

tion. These other costs includes the costs of the fingerling fish required for stocking. Fall stocking yielded a comparable \$240.00 per acre.

The most important problem in the establishment of a commercial channel catfish industry is how to produce large numbers of fingerling channel catfish for stocking at a low price.

LENGTH AT MATURITY OF CHANNEL CATFISH (*Ictalurus lacustris*) IN LOUISIANA

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INTRODUCTION

Many fisheries biologists are faced with the problem of recommending mesh sizes and nets for the control of commercial fish. As the size of fish to be caught is directly proportional to the mesh size, the length of a fish at maturity is an important factor. If the harvest of commercial fish is to be perpetuated large numbers of immature fish must escape the nets to spawn. Conversely, if the mesh size is too large the crop will be inadequately harvested.

During the spring of 1956 and 1957, a large number of channel catfish were examined at fish markets within the State of Louisiana. In addition catches of channel catfish in commercial gear used by Dingell-Johnson Project F-5-R were also examined. Fish were taken from these bodies of water: Mississippi River, Ouachita River, Atchafalaya River, Eagle Lake, Lake Providence, and Lake Bruin. The data presented below are a composite of samples from all of these areas.

MATERIALS AND METHODS

Fish were taken by gill nets, trammel nets, hoop nets, wire traps and trot lines. No attempt was made to differentiate between the sizes of fish taken with different gear.

Each specimen was measured (total length to the closest tenth inch) and weighed (in pounds and tenths). The fish were carefully examined to determine their sex and gonadal development. The classification of degree of maturity was somewhat arbitrary and was set up to meet the circumstances at hand.

Field classification was into five groups: Immature, undeveloped, developing, ripe, and spent. For the purposes of this paper only two classifications will be used: Undeveloped and Mature.

"Undeveloped" includes all immature fish and those mature fish which would not spawn during the year examined. In the former the gonads show no signs of development, the ovaries are seen to be present only upon close examination and the testis is barely distinguishable. In the latter field classification, undeveloped, the ovaries and testis are readily distinguishable but show no expansion of sperm or ovum cells.

"Mature" contains the three field classification of developing, ripe and spent. Careful checks with field personnel indicated that this field classification of males was particularly hard. Therefore the "mature" classification includes all fish in which the ovaries or testis are fully swollen and developed. All of the fish spawned or would have spawned during the present season. As examinations were made during the spring this classification of mature was considered very accurate.

RESULTS

The data at hand show fairly well the length of fish as they reach sexual maturity. The majority of females taken in the study were mature at 10.5 through 11 inches. Males apparently matured a bit later at 12.0 through 12.5 inches in length.

There is considerable overlap in the lengths of undeveloped and mature fish. One female was found to be ripe at seven inches in length while another at 15.5 inches showed no signs of development. For males the overlap was equally as

great with a fully developed male at 8.5 inches and an undeveloped specimen at 17.0 inches.

DISCUSSION

Channel catfish in Louisiana apparently mature at a shorter length than those farther north. Greenbank and Munson (1947) found the smallest mature females at 12 to 12.9 inches and the smallest mature male an inch shorter in their studies of Upper Mississippi River. This is 3 to 5 inches longer than in Louisiana.

Finnell and Jenkins (1954) noted that channel catfish grew more rapidly for the first six years than those reported from the upper Mississippi River by Appelget and Smith (1951). This would mean that channel catfish in Louisiana were reaching maturity at least one year before the individuals further north. As no age and growth studies have been completed on channel catfish in Louisiana this belief may be in error.

TABLE I
MALE CHANNEL CATFISH
SIZE AND SEXUAL DEVELOPMENT

Total Length (Inches)	No. in Group	Undeveloped	Mature
6.5	1	1	0
7.0	0	0	0
7.5	2	2	0
8.0	10	10	0
8.5	37	36	1
9.0	49	47	2
9.5	35	33	2
10.0	60	47	13
10.5	21	16	5
11.0	29	17	12
11.5	24	10	14
12.0	68	32	36
12.5	51	6	45
13.0	112	14	98
13.5	89	9	80
14.0	101	12	89
14.5	54	7	47
15.0	47	3	44
15.5	51	0	51
16.0	69	2	67
16.5	75	0	75
17.0	35	1	34
17.5	36	0	36
18.0	24	0	24
18.5	20	0	20
19.0	12	0	12
19.5	11	0	11
20.0	2	0	2
TOTAL	1,125		

TABLE II
FEMALE CHANNEL CATFISH
SIZE AND SEXUAL DEVELOPMENT

Total Length (Inches)	No. in Group	Undeveloped	Mature
6.5	0	0	0
7.0	1	0	1
7.5	0	0	0
8.0	12	12	0
8.5	36	31	5
9.0	52	43	9
9.5	48	39	9
10.0	74	41	33

TABLE II—Continued
 FEMALE CHANNEL CATFISH
 SIZE AND SEXUAL DEVELOPMENT

Total Length (Inches)	No. in Group	Undeveloped	Mature
10.5	37	15	22
11.0	30	7	23
11.5	33	6	27
12.0	76	11	65
12.5	52	4	48
13.0	55	8	47
13.5	38	3	35
14.0	57	6	51
14.5	33	2	31
15.0	76	2	74
15.5	78	1	77
16.0	63	0	63
16.5	91	0	91
17.0	57	0	57
17.5	36	0	36
18.0	28	0	28
18.5	17	0	17
19.0	9	0	9
19.5	7	0	7
20.0	1	0	1
TOTAL	1,097		

CONCLUSIONS

With the data presently available it is not possible to set a legal minimum size limit at which all of the fish captured will be mature. About the best at present is an arbitrary length at which the majority of the individuals will have reached maturity. For Louisiana it appears that the present 14 inch length limit causes many mature fish to be of illegal sizes. The size limit might well be dropped to a shorter length at least on a trial basis.

LITERAURE CITED

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