

Resource Survey Report and Cruise Results

2025 Atlantic Sea Scallop Optical Survey

Georges Bank - Mid-Atlantic Bight

NOAA Ship *Henry B. Bigelow*

06 June - 16 June 2025

DOI: 10.25923/134y-na53

Submitted to: NOAA, NEFSC

Conor McManus

NOAA National Marine Fisheries Service

Northeast Fisheries Science Center

28 Tarzwell Drive

Narragansett, RI 02882

Phone: (401) 859-3404

Email: michael.conor.mcmanus@noaa.gov

Date: 17 December 2025

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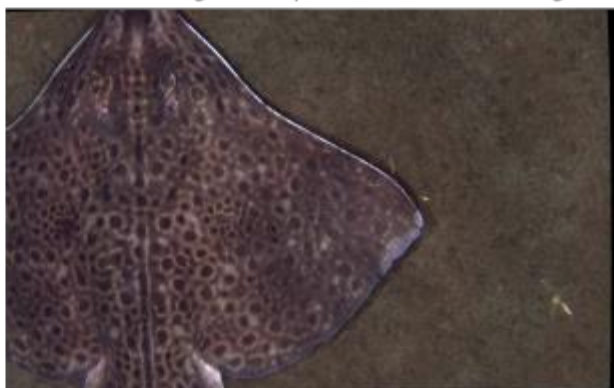
Georges Bank - Mid-Atlantic Bight
NOAA Ship *Henry B. Bigelow*
06 – 16 June 2025



Scientific staff prepare to launch HabCamV4 from the backdeck of NOAA ship *Henry B. Bigelow*



A swimming scallop in a HabCam image



A barndoor skate in a HabCam image



Scientific staff recover the Tethys AUV Polaris aboard NOAA ship *Henry B. Bigelow*



A goosefish in a HabCam image

NOAA National Marine Fisheries Service
Northeast Fisheries Science Center
Woods Hole, MA 02543

RESOURCE SURVEY REPORT AND CRUISE RESULTS

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Atlantic Sea Scallop Optical Survey

Georges Bank - Mid-Atlantic Bight
NOAA Ship *Henry B. Bigelow*
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Overview

The goal of the survey is to monitor and assess abundance, population composition and recruitment of the off-shore Atlantic sea scallop (*Placopecten magellanicus*) resource. This species is assessed using a combination of dredge sampling and non-invasive optical methods. The results of the dredge survey are reported separately. The following charts and data indicate the areas surveyed using a fiber-optic towed vehicle (HabCamV4) and two Tethys-class Autonomous Underwater Vehicles (hereafter Tethys AUVs).

The Northeast Fisheries Science Center (NEFSC) deployed HabCamV4 to collect paired images of the sea floor. In collaboration with the Woods Hole Oceanographic Institution (WHOI), the NEFSC also deployed a Tethys AUVs fitted with stereo camera payloads to begin collecting data for use in annual scallop assessments and for calibration analyses between the other survey methods (e.g. HabCamV4, Tethys AUV, dredge). The HabCamV4 and the Tethys AUV images were annotated in order to quantify scallop abundance and size composition, and other species of commercial and ecological significance were noted.

In this report, maps of the optical survey track are included, showing locations of images that were analyzed.

Cruise Details

Project Title

2025 Atlantic Sea Scallop Optical Survey

Survey Vessel Names (Cruise Code), Cruise Dates, and Survey Legs

NOAA Ship *Henry B. Bigelow* (202504)

06 June - 16 June 2025

1 survey leg

Operating Institution

NOAA National Marine Fisheries Service, Northeast Fisheries Science Center

Cruise Objectives

- 1) Determine the distribution and relative abundance of Atlantic sea scallops (*Placopecten magellanicus*) and associated fauna using two sampling devices: the stereo-optic towed camera array (HabCamV4), and Tethys-class Autonomous Underwater Vehicles (Tethys AUVs).

Area of Operation

HabCamV4 and Tethys AUV survey tracks covered the Georges Bank - Mid-Atlantic Bight regions and are shown in Figures 1 and 2.

Methods

The NEFSC annual Atlantic sea scallop survey collects data on the Atlantic sea scallop, as well as a variety of fish and invertebrate species, using standardized dredging and optical surveys using a towed HABitat mapping CAMera system (HabCam) and Tethys AUVs. The standardized dredge survey has been conducted annually since 1977. The optical survey began in 2011 (HabCamV3, upgraded to HabCamV4 in 2012) and was conducted in conjunction with the dredge survey until 2023. In 2024, the optical and dredge survey were split into two distinct surveys, on two different vessels, and the Tethys AUVs have been deployed both independently and in conjunction with the HabCam survey time.

The optical survey is run by the NEFSC and consists of a fiber-optic towed vehicle (HabCamV4) fitted with stereo cameras. The HabCam was designed to collect paired images of the sea floor for the purpose of enumerating Atlantic sea scallops and other commercially and ecologically important species (roundfish, flatfish, skates, cancer crabs, whelks, lobsters, and squid). A Teledyne Benthos altimeter is mounted between camera housings and the vehicle's Attitude and Heading Reference System (MicroStrain; pitch, roll, yaw, heading) located on the back of the camera plate. Four vehicle mounted LED strobes are mounted at fixed angles. The strobes are adjusted to focus their beams on the seafloor when the vehicle is flown between 1.5-3 meters off the seafloor. Stereo cameras and strobes are triggered at 4-6 images per second and collect terabytes of data per day. Tow speed varies between 5 and 7 knots depending on ocean and bathymetric conditions. Images are analyzed for biological data at NOAA Fisheries, NEFSC, Woods Hole, MA.

Additionally, the NEFSC and WHOI have developed an optical imaging payload, known as the Autonomous Benthic Imaging Surveyor (ABIS) for the Tethys AUVs. This technology has been integrated with altitude following mission behaviors and downward facing stereo cameras to provide data products comparable to the HabCamV4 survey's towed vehicle. In 2024, a Tethys AUV was deployed with the ABIS during NEFSC Sea Scallop HabCam Survey and Uncrewed Underwater Vehicle for Scallop Survey to test the technology in the operational environment and begin understanding calibration needs between the different survey methods. Additional operational and gear details for the cruise can be located in cruise plans for the HabCam/Ecosystem Monitoring Cruise (HB2503) plans.

In 2025, the optical survey was conducted on the NOAA Ship *Henry B. Bigelow*. A Tethys AUV was also deployed from the *Bigelow* during the survey, but testing data from that mission were not analyzed as part of the sea scallop assessment. With the cancelation of leg 2 of the HabCam survey, two Tethys AUVs were deployed from

near-shore southern New England waters to sample scallop management areas in the Mid-Atlantic Bight.

Results

HabCam and Tethys AUV Image Collection Results

During the HabCam Survey, HabCamV4 operated in scallop strata of Georges Bank. Sampling was halted with temporary loss of the vehicle. HabCamV4 imaged along a cruise track of approximately 281 nm in the Georges Bank collected 880,059 image pairs, of which 11,504 were analyzed.

Two Tethys AUVs (“Stella” and “Polaris”) were deployed to cover additional tracklines in the Mid-Atlantic Bight. The Tethys AUVs imaged along a cruise track of approximately 128 nm and collected 48,421 image pairs in the Mid-Atlantic Bight, of which 5,414 were analyzed.

The survey track is shown in Figures 1 and 2.

Disposition of Data

Associated data were analyzed at the NEFSC Laboratory in Woods Hole, MA. Resulting data were audited for quality control and assurance, and archived in an Oracle database. Data and metadata for dredge surveys are available online at: [NOAA Fisheries InPort Library](#).

This report can be viewed online at <https://doi.org/10.25923/134y-na53> or by visiting the [NOAA Institutional Repository](#). Choose the Resource Survey Report for the 2025 Atlantic Sea Scallop Optical Survey.

The results of the dredge survey can be viewed online at <https://doi.org/10.25923/de6n-9p87> or by visiting the [NOAA Institutional Repository](#). Choose the Resource Survey Report for the 2025 Atlantic Sea Scallop Dredge Survey.

For further information, contact:

Conor McManus
NOAA National Marine Fisheries Service
Northeast Fisheries Science Center
28 Tarzwell Drive
Narragansett, RI 02882
Phone: (401) 859-3404
Email: michael.conor.mcmanus@noaa.gov

Field Notes

In an effort to share any unique insights and observations made during the survey, we have requested that the Chief Scientists on each part of the cruise comment on any interesting events that occurred during their leg of the survey. As noted above, the HabCam vehicle was temporarily lost during the survey, but was recovered after the survey and is being prepared for surveying in 2026.

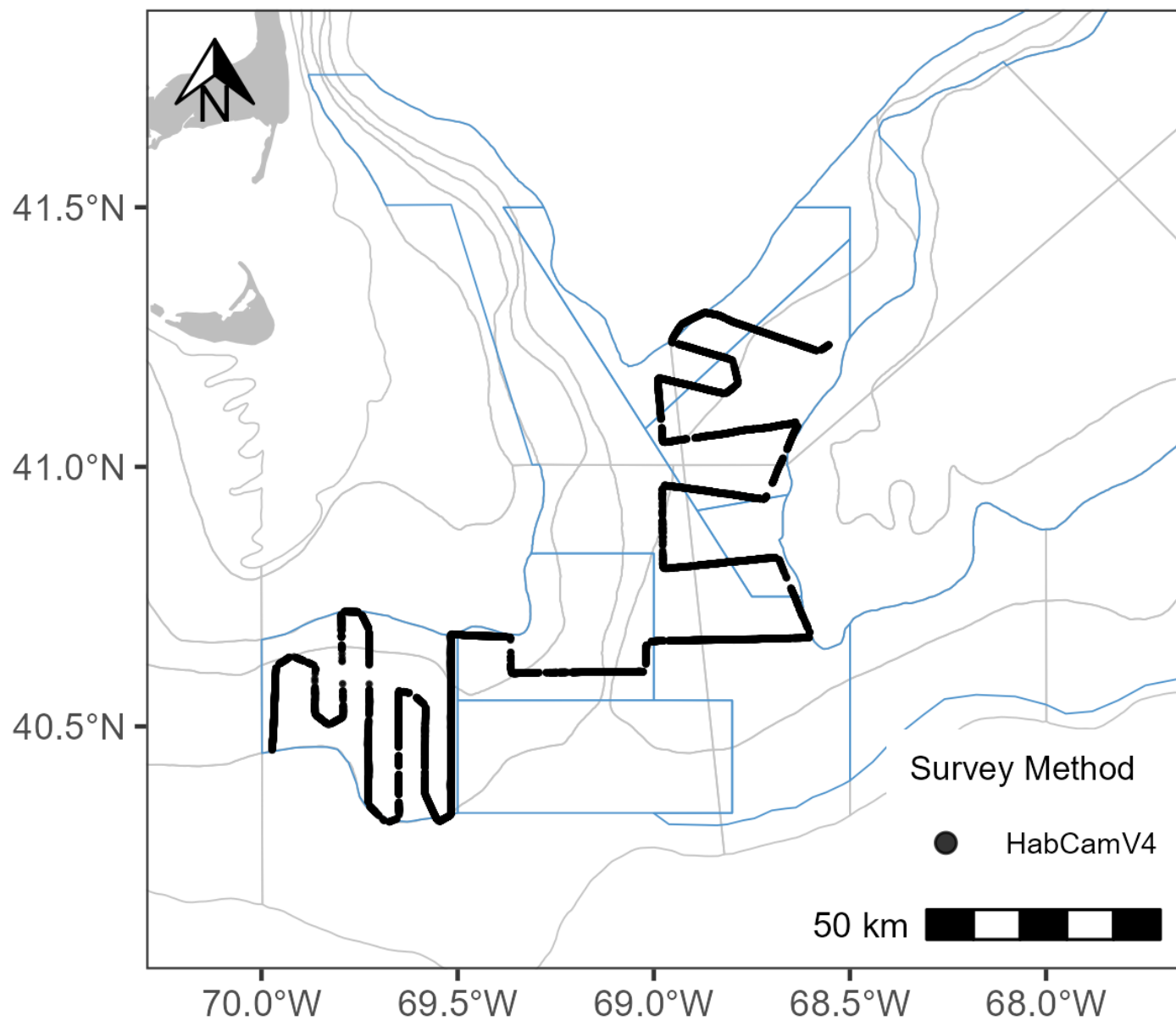


Figure 1. Georges Bank optical survey cruise track (usable images), as followed by NOAA Ship *Henry B. Bigelow* during the Northeast Fisheries Science Center's Atlantic Sea Scallop Survey, 06 June - 02 July 2025, respectively. NEFSC shellfish strata boundaries are shown in light grey, Scallop Area Management Simulator areas are shown in blue.

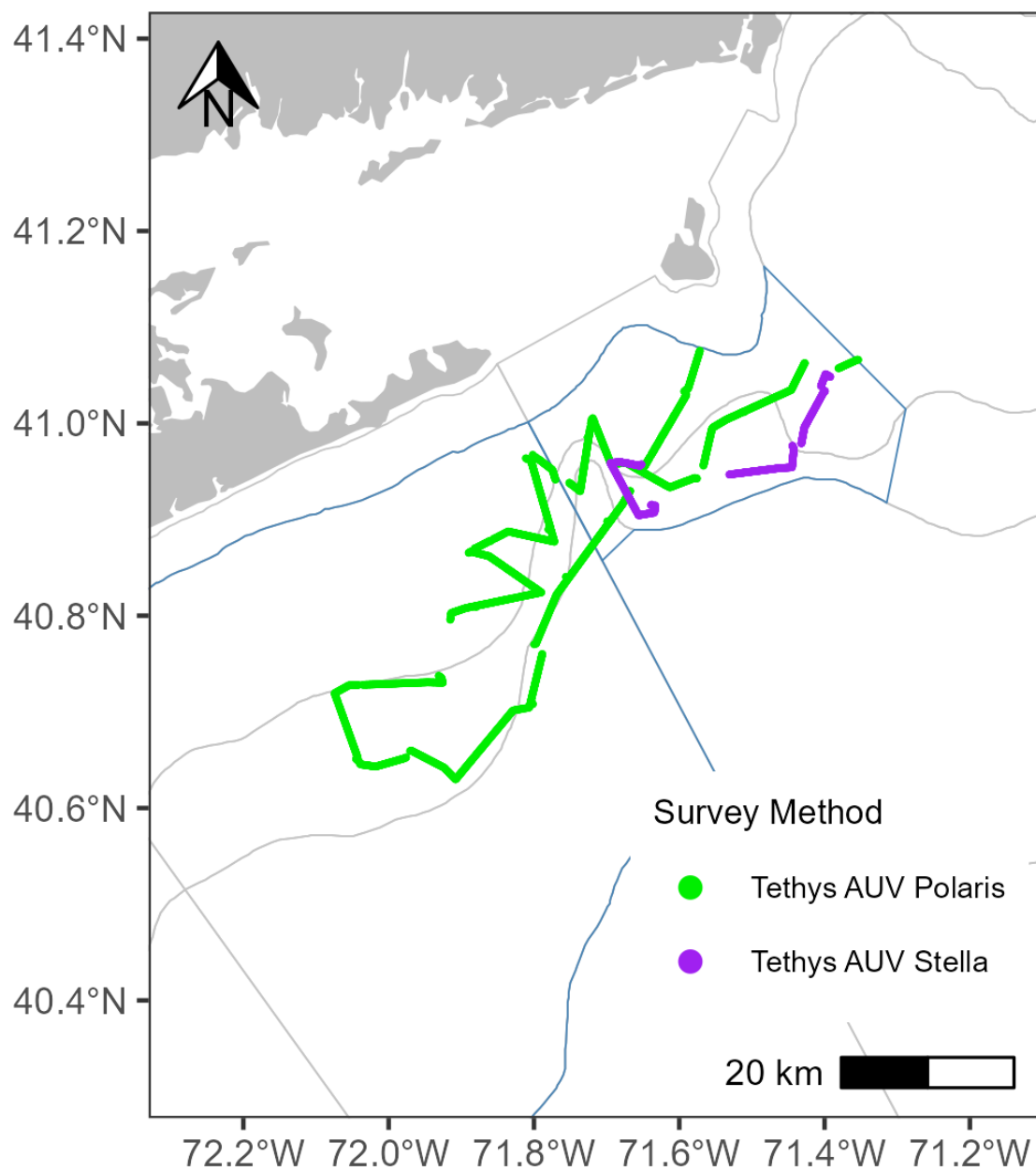


Figure 2. Mid-Atlantic Bight optical cruise track (usable images) from the Tethys AUVs, "Polaris" and "Stella". NEFSC shellfish strata boundaries are shown in light grey, Scallop Area Management Simulator areas are shown in blue.