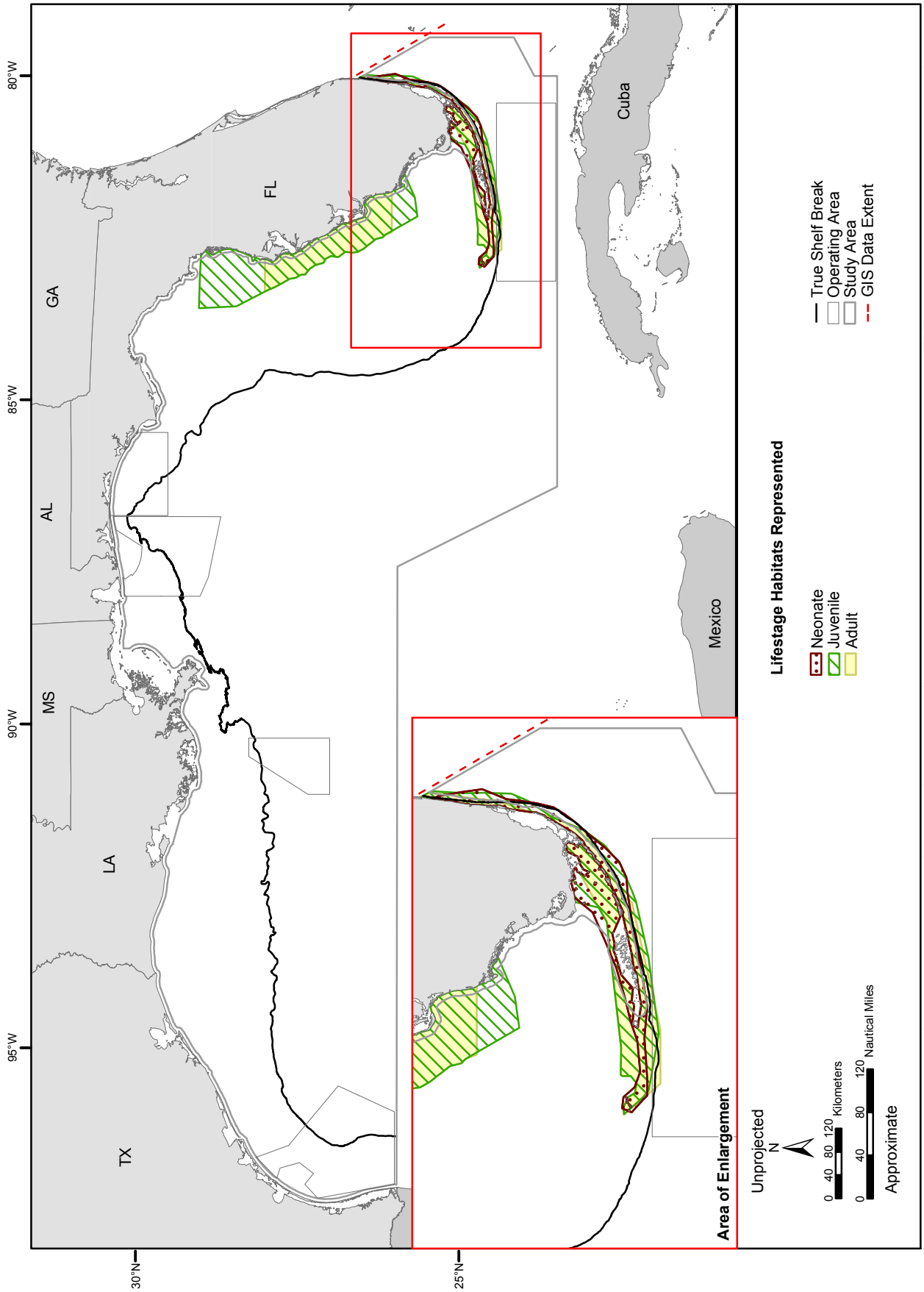


Figure D-51. Essential fish habitat (EFH) for all lifestages of the nurse shark designated in the GOMEX study area. The EFH for the juvenile and adult lifestages shown graphically does not match the text designation. Source data: NMFS (2003d).

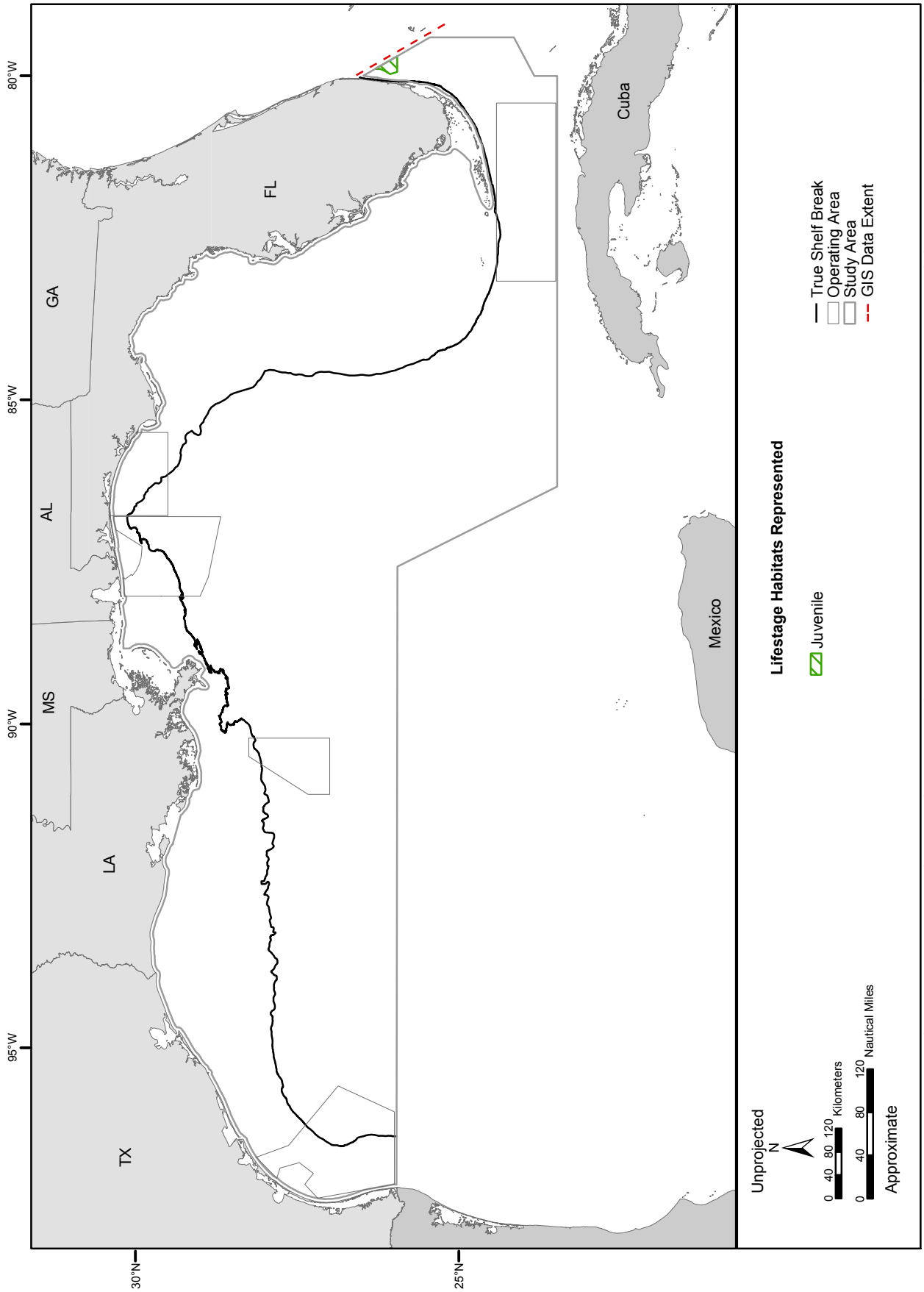


Figure D-52. Essential fish habitat (EFH) for all lifestages of the oceanic whitetip shark designated in the GOMEX study area. Source data: NMFS (1999d). Source information: Rilling (2007).

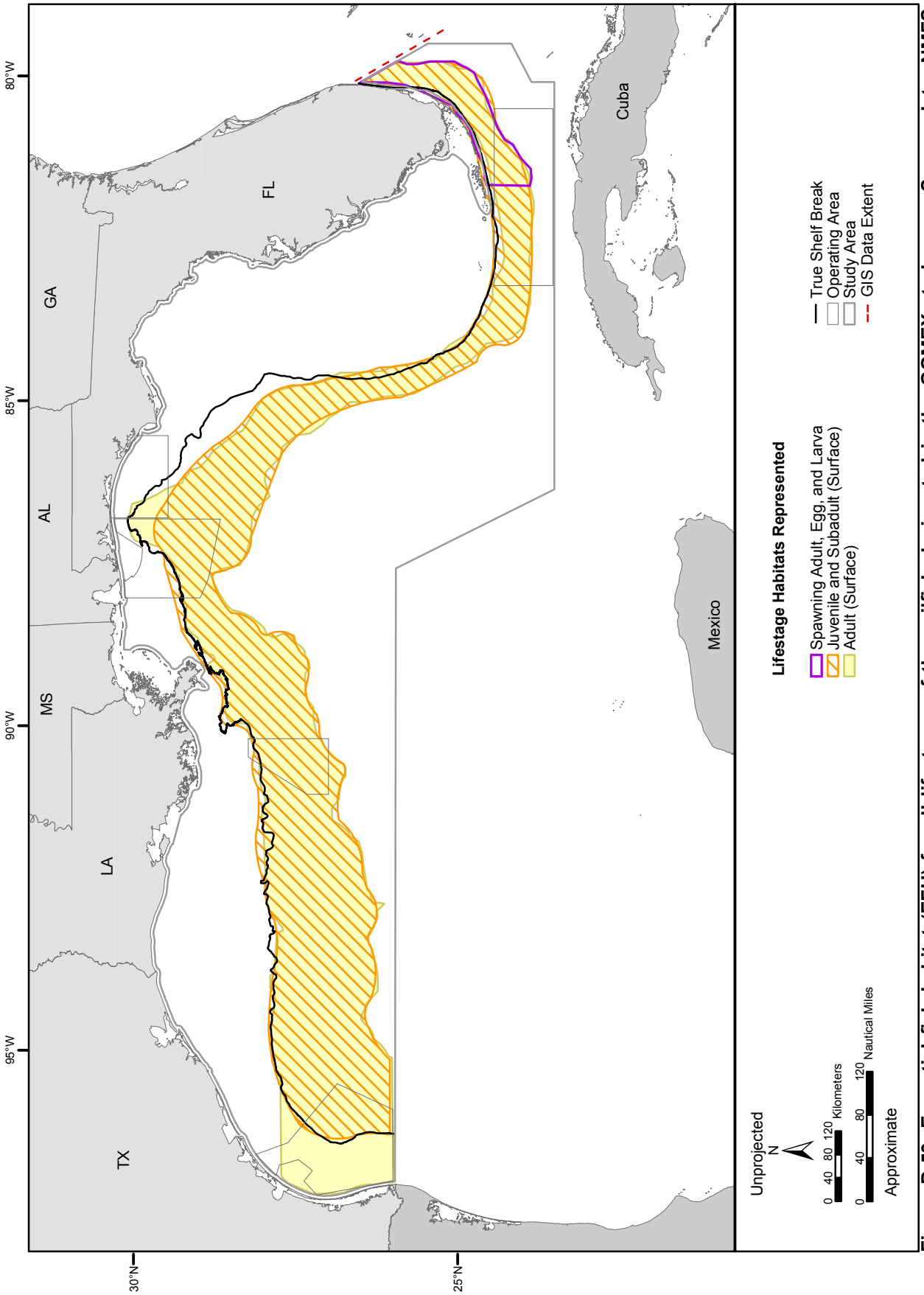


Figure D-53. Essential fish habitat (EFH) for all lifestages of the sailfish designated in the GOMEX study area. Source data: NMFS (1999d). Source map (scanned): NMFS (1999b).

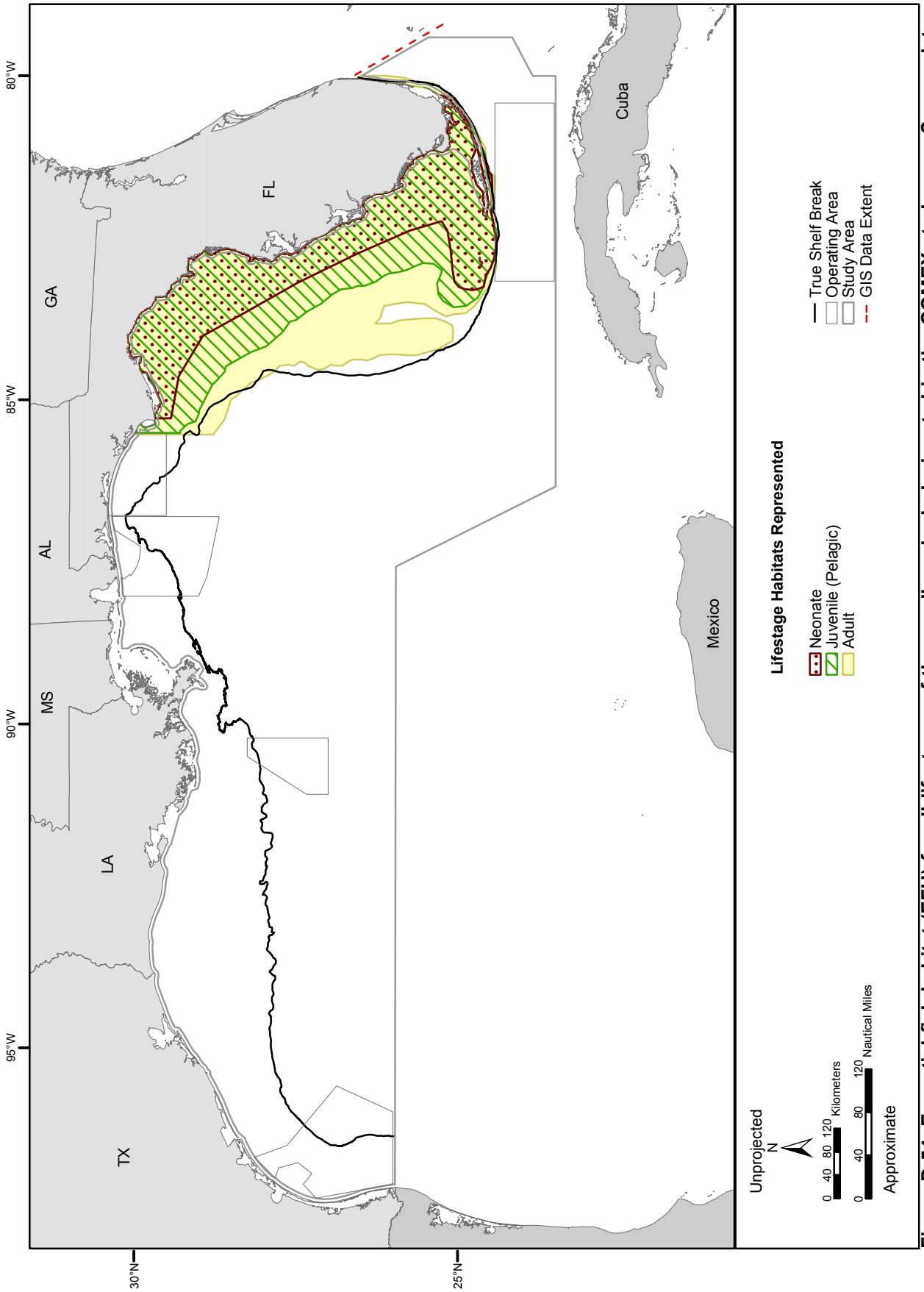


Figure D-54. Essential fish habitat (EFH) for all lifestages of the sandbar shark designated in the GOMEX study area. Source data: NMFS (2003d).

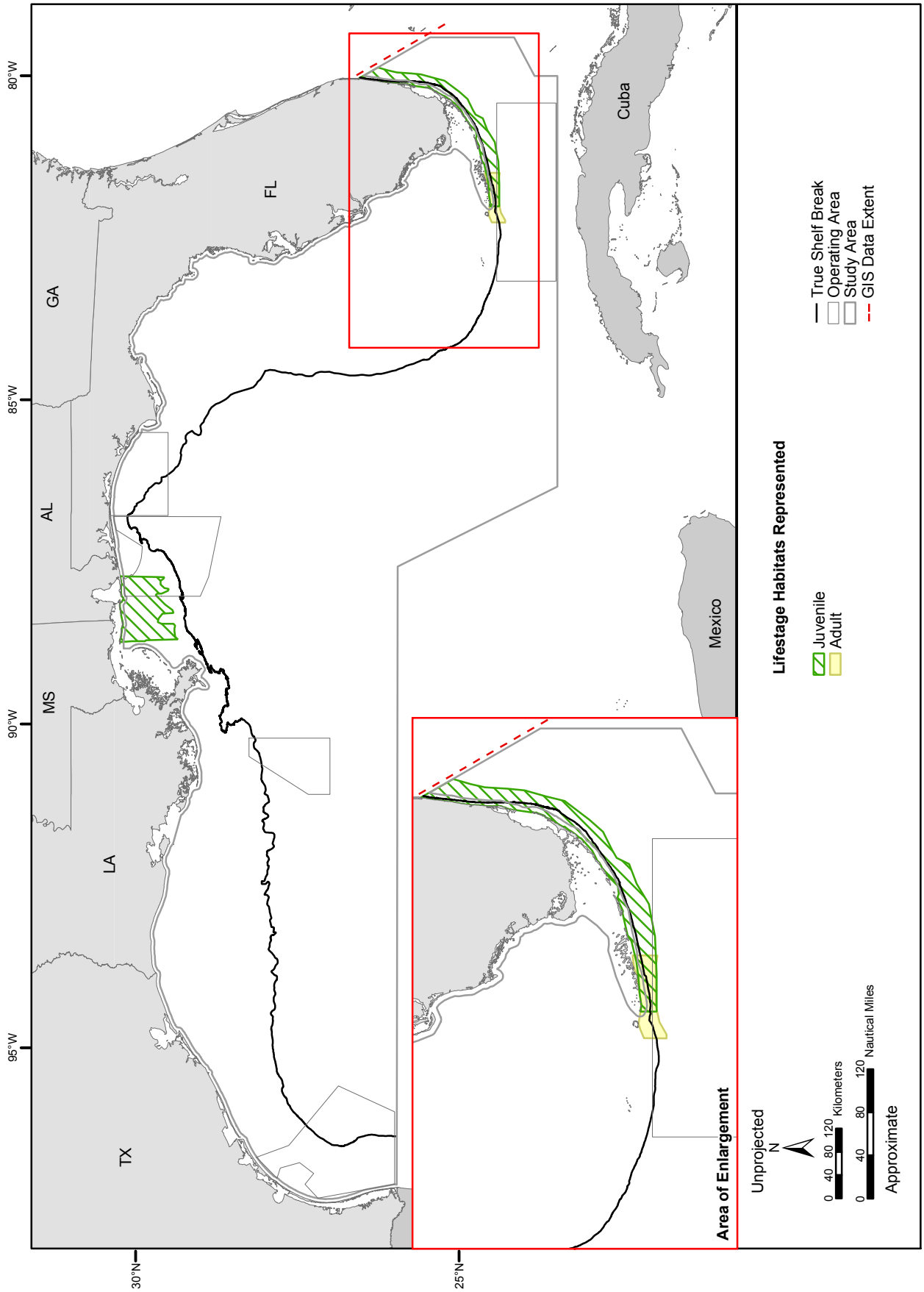


Figure D-55. Essential fish habitat (EFH) for all lifestages of the scalloped hammerhead shark designated in the GOMEX study area. Source data: NMFS (1999d). Source information: Rilling (2007).

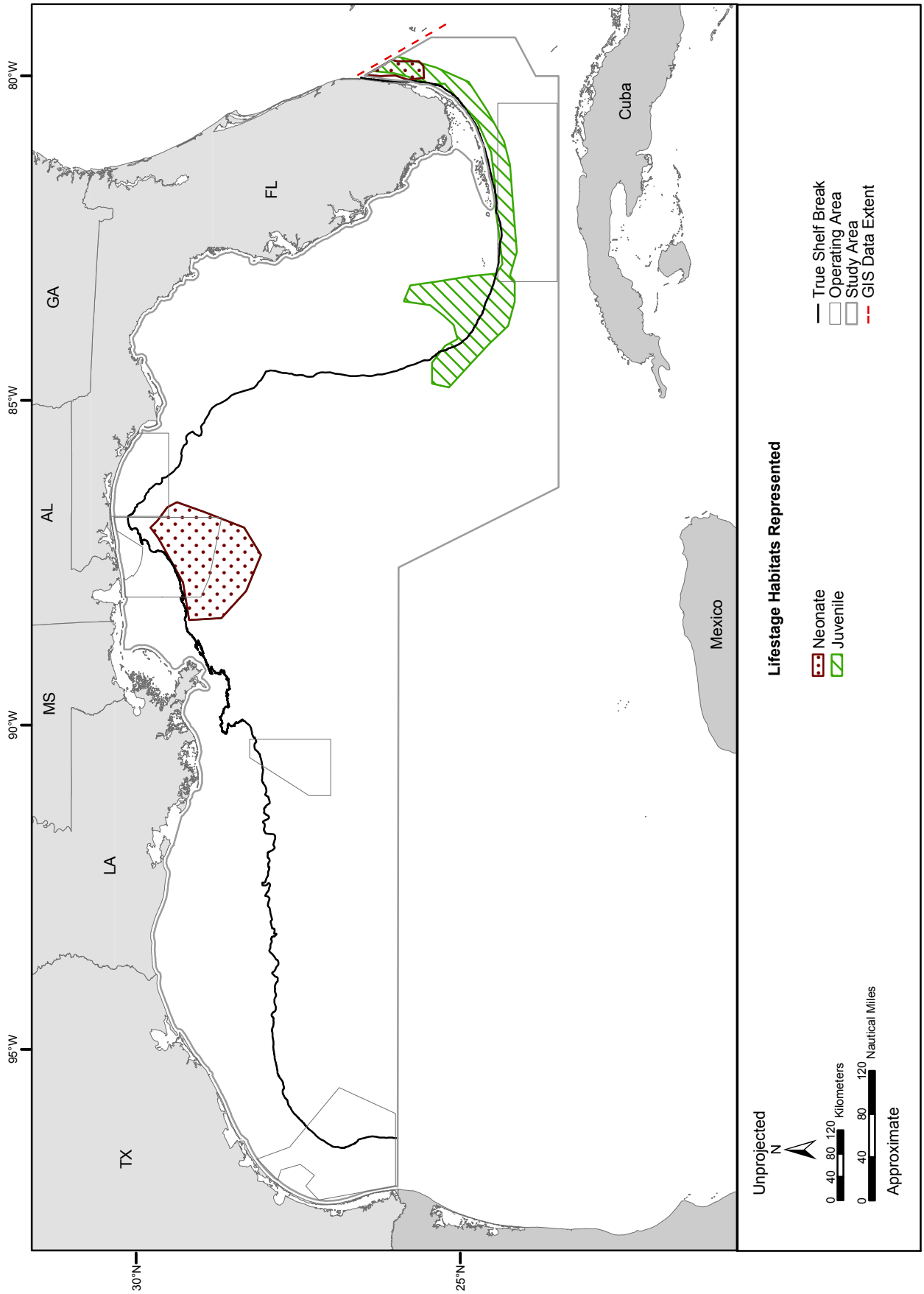


Figure D-56. Essential fish habitat (EFH) for all lifestages of the silky shark designated in the GOMEX study area. Source data: NMFS (1999d). Source information: Rilling (2007).

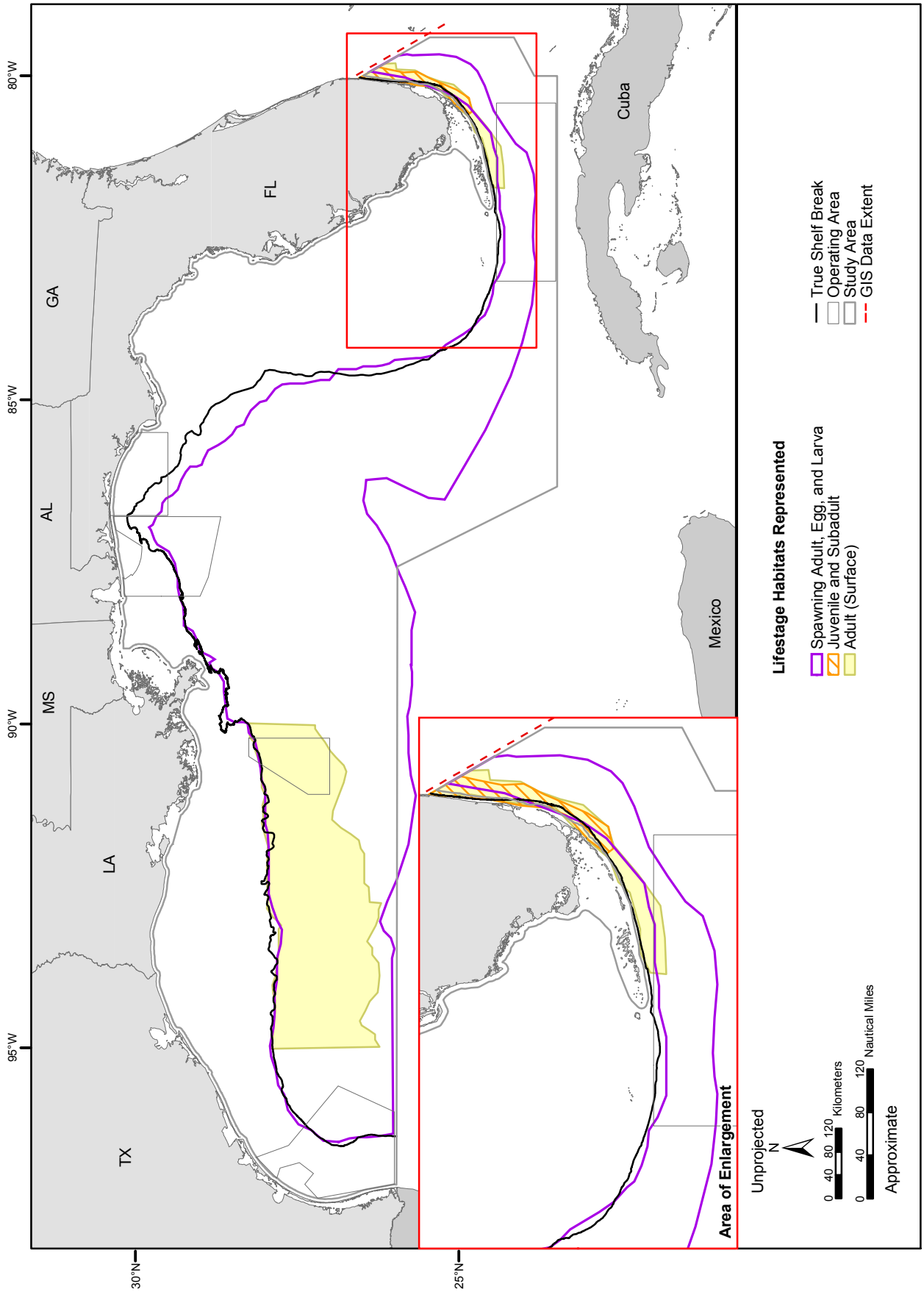
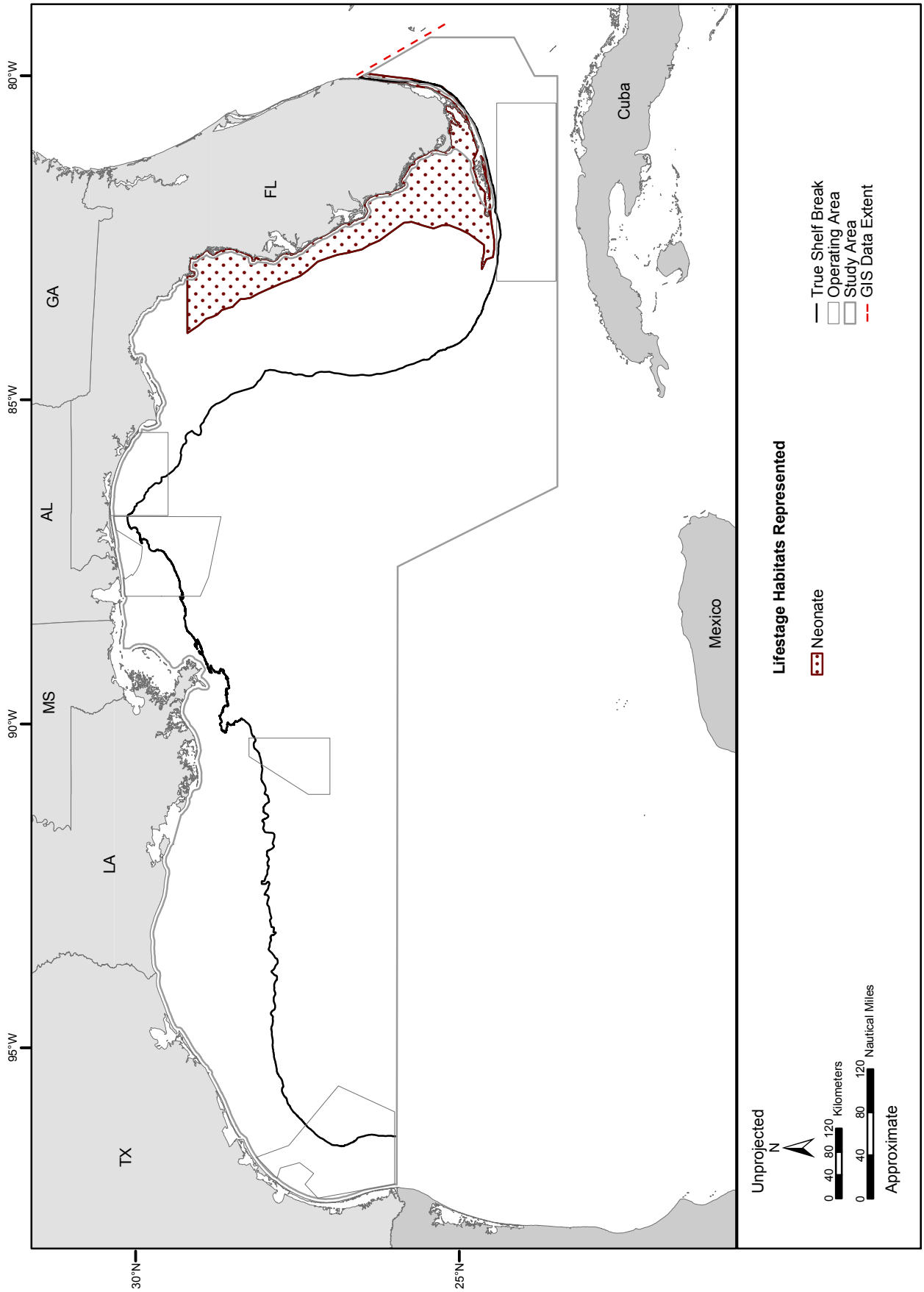


Figure D-57. Essential fish habitat (EFH) (EFH) for all lifestages of the skipjack tuna designated in the GOMEX study area. The EFH for the adult lifestage depicted graphically does not match the text designation. Source data: NMFS (1999d).



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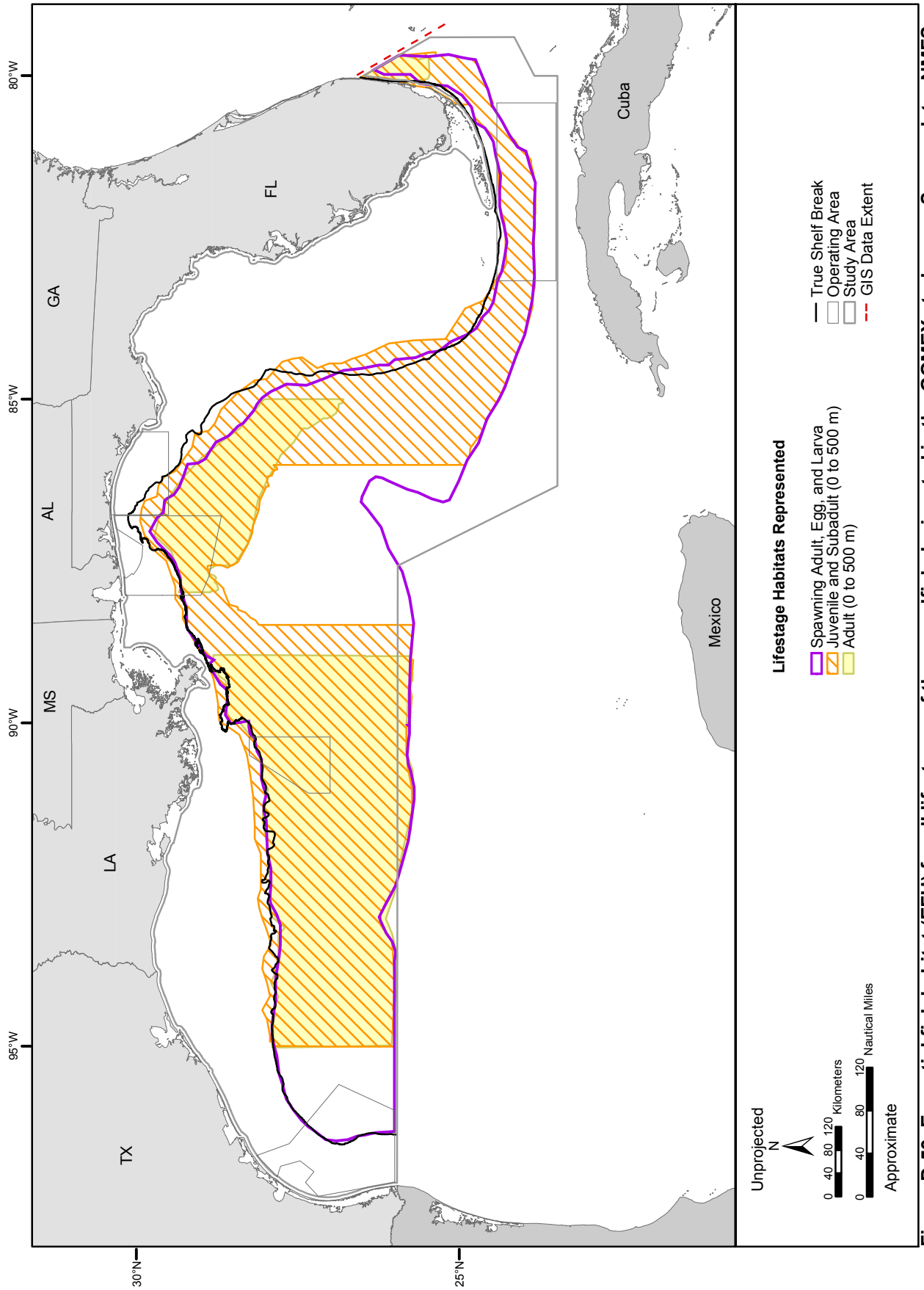

Figure D-59. Essential fish habitat (EFH) for all lifestages of the swordfish designated in the GOMEX study area. Source data: NMFS (1999d).

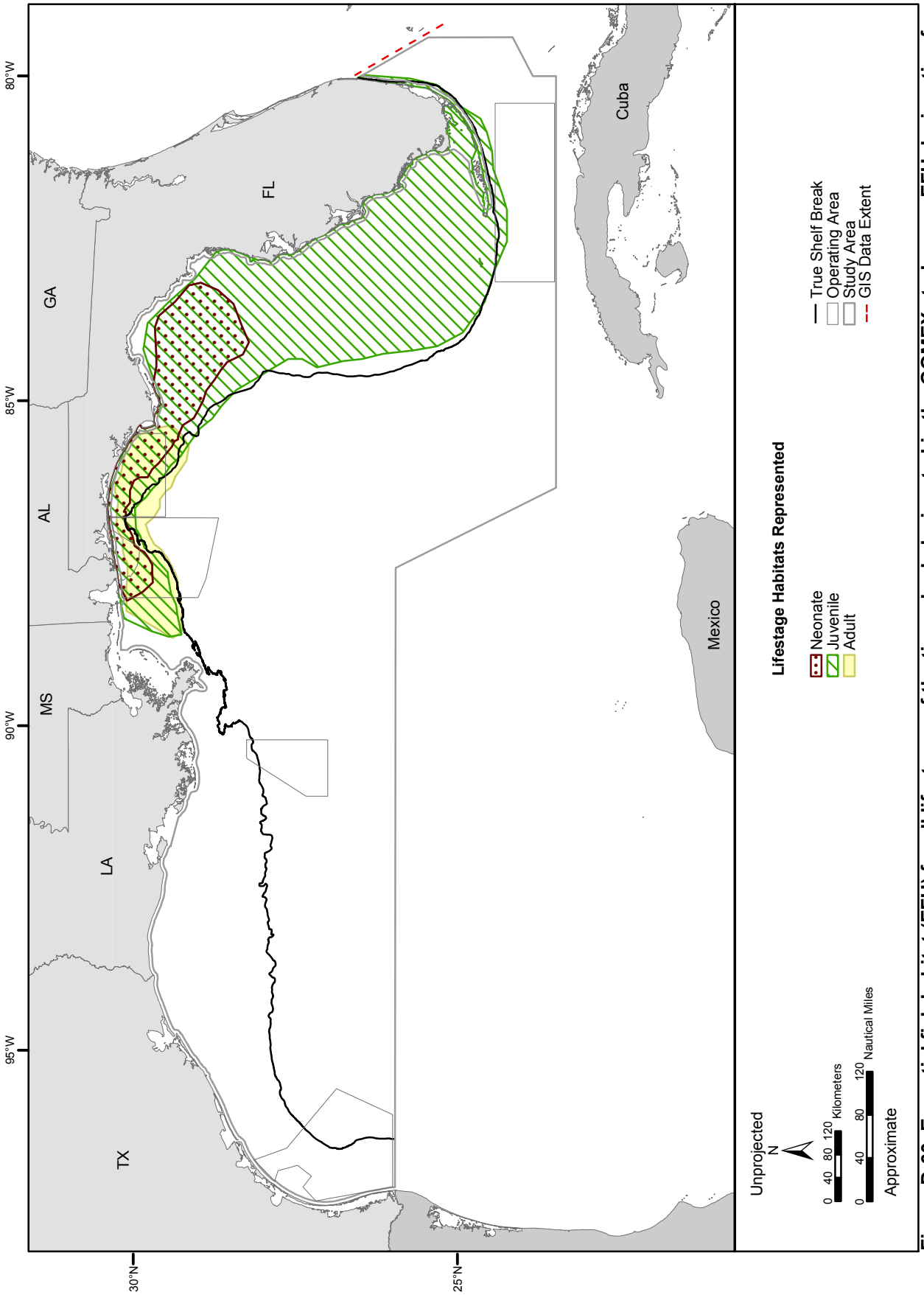

Figure D-60. Essential fish habitat (EFH) for all lifestages of the tiger shark designated in the GOMEX study area. EFH designation for the adult lifestage depicted graphically does not match the text designation. Source data: NMFS (1999d). Source information: Rilling (2007).

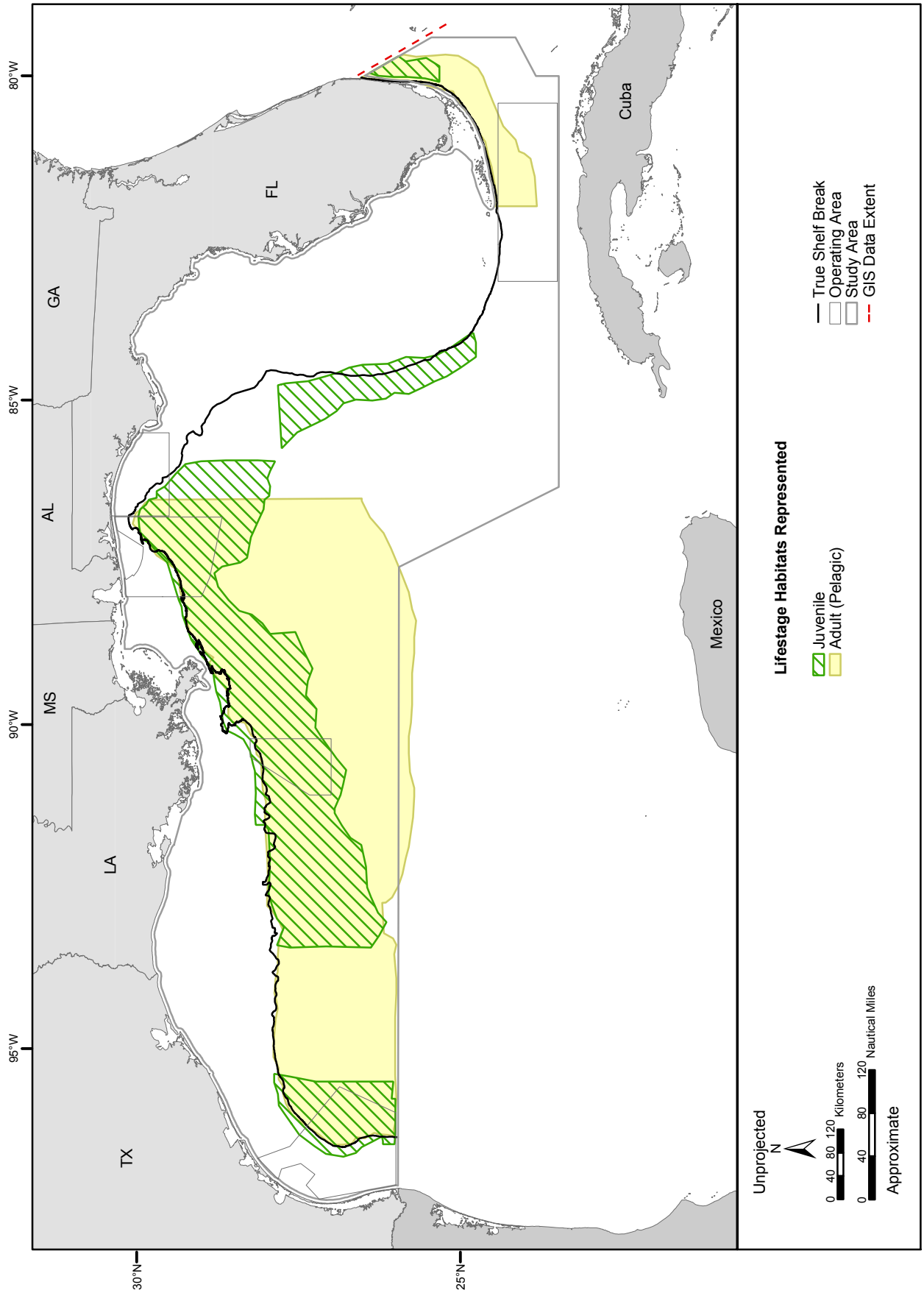

Figure D-61. Essential fish habitat (EFH) for all lifestages of the white marlin designated in the GOMEX study area. Source data: NMFS (1999d). Source information: Rilling (2007).

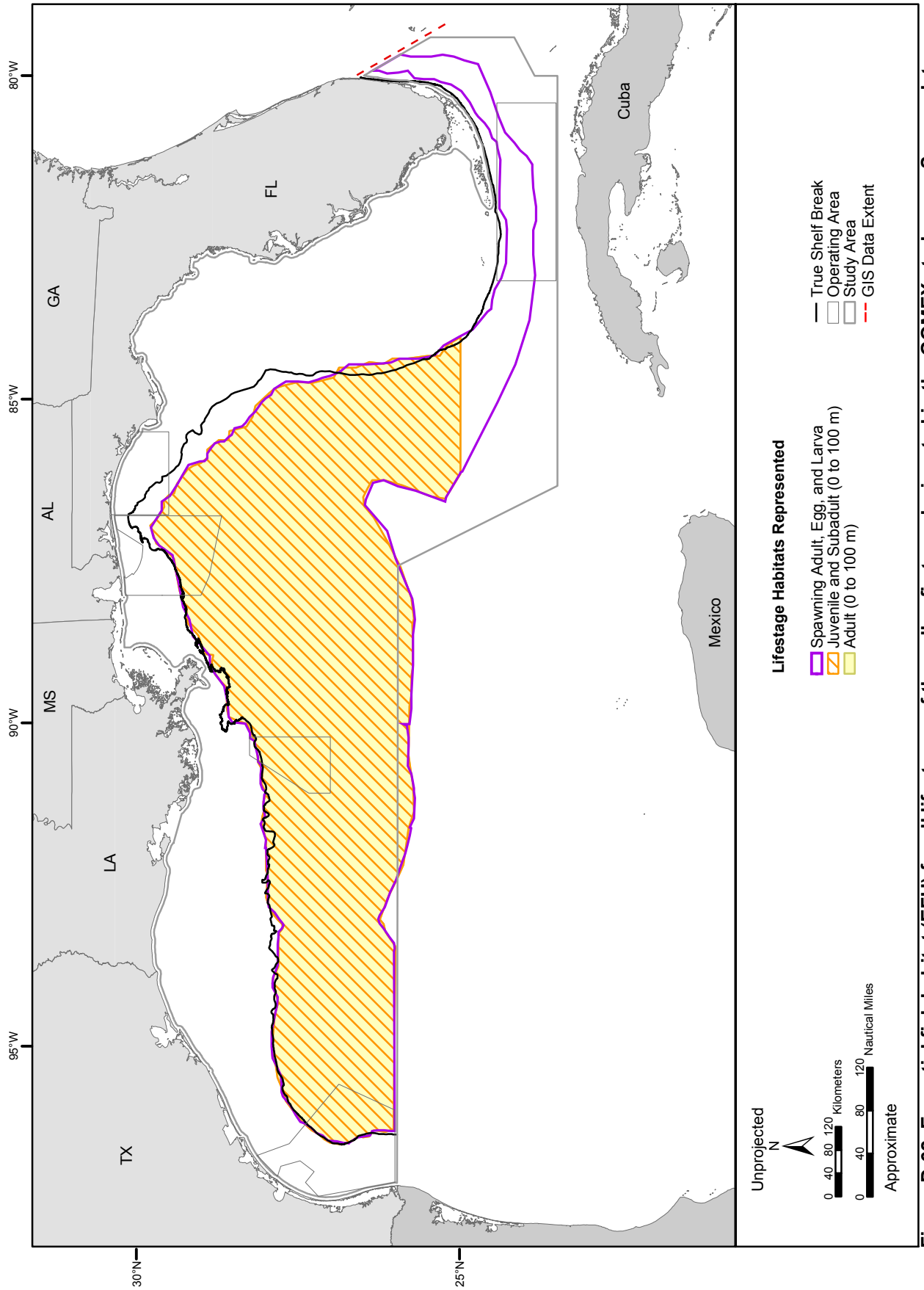

Figure D-62. Essential fish habitat (EFH) for all lifestages of the yellowfin tuna designated in the GOMEX study area. Source data: NMFS (1999d).

APPENDIX E: MYLAR TRANSPARENCIES

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Limited isobath bathymetry: 50, 100, 200, 500, 1000, 2000, 3000, 4000, and 5000 m—Seasonal (quad) layout

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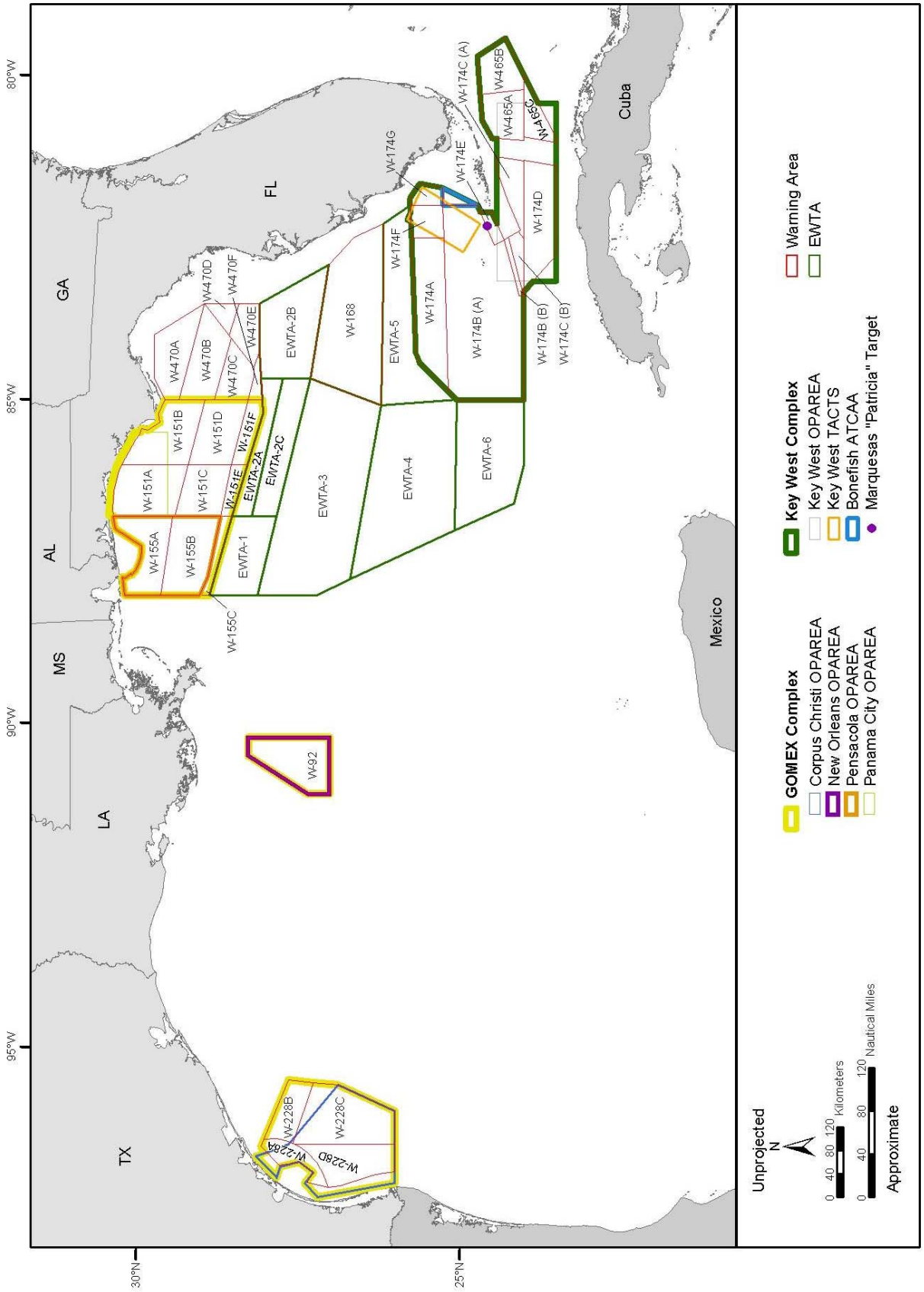

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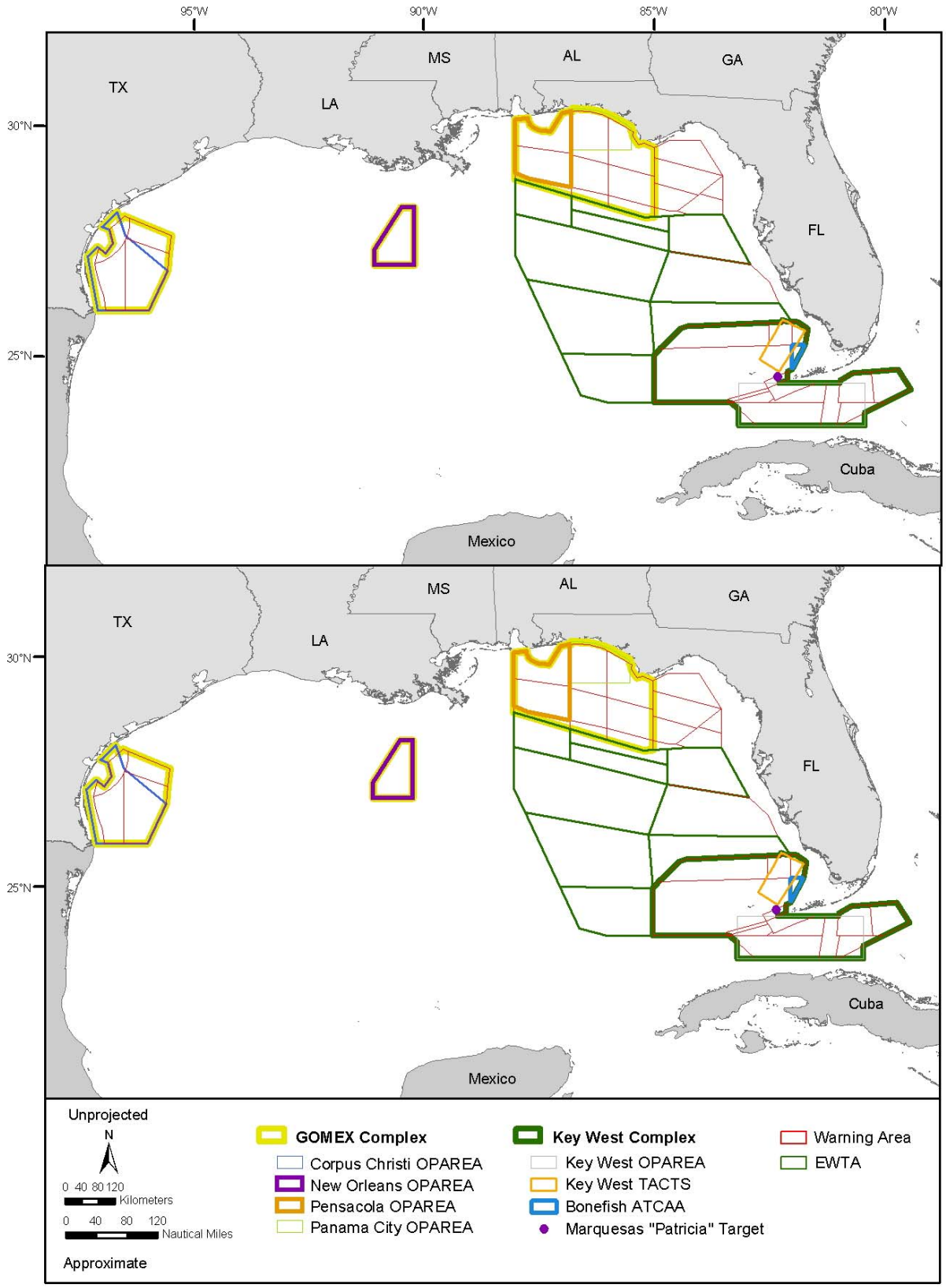

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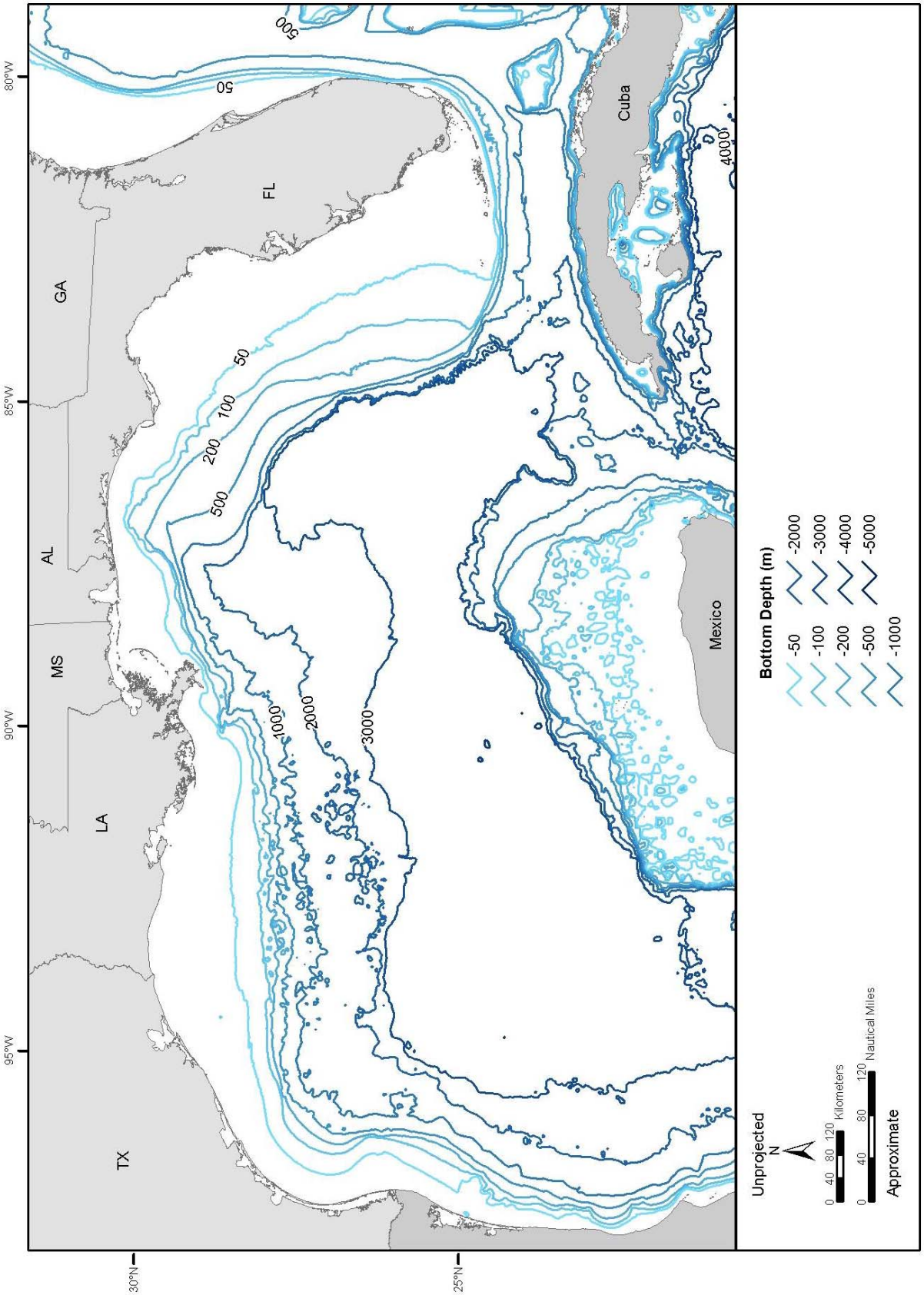
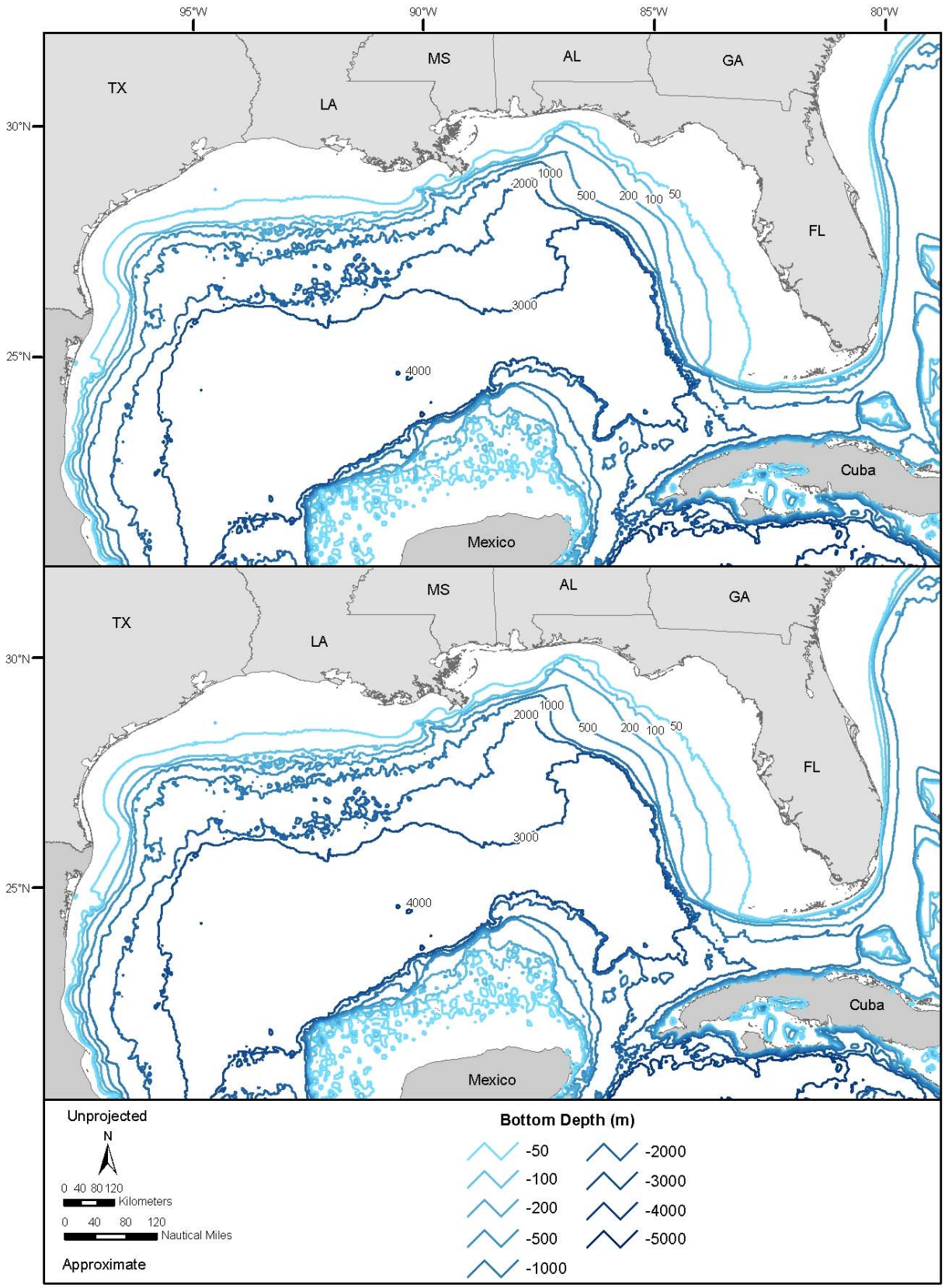


GOMEX study area: GOMEX OPAREAs, Complexes, and warning areas—Seasonal (quad) layout



GOMEX study area: GOMEX OPAREAs, Complexes, and warning areas—Mono layout