THE CLIFTON COURT FOREBAY SPORT FISHERY[1/]

by

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ABSTRACT

A one-year creel census of Clifton Court Forebay was conducted from October 1972 to September 1973. The census was conducted to determine angler numbers, preferred fishing sites, effort, species caught, catch rate, and yield.

We interviewed 1,989 anglers and recorded 4,953 angler hours and 2,143 fish during the year. Most angling effort occurs on a peninsula on the west side of the Forebay, the only area where motor vehicles are permitted. Approximately 91% of the observed catch was white catfish, Ictalurus catus. The catch rate for white catfish was 0.39 fish/angler hour. The annual yield for all fish was 54.7 fish/ha (22.1 fish/acre) for the surface area within the casting range, arbitrarily set at 60 m (200 ft) from shore.

1/ Anadromous Fisheries Branch Administrative Report No. 80-7. Submitted June, 1980.

INTRODUCTION

In 1968 the California State Water Project (SWP) began pumping water from Italian Slough, a tributary to Old River, near Byron, Contra Costa County, California. The combined pumping of the SWP and the Central Valley Project (CVP) located on Old River approximately 9 km (5.5 miles) upstream from the mouth of Italian Slough created serious flow problems in the local waterways during low tides. To alleviate this problem, Clifton Court Forebay was built to serve as a buffer between Old River and the SWP pumps. The Forebay is operated to draft water from Old River in relation to tide height.

Clifton Court Forebay has a surface area of 890 ha (2,200 acres) and a circumference of approximately 12 km (7.5 miles). Located at the southeast corner of the Forebay is the intake structure consisting of a set of radial gates 30.5 m (100 ft) wide connected to Old River by a canal approximately 120 m (400 ft) wide. On the west side of the Forebay is an opening approximately 120 m (400 ft) wide which connects the Forebay to the California Aqueduct (Figure 1). There are no trees or structures to provide shelter from the elements.

Angling access to the Forebay is very restricted. Motor vehicles are permitted only on the peninsula designated as section J (Figure 1). The eastern portions of the Forebay can be reached by leaving a boat at the dock near the intake canal and walking across the levee. Access to the remainder of the Forebay is by foot or bicycle from one of the above points. Fishing boats are not permitted on the Forebay.

The presence of fish in Clifton Court dates from 1969 when the Forebay was filled. Water (and fish) are drawn into the Forebay from Old River just after the peak of high tide. Water velocities at the intake gates may exceed 3 m/s (10 ft/s), and it is doubtful that any fish return to Old River.

In addition to regular "stocking" of fish from Old River there appears to be some spawning activity within the Forebay. Largemouth bass, Micropterus salmoides, have been observed over nests. Other species that may spawn in Clifton Court include black crappie, Pomoxis nigromaculatus, bluegill, Lepomis macrochirus, green sunfish, L. cyanellus, and possibly white catfish.

In November, 1970, a daily spot check angler count was instituted and was continued through our creel census. The monthly totals of these counts are the only data available on the sport fishery prior to this creel census.

Our creel census was conducted from October 2, 1972, to September 30, 1973, to determine angler numbers, preferred fishing sites, effort, species caught, catch rate, and yield. The creel census was conducted by California Department of Fish and Game personnel assigned to the SWP Fish Protective Facility (FPF). The census was designed to avoid interference with the primary responsibilities at the fish facility.

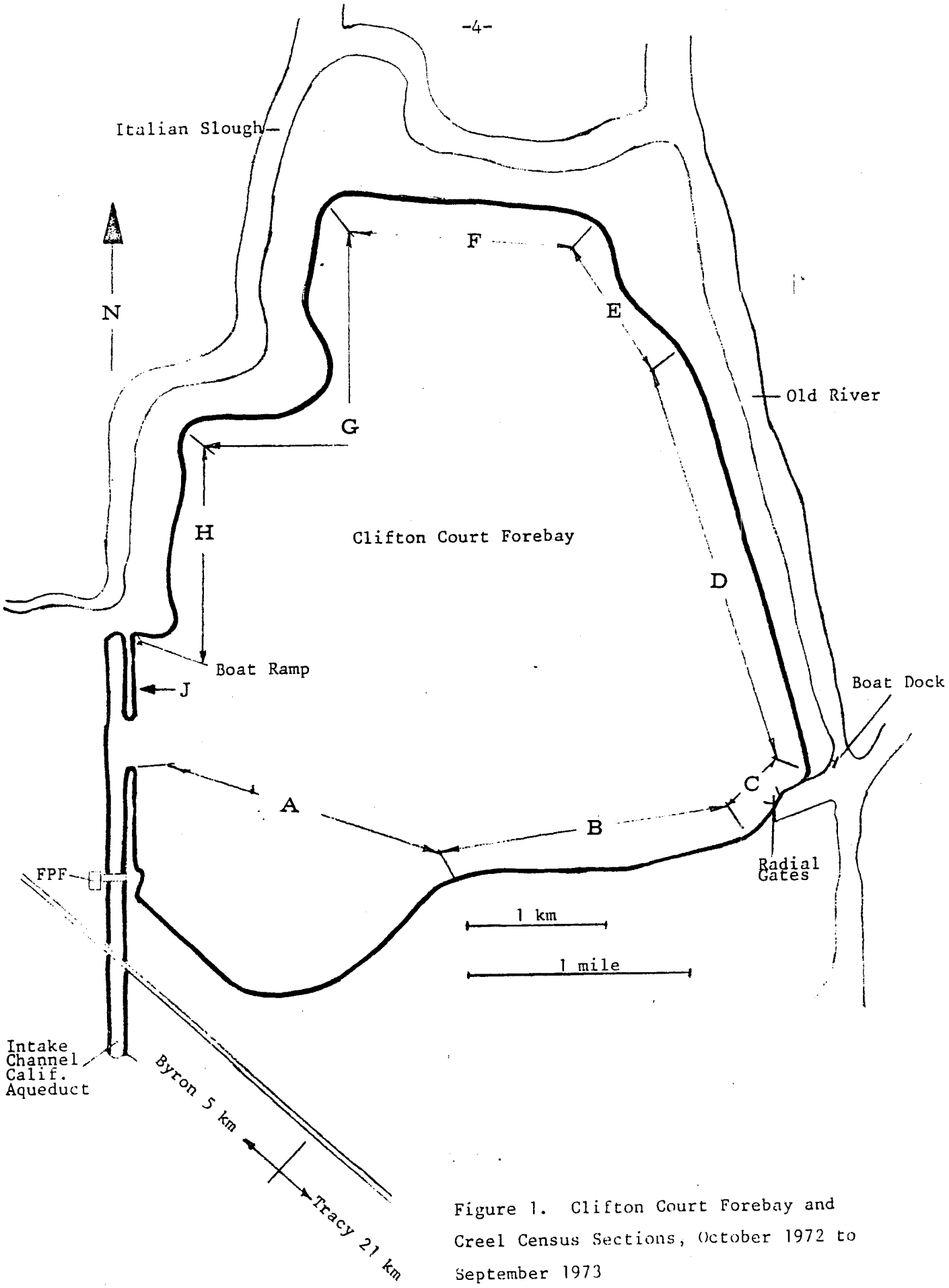

Figure 1. Clifton Court Forebay and Creel Census Sections, October 1972 to September 1973

METHODS

The census was conducted every third day for a total of 83 weekdays and 37 weekends/holidays. Data for weekdays were analyzed separately from data for weekends and holidays.

Initially, interviews were conducted only on the peninsula (section J, Figure 1). As the creel census progressed we realized there was more angling activity in the remote areas of the Forebay than previously suspected. Therefore, in March 1973, the creel census was modified to locate general areas of fishing pressure. The perimeter of the Forebay was divided into geographically distinct sections designated alphabetically from A to J (excluding I) in a counterclockwise direction from the FPF (Figure 1).

From October 2, 1972 until September 30, 1973, each fishing party present on the peninsula (section J) was interviewed at two hour intervals (0000 to 2400) and the following information was recorded: the number of anglers in the party, the length of time the party had been fishing on the Forebay, and the number and species of fish caught. At subsequent interviews with a given fishing party, only the time elapsed and fish caught since the previous interview were recorded. From March 1973 to the end of the census, sections A to H were checked at 1300 on each census day. The section in which the fishing party was interviewed was added to the information recorded.

Numbers of anglers observed were totaled by month and section. The number of anglers using the entire Forebay on weekdays each month was projected by the following mathematical formula:

$$\frac{\text{number of anglers censused on weekdays} \times \text{number of weekdays in month}}{\text{number of weekdays the census was conducted during the month}}$$

This procedure also was applied to counts for weekends/holidays. The two figures were added to determine the projected total number of anglers for the month. Preferred fishing sites were located by comparing the percentages of anglers using each section.

Seasonal variation in angler use was determined by comparing the means of the monthly totals from the first three years of daily spot angler counts.

The daily spot counts were conducted at 0800 by driving on the peninsula (section J) and counting the anglers. The validity of the daily spot counts was determined by a simple linear regression between the daily spot counts and the estimated monthly totals from section J of our creel census. This also provided a method of estimating the numbers of anglers using the Forebay from the daily spot counts.

Angler hours observed during the creel census were recorded to the nearest quarter hour and added to provide information on angling effort. The catch data were organized by species and section. Angler success rates were determined by calculating catch/angler hour.

The Forebay's yield was determined for that portion within casting range of the shore. The casting range was arbitrarily set at 60 m (200 ft).

RESULTS

Angler Numbers

We interviewed a total of 1,989 anglers. From October 1972 through February 1973, 294 anglers were interviewed on weekdays and 214 were interviewed on weekends/holidays in section J. From March 1973 through September 1973, 1,481 anglers were interviewed on the Forebay of which 790 were on weekdays.

The projected total number of anglers using the Forebay from October 1972 to February 1973 was 879 for weekdays and 682 for weekends/holidays. For the period from March 1973 through September 1973, the projected total number of anglers were 2,353 for weekdays and 1,993 for weekends/holidays.

The coefficient of determination (r^2) between the monthly totals of the daily spot angler counts on section J and the projected total number of anglers using the Forebay for each month during the creel census was 0.45, $p = 0.02$. The regression equation through the origin (point where a monthly total of 0 anglers equals an estimated total of 0 anglers) is:

Estimated No. of Anglers = 2.1 X Monthly Total of Daily Spot Counts

This indicates that approximately twice as many anglers were on the Forebay than indicated by the daily spot counts.

Comparisons of the first three years of daily spot angler counts (from November 1970 through November 1973) for seasonal variation showed that the peak level of activity occurred during May and June.

Less than 3% of the total number of angler hours were recorded between 0000 and 0800. Approximately 35% were recorded between 0800 and 1200. The peak level occurred between 1200 and 1600 when 42% of the angling hours were recorded. The remaining 20% were recorded between 1600 and 2400.

Effort

The anglers interviewed spent 4,953 hours fishing at Clifton Court Forebay from October 1972 to September 1973. Six hundred thirty angling hours were spent on weekdays and 565 were spent on weekends/holidays in section J alone from October through February.

The total number of angling hours recorded for the entire Forebay from March through September was 1,734 for weekdays and 2,024 for weekends/holidays.

Projected total effort was 14,535 angler hours. From October through February, 1,907 angler hours were spent on weekdays and 1,724 angler hours on weekends/holidays. For the period from March through September, the projected totals were 5,306 and 5,598 angler hours respectively for weekdays and weekends/holidays. Approximately 85% of the effort was expended in section J.

Catch

Thirteen species totaling 2,143 fish were observed. Ninety-one percent (1,941) of the catch was white catfish, 5% (98) bluegill, and 2% (46) black crappie (Table 1).

The observed catch rate of 0.43 fish/angler hour for the period October 1972 to September 1973. Three sections had angling success rates greater than one fish/angler hour on weekdays. They were sections C, D, and G with 1.11, 1.57, and 1.39 fish/angler hour, respectively. On weekends/holidays four sections had success rates greater than one fish/angler hour. They were sections A, B, C, and F with 2.18, 2.04, 1.02, and 1.86 fish/angler hour, respectively. However, these sections received relatively little use. Section J had a relatively low success rate of 0.29 fish/angler hour on weekdays and 0.22 fish/angler hour on weekends/holidays (Table 2).

The success rate for white catfish, the most commonly caught species, was 0.39/angler hour.

DISCUSSION

If 60 m (200 ft) is taken as the casting range then the actual surface area that can be fished on Clifton Court Forebay is approximately 72 ha (178 acres) or 8% of the total Forebay area. The projected yield for the Forebay was approximately 54.7 fish/ha (22.1 fish/acre) during the census. The peak yield occurred in May and June when approximately 11 fish/ha (4.5 fish/acre) were taken in both areas.

Although more fish were caught in section J than any other section from March through September, the catch/angler hour figures were lower for section J than for most other sections. This could be due to competition among anglers. The only lower figures were for sections E and F on weekdays for which a combined total of one angler hour had been recorded (Table 2). These facts indicate that the lower yield of sections A-H are the result of relatively low effort.

The 0.39 white catfish/angler hour at Clifton Court compares favorably with other areas in central California. Pintler (1957 a, b) reported a catch rate of 0.14 white catfish/angler hour in 1955 and 0.24 catfish/angler hour in 1956 for Clear Lake. Von Geldern (1972) reported 0.13 catfish/angler hour for shore fishermen at Folsom Lake in 1962.

CONCLUSIONS

Favorable angler success rates for white catfish were observed at Clifton Court Forebay and only 8% of the total surface area is available to anglers. The majority of the effort was observed on one small peninsula (section J), the only location where vehicle access is permitted. Results of this census suggest

TABLE 1. Total Observed Catch by Species and Month at Clifton Court Forebay.

Species	1972 Oct	Nov	Dec	1973 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Percent
White Catfish *Ictalurus catus*	322	195	17	120	156	211	77	182	224	113	152	172	1,941	90.6
Bluegill *Lepomis macrochirus*		1					1	56	27		8	5	98	4.6
Black Crappie *Pomoxis nigromaculatus*	2	3					27	9	3		2		46	2.1
Striped Bass *Morone saxatilis*	2	2			1	4	7	2	3		1		22	1.0
Largemouth Bass *Micropterus salmoides*	1		1				5	2	2				11	0.5
Green Sunfish *Lepomis cyanellus*	1					1		1	6	1			10	0.5
Warmouth Bass *Chaenobryttus gulosus*	1					1		3	1				6	0.3
Hitch *Lavinia exilicauda*	1		1	1									3	0.1
Carp *Cyprinus carpio*								1		1			2	0.1
White Sturgeon *Acipenser transmontanus*									1				1	TR
Tule Perch *Hysterocarpus traski*									1				1	TR
Sacramento Squawfish *Ptychocheilus grandis*						1							1	TR
Western Sucker *Catostomus occidentalis*					1								1	TR
Total	330	201	19	121	158	218	117	256	268	115	163	177	2,143	

TABLE 2. Summary of Effort, Catch, and Success Data by Section at Clifton Court Forebay - March through September, 1973.

	Weekdays				Weekends/Holidays			
Section	Observed angler hours	Mean angler hours per day	Observed catch	Fish per angler hour	Observed angler hours	Mean angler hours per day	Observed catch	Fish per angler hour
A	32.50	0.7	32	0.98	16.50	0.8	36	2.18
B	12.50	0.3	6	0.48	24.00	1.1	49	2.04
C	30.75	0.6	34	1.11	49.00	2.3	50	1.02
D	18.50	0.4	29	1.57	5.75	0.3	2	0.35
E	0.50	-	0	0.00	45.00	2.1	34	0.76
F	0.50	-	0	0.00	28.00	1.3	52	1.86
G	40.25	0.8	56	1.39	69.00	3.3	54	0.78
H	125.00	2.5	44	0.35	37.00	1.8	11	0.30
J	1548.00	30.9	441	0.28	1681.25	80.1	383	0.23

a valuable resource is not available to California anglers. Additional vehicle access should be provided as well as boat access to the Forebay to allow utilization of the resources in Clifton Court Forebay and to be consistent with operations in other SWP impoundments.

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