BOEM
Bureau of Ocean Energy Management

OSC Scientific Committee Meeting
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Headquarters

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Variability in Ecosystem Service, Resiliency, and Post-Dredging Recovery of Ridge-Swale Habitat and Biological Communities in the Mid- and South-Atlantic Bight

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**PO = Physical Oceanography FE = Fate & Effect BIO = Biology
PS = Protected Species SE = Social & Economic OT = Other

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Variability in Ecosystem Service, Resiliency, and Post-Dredging Recovery of Ridge-Swale Habitat and Biological Communities in the Mid- and South-Atlantic Bight

BOEM Information Need:

1) A better understanding of ecosystem functions (bioenergetics, trophic transfer) of ridge-swale habitat

2) The relevance of this habitat to benthic communities, fishes, and trophic structure

3) To identify appropriate conservation and mitigation measures

4) Ability for improved effects analyses in NEPA documents and greatly focus and improve the outcomes of Essential Fish Habitat consultations.

Date Information is Required:

Ongoing need for current and future projects

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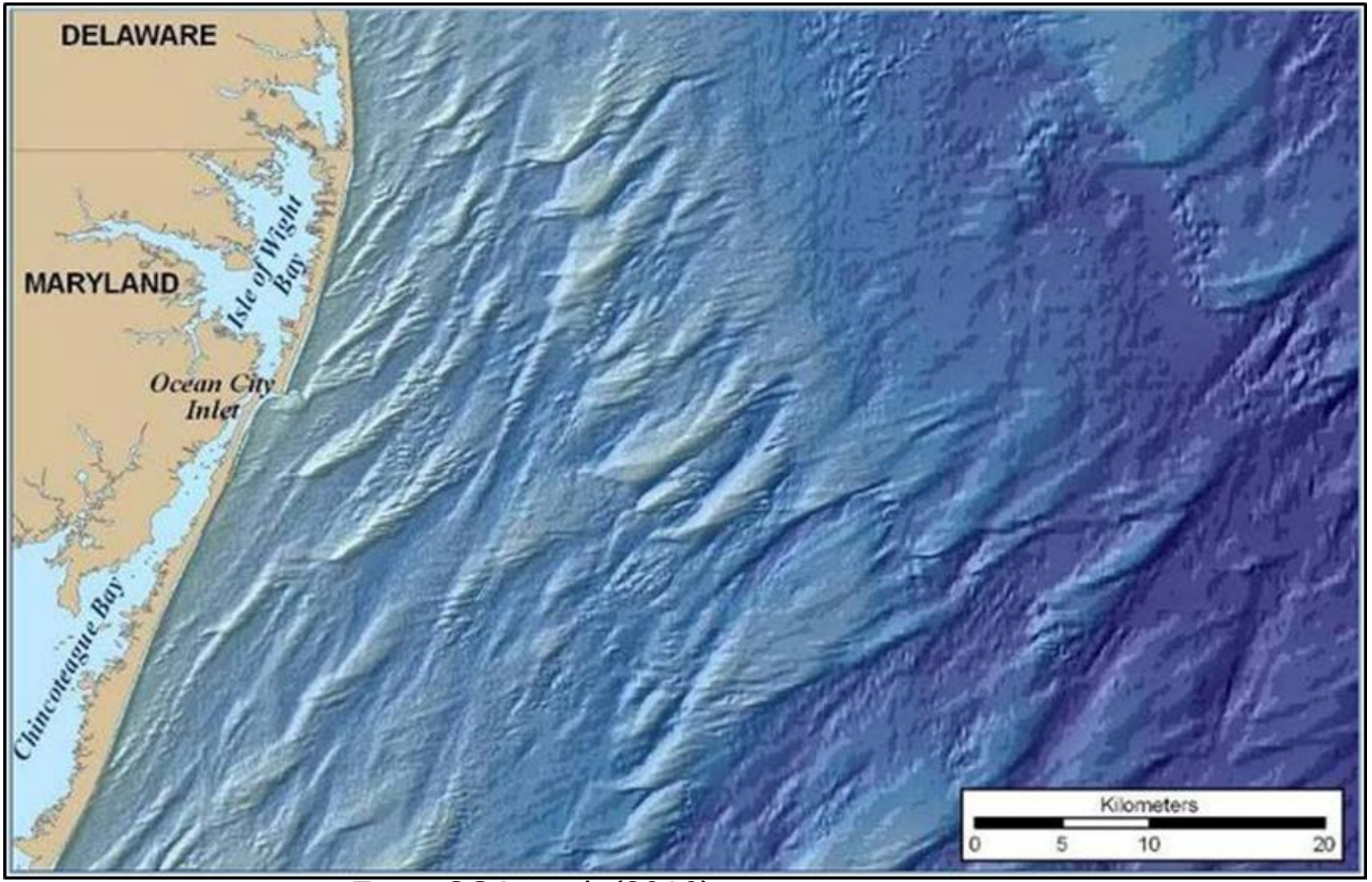

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From CSA et al. (2010).

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Variability in Ecosystem Service, Resiliency, and Post-Dredging Recovery of Ridge-Swale Habitat and Biological Communities in the Mid- and South-Atlantic Bight

Background:

A) Relationship with Previous Work/Efforts

- Numerous site-specific studies (many BOEM-sponsored) with observations <3 years after dredging, but extremely limited observations on biological recovery 7-10 years removed

- Shorter-time frame observations generally capture initial recovery of benthic and pelagic communities with some observations of succession

- Limited information about the trophic functions of recovered communities and fisheries use and recovery

- U.K. research in North Sea stresses value of long-term observation record

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Background:

B) Relationship with Concurrent/Future Efforts

- Recent study, *Review of Biological and Biophysical Impacts from Dredging and Handling of Offshore Sand,* reviewed and ranked data gaps, several of which would be addressed through this study

- Opportunity to expand an existing study of similar nature that has recently been allotted funds through Hurricane Sandy Supplemental Appropriations

- Would complement an ongoing study, *Workshop and Research Planning to Improve Understanding of the Habitat Value and Function of Shoal/Ridge/Trough Complexes to Fish and Fisheries*

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Variability in Ecosystem Service, Resiliency, and Post-Dredging Recovery of Ridge-Swale Habitat and Biological Communities in the Mid- and South-Atlantic Bight

Study's Objectives:

- Characterize the range and variability of ecosystem function (bioenergetics, trophic transfer) that ridge-swale habitats provide in the Mid- and South Atlantic Bights

- Determine the relative importance of this habitat type to keystone benthic and fish species

- Characterize functional differences in dredged and undisturbed areas by comparing species composition and diversity, population dynamics, and trophic structure

- Relate observed biological differences to physical and biophysical characteristics or other ecosystem changes.

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Study's Methods:

- Two potential study sites offshore Virginia and Florida w existing data

- Sample pre and post disturbance and proximal control sites using the Before-After-Control-Impact method (BACI)

- Seasonal data collection and from various ridge/swale environments

- Suggested methods include repeat bathymetric/side-scan sonar surveys, box cores, benthic video, trawling, fish tagging, diurnal nekton sampling, gut content analysis, reflectance analyses for plankton size distribution, etc.

- Collection methods would be developed to build a framework for an ongoing longer term (7-10 year) project examining residual impacts and recovery changes

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