

Sea Turtle Entanglements in Buoy Lines

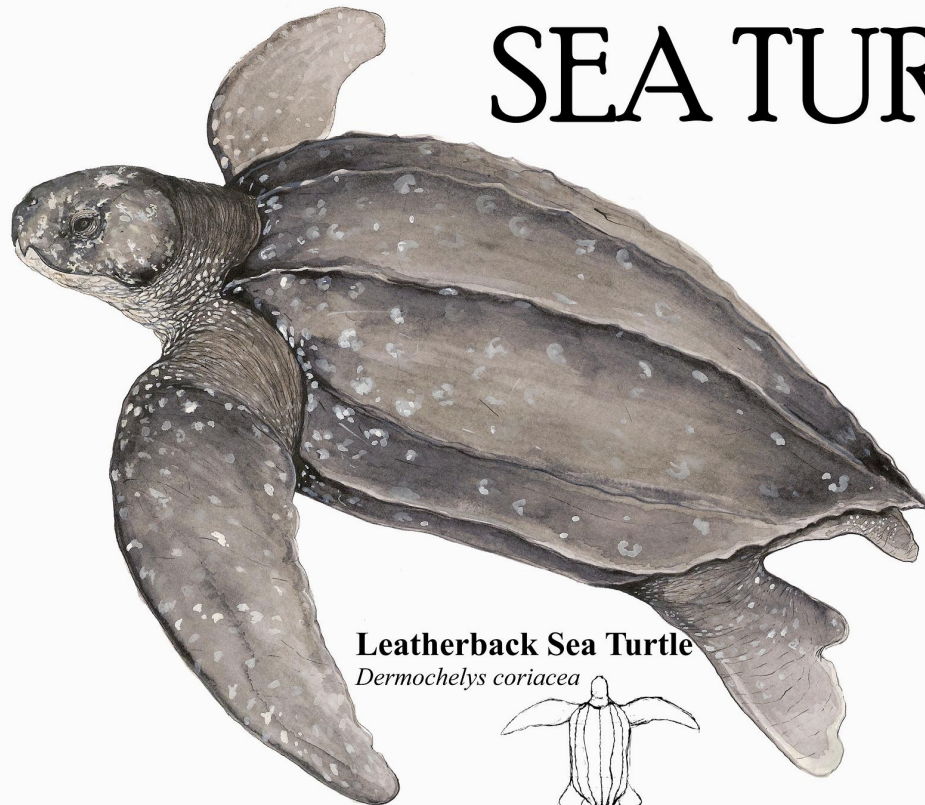


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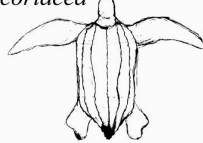
Photo: Andy Myers



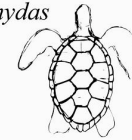
SEA TURTLES



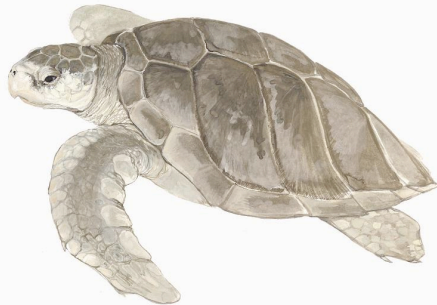
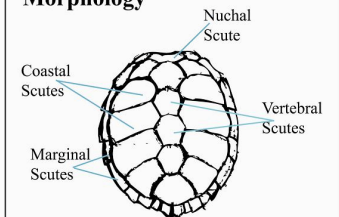
Leatherback Sea Turtle
Dermochelys coriacea



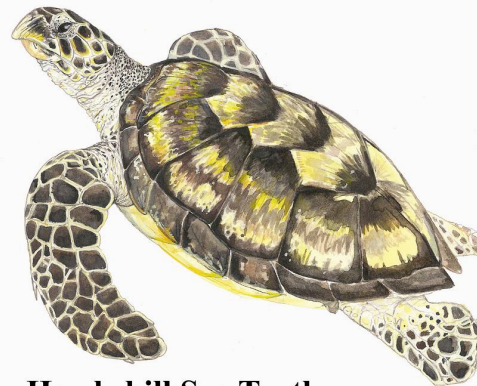
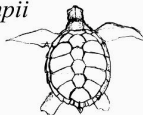
Green Sea Turtle
Chelonia mydas



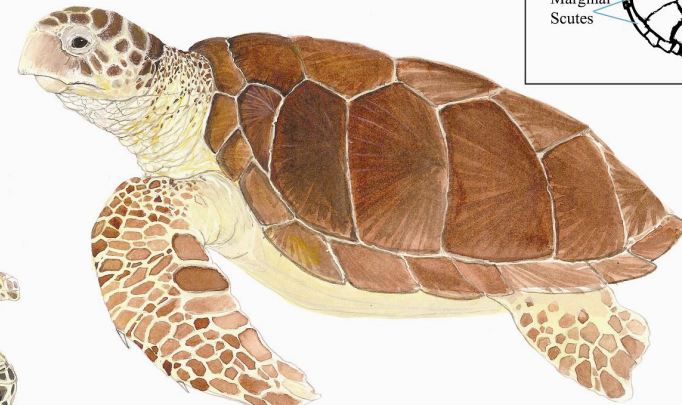
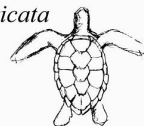
Sea Turtle Carapace Morphology



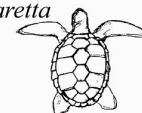
Kemp's Ridley Sea Turtle
Lepidochelys kempii



Hawksbill Sea Turtle
Eretmochelys imbricata



Loggerhead Sea Turtle
Caretta caretta



Leatherback *Dermochelys coriacea*

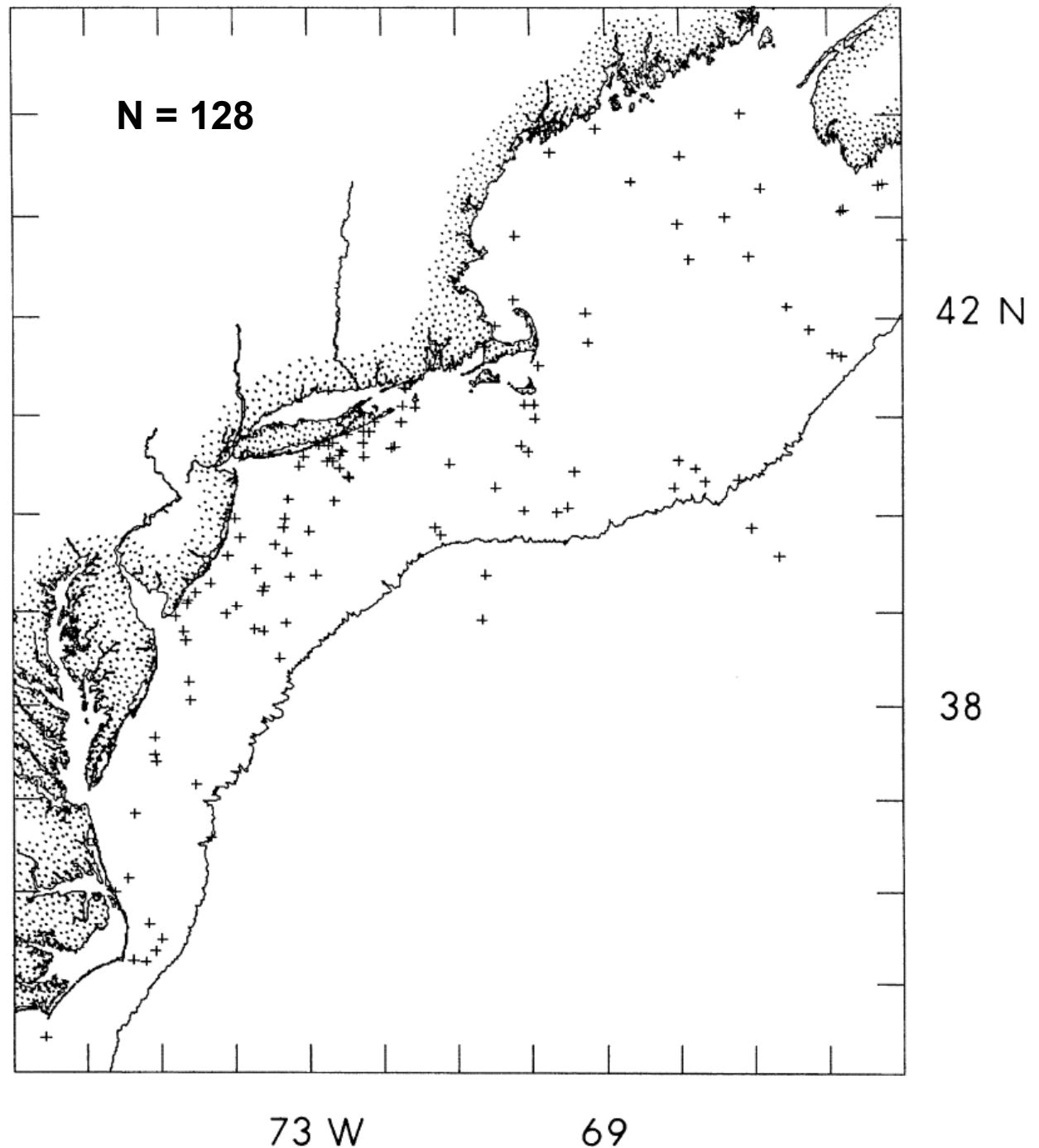
- Specialized gelatinous diet
- Primarily water column feeders
- Heat conserving adaptations
- Mammalian-like bone growth
- Deep diving capability (>1000m)
- NE US: late spring, summer & fall



Leatherback Distribution

Systematic Survey Data: CeTAP 1978-1982

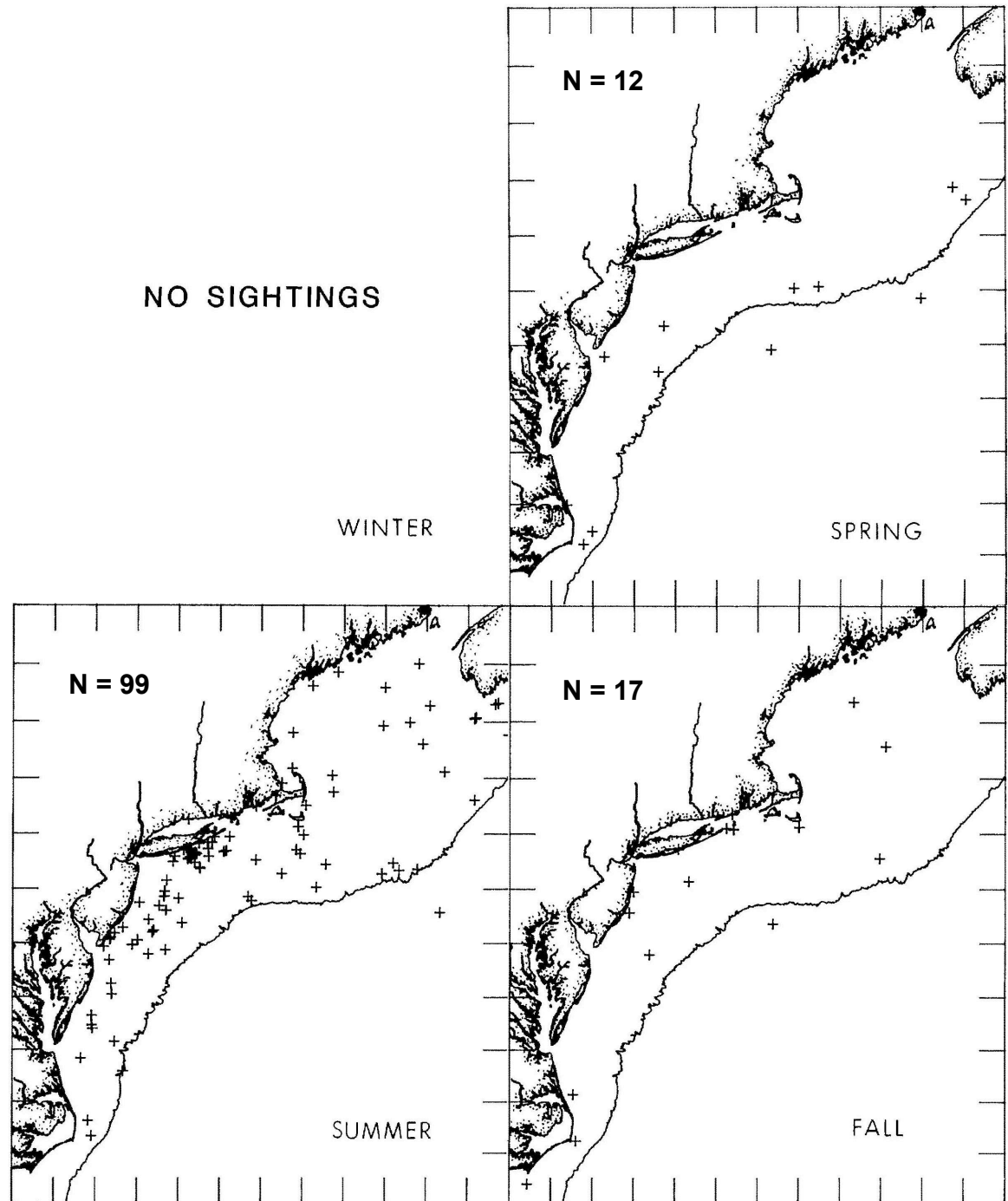
Shoop and Kenney (1992)
Herpetological Monographs 6,
43-67



Leatherback Seasonality

Systematic Survey Data: CeTAP 1978-1982

Shoop and Kenney (1992)
Herpetological Monographs 6,
43-67



Opportunistic Data Sets

- **Strandings**
- **Sightings**
- **Entanglements**



Photo: Kara Dodge



Photo: New England Aquarium



Photo: Wayne Davis

ENTANGLEMENT DATA

All Data Presented is from 2002 – 2007

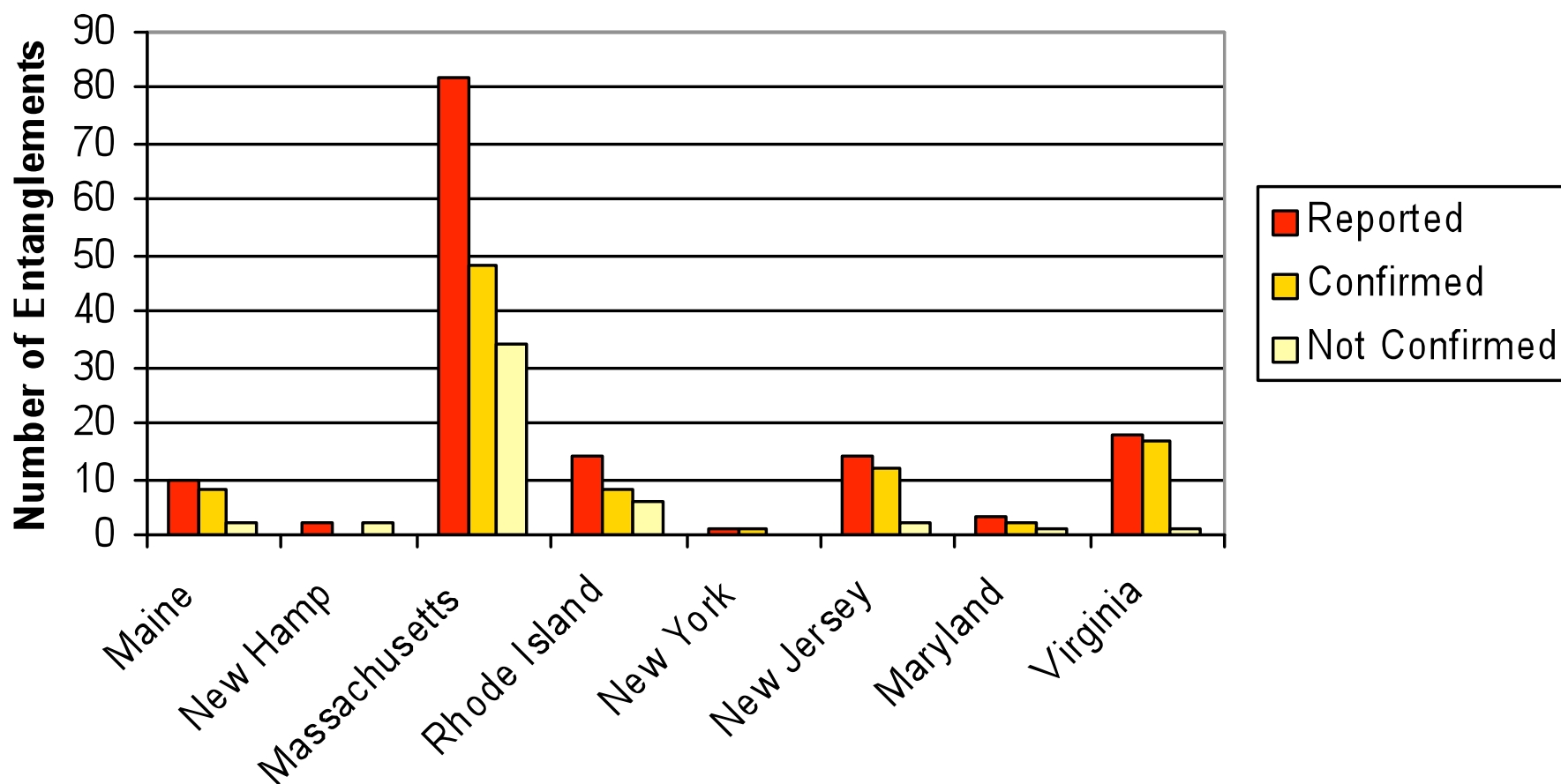
The following entanglement data has been collected by STSSN and STDN organizations and submitted to NMFS.

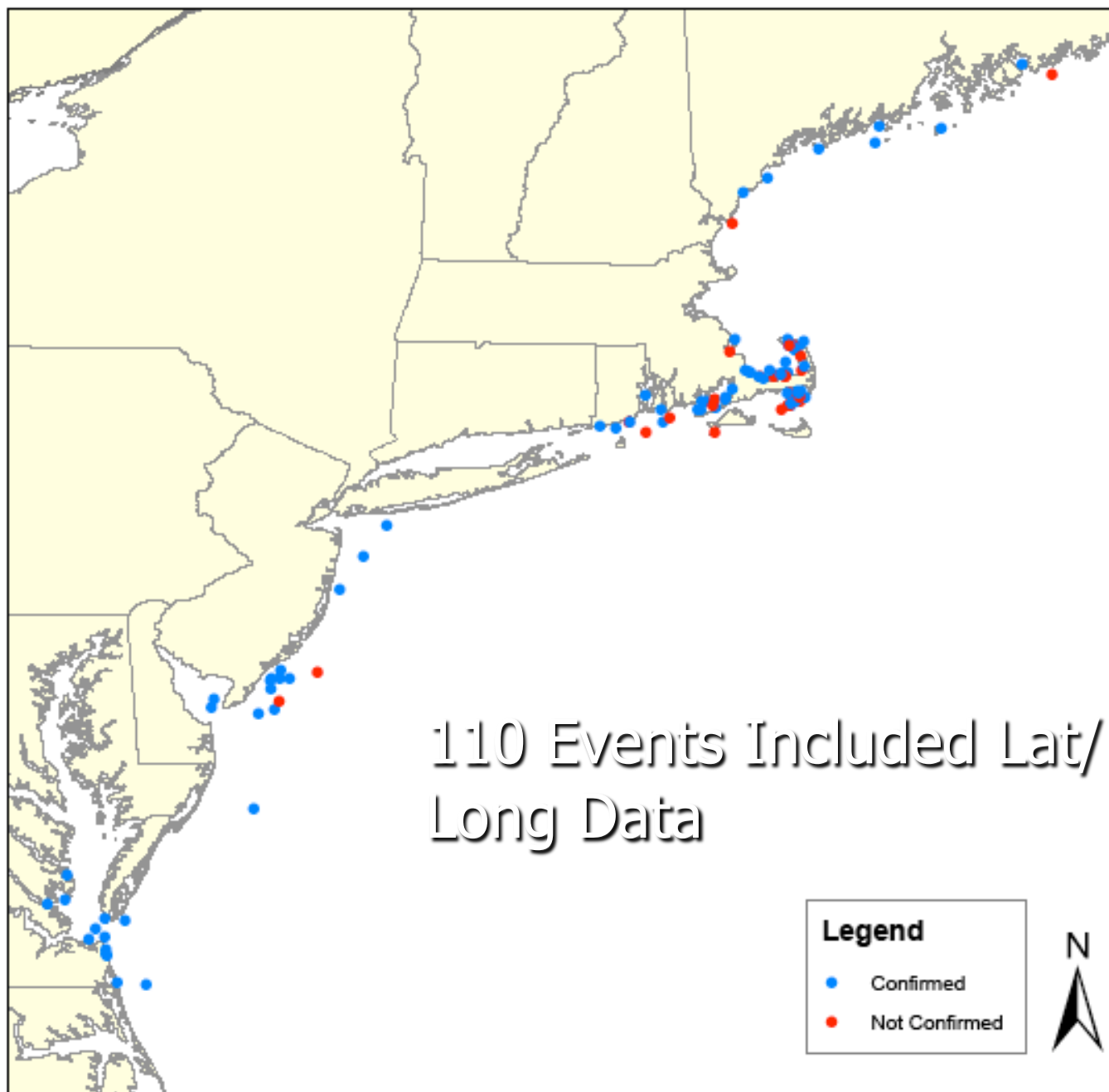
Please do not reproduce any of this data without permission.

144 Reported Line Entanglements

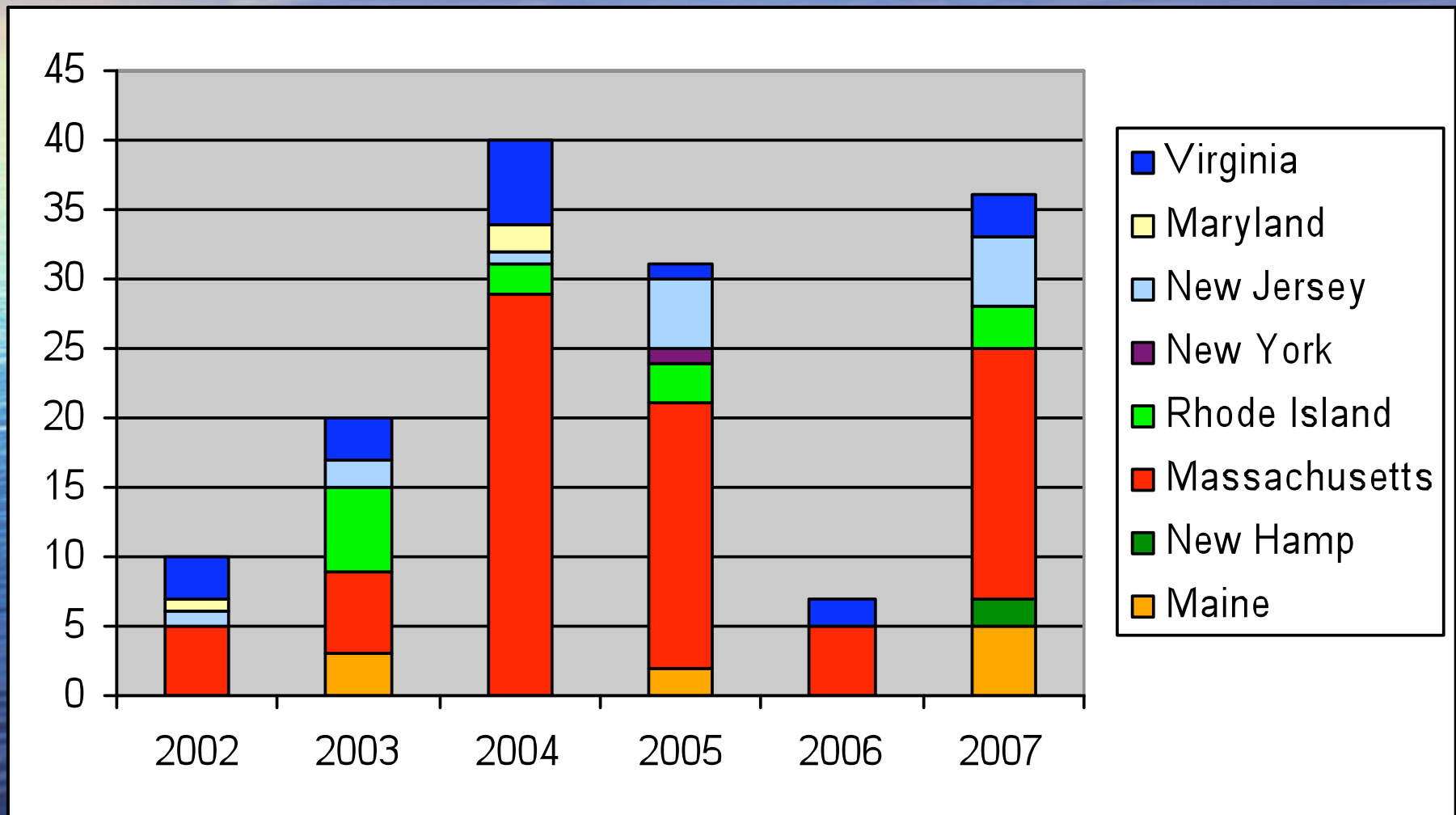
96 Events Confirmed

(Data from 2002-2007)

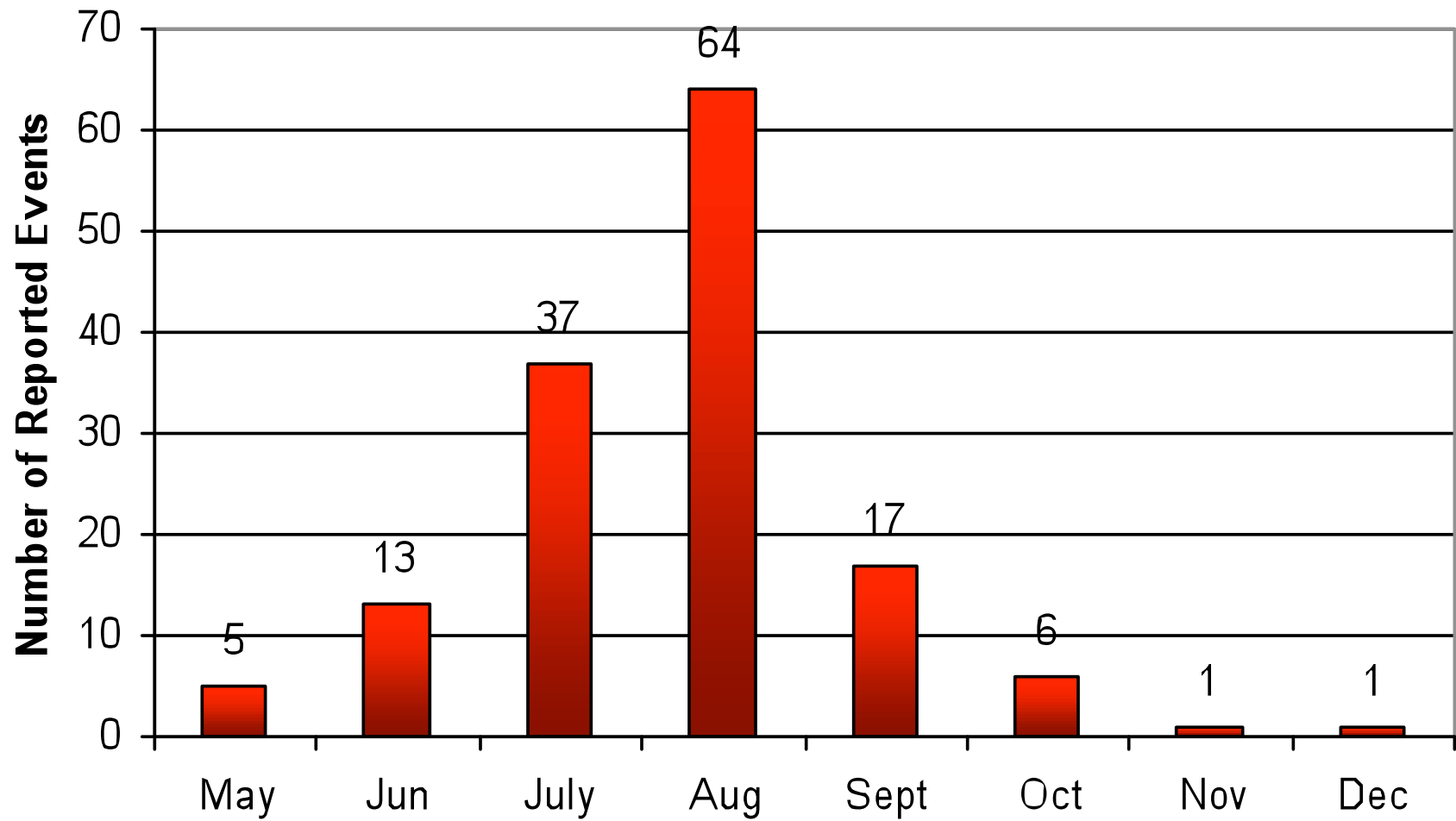




Total Reports by Year for All States



Total Reports by Month for All States and All Years



96 Confirmed Events

Condition: 75 Alive
21 Dead

Species: 87 Leatherback
8 Loggerhead
1 Green

Disposition of Animals

75 Live Sea Turtles

Partially or Fully Disentangled: **72**

Collected for Rehabilitation: **2**

Turtle Shed Gear: **1**

21 Dead Sea Turtles

Floating and/or Anchored: **12**

Stranded on Shore with Gear: **9**

Gear Identified by NMFS & Partners (Of the 96 Confirmed Events)

21 Lobster pot gear

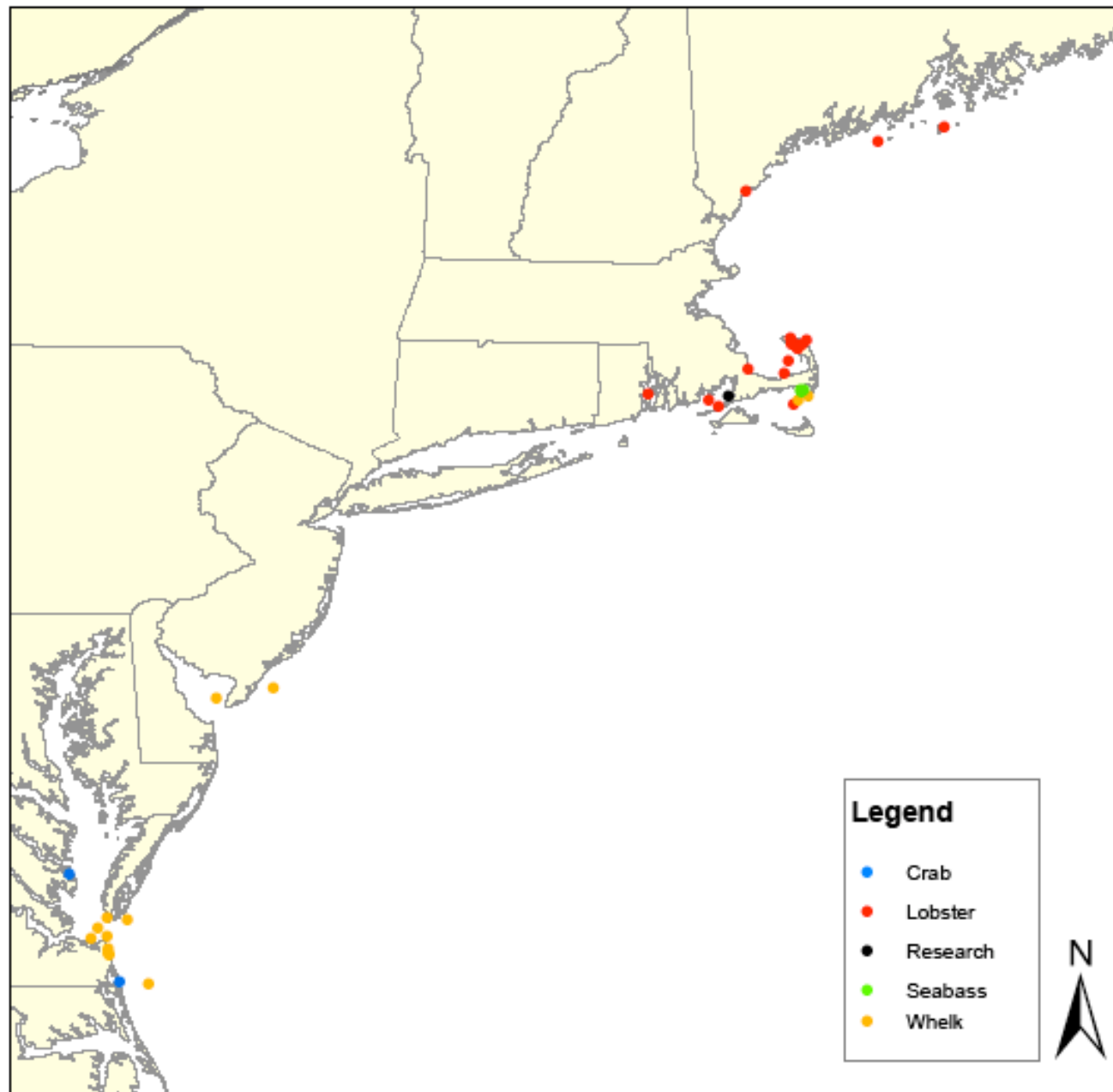
13 Whelk pot gear

2 Crab pot gear

5 Sea Bass pot gear

1 Research pot

Total = 42 events



***Preliminary* 2008 Data**

22 Reports Total (14 Dc & 8 unknown sp.)

- ME – 3 confirmed, 1 unconfirmed
- MA – 7 confirmed, 2 unconfirmed
- RI = 1 confirmed, 2 unconfirmed
- NY = 3 confirmed
- VA = 3 unconfirmed

Parts of Gear = Entanglement Risk

GEAR COLLECTION & DOCUMENTATION



Buoy Line, Surface System Float Line, Bridle*

Parts of Turtle = Entanglement Risk

Front flippers

Neck

Pygal



Photo: Provincetown Center for Coastal Studies



Photo: Andy Myers

Types of Entanglement

Single wrap – one or more body parts

Multiple wraps – one or more body parts

Single traps, trawls, gear impingement



Photo: Don Lewis

Disentanglement

- Less risky* than whales
- Good chance of removing all gear
- Entanglement data
- Gear shedding unlikely



Disentanglement

- Stop-gap measure
- Entangle again
- Pressure necrosis injuries – “minor” entanglements may be misleading



Photos: Sue Barco / VAAquarium



Entanglement Risk Reduction

Gear Modifications

- Weak links etc. (tension/force)
- Sinking ground line
- Glow rope*
- Stiff rope
- Bottom release devices
- Biodegradable materials
- Elimination of surface system line



Photo: ME DMR

Entanglement Risk Reduction

Management Measures

- Seasonal closures in key areas?
- Gear-type restrictions?
 - effort reduction (e.g. ban on singles in high use areas)

Entanglement Risk Reduction

Outreach to Fishing Community

- Cooperative at-sea research on sea turtles
- Gear modification R & D



Photo: Kara Dodge

Entanglement Risk Reduction

Outstanding Questions

- Mechanism for entanglement unknown
- Turtle behavior when encountering gear
- Gear densities in shelf waters
- Rate of sea turtle entanglement (unreported/undetected)
- Population-level impact of line entanglements

Entanglement Risk Reduction

Current & Future Research

- Updated seasonal sea turtle distribution & abundance for northeast shelf!
- Sea turtle behavior studies (satellite and archival tagging) = high use areas, environmental correlations, dive behavior
- Prey dynamics
- Predictive habitat models

Collaborative Research

- Baseline health assessment (NEAq)
- Sea turtle entanglements (PCCS)
- 3D movements during inter-nesting interval, St. Croix, USVI (Univ. of Wales Swansea and WIMARCS)
- Gelatinous zooplankton surveys (WHOI)
- South Atlantic Bight tagging (Georgia DNR)
- Thermal and energetics modeling (UNC Wilmington)
- Future: 3D movements and oceanographic sampling in New England forage grounds, MA (MA DMF, Univ. of Wales Swansea, and WHOI)

Support and Funding

- UNH Marine Program Fellowship (KLD)
- Large Pelagics Research Center
- NOAA Fisheries NERO & NEFSC
- National Fish & Wildlife Foundation
- Provincetown Center for Coastal Studies
- New England Aquarium
- Cape Cod Commercial Hook Fishermens Association
- Woods Hole Oceanographic Institution
- MA Audubon Wellfleet Bay Wildlife Sanctuary
- MA Division of Marine Fisheries & Marine Environmental Police
- Pura Vida, Inc.
- F/V Sea Holly
- F/V Rolling Stone
- F/V Sea Bag
- M.F. Dodge Carpentry
- 1-888-SEATURT (Karen Dourdeville)