

ECONOMIC EVALUATION OF THE WILD COMMERCIAL FISHERY IN ARKANSAS—1 JULY 1978 TO 30 JUNE 1979

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Abstract: The 1978-79 survey of Arkansas' wild commercial fishery was compared to a previous 1977-78 survey. A tremendous increase in the commercial fishery industry has occurred since mid 1977. The 1978-79 commercial fishery harvest of 8,320,774 kg valued at \$4,923,259 represents a probable all time high for the industry. Large increases in the number of licensed commercial fishermen and their gear were also documented for 1978-79. Catch per unit effort values were reported for the various gear types from each watershed.

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Arkansas is blessed with a vast commercial fishery resource that supports a loosely knit industry of independent commercial fishermen and local fish markets. These people derive their livelihood from the natural waters of our state and contribute several million dollars to its economy each year. In an effort to gather data which will show the value of the wild commercial fishery in Arkansas, the Fisheries Division of the Arkansas Game and Fish Commission annually surveys the commercial fishing industry. This effort is partially funded as a Public Law 88-309 Project by the National Marine Fisheries Service.

METHODS

For 1 July 1978, to 30 June 1979 survey purposes, the state was divided into 4 watersheds representing the major river systems: Arkansas River System, White River System, Red River System, and Mississippi River System. District fishery biologists throughout the state contacted various commercial fishermen within their district and accompanied them as they ran their gear. Randomization of sampling effort among all commercial fishermen was not possible, since some fishermen were not willing to cooperate with the biologists. Most cooperating fishermen were individuals who depended on commercial fishing for a living as opposed to casual or weekend commercial fishermen.

While observing commercial fishermen firsthand, the biologists recorded the type gear being used, length of time it was fished, and the number and weight in pounds of each species caught. To sample most of the commercial waters within their district, Commission biologists also set their own gear in various locations and recorded the same information as listed above. Since Commission biologists vary in their commercial fishing expertise, they represent a true cross section of Arkansas' commercial fishermen, who may own 1 piece or several hundred pieces of gear. Therefore, data from both sources were combined, converted to metric units and used to calculate catch per unit effort values for the various gear types from each watershed.

These catch per unit effort values represent the observed mean catch in kilograms of a single piece of gear fished for 1 night. The hoop net category includes data from baited and unbaited hoop nets with a mesh size equal to or greater than 5.3 cm square. The long net category includes data from gill and trammel nets that are 91.44 m in length with 7.6 cm square or larger bar mesh. The longline category consists of data from trotlines and snaglines that are 7.62 m in length with drops no closer than 0.61 m.

Interviews were conducted in person and over the telephone by the authors with commercial fishermen and wholesale buyers. Data from these interviews were used to

determine the average price per kilogram of each species and to determine the average days each type of gear was fished per year in the various areas of the state.

The above information was correlated with a computer listing of license sales to determine estimates of total catch and value of the commercial fishery for the state. License sales were broken down by gear in each major drainage system.

The 1 July 1977 to 30 June 1978 data were obtained from the Commercial Fishery Industry Survey Report of Henderson et al. (1978). This earlier survey employed sampling methods identical to the current survey.

RESULTS AND DISCUSSION

Hoop net and longline catch per unit effort totals were greatest in the Red River System, while the long net catch per unit effort total was greatest in the Mississippi River System (Table 1). Long nets exhibited the greatest total catch per unit effort in all 4 watersheds.

The price per kilogram of the more desirable species of fish, such as catfish and buffalo, generally increased statewide over 1977-78 values, while the less desirable species, such as

Table 1. Arkansas catch per unit effort values¹ (kilograms) by river systems and gear types for 1 July 1978, to 30 June 1979.

Species	Arkansas River System			White River System		
	Hoop Nets	Long Nets	Longlines	Hoop Nets	Long Nets	Longlines
Catfish	0.359	2.043	0.671	1.073	0.703	2.721
Buffalo	1.165	2.227	----	3.779	9.317	----
Carp	0.295	0.402	----	2.026	0.240	----
Drum	0.088	0.241	----	----	0.398	----
Gar	0.018	0.733	0.030	0.242	0.228	----
Grass Carp	0.009	0.011	----	----	----	----
Paddlefish	----	0.088	----	0.060	----	----
Bowfin	----	0.042	----	0.040	----	----
Carp sucker	0.122	0.018	----	0.302	0.151	----
Turtles	----	0.015	----	----	0.031	----
Totals	2.056	5.820	0.701	7.522	11.068	2.721

Species	Red River System			Mississippi River System		
	Hoop Nets	Long Nets	Longlines	Hoop Nets	Long Nets	Longlines
Catfish	1.289	1.865	3.855	0.227	0.978	2.033
Buffalo	1.872	4.367	----	0.763	6.448	0.270
Carp	3.383	3.998	----	0.124	3.186	----
Drum	1.235	0.286	----	----	0.326	0.191
Gar	0.547	0.121	----	----	1.417	----
Grass Carp	----	----	----	----	0.026	----
Paddlefish	1.152	----	----	----	----	----
Bowfin	----	0.019	----	----	----	----
Carp sucker	----	----	----	0.062	----	----
Turtles	----	----	----	0.151	----	----
Totals	9.478	10.656	3.855	1.327	12.381	2.494

¹Single piece of gear fished for one night.

Table 2. Average prices per kilogram for commercial fish and related organisms in Arkansas.

Species	Arkansas		White		Red		Mississippi	
	River System		River System		River System		River System	
	1977-78	1978-79	1977-78	1978-79	1977-78	1978-79	1977-78	1978-79
Catfish	\$1.25	\$1.32	\$1.14	\$1.10	\$1.12	\$1.43	\$1.14	\$1.10
Buffalo	.55	.66	.53	.55	.53	.66	.64	.55
Carp	.18	.11	.13	.22	.22	.11	.26	.22
Drum	.37	.66	.33	.33	.22	.66	.29	.33
Gar	.33	.22	.20	.22	.22	.44	.22	.22
Grass Carp	.57	.66	.35	.55	.51	.66	.37	.55
Paddlefish	.57	.66	.35	.44	.11	.66	.55	.44
Bowfin	.22	.11	.18	.11	.22	.11	.22	.11
Carp sucker	.18	.11	.15	.11	.22	.66	.22	.11
Turtles	.55	.55	.55	.59	.62	.55	.35	.59
Mussel Shells	\$313/metric ton in 1977-78							
	\$480/metric ton in 1978-79							

carp and bowfin, tended to decrease in value (Table 2). The total value of Arkansas' wild fishery (Table 3) more than doubled last year's estimate of \$2,325,255 by Henderson et al. (1978), and probably represents an all time high.

Buffalo and carp constituted 69.0 percent of the commercial harvest by weight while buffalo and catfish made up 86.1 percent of the total value. The paddlefish, which only represented 1.7 percent of the total harvest by weight, has not yet been targeted for its valuable roe by commercial fishermen as it has in several surrounding states.

Since Arkansas is well-known for its aquatic vegetation control program utilizing the white amur or grass carp, the commercial harvest of 8,048 kg of this species from the waters of our state is worth noting. This value represents less than 0.1 percent of our total commercial harvest, however.

Since 1977-78, the total harvest in kilograms increased 34.9 percent, 303.8 percent, 426.2 percent and 61.3 percent in the Arkansas River System, White River System, Red River System and Mississippi River System respectively (Table 4). Much of this dramatic increase is simply the result of more commercial fishermen (Table 5). Thus, a declining trend in the number of commercial fishermen (Henderson and Wooldridge 1977, Henderson et al. 1978) has reversed itself dramatically with a 40.6 percent increase over 1977-78 totals.

The total number of hoop nets licensed in 1978-79 increased 78.4 percent over 1977-78 data, licensed long nets increased 31.5 percent and licensed lines increased 66.2 percent. The causes for such a spectacular resurgence of commercial fishing may only be speculated, but undoubtedly inflation has caused many Arkansans to increase their consumption of fish. Other factors such as increased markets out-of-state would definitely contribute to the commercial fishing industry.

Table 3: Total Arkansas commercial fishery harvest statewide for 1 July 1978, to 30 June 1979.

Species	kg	Value
Catfish	1,485,215	\$1,825,224
Buffalo	4,174,990	2,413,106
Carp	1,567,722	270,418
Drum	305,984	166,227
Gar	462,317	114,914
Grass Carp	8,048	4,873
Paddlefish	140,854	90,176
Bowfin	10,148	1,116
Carp sucker	122,873	13,517
Turtles	24,789	15,075
Mussel Shells	17,834	8,613
Totals	8,320,774	\$4,923,259

Table 4: Total Arkansas commercial fishery harvest (kilograms) by river system.

Species	Arkansas River System		White River System		Red River System		Mississippi River System	
	1977-78	1978-79	1977-78	1978-79	1977-78	1978-79	1977-78	1978-79
Catfish	418,629	456,903	214,471	536,196	53,527	275,107	334,351	217,009
Buffalo	409,084	647,794	438,682	2,186,387	181,060	412,386	480,227	928,423
Carp	69,732	136,071	49,756	461,787	30,269	541,286	198,179	428,578
Drum	80,483	61,605	71,360	59,497	7,215	136,081	47,095	48,801
Gar	63,319	132,399	19,173	84,902	9,000	59,968	6,041	185,048
Grass Carp	28,141	4,051	----	----	3,418	----	4,278	3,997
Paddlefish	7,748	15,216	1,920	12,711	4,199	112,927	10,672	----
Bowfin	6,386	733	----	8,421	1,815	994	----	----
Carp sucker	18,508	30,421	12,560	86,155	1,381	----	1,079	6,297
Turtles	800	2,537	2,913	4,661	558	----	251	17,591
Mussel Shells	----	----	43,537	9,159	----	----	61,320	8,675
Totals	1,102,830	1,487,730	854,372	3,449,876	292,442	1,538,749	1,143,493	1,844,419

Table 5: Arkansas commercial fishermen and gear licensed by river system.

River System	Number of Fishermen		Licensed Hoop Nets		Licensed Long Nets ¹		Licensed Long Lines ²	
	1977-78	1978-79	1977-78	1978-79	1977-78	1978-79	1977-78	1978-79
Arkansas	619	785	974	1,834	1,169	1,400	723	1,365
White	697	1,122	1,829	2,715	652	901	868	1,379
Red	615	899	662	1,495	844	1,085	339	662
Mississippi	415	493	575	1,164	733	1,084	645	874
Totals	2,346	3,299	4,040	7,208	3,398	4,470	2,575	4,280

¹License required for every 91.4 m (100 yds.) or fractional part thereof.

²License required for every 30.5 m (100 ft.) or fractional part thereof.

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