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Why?

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- Long lived Mammals
- Top predators
- Resident populations show high levels of site fidelity
- Affected by a variety of environmental stressors and act as bioindicators
- Ideal sentinels for Bays and Estuaries
- Data on large predators for ecosystem modeling
- Federally managed under the MMPA

Strategic stocks are to be maintained as a "significant functioning element of the ecosystem"

Conservation Tool

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HIGH RISK ENVIRONMENT

- Industrial Development
- Residential Development
- Ship Traffic
- Dredging
- Seagrass Loss
- Contaminants
- Commercial Fisheries
- Harmful Algal Blooms

Goals of the GDRCP

1. Implement a long-term monitoring program
2. Conduct research on the ecology, behavior, and health
3. Study human-dolphin interactions and their impact
4. Raise awareness about GB dolphins and their habitats

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Visual Surveys

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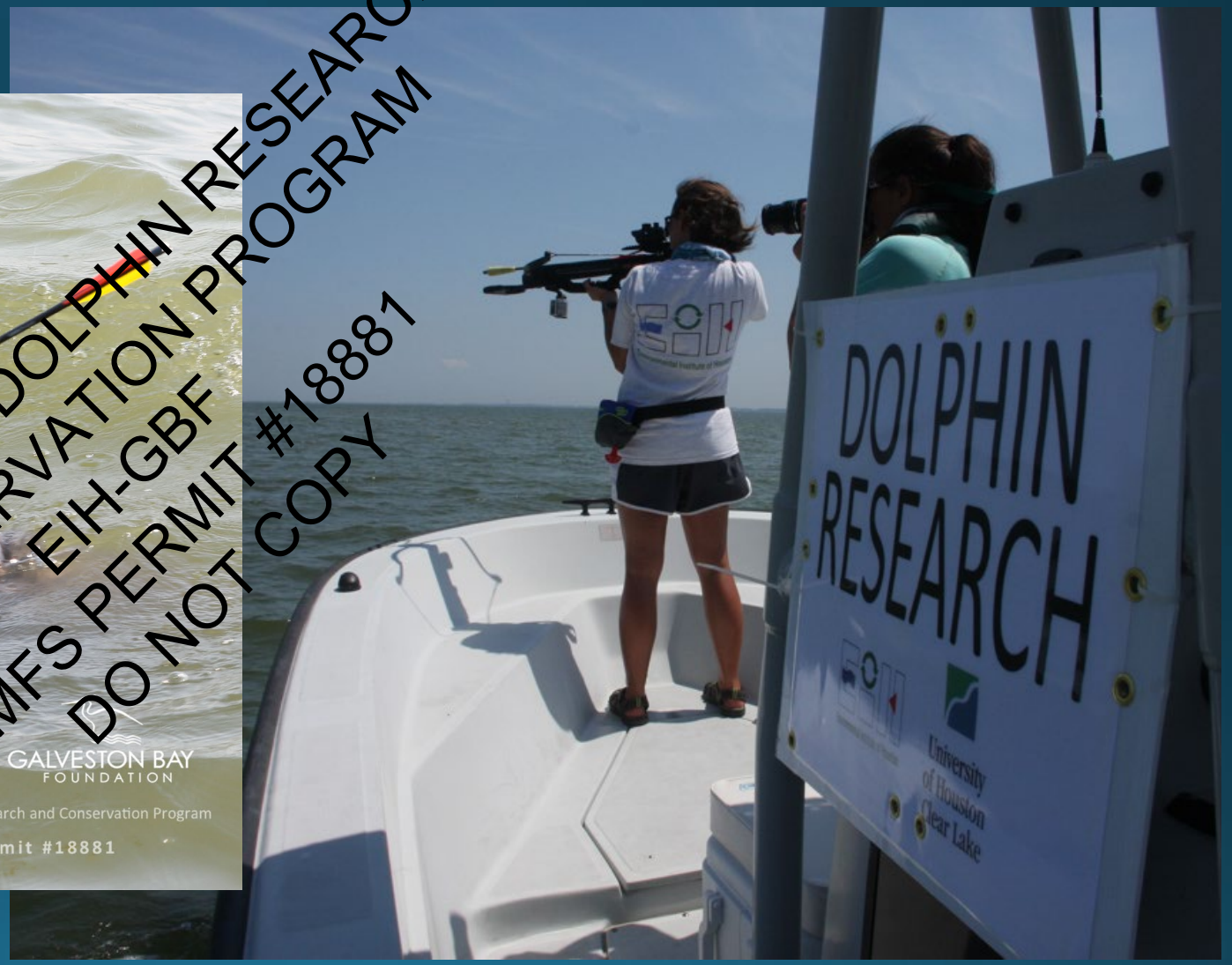
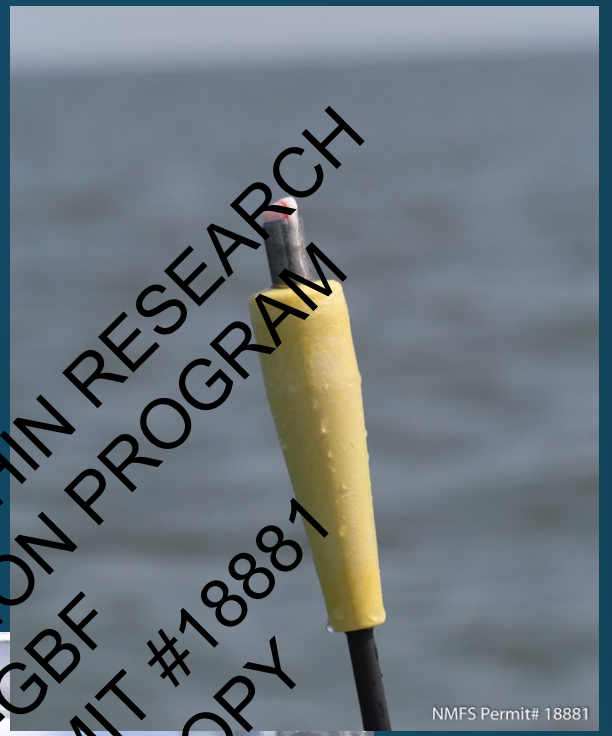
Current catalog of almost 700 unique individuals

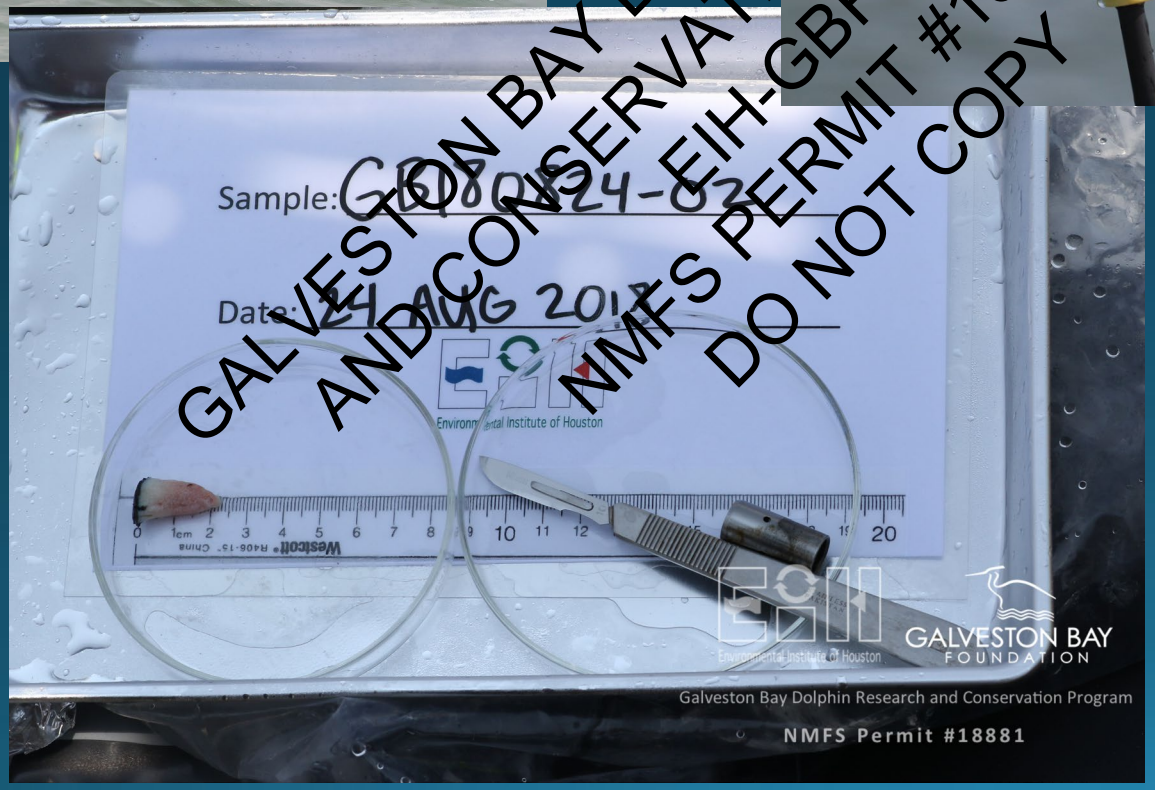
What can we learn from Visual Surveys?

- Distribution
- Abundance
- Site Fidelity
- Survival Rates
- Habitat Utilization
- Behavioral Activities
- Social Structure
- Fecundity
- Foraging Strategies
- Human Interactions
- Visual Health Indicators

Remote Biopsy Darting







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What can we learn from Biopsy Samples?

>50 samples currently undergoing or awaiting analyses

- Genetics – Population Structure
- Sex
- Stable Isotopes – Foraging*
- Persistant Organic Pollutants (POPs) – PCB's, Dioxins
- Heavy Metals
- Toxicology and Gene Expression
- Hormones – Pregnancy and Stress

***POSTER → McDaniel, S. "Foraging Ecology of Bottlenose Dolphins (Tursiops truncatus) in Galveston Bay."**

BASELINE DATA
HEALTH INDICATORS

Vital for understanding the effects of future environmental disturbance

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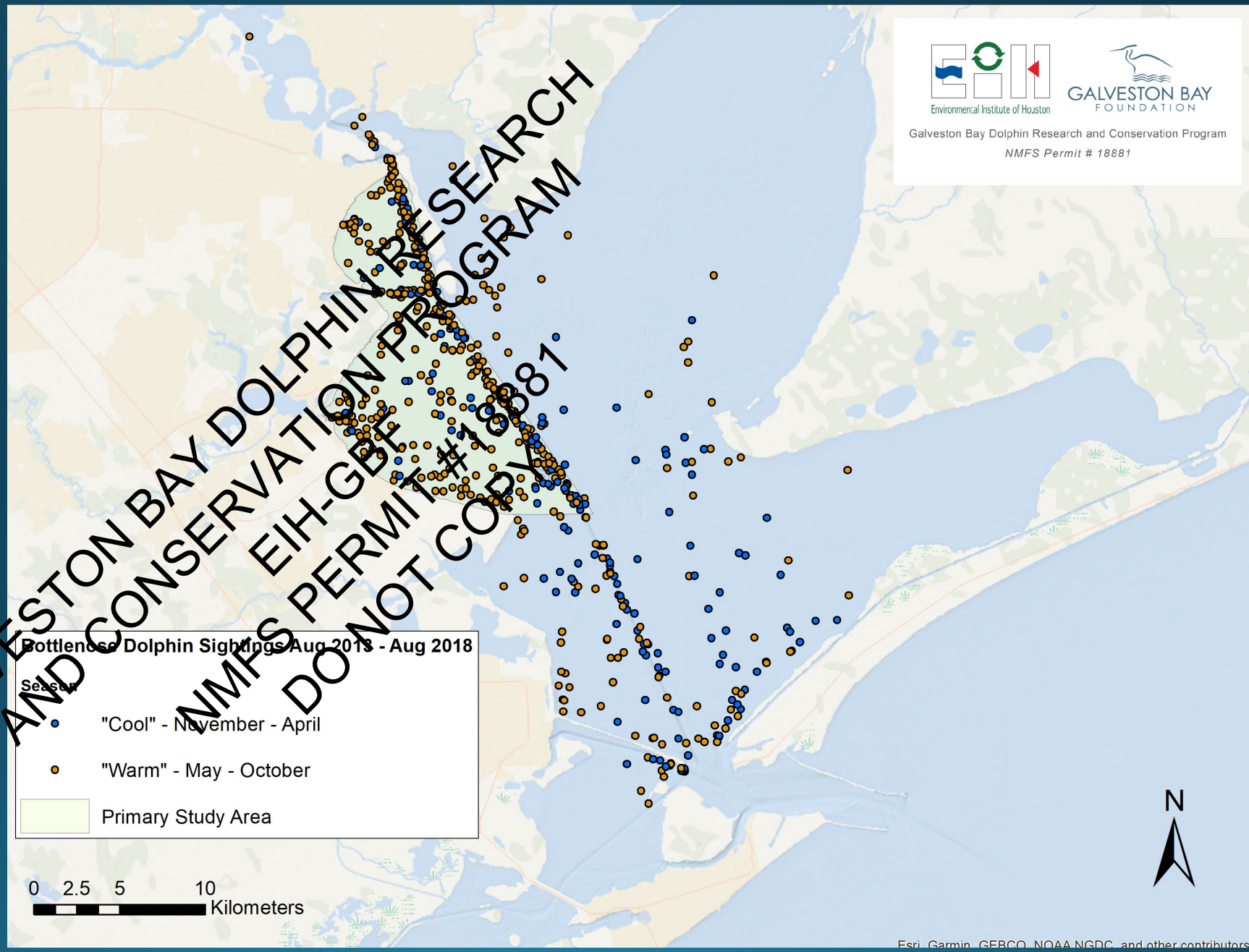
Dolphin Population Management

Ecosystem Management Public Engagement

Oiled dolphin, Barataria Bay, LA, 2010

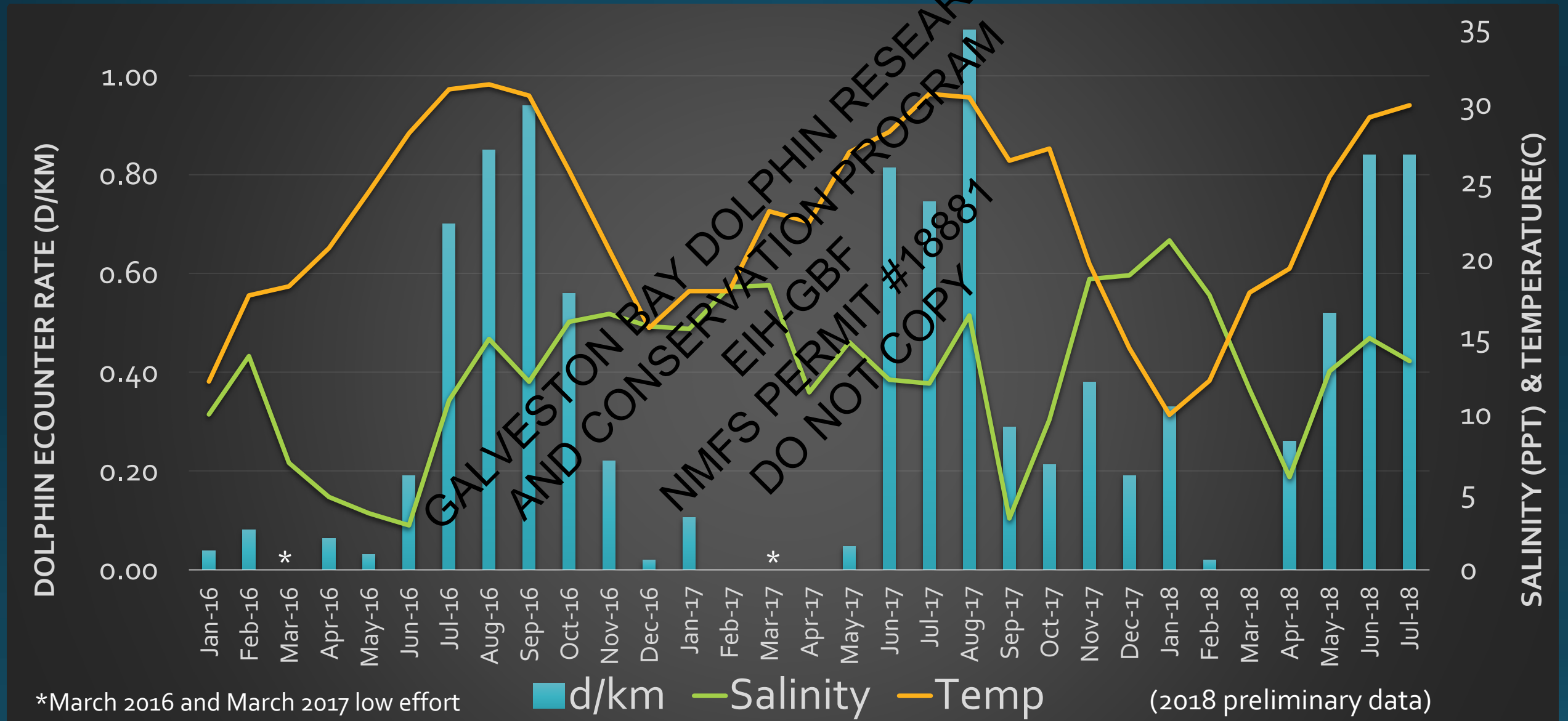
Results

- Monthly photo-id surveys of primary study area in upper Galveston Bay since 2015 (preliminary surveys 2013-2014)
- Coverage of nearshore, open bay and deep channel habitats
- Opportunistic and biopsy focused surveys of other Galveston Bay waters inshore of the ICW



Seasonal changes in distribution

Upper Galveston Bay encounter rates (# dolphins / km surveyed)



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*March 2016 and March 2017 low effort

(2018 preliminary data)

Levels of human-dolphin interactions are high

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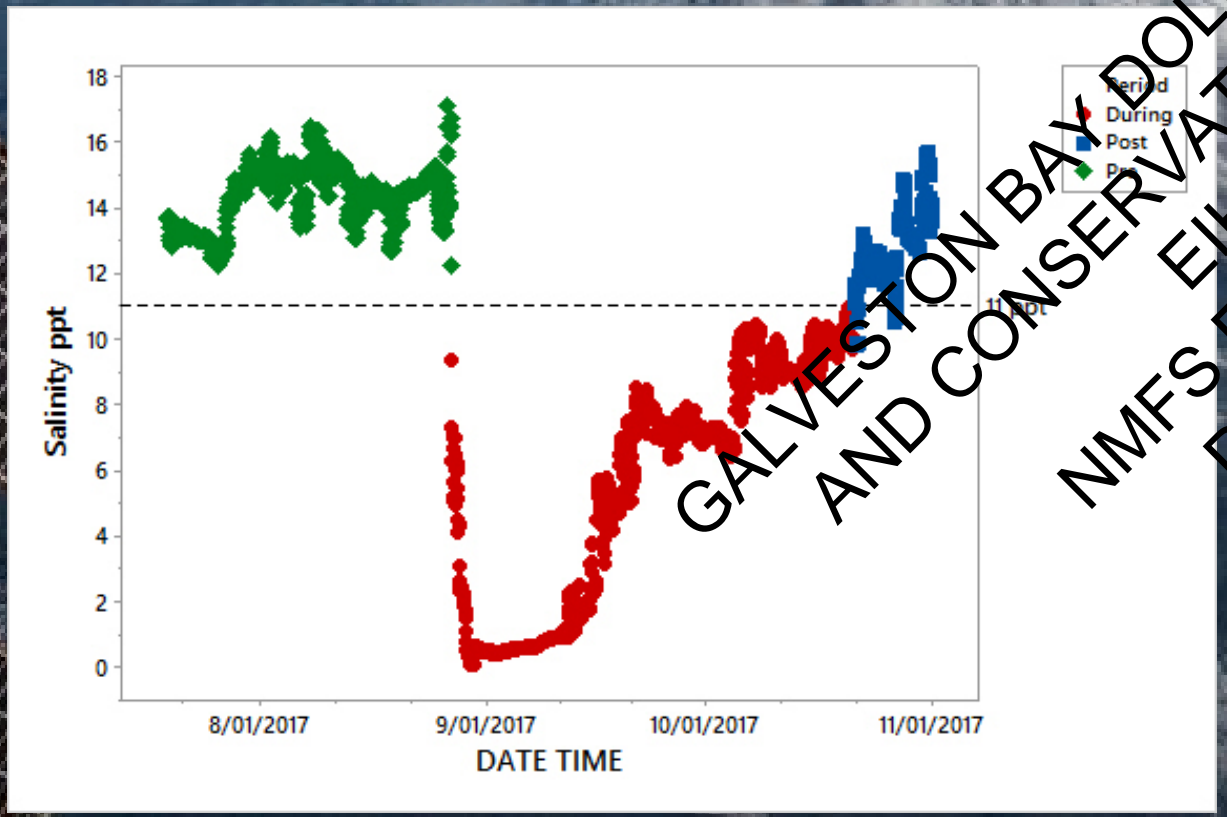
Potential health consequences from freshwater influx

- Skin lesions = "hydropic degeneration" of the epidermis; may be accompanied by opportunistic fungal or algal growth
- Potential for:
  - Secondary infection
  - Electrolyte imbalance
  - Corneal edema
  - Mortality
- Long-term effects?

Hurricane Harvey

Low Salinity Event (LSE)

- Large influx of freshwater
- Toxic contaminants, bacteria and nutrients in run-off
- Effects on prey availability



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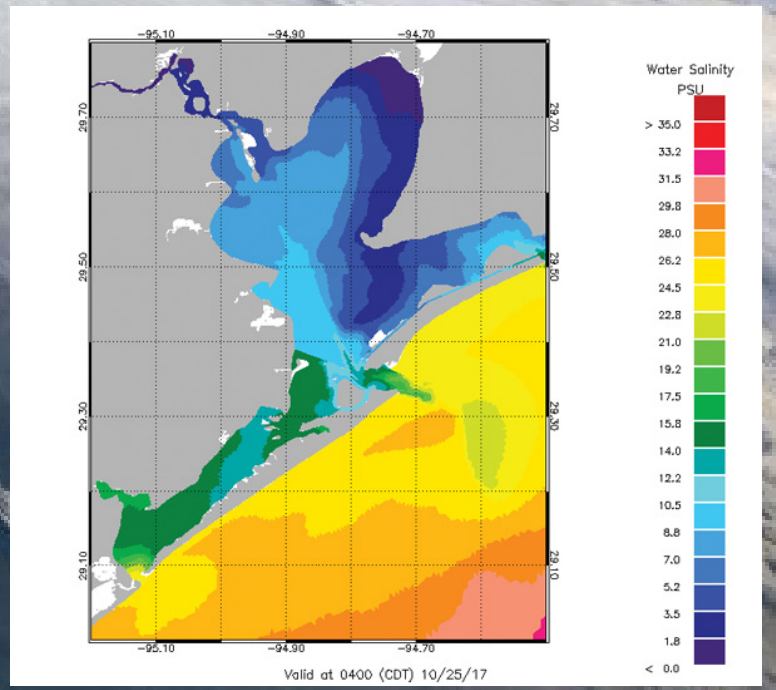
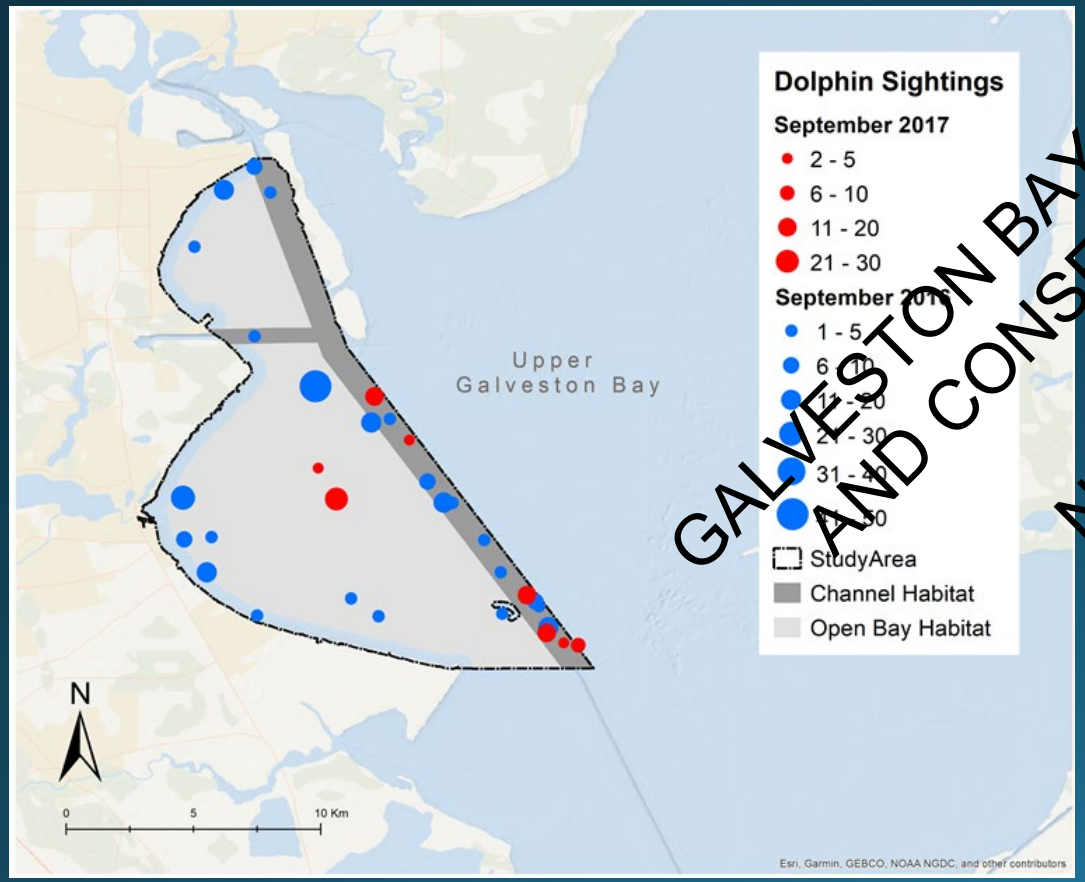
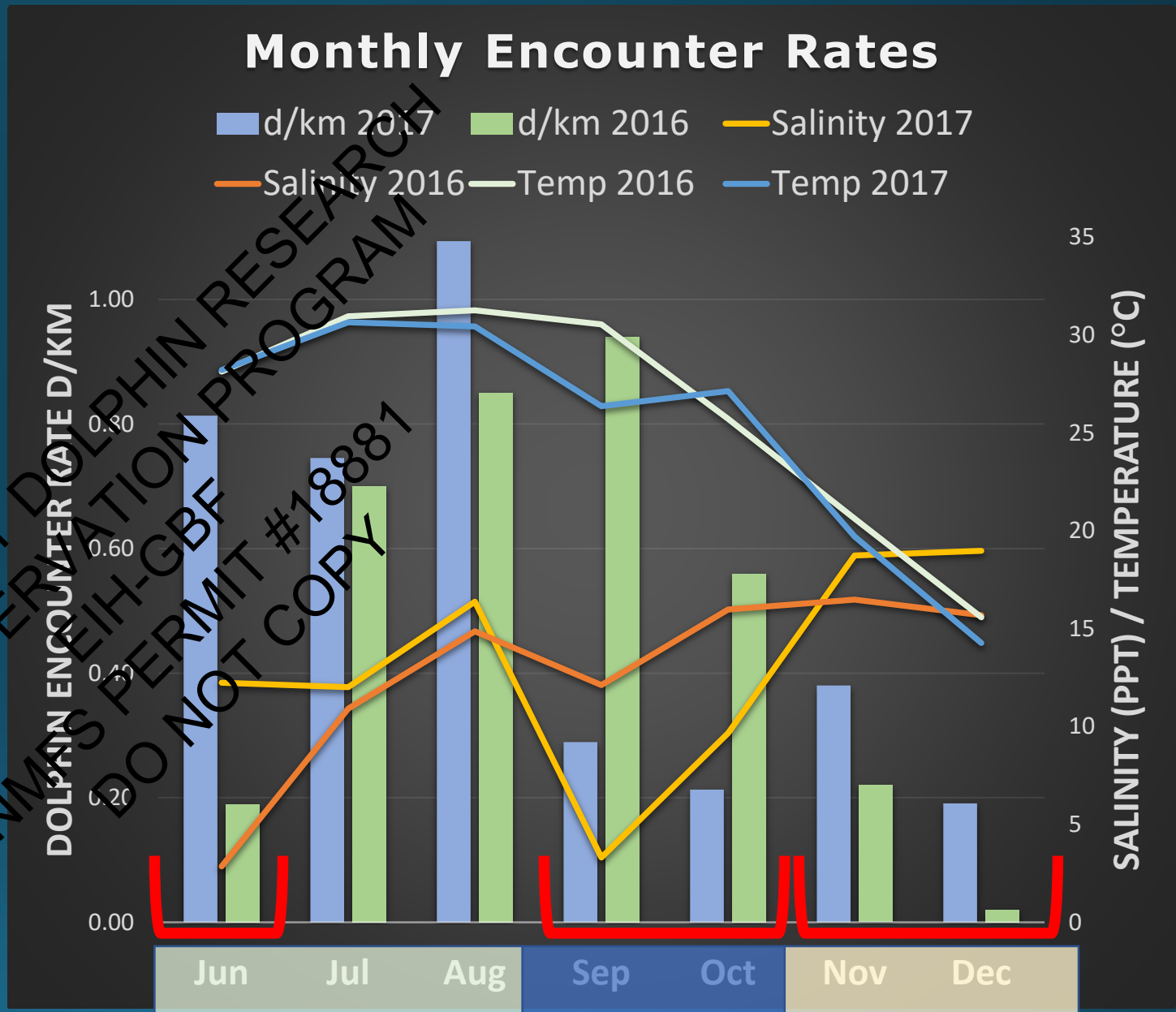


HURRICANE HARVEY

Effects

Temporary change in distribution/habitat use





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HURRICANE HARVEY

Effects

Skin lesions

Minimum Prevalence = proportion of identified individuals that exhibited visible lesions

Extent = percentage of each individual's epidermis covered by lesions

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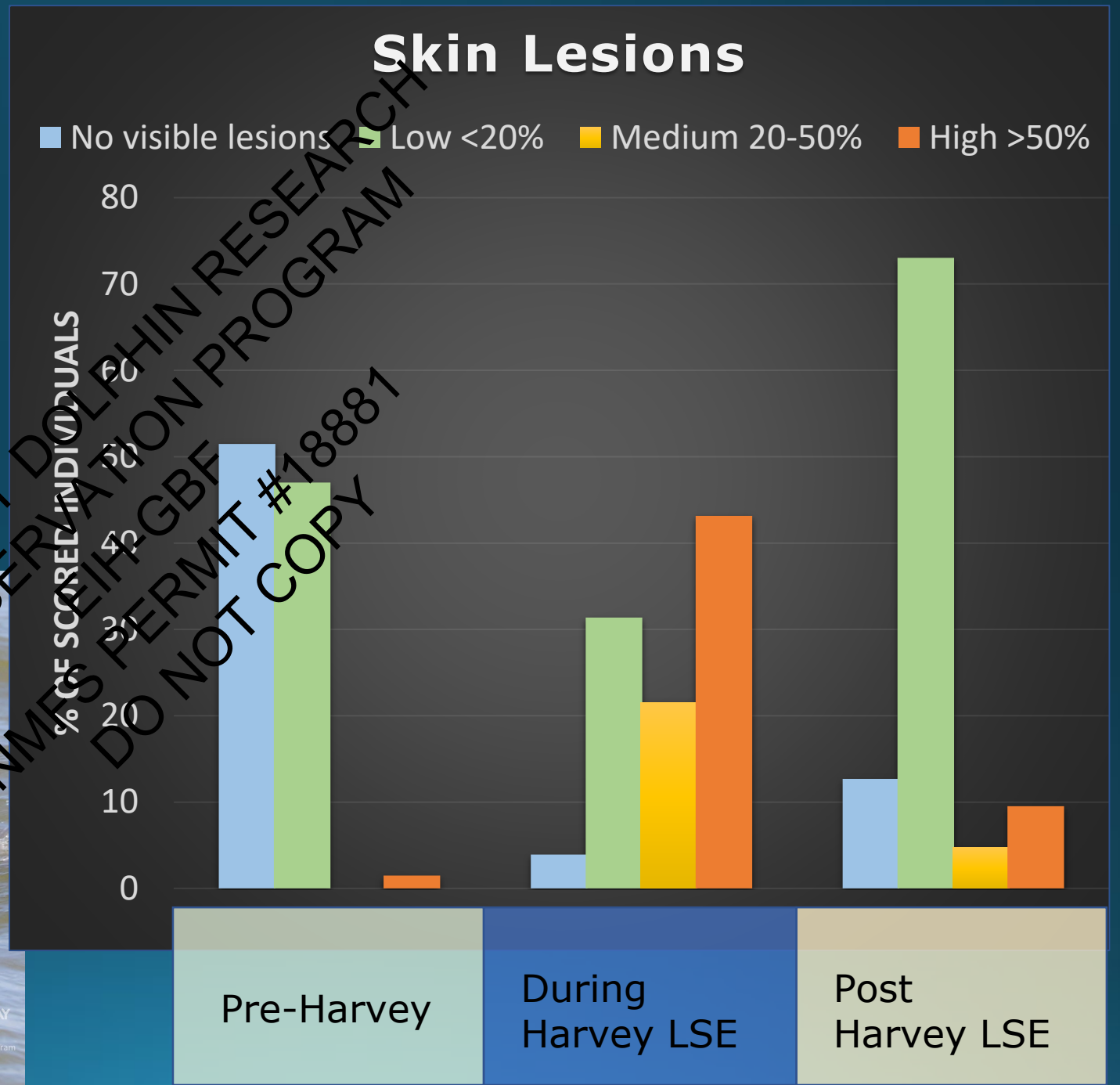

Lesion extent and healing

- Age Class
- Immunity
- Range Patterns
- Access to higher salinity

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Questions?

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www.uhcl.edu/environmental-institute

→ *links to scientific output*

www.galbay.org

→ *Adopt-a-dolphin*

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