APPENDIX II – Other surveys that capture bluefish

New Hampshire

NHFG Estuarine Juvenile Finfish Seine Survey

The New Hampshire Fish and Game's (NHFG) Marine Fisheries Division developed an Estuarine Juvenile Finfish Seine Survey in 1997 to monitor the abundance of juvenile finfish in the state's estuaries. The seine survey samples fixed stations in the Great Bay Estuary and Hampton Harbor on a monthly basis from June to November. Bluefish have only been encountered in this survey during the months of July, August, and September. All of the fish were less than 21 cm in length indicating they were young-of-the-year. Significant numbers of bluefish were only observed in three years of this survey: 1999 – 76 bluefish were caught; 2000 – 7 bluefish were caught; and 2001 – 53 bluefish were caught.

New Jersey

NJDFW Delaware River Striped Bass Recruitment Survey

The NJDFW Bureau of Marine Fisheries Delaware River Recruitment Survey monitors young-of-year striped bass found from the Salem Power Plant up to Newbold Island near Trenton, NJ. The survey, which began in 1980, provides an annual recruitment index for striped bass in the Delaware River. A 100-foot beach seine samples 32 fixed stations, bi-monthly, from late June through early November. The river is divided into three regions, each characterized by a distinct habitat type. Numbers of bluefish caught for the survey season range from 7 to 194. Distribution of juvenile bluefish caught in the survey usually depends on the amount of rainfall and sizes have ranged from 31 to 338 mm FL. The highest years of abundance were 1997, 1999, and 2001. The lowest years of abundance were 1996, 1994, and 2003. The majority bluefish catches occurred in the lower part of the river.

NJDFW Delaware Bay Finfish Trawl Survey

The NJDFW initiated a trawl survey in 1991 to survey finfish occurring in the shallow waters of the Delaware Bay. Eleven fixed stations are sampled monthly from April through October. Bluefish caught in the surveys have ranged in size from 34 to 259 mm FL. The survey has caught 82 bluefish in 937 samples. Numbers of bluefish caught for the survey season range from 1 to 24.

Virginia

VIMS Juvenile Finfish & Blue Crab Trawl Survey

The Virginia Institute of Marine Science's (VIMS) Juvenile Finfish and Blue Crab Trawl Survey was started in 1955 to monitor seasonal trends of important juvenile fish and invertebrates. The survey design includes both fixed and stratified random stations, which are sampled monthly throughout the year. Sampling occurs in the Lower Chesapeake Bay and the Lower James, York, and Rappahannock Rivers.

VIMS Juvenile Striped Bass Seine Survey

VIMS started the juvenile striped bass seine survey in 1967 to monitor annual recruitment of juvenile striped bass occurring in the lower Chesapeake Bay. The survey is the second longest abundance index for striped bass in the U.S. Fixed stations along the shores of the James, York, and Rappahannock rivers are sampled monthly from July to September.

North Carolina

NCDMF Juvenile Trawl Survey

NCDMF has conducted a juvenile fish trawl survey during May and June since 1979. The survey samples fixed stations from the Cape Fear River to the mouth of Albemarle and Currituck Sounds at depths <2 meters. One-minute tows are carried out using a trawl with a 3.2 m headrope and 3.2 mm (0.13 in) mesh cod end. Indices of abundance developed from this survey using data for shrimp, croaker, and spot have shown good correlation with landings for those species, but catches of bluefish were typically low. Catches ranged from 1-20 bluefish annually and fish ranged from 4-28 cm size classes. Arithmetic mean CPUEs ranged from 0.01-0.30 (1979-2004).

North Carolina Pamlico Sound Trawl Survey

NCDMF Pamlico Sound Trawl Survey began in 1987 and was initially designed to provide a long-term fishery-independent database for the waters of the Pamlico Sound, eastern Albemarle Sound and the lower Neuse and Pamlico rivers. However, in 1990 the Albemarle Sound sampling in March and December was eliminated, and sampling now occurs only in the Pamlico Sound and associated rivers and bays in June and September. From 1987-1989, a mongoose or falcon trawl was used for comparison with SEAMAP data of inshore and offshore catches. From 1990 to the present, fifty-two randomly selected stations (grids) are sampled over a two-week period, usually the second and third week of the month in both June and September. The stations sampled are randomly selected from strata based upon depth and geographic location. There are seven designated strata: Neuse River, Pamlico River, Pungo River, shallow (6-12 ft) and deep (>12 ft) Pamlico Sound east of Bluff Shoal, and shallow and deep Pamlico Sound west of Bluff Shoal. A minimum of three stations are maintained in each strata and a minimum of 104 stations are trawled every year. Tow duration is 20 minutes at 2.5 knots using the R/V Carolina Coast pulling double rigged demersal mongoose trawls (9.1 m headrope, 1.0 m x 0.6 m doors, 2.2 cm bar mesh body, 1.9 cm bar mesh cod end and a 100 mesh tailbag extension. All species are sorted and a total number and weight is recorded for each species. For target species, 30-60 individuals are measured and total weights are measured. The two catches from each tow are combined to form a single sample in an effort to reduce variability. The total number of bluefish caught annually ranged from 26 (1995) to 324 (2004), and in length from 4-42 cm size classes. Arithmetic mean CPUEs for 2003 (2.39) and 2004 (2.34) notably higher than in previous years.

North Carolina Pamlico Sound Independent Gill Net Survey

The Pamlico Sound Independent Gill Net Survey was initiated on March 1, 2001 and field sampling began in May 2001. The primary objective of the project is to provide independent relative abundance indices for key estuarine species in Pamlico Sound and adjacent rivers that can be incorporated into stock assessments and used to improve

bycatch estimates, evaluate management measures, and evaluate habitat usage. A stratified random sampling design is used and each region is divided into four areas of similar sizes. The creation of areas assured that samples were distributed evenly throughout each region. Each of the four areas by region was sampled twice a month. The SAS procedure PLAN was used to randomly select sampling grids within each area. For each of the grids selected, both the shallow and deep strata were sampled with separate gangs of nets. A gang of nets consisted of 30-yard segments of 3, 3 ½, 4, 4 ½, 5, 5 ½, 6, and 6½ inch stretched mesh, for a total of 240 yards of nets.

Segment 1 was conducted during May 2001-June 2002, and Segments 2 & 3 were conducted during July-June 2003, 2004. Excluding menhaden, bluefish were the second most abundant species encountered and only exceeded by spot. The annual index of relative abundance or catch per unit effort (CPUE) was calculated as the number of fish at length per 12-hour soak time per 240 yards (gang) of net for both regions and strata combined. The total area of each region by strata was quantified using the one-minute by one-minute grid system and then used to weight the observed catches for calculating the abundance indices. Annual weighted catch per unit effort (CPUE) estimates and weighted catch per unit effort length distributions were calculated. Bluefish CPUE was 5.87 (1,512), 3.66 (1,293), & 4.92 (1,498) during Segments 1,2,3, respectively, and bluefish were the third most abundant species collected during each segment. A wide range of size classes were represented, as bluefish caught ranged from 122-765 mm FL.