

JOB COMPLETION REPORT

As required by

FEDERAL AID IN FISHERIES RESTORATION ACT

TEXAS

Federal Aid Project No. F-6-R-13

FISHERIES INVESTIGATIONS AND SURVEYS OF THE WATERS OF REGION 5-B

Job No. D-3 (1st of 2 segments) Appraisal of Various Mesh
Sizes in Taking Fishes at Lake Corpus Christi, Texas

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ABSTRACT

Bimonthly gill netting with straight mesh nets was conducted at Lake Corpus Christi in 1965. Nets with mesh ranging from one to four inches were used. The purpose of the operation was to determine which species of fish would be taken in the various mesh sizes. This information would cast light on the assumption that gill netting is harmful to sport fishes.

The job is to be conducted for another year, and the results of the collecting will be pooled, analyzed, and published. The data collected in this first segment shows that less than two per cent of the species which anglers ordinarily seek were taken in legal size (three-inch or above) gill nets.

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State of Texas

Project No. F-6-R-13

Name: Fisheries Investigations and Surveys of the Waters of Region 5-B

Job No. D-3 (1st of 2 Seg.)

Title: Appraisal of Various Mesh Sizes in Taking Fishes at Lake Corpus Christi, Texas

Period Covered: January 1, 1965 to December 31, 1965

Objective:

To appraise the effectiveness of various mesh sizes in taking rough or commercial species of fish at Lake Corpus Christi, Texas.

Procedures:

Bimonthly netting trips were made to Lake Corpus Christi during this segment. Straight mesh gill nets were used to collect fish specimens. Six different mesh sizes were used: 1-, 2-, 2½-, 3-, 3½-, and 4-inch bar measure. The nets were 100 feet long and 8 feet deep.

The gill nets were set in a radial pattern about a stake. This insured that each mesh size was available in each location. Three collection sites were used. These were at Pernitas Creek, Miller's Island, and Ramirena Creek. The latter site was near the headwaters of the lake, the former near the dam, and the middle site was between the other two.

The fish collected were separated according to the mesh size in which they were taken. Length and weight measurements were recorded for most individuals, although at times it was necessary to weigh some species as a group.

Results and Discussion:

It is intended that this job will be conducted for another segment; therefore, since these data collected this year represents only half of the scheduled total, only a cursory examination and analysis will be attempted. Table 1 presents the numbers of fishes collected in the various mesh sizes. The species are grouped into convenient units of commercial, catfishes (since in some counties they are commercial and in others are sport), sport (those commonly sought after by anglers), and others. This grouping is somewhat arbitrary, but for the present it is adequate.

Table 1
Number of Fishes Collected at Lake Corpus Christi in 1965

Species	Mesh Size of Gill Net							Total	Mean Mesh Size Collected In
	1"	2"	2 1/2"	3"	3 1/2"	4"			
Commercial Fishes									
Alligator gar	36	156	38	33	38	13		314	2.31
Spotted gar	22	2	1	1	1			3	2.50
Longnose gar	10	30	1	1	1			54	1.62
Smallmouth buffalo		1	1	22	29	8		13	1.38
Carp	2	6	23	4	4	3		88	3.05
Freshwater drum	2	21	6	4	4	3		40	2.42
	2	96	7	6	3	2		116	2.13
Catfishes									
Channel catfish	213	38	3	1	1	5		266	1.23
Blue catfish	99	4			1	1		105	1.09
Flathead catfish	118	34	3	1		2		158	1.29
	1					2		3	3.00
Sport Fishes									
White bass	86	167	7			1		263	1.70
Largemouth bass	1	102	3					106	2.00
White crappie	32	1						33	1.03
Black crappie	40	46	4			1		92	1.62
	13	18				1		32	1.64
Other Fishes									
Gizzard shad	469	31						500	1.05
Warmouth	427	27						454	1.05
Redear sunfish	6							6	1.00
Bluegill	3	4						7	1.57
Rio Grande perch	29							29	1.00
	4							4	1.00

Unfortunately, these data collected will not satisfy the stated objectives of the job. Effectiveness (=efficiency) of the various meshes was to have been appraised. In order to test this, one must at least have an estimate of population sizes; however, no such estimates were attempted or available.

The objective was restated in the job description submitted for the coming segment to read: To determine the relation between mesh size of gill nets and species composition of the catch. These data thus collected will be considered with this objective in mind.

Actually, this job is intended to answer the question: "Does gill netting hurt game fish populations?" In the counties where commercial fishing with large mesh gill nets is allowed many sportsmen contend that these nets damage the game fish populations. The preliminary analysis of these data which we have collected, however, does not uphold this claim. Table 2 better illustrates this point. Of the 529 sport and catfishes taken, less than 2 per cent were collected in legal size (three-inch or more) gill nets. The legal size seems to be buffered too, since less than 4 per cent of the catch was taken in the next smaller net size.

Inspection of the catch frequencies over the various mesh sizes leads to the belief that they are distributed in the form of one of the theoretical discrete distributions (probably the Poisson). The validity of this assumption cannot be tested, however, due to the unfortunate exclusion of the 1½-inch mesh size. This omission gives the 1- and 2-inch mesh sizes larger sampling intervals than the other groups. This breakdown in experimental design illustrates the need of statistical counsel when preparing research jobs, since it would be very desirable to know the hypothetical probabilities of the various mesh sizes instead of just the sampling probabilities shown in Table 2.

Of course the capture of fish in a gill net is a bilateral function of not only net mesh size but fish size as well. To obtain data on this aspect, it will be necessary to show the weight of the groups taken in the various mesh sizes. The weight percentages taken in the legal size nets will probably be greater than the frequency percentages, due to the fact that the larger individuals are usually caught in the larger mesh sizes. No attempt now will be made to analyze or present data on weight per mesh size, but it will be a part of the job completion report for the coming segment.

Recommendations:

This job should be conducted for another segment then the results pooled and analyzed. The job completion report should be published in the departmental magazine, Texas Parks and Wildlife, and later reprinted as a bulletin. This would give maximum circulation and would publicly answer the question of commercial fishing on the inland waters of the State.

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Approved by Marion Toole
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Date February 9, 1966

Kenneth C. Jurgens
Regional Supervisor

Table 2
Percentages of Sport and Catfishes Collected in 2½-inch
and Larger Gill Nets

Species	Gill Net Mesh Sizes	
	2½" and larger	3" and larger
Channel catfish	1.90%	1.90%
Blue catfish	3.80	1.90
Flathead catfish	66.67	66.67
White bass	2.83	0.00
Largemouth bass	0.00	0.00
White and black crappie	5.64	2.42
Total (percentage)	3.78	1.39