Project Performance Report

F-2-R-13

1998 Recreational Fishing Survey

of

The District of Columbia

Project Performance Report

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INTRODUCTION

The 1998 angler survey of the recreational fisheries of the District of Columbia is the sixth survey that has been done over the past six consecutive years. This 1998 telephone angler survey (like those for 1997 and 1996) follows a different methodology than those of other surveys (roving and mail) conducted in previous years since 1986. Hence, this 1998 report is dissimilar in format and procedure to those presented in 1995, 1994, 1993, 1991, 1989, 1987, and 1986. However, the scope and pattern are based on a pilot study done in 1985 (Cummins 1985), which in turn was guided, in part, by an earlier study (Wallace and Gay 1983).

In overview, the survey uses stratified and systematic random sampling designs incorporating non-uniform probability (Malvestuto 1983; Nielsen and Johnson 1983; Pollack, et al. 1994). Six sites (See Figure 1.) have been established in roving surveys as major fishing areas along the District's waterways based on angler use probabilities developed using data presented by Wallace and Gay (1983). A telephone survey perhaps provides a new or better assessment of anglers' fishing habits, needs, and concerns. As implemented, the survey is directed at recreational shoreline, as well as, boat anglers. The survey provides information on angling effort, catch and harvest, species preference, fish consumption, angler demographics, angling expenditures, and other parameters. It is a comprehensive study on the recreational fisheries resources of the

District of Columbia and any detectable trends thereof which are pertinent for successful management of these valued resources in a critical urban environment.

Figure 1.

METHODS

The 1998 telephone angler survey was performed on the same premise of the earlier studies (Mudre 1989). It is estimated that nearly 200 anglers may be found fishing from D.C. waters on a given sample day. The survey covers the angling population from the entire Washington Metropolitan area. A description of the statistical design and sampling procedures is presented below.

SAMPLING SITES

Six sampling sites located along the Potomac and Anacostia Rivers (Figure 1) were presumed or theorized as major angling areas in this study. Three of these sites were compound, being composed of two or three discontinuous stretches of shoreline. All six sites are shown and further described in Figures 2-1 through 2-6.

SAMPLING DESIGN AND SCHEDULE

The sampling design was a stratified and systematic random survey incorporating non-uniform probability. The two strata were shoreline and boat anglers from a list frame of 1997 fishing licensees. The survey was conducted from mid-August through late-December. Pollack, et al. (1994) suggest this time of the year as best for telephone surveys to ensure higher angler recall

and response rates. For each stratum, sampling dates within the months were chosen randomly.

Licensees from the list frame of shoreline and boat anglers were selected randomly without replacement following the assignment of the formula: $k = N/n$. Whereas k is the sampling interval, N is the total number of names in the list frame, and n is the desired sample number, every kth licensee was telephoned. Out-of-area anglers (with long distance telephone numbers) were ignored, as well as, obviously, anglers with blank telephone numbers. The angler use probabilities considered in this study were based on average instantaneous count data of the 1993 angler survey. These probability estimates are presented in Table 2-1.

Table 2-1. 1995 Shoreline Angler Use Probabilities*

SITE NUMBER	SITE NAME	PROBABILITY ESTIMATE
1	Fletcher=s Boat House	.15
2	Rock Creek/Roosevelt Is.	.07
3	Washington Ship Channel/Tidal Basin	.11
4	Hains Point	.41
5	Anacostia Park	.16
6	PEPCO/Roaches Run/Lady Bird Johnson Park	.10

* Updated version based on previous survey data (1993).

Figure 2-1.

Figure 2-2.

Figure 2-3.

Figure 2-4.

Figure 2-5.

Figure 2-6.

SAMPLING PROCEDURES

Implementation of the angler survey consisted of two elements: the license list frame and angler interviews. The license list frame provided general information (i.e, name, gender, age, telephone number, residency) of the anglers; while the interviews provided detailed information on catch, harvest, fishing habits, expenditures, species preferences, fish consumption, etc. In combination, the two elements were used to develop estimates relative to the parameters of interest for the entire angling population.

License List Frame

The license list frame was a special frame from the 1997 D.C. fishing license file. The frame exclusively consisted of anglers 16-65 yrs. old who held a license to fish in D.C. during 1997. The selected categories of information in the database (i.e., name, gender, residency, telephone number, date of birth, and license number) were computer-generated to be used by the survey clerks as a "contact" list for conducting interviews.

Angler Interviews

Subsequent to the issuance of a unique list, each survey clerk began calling anglers, introducing himself, and conducting the interview. Anglers were contacted weekdays and weekends, daytimes and evenings. Clerks noted the status of every call made (i.e., whether it was a successful interview, refusal, wrong number, not answered, "call back", or "message left"). The questionnaire that the clerks used is shown as the "Telephone Angler Interview Form" (See Figure 2-7.). Anglers consenting to be interviewed were asked a sequence of questions from the form. Discussions of the usage of the questionnaire is presented in Nielsen and Johnson (1983), Cummins and Rockland (1987), and Pollack, et al. (1994).

Figure 2-7.

PARAMETER ESTIMATION

Angler harvest and total catch estimates were based on information obtained during the angler interviews. Due to the nature of an off-site, telephone survey, parameters such as catch/harvest data, and angler effort could be determined merely by expansion methodology (Guthrie, et al. 1991). Catch per unit effort (CPUE) was based on catch per angler hour for effort actually expended (whether involving complete or incomplete fishing trips). It was calculated by dividing the total number of fish caught by the total number of hours spent fishing.

RESULTS

The results of the 1998 District of Columbia Telephone Angler Survey are arranged in the following sequence: demographics, fishery usage description, effort, catch/harvest, and economic impact/value. Figures are shown in percentages, where applicable, and averages appear as mean calculations, resulting from the responses of the survey questionnaire.

DEMOGRAPHICS

There was a total of 88 anglers interviewed. The gender comprisal of these anglers was: male (92%), female (8%), as seen in Figure 3-1. Their racial composition was 51%, African-American; 32%, European-American; 5%, Latin-American; 2%, Asian-American; and 9%, "other" (Native American, West Indian, Caucasian, White, and mixtures of African-American/Chicano/Native American). One interviewee (1%) refused to specify his ethnicity (See Figure 3-2.). Ages ranged mostly between 36 and 65 years (75%), followed by 16-35 yrs. (21%) and > 65 yrs. (1%); There was no specified age information from 3% of the anglers (See Figure 3-3.). Also, it is noted that anglers who were older than 65 and those who were younger than 16 before 1997 are not included in the scope of this survey since they would not have been required to obtain a D.C. fishing license and hence, would not have been listed in the license file frame.

The overall residency of interviewed anglers was distributed as in the District of Columbia

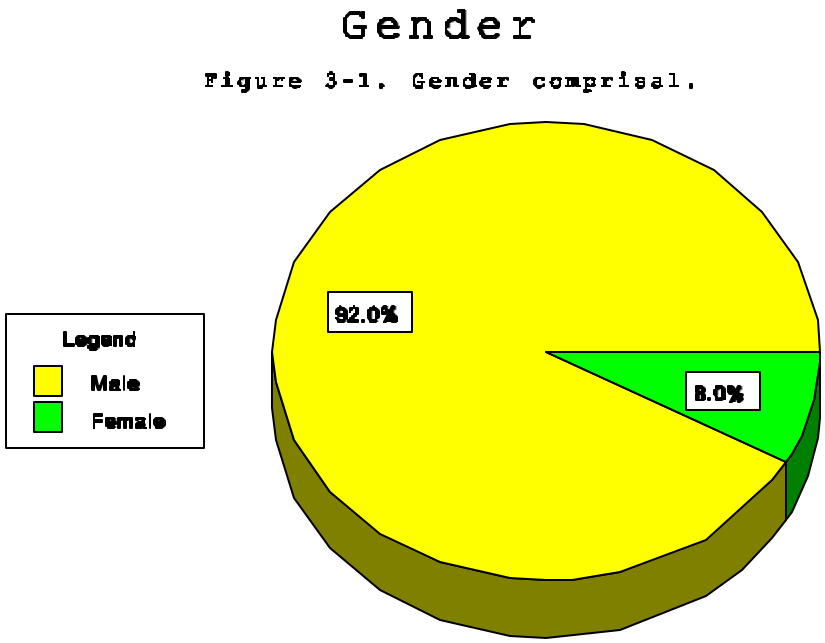
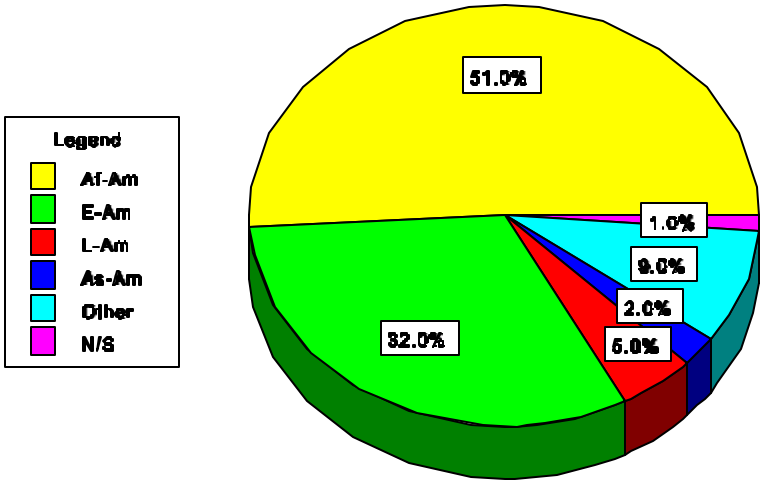


Figure 3-1. Gender comprisal.

(51%), Maryland (28%), and Virginia (21%), as shown in Figure 3-4.

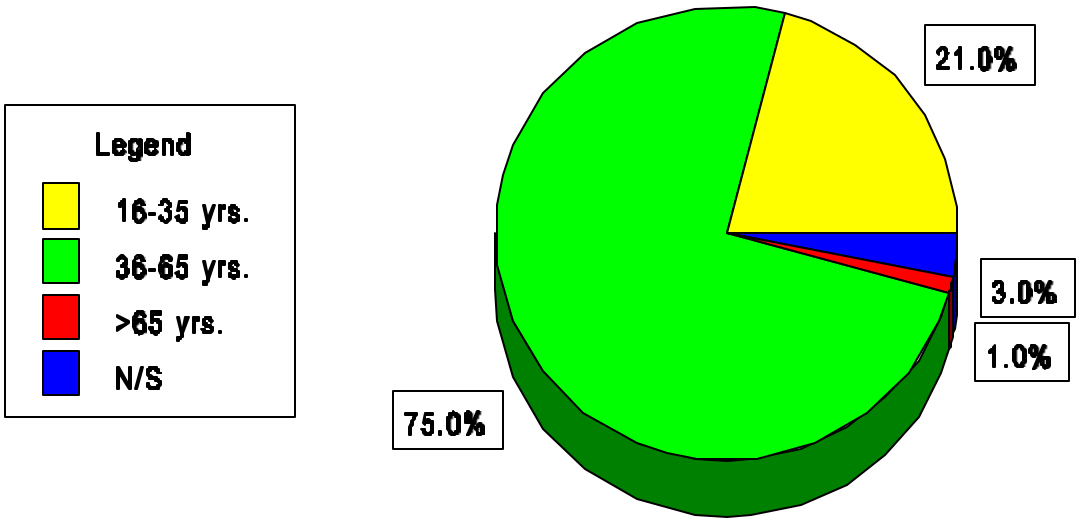
Ethnicity

Figure 3-2. Ethnic composition.



Age

Figure 3-3. Age representation.



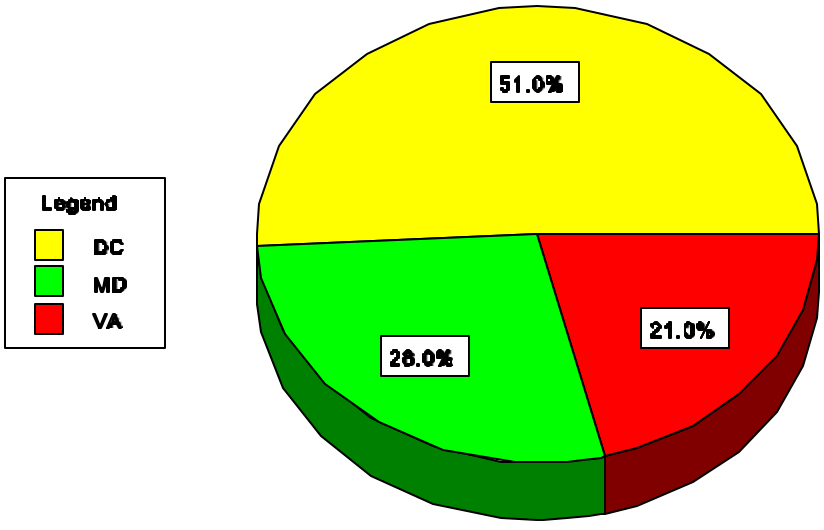


Figure 3-4. Residency distribution.

The average angler declared that he/she has been fishing generally for 25.2 years (1-55 years range); in D.C., for 15.6 years (0-55 years range). Thirty-six percent of his/her fishing usually was conducted in D.C. waters, with an average of 35.1 days per year spent (0-208 days range), and a trip length (duration) of 6.4 hours (2-14 hours range). To get to a fishing site in D.C., the average angler traveled a maximum of 10.7 miles (0.5-50 miles range). Only 20.5% of the anglers indicated problems accessing their favorite fishing spots, citing traffic pattern and congestion hassles due to construction, meager parking availability, the absence of fishing piers, limited means of transportation, and natural impediments such as submerged boulders (particularly at Fletcher's Boat House and the Key Bridge).

FISHERY USAGE DESCRIPTION

The D.C. fishery is predominantly a "catch-and-release" shoreline fishery. Sixty-six percent of the interviewed anglers usually fished from the shoreline; and although many anglers gave more than one reply as to the result of their catch: 82% released the fish, 47% ate them, 36% gave them away, and 2% replied "other" - specifying that they use them for bait.

Despite some fishing sites being mentioned more than once, Fletcher's Boat House was a 50% favorite, followed by Hains Point (26%), and the Chain Bridge area (14%). Other favorites among interviewed anglers were these species: striped bass (38%), largemouth bass (15%), and catfish (non-specified, 11%). Generally speaking, anglers mostly caught catfish during spring (22%) and summer (22%); catfish, largemouth bass, and striped bass during fall (16%, each species); and catfish and largemouth bass during winter (16%, each species). Asked if any unfamiliar fish were ever caught, 22% of the anglers responded "yes", citing catfish, bluegill, carp, crappie, eel, gar, hickory shad, pike, striped bass, spot, walleye, "sucker", "boafish", and other species which they could not identify.

Upon their latest fishing trip, 70% of the anglers fished from shoreline in May, July, or September 1998 (11%, each month) at Fletcher's Boat House (35%). Twenty-five percent were fishing for "any" species; 19%, for largemouth bass; 14%, for striped bass; and others, for catfish, white perch, bass, and a variety of species combinations.

The highest rating most anglers gave on their latest fishing trip was good (45%); others were fair (26%), excellent (15%), and poor (13%) - one percent did not respond (See Figure 3-5.).

The average angler spent $22.79 on his/her experience which included transportation ($5.02), bait ($4.54), and tackle costs ($13.23). The comments offered by 48% of the anglers on the management of the D.C. fisheries resources are provided in Table 3-1.

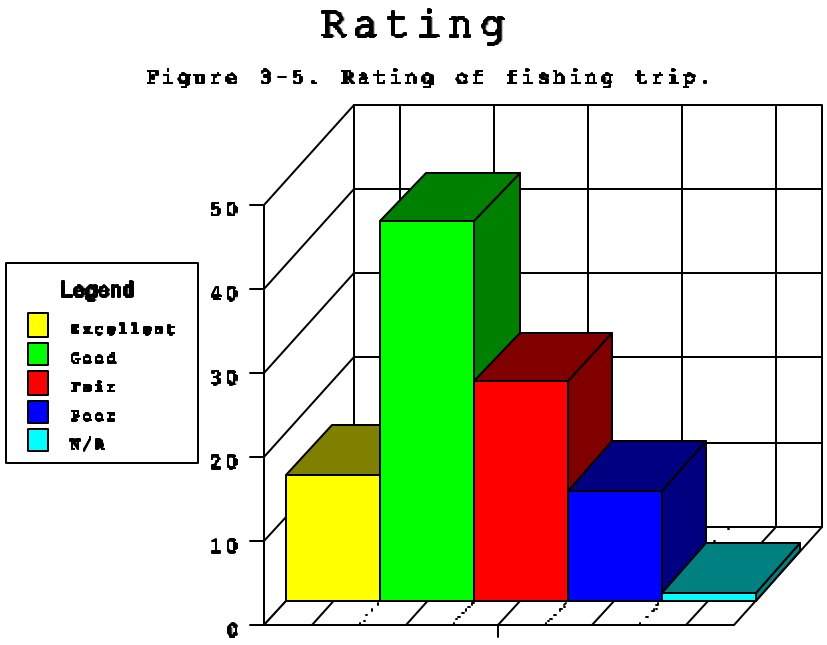


Figure 3-5. Rating of fishing trip.

Table 3-1.

Table 3-1. (Cont.)

Anglers' responses (in percentages) to regulatory questions are summarized in Table 3-2. Most anglers were aware of the District's fishing regulations (83%), received a regulations booklet (75%), possessed a current fishing license (60%), intended to buy one for 1999 (92%), and would visit a D.C. Fisheries Web Site on the Internet (85%). Nineteen percent of the anglers reported violations of D.C. fishing laws such as poaching of striped bass, shad, bass, and other species; fishing without a license; cast netting; and illegal snagging. Some anglers complained they frequently witnessed many violations among ethnic minority anglers (esp. in the Chain Bridge and Fletcher=s Boat House areas). Only 19% encountered problems obtaining a fishing license - i.e. unawareness of vendors other than Fletcher's Boat House, check-only payment method at the Harbor Patrol Police Station, and license unavailability (esp. early in the year).

Table 3-2. Percentage responses to regulatory questions.

QUESTION	YES	NO	UNSURE
Reg. awareness?	83	17	0
Reg. booklet?	75	20	5
Violations?	19	81	0
Current license?	60	40	0
Next year license?	92	5	3

License problem?	19	80	1
Internet?	85	13	2

EFFORT

Data collected from respondents indicated that the latest fishing trips mostly occurred during May, July, and September (12%, each month) of 1998 - although responses ranged from April 1995 to December 1998. Contrarily to the latest angler use probability (of 1995), Fletcher's Boat House demonstrated the highest angler usage (35%). Hains Point and Chain Bridge ranked as the next most frequented sites (18% and 10%, respectively). Due to the small sampling size, the relatively large number of sites, and potential confounding circumstances in weather, season, and time strata, a statistical analysis of these differences in angler usage is not feasible.

Total fishing pressure was determined as the sum of total days fished per year (3,051 days/yr.; The average was 35.1 days/yr.). Again, a statistical analysis of this data is not conducive to such a small sample. The areas of D.C. waters where concentrations of fishing activity occurred are illustrated in Figure 3-6.

Figure 3-6.

CATCH/HARVEST

According to angler response, there was a grand total of 615+ fish (419+ lbs.) caught. Of this catch, 411+ fish (254+ lbs.) were released, and ~204 were harvested (kept). The amount of fish harvested was measured as nearly 165 lbs. Seventy-two percent (~37 lbs.) of this harvest was white perch. The greatest amount of a particular species released was also white perch (44%, ~27 lbs.) as recorded in Table 3-3.). The largest numbers of fish caught were white perch (~325), bluegill (~78), and catfish (nonspecific, 62+). The CPUE estimate was 1.69 fish/hour or 1.15 lbs./hour. Fifty percent of the anglers caught at least one fish during their latest fishing trip in 1998.

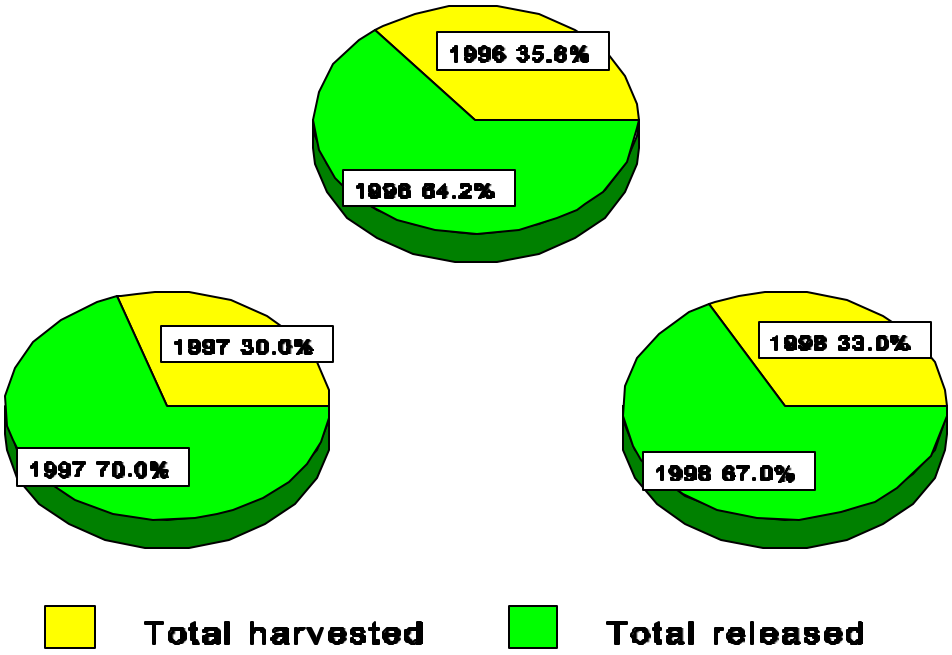
Twenty-six percent of the anglers eat carp, eel, or catfish caught in D.C. waters. Catfish consumption was indicated - as rarely as "once a year" and as often as "always" (whenever caught) - by 18% of the respondents. When asked if they were aware of the public health advisory on the consumption of carp, eel, and catfish, 63% of the anglers responded "yes". The percentages of fish released and harvested - as compared to the angler surveys of 1996 and 1997 - are shown in Figure 3-7.

Table 3-3. Numbers and poundages of species caught by interviewed anglers.

SPECIES	NUMBER HARVESTED	POUNDS HARVESTED	NUMBER RELEASED	POUNDS RELEASED	NUMBER CAUGHT	POUNDS CAUGHT
Bass (N/S)	1	~4	6+	~18	7+	~22
Blueback Herring	0	0	3	~1	3	~1
Bluegill	10	2	~68	~7	~78	~9
Catfish (N/S)	22	~25	40+	~35	62+	~60
Channel Catfish	15	~77	8	~18	23	~95
Crappie (N/S)	0	0	?	?	?	?
Largemouth Bass	6	20	28	~72	34	~92
Perch (N/S)	0	0	2+	?	2+	?
Shad (N/S)	0	0	~15	~15	~15	~15
Smallmouth Bass	0	0	11	11+	11	11+
Striped Bass	0	0	~15	~45	~15	~45
Sunfish (N/S)	0	0	20	~5	20	~5
White Perch	~146	~37	~179	~27	~325	~64
Yellow Perch	4	?	16	?	20	?
TOTALS:	~204	~165	411+	254+	615+	419+

Catch/Harvest

Figure 3-7. Catch/harvest of fish.



ECONOMIC IMPACT/VALUE

In the absence of instantaneous count data, 1998 angler use probability estimates, and hence, a calculation of angler trips per year, an economic impact/value assessment can be determined only on the basis of the interviewed anglers' average expenditure per trip ($22.79). Earlier, it was reported that the average angler traveled 10.7 miles to fish in D.C. Cummins and Rockland (1987) suggest that in such an urban fishery, for which few anglers travel more than 30 miles, the travel cost method cannot be used. Also, the contingent value approach cannot be applied, since there was no contingency item included on the questionnaire.

DISCUSSION

The quantitative results of the 1998 District of Columbia Telephone Angler Survey appear to be fairly consistent with those of prior shoreline and boat angler surveys. Extreme values of gender, ethnic, age, and residential data (demographics) tend to not vary typically over the years more than ten percentage points. Likewise, the 1998 results regarding usage of the fishery, angler effort, and catch/harvest are not very dissimilar to those of earlier angler surveys (i.e., Fletcher's Boat House, Hains Point, shoreline fishing, and a variety of fish species remain as anglers' predominant favorites.). Additionally, unlike previous studies, this survey includes more than the presumed greatest fishing period of the year (springtime) - since anglers replied according to their fishing trips regardless of season - hence, it covers higher fishing activity, reflects greater angler

responsiveness, and thus, can be considered even more comprehensive and directed towards the entire representative angling population than some prior surveys.

Based upon the average angler=s relatively large percentage of fishing done in the District (36%), high fishing pressure at selective sites (a total of 5,211 days/yr.), and augmented licensure (approximately 13,000 sales in 1997 and 92% interviewees intending to be licensed in 1999), the usage of the D.C. fisheries resources seems to be increasing steadily. This assertion is supported by the observance that despite seasonal changes and adverse winter conditions, angling pressure was stabilized during the "lull" in recreational fishing of the year. Also, according to angler opinion data in Table 3-1 and Figure 3-5, their overall commentary and a majoritarian "good" rating (45%) on their latest fishing trip imply that anglers basically seem to enjoy their entire fishing experience, regardless of catch.

Furthermore, certain trends have developed over the last seven surveys (1998, 1997, 1996, 1995, 1994, 1993, and 1991) regarding angler use probability at some fishing sites, despite seasonal differences. While slight variations may occur in rank, three sites (Fletcher's Boat House, Hains Point, and Anacostia Park) remain the primary fishing areas in the District of Columbia.

Upon comparison of fish consumption data to those of the 1995, and 1994 shoreline angler surveys, fewer anglers eat catfish, carp, or eel harvested from D.C. waters (26%, as opposed to 46% in 1995, and 65% in 1994). However, 18% eat catfish as often as "always" (whenever caught), which suggests that there still is not <u>much</u> trepidation regarding the advisory re-issued by the D.C. Commissioner of Public Health (non-consumption of these particular species).

Finally, the clerks offered a few comments based on editorial sampling observations. Namely, the CPUE values for 1998 are subject to inaccuracy due to many anglers who either could not recall precisely, exaggerated, or may not have appeared truthful about their creel. Apparently, they were intimidated by the approach and felt somewhat uneasy. Several anglers even commented that they believed the clerk's intent was to "police" them. Despite the clerk's polite verbal assurances and tonal demeanor, some anglers seemed uncomfortable and/or annoyed by the interruption for an interview; others flatly refused to be interviewed.

RECOMMENDATIONS

The following considerations apply to improving the quality and efficacy of the recreational fisheries of the District of Columbia:

* The number and composition of major sampling sites should be updated according to the results of this 1998 survey to include fishing done by boat.

* Upon consolidation of open water fishing areas into specific sample sites, angler use probability estimates and instantaneous count data would be useful to accurately assess fishing effort in the next survey.

* Angler use probability estimates should be revised via aerial survey. Different estimates for spring versus summer and fall should be established since angler usage tends to be higher during runs of anadromous fishes in the spring.

* The current angler interview questionnaire/form should be redesigned to improve the interview procedure, extricate unnecessary data, and facilitate data processing.

* More clerks are needed to conduct interviews in order to increase the sample number (of anglers interviewed) for the next survey.

* Clerk training sessions and the sharing of previous survey reports and/or other fishing- related materials with anglers would improve interviews and help ease tensions between clerks and anglers.

* A sportfishing tournament in D.C. targeting a variety of species and sponsored by the FWD and local area fishing organizations is requested by some shoreline anglers and encouraged by FWD officials. Such an activity may improve anglers' awareness and appreciation of our fisheries resources and provide extra essential revenue for the District of Columbia.

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