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Research Cruise Summary Report
2025

Project Name:	Davis Bank East Benthic Survey
Vessel Name:	FV Seafox
Departure Date:	5/11/2025
Land Date:	5/13/2025
Port:	Hyannis, MA
Chief Scientist:	Natalie Jennings
Scientific Crew:	Natalie Jennings, Kelly Alves
Report Completed by:	Natalie Jennings

BACKGROUND

The Great South Channel Habitat Management Area is a designated area closure to mobile bottom-tending fishing gear located east of Nantucket Island to protect essential fish habitat for Atlantic cod. With its closure, the New England Fishery Management Council set aside two areas (called the Rose and Crown and Davis Bank East) for research to accomplish objectives that include improving the understanding of living and non-living habitat features, habitat stability, habitat vulnerability, and other topics. From 2020 to 2022, CFF scientists and our Atlantic surfclam industry partners documented benthic habitat characteristics from dredge-mounted camera footage in the Rose and Crown. Analysis demonstrated that the seafloor in that region is patchy with sand and gravel substrates and experiences sediment instability due to strong tidal effects and the regular occurrence of seasonal storms coupled with the shallow nature of the Nantucket shoals.

Ongoing research in Davis Bank East under EFP# 23073 involves collaboration with two fishing vessels to collect seafloor imagery: drop-camera stills with the assistance of the FV *Seafox*, and multibeam sonar imagery with the FV *Tom Slaughter*. In May, two CFF staff scientists joined the captain and crew of the *Seafox* to survey the northern half of the sample area using the drop-camera array (**Figure 1**). A summary of the project objectives and a description of survey operations are provided below.

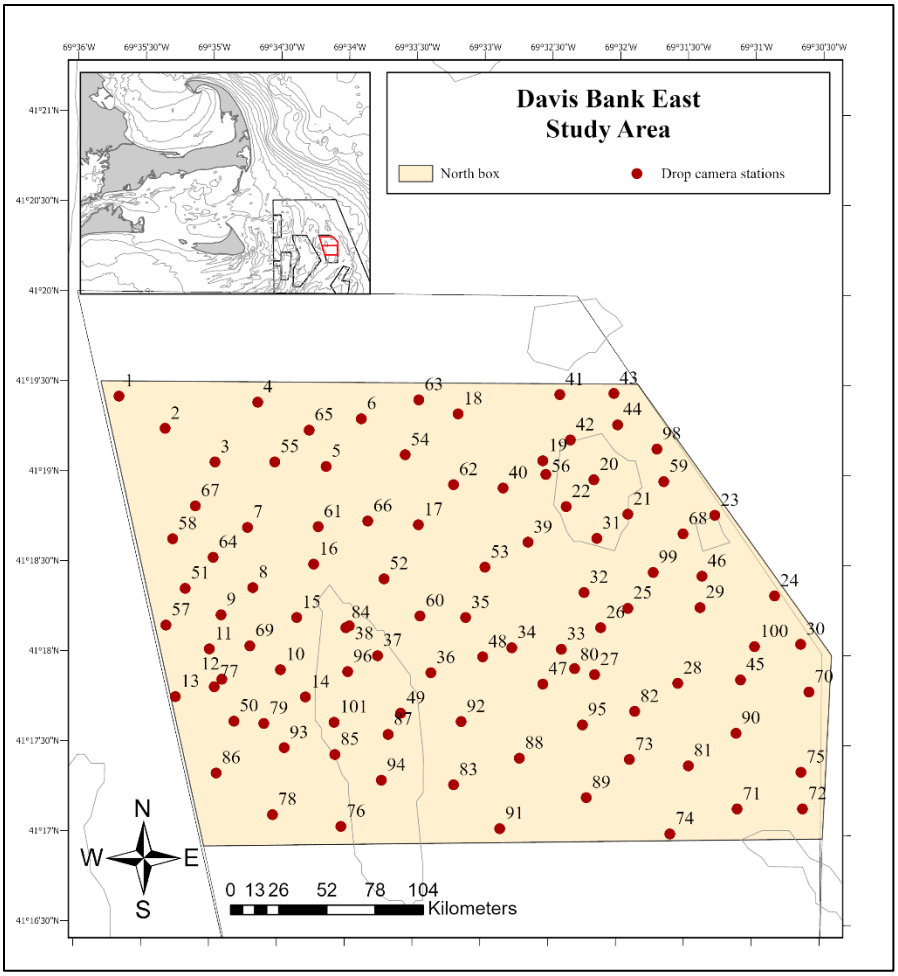

Figure 1. Chart of the study area in Davis Bank East research exemption area in the Great South Channel Habitat Management Area surveyed in May 2025.

CRUISE OBJECTIVES

The survey was designed to deploy a drop-camera at 100 stations within the 30 km² northern section of the study area. The drop-camera array (**Figure 2)** is equipped with a 5-second time-lapse camera, two high-definition video camera systems, and a temperature-depth logger. Additionally, the deployment of a baited stationary camera stand, also equipped with a 5-second time-lapse camera, was planned to capture images of any groundfish present in the area.

General objectives outlined in our research plan include:

1. Map benthic features within the Davis Bank East fishery exemption area of the HMA,
2. Assess seasonal benthic trends within the Davis Bank East fishery exemption area using multibeam sonar survey and ground-truthed with drop camera deployments,
3. Survey the benthic community associated with various habitats in the Davis Bank East exemption area using drop camera deployments,
4. Assess if Atlantic cod are present and using the area as the HMA was designed, i.e. spawning and juvenile habitat.

Figure 2. Drop camera array used to survey the Davis Bank East research area in the Great South Channel Habitat Management Area.

OBSERVATIONS & KEY TAKE AWAY

Preliminary annotations of the drop camera still images indicate that the study area contains a heterogeneous mixture of sand, shell hash underlain with sand, and rocks that range in size from granule to cobble (**Figure 3**). Annotations are currently 65% completed.

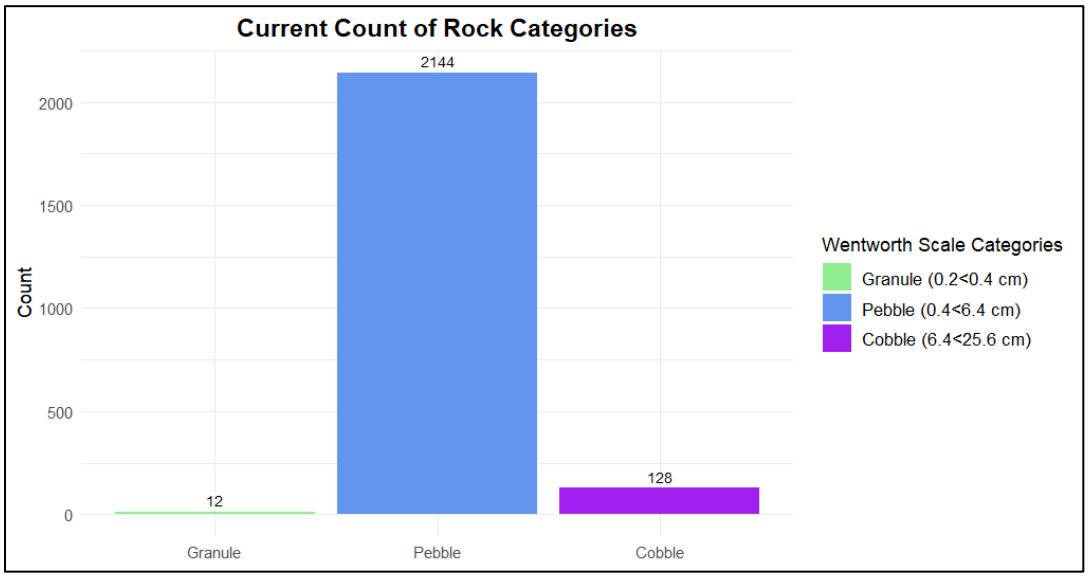

Figure 3. Total number of rock particles classified by Wentworth size categories collected in still images during the drop camera survey of the Davis Bank East research area.

After annotations are completed, station images will be compared to the September 2024 survey to assess changes in the benthic environment and substrate coverage (**Figure 4**).

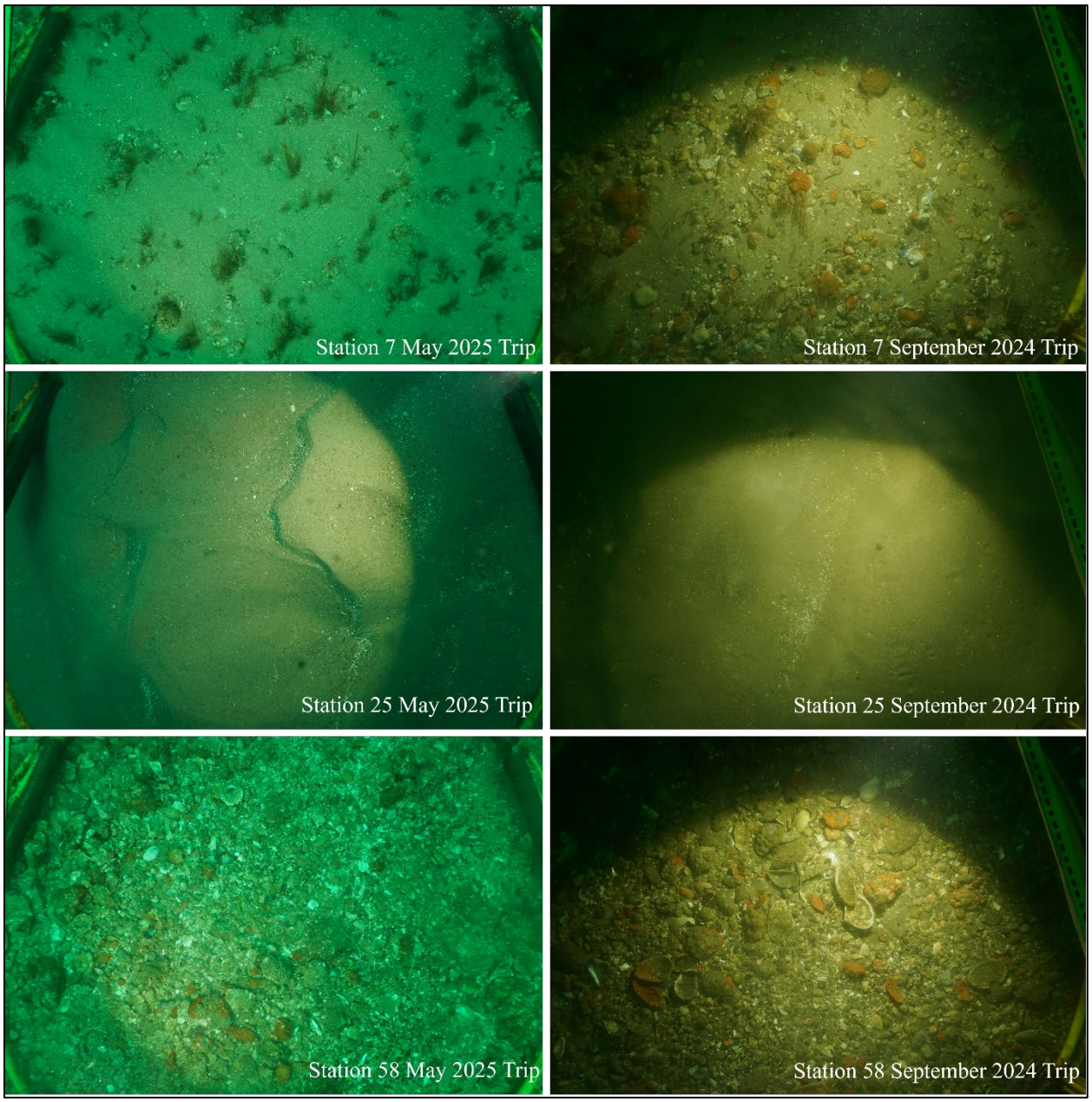

Figure 4. Three example stations showing images from the drop camera survey conducted in May 2025 shown on the left and the drop camera survey conducted in September 2024 on the right.

RESULTS

The drop camera array collected images at 100 stations in the north box of the survey area, resulting in 9 species annotated in the still images (**Table 1)**.

Table 1. Species present in the drop camera images annotated from 100 stations in the Davis Bank East north box study area.

Drop Camera Species	**Scientific Name**
Atlantic sea scallop	*Placopecten magellanicus*
Atlantic surfclam	*Spisula solidissima*
Blue mussel	*Mytilus edulis*
Common hermit crab	*Pagurus bernhardus*
Jonah crab	*Cancer borealis*
Longhorn sculpin	*Myoxocephalus octodecemspinosus*
Northern moonsnail	*Euspira heros*
Rock crab	*Cancer irroratus*
Waved whelk	*Buccinum undatum*

The stationary camera stand was successfully recovered after a 14-hour deployment in the northeast corner of the sample area (**Figure 5**). Eight species were identified in the still images (**Table 2**).

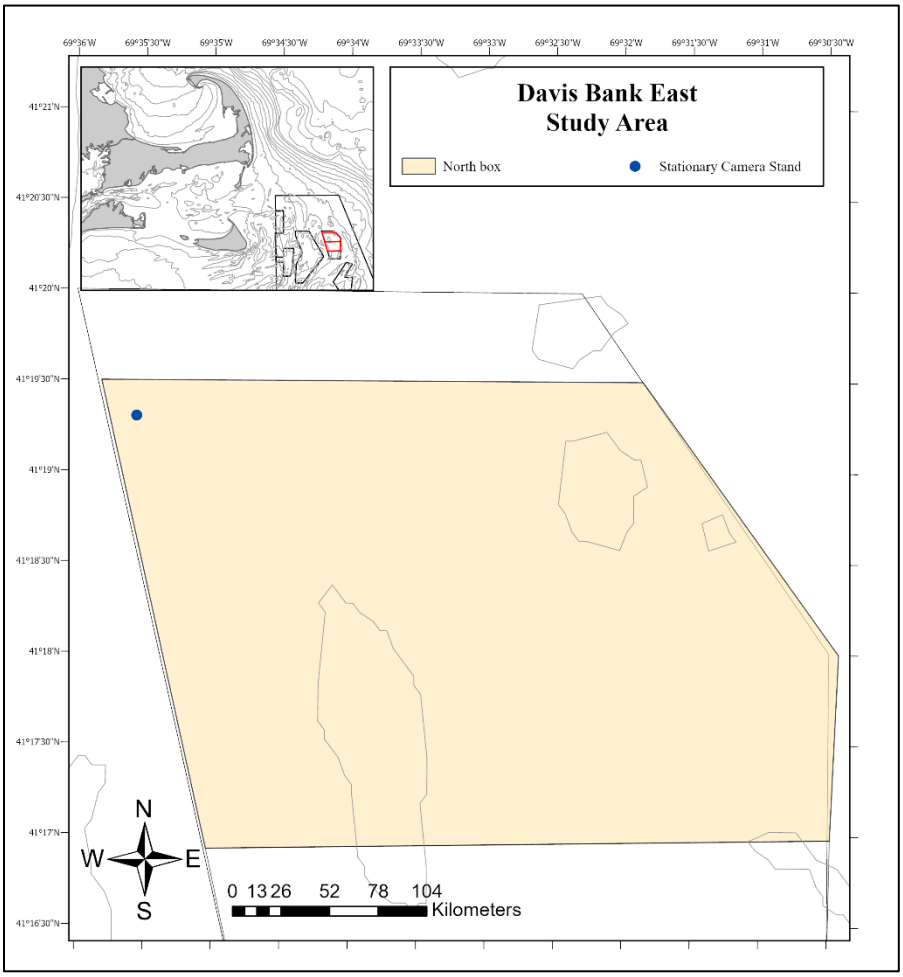

Figure 5. Location of the stationary camera stand deployment in the Davis Bank East north box study area.

Table 2. Species present in the 14-hour stationary camera deployment in the Davis Bank East north box study area.

Stationary Camera Species	**Scientific Name**
Atlantic cod	*Gadus morhua*
Blue mussel	*Mytilus edulis*
Common hermit crab	*Pagurus bernhardus*
Jonah crab	*Cancer borealis*
Northern moonsnail	*Euspira heros*
Rock crab	*Cancer irroratus*
Sea raven	*Hemitripterus americanus*
Waved whelk	*Buccinum undatum*

ADDITIONAL COMMENTS

The Davis Bank East Benthic Survey is supported through industry collaboration. A percentage of the proceeds from compensation fishing trip landings is allocated to CFF to further our research objectives.