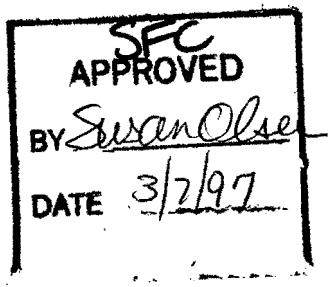

UNITED STATES
DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Northeast Region
State, Federal & Constituent Programs Division

COMPLETION REPORT

Grantee: **DISTRICT OF COLUMBIA**

Project No: **3-ACA-016**

Grant No: **NA56FG0442**

Project Title: **MID-WATER TRAWL, CREEL AND GILL NET MONITORING OF STRIPED BASS AND AMERICAN SHAD**

Period Covered: **09/01/95 - 07/31/96**

Prepared by: **M. JON SIEMIEN**

Approved by: _____

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Statutory Funding Authority:
___ Anadromous Fish Conservation Act (P.L. 89-304)
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___ Unallied Science Projects
X ACFCMA

COMPLETION REPORT

September 1, 1995 through July 31, 1996

Mid-water Trawl, Creel and Gill Net Monitoring of Striped Bass and American Shad

NOAA Award Number NA56FG0442 3-ACA-016

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COMPLETION REPORT

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OBJECTIVES

This study was designed to help determine the population abundances of American shad and striped bass within the District of Columbia. This estimate will give the District a better handle on the size of the spring spawning populations entering the District, and the number of fish which will be available to move upstream once a notch is put into the Little Falls Dam to facilitate fish passage. Also, this study is expected to provide information on when adult striped bass are available to anglers. This data will allow us to better manage the catch of this species within the District through possible changes in season, creel limits, and length restrictions.

Midwater Trawl, Creel and Gill Net Monitoring of Anadromous Fish Populations within the District of Columbia

INTRODUCTION

Historically, large spawning runs of anadromous fish entered the District of Columbia in the spring. Populations of hickory and American shad, alewife, blueback herring, white perch and striped bass used to be abundant in the springtime in both the Potomac and Anacostia rivers. Today however, hickory and American shad abundances are at all time lows, and the populations of alewife, blueback herring, white perch and striped bass, while still viable, are also low. The only hope for these fisheries is to devise a strategy which will allow us to protectively manage these species so that their populations can rebound.

Presently, the District of Columbia's Fisheries Management Branch (DCFMB) is most concerned about the American shad and the striped bass. Throughout the Bay, as in the District, these two species once were abundant and provided hours of angling enjoyment for local anglers. Now however, with the decline in their spring spawning populations and quality breeding and nursery areas, and an increase in the number of anglers, there has been an increase in the amount of fishing pressure placed on these, and the other anadromous fish species which are present in the District during this time of year. This increased pressure puts a concurrent stress on the populations which are still healthy, and if this continues these populations may also decline dramatically. To help prevent this scenario, we instituted this monitoring study.

striped bass in the District and we have consistently recorded YOY from both the Potomac and Anacostia rivers. One facet of the striped bass's life in the District which we do not have a good handle on however, is how long the 18 inch and larger fish remain in the District. While it has been suggested that most large spawners leave shortly after spawning, we do not have first hand knowledge to this effect. Since we have such a large population of large, prespawned fish as far upstream as the head of tide in the District, we believe that these fish may stay in this region for at least part of the summer.

The aims of this study are to increase the information which we have on both the American shad and the striped bass. With the American shad we are hoping to better determine the relative abundance of adult American shad available for breeding within the District, and with the striped bass we will try and determine how late in the season there are 18 inch and larger fish available to the angler. Information on the American shad will be useful to help determine how many fish will be available for recolonization above Little Falls Dam once this dam is equipped with a notch for fish passage, while gaining information on the striped bass will better allow us to manage our fishing season and size length restrictions for this species.

STUDY METHODS

Since the American shad and striped bass appear to be most abundant in the District in certain areas during the early spring

1). Each gill net set utilized two, simultaneously deployed, 91.44 x 1.83 m, floating gill nets fished parallel to the shoreline. One net was 12.5 cm (5") stretch mesh and one contained 15.24 cm (6") stretch mesh. The nets were allowed to fish for one hour before retrieval, however, when large numbers of fish or debris were encountered, actual fishing time was increased. Upon retrieval, the first 50 individuals of each anadromous species were weighed and measured, while the remainder of the fish of the species were only counted.

Creel Survey

The creel survey was a combination of roving clerk and boat angler surveys, patterned on a pilot study done in the District in 1985 (Cummins, 1985). The sampling design was a stratified, random survey incorporating non-uniform usage probabilities (Malvestuto, 1983) similar to the design used by creel surveys performed in the District over the past several years (Mudre, 1990). In order to more efficiently target anadromous fish anglers we utilized data from the District's past years creel surveys and narrowed the roving clerk surveys to three areas which have routinely high angler usage, while the boat angler survey was also conducted in two heavily used areas. The sites sampled by the shore survey roving clerk were 1) Fletcher's Boathouse (FBS)(Potomac river), 2) Hains Point (HPS) (Potomac river), and 3) the lower Anacostia river (APS) (in Anacostia Park)(Figure 1). The Boat Angler survey was conducted upstream on the Potomac river at Fletcher's Boathouse

TABLE 1

Angler Use Probabilities Used in Boat and Shoreline Creel Surveys

Site	Angler Use Probability
Shoreline Survey	
Fletcher's Boathouse	0.21
Hains Point	0.57
Anacostia Park	0.22
Boat Survey	
Fletcher's Boathouse	0.33
Blue Plains/Oxon Cove	0.67

entire site was visible. Angler interviews were done so as to make a complete circuit of the site during the allotted time slot.

Estimates of total angling pressure were made based on an extrapolation from the instantaneous counts. To estimate total angling pressure, the average instantaneous count was first multiplied by 12 to give the total daily fishing pressure, in angler hours, for that site. That number was then divided by the angler use probability for that site to give the total angling pressure for that day across all the sites. Monthly angling pressure was estimated by multiplying the average weekday and weekend daily pressures by the corresponding number of weekday and weekend days in the month. Holidays, which included Labor Day, Columbus Day, Veterans Day, Memorial Day, and Independence Day, were treated as weekend days.

deployment, the 12.5 cm net did catch 89 gizzard shad. Also, while the 15.24 cm net produced no sniped bass in the 10.5 hours it was deployed, it did catch 57 gizzard shad and 2 common carp (Table 4).

Creel Survey

The creel survey was run on 20 days in 1995, and again on 24 days in 1996. Over this time, fishing parties totaling 103 anglers were approached and 61 of those anglers were interviewed. Based on

Table 2

Gill netting Results for Sampling at the Anacostia River Station

DATE	GILL NET MESH SIZE	
	5 INCH	6 INCH
9/21/95	3 Gizzard Shad (389)	#
9/29/95	#	#
10/13/95	3 Gizzard Shad (377) 1 Quillback Carpsucker (440)	#
10/20/95	#	#
10/26/95	3 Gizzard Shad (339) 1 Channel Catfish (503)	#
11/3/95	4 Gizzard Shad (380)	#
11/9/95	**1 Striped Bass (590)** 1 Carp (425) 1 Channel Catfish (445)	1 Gizzard Shad (405)
4/19/96	#	#
5/2/96	68 Gizzard Shad (409)*	#*

- Denotes No Fish Captured
* - Denotes 30 Minute Set
(xxx) - Mean Length (mm) of Captured Fish

anglers who mentioned a season referred to more than one season. The average time spent on a fishing trip in the District was 5.8 hours.

The dates, sites sampled, whether the sample was a boat or shoreline survey, and angler counts are given for 1995 in Table 5, and for 1996 in Table 6. In 1995, angling pressure declined with the average temperature, being highest in September, and lowest in November. During this period 11 interviews were done and one of the respondents in October reported having caught a 25 pound striped bass. This fish was reported during a boat survey of at the Blue Plains/Oxon Cove site. Other than in this one instance however, no one reported catching a striper in the 1995 portion of the creel survey.

In 1996, effort was highest in June, followed by April, then July; the least effort was expended in May (Table 7). While nine striped bass were reported caught by anglers during the June survey, and this was by far most fish reported in any month of the survey, two fish were reported in the shoreline survey at Hains Point on April 6, 1996. These two fish averaged 58 cm. Eight of the nine fish reported in June were reported during a shoreline creel survey at Hains Point on June 6, 1996, and the other fish was reported during a boat survey at the Blue Plains/Oxon Cove site. The eight fish from Hains Point averaged between 15 and 20 cm in length while the one fish reported during the boat survey was unmeasured.

TABLE 5

Sampling Dates and Average Counts for Creel Samples in 1995

DATE	SITE	SURVEY	DAY	TIME	AVERAGE COUNT	MONTHLY AVERAGE
9/9/95	FB	Shore	WE	11-3	6	
9/10/95	BP/OC	Boat	WE	3-7	10	
9/12/95	BP/OC	Boat	WD	11-3	1.3	
9/16/95	HP	Shore	WE	11-3	45.3	WE= 18.3
9/18/95	FB	Boat	WD	3-7	1.3	WD= 1.2
9/20/95	AP	Shore	WD	7-11	2.3	
9/24/95	BP/PC	Boat	WE	7-11	12	
9/27/95	HP	Shore	WD	7-11	0	
10/5/95	HP	Shore	WD	3-7	3.3	
10/6/95	FB	Shore	WD	3-7	2	
10/8/95	AP	Shore	WE	3-7	12.7	
10/12/95	BP/OC	Boat	WD	3-7	3.7	WE= 3.9
10/13/95	BP/OC	Boat	WD	11-3	7.7	WD= 4.2
10/14/95	HP	Shore	WE	11-3	3	
10/22/95	FB	Boat	WE	11-3	0	
10/28/95	BP/OC	Boat	WE	3-7	0	
11/4/95	BP/OC	Boat	WE	11-3	0.7	
11/6/95	FB	Shore	WD	7-11	0.3	WE= 0.5
11/12/95	HP	Shore	WE	3-8	0.3	WD= 0.5
11/13/95	BP/OC	Boat	WD	7-11	0.7	

WE = Weekend

WD = Weekday

TABLE 7

Estimated Fishing Pressure and Total Striped Bass Catch for Combined Boat and Shoreline Creel Surveys during 1995-1996 Fishing Season

DATE	Estimated Total Fishing Pressure Hours/Trips	Number of Interviews	Striped Bass Reported No. / Avg Length	Estimated Total Striped Bass Caught
9/95	10,449/1,802	6	0	0+
10/95	7,840/1,352	9	1 / 96 cm	150
11/95	810/140	1	0	0+
4/96	12,398/2,138	9	2 / 58 cm	475
5/96	10,345/1,784	2	0	0+
6/96	24,891/4,292	16	9 / 15-20 cm	2,414
7/96	11,447/1,974	18	0	0+
Total[1]	78,180/13,482	61	12	3,039+
Total[2]				2,652

Estimated Total Striped Bass Caught- (Trips/Interviews)x(Striped Bass Caught)
Total[1] - Summation of Monthly Data
Total[2] - (Trips/Interviews)x Striped Bass Caught

quite common within the District, especially in spring when then return to spawn. The largest prespawned striped bass collected during sampling in the District was 1050 mm; it was caught in the spring of 1994 while electrofishing in the Potomac river (Tilak and Siemien, 1995). Previous electrofishing in the District has shown adult striped bass are still in the District as late as November, and according to Lippson et. al. (1979) these fish return to the bay during the fall of the year. Electrofishing surveys have also shown that striped bass return to the District by April, when water temperatures rise about 10^{0}C. This pattern of behavior is

potential for illegal harvest and, since the terrain in the area is not conducive to enforcement, most of the illegal harvest would go unreported. Still, the estimated catch excluding illegal harvest is around 3,000 striped bass for the period of September through November, 1995, and April through July 1996. This figure agrees well with an estimate of striped bass harvest calculated from a creel survey done by DCFMB in 1994 (Unpublished data).

Overall, while this survey did little to appreciably increase our knowledge concerning the relative abundances of American shad and striped bass within the District, and of how late in the year 18 inch and larger fish are available to the angler, it did confirm data previously gathered. This data indicated extremely low abundances of adult American shad, and of the presence of at least a few large striped bass still present in the District into the fall. From the creel data we can assume that at least some fishermen are still catching fish over 18 inches into October, and the gill netting data shows that fish 18 inch and larger are still here in November. It is unusual though that in the early summer, shortly after the larger fish finish spawning, that the only fish being reported by the anglers were striped bass in the 15-20 cm length range. You would think that even if fish were returning to the bay they would be feeding along the way, and be reported by anglers. Possibly if more anglers were interviewed this would have proven to be the case.

This study did provide a base from which to launch a more refined and intense study into the angling pressure exerted on striped bass and American shad within the District. While some

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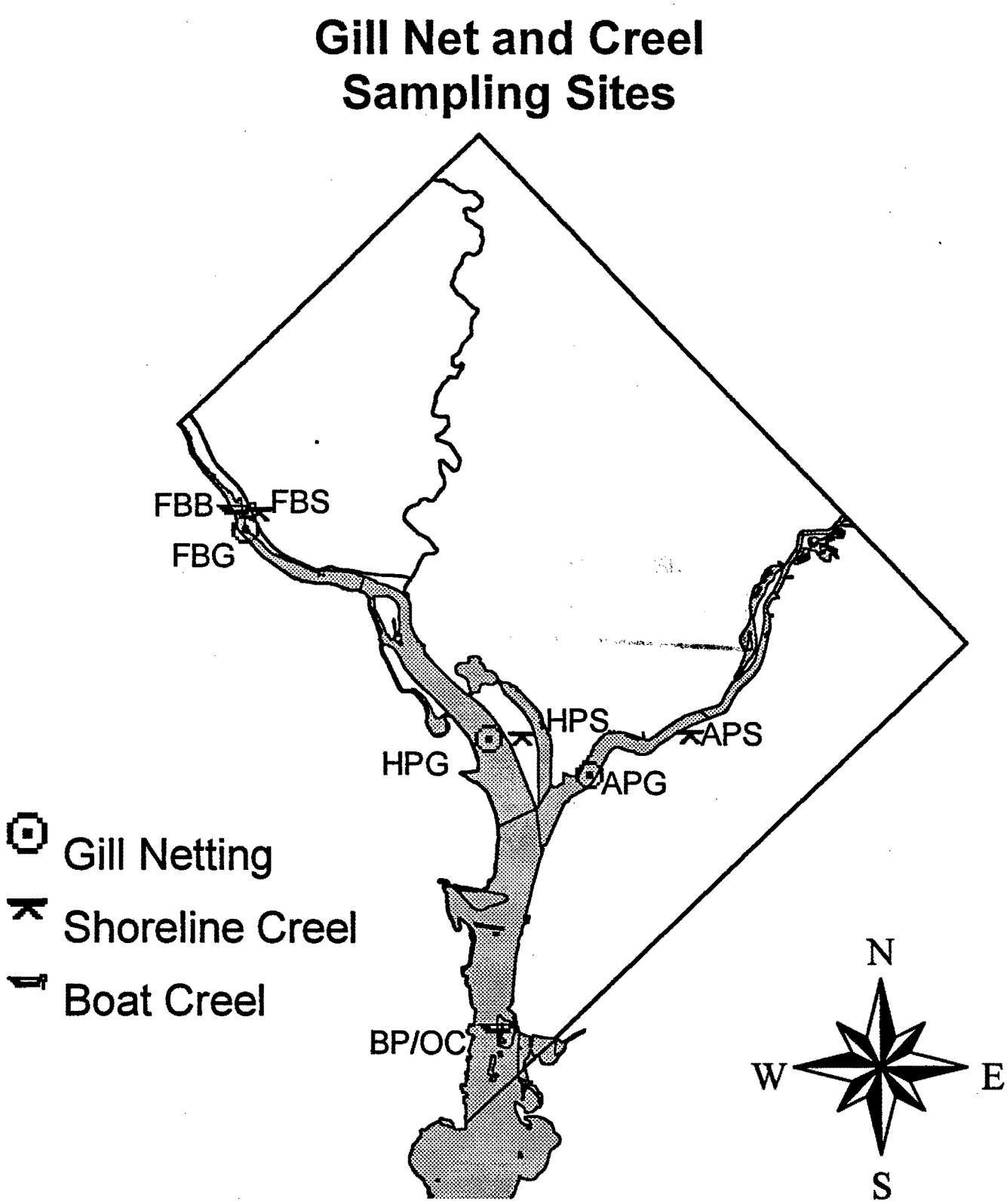
Figure 1. - Gill Net and Creel Sampling Sites.

Gill Net Sites - Fletcher's Boathouse (FBG), Hains Point (HPG), and Anacostia River (APG)

Shoreline Creel Sites - Fletcher's Boathouse (FBS), Anacostia River (APS)

Boat Creel Sites - Fletcher's Boathouse (FBB), Blue Plains/Oxon Cove (BP/OC)



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