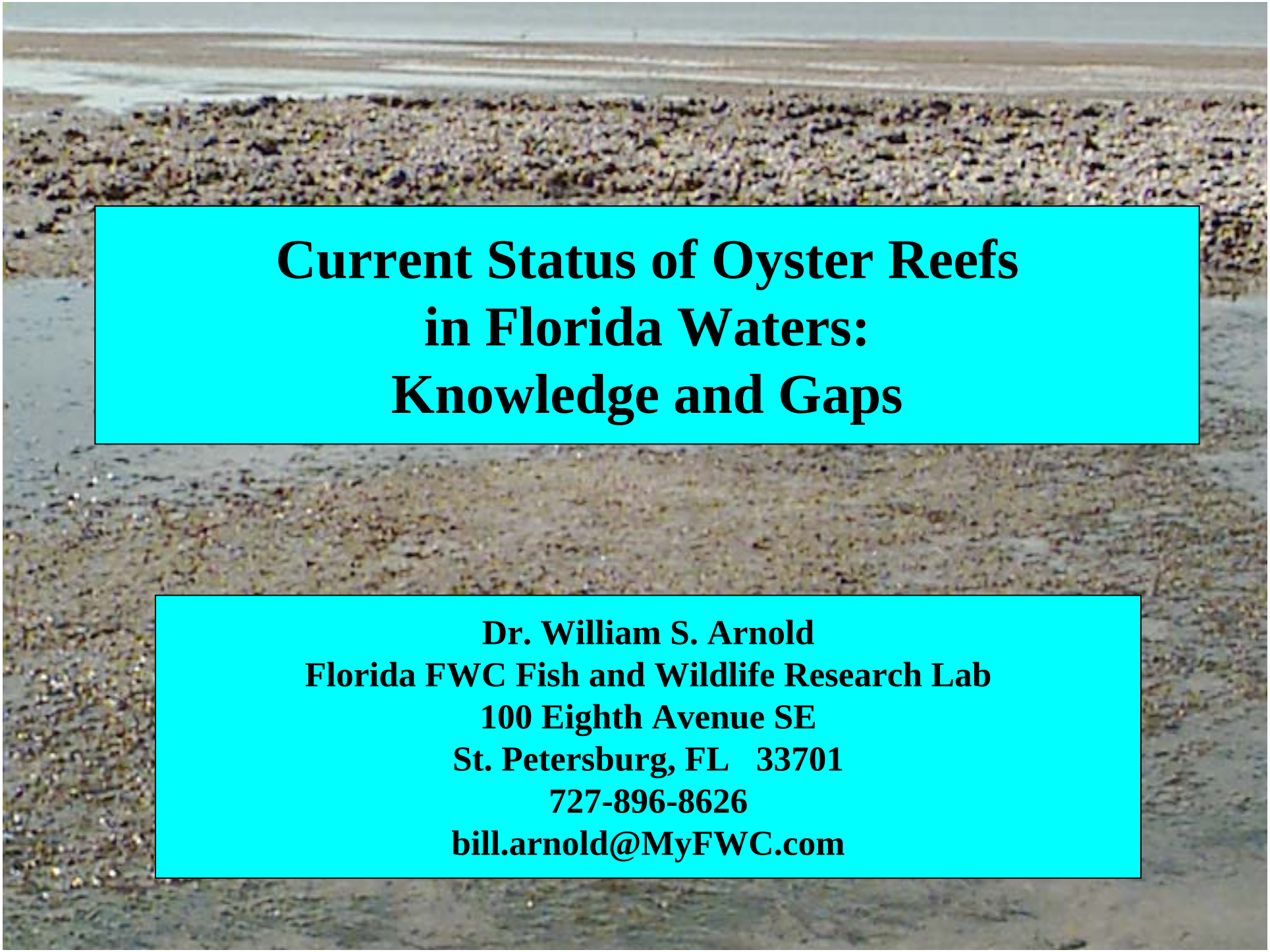

Current Status of Oyster Reefs in Florida Waters: Knowledge and Gaps

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Outline

- History-statewide distribution
- Present distribution
  - Mapped populations and gaps
  - Methodological variation
- Ecological status
- Application

Need to Know

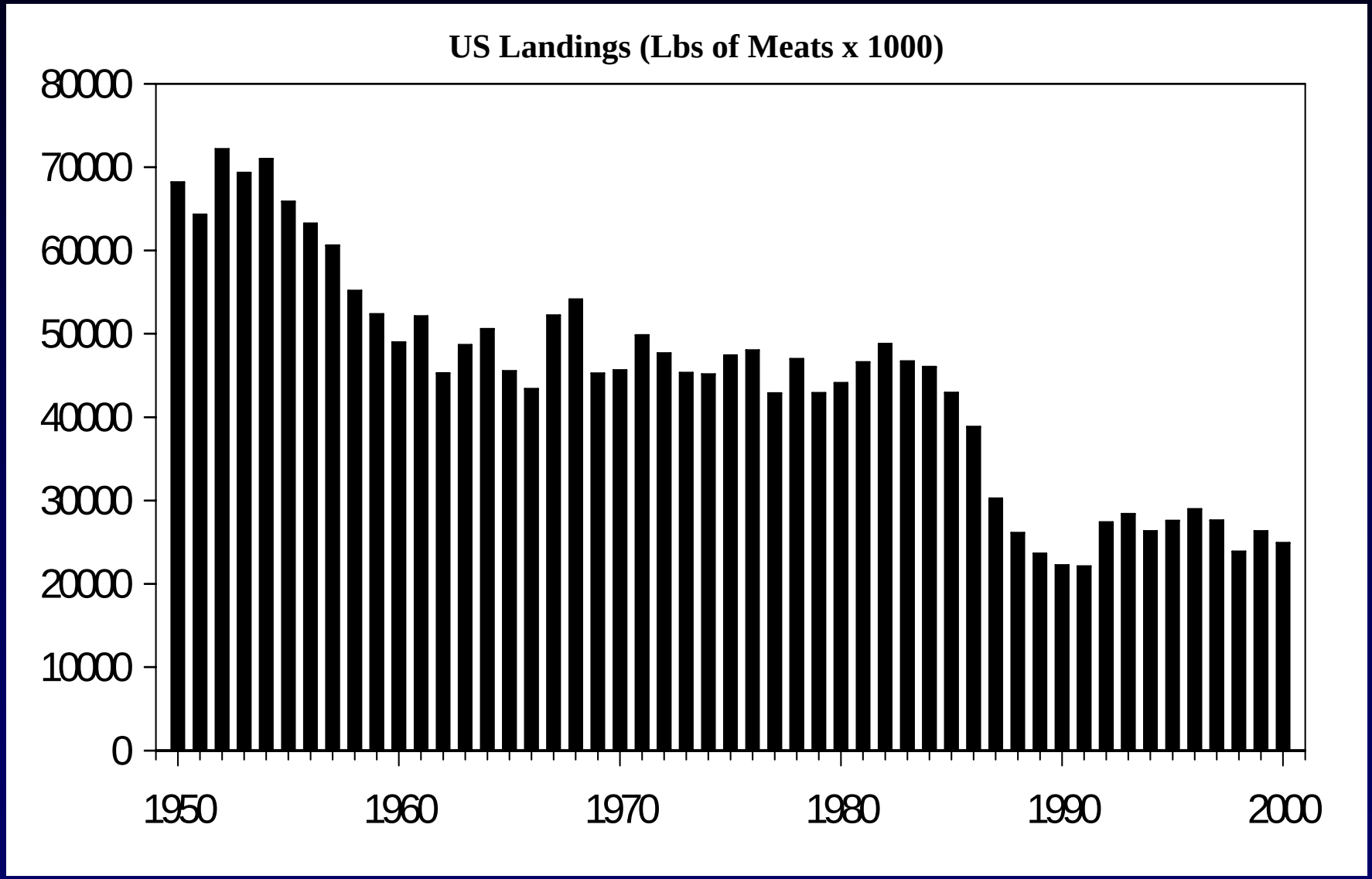
Ecological value of oyster reefs will be clearly defined in subsequent talks

Within “my backyard”, at least some idea of need to protect and preserve, as exemplified by the many reef restoration projects

However, statewide understanding of status and trends is poorly developed

Culturally important- archaeological evidence suggests centuries of usage

Long History of Commercial Exploitation

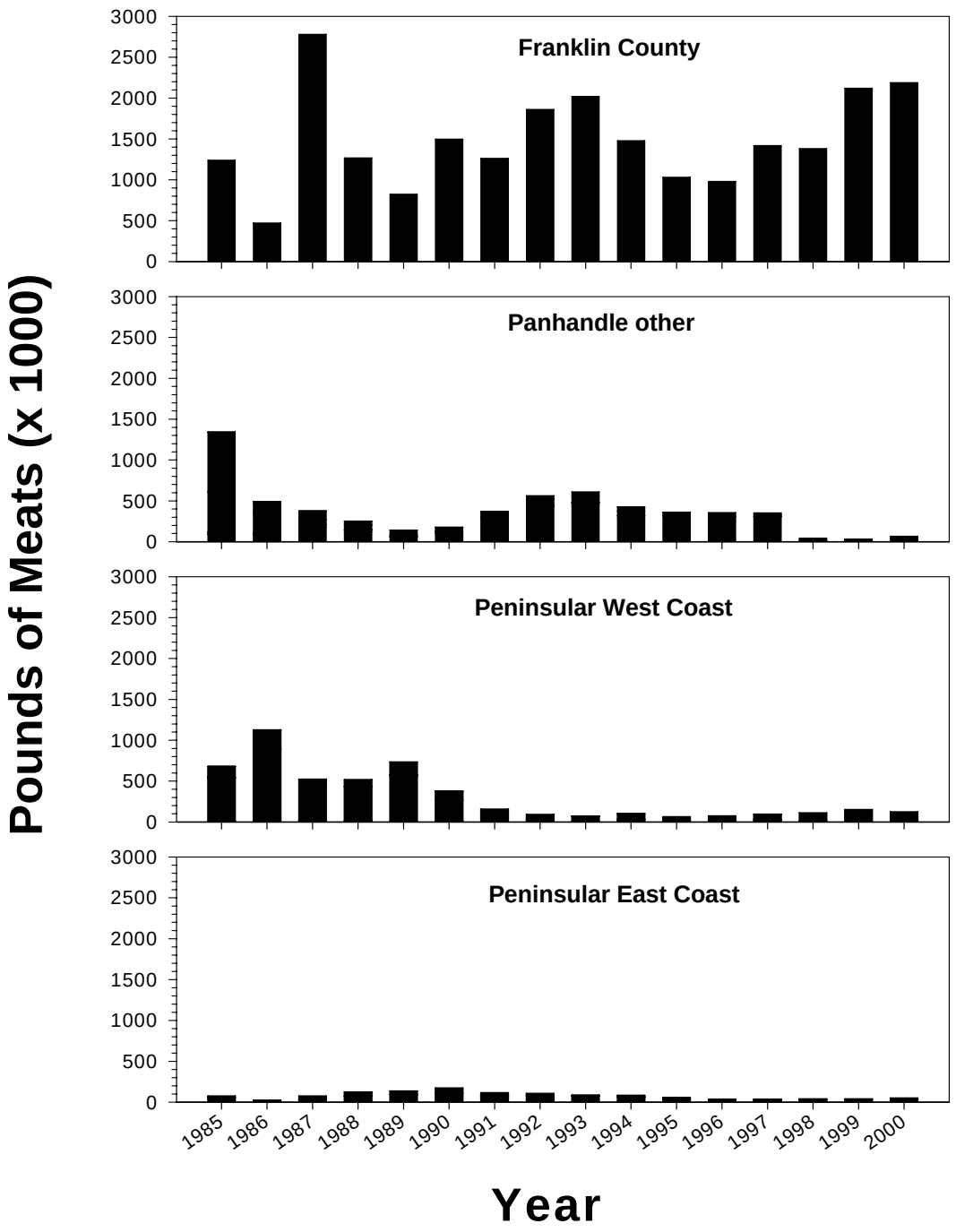


Statewide:

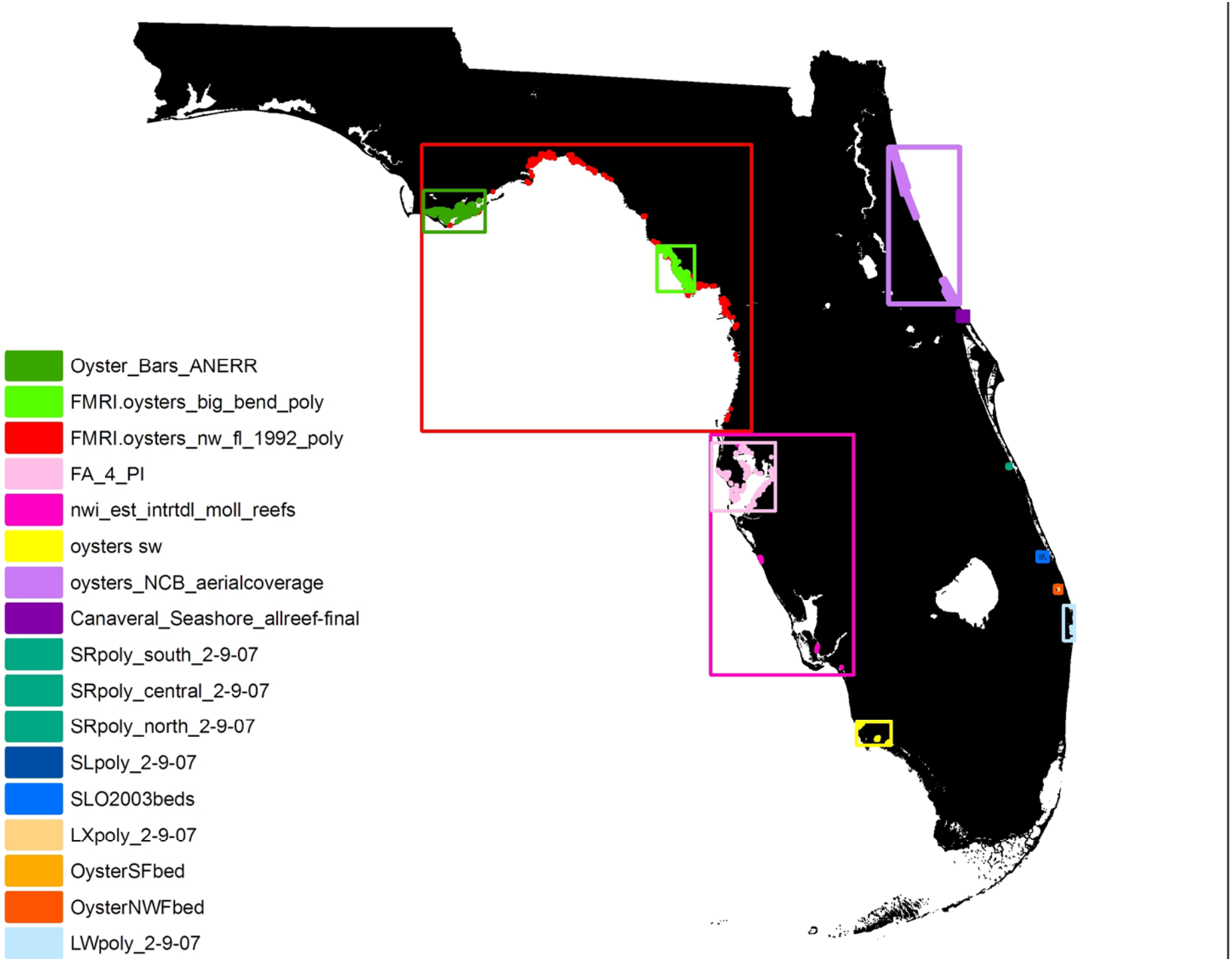
Economically important: over $2.8 million in landings value for Florida fishery in 2003

Most of that value is from Franklin County (Apalachicola Bay), where landings have been relatively stable since 1985

In other areas of state, oysters landings are on decline due to loss of access, degraded water quality, and loss of oyster populations



MAPPING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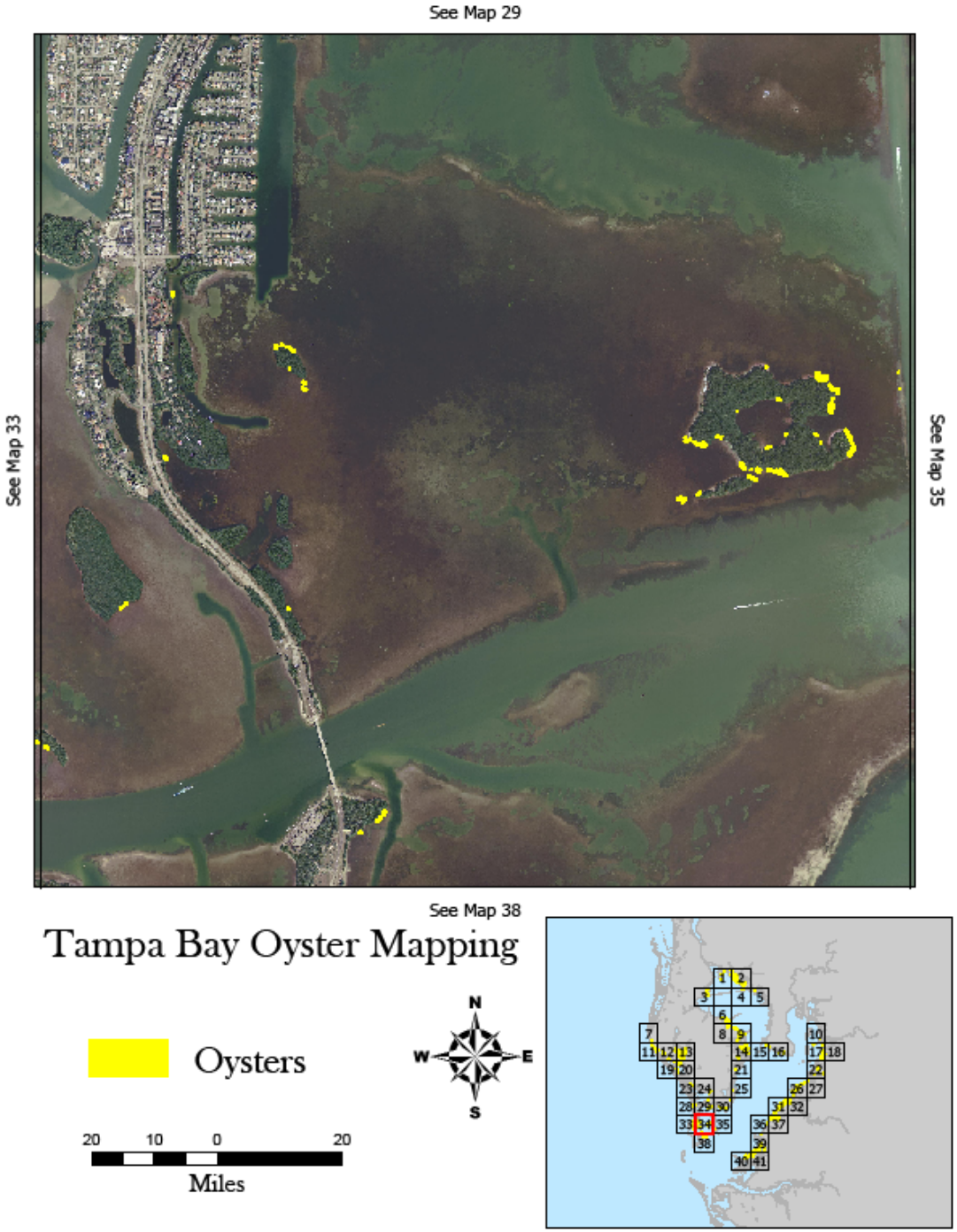
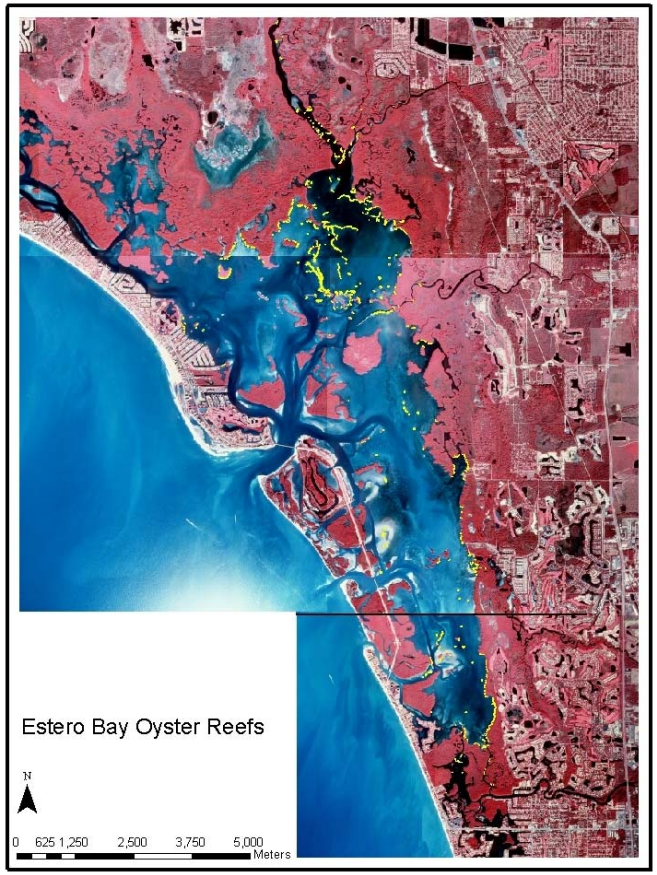
Tampa Bay Oyster Maps

More reef coverage than anticipated, but many of the reefs are moderately to severely degraded

Kathleen O'Keife will discuss Tampa Bay oyster mapping methods in the next talk



Caloosahatchee River and Estero Bay
Aerial imagery used to map reefs, verified by ground-truthing

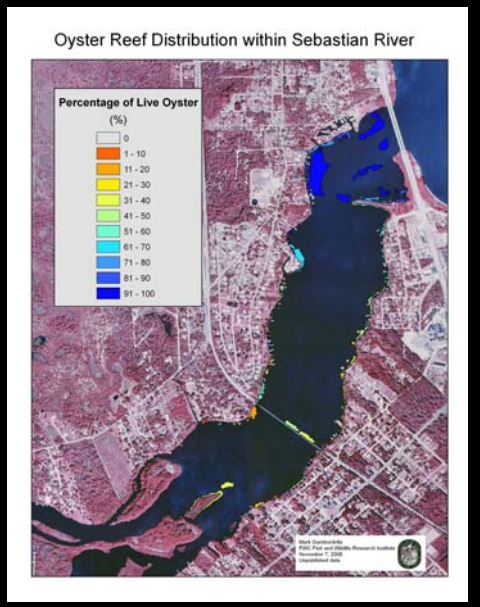


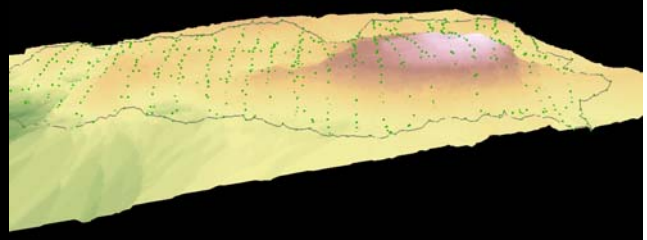
Southeast Florida oyster maps

- Used RTK-GPS equipment to map in both the horizontal and the vertical. Very labor intensive, but does provide that important vertical dimension

- Contemporaneous ground-truthing provided information not just on location of reefs but also on status at time of sampling

- Subsequent sampling efforts can be designed based upon vertical C.I.'s, sampling density, and expectations of change in the vertical dimension



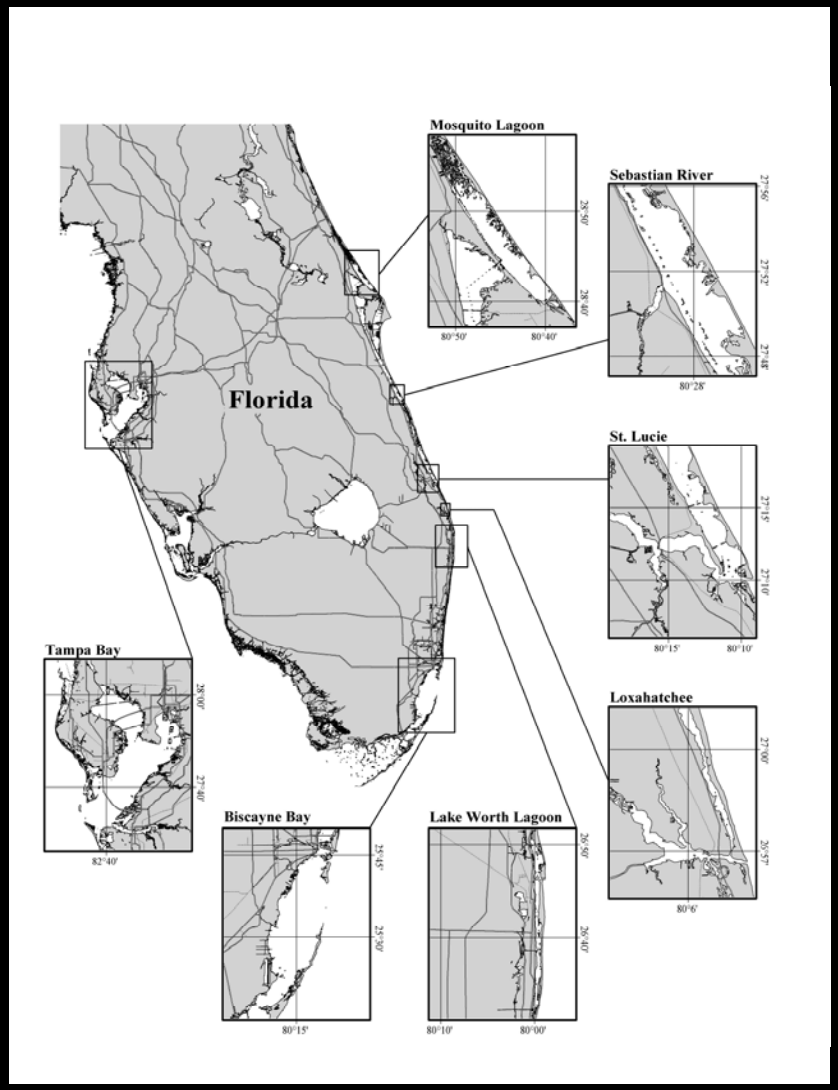


Positives and Negatives

- **Better information available on oyster reef distribution and abundance than ever, most developed within last five years**
- **Various methods have been employed, but common format for results is needed to allow direct comparisons and mapping**
- **A rapid, 3-D, remote methodology is needed to facilitate repeat sampling and analysis**

Ecological Status

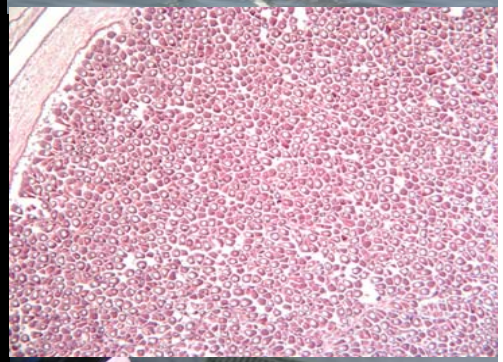
The status of oyster reefs varies considerably from site to site, at least on the SE coast of Florida.



Adult Standing stock

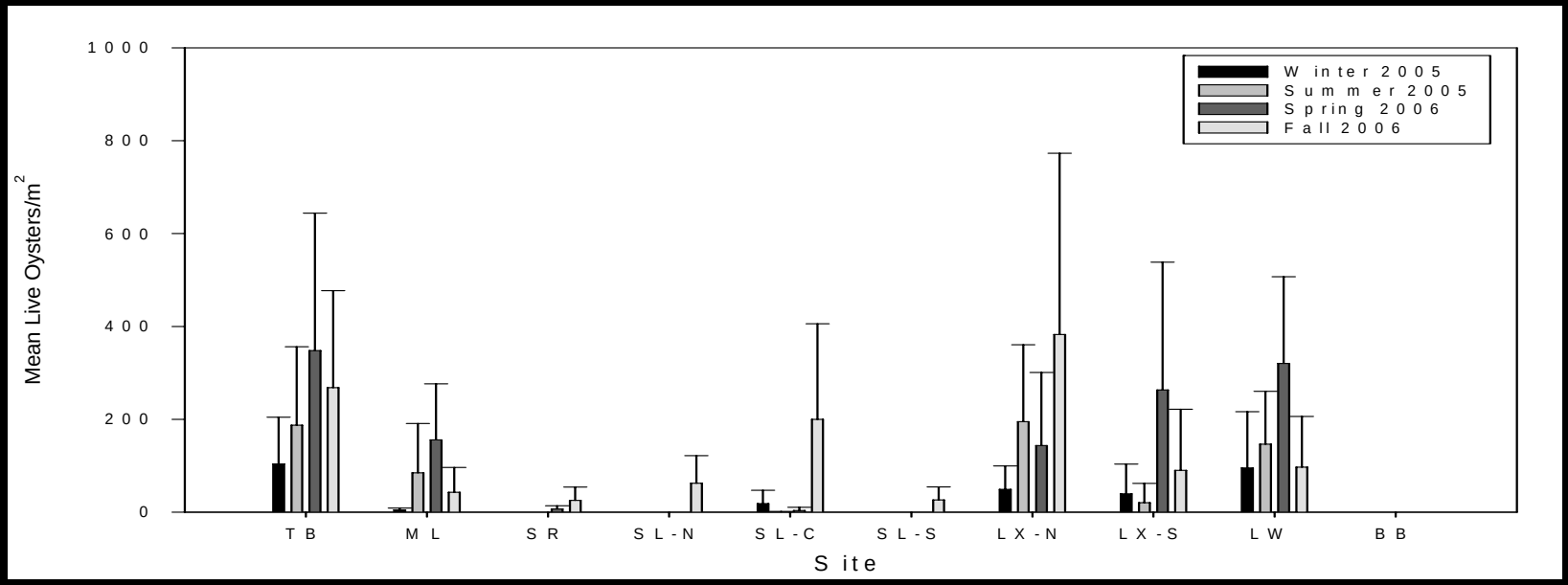
Recruitment

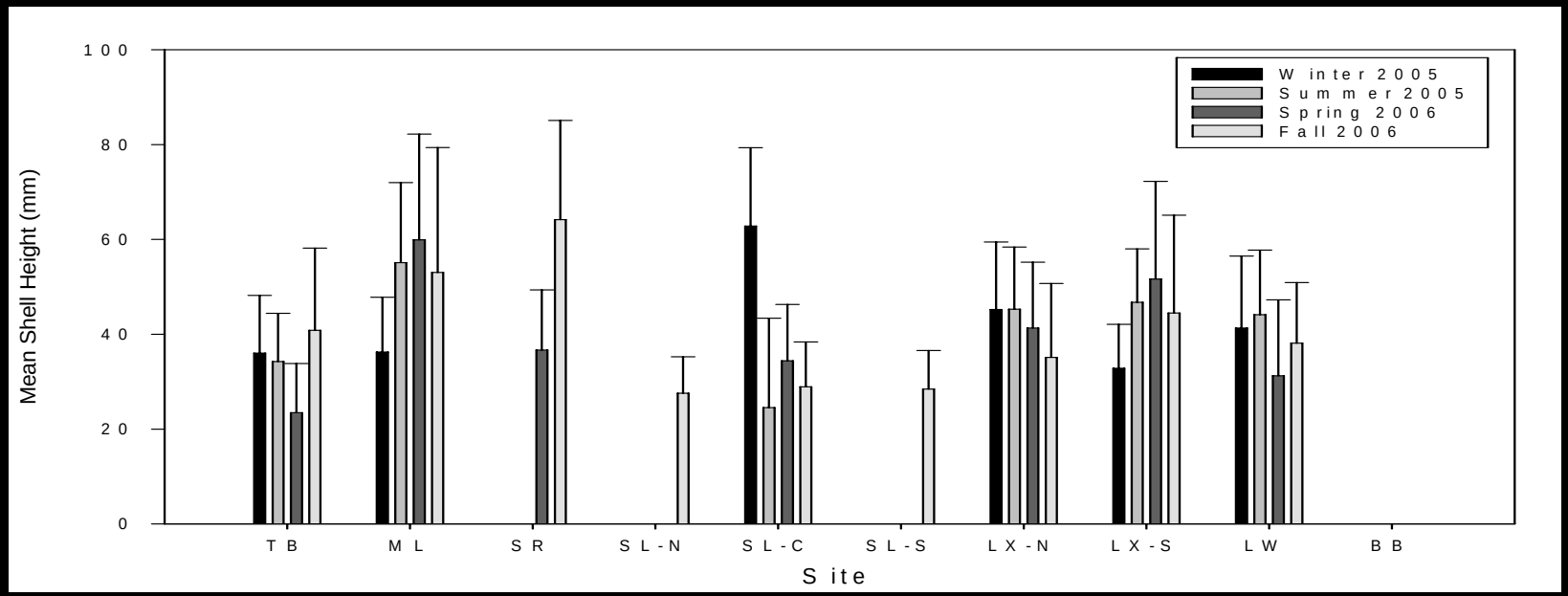
Reproduction, disease, condition index



Growth rate

Adult Population Abundance and Size





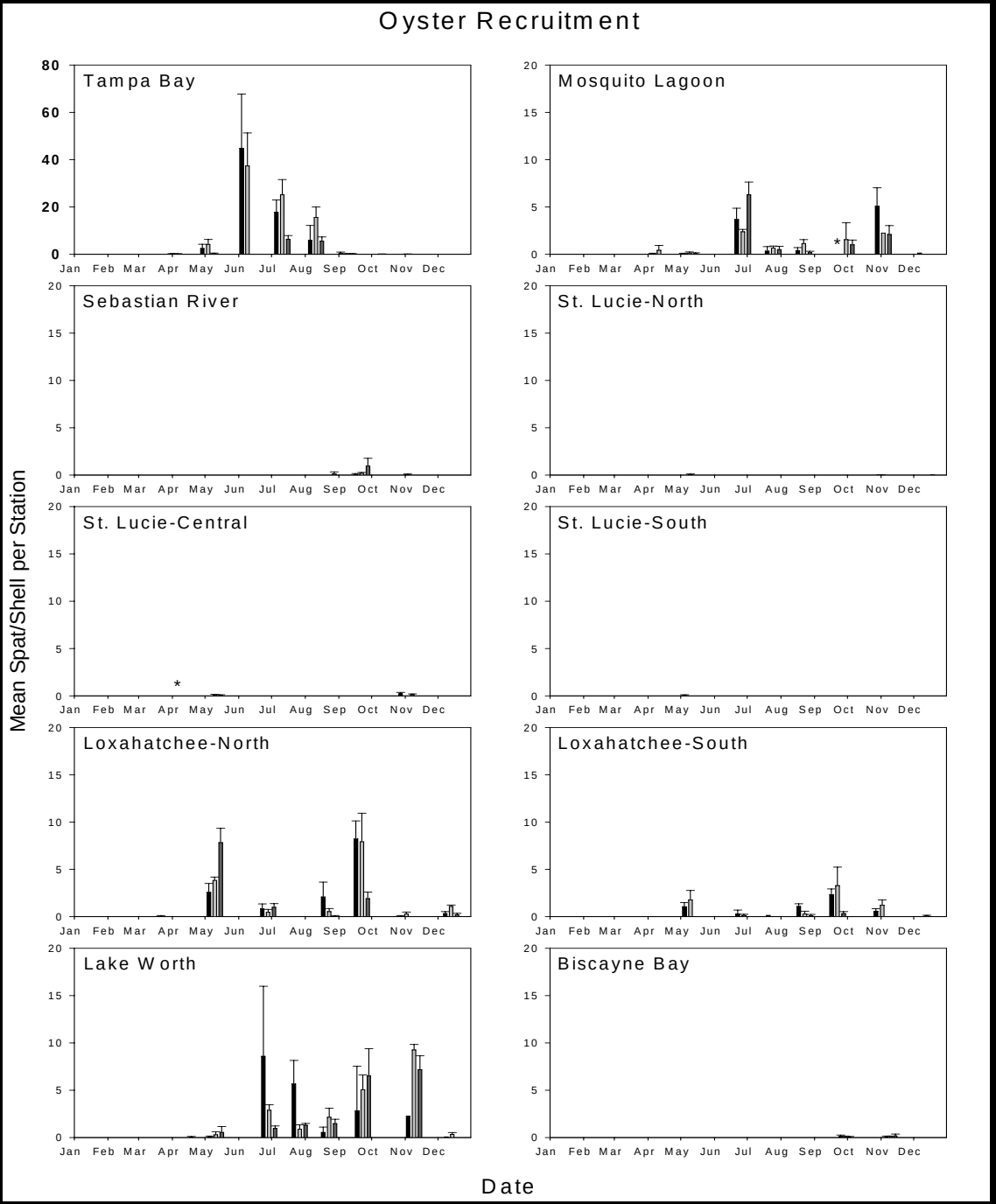
Recruitment

Bimodal in Tampa Bay, peak in June and most recruitment in summer. Peak is 3x here what it is in east coast sites.

Relatively continuous at lower level in Mosquito Lagoon and Lake Worth Lagoon

Almost non-existent in Sebastian, St. Lucie, and Biscayne Bay.

Loxahatchee exemplifies local variation



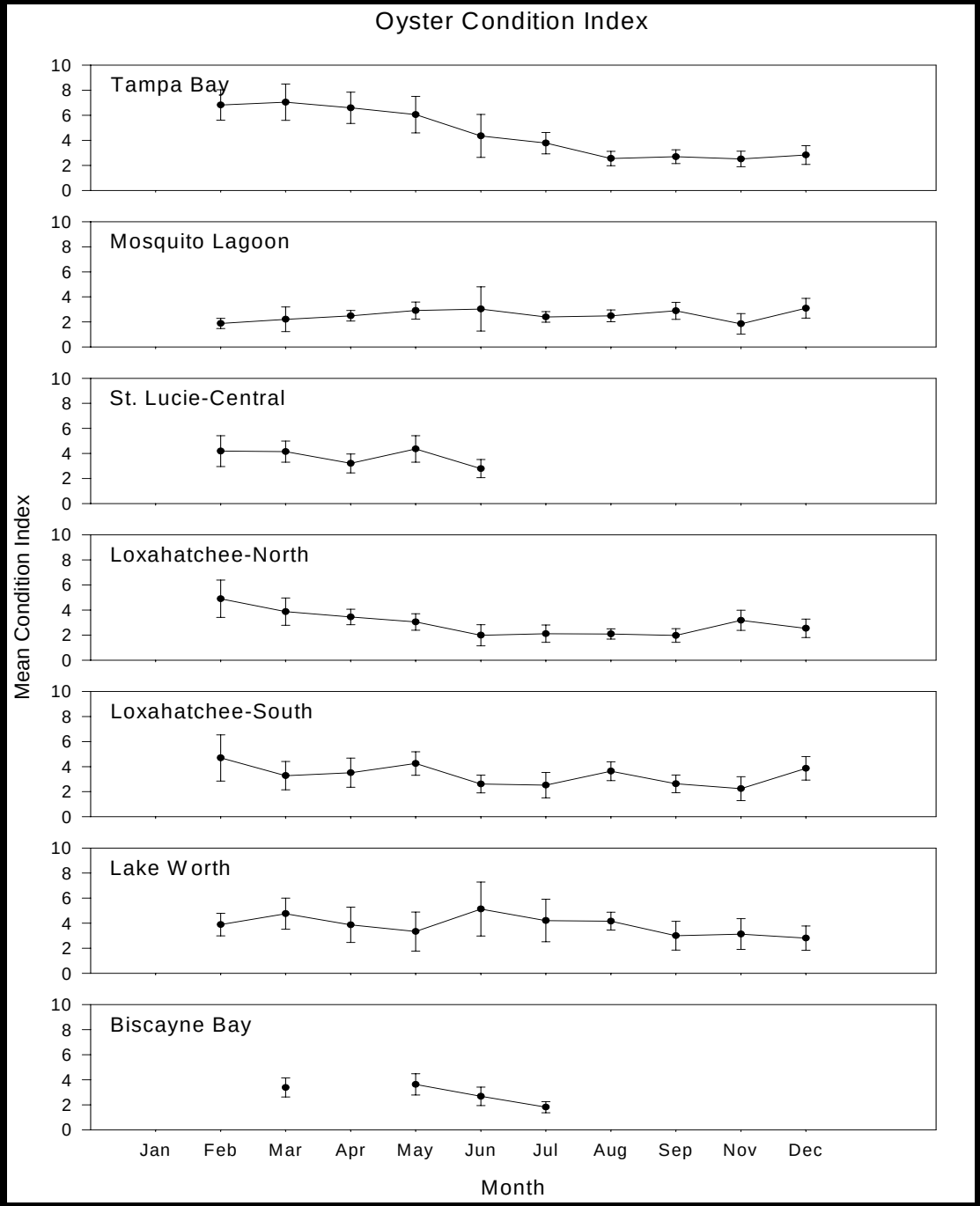
Condition Index = soft body to shell ratio

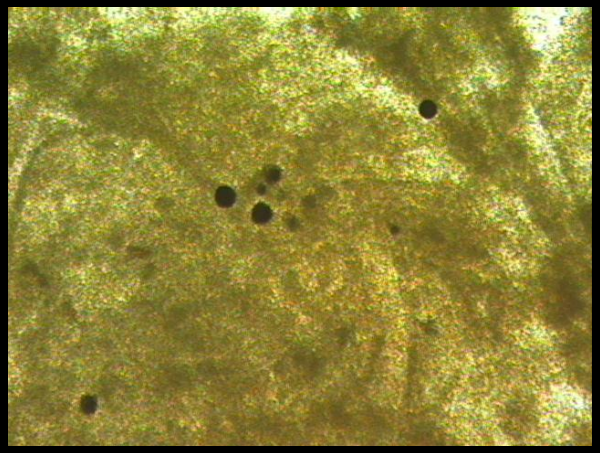
Generally follows recruitment (spawning?) patterns.

In Tampa Bay CI decreases steadily throughout summer coincident with continued but decreased recruitment

In contrast, CI relatively constant in Mosquito Lagoon as is recruitment pattern

Repro data not yet available but link with CI may be more direct (source of recruits not known)



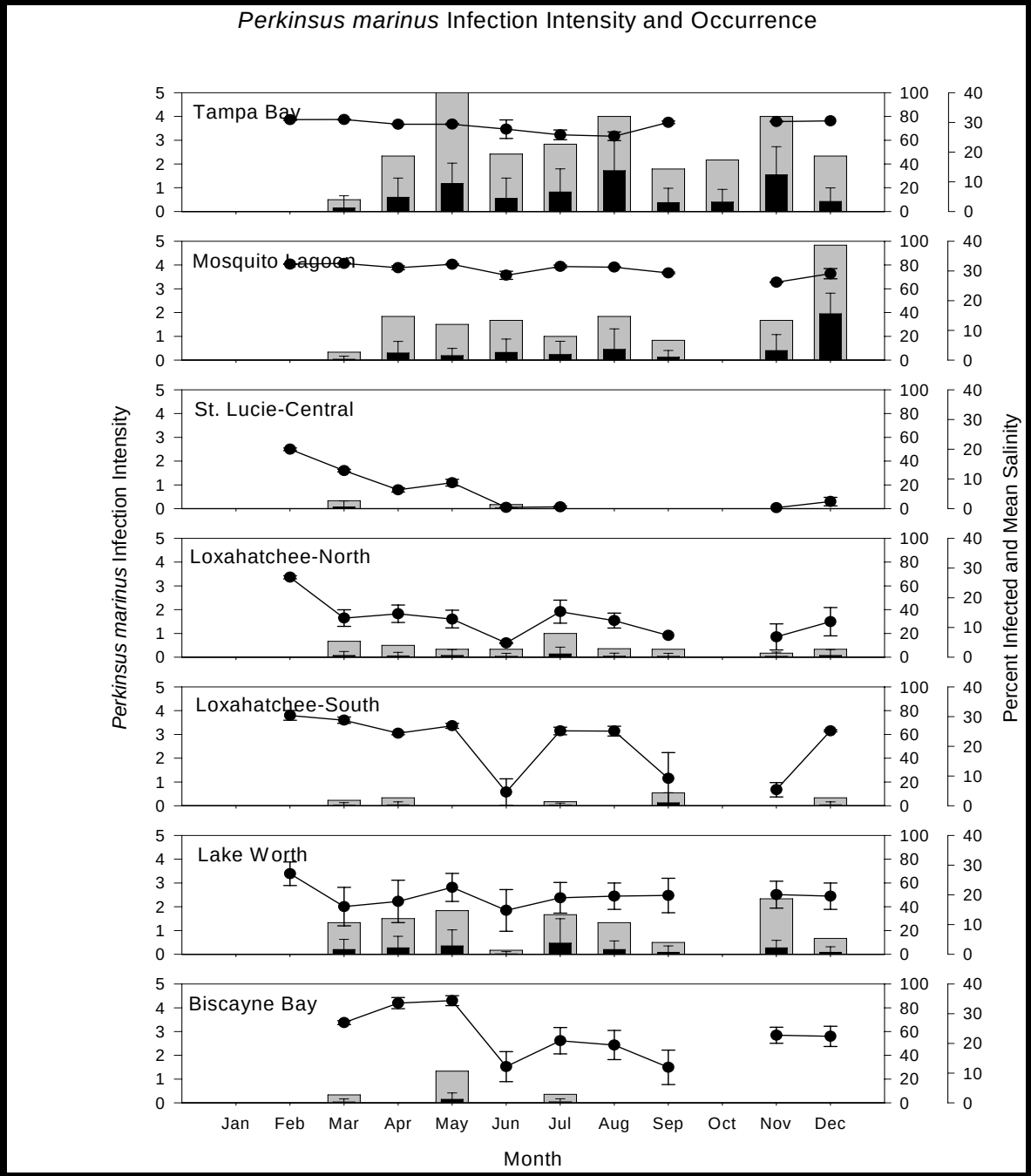


Disease Intensity

Highest prevalence in TB although TB and ML experience similar salinity

Not much disease in St. Lucie or Loxahatchee due to extremely low salinity during summer

Not enough animals at several sites and/or on certain dates for analysis

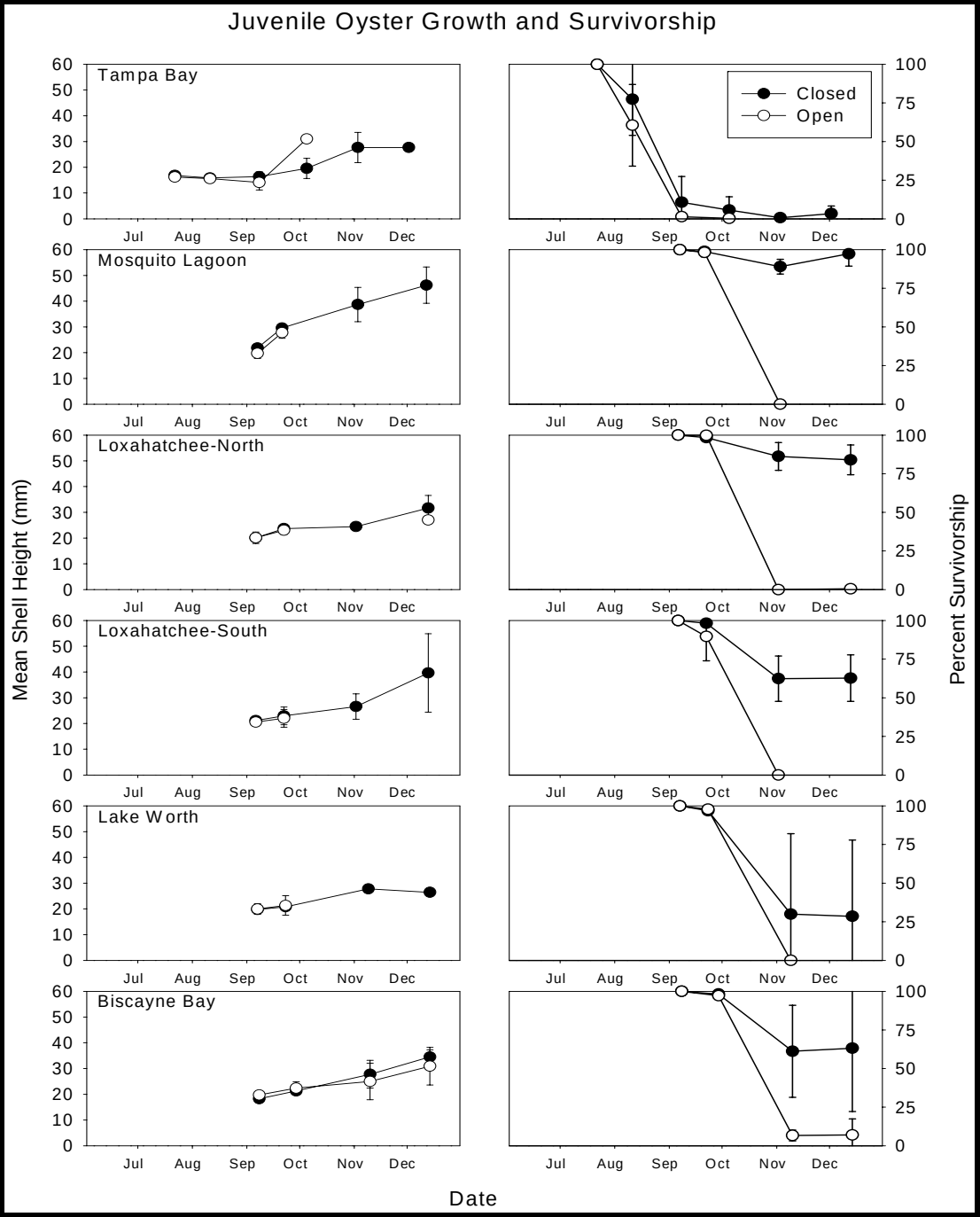


Juvenile Growth and Mortality

Cultured animals planted in cages, ½ open and ½ fully enclosed

Growth rates similar between sides suggesting little physiological impact of cages. Good growth at most sites except Tampa Bay.

Contrast in mortality between sides and among sites. Most oysters in open side lost (washout?). Lots of mortality at TB site, may be due to different origin of planted stock.



Summary

Variation among samples within a reef must be captured when sampling: this dictates large sample sizes and perhaps stratification within reefs

Variation among reefs within a site: location relative to local inputs of nutrients, freshwater, depth, larval sources, etc.

Variation among sites: fundamentals of substrate, landscape, environmental factors although patterns of variation are not always according to conventional wisdom

Conclusions

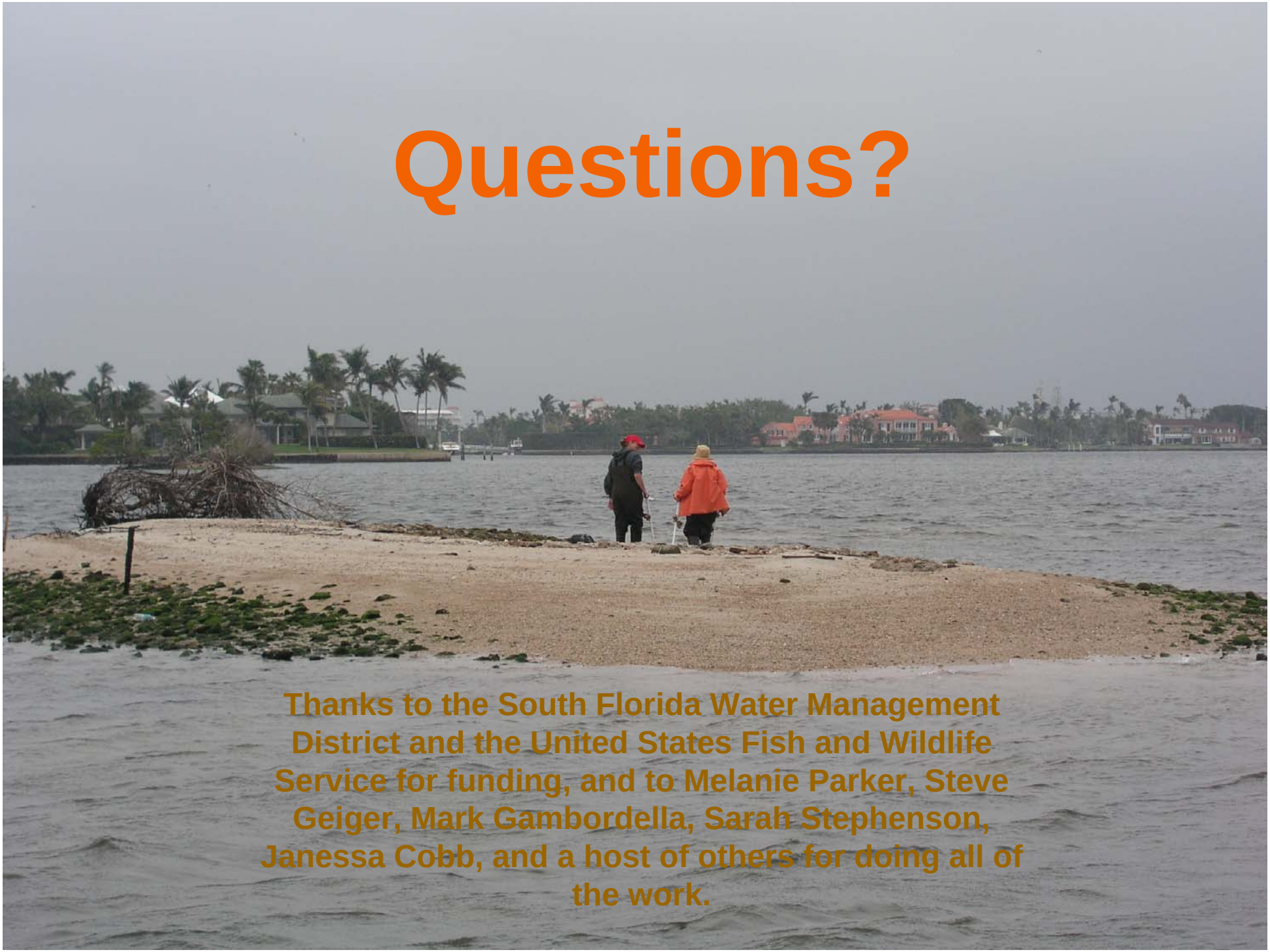
Mapping is prerequisite to knowing where the resource is and how it is changing, and this applies to any habitat (e.g., seagrass)

Maps need to be comparative and 3-D

Also need information on biological status, because maps provide a general outline but are less accurate in assessing within-reef status

These data can be used to guide site selection process and identify areas of need, but scale-dependent variation also must be accounted for

Questions?



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