

**Marine Mammals and
Sea Turtles of
Narragansett Bay, Block
Island Sound, Rhode
Island Sound, and
Nearby Waters: An
Analysis of Existing
Data for the Rhode
Island Ocean SAMP**

**Robert D. Kenney
URI, GSO**

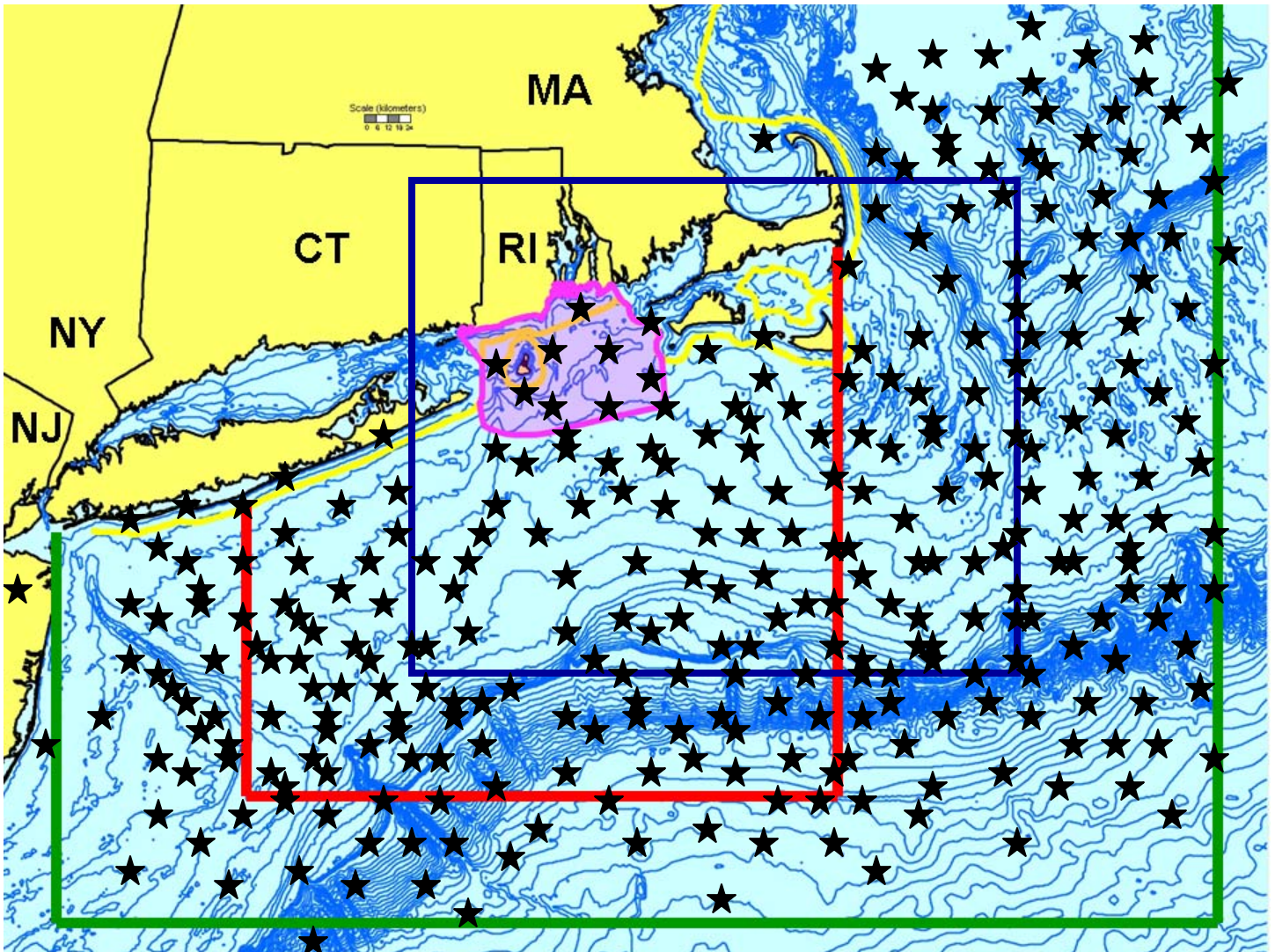
**Kathleen J. Vigness Raposa
URI, CELS, NRS**



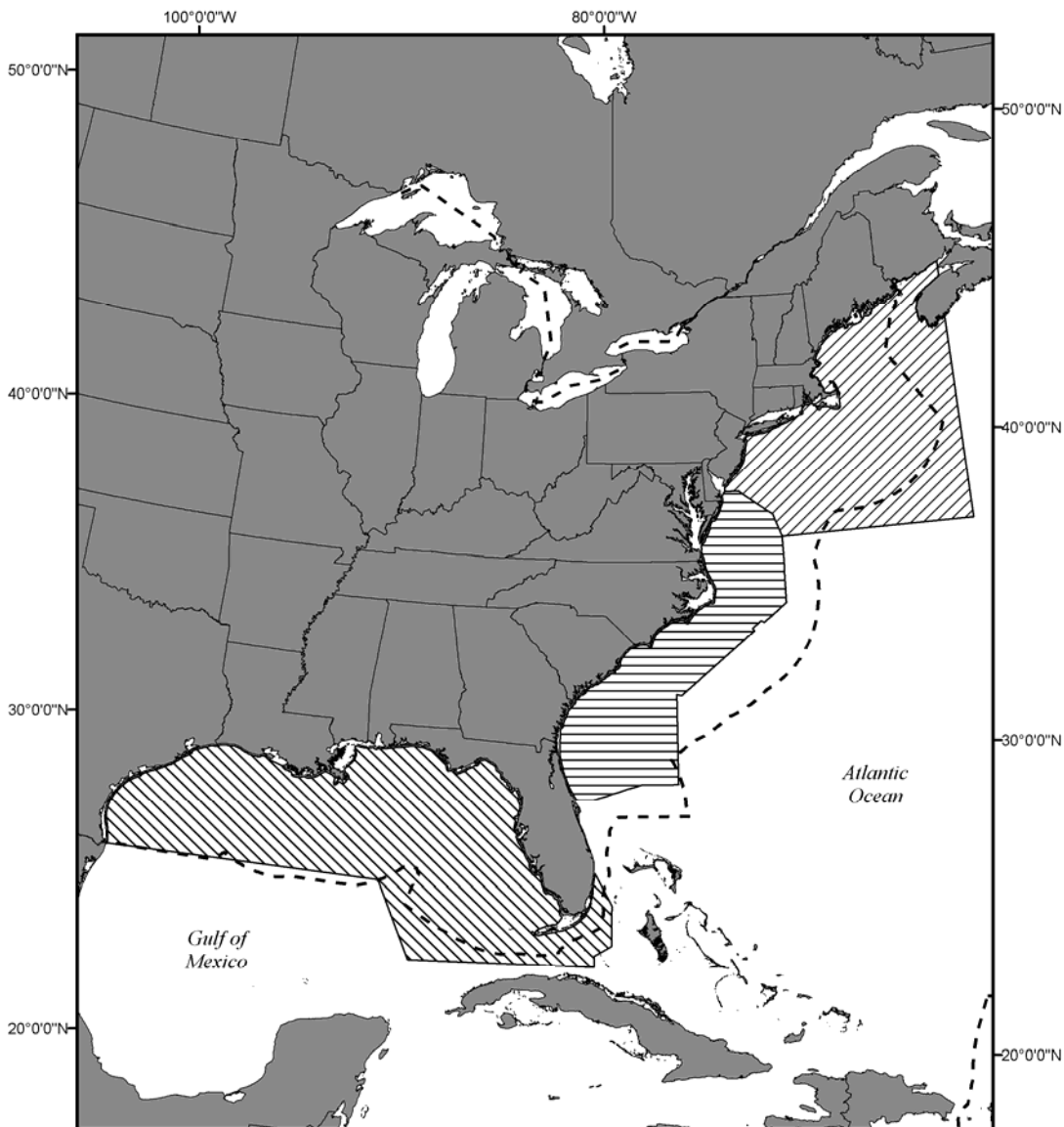
Why do we care?

- Legal requirements
 - National Environmental Policy Act of 1969 (42 U.S.C. 4321-4347)
 - Marine Mammal Protection Act of 1972 (16 U.S.C. 1361-1421)
 - Endangered Species Act of 1973 (16 U.S.C. 1531-1544)
 - Rhode Island Endangered Species list (R.I.G.L. 20-37)
- Economic values – e.g., whale-watching
- Socio-cultural values – “charismatic megafauna”

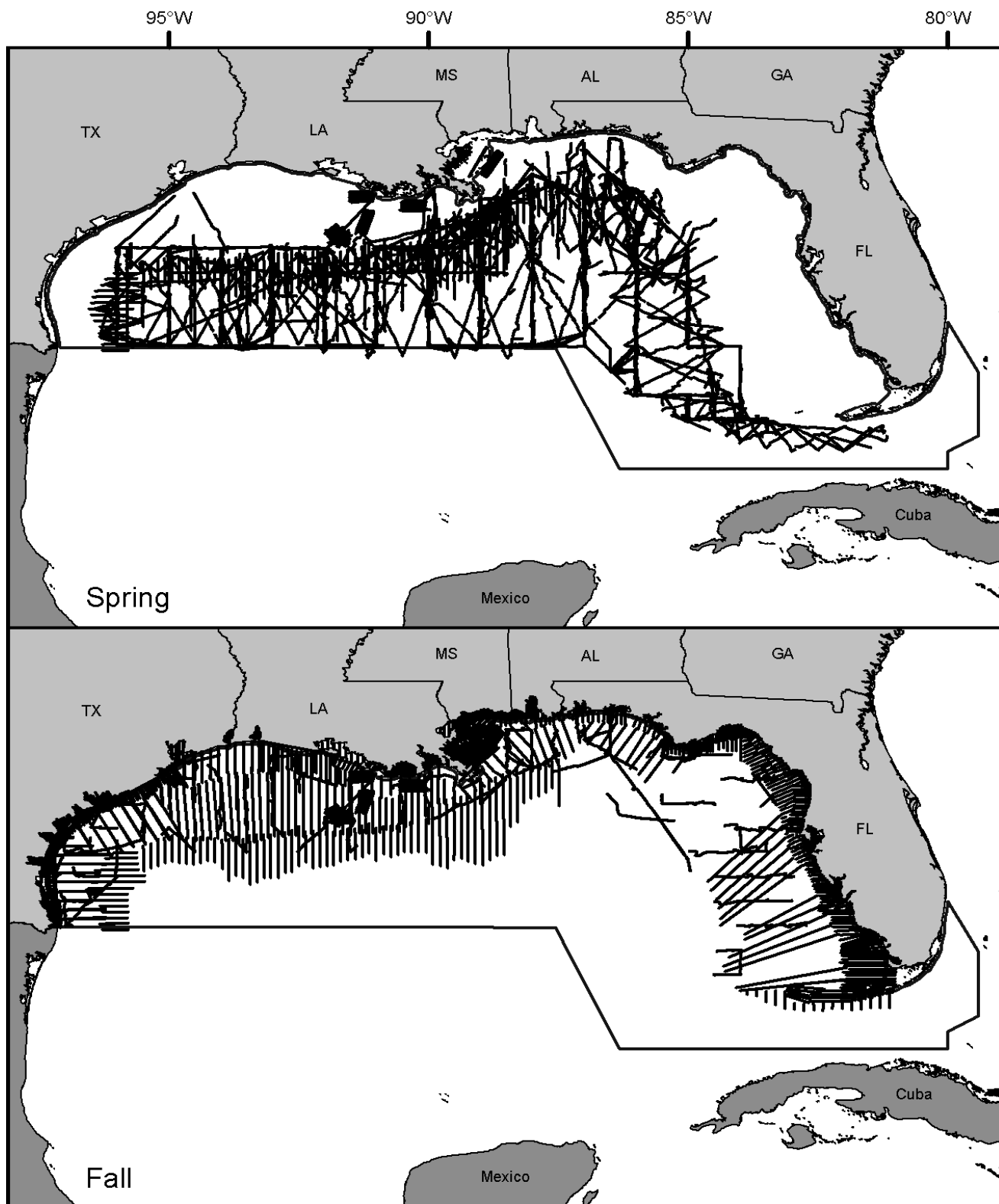
Study Areas:



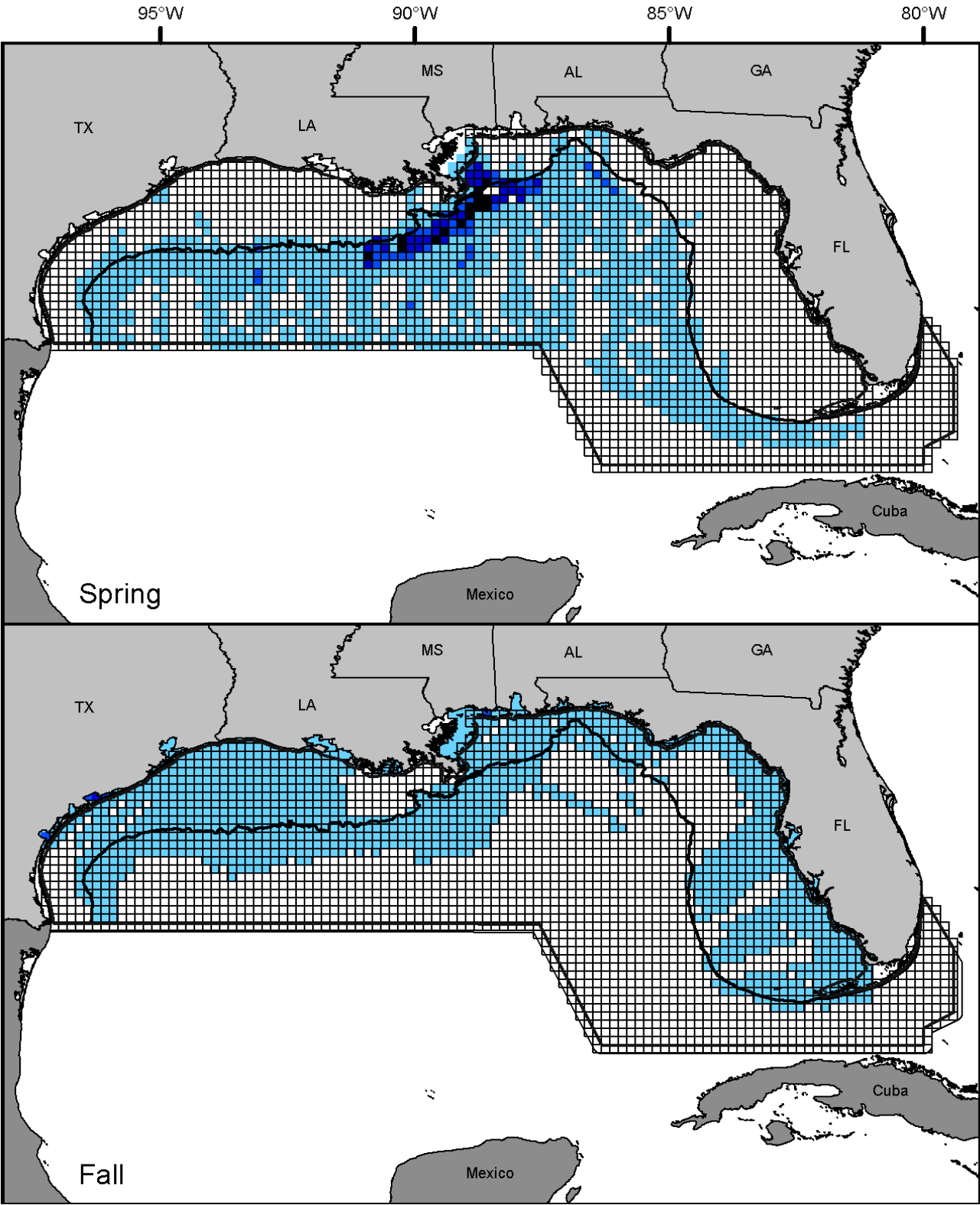
Data: Surveys, opportunistic sightings, whale-watcher sightings, strandings, historical records, fishery bycatch records



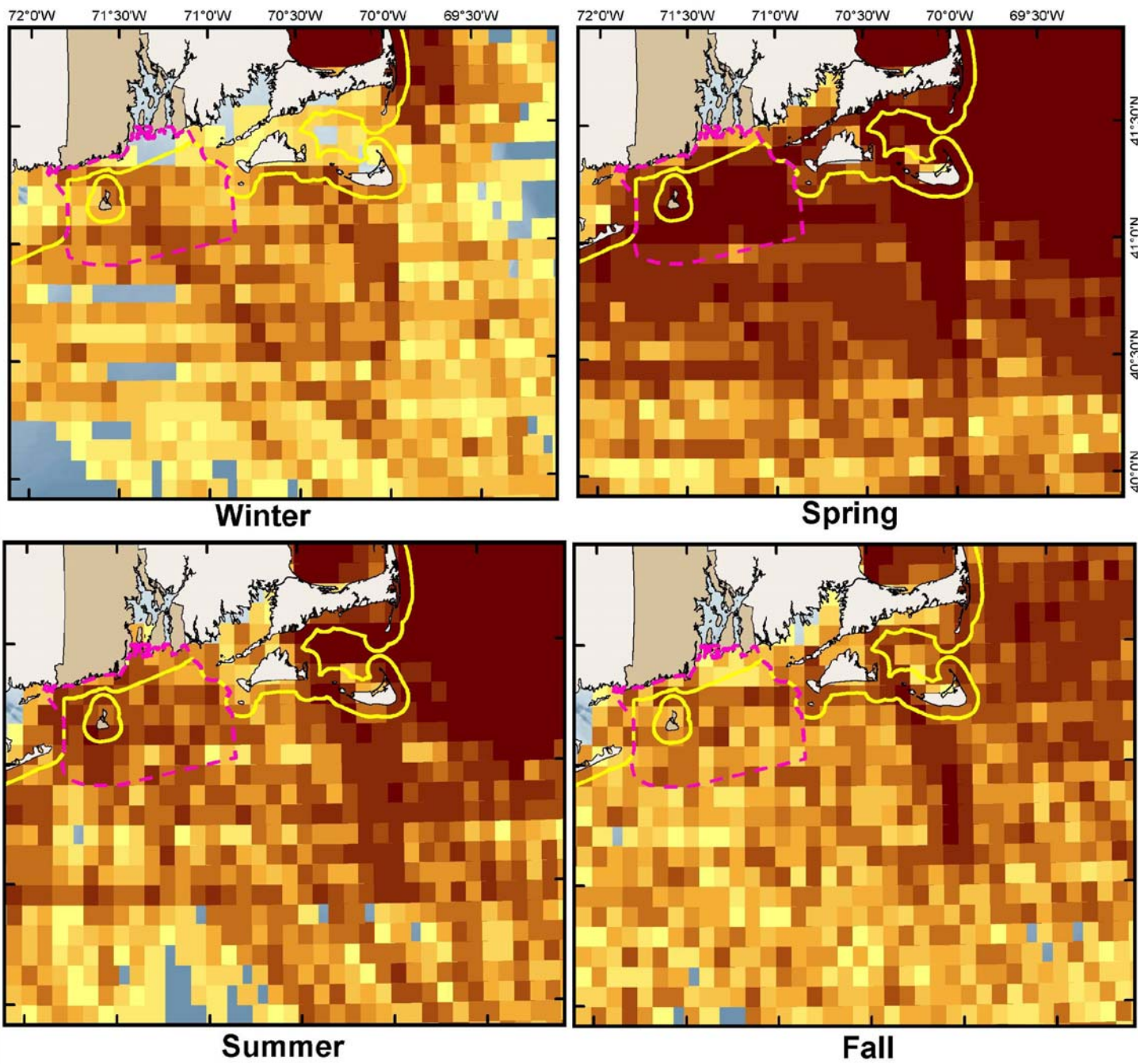
Watterson, J.C., R.D. Kenney, A. Richardson, A. Kumar, C.L. Schroeder, R. Crossland, J.T. Bell, and D.R. Rees. *In review*. Method for predicting seasonal distributions of protected species through geostatistical modeling. *Journal of Wildlife Management*.



Tracklines

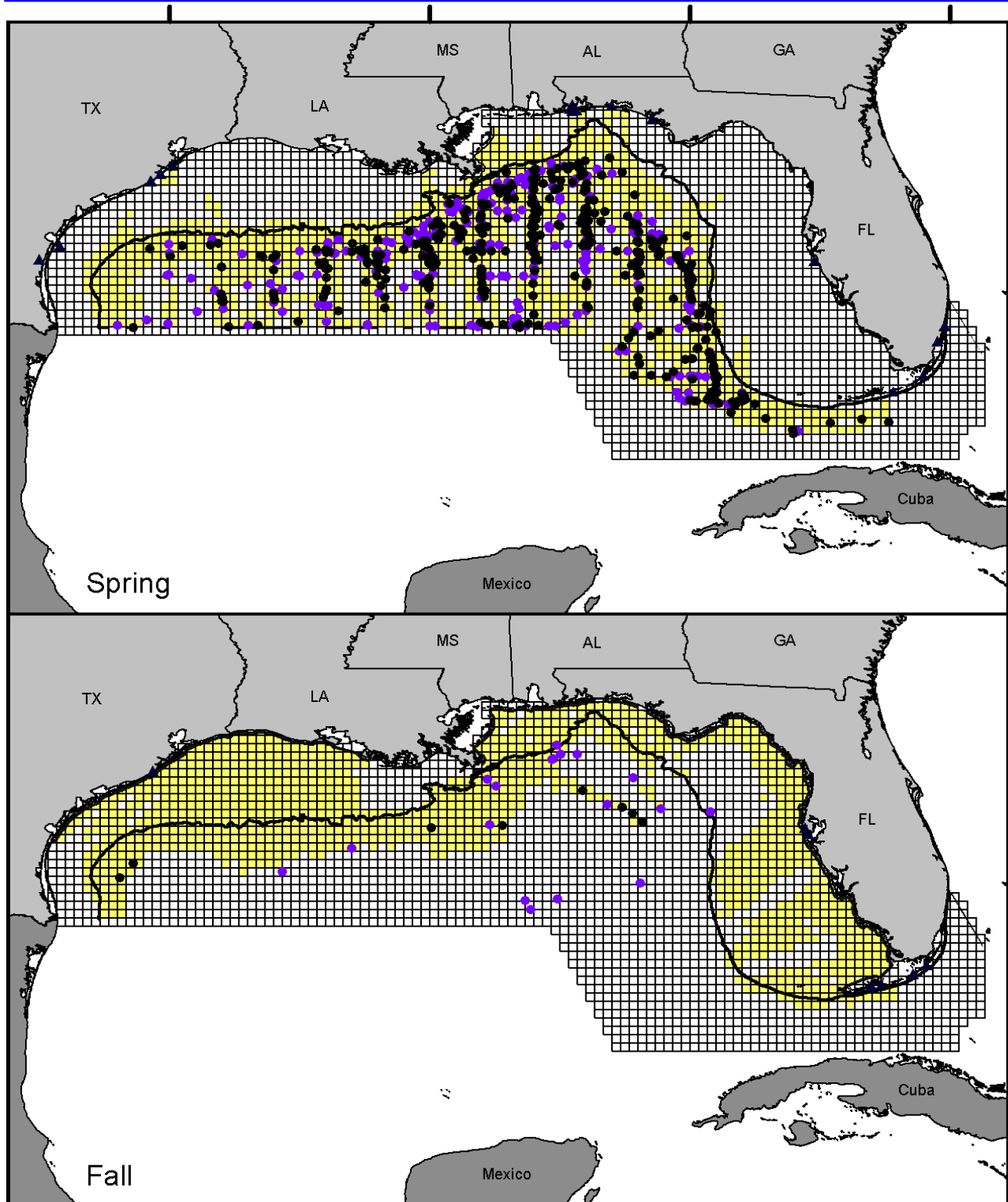


Effort (4 levels)

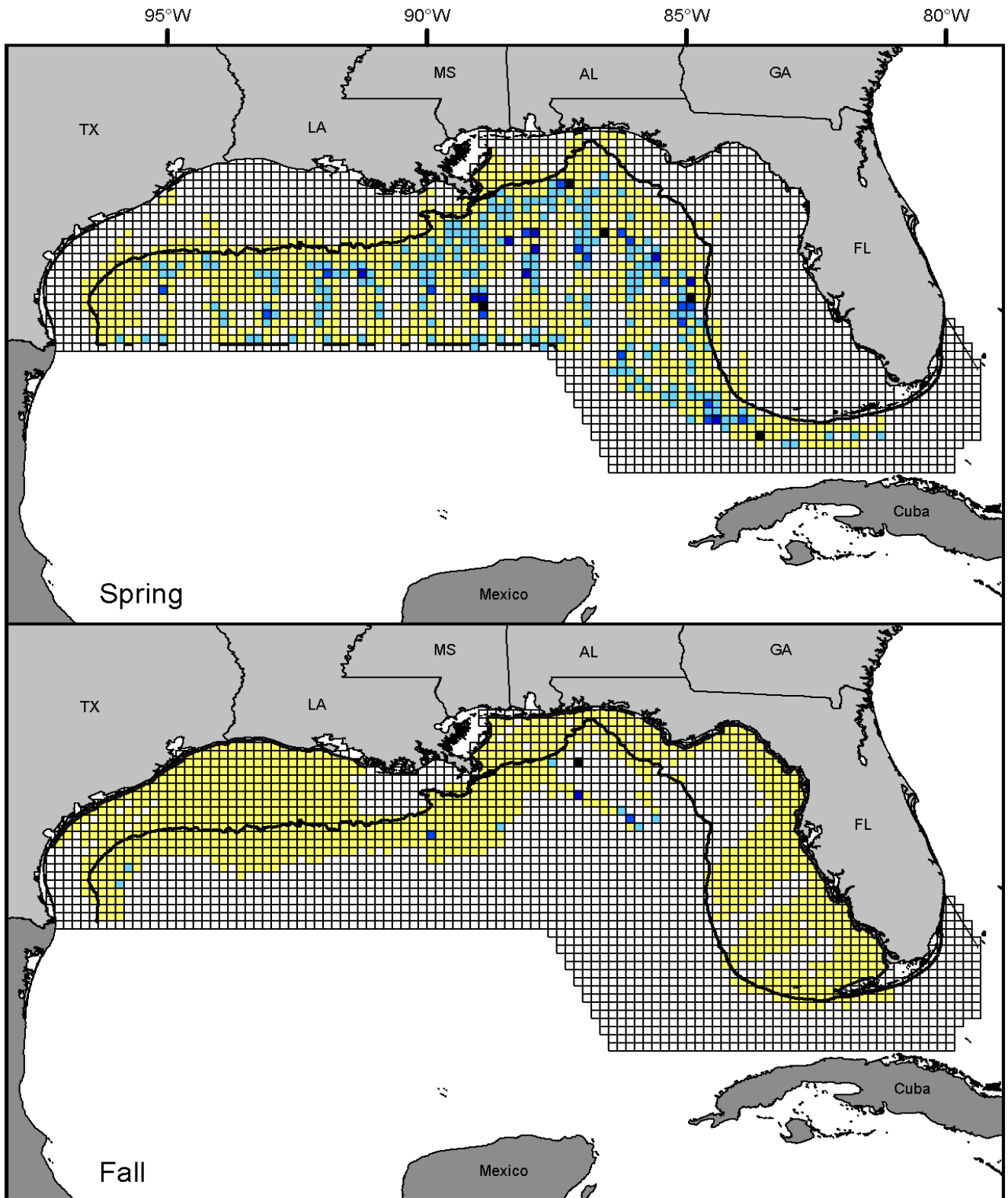


Survey Effort (10 levels)

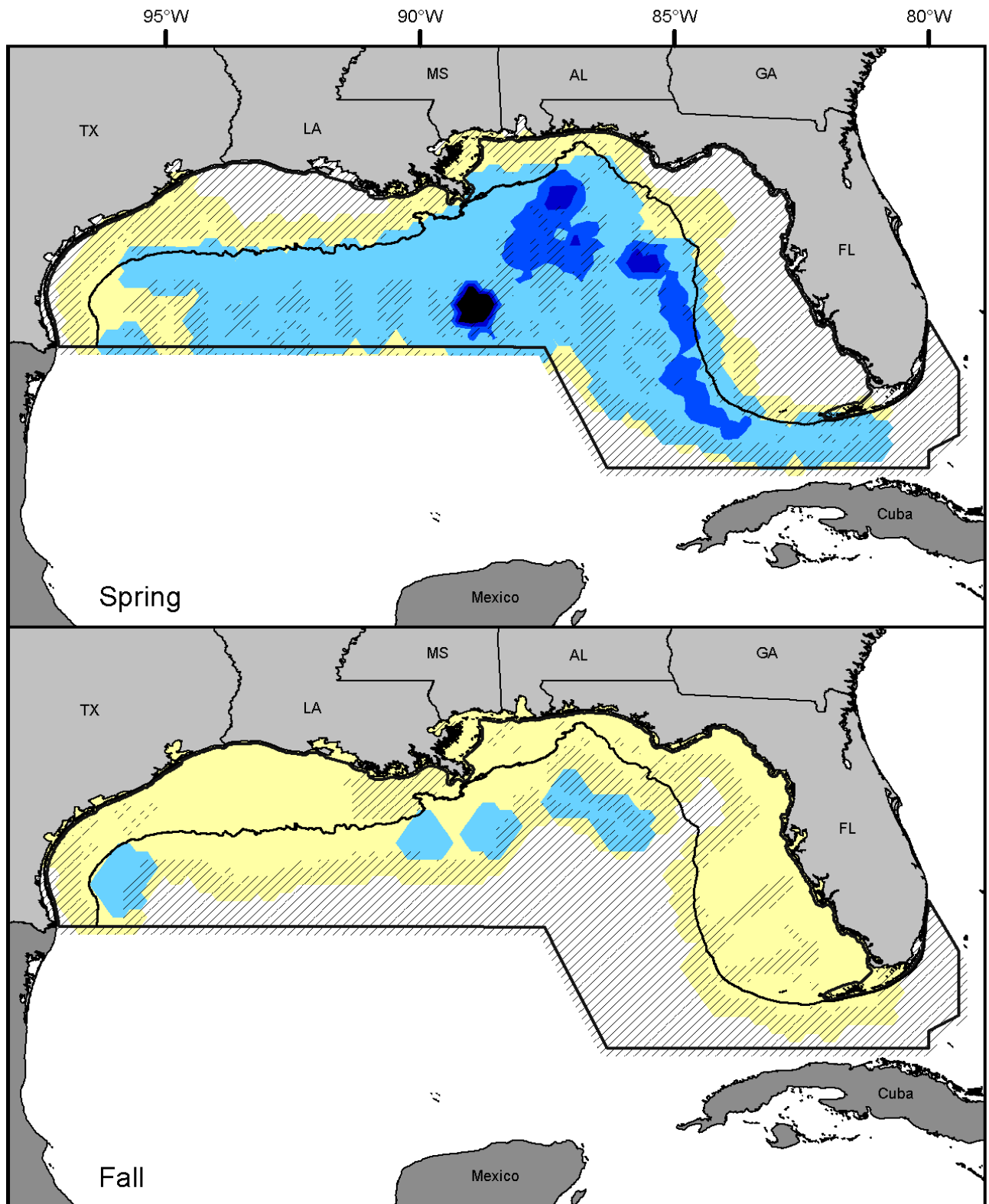
Pantropical Spotted Dolphin, *Stenella attenuata*



Sightings



SPUE (4 levels)



Relative Abundance (4 levels)

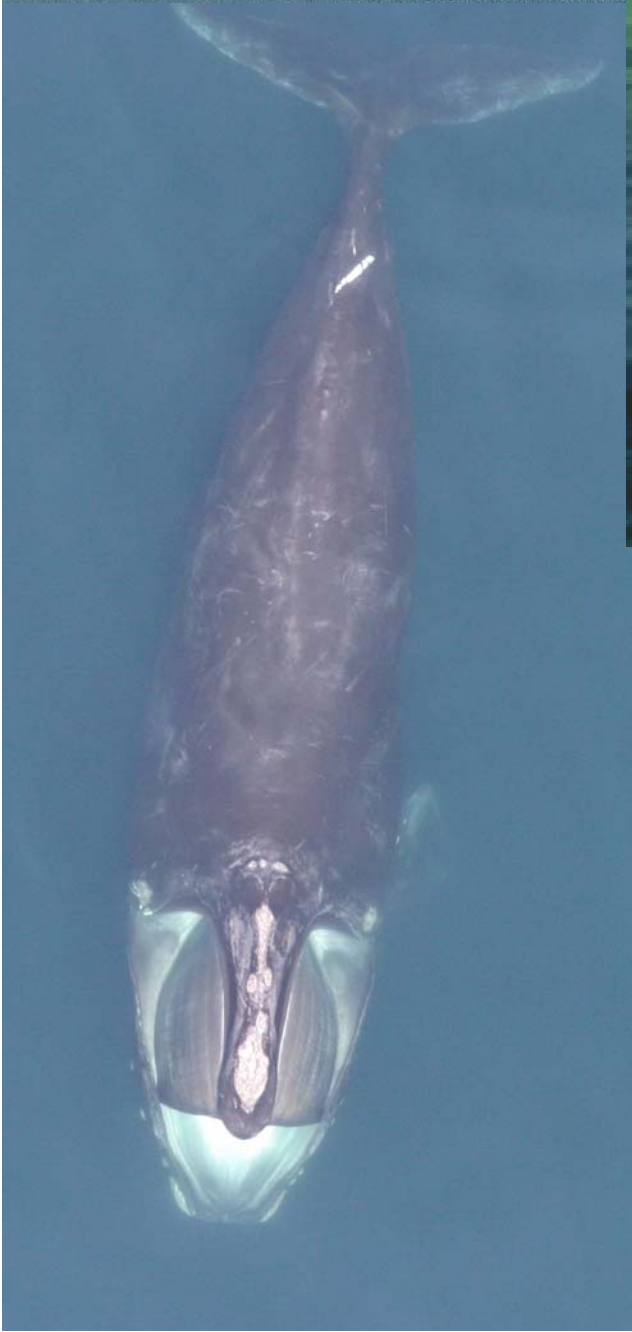
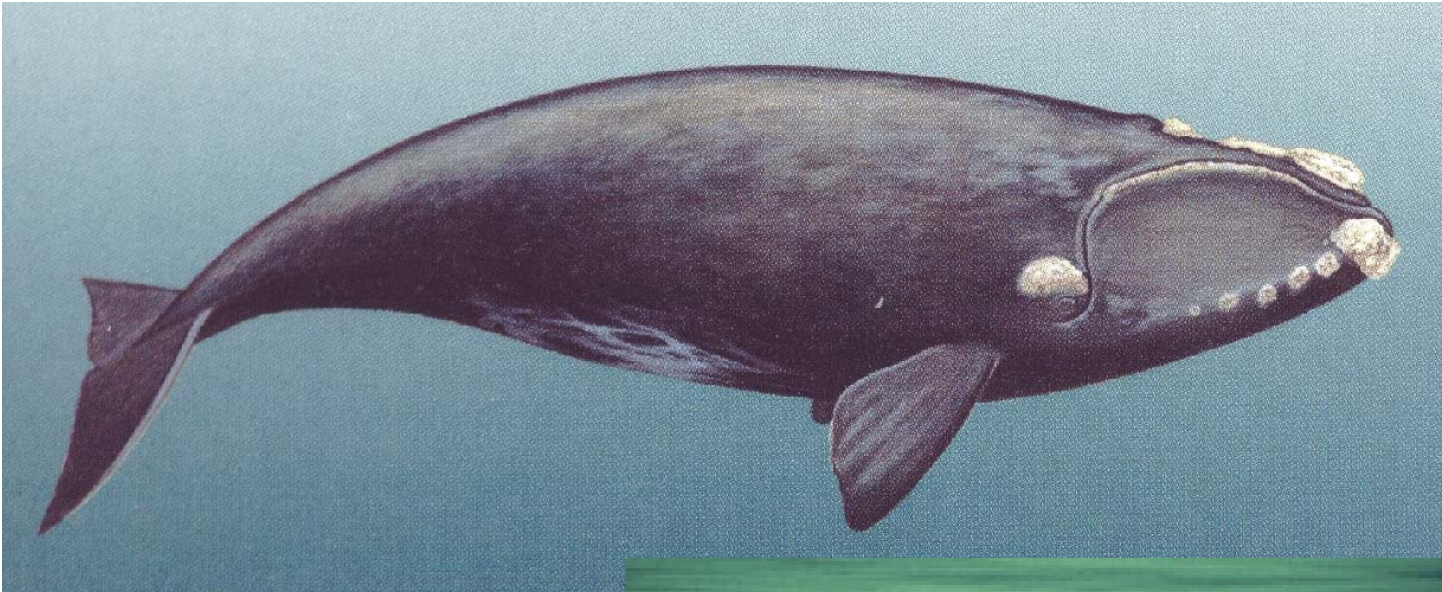
49 species addressed:

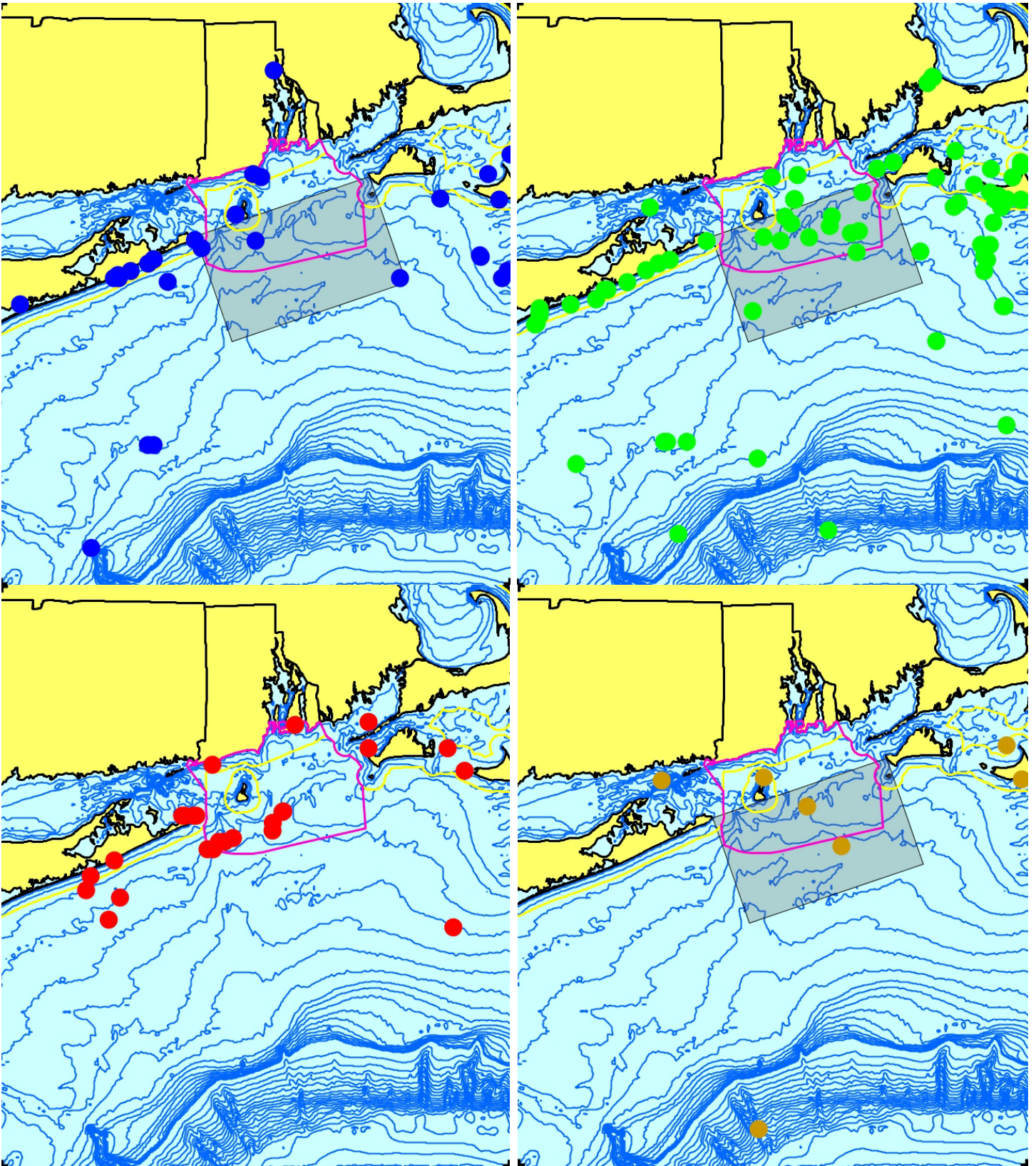
- 16 common (>100): North Atlantic right whale, humpback whale, fin whale, common minke whale, sperm whale, harbor porpoise, short-beaked common dolphin, long-finned pilot whale, Risso's dolphin, Atlantic white-sided dolphin, bottlenose dolphin, gray seal, harp seal, harbor seal, leatherback sea turtle, loggerhead sea turtle
- 6 regular (10-100): sei whale, pygmy sperm whale, white-beaked dolphin, striped dolphin, hooded seal, Kemp's ridley sea turtle
- 18 rare (<10): Bryde's whale, blue whale, dwarf sperm whale, northern bottlenose whale, Sowerby's beaked whale, Blainville's beaked whale, Gervais' beaked whale, True's beaked whale, Cuvier's beaked whale, beluga whale, short-finned pilot whale, killer whale, false killer whale, pan-tropical spotted dolphin, Atlantic spotted dolphin, ringed seal, West Indian manatee, green sea turtle
- 1 extirpated: Atlantic gray whale
- 8 hypothetical: pygmy killer whale, melon-headed whale, rough-toothed dolphin, spinner dolphin, Clymene dolphin, bearded seal, walrus, hawksbill sea turtle

Species ranked by conservation priority:

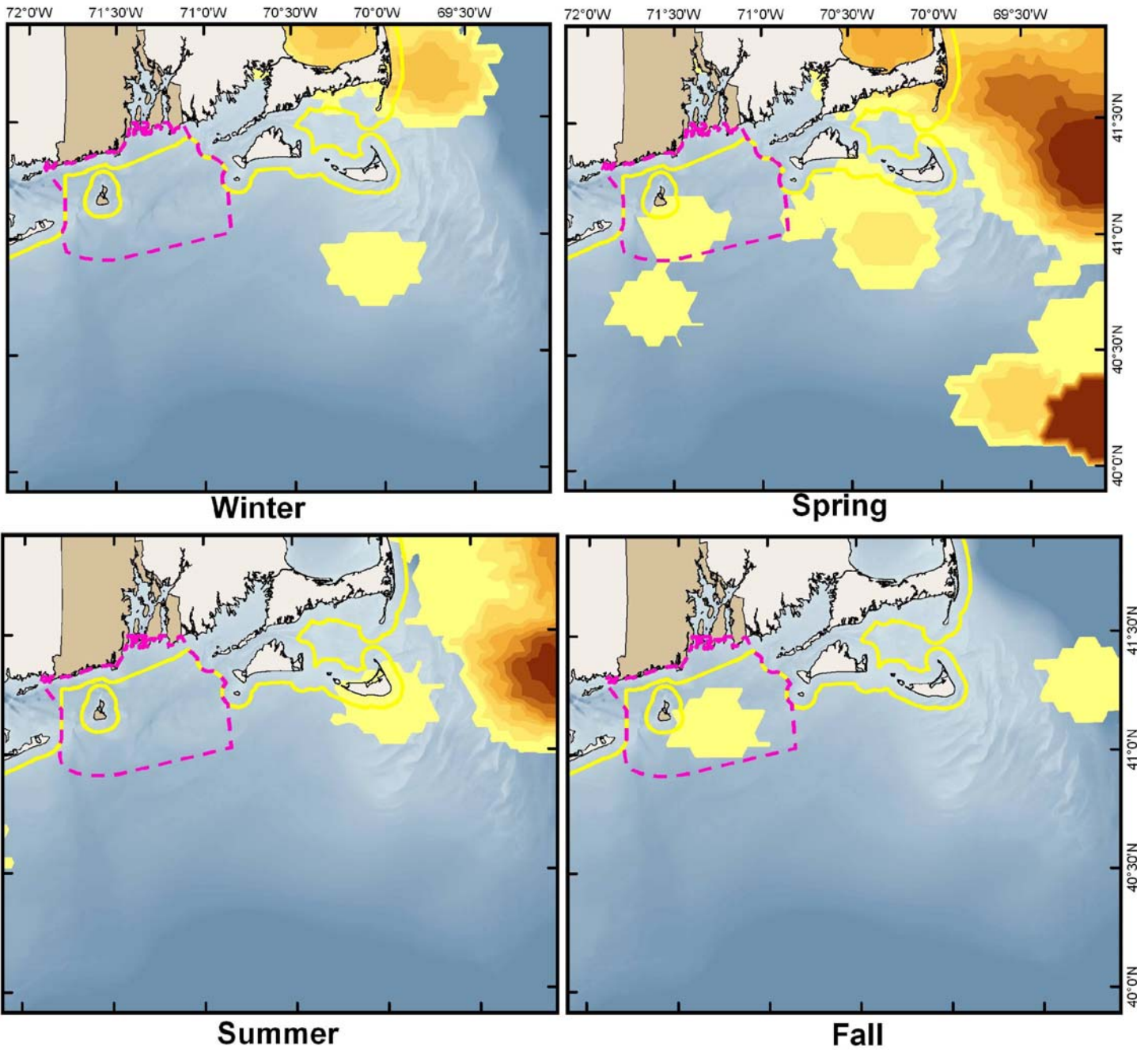
1. (A) North Atlantic right whale
(B) humpback whale, fin whale, leatherback sea turtle
2. sperm whale, loggerhead sea turtle, harbor porpoise, Atlantic white-sided dolphin, short-beaked common dolphin, harbor seal,
3. sei whale, common minke whale, long-finned pilot whale, Risso's dolphin, bottlenose dolphin
4. blue whale, Kemp's ridley sea turtle, green sea turtle, pygmy sperm whale, dwarf sperm whale, Sowerby's beaked whale, Blainville's beaked whale, Gervais' beaked whale, True's beaked whale, Cuvier's beaked whale, striped dolphin, gray seal, harp seal, hooded seal
5. West Indian manatee, Bryde's whale, northern bottlenose whale, beluga whale, short-finned pilot whale, killer whale, false killer whale, white-beaked dolphin, pan-tropical spotted dolphin, Atlantic spotted dolphin, ringed seal

Priority 1

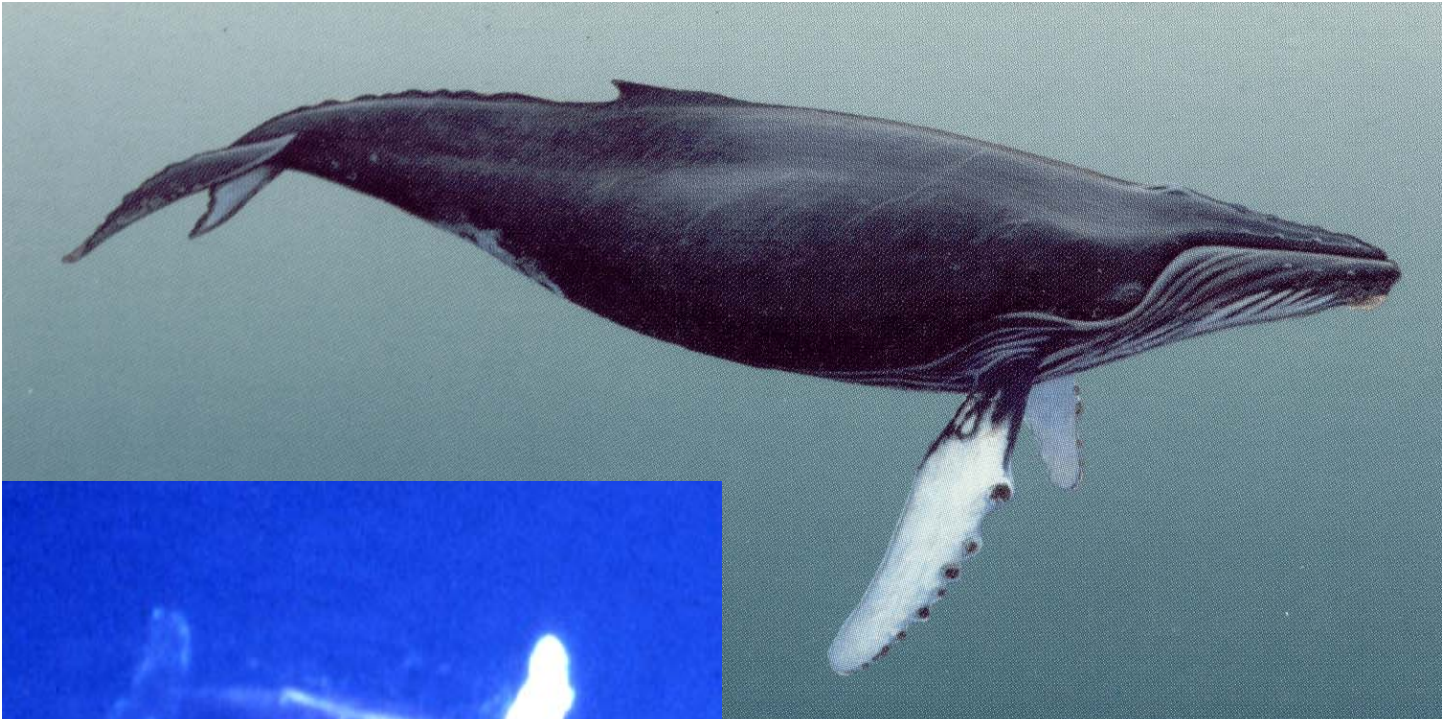


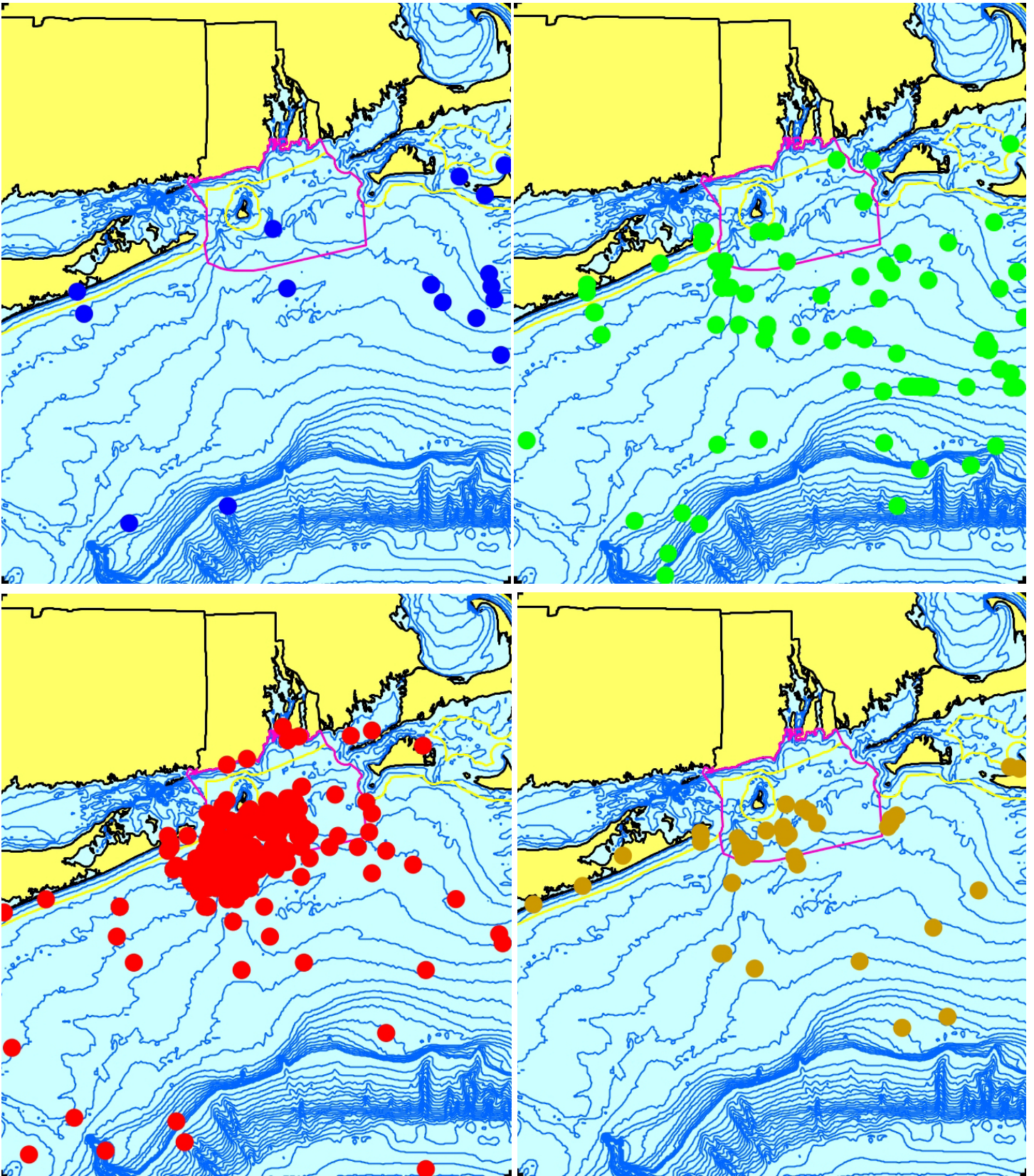


North Atlantic Right Whale, 1828-2007

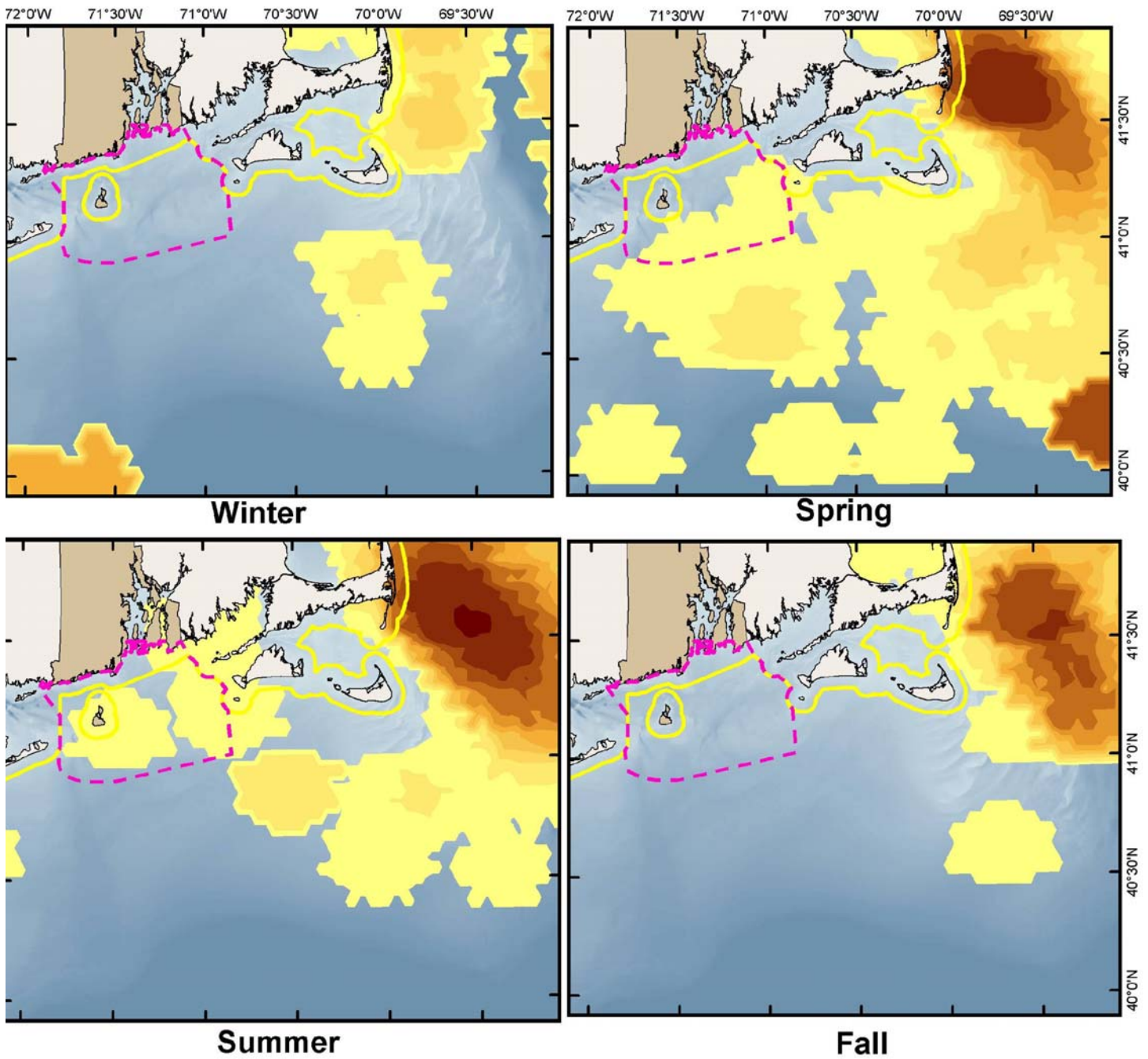


North Atlantic Right Whale



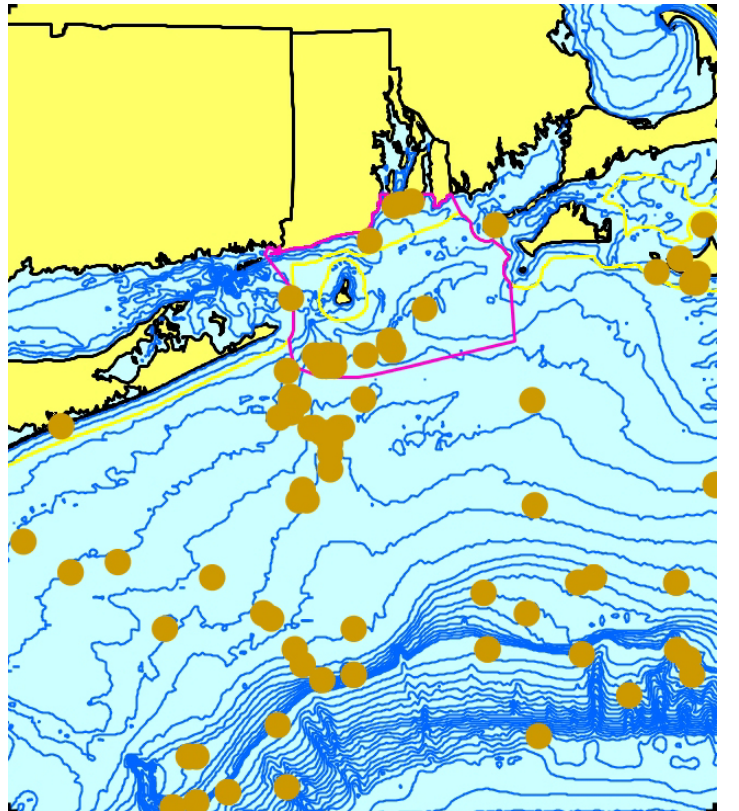
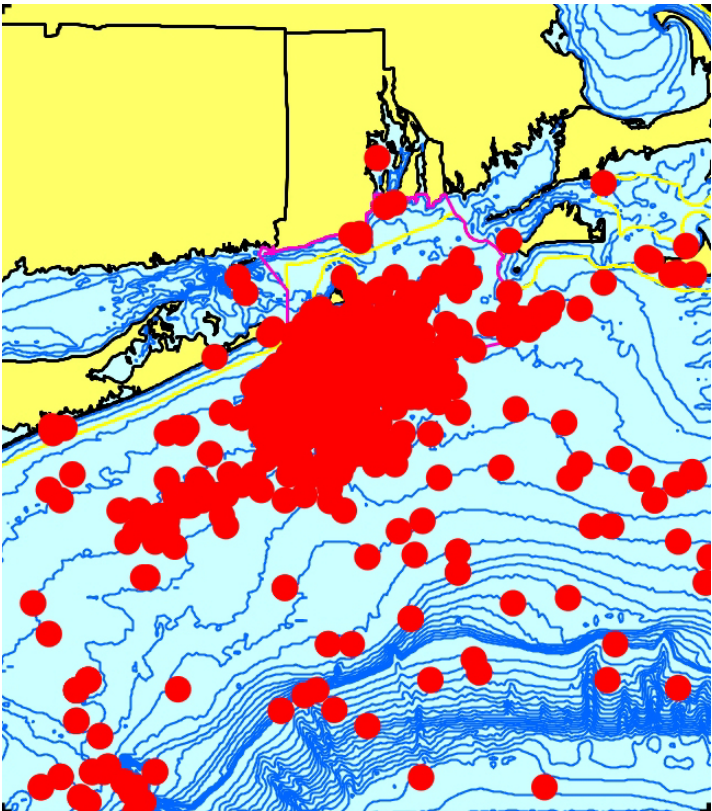
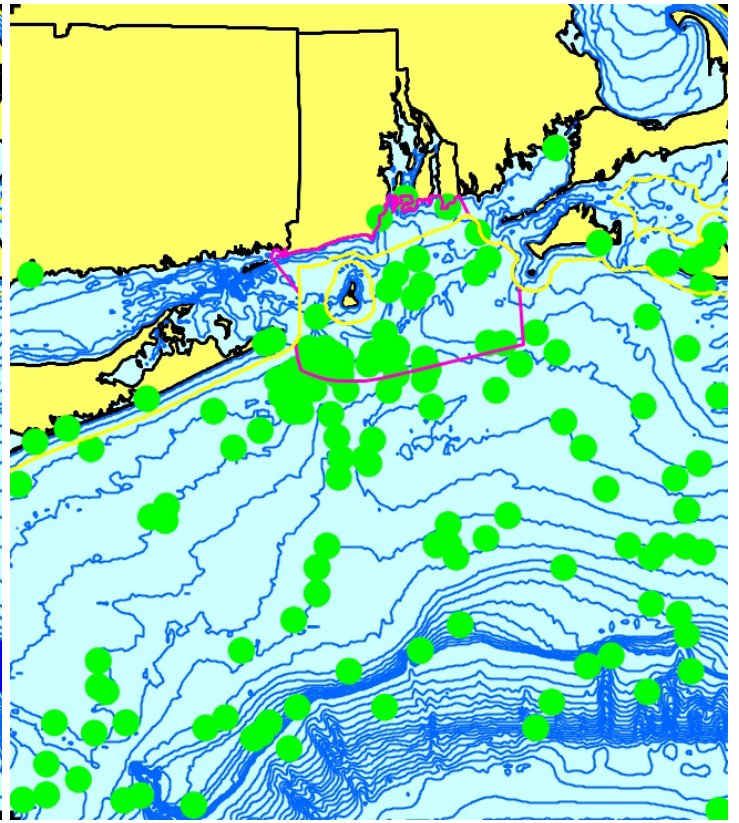
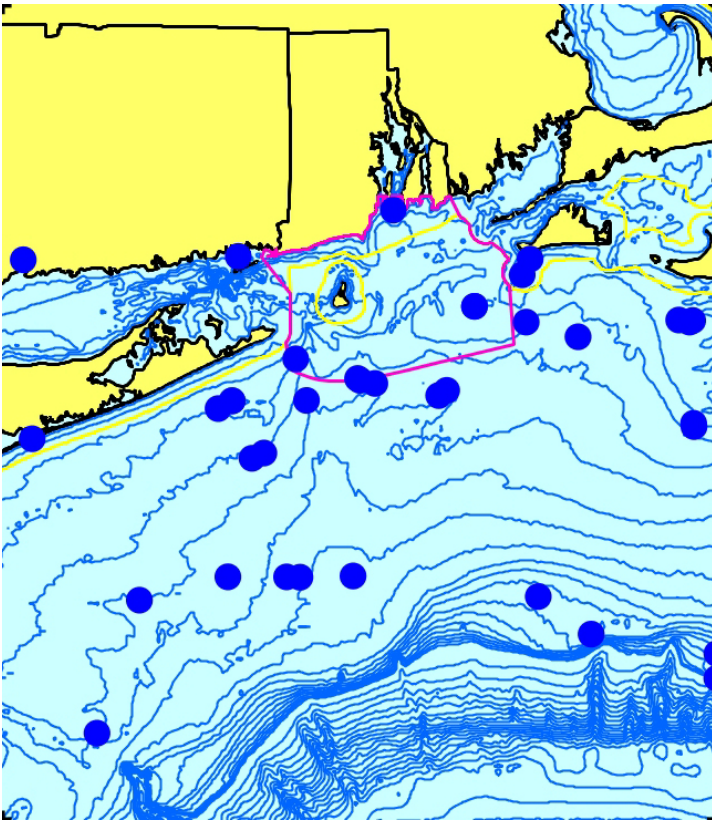


Humpback Whale, 1608-2007

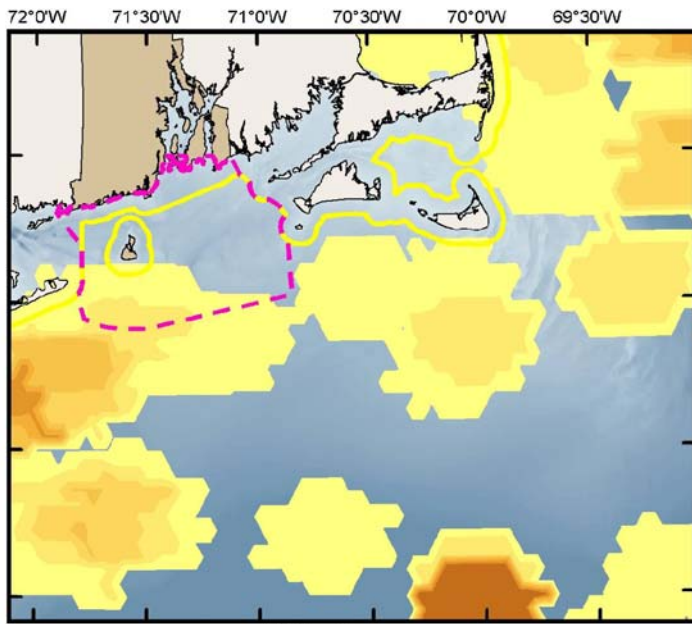


Humpback Whale

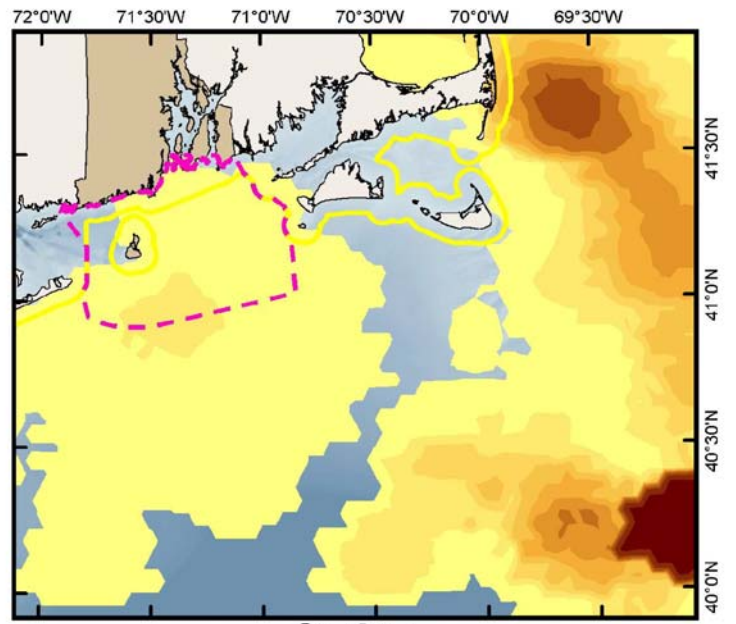




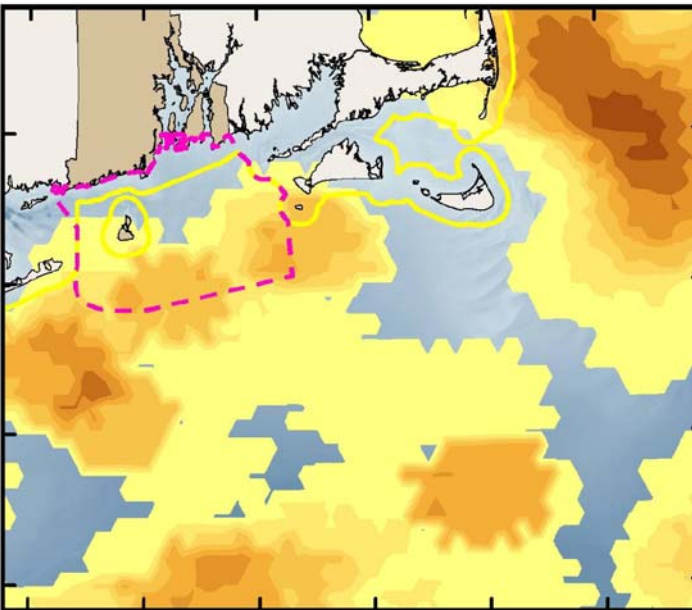
Fin Whale, 1834-2008



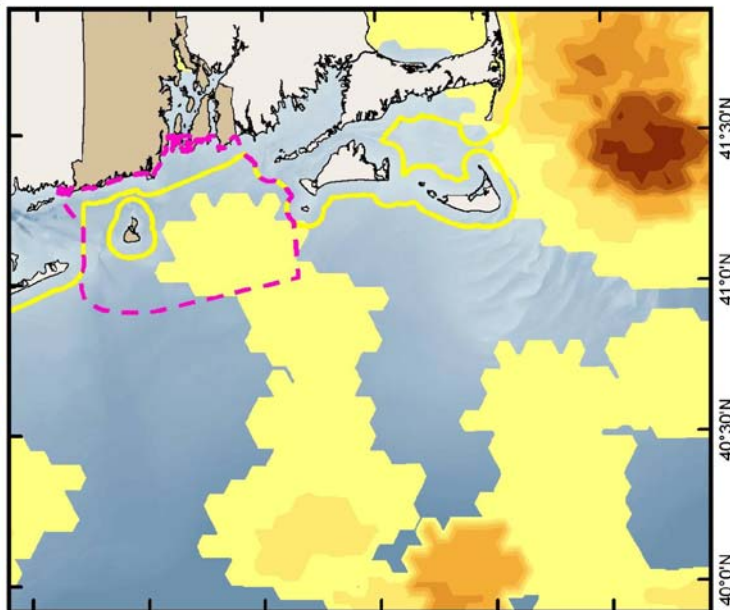
Winter



Spring

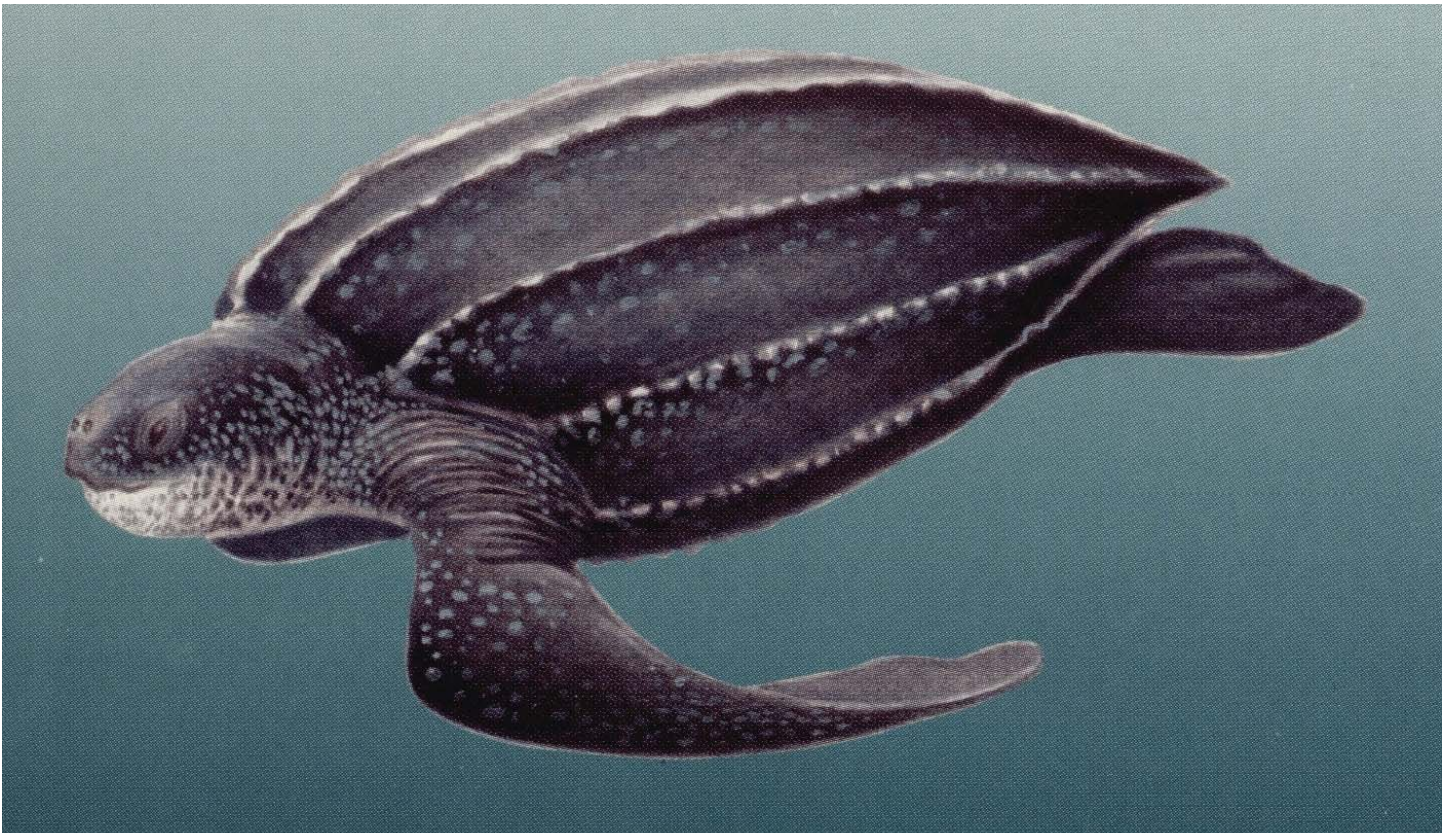


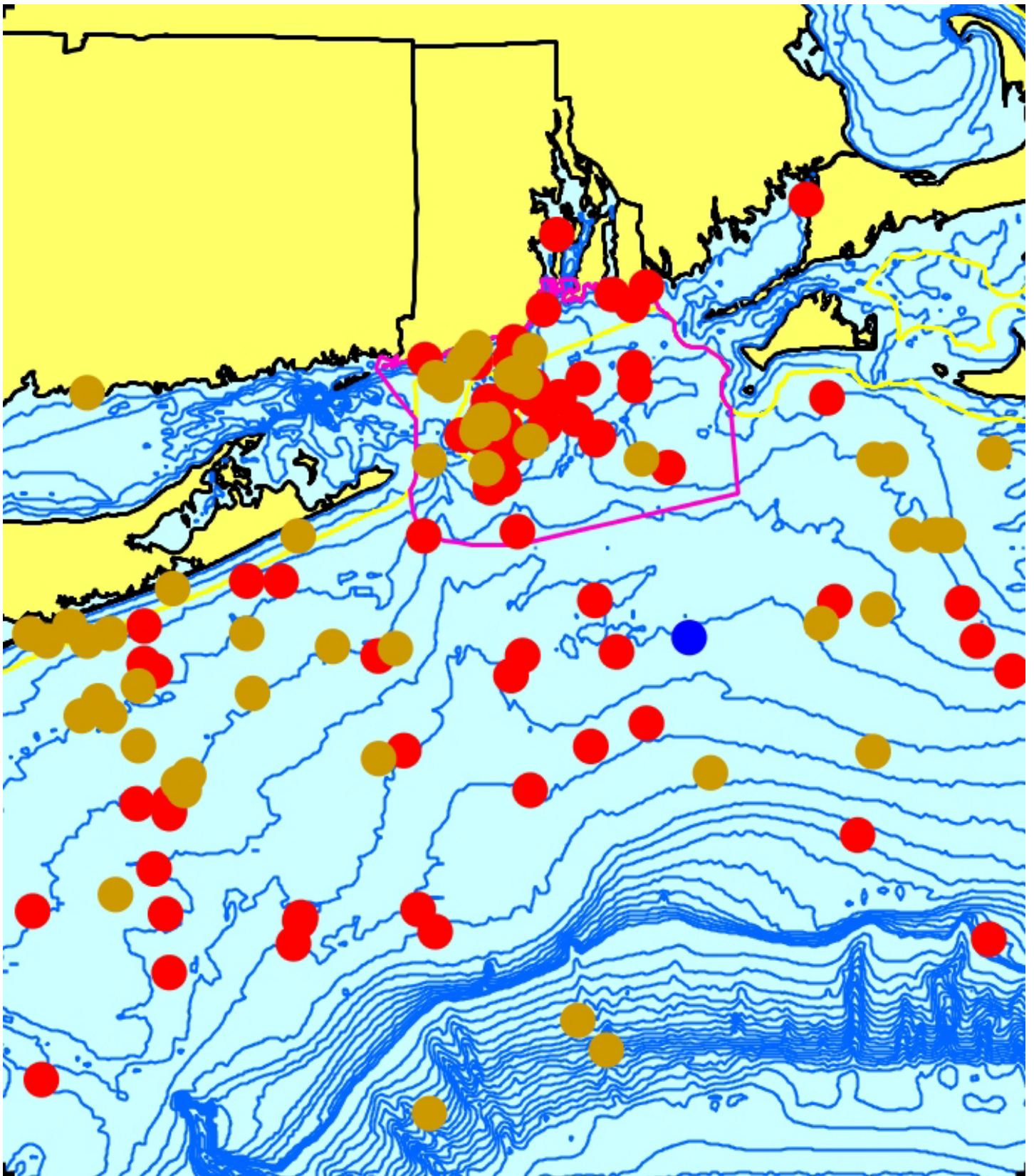
Summer



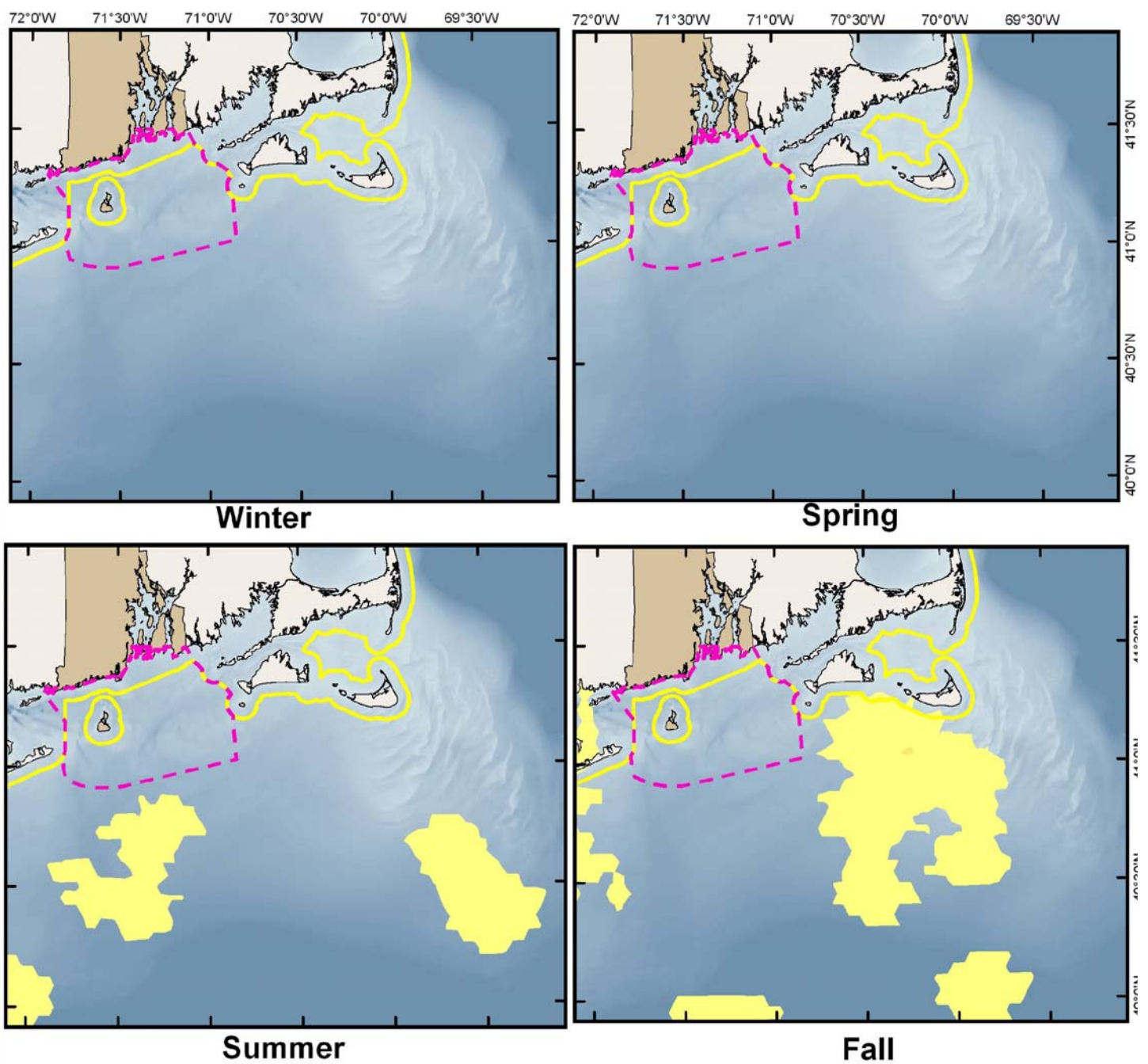
Fall

Fin Whale



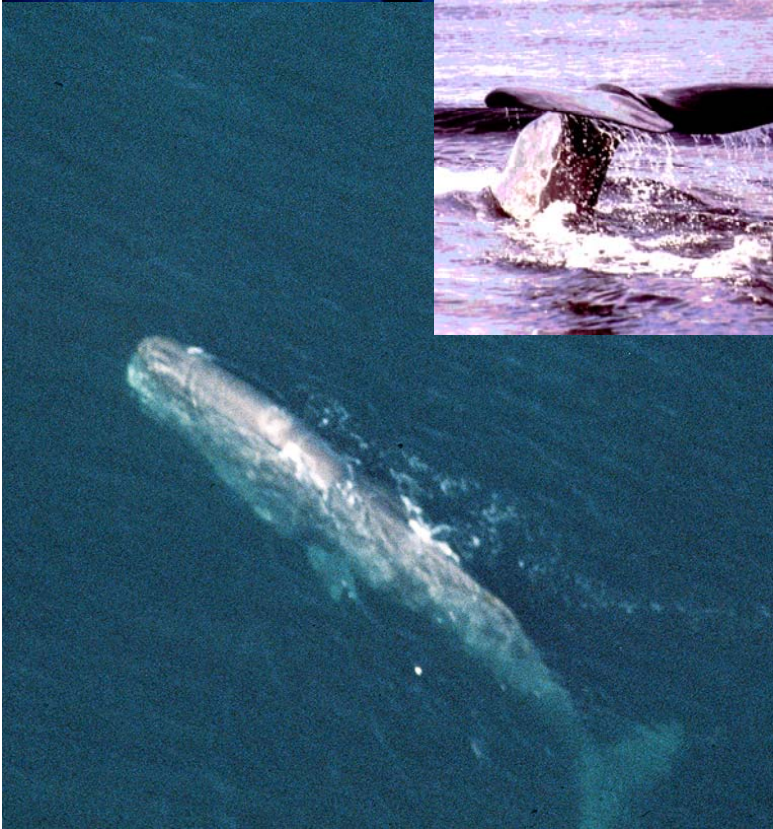
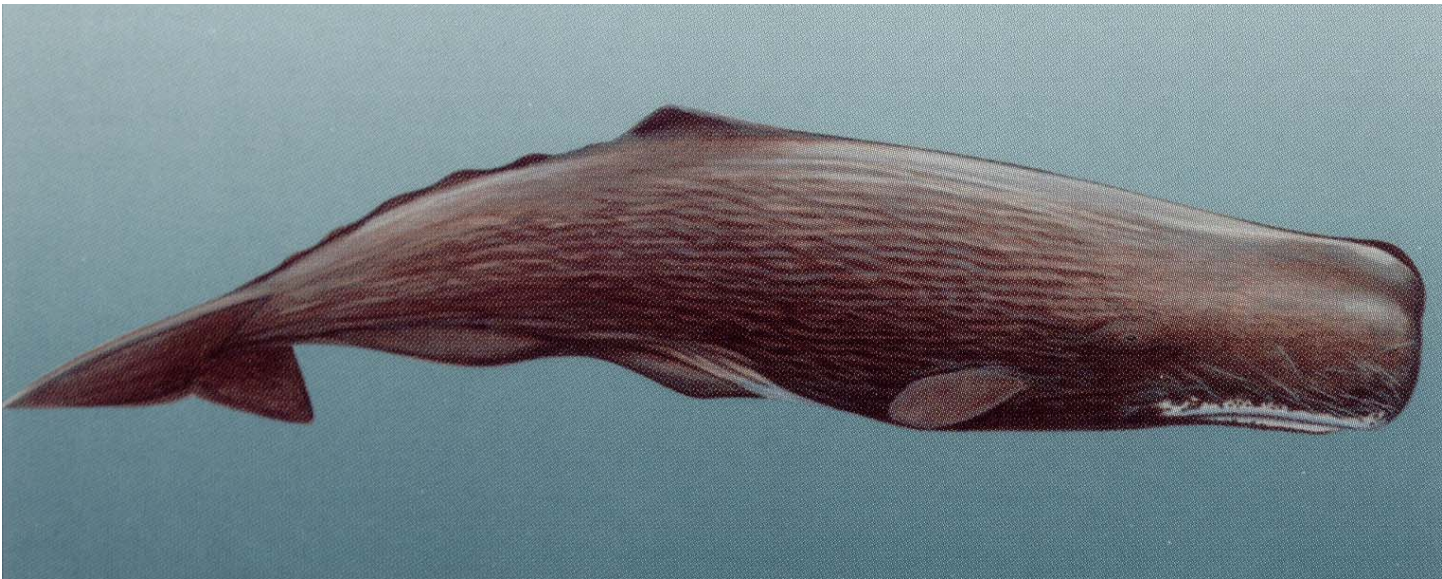


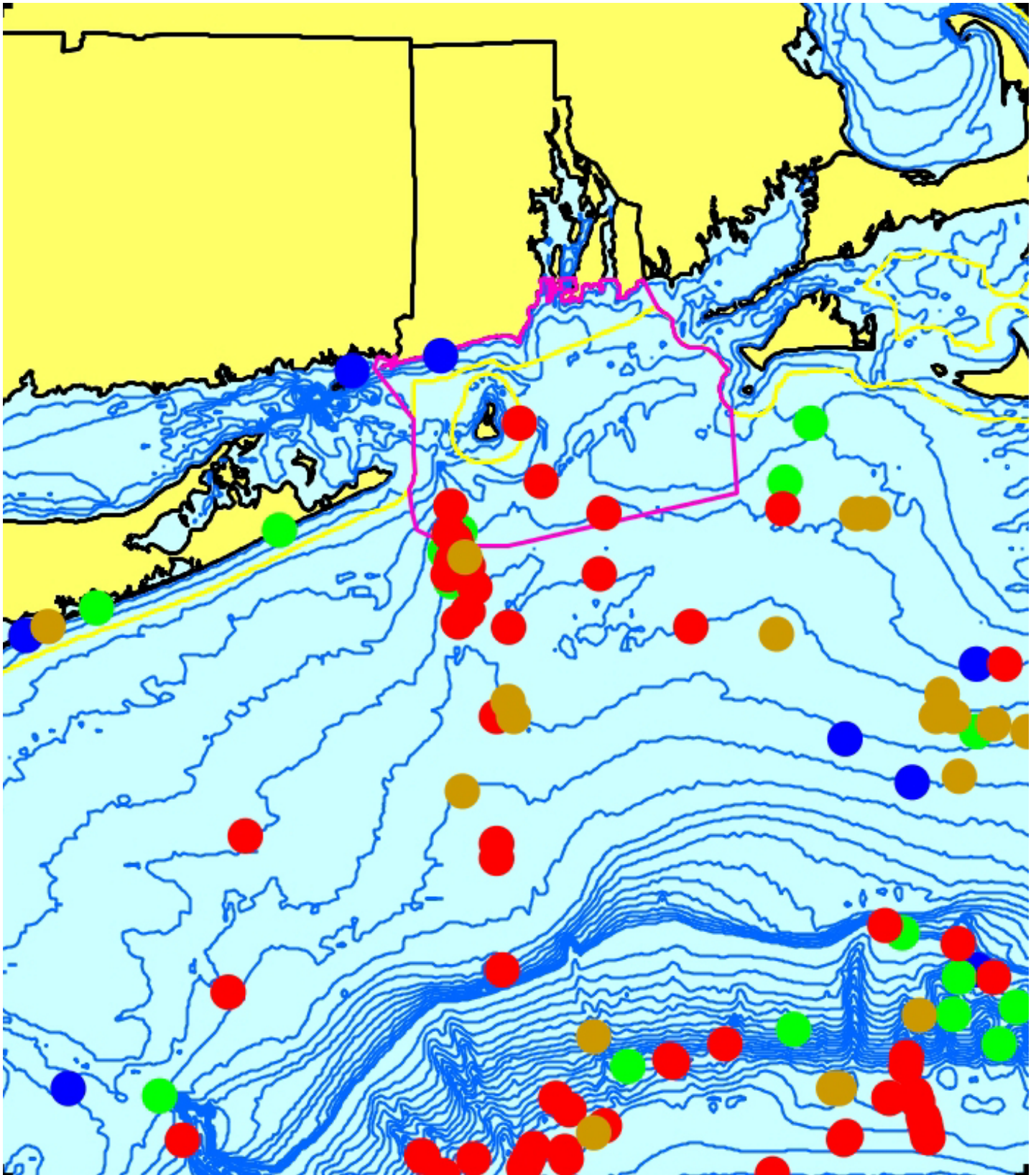
Leatherback Sea Turtle, 1974-2008



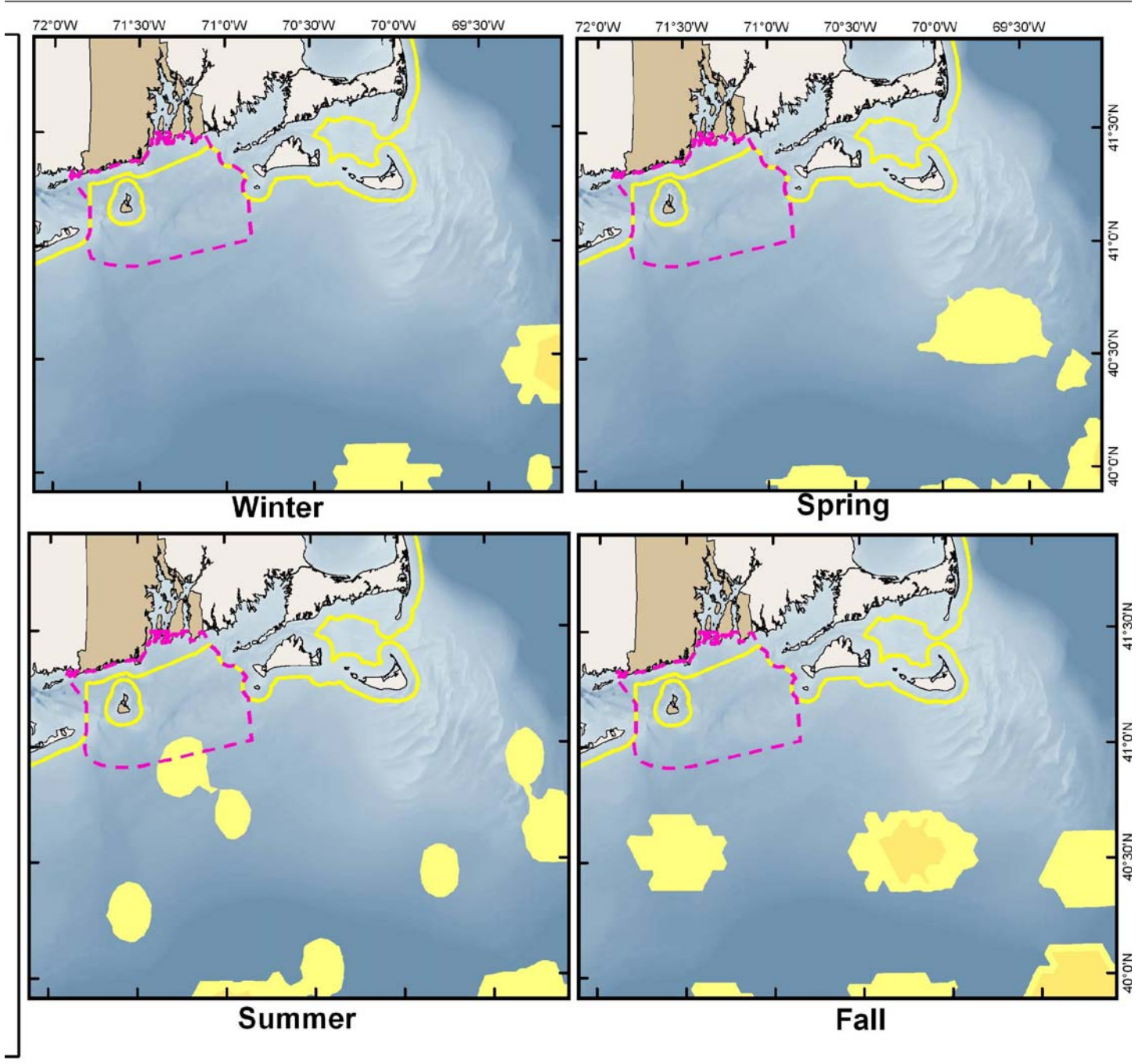
Leatherback Sea Turtle, 1974-2008

Priority 2

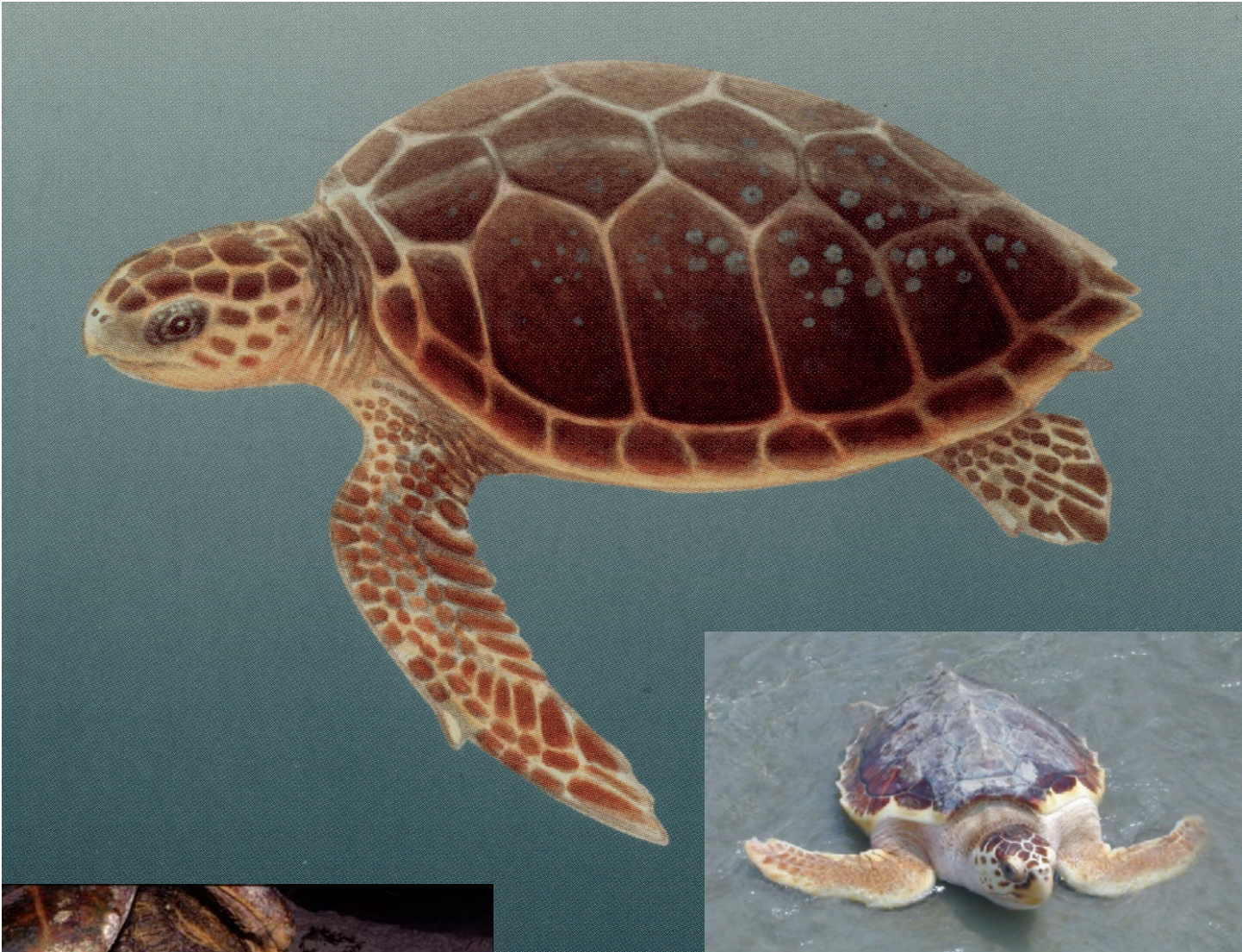


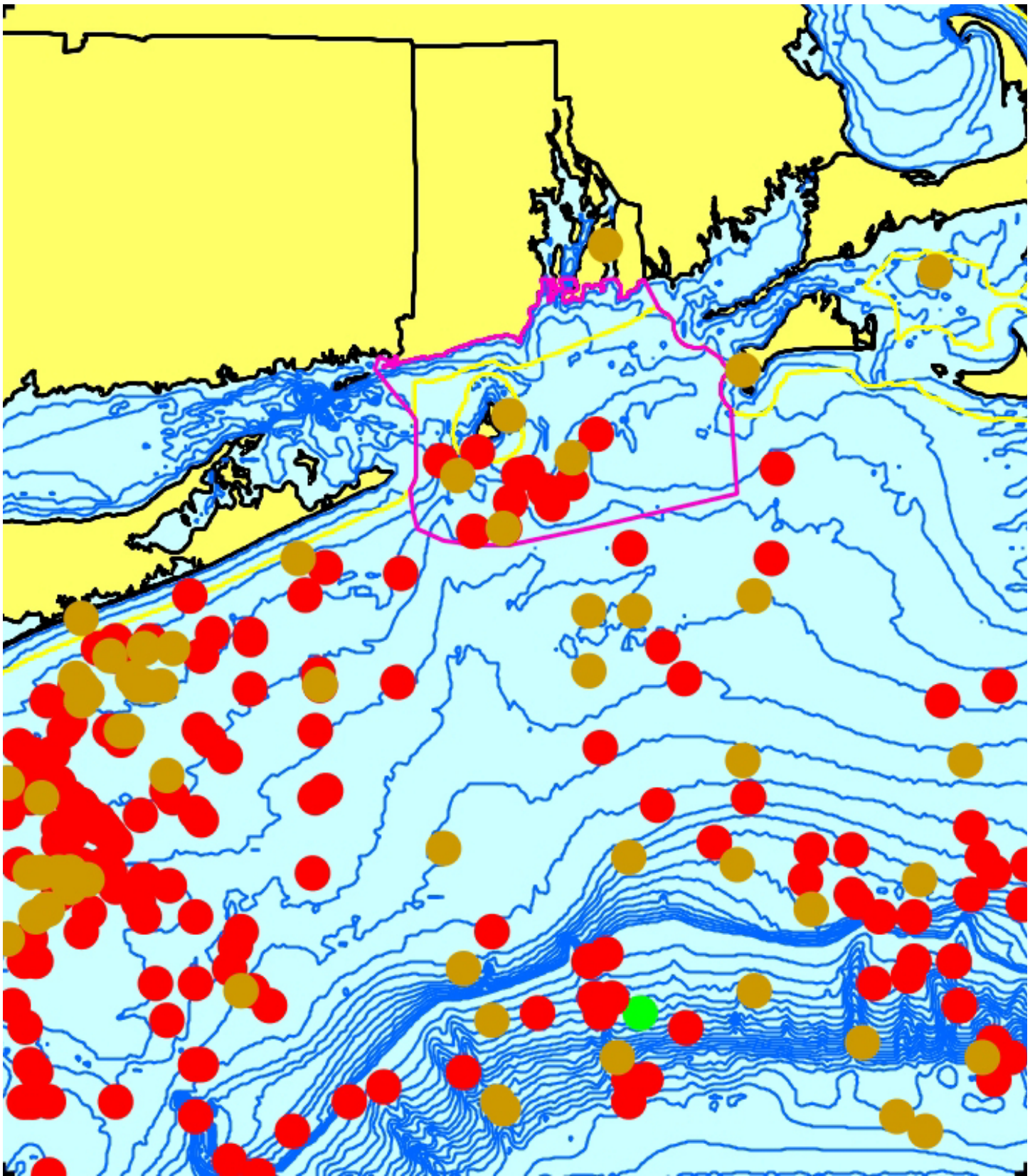


Sperm Whale, 1891-2004

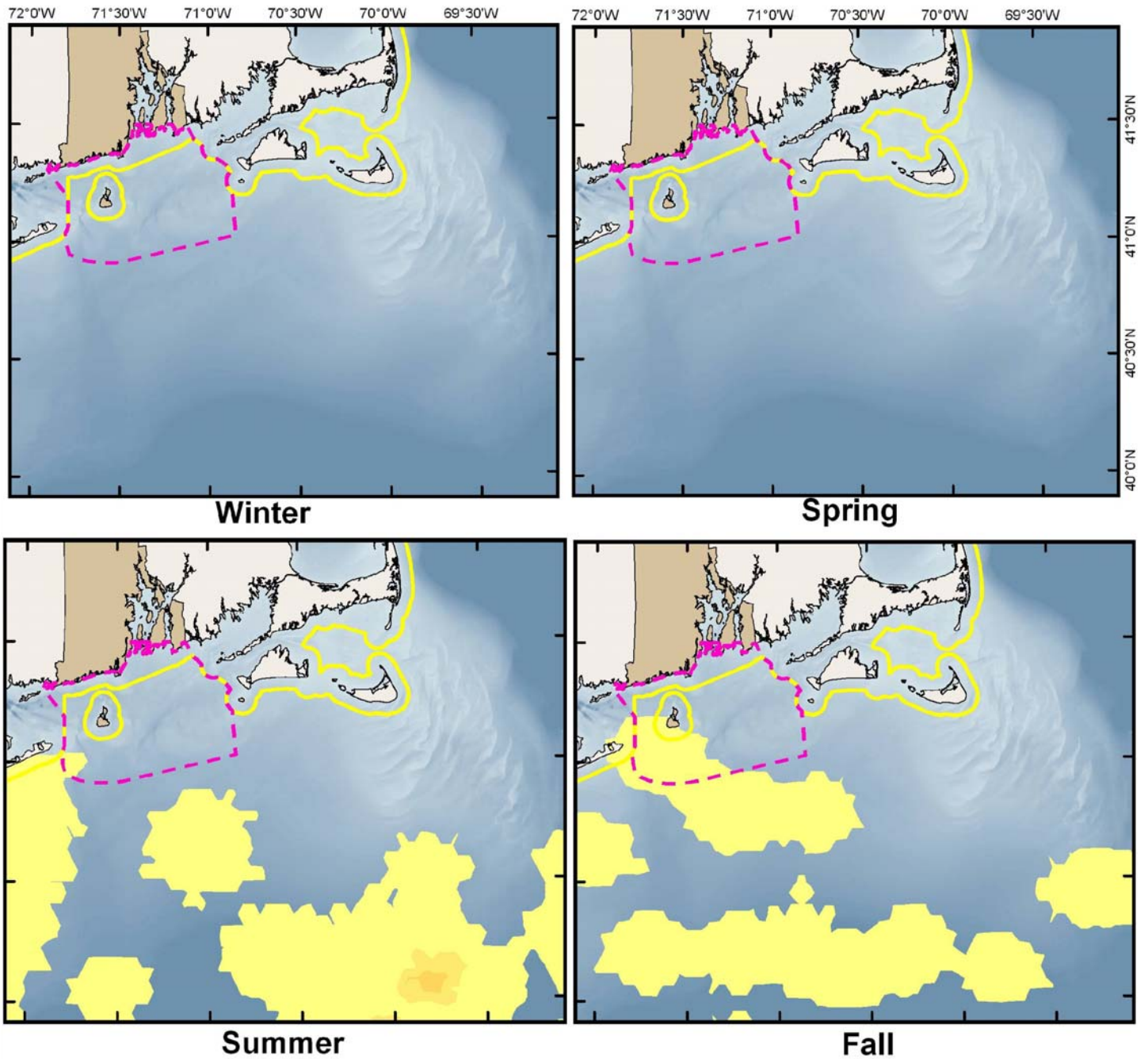


Sperm Whale



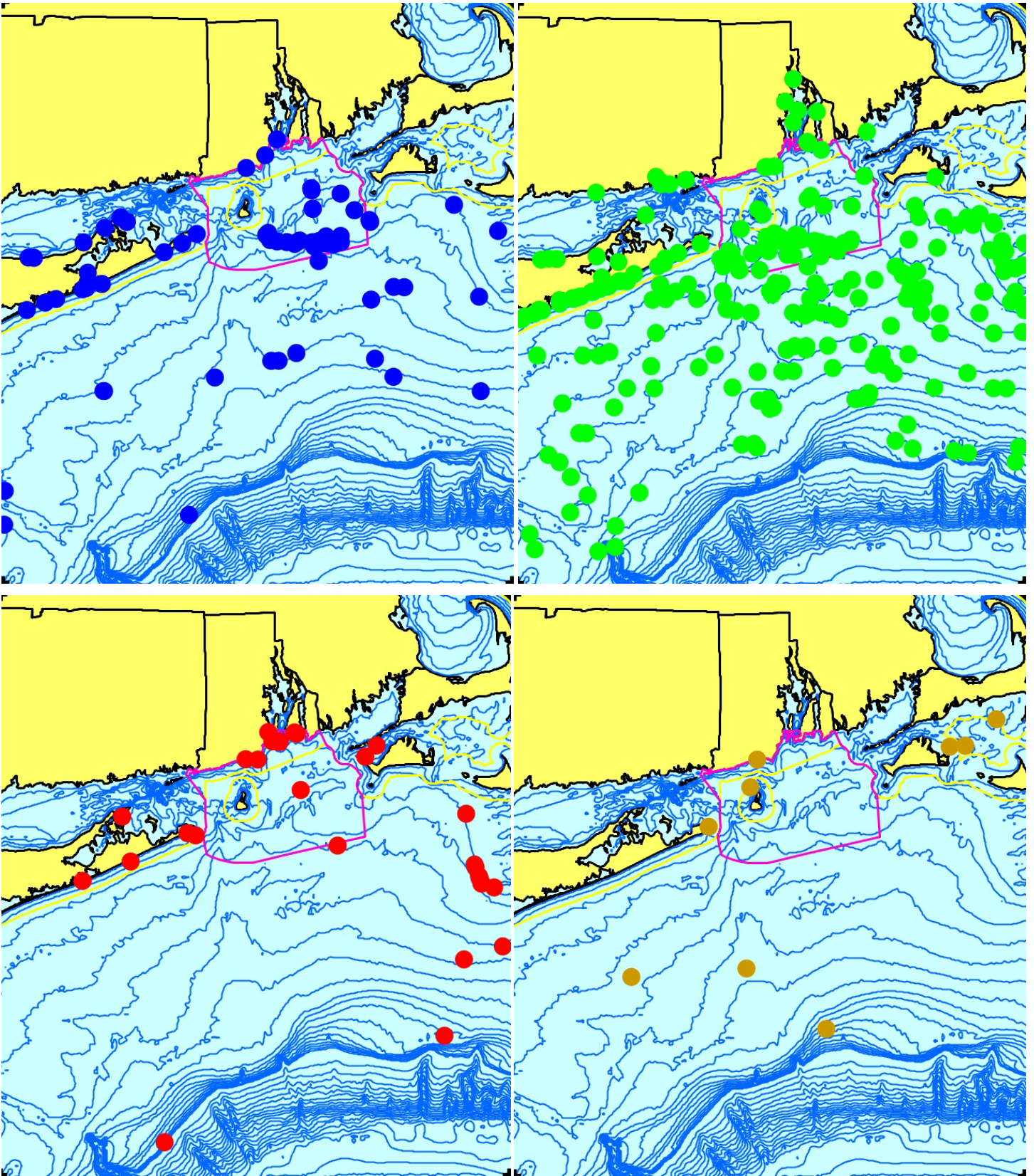


Loggerhead Sea Turtle, 1963-2006

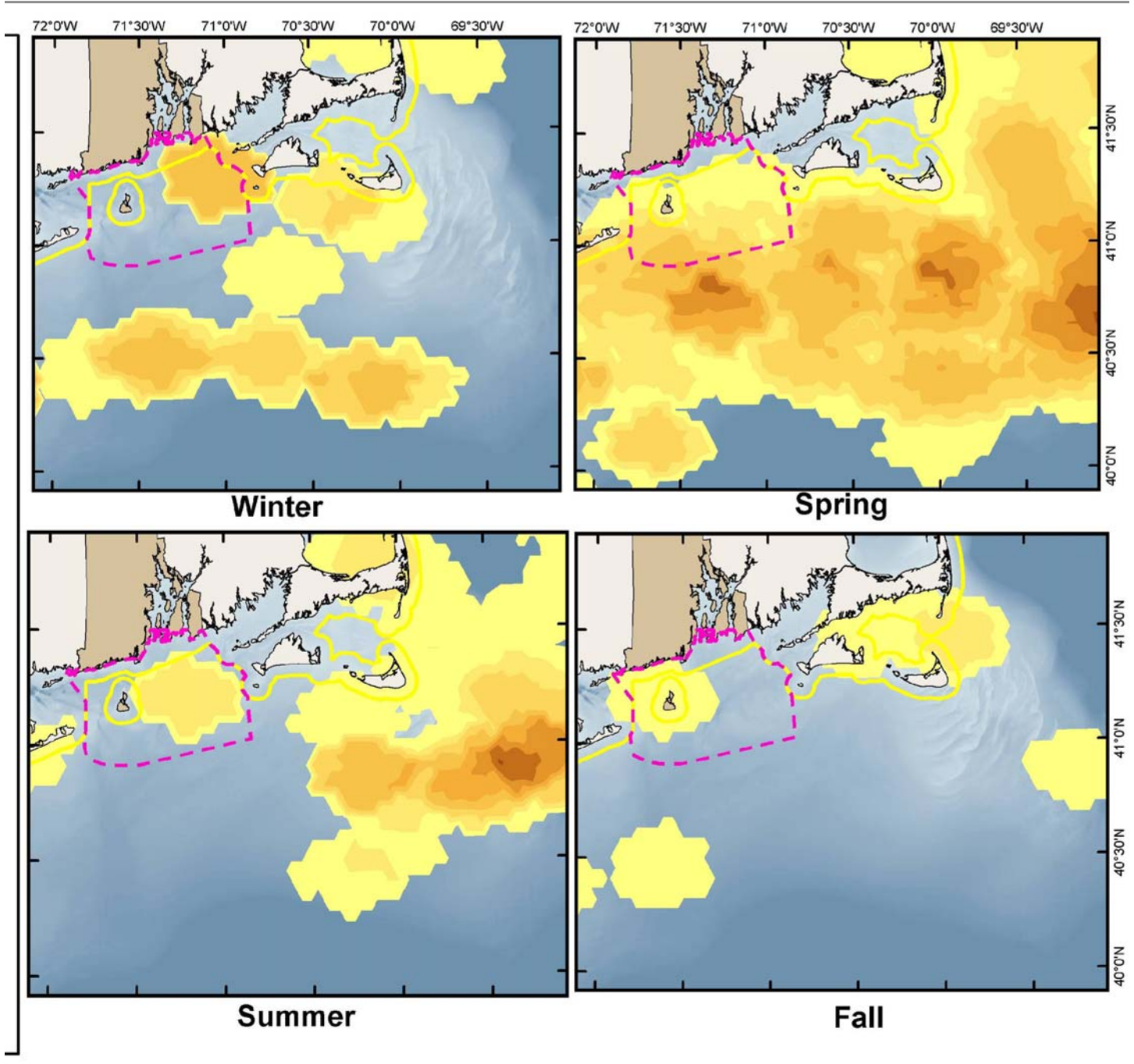


Loggerhead Sea Turtle

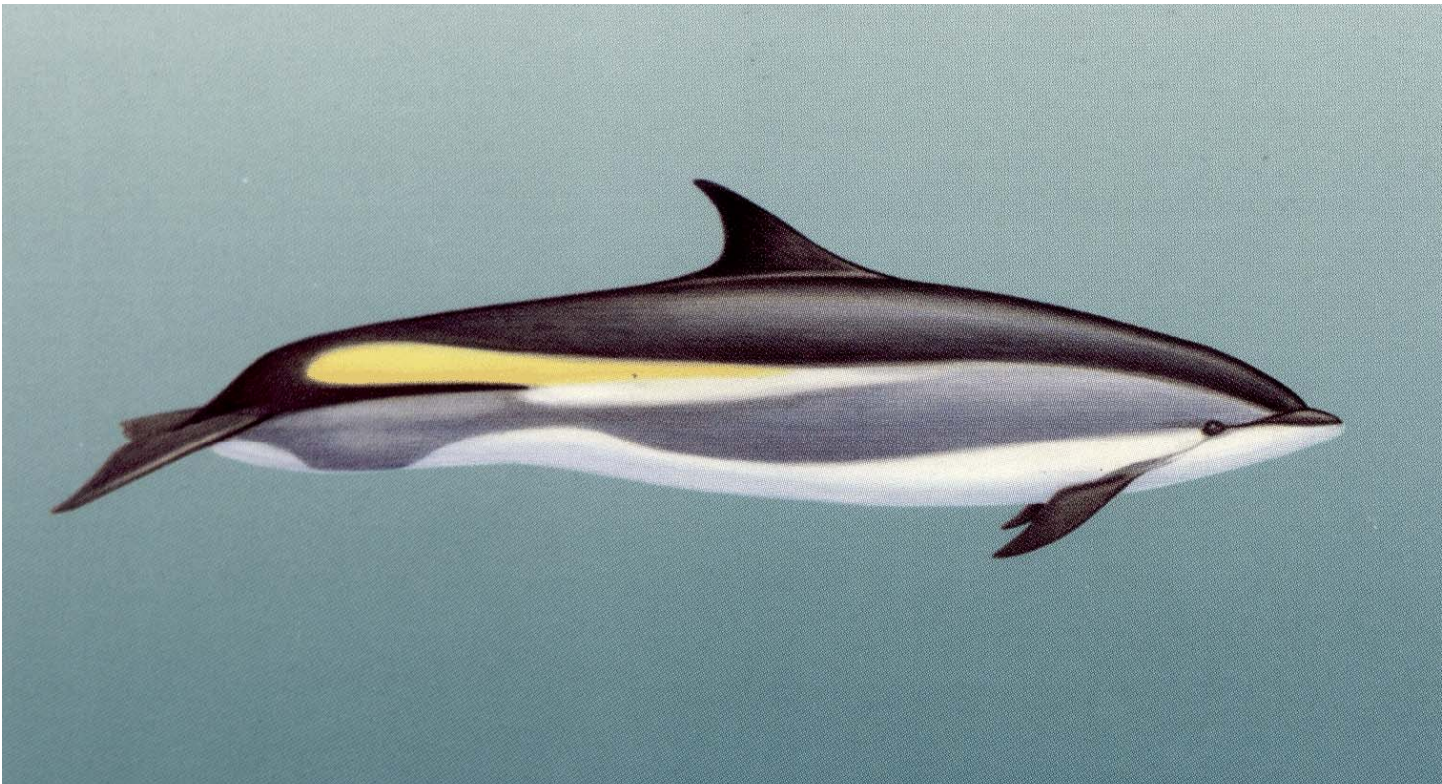


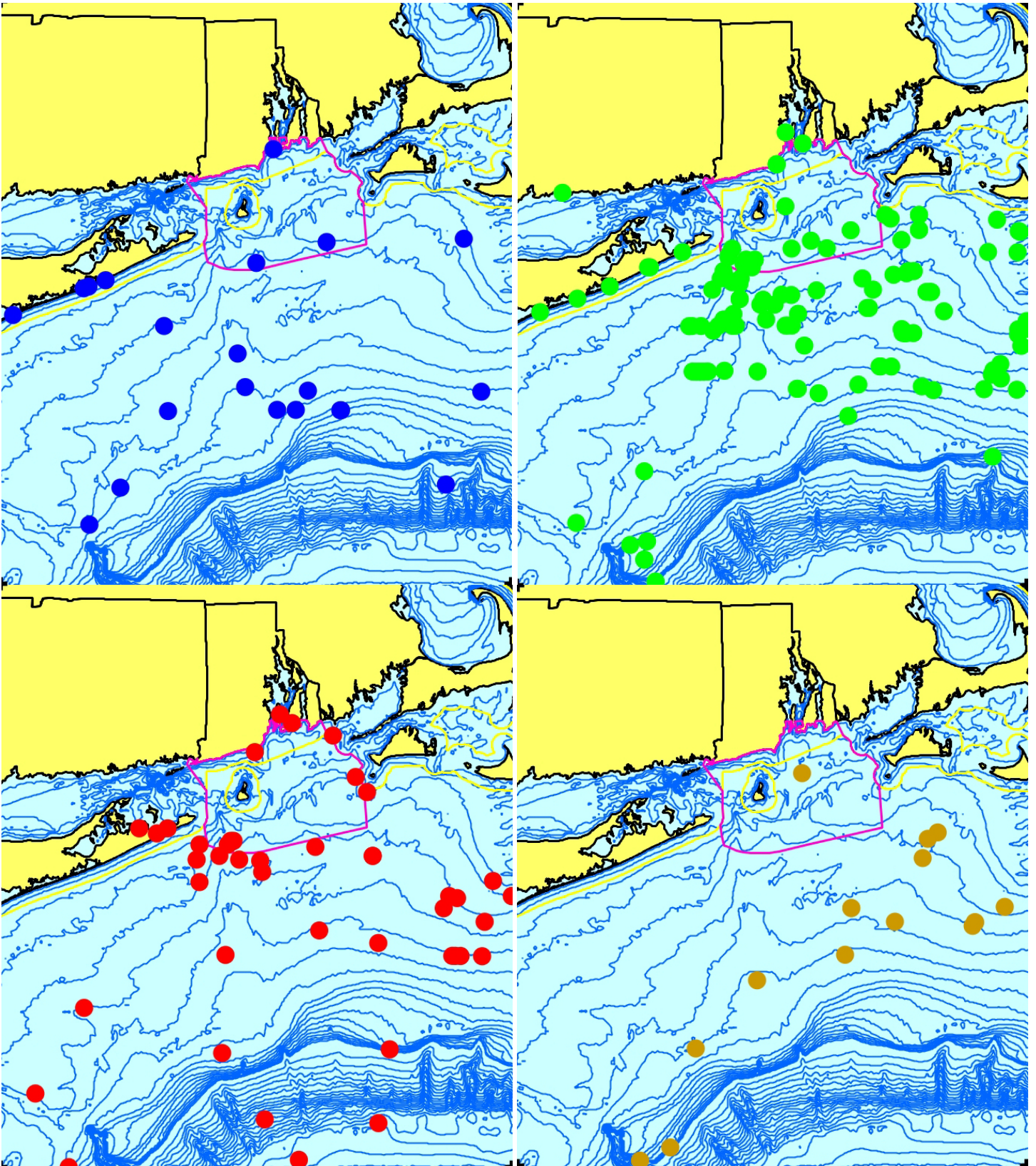


Harbor Porpoise, 1850-2007

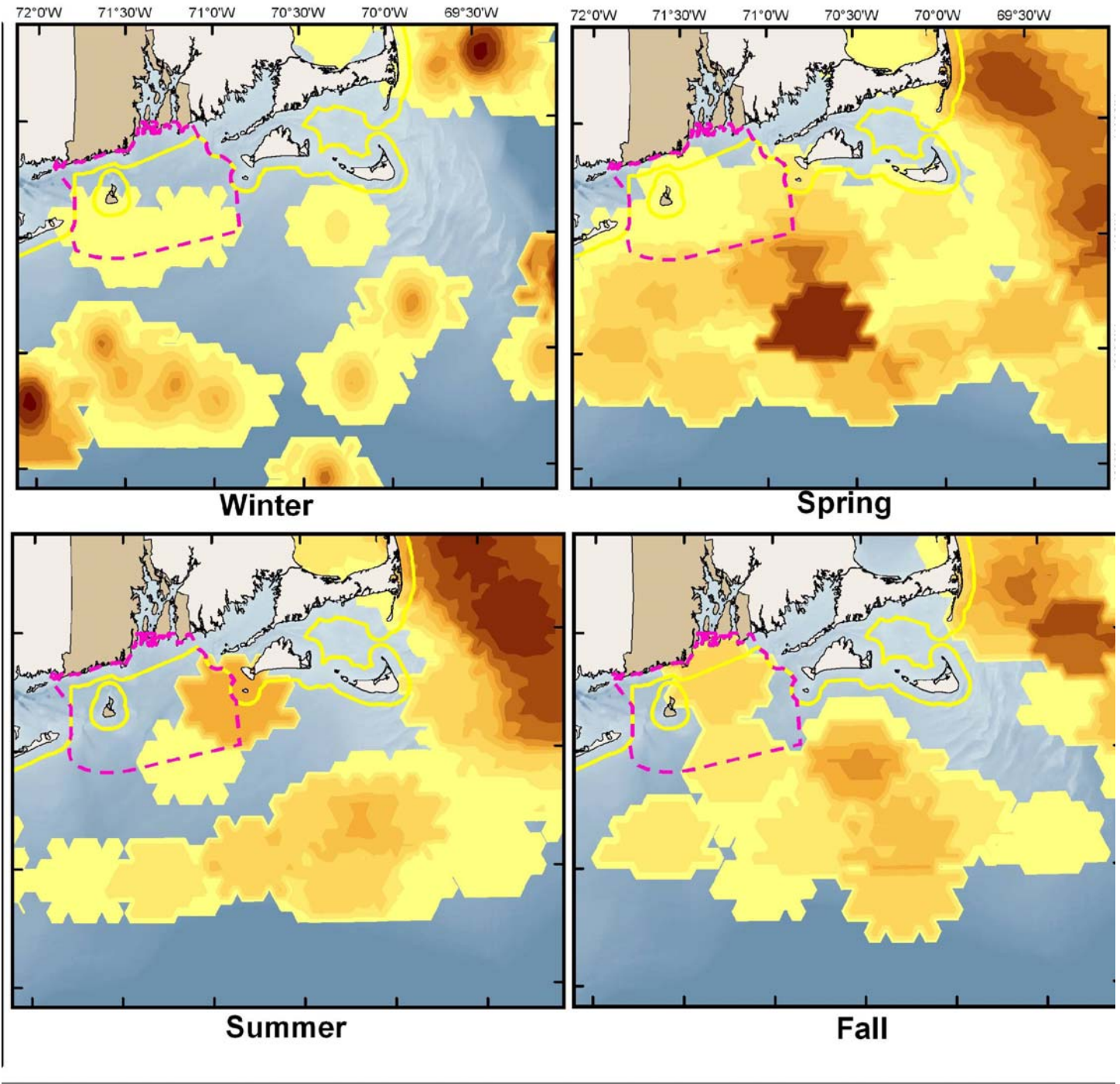


Harbor Porpoise

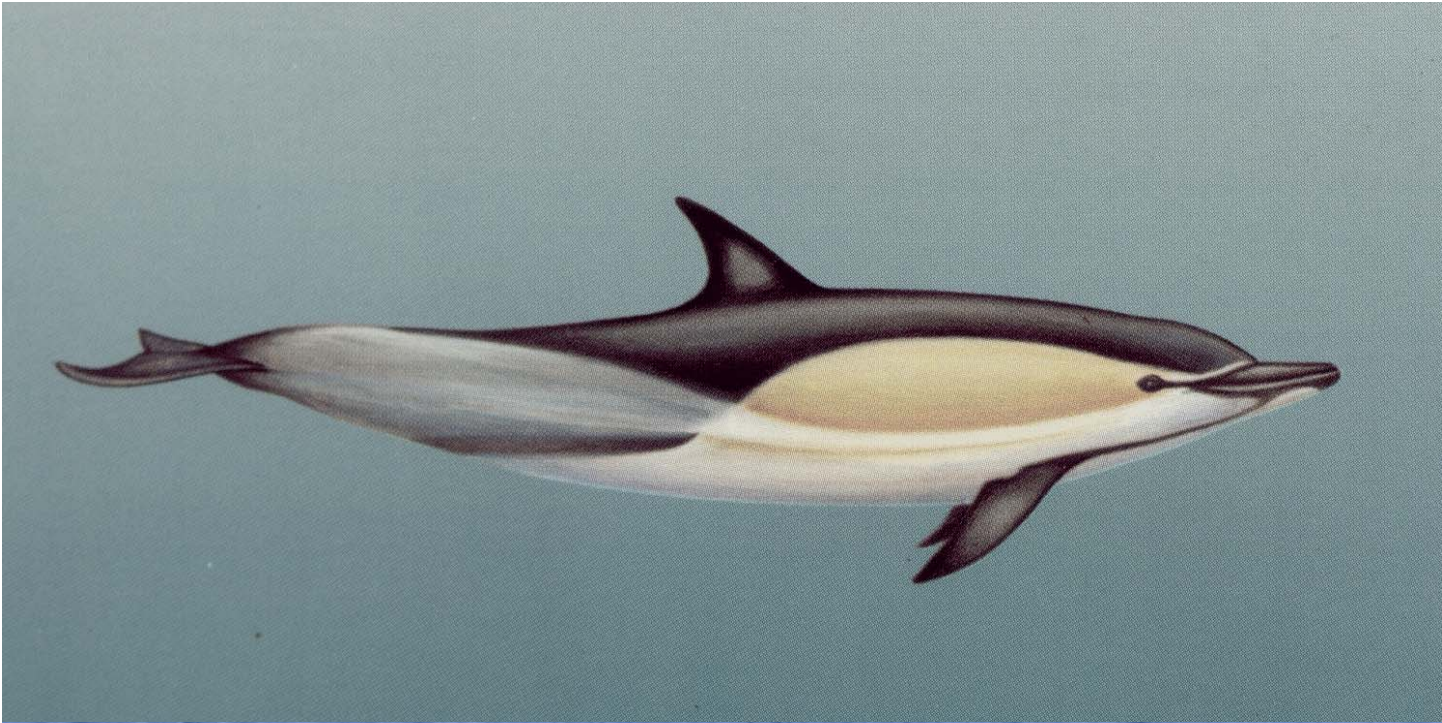


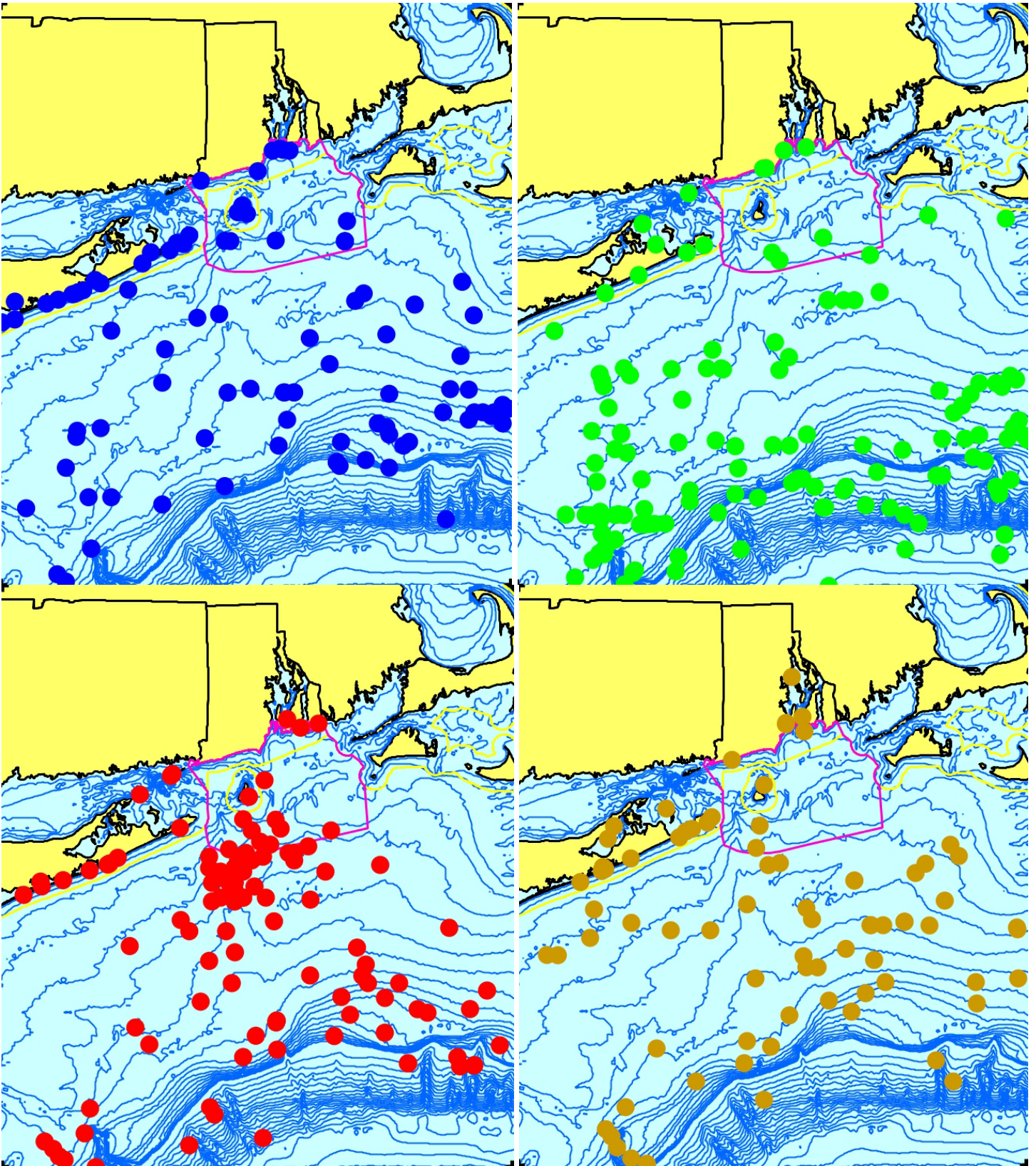


White-sided Dolphin, 1973-2006

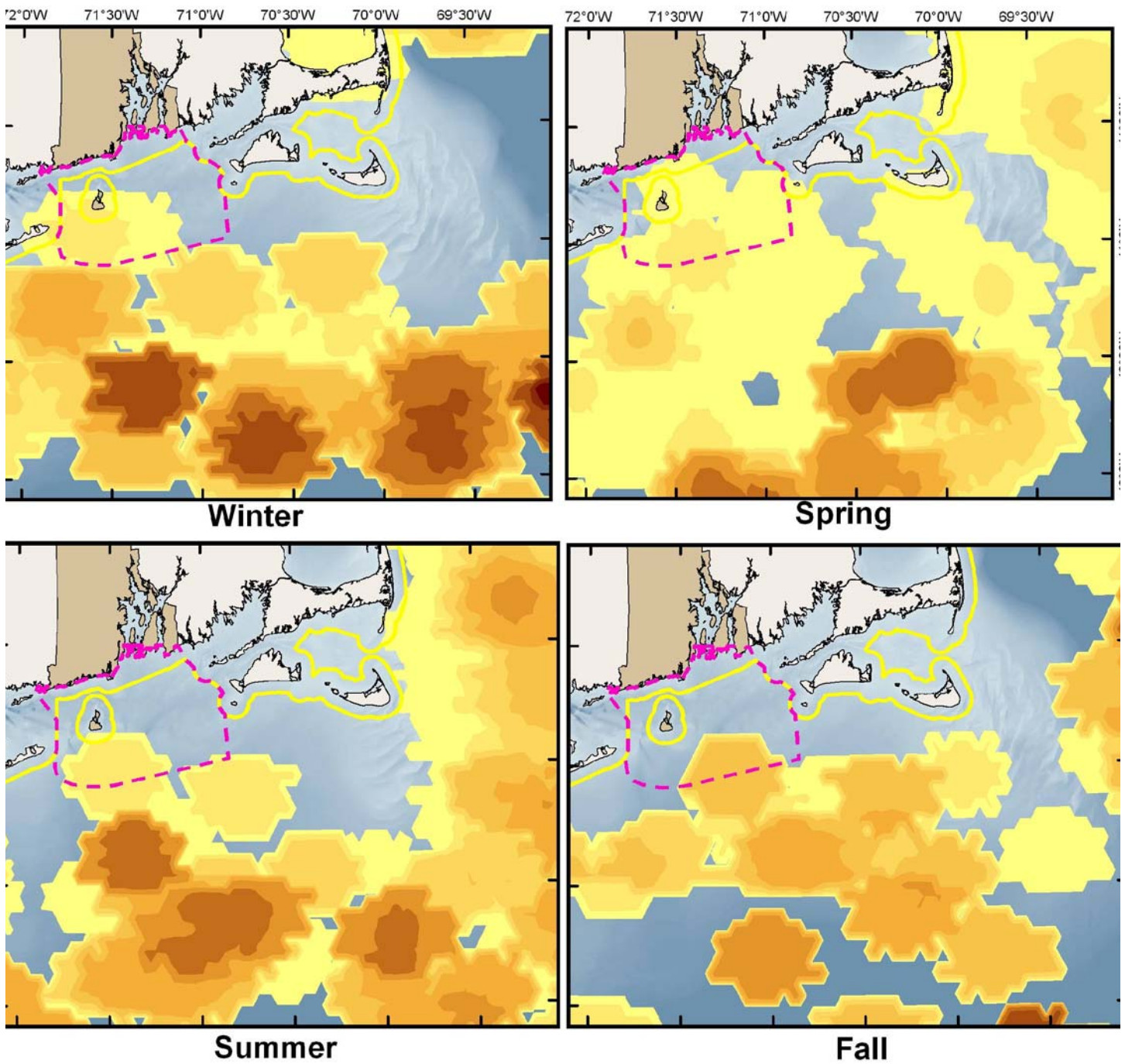


White-sided Dolphin

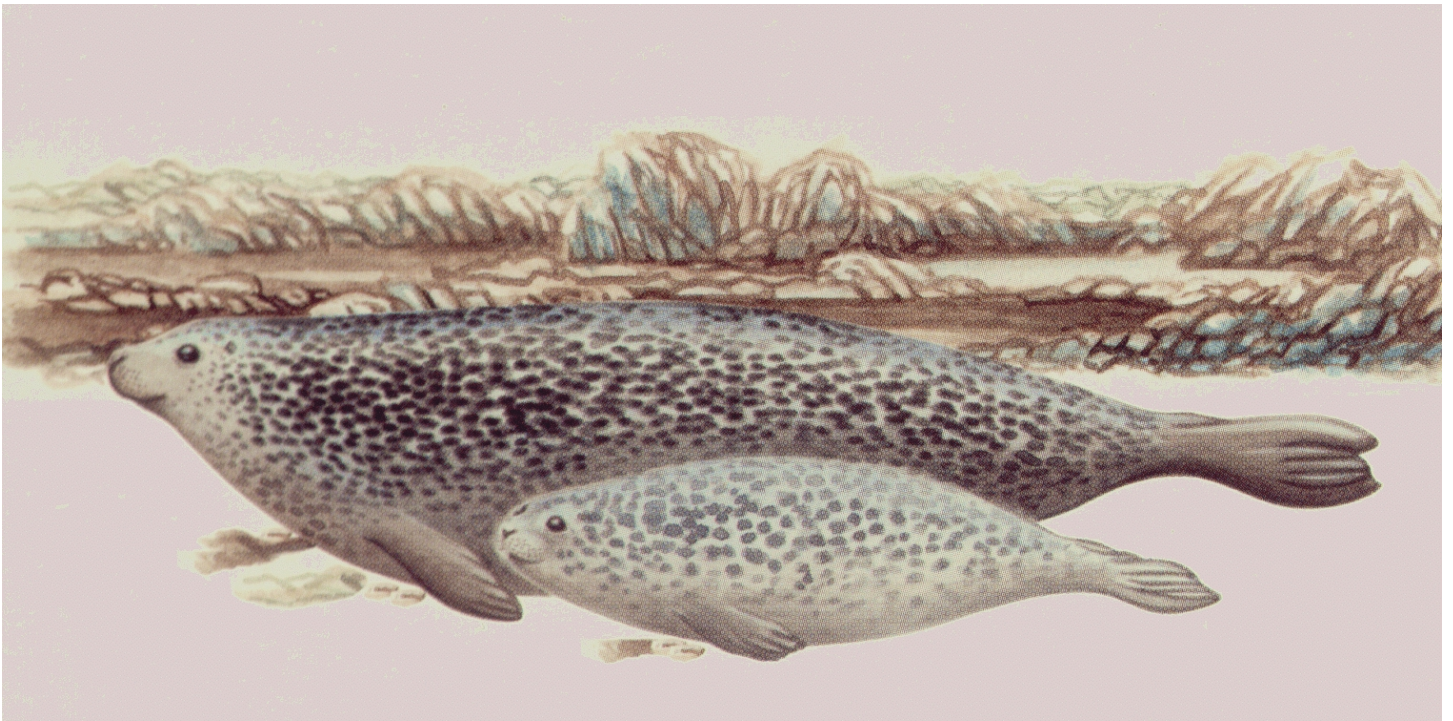


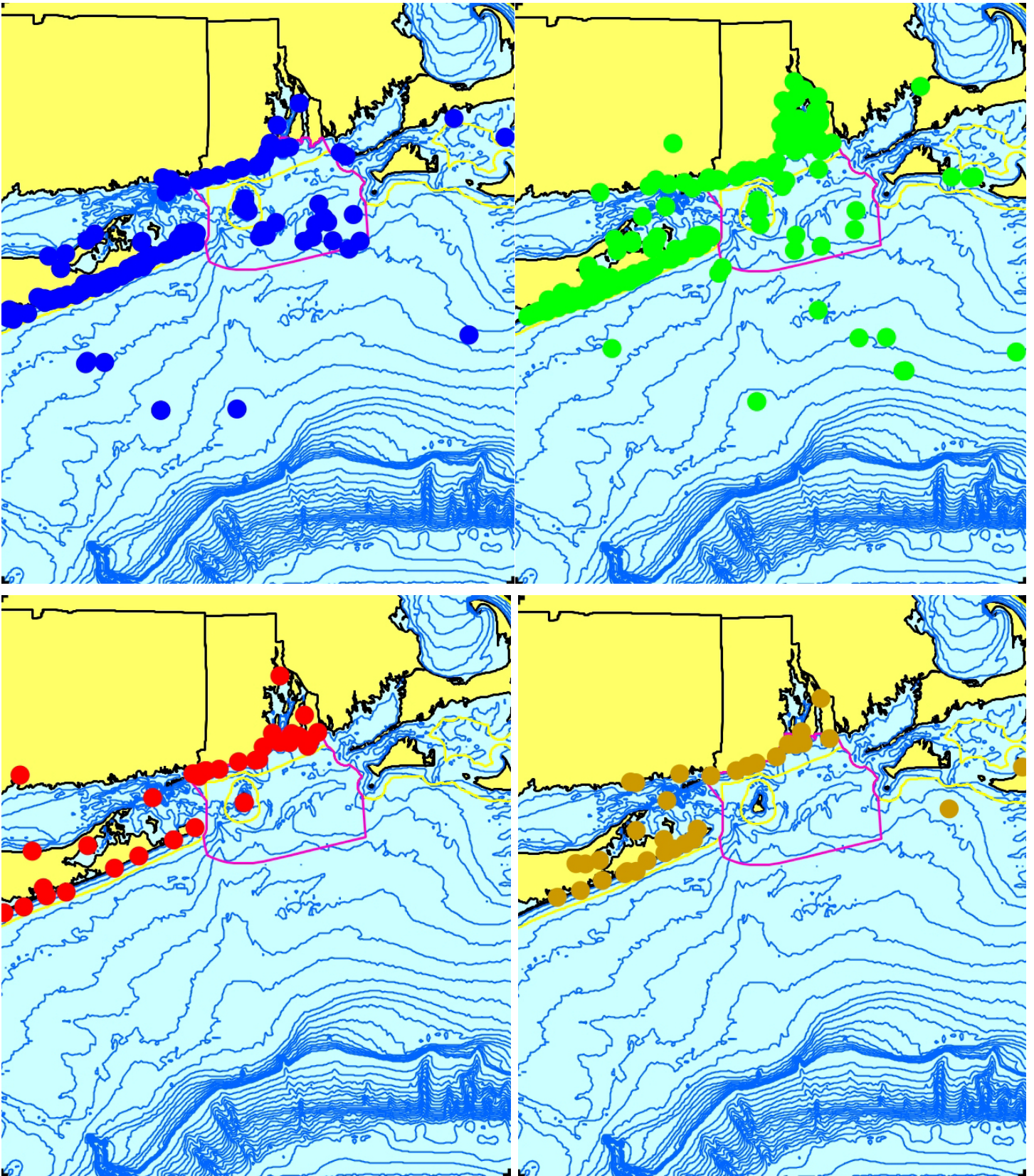


Common Dolphin, 1882-2007

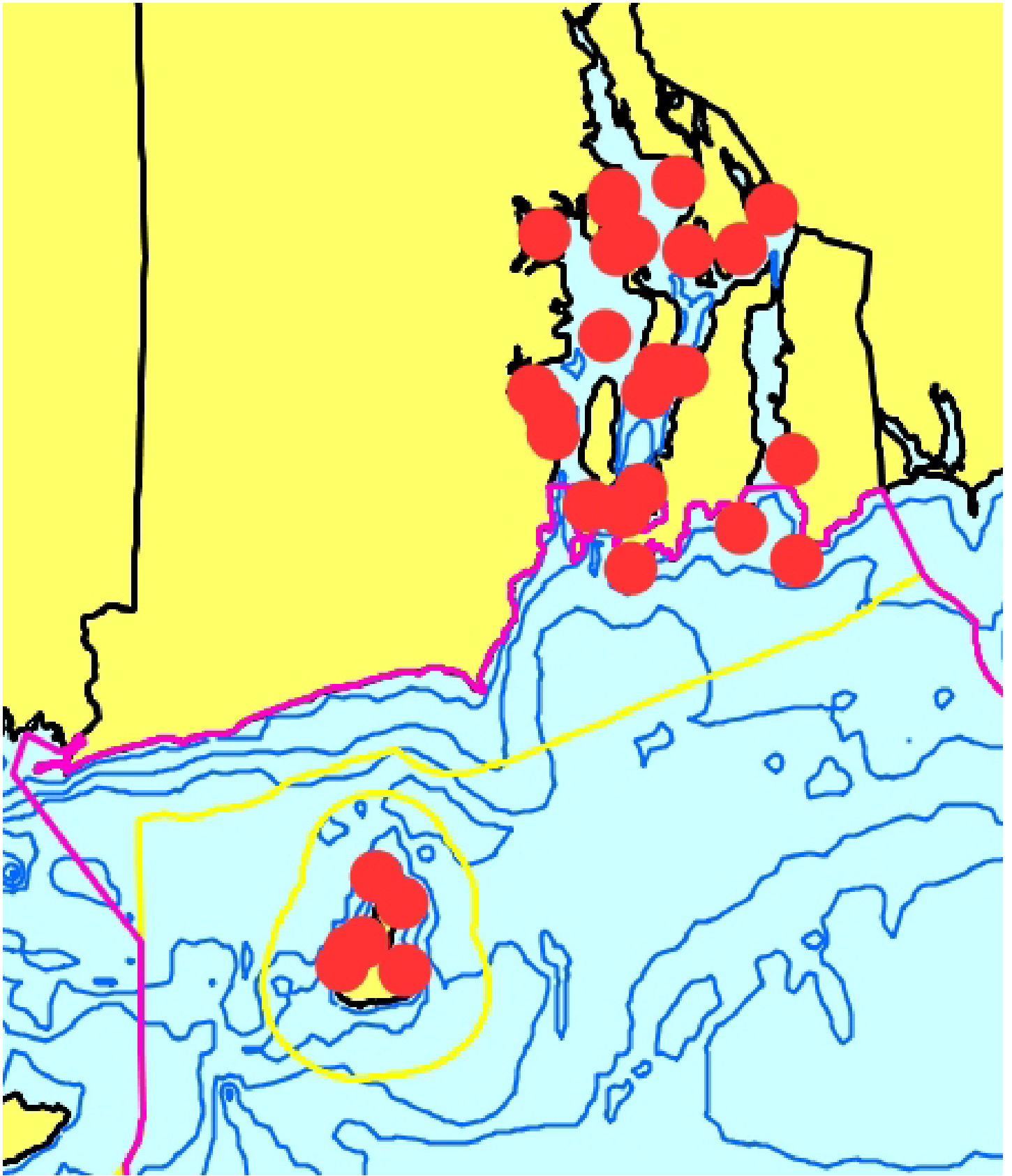


Common Dolphin

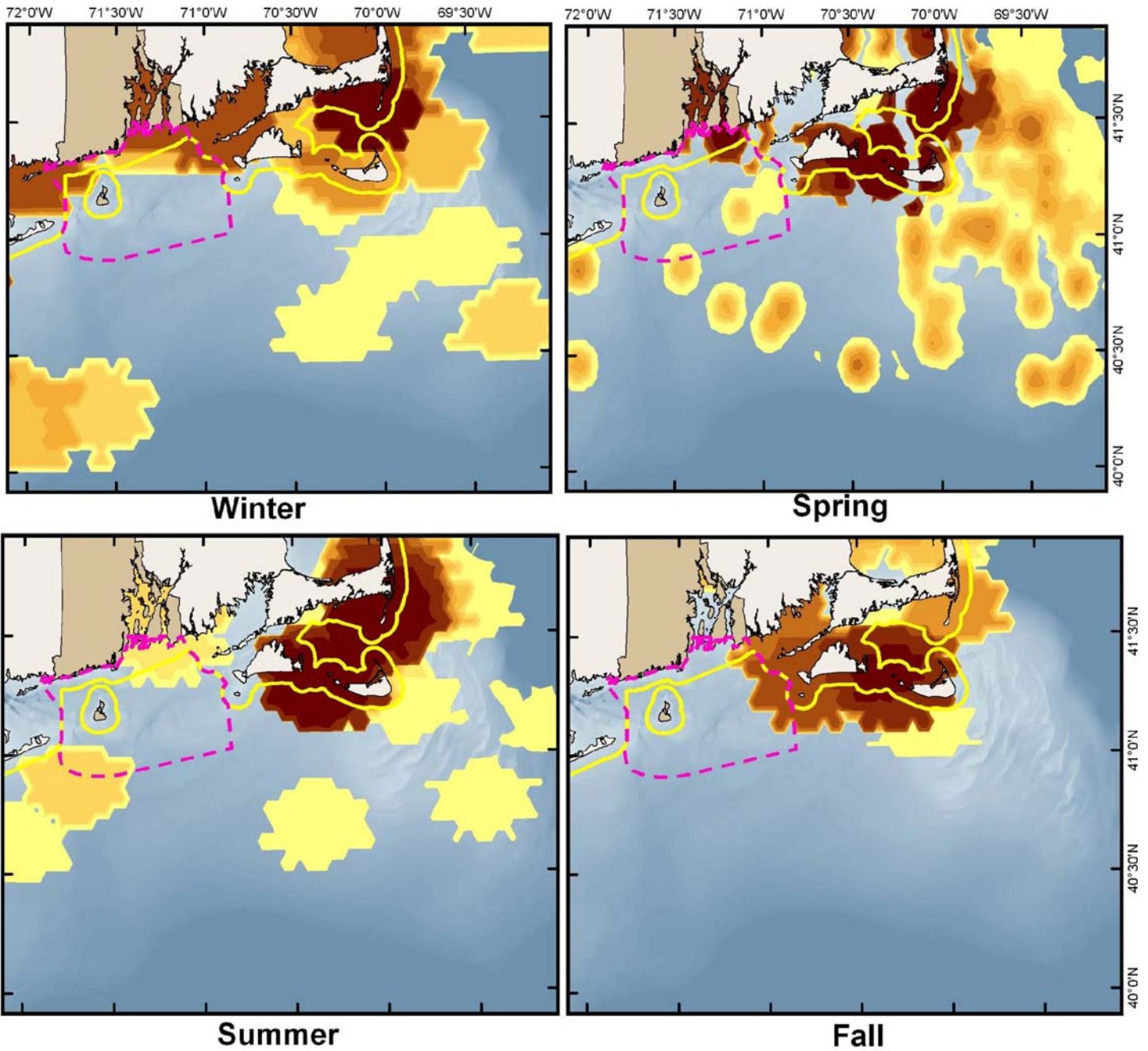




Harbor Seal, 1954-2005

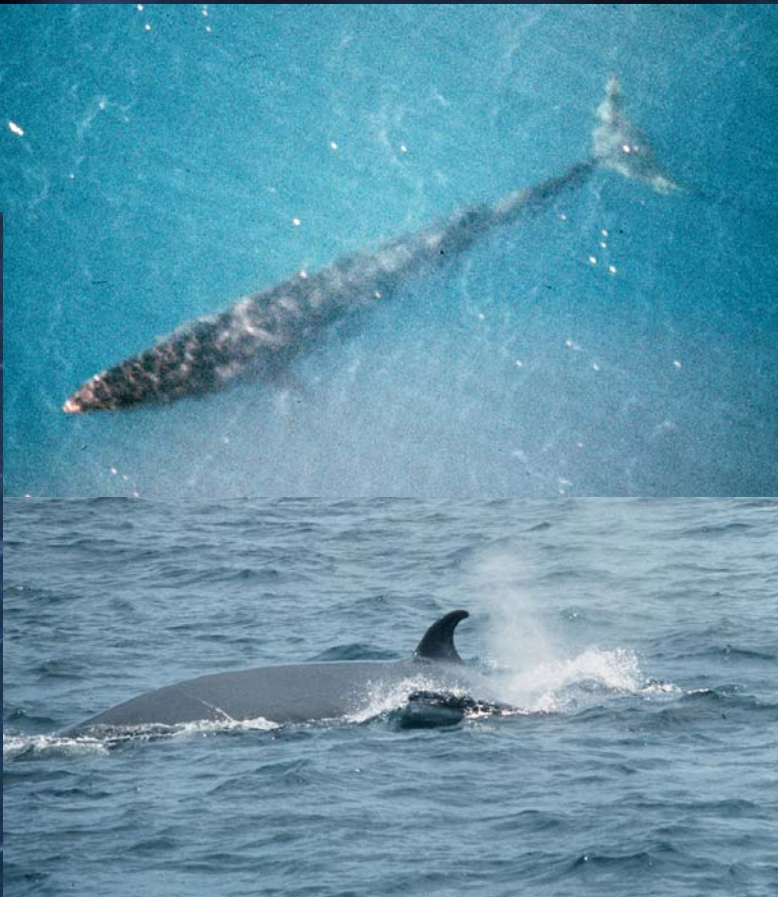
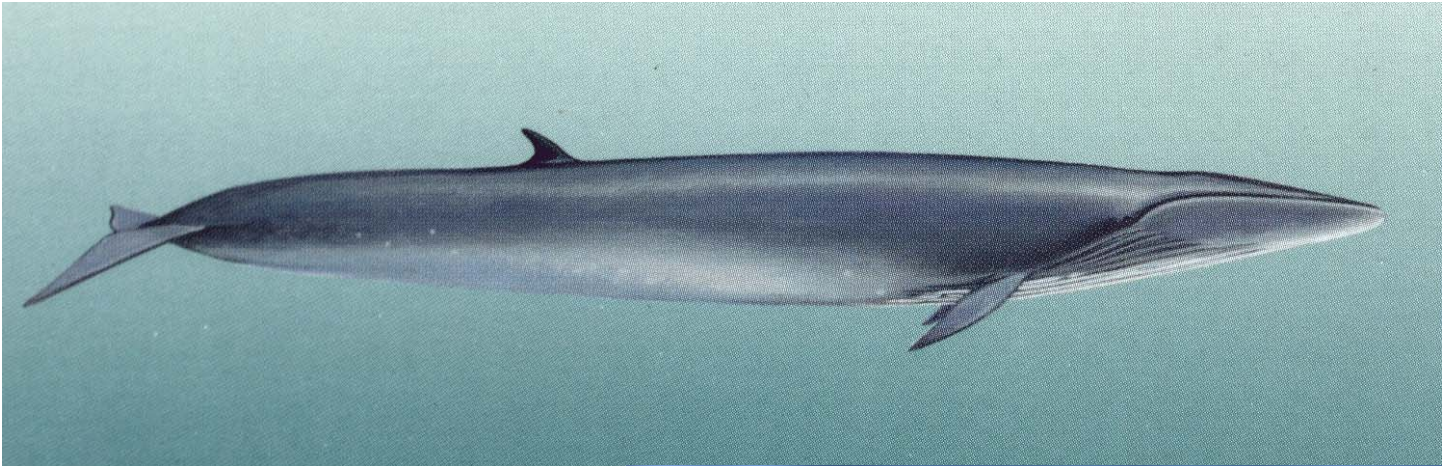


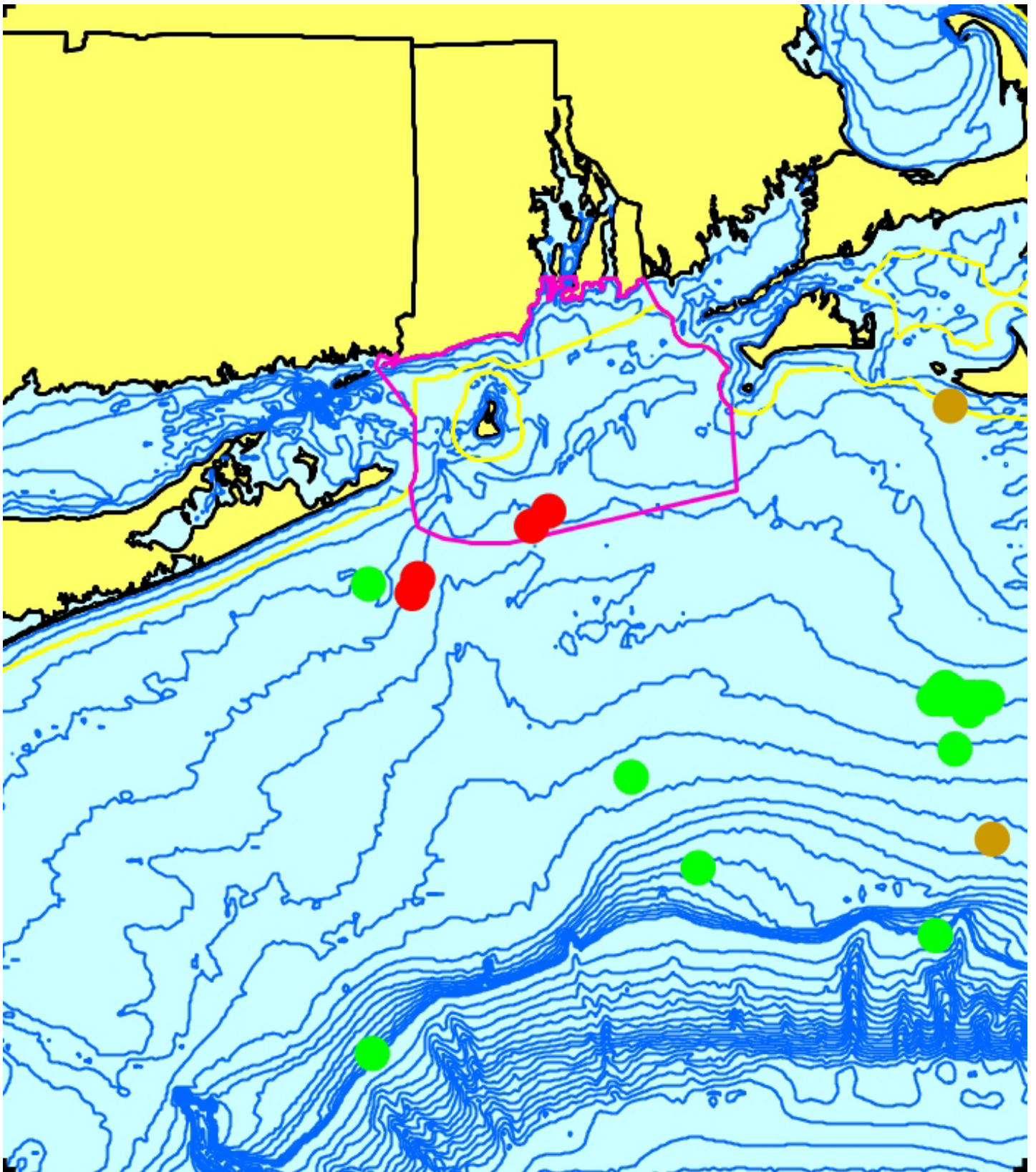
R.I. Harbor Seal Haul-outs



Harbor, Gray, & UnID. Seals
(N = 151, 16, 809)

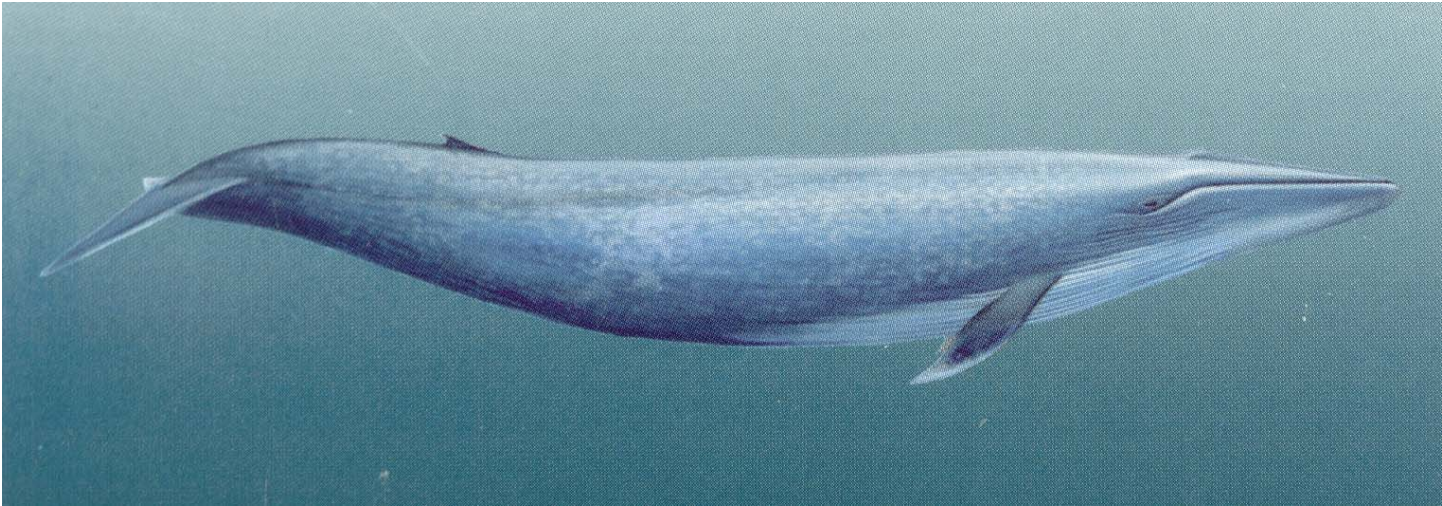
Priority 3

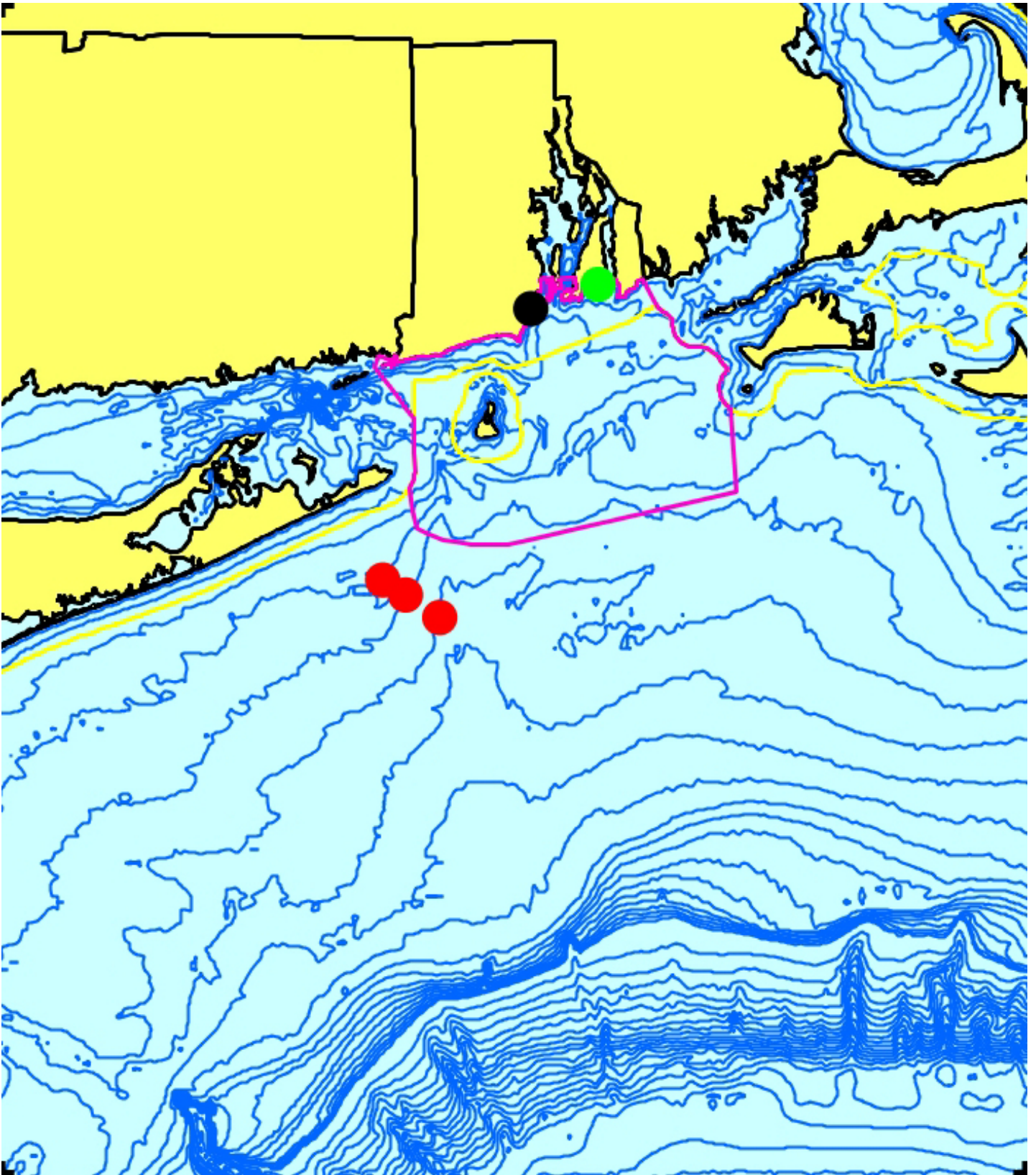




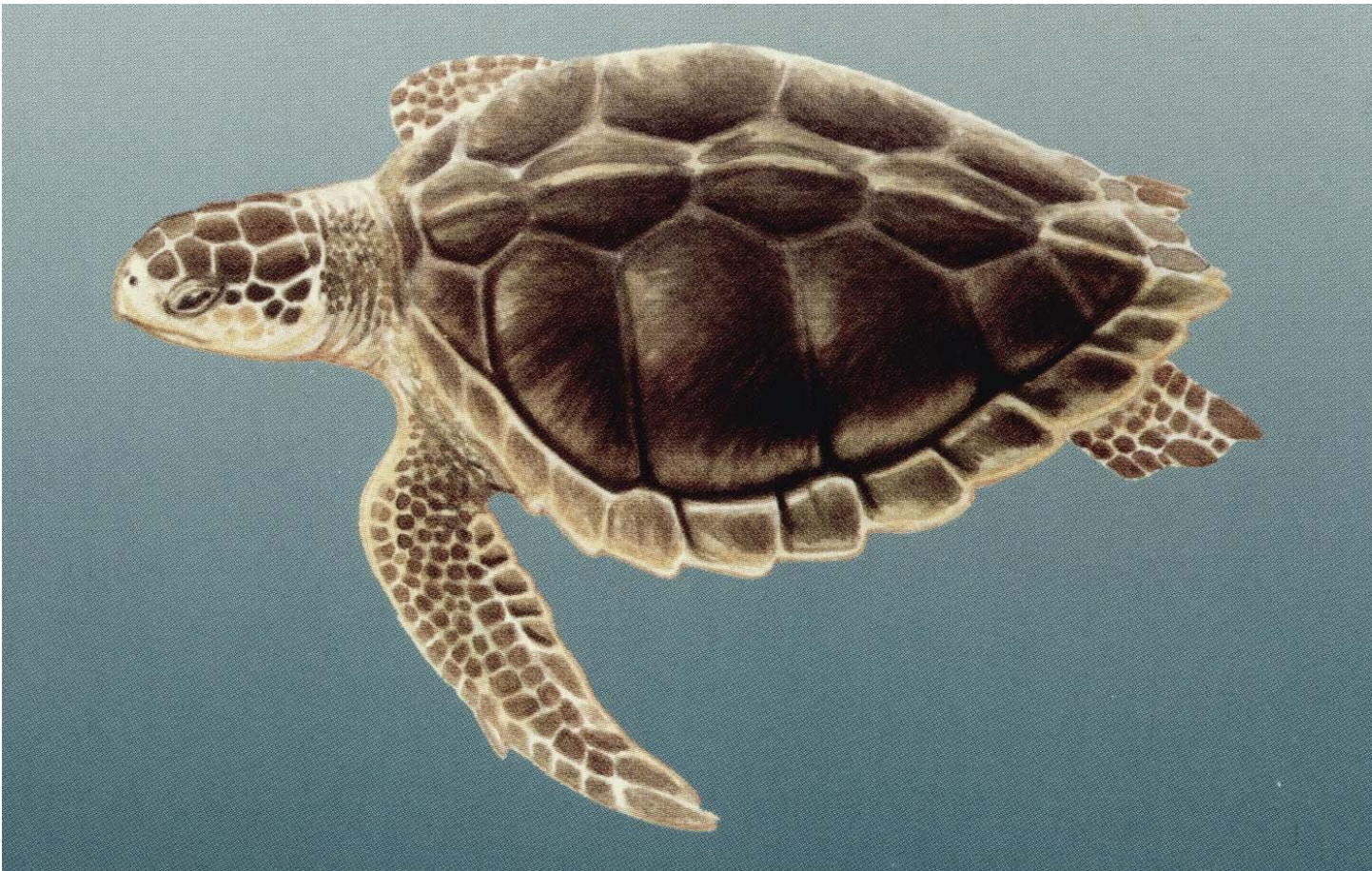
Sei Whale, 1981-2006

Priority 4



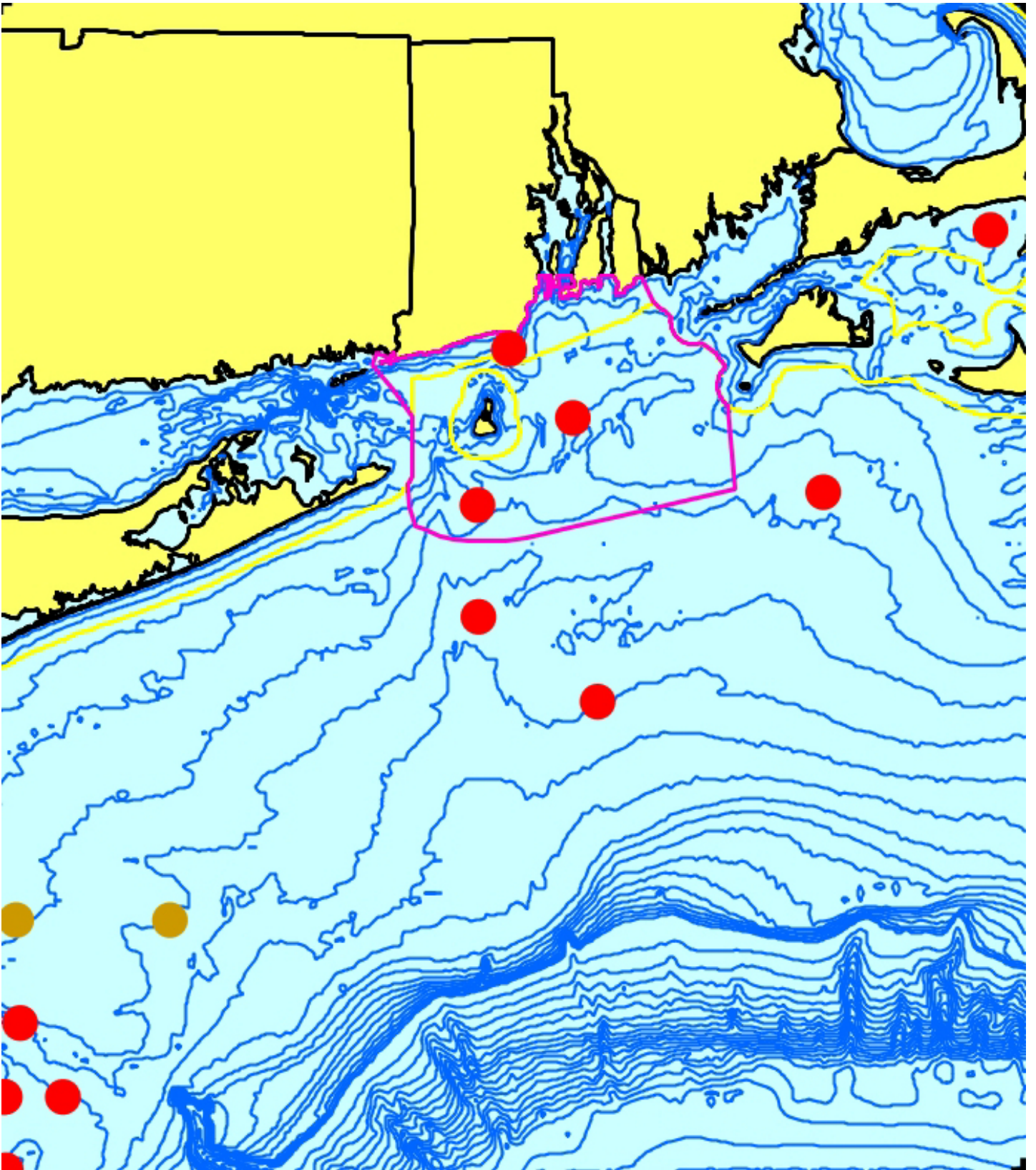


Blue Whale, 1882, 1990, 1998



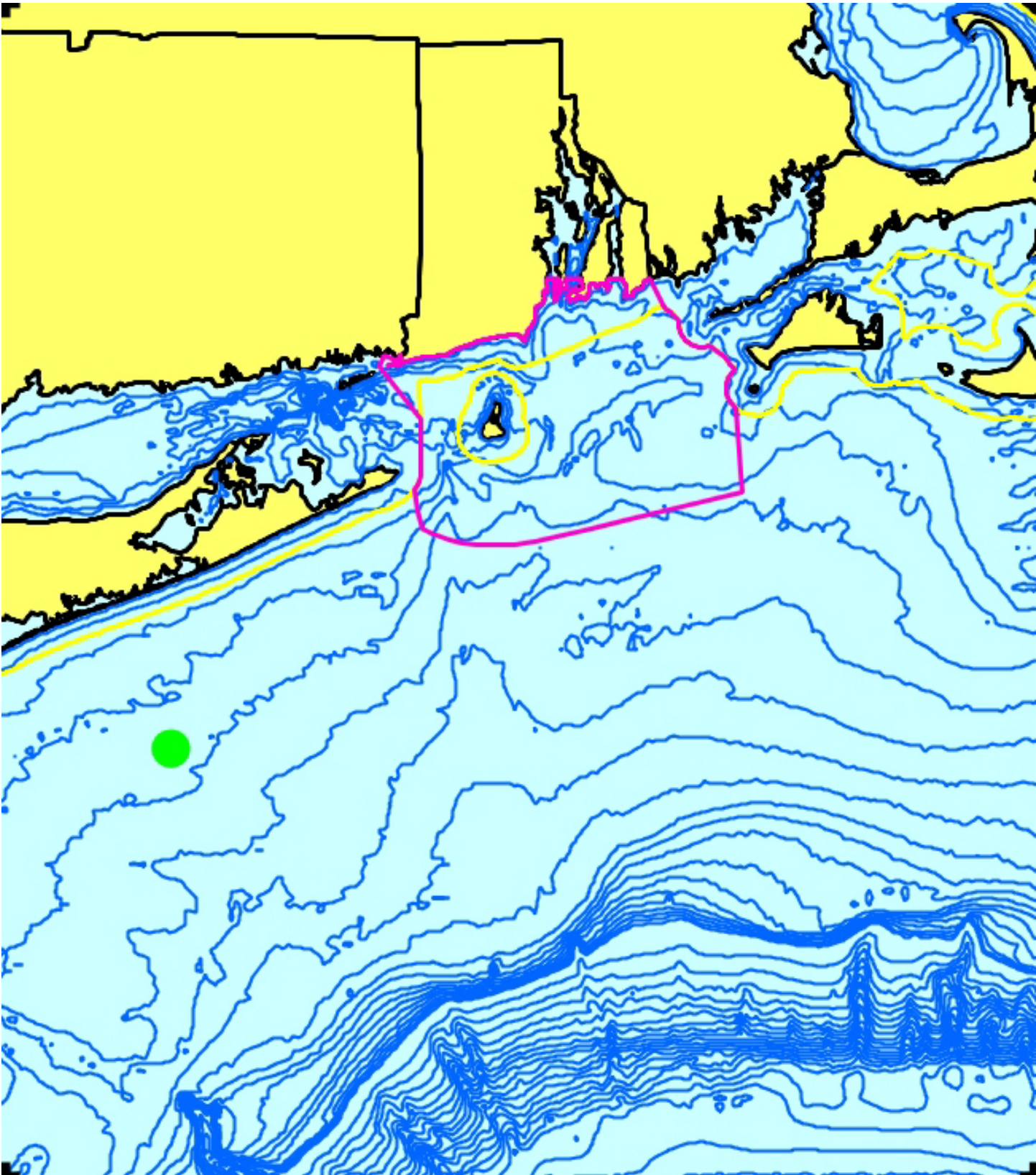
Dr. Joe Flanagan - www.chelonia.org



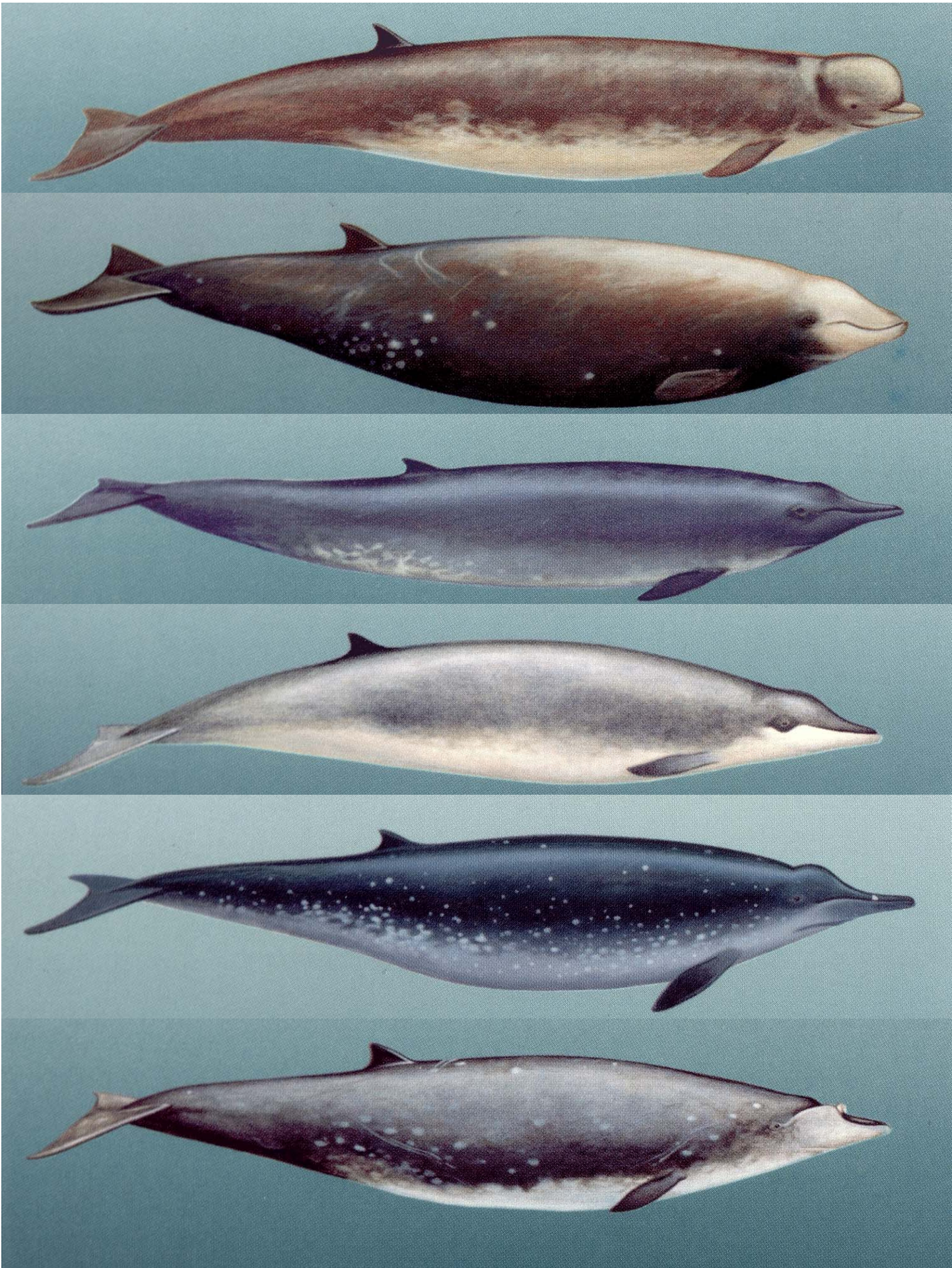


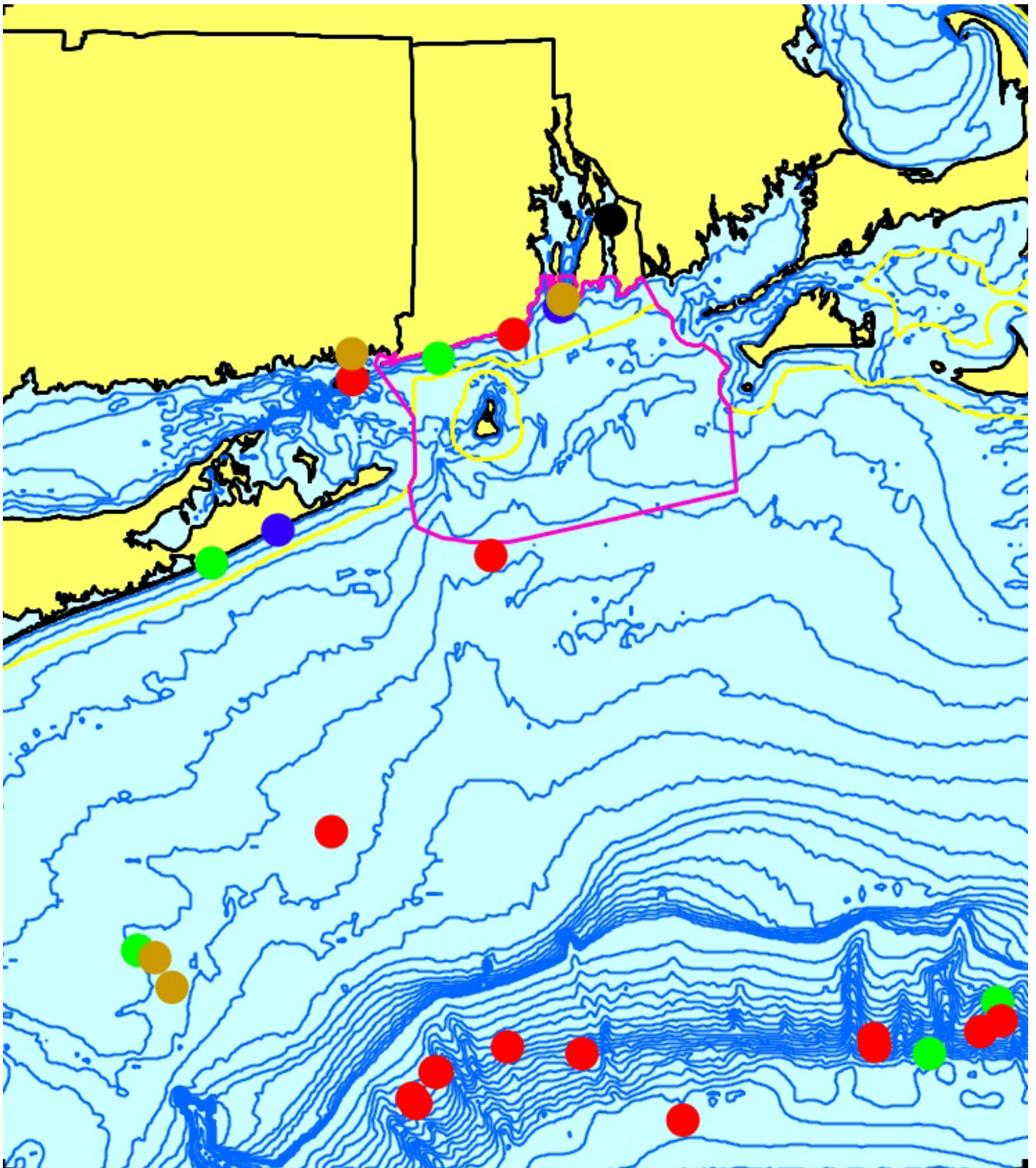
Kemp's Ridley Sea Turtle, 1979-2002





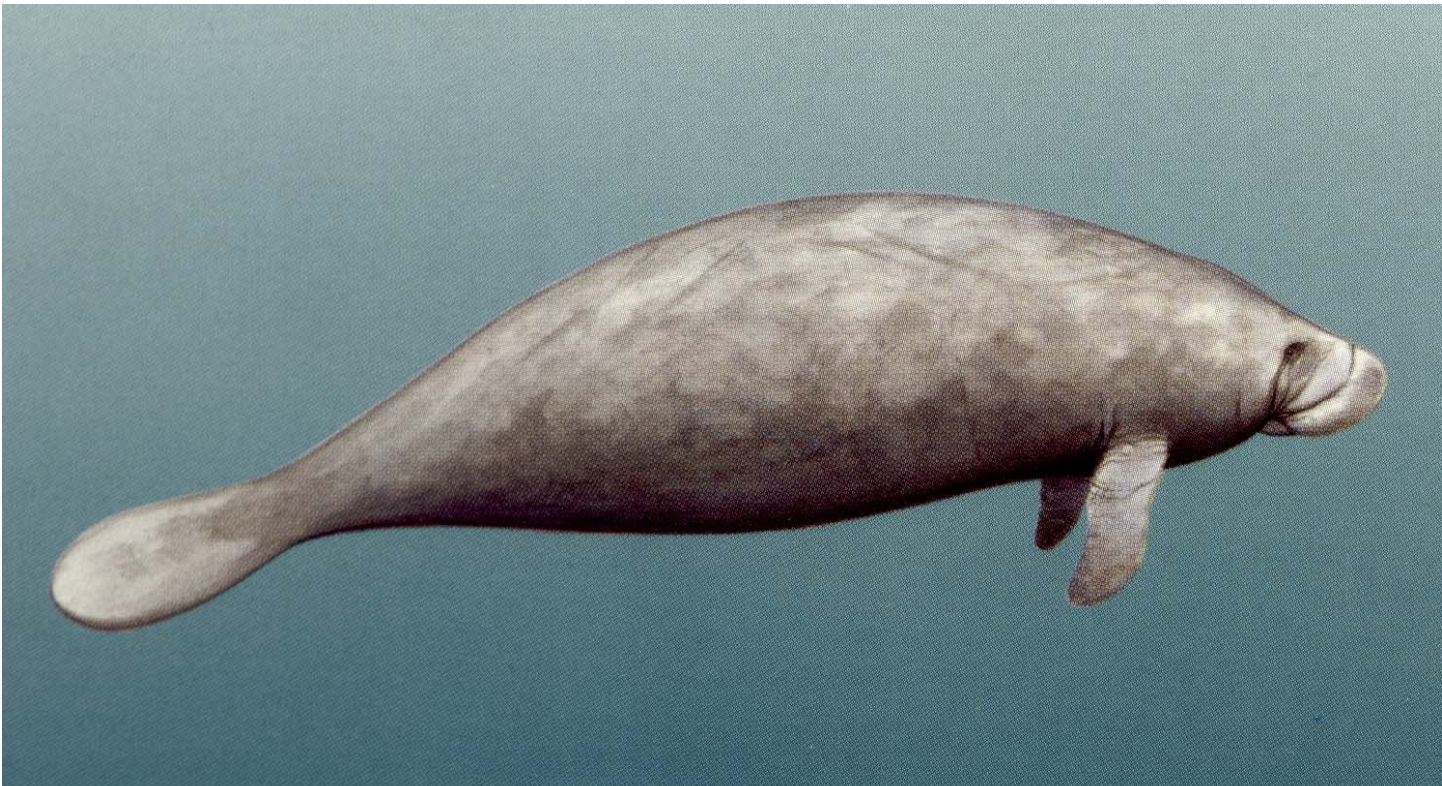
Green Sea Turtle, 2005



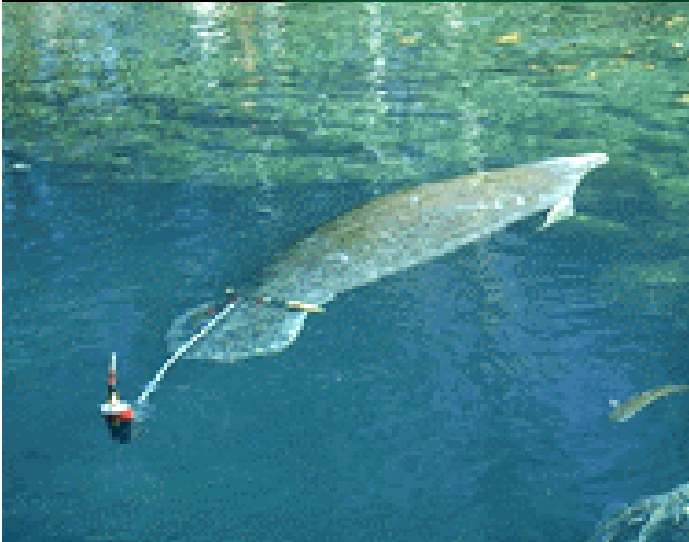


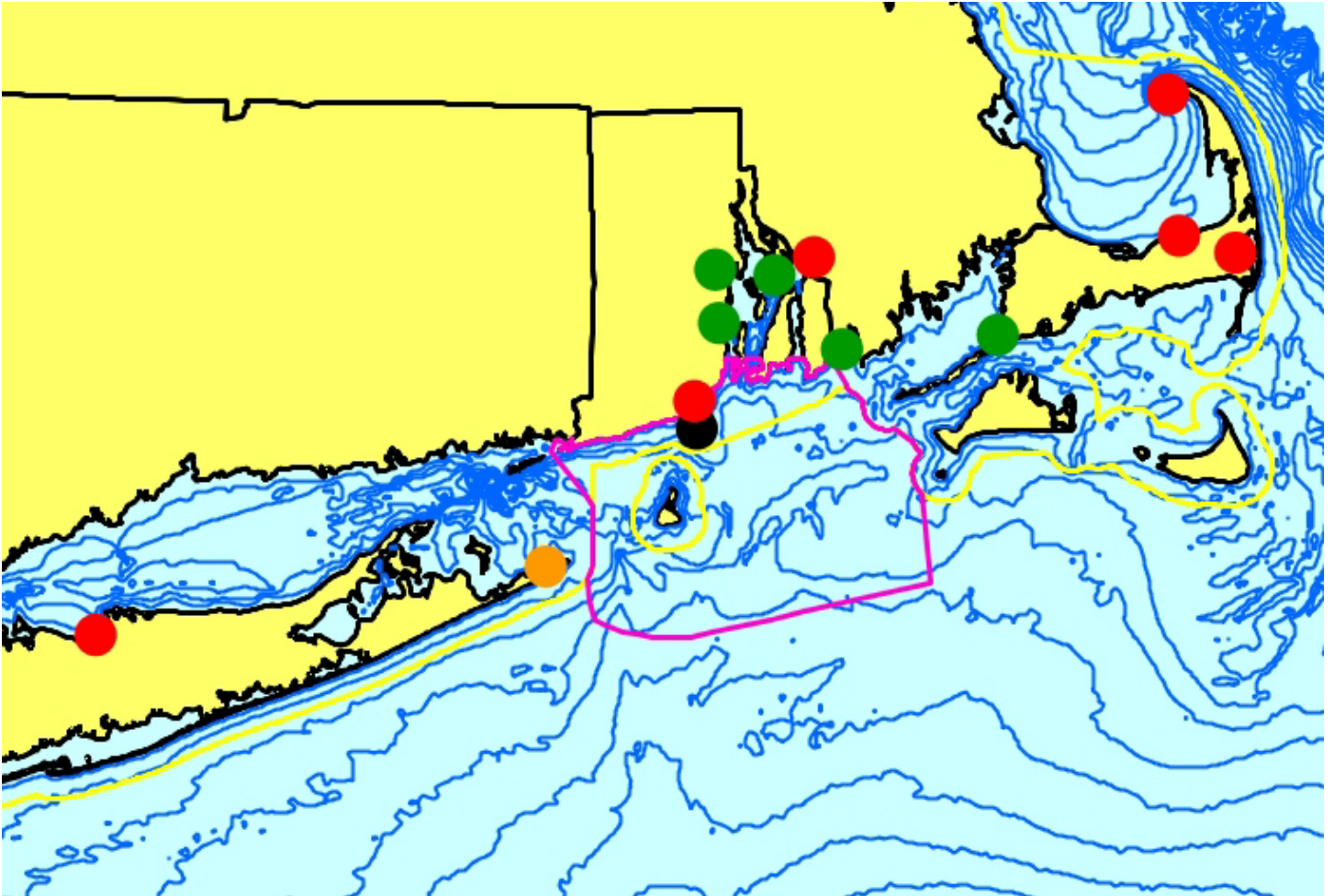
All Beaked Whales, 1867-2005
(exc. N bottlenose = priority 5)

Priority 5



Laurel Canty-Ehrlich





West Indian Manatee,
1996, 1998, 2006, 2008

Issues to consider relative to the SAMP & protected species

- Noise effects – mortality, serious injury, PTS, TTS, disturbance
 - For permanent installations, both construction and operational phases
- Increases in ship traffic – collisions, noise
- Electromagnetic fields
- Other mortality/injury
- Loss of important habitat

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