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• In 1905 measured as much as 500 acres
• Extirpated throughout 20th century
• In 2013, Conservancy partnered with the USACE, U.S. F&W, and others to restore HMR
Structural (Reef Footprint, Area, Height)

Multi-Beam Side Scan Sonar Survey and Analysis

Post-Construction
• As-Built Survey
• 2-year Survey
• 4-year survey
Oyster Metrics (density, size, disease, % cover, etc)
\[ FR = 8.02 W^{0.58} e^{(-0.015T-27)^2} \]

Where \( W \) is dry tissue mass, \( T \) is temperature °C

zuErmgassen et al. 2012

**Estuary Filtration**

- **Estuary filter volume**
  - 1.7 B L/h

- **Historic filtration**
  - 87.2 B L/h (5056%)

- **Current filtration**
  - 12.1 M L/h (7%)

*using data as of March 2016*
Resident & Associated Fauna/Fish production

- **Biodiversity is 40% higher** at Half Moon Reef than on the adjacent bay bottom
- **Biomass is 1,014% greater** on the reef than on the adjacent bay bottom
Spatial and Temporal Use by a Recreational Important Spc.

- Half Moon Reef appears to serve as primary core use area or habitat for the majority of tagged spotted seatrout
- Disproportionately high use of the inner reef habitats of HMR
- Short- and long-term patterns of presence on the reef were strongly influenced by regional fluctuations in temperature and salinity. However the majority of fish resumed use of the reef habitat shortly thereafter.
Recreational Angler Survey

- 45% of the in-person survey respondents reported that they were familiar with the Half Moon Reef restoration work.
- 94% of anglers reported that the restored habitat offers a more satisfying experience than other fishing locations.
- Charter and rec boats both agreed HMR was an above-average to excellent fishing spot in Matagorda Bay to which they will return time and time again.

- Reef added $691,000 to Texas’ GDP each year and generated an additional $1.273 million in annual economic activity.
- Half Moon Reef has created a dozen new jobs and $465,000 in annual labor income.
The Science for Nature and People Partnership (SNAPP)

Aligning coastal restoration with ecological and societal needs

Jon Grabowski, Katie Arkema, Rachel Gittman, Bryan DeAngelis and Multiple Workshop and Advisory Panel Members
I. Understanding where we are now

Q1) Where has restoration occurred so far and for which coastal habitats?
*Approach:* data-driven analysis

Q2) What types of quantitative and qualitative information are currently used to guide restoration decisions, and what would be valuable to help guide future restoration efforts?
*Approach:* Review and evaluation of ecological, physical, economic, and societal data and metrics currently tracked and those that would be beneficial to track

Q3) Where are the key points/places/opportunities in restoration funding decision-making processes across agencies that provide an opportunity for inserting new information?
*Approach:* qualitative analysis of decision-making process
II. Where do we want to get to

Q4) How do we scale up and connect outputs to outcomes so that we can be confident that restoration activities are achieving broader ecosystem and societal goals?

*Approach*: qualitative and quantitative analyses of previous restoration projects, the types of data that are typically collected, and the types of data that would be useful in addressing outcomes

Q5) What are the primary and secondary goals of each agency, and what are the common societal goals that they are achieving/would like to achieve? Where are the areas (e.g., habitats, projects, geographic regions) where societal and ecological benefits are well aligned?

*Approach*: qualitative analysis of primary and secondary mandates to understand where co-benefits can be more readily achieved; quantitative spatial analysis (e.g., heat maps) of the degree to which societal and ecological goals are aligned
Questions?