

# Clam Dredge Framework Update

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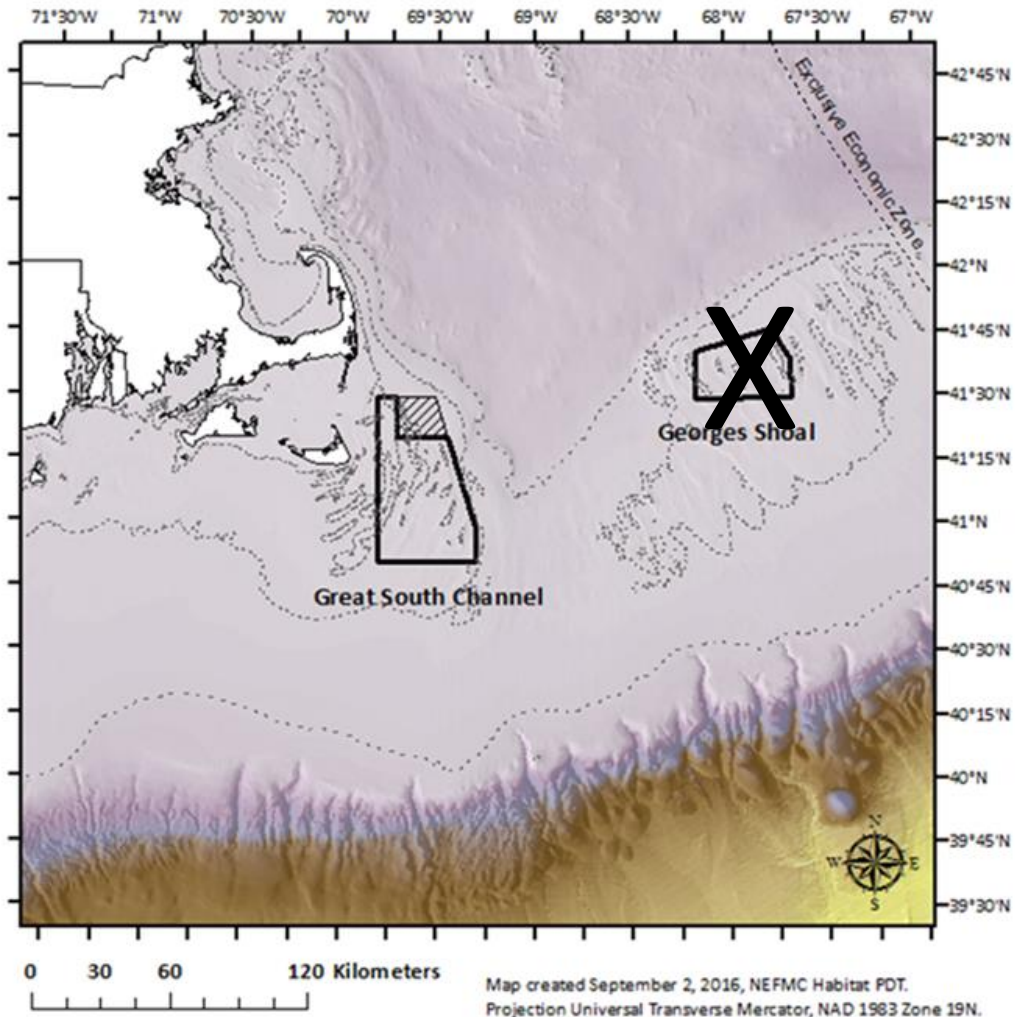
**NEFMC Staff, Habitat PDT Chair**

**NEFMC Habitat Committee**  
**January 9, 2018**  
**Wakefield, MA**



# Timing

- OHA2 decision 1/3/18
- One year clock starts with OHA2 effective date (April or May 2018?)
- Final Council action in September or November 2018
- Need to finalize action in time for rulemaking process to be completed before year is up



# Statement of work (edited)

The SC/OQ fishery will be granted a one year exemption for the Great South Channel Management Area (HMA) following implementation of OHA<sub>2</sub>, which will allow NEFMC to consider development of an access program for this fishery. The Council intends through this action to identify areas within the HMAs that are currently fished or contain high energy sand and gravel that could be suitable for a hydraulic clam dredging exemption that balances achieving optimum yield for the SC/OQ fishery with the requirement to minimize adverse fishing effects on habitat to the extent practicable and is consistent with the underlying objectives of OHA<sub>2</sub>.

# Sources of information to consider

- Habitat characteristics
  - Sediment, epifauna, depth, flow
- Fish distributions
  - Groundfish, other managed resources – focus on juveniles, structure-associated species
- Clam distributions
  - Federal survey
  - Recent Nantucket Shoals survey (SCMFIS, August 2017)
- Fishing effort distributions
  - VTR, vessel track data, VMS

# SMAST video survey digital imagery

- 2006-2015
- Absence vs. presence of complex habitat:
  - Absence (0) = all quadrats have < 10% coverage of pebble/cobble/boulder substrate
  - Presence (1) = at least one of the four quadrats has > 10% coverage of pebble/cobble/boulder substrate, OR cobble is present at the station, OR boulder is present at the station
- Presence of cobble at the station (any one of the four quadrats)
- Presence of boulder at the station (any one of the four quadrats)
- Presence of > 30% percent gravel cover at station (any one of the four quadrats)
- Presence of long-lived epifauna at station (any one of the four quadrats)

# Habitat vulnerability

- 100 km<sup>2</sup> resolution as an output of the Swept Area Seabed Impact Model (SASI)
- SASI outputs ignore presence of cobble and boulder-dominated habitat types, but subsequent Council discussions have made clear that cobble- and boulder-dominated sediment types, as classified for SASI, are fishable with hydraulic dredges
- Updated vulnerability estimates from fishing effects model might be available in time to inform development of this management action

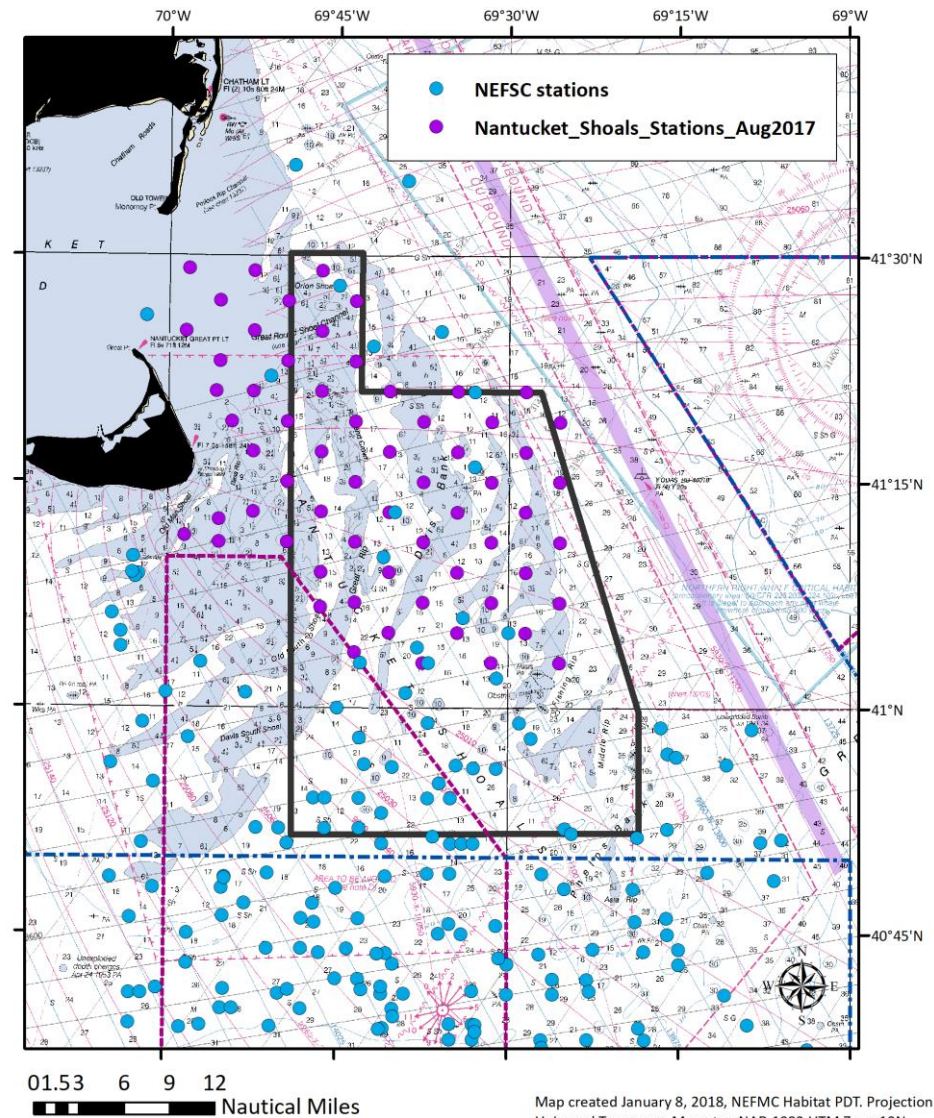
# Depth and shear stress

- The distribution of many biological resources is related to depth, so this attribute is an important metric by which to characterize potential clam dredge exemption areas and closures to mobile bottom-tending gears.
- Shear stress gives an indication of the level of natural disturbance experienced at a site. In this region, benthic boundary shear stress has been modeled using SMAST's FVCOM. The Great South Channel was identified as “high” vs. “low” energy for the purposes of SASI.



# Clam dredge surveys

- NEFSC 1982-2014 and industry-based August 2017
- Protocols very similar, data can be integrated
- Industry-based survey on Nantucket Shoals was completed largely to fill in spatial gaps in the federal survey, which missed important commercial fishing grounds





# Clam survey data

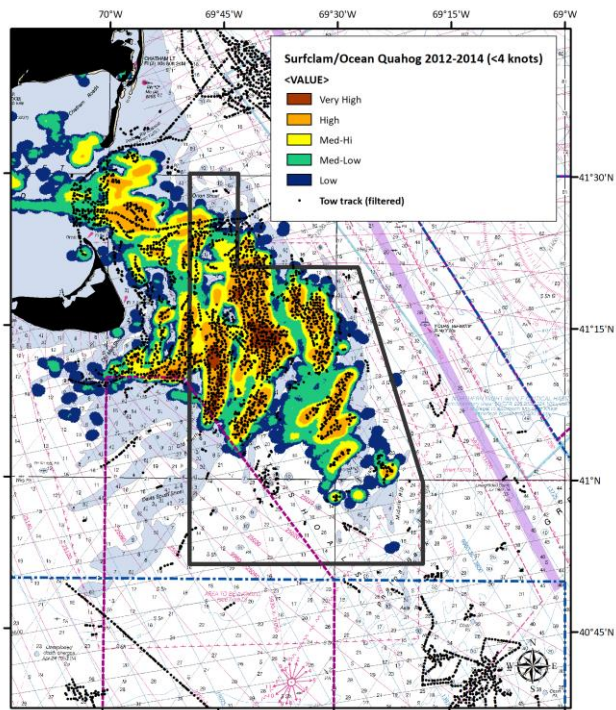
Category	Details
Clams	Surfclams ( <i>Spisula solidissima</i> ) and ocean quahogs ( <i>Arctica islandica</i> ), by species and size class
Other live animals	<i>Mercenaria campechiensis</i> , <i>Placopecten magelanicus</i> , <i>Spisula polynyma</i> , <i>Pitar morrhuanus</i> , <i>Venus borealis</i> , <i>Astarte castanea</i> , <i>Modiolus modiolus</i> , <i>Ensis directus</i> , Asteroids ( <i>Asterias</i> spp., <i>Astropecten</i> sp.), <i>Limulus polyphemus</i> , Crabs ( <i>Cancer borealis</i> , <i>Cancer irroratus</i> , <i>Ovalipes guadalupensis</i> , <i>Ovalipes ocellatus</i> , <i>Libinia emarginata</i> , <i>Pagurus</i> ), Gastropods ( <i>Busycon</i> spp., <i>Buccinum undatum</i> , <i>Neptunea decemcostata</i> , <i>Colus stimpsoni</i> , <i>Lunatia heros</i> , <i>Polinices duplicatus</i> , <i>Nassarius</i> )
Shells	<i>Arctica</i> , <i>Spisula</i> , <i>Placopecten</i> , <i>Ensis</i> , <i>Astarte</i> , <i>Veneridae</i> , <i>Crassostrea</i> , Gastropoda, other
Substrate	Gravel, Rock < 6", Rock 6-12", Boulder > 12"
Other invertebrates	Sponges, sea squirts, anemones, barnacles
Gear codes	Bad bottom, dredge damage, rocks, or 'good' tows

# Fall and spring trawl survey

Species	Size	Season	Years
Cod	0-24 cm	Mar-May	1968-2015
Cod	0-34 cm	Sep-Nov	1963-2014
Cod	0-10 cm	Mar-May	1968-2015
Cod	0-13 cm	Sep-Nov	1963-2014
Cod	25 cm +	Mar-May	1968-2015
Cod	35 cm +	Sep-Nov	1963-2014
Little skate	All sizes	Mar-May, Sep-Nov	1968-2015, 1963-2014
Winter skate	All sizes	Mar-May, Sep-Nov	1968-2015, 1963-2014
Lobster	All sizes	Mar-May, Sep-Nov	1968-2015, 1963-2014
Windowpane	0-13 cm	Mar-May	1968-2015
Windowpane	0-15 cm	Sep-Nov	1963-2014
Winter flounder	0-18 cm	Mar-May	1968-2015
Winter flounder	0-28 cm	Sep-Nov	1963-2014

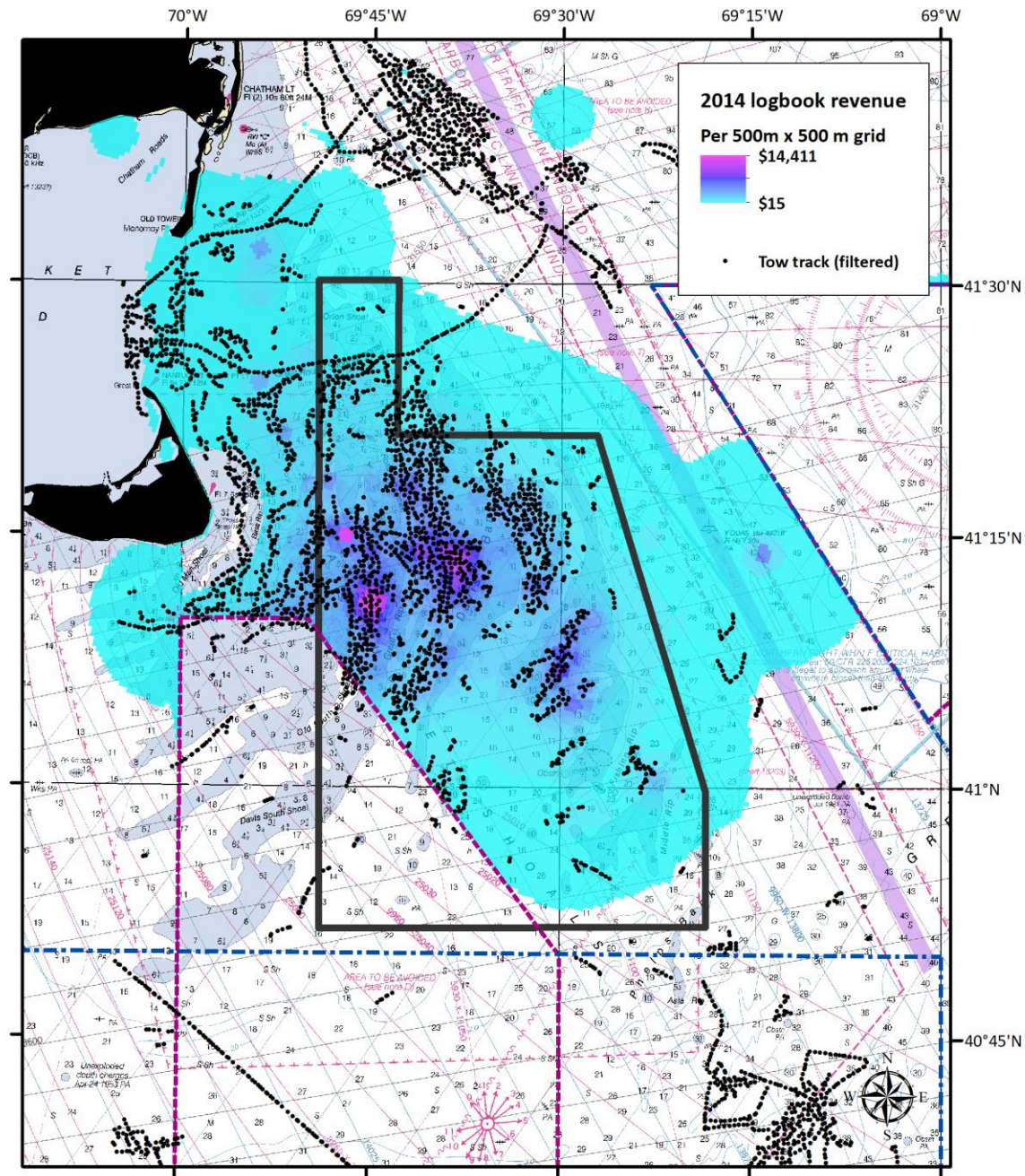
# Fishing effort

- Logbook
- Tow track data
- VMS



01.53 6 9 12  
Nautical Miles

Map created January 8, 2018, NEFMC Habitat PDT. Projection  
Universal Transverse Mercator, NAD 1983 UTM Zone 19N.



01.53 6 9 12  
Nautical Miles

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# Next steps

- Generate mapping products
- Develop quantitative metrics to summarize data in different portions of the HMA
- Compare results of analysis to determine which areas are best suited for access or closure
- Recommend draft alternatives and gather feedback
  - Work with habitat and MAFMC clam advisors