

A Summary of State & Regional Fishery-Independent Bottom Trawl Surveys Rhode Island to Cape Hatteras, North Carolina

Rhode Island Division of Fish & Wildlife (DFW) Coastal Trawl Survey

The Rhode Island DFW Coastal Trawl Survey, in its current form, was initiated in 1979. This survey consists of two components, a Seasonal Trawl Survey that has sampled the Rhode Island state waters of Block Island and Rhode Island Sounds since 1979 and a Narragansett Bay Monthly Trawl Survey that was implemented in 1990. The Seasonal Survey is conducted during both the spring and fall, and 44 fixed sites are sampled during each cruise. The Narragansett Bay Monthly Survey uses a combined fixed and stratified random design, sampling 13 sites each month and increasing sampling intensity to 26 sites per month in the spring and fall. Stratification for this component is based on region and depth designations. These Rhode Island surveys sample from the *R/V John H. Chafee*, a 50' research vessel, and both use a 210 x 12cm, 2-bridle, 2-seam bottom trawl with a 6.4mm liner in the codend. Tows are 20 minutes in duration.

These Rhode Island DFW trawl surveys have provided data to support the stock assessments of: American lobster, bluefish, horseshoe crab, scup, summer flounder, tautog, and winter flounder.

Connecticut Department of Energy & Environmental Protection (DEEP), Long Island Sound Trawl Survey (LISTS)

The Connecticut DEEP, Long Island Sound Trawl Survey (LISTS), began in 1984 and has sampled both the Connecticut and New York portions of the Sound between New London, CT and Greenwich, CT annually since that time. Sampling occurs monthly in both the spring (April, May, & June) and fall (September & October), and 40 sites are sampled during each month for a total of 200 annually. Sites are selected using a stratified random design, with stratification based on depth and bottom type. The survey samples from a 50' research vessel, the *R/V John Demsey*, and uses a 14.0m (footrope length) otter trawl with a 5.1cm codend. Tow time is 30 minutes.

The LISTS has provided data in support of the stock assessments of the following species: American lobster, American shad, Atlantic menhaden, Atlantic sturgeon, black sea bass, bluefish, butterfish, horseshoe crab, longfin squid, river herring, scup, striped bass, summer flounder, tautog, weakfish, and winter flounder.

New Jersey Division of Fish & Wildlife (DFW), Ocean Trawl Survey

The New Jersey DFW Ocean Trawl Survey has been in operation since 1988, and samples the coastal ocean bounded by New York Harbor, the entrance to the Delaware Bay, and the 28m depth contour offshore. Sampling is conducted in January, April, June, August, and October each year, and sampling sites are selected using a stratified random design. Stratification is based on both latitude and depth. Approximately 40 sites are sampled during each cruise. All survey operations are conducted using the *R/V Seawolf*, an 80' converted stern dragger that is owned and operated by the State University of New

York. The survey trawl is a 2-bridle, 2-seam net measuring 25m on the headline and 30.5m on the footrope and is comprised of 12cm and 8cm stretch mesh webbing in the body and a 6.4mm stretch mesh liner in the codend.

Data collected by the New Jersey Ocean Trawl Survey have been incorporated into the following stock assessments: American shad, Atlantic menhaden, Atlantic sturgeon, black sea bass, bluefish, horseshoe crab, river herring, striped bass, summer flounder, tautog, weakfish, and winter flounder.

Delaware Division of Fish & Wildlife (DFW), Coastal Finfish Assessment Surveys

The Delaware Adult Trawl Survey has been conducted over three separate periods, 1966-1971, 1979-1984, and from 1990 to the present. Sampling occurs at 9 fixed stations on the Delaware side of the Delaware Bay extending from the upper bay to the mouth of the bay. A fixed site sampling scheme is utilized due to the lack of towable bottom in most locations. The survey has generally been conducted monthly from March through December since 1990, while earlier installments of the survey were conducted in January and February. Over the history of the survey, three vessels have been used but the gear has remained constant. The net used in the survey consists of 7.6cm stretch mesh in the wings and body and 5.1cm stretch mesh in the cod end. The trawl has a 9.3m headrope and a 12m footrope with 12.1m leglines. The trawl doors are constructed of 1.9cm virgin pine lumber and measure 1.4m x 0.7m and have a milled steel bottom shoe runner and chain bridles.

The Delaware Bay Juvenile Trawl Survey has been conducted from 1980 to the present. Sampling occurs at 49 fixed sites on the Delaware side of the Delaware Bay (1980-present), the Delaware River (1989-present), and in Indian River and Rehoboth Bays (1986-present). Again, due to lack of towable bottom, a fixed sampling scheme is utilized. The survey is conducted monthly from April through October. Over the history of the survey, three vessels have been used while the gear has remained constant. The net used in the survey is a semi-balloon otter trawl, consisting of a 5.2m headrope and a 6.4m footrope with 3.8cm stretch mesh number 9 twine in the body and a 1.3cm knotless stretch mesh liner in the codend. The trawl doors measure 0.3m x 0.6m and are constructed of marine plywood.

Data have been used from both surveys in the assessments of the following species: American eel, American shad, Atlantic croaker, Atlantic menhaden, black drum, black sea bass, blue crab, bluefish, horseshoe crab, river herring, spot, striped bass, summer flounder, and weakfish.

Virginia Institute of Marine Science (VIMS), Juvenile Fish & Blue Crab Trawl Survey

The VIMS Juvenile Fish & Blue Crab Trawl Survey was initiated in 1955, and as such is the longest continuously-operated trawl survey in the U.S. This survey samples in the Virginia portion of the mainstem of the Chesapeake Bay, as well as in the three major Virginia tributaries (James, York, & Rappahannock Rivers). Sampling in the rivers is restricted to the lower 64 km of each. Cruises are conducted each month of the year. A 43' research vessel, the *R/V Tidewater*, serves as the sampling platform for this program, and the trawl is a 200 x 6cm, two-bridle, four-seam box trawl. This net is of the same design, but ¼ of the size, of the NEAMAP/NEFSC 400 x 12cm bottom trawls. The trawl has a 5.3m headrope length, 6.4m footrope length, and the codend has a 6.35mm mesh liner.

Approximately 100 sites are sampled each month, and stations are selected using a combined fixed and stratified random design. Stratification is based on river mile in the tributaries, latitude in the bay, and depth in all areas. Tows are 5 minutes in duration, as the juvenile stage of the fishes inhabiting the bay is the target.

The Juvenile Fish & Blue Crab Survey has been incorporated into stock assessments of the following species: American eel, Atlantic croaker, Atlantic menhaden, Atlantic sturgeon, blue crab, summer flounder, and weakfish.

VIMS, Chesapeake Bay Multispecies Monitoring & Assessment Program (ChesMMAP)

Trawl Survey

The VIMS Chesapeake Bay Multispecies Monitoring & Assessment Program (ChesMMAP) Trawl Survey was initiated in 2002 and samples the mainstem of the Chesapeake Bay from approximately Pooles Island, Maryland to the Virginian Capes. Sampling is conducted every other month from March to November, and is meant to coincide with the period of estuarine residency for most of the fishes in this region. Survey operations are conducted using the *R/V Bay Eagle*, a 65' research vessel owned and operated by VIMS. The trawl is a 13.7m (headline length), two-bridle, four-seam modified shrimp trawl, with 15.3cm stretch mesh webbing in the wings and body and a 7.6cm stretch mesh unlined codend. The net is towed for 20 minutes at each sampling site with a target speed-over-ground of 3.5 knots. This gear configuration and towing protocol were selected to target the late juvenile and adult stages of fishes in the bay, complementing the efforts of the VIMS Juvenile Trawl Survey.

Sampling sites are selected using a stratified random design, with stratification based on both latitude and depth. Eighty stations are sampled during each of the five annual cruises.

The ChesMMAP Trawl Survey has been incorporated into the following stock assessments: Atlantic menhaden, Atlantic sturgeon, black sea bass, bluefish, scup, summer flounder, and weakfish.

VIMS, Northeast Area Monitoring & Assessment Program (NEAMAP) Mid-Atlantic/Southern New England Nearshore Trawl Survey

The VIMS Northeast Area Monitoring and Assessment Program (NEAMAP) Mid-Atlantic/Southern New England Nearshore Trawl Survey began full-scale sampling in the fall of 2007. This program operates from Martha's Vineyard, Massachusetts to Cape Hatteras, North Carolina; the outer bound of the sampling area is given by the 18.3m depth contour between Montauk and Hatteras and the 36.6m depth contour between Montauk and Martha's Vineyard. Two cruises are conducted annually. The spring survey begins around the third week of April and is completed by the end of May, while the fall sampling starts during the third week of September and is typically completed by the end of October. Sampling sites are selected using a stratified random design, with stratification based on latitude/longitude and depth, and 150 sites are sampled per cruise (300/year).

This trawl survey is a cooperative/collaborative sampling effort, and as such all at-sea research is conducted on the *F/V Darana R*. The bottom trawl is a 400 x 12cm (fishing circle), 3-bridle, 4-seam net,

with 12cm and 6cm stretch mesh webbing in the wings and body and a 2.54cm knotless nylon liner in the codend.

The NEAMAP Trawl Survey has been incorporated into the following stock assessments to date:
American lobster, Atlantic menhaden, bluefish, butterfish, long-finned squid, river herring, scup, and summer flounder.