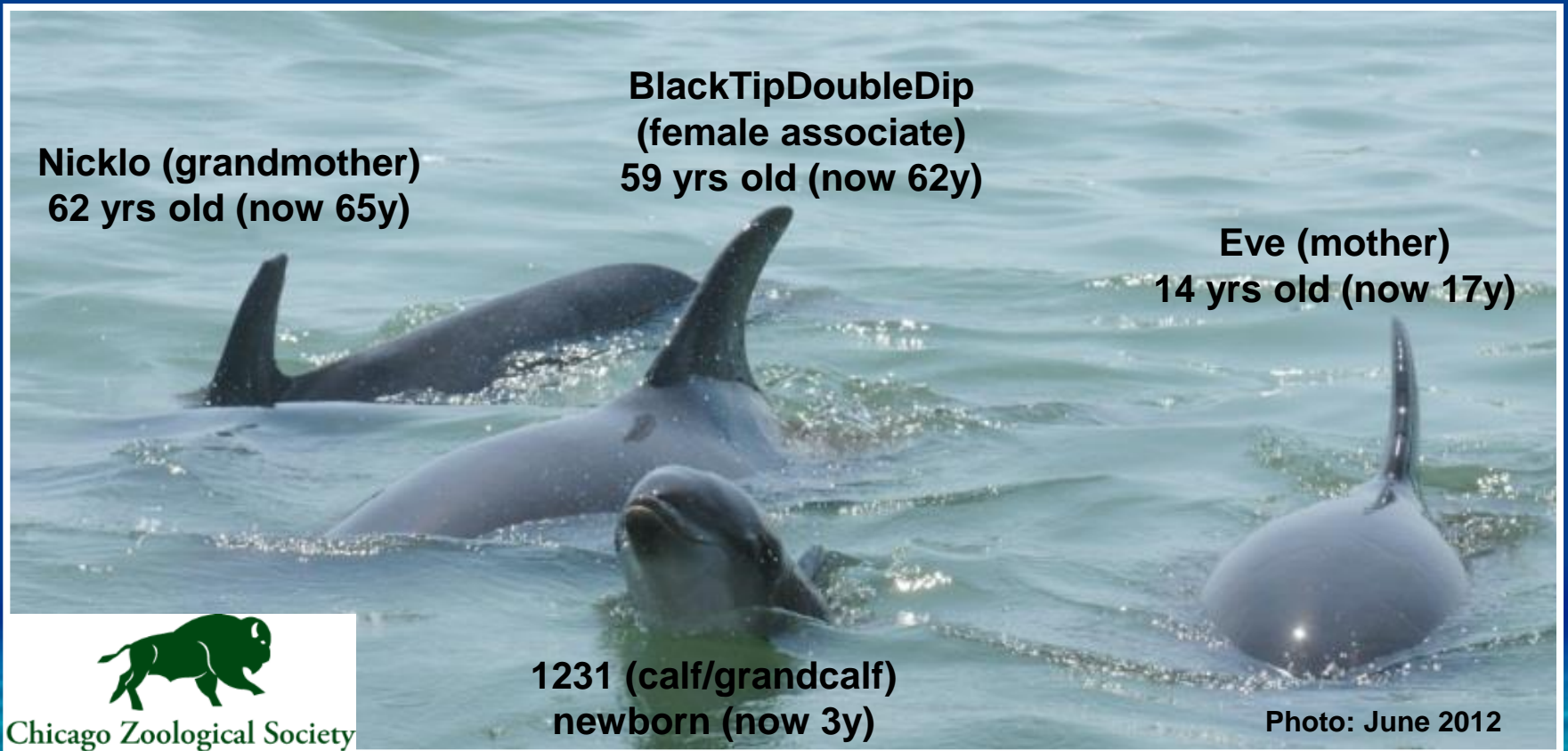


Bottlenose Dolphin Research on Florida's West Coast: 4+ Decades of Research, 5 Generations of Dolphins, and 3 Generations of Scientists

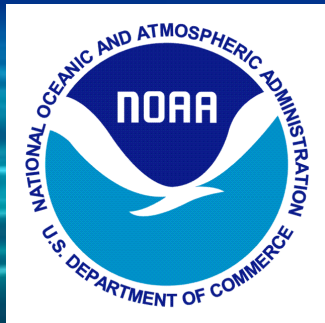


Randall Wells, and the staff, students, and collaborators of the Chicago Zoological Society's Sarasota Dolphin Research Program

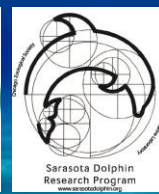
Today's Presentation:



Made possible by:



- Sarasota Dolphin Research Program
 - History – co-evolution of issues, topics, tools
 - Current integrated program components
 - Photo-ID, population monitoring
 - Capture-release/health assessment
 - Biopsy dart sampling
 - Focal animal behavioral follows
 - Tagging/tracking (incl. post-release)
 - Ecological Perspective
 - Dolphin prey fish sampling
 - HAB monitoring
 - Collaboration with stranding network
 - Training (established scientists, students)
 - Education and outreach
 - Research collaborations (reference site)
- Recommendations for new Gulf dolphin programs
- Bridging the Gulf – GoMDIS (see poster)



Multi-Generational, Multi-Decadal, Year-Round Residency

Current community of ~160 dolphins spans up to five generations

96% of dolphins >15 yrs old seen for 15-40 yrs



FB43: Great-great-grandmother



FB37: Great-grandmother



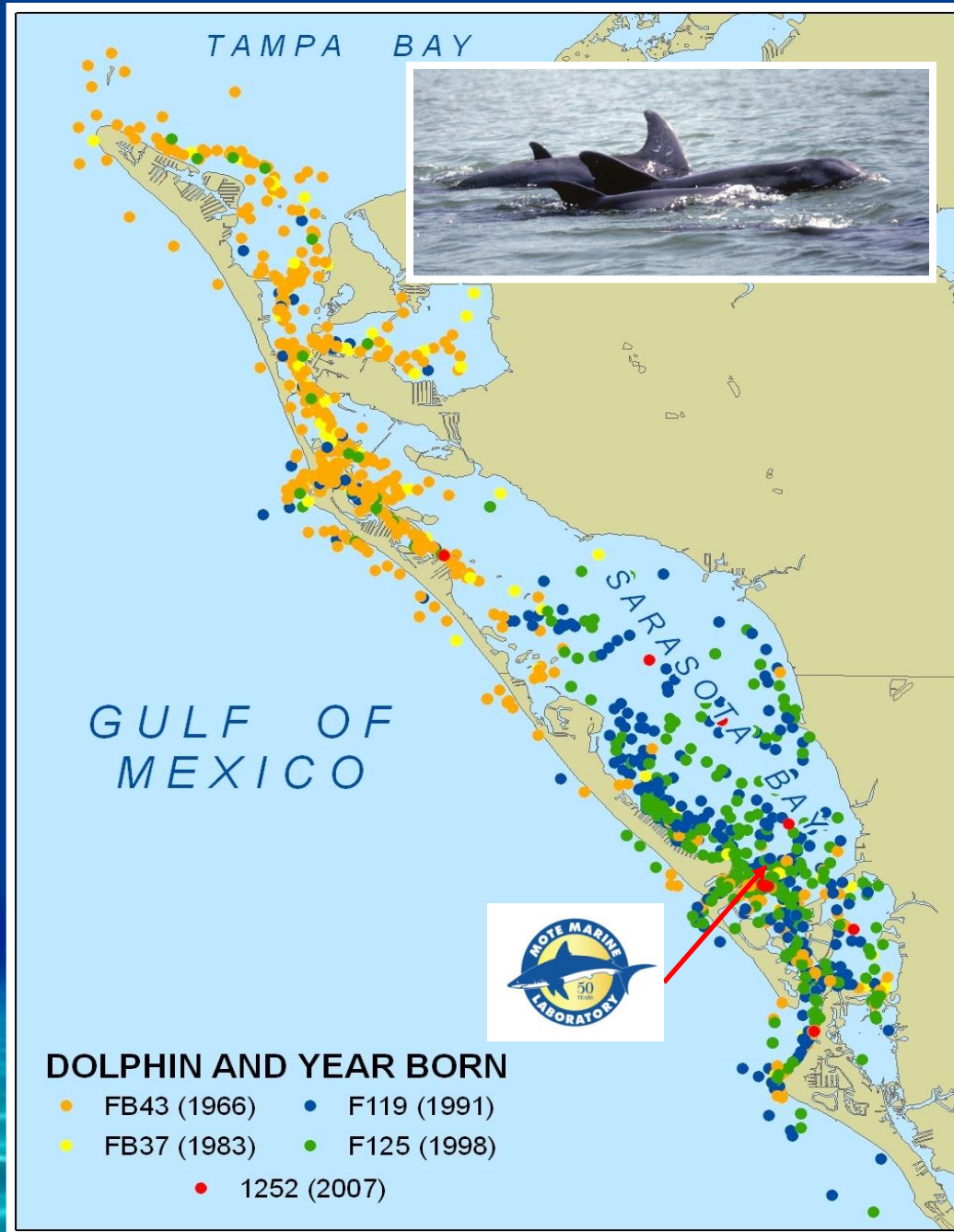
F119: Grandmother



F125: Mother



1252: 2007 Calf



Co-evolution of Scientific Questions and Methods

Findings of Long-term Residency Set the Stage for Unique Longitudinal Research

The ability to repeatedly and predictably find identifiable animals of known age, sex, and relationships in shallow, sheltered waters has provided opportunities to study:

- 1. Movements, ranging patterns, habitat use, population definition;**
- 2. Life history, genetics, and factors affecting survivorship and reproductive success;**
- 3. Foraging ecology;**
- 4. Behavior, social structure and communication;**
- 5. Health, body condition, environmental contaminants;**
- 6. Human interactions;**
- 7. Technology development and testing.**

This situation also facilitates transferring technology and expertise to other populations, species, situations around the world.

Photo-Identification: Primary Tool Since 1977

Nicks and notches serve as “fingerprints”



Dr. Strangemocha: >300 sightings since 1975

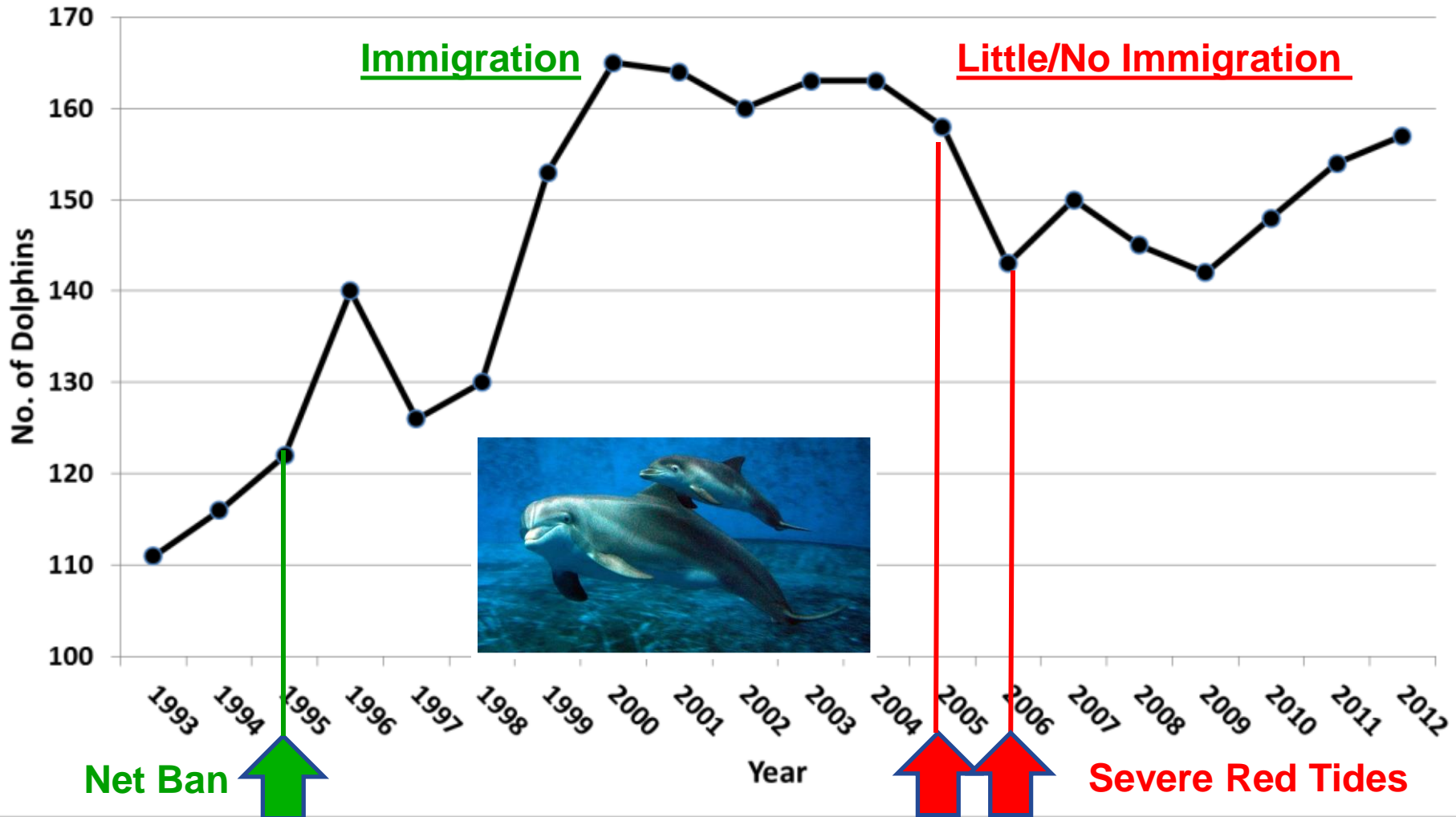


Sighting Database:

- >45,250 sightings of dolphin groups
- >520,000 archived photos
- >133,800 individual identifications
- >5,440 identifiable individuals
- 96% of dolphins in Sarasota Bay are identifiable
- >1,480 sightings of an individual
- >44 years of sighting records for individuals

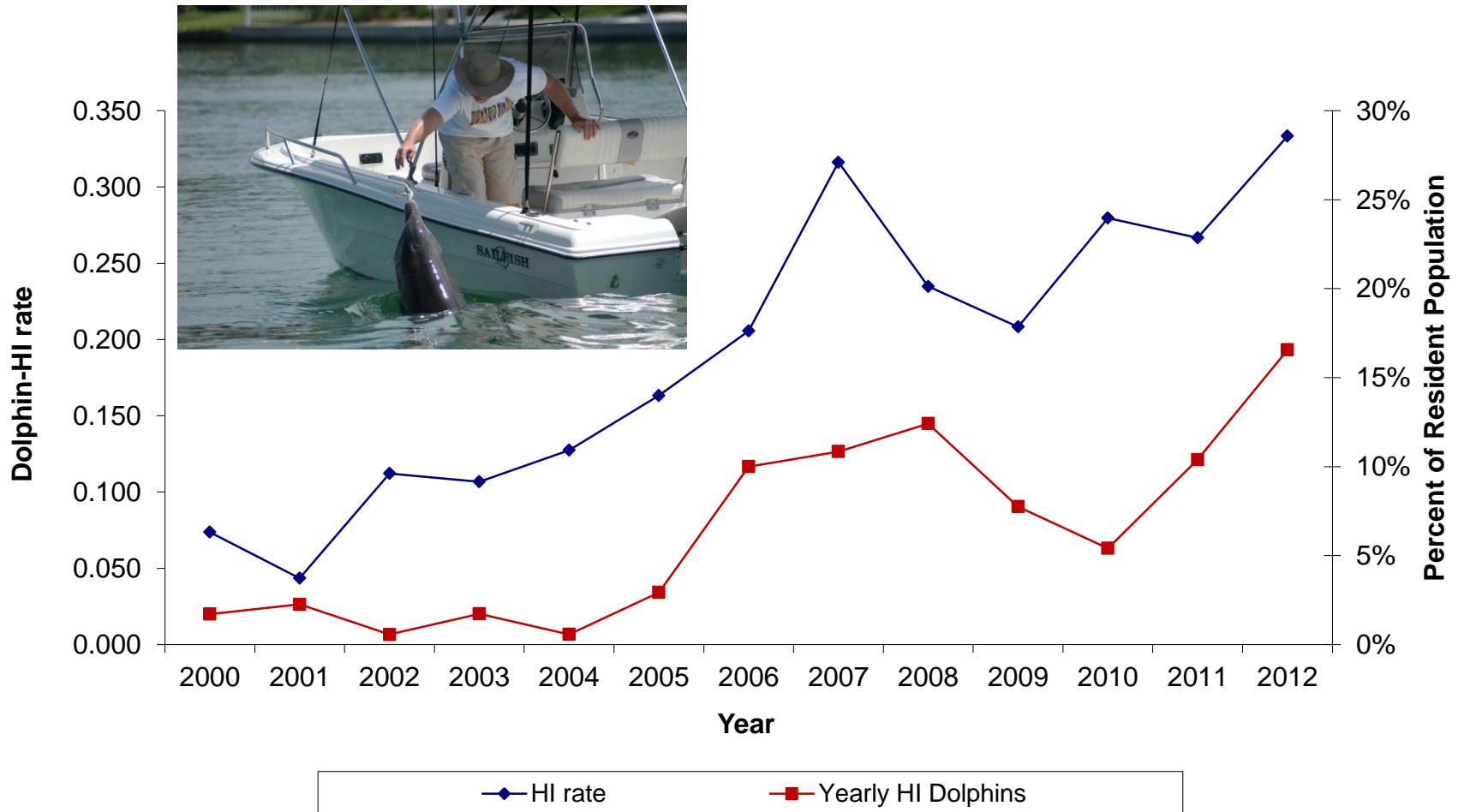
Monitoring Resident Dolphin Abundance, Reproductive Success in Sarasota Bay

Recognizable dolphins using Bay on a regular basis (96% of those seen)

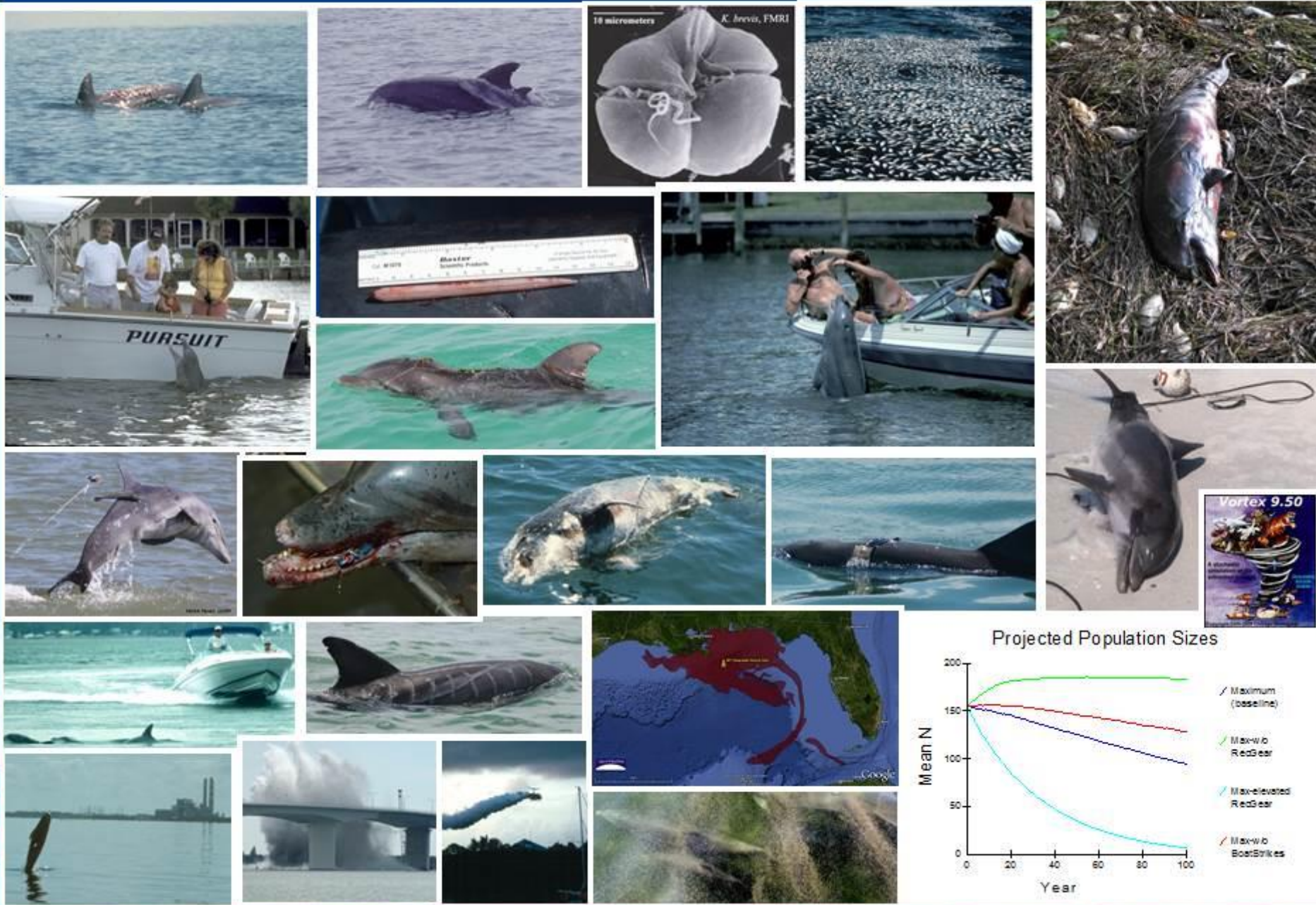


Monitoring Occurrence of Human Interactions (HI) Continuing and Increasing Concern

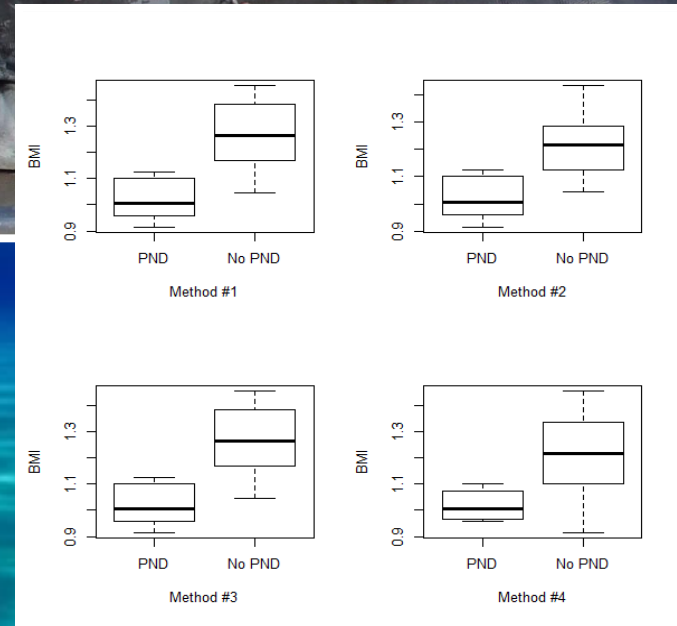
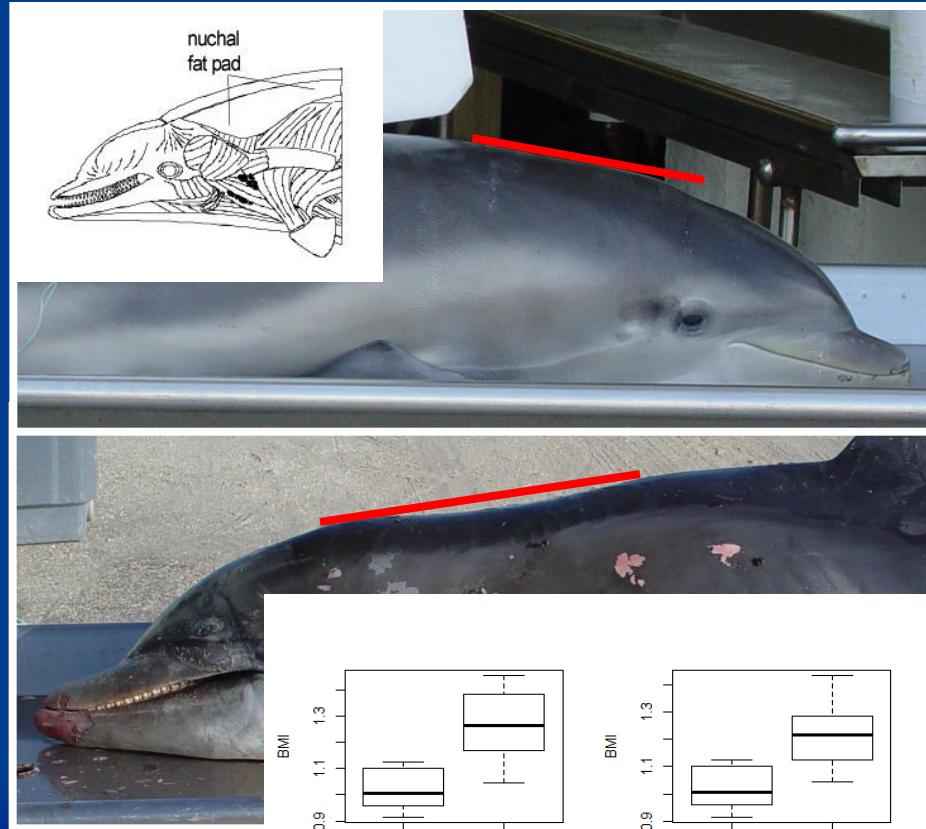
Yearly standardized HI rate and Yearly HI dolphins 2000-2012



Sarasota's Dolphins Face an Array of Concurrent and Cumulative Threats



Remote Body Condition Measures (Lateral PND Photos and Unmanned Aerial Vehicle Images)



Health Assessment Projects

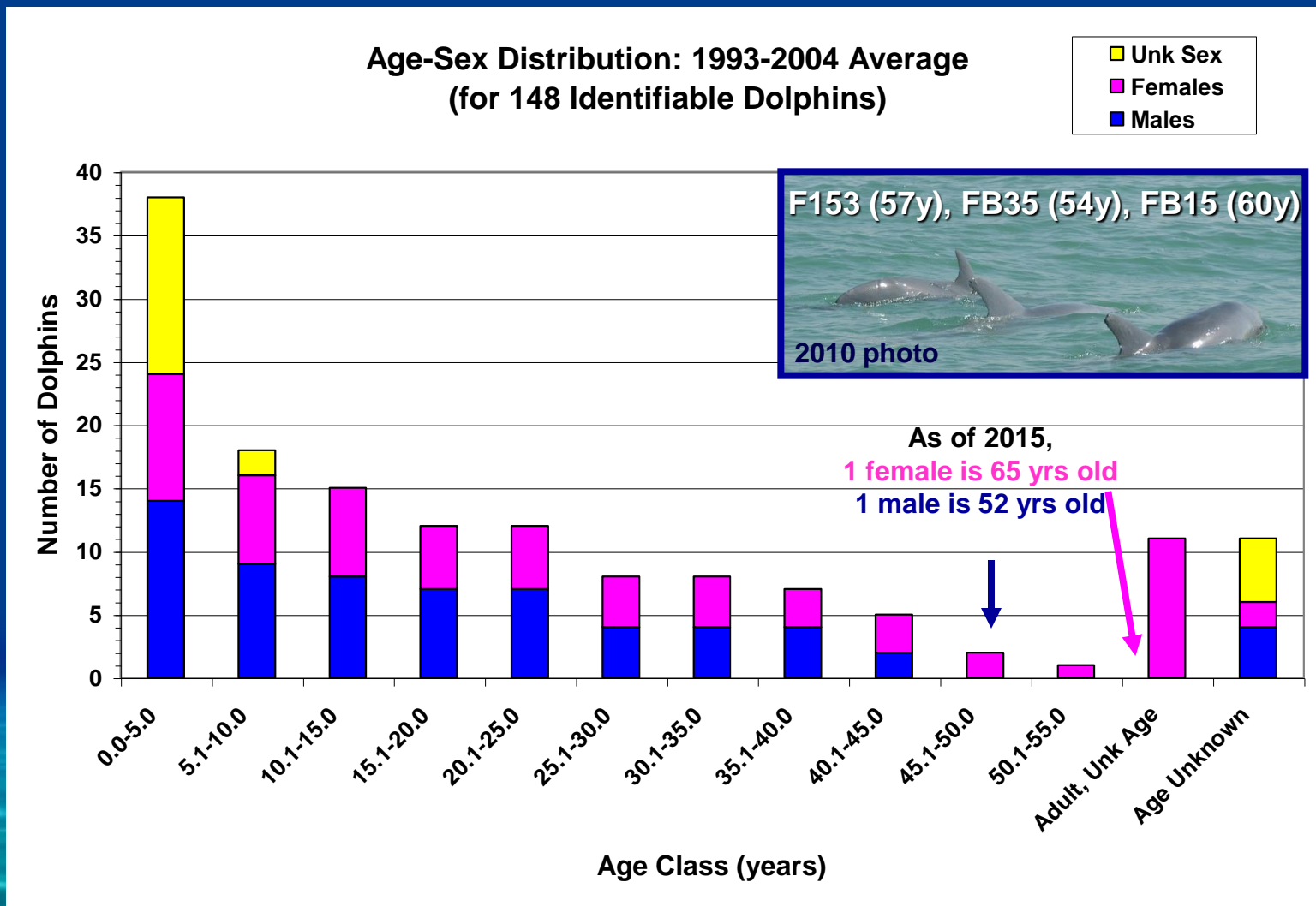
Veterinary examination, sampling, initiated in 1988



- >225 dolphins examined, sampled
- >700 sets of samples for: blood chemistry, hematology, endocrinology; urinalysis; serology; biotoxins, microbiology; trace elements and organic contaminants
- >700 sets of measurements of weight, blubber depth, and morphometrics
- Hearing tests
- Breath analyses
- Ultrasound examinations
- Age determination
- Genetics

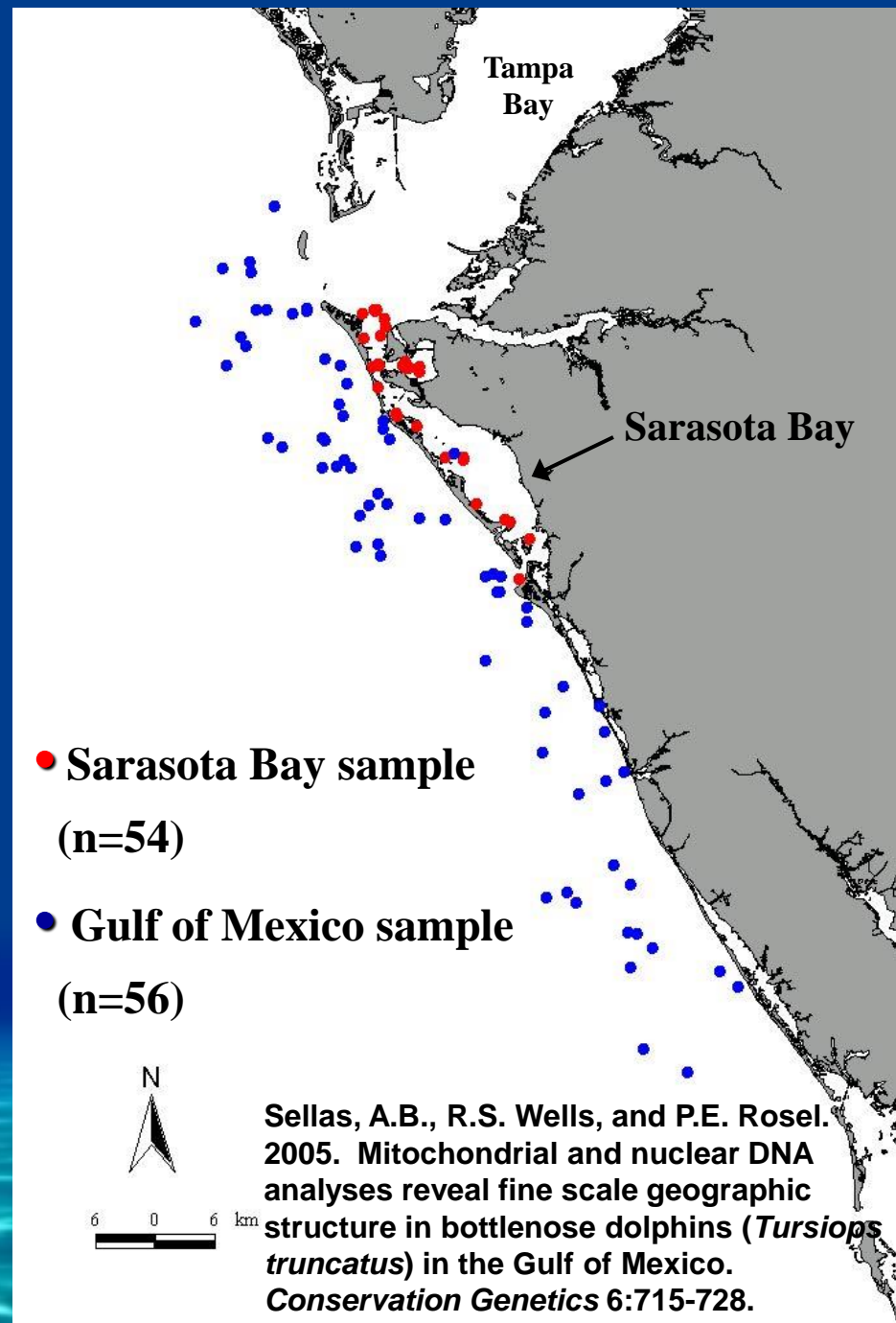
Population Structure from Photo-ID and Capture-Release

12-year average based on 148 identifiable residents; 96% of dolphins in Sarasota Bay are identifiable, > 80% known sex, age



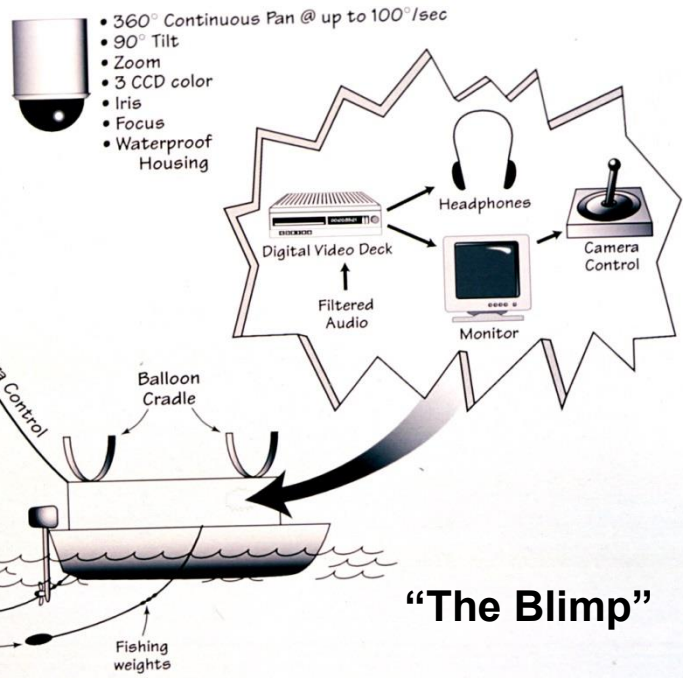
Remote Biopsy Sampling

Standard technique used internationally for Genetics, Contaminants, Stable Isotopes, Hormones



Focal Animal Behavioral Observations

Well-known Cast of Characters Enhances Interpretations



Nai'a, Survey/Observation Vessel

Follow archive contains >2,140 follows on 156 individuals from 16 projects during 1992-2014.

Tagging and Tracking: Development, Testing, Application of Electronic Tags

Since 1970s → Smaller, Safer, More Functions

Satellite-linked Location and Time-Depth-Recording Tags



DTAGs - Digital Archival Tags
Suction cup attachments,
produced by WHOI and SMRU

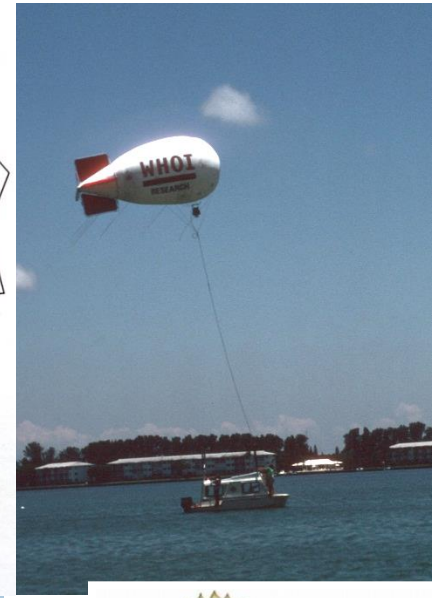
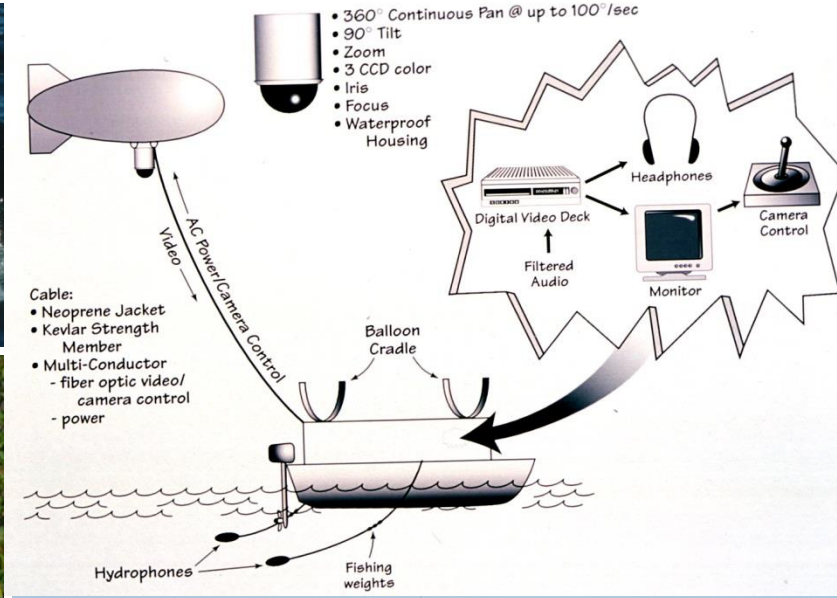


Ecological Perspective: Dolphin Prey Fish Sampling

Opportunistic Observations, Systematic Observations, Stomach Contents of Stranders, Prey Sampling

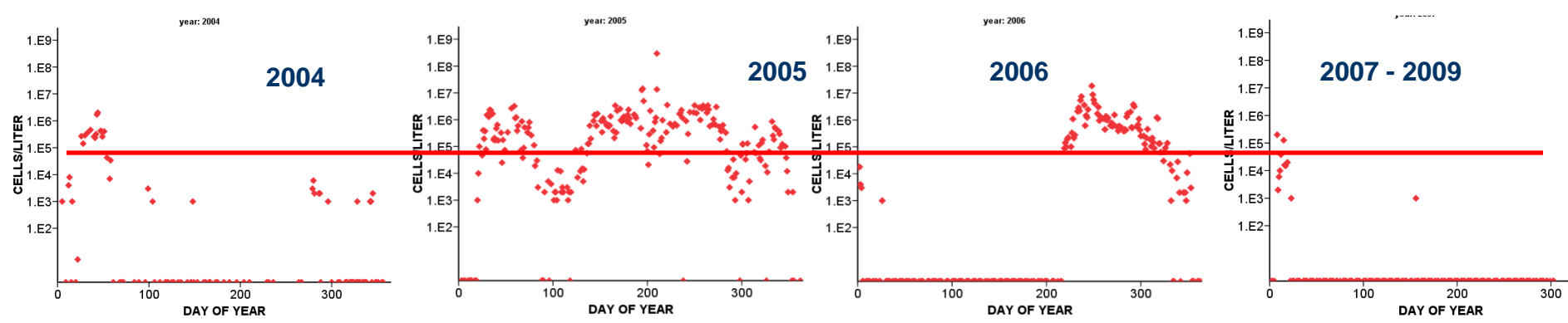
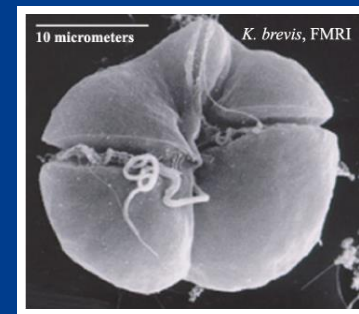


Dr. Nelio Barros: 1960-2010





Ecological Perspective: Harmful Algal Bloom Sampling



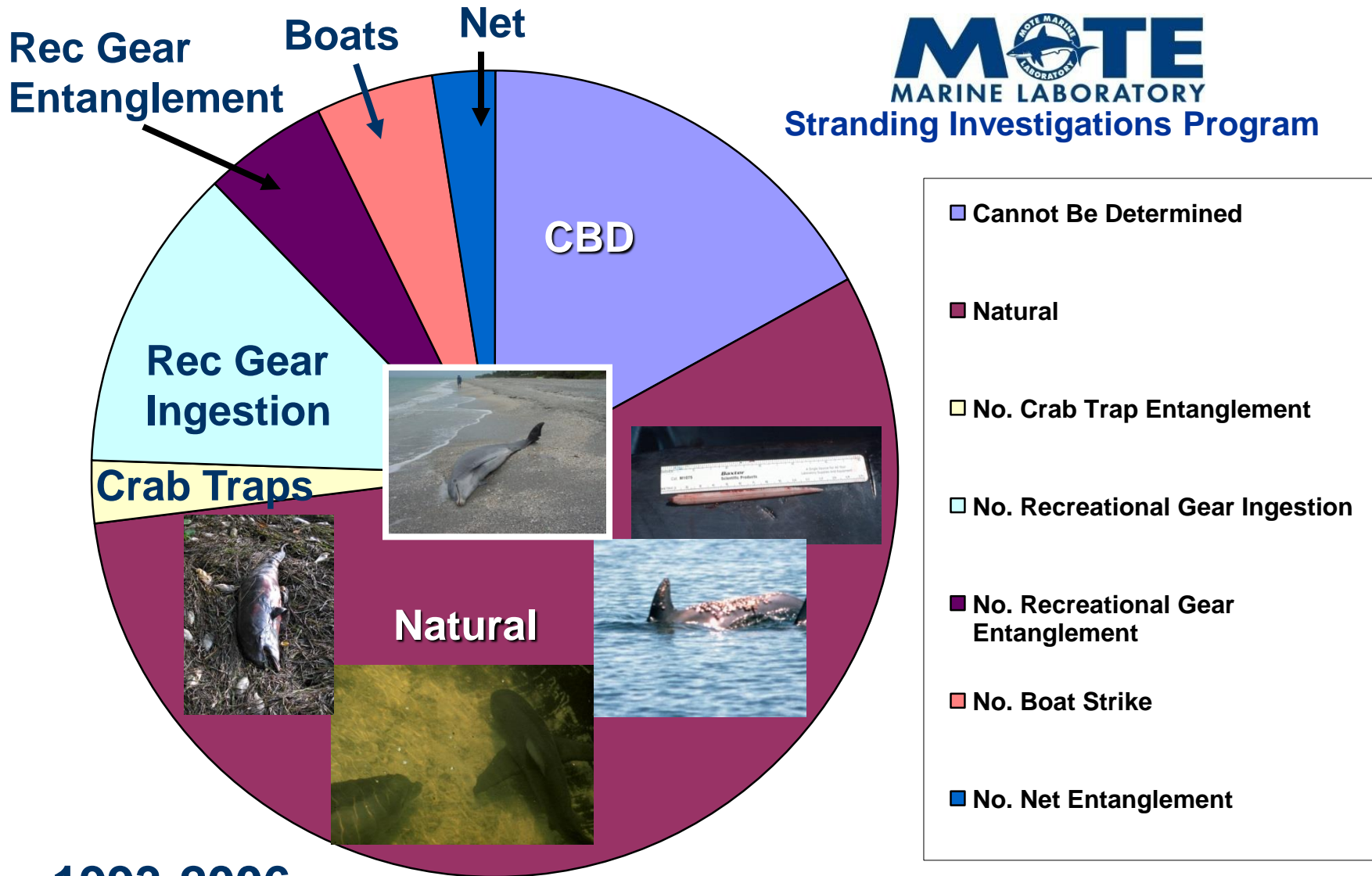
During Severe 2005-2006 *K. brevis* Red Tides:

1. Declines of >90 % of some primary prey fish.
2. 10% decline in dolphin abundance.
3. Increased emigration, decreased immigration.
4. Earlier weaning.
5. Loss of 50% of 2-yr-old calves (weaning, most vulnerable).
6. Remaining 2-yr-old calves 20% underweight.



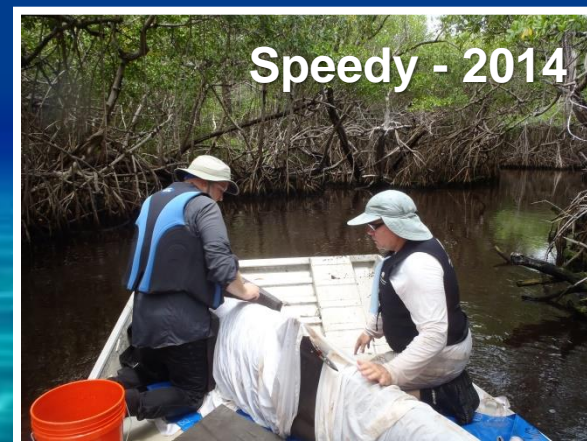
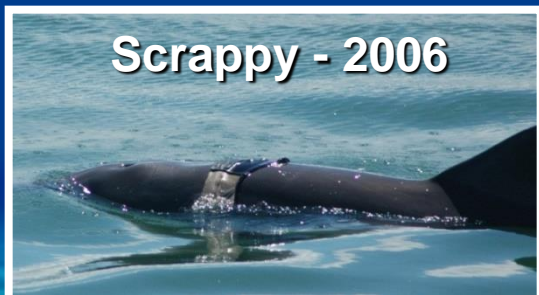
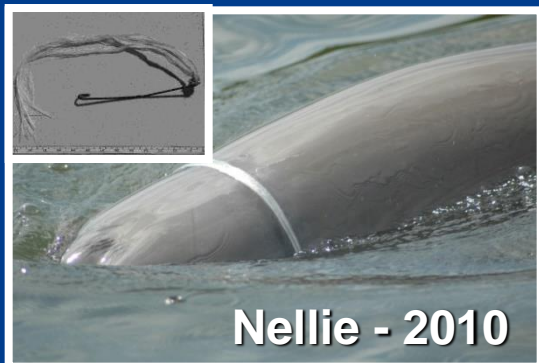
Stranding Network Collaborations

Identifying/Quantifying Mortality Sources from Observations, Strandings



Interventions and Rescues

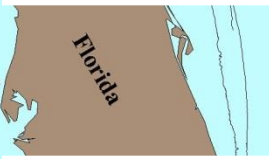
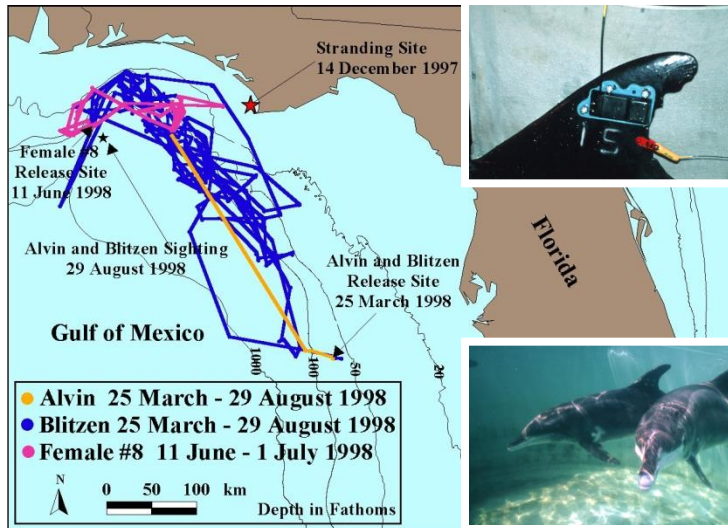
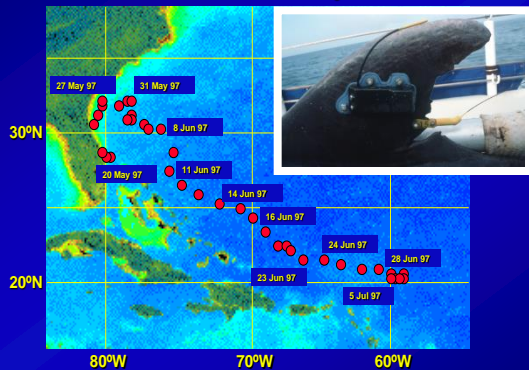
Collaborations with Stranding Network Participants



Rehab Post-Release Follow-Up Monitoring

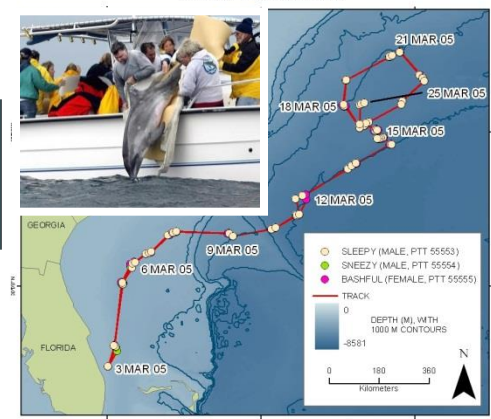
Bottlenose, Risso's, Rough-toothed Dolphins, Pilot Whales

Gulliver's Travels : 20 May 97 - 5 Jul 97



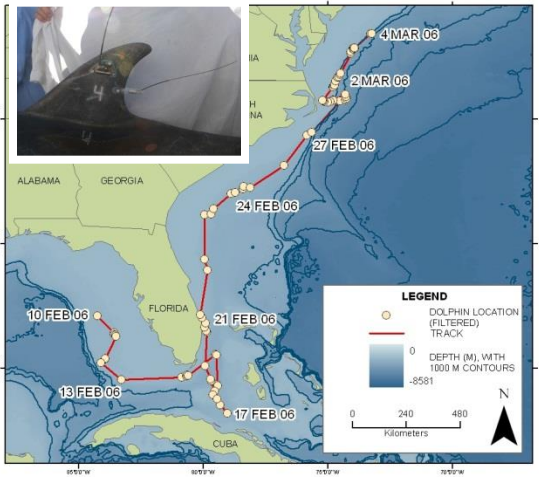
ROUGH-TOOTHED DOLPHINS, *Steno bredanensis*

STRANDED: 7 AUGUST 2004, FT PIERCE, FL
TRACKED: 3 - 25 MARCH 2005

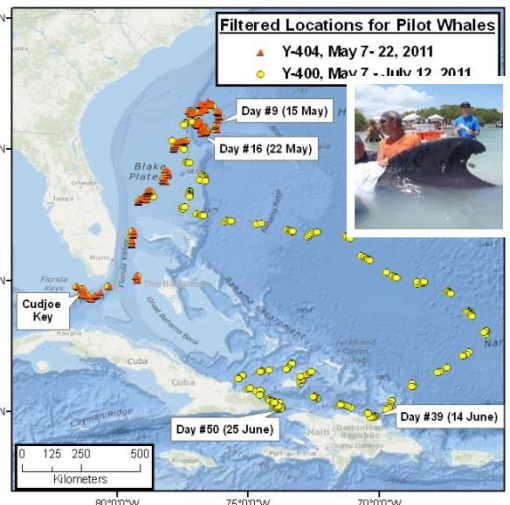
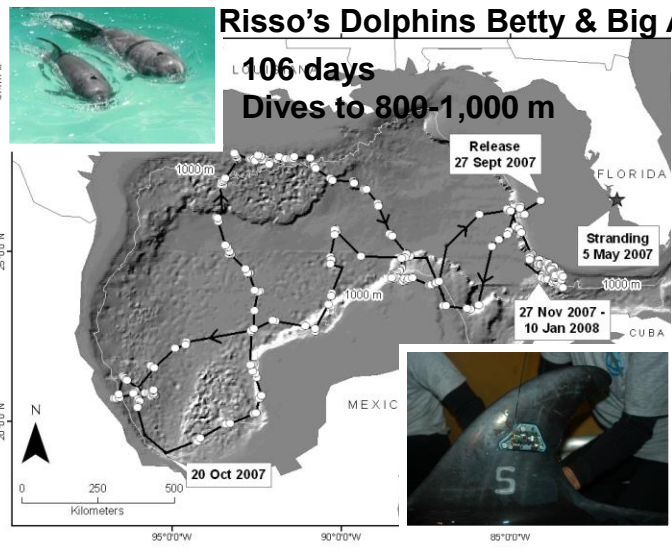


RISSEO'S DOLPHIN, *Grampus griseus*

Adult Male, PTT 57605
STRANDED: 16 JULY 2005, MARCO ISLAND, FL
TRACKED: 10 FEBRUARY - 4 MARCH 2006



Risso's Dolphins Betty & Big Al



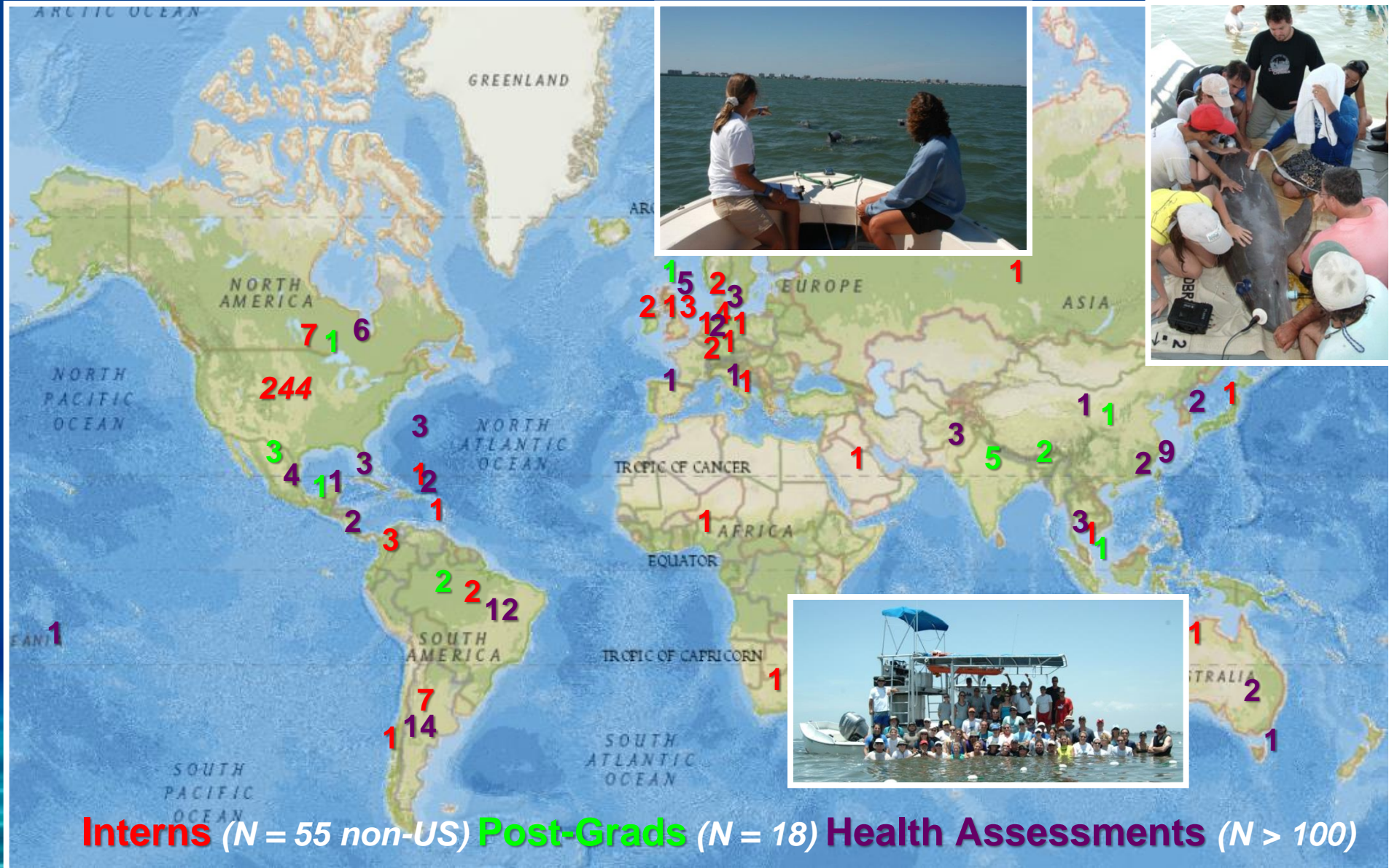
Conservation Capacity Building through Graduate Research

32 PhD and 30 MSc Students have benefited from SDRP data collection opportunities, data, samples, or guidance over the years



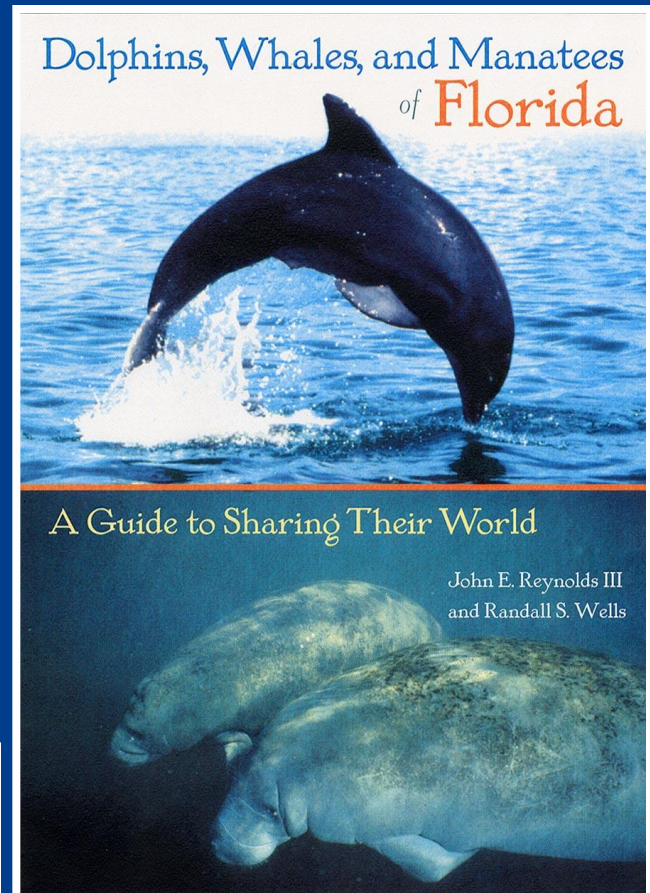
Conservation Capacity Building:

Sarasota Dolphin Research Program Interns/Trainees during 1998-2014



Efforts To Educate Public About Feeding, Interaction Issues

Publications, Signage, Town Hall Meetings, PSA, Aquarium/Museum/Zoo Displays



To report feeding or harassment of wild dolphins, call the NOAA Fisheries Southeast Enforcement Division at: 1-800-853-1964.

To report an injured or entangled dolphin, or other wildlife, call the Florida Fish and Wildlife Conservation Commission at: 1-888-404-FWCC (3922).

For more information on fishing line recycling and bin locations, please visit: www.fishinglinerecycling.org

For more information on dolphins and interactions with anglers, please visit: www.mote.org or www.sarasotadolphin.org



Dolphins have a reputation for being friendly

however, they are really wild animals who should be treated with caution and respect. Interactions with people change the behavior of dolphins for the worse. They lose their natural wariness which makes them easy targets for vandalism and shark attacks.

For the dolphins' sake, and for your safety, please don't feed, swim with or harass wild dolphins. We encourage you to observe them from a distance of at least 50 yards. Please use binoculars or telephoto lenses to get a closer view. If you would like to get up close and personal with dolphins, the MMPA provides for the public display of marine mammals in zoos and aquariums. Contact the Office of Protected Resources for a list of facilities that hold dolphins.

Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910
301-713-2289
<http://www.nmfs.noaa.gov/ot/res.html>

Let the wild ones stay wild

NOAA Fisheries Enforcement Hot Line: 1-800-853-1964

The maximum fine for violating the MMPA is \$20,000 and one year in jail.

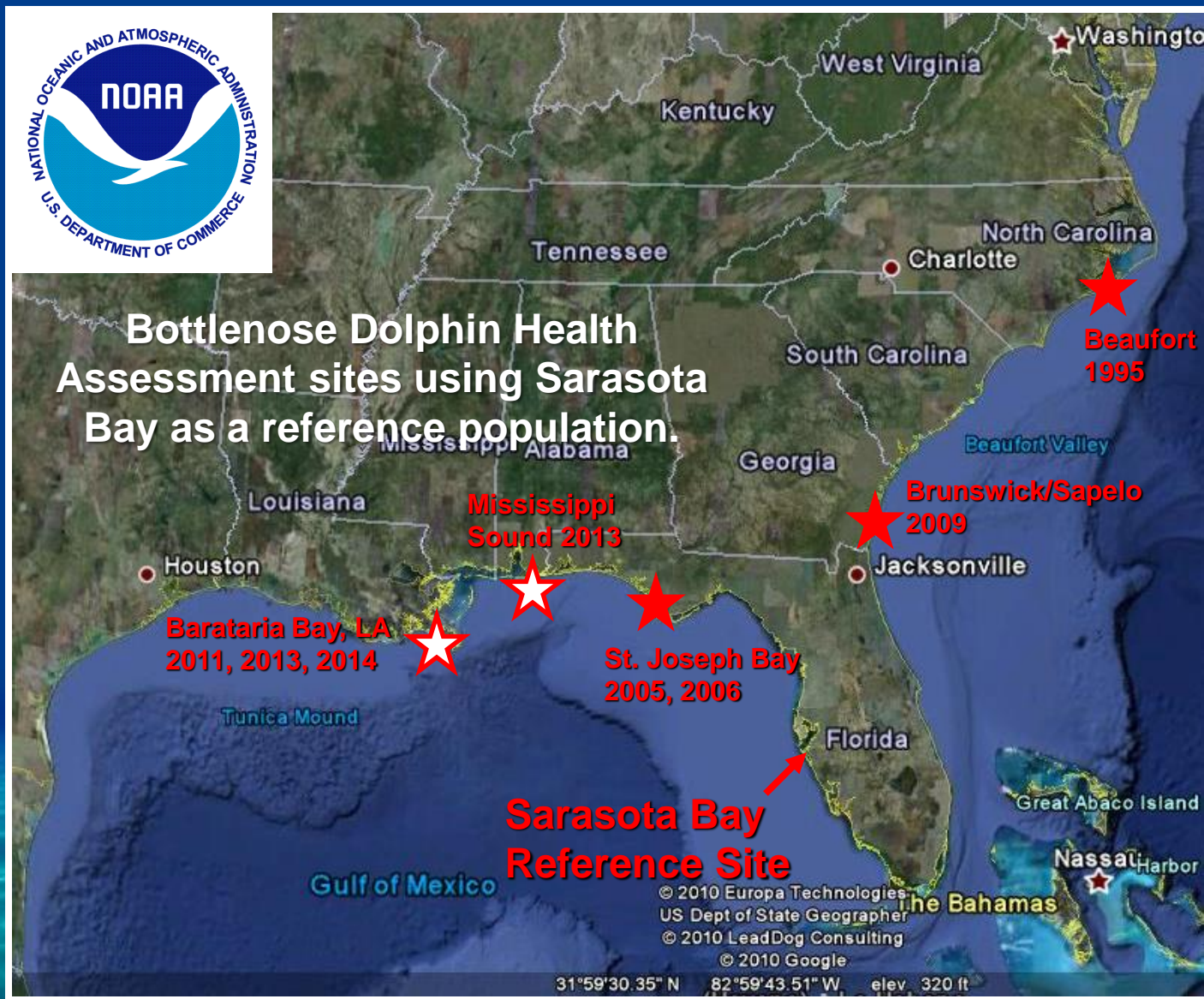
Protect Dolphins

admire them from a distance

Sarasota Dolphin Research Program Research Sites in the SE United States: 1995-2015



Sarasota Bay serves as a reference site for NOAA for health assessment comparisons



Recommendations for New Gulf of Mexico Bay, Sound, Estuary, and Coastal Dolphin Conservation Research Programs

- **Available information is inadequate for appropriate management of many inshore dolphin stocks.**

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 - Photo-ID – most important, basic data:
 - Abundance, distribution, residency, habitat use, survivorship, reproductive rates

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 - Telemetry can expedite definition of stock boundaries
- Collaborations! Leveraging opportunities to enhance research.

Gulf of Mexico Dolphin Identification System (GoMDIS)

Compiling Individual Identification Catalogs from the entire Gulf



1. Collaborations being developed with >20 research groups throughout the U.S. Gulf of Mexico.
2. Cuba and Mexico are joining the GoMDIS – it is now truly Gulf-wide.
3. Collaborators able to access compiled catalogs on-line through OBIS-SEAMAP (Duke Univ.) for comparisons.
4. Providing Gulf-wide repository for catalogs, to establish baselines for ongoing and future bottlenose dolphin research, including current DWH oil spill studies.
5. Provides unique tool for identifying shifts in habitat use and ranges: requested by NOAA, supported by DWCF and NOAA.

Programmatic Goal

Continued Coexistence: Learning about the animals' needs and how to mitigate cumulative threats while minimizing impacts to humans



For more information, visit: sarasotadolphin.org