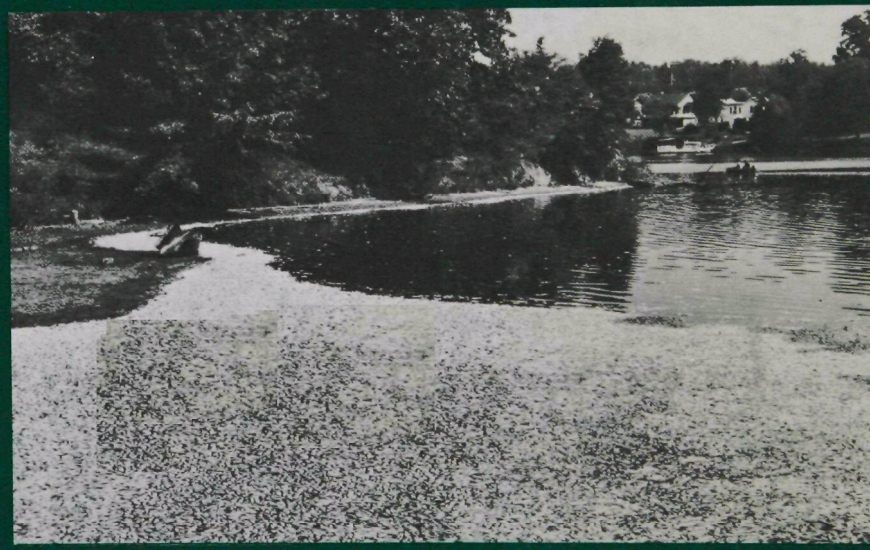
EPA–440/9–73–001

FISH KILLS caused by pollution in 1972



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1972 FISH KILLS Thirteenth Annual Report

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF WATER PLANNING AND STANDARDS

MONITORING AND DATA SUPPORT DIVISION
DATA REPORTING BRANCH
WASHINGTON, D.C. 20460

Foreword . . .

The Annual Pollution-Caused Fish Kill Report is the result of cooperative teamwork between the Environmental Protection Agency, state pollution control agencies, and private citizens. It includes reports of fish kills where water pollution is known or suspected to be the cause of death.

Since numerous kills resulting from pollution go unnoticed or unreported, the report cannot be considered complete. Furthermore, each year a few kills are not included because they appear to be kills that were produced by natural causes.

Despite these gaps, the data compiled in the report provide useful basic information, and alert officials and the public to potential pollution problems.

The following is a short summary of significant statistics of fish kills reported in 1972.

- ***All States Reported in 1972***

  For the first time since the inception of the annual pollution-caused fish kill reporting system in 1960, every state in the Union participated. In six states, participation consisted of a notice that the state had no recorded pollution-caused fish kill incidents in 1972.

- ***The Number of Fish Kill Reports Decreased in 1972***

  For the first time since 1967, the number of reported incidents decreased from the previous year. The 760 incidents reported in 1972 showed a 12 percent decrease compared to the 860 incidents reported in 1971. Nevertheless, 1972 had the second highest number of reports in 13 years of reporting.

- ***Almost 300 Million Fish Reported Killed Since 1960***

  The 17.7 million fish reported killed in 1972 brought the cumulative total of all fish reported killed by water pollution since 1960 to 298.5 million. While there was a 76 percent decrease in fish reported killed in 1972 compared to the record 73.6 million fish reported killed in 1971, 1972 was the sixth highest year in number of fish reported killed since the inception of the annual fish kill reporting system.

- ***Industrial Operations Led all Other Pollution Operations in Fish Kill Reports in 1972***

  The 189 fish kill reports associated with industrial operations in 1972 led all other pollution sources, even though the number was 18 percent less than the 231 industrial incidents reported in 1971. Industrial operations have led all other source operations in every one of the 13 years of the system.

- ***Municipal Operations Killed More Fish Than Any Other Pollution Operation in 1972***

  The 8.4 million fish killed by pollution from municipal operations represent almost one-half of the 17.7 million fish reported killed in 1972. Municipal operations include electric power generating plants.

- ***The Majority of Fish Kill Reports Indicated That Less Than 10,000 Fish Were Killed Per Incident in 1972***

  While 84 percent of the reports submitted specified the size of the kill as less than 10,000 fish, the sum of these kills represented only 4 percent of the 17.7 million fish reported killed in 1972.

- ***From 1960 Through 1972, Approximately 10,000,000 Fish Were Killed by Pollution in 21 Major U.S. Rivers***

  A total of 276 reports received between 1960 and 1972 occurred on the 21 largest and most important U.S. rivers (and estuaries). Mileage reports indicate that at least 1 mile in every 10 on these major rivers has experienced a fish kill in the last 13 years.

Voluntary Reporting Is The Key . . .

. . . to the nation-wide pollution-caused fish kill reporting system. A fish kill is first noticed by a fisherman, camper, or sportsman who, as an interested and concerned private citizen, reports the kill to a state official. In most instances, the state agency sends trained specialists to investigate and identify the size and cause of the kill. These specialists may request the help of Environmental Protection Agency field personnel to assist in on-site investigations, or to make laboratory analyses of dead fish tissue samples. When water pollution is determined to

be the cause of the kill, the State submits a report to the Environmental Protection Agency.

It is essential that a fish kill be reported and investigated immediately in order to determine the source of pollution and the polluting agent. Dead fish may be washed downstream from the source of pollution. The polluting agent may be diluted by fast flowing water, making on-site investigation difficult or even impossible. Hot weather conditions decompose fish tissue, also mak-

Table 1 contains historical data for the thirteen years that fish kill reports have been received. The table summarizes the following: The number of states reporting; the number of reported pollution-caused fish kill incidents; the number of reports which specify how many fish died; the reported number of fish killed; the largest single fish kill for each year; the number of reports for each pollution source operation; and a breakdown of fish killed by size of kill. The number of incidents and the numbers of fish killed are probably understated because of incomplete reporting and the difficulties of estimating numbers of dead fish. Also, 20 percent of the reports do not specify how many fish were killed.

TABLE 1—Historical Summary of Pollution-Caused Fish Kills, June 1960–December 1972

	1960 [2]	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972
Number of states responding	38	45	37	38	40	44	46	40	42	45	45	46	50
Number of reports	289	413	421	442	590	625	532	454	542	594	635	860	760
Reports which state number of fish killed	151	265	246	304	470	520	453	364	469	492	563	759	697
Total reported number of fish killed	6,035,000	14,910,000	44,001,000	6,937,000	22,914,000	12,140,000	9,614,000	11,291,000	15,815,000	41,166,000	22,290,000	73,670,000	17,717,000
Average size of kill [1]	2,925	6,535	5,710	7,775	5,490	4,310	5,620	6,460	6,015	5,860	6,412	6,154	4,639
Largest kill reported	5,000,000	5,387,000	3,180,000	2,000,000	7,887,000	3,000,000	1,000,000	6,549,000	4,029,000	26,527,000	3,240,000	5,500,000	2,922,000
Number of reported incidents for each pollution source operation													
Agricultural	79	74	51	84	131	114	88	87	77	117	108	132	113
Industrial	103	169	209	199	193	244	195	139	177	199	213	231	189
Municipal [3]	24	52	33	60	120	125	87	91	122	84	120	162	167
Transportation	0	0	1	17	26	27	27	23	39	32	28	52	56
Other	33	58	47	27	17	23	38	35	23	33	28	64	72
Unknown	50	60	80	55	103	92	97	79	104	129	138	219	163
Total reports	289	413	421	442	590	625	532	454	542	594	635	860	760
Number of reports and fish killed by size grouping	No. reports / No. fish (millions)	No. reports / No. fish (millions)	No. reports / No. fish (millions)	No. reports / No. fish (millions)	No. reports / No. fish (millions)	No. reports / No. fish (millions)	No. reports / No. fish (millions)	No. reports / No. fish (millions)	No. reports / No. fish (millions)	No. reports / No. fish (millions)	No. reports / No. fish (millions)	No. reports / No. fish (millions)	No. reports / No. fish (millions)
1,000,000 or more	1 / 5.0	4 / 12.6	2 / 41.0	1 / 2.0	5 / 16.9	3 / 5.4	2 / 2.0	1 / 6.5	3 / 6.1	4 / 35.1	5 / 11.4	28 / 63.0	6 / 8.97
100,000 to 1,000,000	3 / 0.53	5 / 0.85	9 / 1.69	12 / 2.68	15 / 3.82	17 / 4.62	23 / 5.48	7 / 2.66	30 / 7.44	9 / 3.15	26 / 7.44	26 / 6.37	27 / 5.43
10,000 to 100,000	15 / 0.31	45 / 1.05	38 / 1.01	54 / 1.82	59 / 1.65	63 / 1.42	58 / 1.53	49 / 1.58	64 / 1.79	81 / 2.06	91 / 2.73	124 / 3.33	81 / 2.60
1,000 to 10,000	64 / 0.18	107 / 0.34	89 / 0.30	134 / 0.41	167 / 0.49	202 / 0.59	185 / 0.55	143 / 0.46	153 / 0.48	165 / 0.52	198 / 0.62	266 / 0.86	216 / 0.62
0 to 1,000	68 / 0.02	104 / 0.03	108 / 0.03	103 / 0.03	224 / 0.07	235 / 0.07	185 / 0.05	164 / 0.05	219 / 0.06	233 / 0.06	243 / 0.07	315 / 0.10	367 / 0.09
No size reported for incident	138	148	175	138	120	105	79	90	73	102	72	101	63
Average duration of kill in days	**2.95**	**2.64**	**2.59**	**3.18**	**2.44**	**2.57**	**2.71**	**3.34**	**2.99**	**3.11**	**3.25**	**3.35**	**3.40**

[1] Derived after excluding reports of 100,000 kills or more as being unrepresentative.
[2] Reporting system in effect for last six months of 1960.
[3] Municipal operations include electric power-generating stations.

ing it difficult to identify a polluting agent. Since the investigator can count only those fish which lie on the surface, the estimated number of fish killed is almost always a conservative figure. Often, as much as 80 percent of the dead fish cannot be counted due to turbid water, or because the fish have either sunk to the bottom of the water body or have been washed away from the site of the kill.

The reporting system depends, to a large extent, upon individuals in the field making state officials aware of fish kills. It is, therefore, quite likely that the increases in reports in the last few years are a result of increased public awareness of pollution. It is hoped that this Fish Kill Report contributes to this awareness.

Basic Statistics

In 1972, 760 reports were submitted (Table 1). Of this total, 697 reports (92 percent of the total) stated the number of fish killed. This percentage represents the highest ratio of reported incidents specifying the number of fish killed to the total number of reports for any year since the start of the reporting system. In 1971, the figure was 88 percent. The general trend of this ratio over the 1960–1972 period shows an increase from a low of 52 percent in 1960 to the present high of 92 percent in 1972.

From 1961 through 1972, the total estimated number of fish killed ranged from a low of 6.9 million in 1963 to a high of 73 million in 1971. The largest number of fish killed in any single incident was 37.8 million in 1962: this incident was caused by pollution in coastal waters and occurred near San Diego Harbor, California.

Excluding the 73.6 million fish reported killed in 1971, the average number of fish killed for the eleven remaining years was 19.9 million. The total of 17.7 million fish reported killed in 1972, the sixth highest year, was slightly lower than the average.

In 1972, as in previous years, most of the incidents were small—that is, they killed fewer than 10,000 fish apiece. Eighty four (84) percent of the 697 reports which specified the number of fish killed in 1972 were in this category (Table 1). The overwhelming majority (81 percent) of fish were killed in a small number (5 percent) of large incidents. For the twelve reporting years since 1960, large kills averaged 4.6 percent of the reports but accounted for an average of 85 percent of all the fish reported killed.

Since even small kills can indicate potentially severe pollution problems, these data show the importance of notifying the proper State officials even when only a small number of dead fish are seen floating on a water body.

In 1972, sources of pollution were identified in 597 of the 760 reports. These kills are listed individually in Table 11. The 163 kills for which the pollution source could not be positively identified are listed in Table 12.

Total Fish Reported Killed

A total of 17.7 million fish were reported killed in 697 separate incidents of water pollution from all sources (Table 2). In the remaining 63 reports from the 760 reports submitted, fish losses were either not stated, or were not expressed in numerical terms.

The 17.7 million fish reported killed in 1972 brought the total number of fish killed

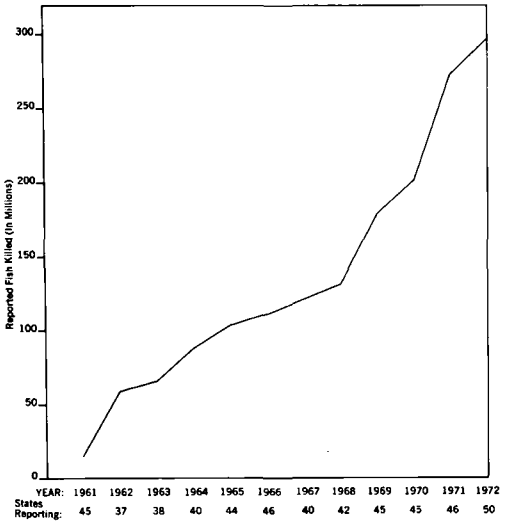
Table 2 summarizes fish kills for 1972 by major and individual pollution sources, and provides further information on fish killed in the game and non-game categories by major pollution sources. Average size of fish kill for each major source is also included. Kills from natural causes are not included.

TABLE 2—Fish Kill Summary by Source of Pollution, 1972

Source of pollution	Total reports	Reports specifying number of fish killed		
		No. of reports	No. of fish	Average kill*
Agricultural:				
Pesticides	57	51	1,500,147	
Fertilizers	10	10	30,944	
Manure-silage drainage	46	41	276,464	
Subtotal	**113**	**102**	**1,807,555**	**6,975**
Industrial:				
Mining	27	26	310,328	
Food products	31	30	328,268	
Paper products	12	10	720,667	
Chemicals	45	42	825,641	
Petroleum	29	26	345,518	
Metals	12	12	128,860	
Combinations	9	8	1,255,528	
Other	24	23	779,580	
Subtotal	**189**	**177**	**4,694,390**	**5,480**
Municipal:				
Sewerage systems	131	126	3,696,990	
Refuse disposal	8	7	37,799	
Water systems	10	9	3,203	
Swimming pool	3	3	46,075	
Power	15	15	4,576,527	
Subtotal	**167**	**160**	**8,360,594**	**6,260**
Transportation:				
Rail	7	7	14,610	
Truck	28	26	300,006	
Barge or boat	2	2	23,750	
Pipeline	19	15	118,160	
Subtotal	**56**	**50**	**456,526**	**4,302**
Other operations:	**72**	**61**	**1,028,869**	**3,520**
Unknown:	**163**	**147**	**1,369,284**	**2,529**
Total	**760**	**697**	**17,717,218**	**4,623**

*Derived after excluding reports of 100,000 kills or more.

FIGURE 1—Cumulative Reported Fish Killed, 1961 to 1972



OVER 298 MILLION FISH WERE REPORTED KILLED BY POLLUTION . . .

. . . over a 12-year period (Figure (1). This graph summarizes the reported number of fish killed for the 1961–1972 period. The first reporting year, 1960 was excluded since reports were not received for the full year. Many more dead fish probably go unreported due to the difficulties of estimating, and because they were not investigated immediately. This total is also low since 20 percent of the reports are not included because they did not state the number of fish killed.

Table 3 summarizes data from the 44 states which reported one or more pollution-caused fish kill incidents. Of the 760 reports submitted, 697 indicated the number of fish killed. The remaining 63 reports did not specify the number of fish killed. The table also shows the number of reports for incidents that occurred in rivers, lakes, and coastal waters.

TABLE 3—Pollution-Caused Fish Kill Summary by State, 1972

State	Total reports	Reports specifying number of fish killed		Number of reports and water surfaces affected					
				River		Lake		Coastal Waters*	
		Number of reports	Number of fish	Number of reports	Number of miles	Number of reports	Number of acres	Number of reports	Number of miles
Alabama	43	42	4,976,001	42	100	1			
Alaska	2	2	3,050			2	1,288		
Arkansas	3	2	6,500			3	368		
California	44	43	120,252	29	71	13	187	2	30
Colorado	6	6	128,422	6	25				
Connecticut	14	14	31,780	8	11	6	23		
Delaware	4	4	1,765	3	4			1	
Florida	33	23	99,440	17	3	16	342		
Georgia	6	4	102,952	3	15	3	20		
Hawaii	4	4	107,319	3	3	1	1		
Idaho	2	2	120,210	2	4				
Illinois	15	15	217,487	13	84	2	2		
Indiana	15	13	25,112	14	57	1	2		
Iowa	1	1	2,000	1	2				
Kansas	14	14	341,623	13	108	1	2		
Kentucky	22	22	245,549	20	118	2			
Louisiana	13	9	36,645	13	52				
Maine	6	5	13,420	6	12				
Maryland	13	9	193,401	11	157	2	4		
Massachusetts	19	14	2,057,443	6	5	13	671		
Michigan	2	2	3,700	1		1			
Minnesota	4	4	1,576	3	3	1			
Mississippi	3	3	59,000	3	68				
Missouri	34	28	537,147	30	101	4	20		
Montana	3	1	50	3	3				
Nebraska	17	17	144,598	8	26	9	266		
New Hampshire	3	3	3,300	1	6	2	1		
New Jersey	22	22	537,800	17	19	5	19		
New York	33	33	75,125	30	55	3	12		
North Carolina	16	15	66,562	13	31	3	39		
North Dakota	5	4	67,500	1	14	4	685		
Ohio	90	90	3,888,191	86		4			
Oklahoma	13	13	169,268	12	41	1	10		
Oregon	9	9	568,356	6	9	3	4		
Pennsylvania	83	82	345,197	74	175	9	3,868		
South Carolina	3	3	2,120	3	6				
Tennessee	23	22	403,480	19	32	4	80		
Texas	62	52	1,665,494	46	23	16			
Vermont	1	1	200	1	2				
Virginia	17	16	78,322	12	21	5	8		
Washington	21	13	238,385	17	27	3		1	1
West Virginia	12	12	27,623	12	29				
Wisconsin	4	3	3,553	4	6				
Wyoming	1	1	300	1	1				
Total	**760**	**697**	**17,717,218**	**613**	**1,529**	**143**	**7,922**	**4**	**31**

*Includes embayments such as Chesapeake, San Francisco, and Galveston Bays.

Table 4 lists the major fish kill incidents occurring in 1972 in which 100,000 or more fish were killed in each incident. Many more large kills may have gone unreported, or missed because they were not investigated immediately, and large kills may have been part of the 8 percent of the reports that did not state a number for fish killed.

(Figure 1) to 298.5 million in 5,602 separate incidents since the first full year of reporting (1961). These 5,602 separate incidents, plus 1,266 reported incidents which did not state the number of fish killed, brought the total number of reported pollution-caused fish kill incidents for the 1961–1972 period to 6,868.

A total of 44 states reported at least one fish kill incident (Table 3). The remaining six states (Arizona, Nevada, New Mexico, Rhode Island, South Dakota and Utah) stated they had no recorded incidents of pollution-caused fish kills for 1972. Five states (Alabama, California, Ohio, Pennsylvania, and Texas) accounted for 42 percent of the total reports.

Major Fish Kills

No heavy kills were reported in 1972 comparable to the massive kills reported in 1971 when six incidents occured in Texas totalling 15,000,000 fish, and twelve incidents occurred in Florida totalling 29,000,000 fish. However, 33 kills were reported in which the number of dead fish equaled or exceeded 100,000 each, accounting for 14.4 million fish (Table 4). Of these, six kills reached or exceeded the million mark. One million or more fish were killed in: one incident in Ohio killing 2,922,480 fish; two incidents in Alabama totalling 2,795,000 fish; two incidents in Massachusetts totalling 2,000,000 fish; and one incident in Texas, killing 1,250,000 fish. These six reported kills accounted for approximately 50 percent (9 million) of the 17.7 million pollution-caused fish kills in 1972.

TABLE 4—Major Kills—100,000 or Over—1972

Lake or stream	Near or in	State	Number of fish	Operation
Bayou La Batre	Bayou La Batre	Alabama	100,000	Food Products
Dry Cr	Decatur	Alabama	106,664	Other Industrial
Soldier Cr	Josephine	Alabama	1,000,000	Unknown
Dog R	Mobile	Alabama	132,103	Sewerage System
Dog R	Mobile	Alabama	100,000	Sewerage System
Dog R	Mobile	Alabama	132,000	Sewerage System
Garrows Bend Chl	Mobile	Alabama	200,000	Paper Products
Garrows Bend Chl	Mobile	Alabama	500,000	Paper Products
Kitty Cr	Mobile	Alabama	337,111	Sewerage System
Robinson Bayou	Mobile	Alabama	334,800	Other Operations
Three Mile Cr	Mobile	Alabama	1,795,000	Sewerage System
Saint Vrain R	Larimer County	Colorado	112,000	Other Operations
Kapakahi Stream	Waipahu	Hawaii	100,000	Pipeline Transportation
N Fk Clearwater	Ahsahka	Idaho	120,000	Other Operations
Arkansas R	Garden City	Kansas	129,400	Food Products
Elk Fork	Morgan	Kentucky	115,638	Mining
Patapsco R	Sparrows Pt	Maryland	114,244	Metals
Great Pd	Falmouth	Massachusetts	1,000,000	Poisons
Cape Cod Ca	Sandwich	Massachusetts	1,000,000	Power
Big Piney R	Cabool	Missouri	115,000	Chemicals
S Fk Salt R	Mexico	Missouri	222,000	Petroleum
Oyster Cr	Forked River	New Jersey	500,000	Power
Bend Fk Cr	Belmont Co	Ohio	105,806	Sewerage System
Grand R	Lake Co	Ohio	374,099	Chemicals
Lake Erie	Lake Co	Ohio	2,922,480	Power
Cranberry Cr	Putnam Co	Ohio	261,390	Other Operations
Washita R	Maysville	Oklahoma	150,000	Truck Transportation
Row River	Culp Creek	Oregon	563,140	Other Industrial
Connoquenessing	Ellwood City	Pennsylvania	140,000	Sewerage System
Stones R-E Fk	Woodbury	Tennessee	169,601	Sewerage System
Galveston Bay	Houston	Texas	1,250,000	Combination
San Antonio R	San Antonio	Texas	100,000	Sewerage System
Spring Cr	Union Gap	Washington	110,000	Poisons

Fish Killed, by Type of Water Body

Reports for 1972 indicate a significant decrease compared to 1971 in fish reported killed in rivers and coastal waters and a marked increase in fish reported killed in lakes (Table 5). Much less than one percent (4.2 thousands) of the total fish reported killed died in coastal waters, while 67 percent (11.9 million) died in rivers, and 33 percent (5.8 million) died in lakes. In 1971, only one percent (0.8 million) of the total fish reported killed died in lakes, 44 percent (32.4 million) died in coastal waters, and 55 percent (40.4 million) died in rivers.

TABLE 5 summarizes reported fish kills by type of water body (river, lake, and coastal waters), and the extent of the area reportedly affected (by miles or acres); Table 6 summarizes fish kills by type of water (fresh, salt, and estuary); and Table 7 summarizes fish kills by month. The mileage and acreage figures cannot always be accurately estimated, so care should be exercised in their use.

TABLE 5—Fish Kill Summary by Type of Water Body, 1972

Type of water body	Total reports	Reports specifying number of fish killed		Reports specifying number of fish killed and extent of area affected	
		Number of reports	Number of fish	Miles	Acres
River	613	570	11,866,305	1,529	
Lake	143	123	5,846,700		7,922
Coastal waters*	4	4	4,213	31	
Total	**760**	**697**	**17,717,218**	**1,560**	**7,922**

*Includes embayments such as Chesapeake, San Francisco, and Galveston Bays.

TABLE 6—Fish Kill Summary by Type of Water, 1972

Type of water	Total reports	Reports specifying number of fish killed	
		Number of reports	Number of fish
Fresh*	683	628	10,669,294
Salt**	10	8	37,766
Estuary***	67	61	7,010,158
Total	**760**	**697**	**17,717,218**

*Fresh water includes any inland water upstream of tidal action.

**Salt water means water beyond the coastline.

***Estuary means the water of inlets, bays, or river mouths that are affected by tidal action.

TABLE 7—Fish Kill Summary by Month, 1972

Month	Total reports	Reports specifying number of fish killed	
		Number of reports	Number of fish
January	25	20	558,995
February	24	24	160,173
March	21	17	501,048
April	49	44	404,189
May	94	80	423,884
June	118	113	1,316,010
July	130	122	4,869,193
August	116	111	1,802,238
September	112	101	3,777,454
October	44	41	3,684,754
November	22	19	175,973
December	5	5	43,307
Total	**760**	**697**	**17,717,218**

Fish Killed by Type of Water

In 1972, the number of fish reported killed in fresh water (any inland water upstream of tidal action) accounted for the largest number of fish reported killed of the three types of waters (Table 6), followed closely by estuary water (water of inlets, bays, or river mouths that are affected by tidal action). An almost insignificant number of fish (37,000) were reported killed in salt water (water beyond the coastline).

In 1972, 60 percent (10.7 million) of the total reported fish were killed in fresh water, as compared to 20 percent (15.2 million) in 1971. Over 39 percent of the fish (7.0 million) were killed in estuary water as compared to 77 percent (56.4 million) in 1971, a significant decrease.

The number of fish reported killed in estuary water in 1972 decreased appreciably from the number reported killed in 1971. Nevertheless, the 7 million fish reported killed in 1972 in this type of water can be of great national concern since estuaries serve as breeding and nursery grounds for many species of marine fish.

Fish Kills, By Month

As in the past, the greatest number of reports (82 percent) were submitted for the warm weather months (Table 7). Over 81 percent of the 17.7 million fish reported killed in 1972 were killed from May through September. Warm weather can often combine with lower water levels during these months to enhance the pollution effects. Also, since more people are in, or on, the water during the summer, kills are more apt to be observed and reported.

A total of 697 reports specified the number of fish killed by month. July ranked first

Table 8 summarizes the reported duration and estimated severity of fish kills, their average size, and the number and percent of reports for the different pollution sources. These figures cannot always be accurately estimated, so care should be exercised in their use.

TABLE 8—Fish Kill Summary by Duration and Severity of Kill, 1972

Severity of kill	Number of reports	Average kill**	Duration of Kill		Agricultural		Industrial		Municipal		Transportation		Other Operations		Unknown	
			No.	Average (days)*	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Complete kill	102	8,505	72	5.2	20	18	28	15	14	8	14	25	11	15	15	9
Heavy kill	191	8,102	150	3.6	33	29	52	27	55	33	17	31	13	18	22	13
Moderate kill	146	4,623	100	1.9	25	22	29	15	36	21	8	14	15	21	34	21
Light kill	151	1,626	93	2.0	16	14	39	21	34	21	9	16	18	25	41	25
Not stated	170	2,820	7	19.7	19	17	41	22	28	17	8	14	15	21	51	31
Total	**760**	**4,623**	**422**	**3.4**	**113**	**100**	**189**	**100**	**167**	**100**	**56**	**100**	**72**	**100**	**163**	**100**

* Includes all fish killed as reported plus an allowance computed for reports which did not indicate the number of fish that died.
Derived after excluding 33 reports of 100,000 kills or more.

in the number of reports (122) and in number of fish. June ranked second (113), followed by August (111), September (101), and May (80).

Fish Kills, By Duration and Severity

Not all reports indicate duration of kill. In 1972, 56 percent (422 reports) indicated duration of kill with an average of 3.40 days (Table 8). In 1971, 58 percent (503 reports) indicated duration of kill with an average of 3.35 days. The three longest pollution incidents in 1972 lasted at least 99 days. These incidents occurred at: Mill Creek near New Holland, Pennsylvania; McCoulgh Run near Sharpsville, Pennsylvania; and Schuts Creek near Illahee, Washington.

The severity of a fish kill is reported as *"complete", "heavy", "moderate", or* "light" (Table 8). One hundred two "complete" kills were reported, averaging 8,505 fish per report. "Heavy" kills averaging 8,102 fish were reported on 191 occasions. "Moderate" kills were reported on 146 occasions, averaging 4,623 fish per kill. "Light" kills were reported on 151 occasions, averaging 1,626 fish per kill. Table 8 also indicates the average duration of fish kills by severity of kill, as well as the number and percentage of fish kill reports given jointly for severity of kill and major source of pollution.

Pollution-Causing Operations . . .

In 1972, pollution from industrial operations ranked first with 189 reports (Figure 2). In 1971, pollution from industrial operations also ranked first, with 231 reports. This comparison indicates a decrease of reported incidents (42 reports), or an 18 percent change between the two reporting years. In spite of this decrease, industrial operations has consistently led all other major pollution source operations in every one of the 13 years of the reporting system.

In 1972, pollution from municipal operations ranked second with 167 reports (Figure 2). In 1971, pollution from municipal operations also ranked second in the number of reports (162). Municipal operations include electric power generating stations.

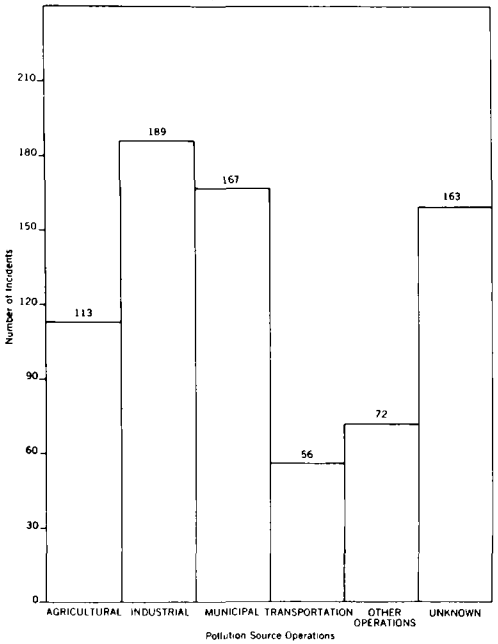
In 1972, pollution from agricultural operations ranked third with 113 reports (Figure 2). In 1971, pollution from agricultural operations also ranked third, with 132 reports.

In 1972, pollution from "other operations" ranked fourth with 73 reports (Figure 2). In 1971, pollution from agricultural also ranked fourth in the number of reports (64).

In 1972, pollution from transportation operations ranked fifth, and last, with 56 reports (Figure 2). In 1971 pollution from transportation operations also ranked fifth with 52 reports.

The term "unknown operations" is applied to situations where a fish kill cannot be linked to a specific pollutant or pollution source, but an investigator is reasonably confident that the fish did not die from na-

FIGURE 2—Number of Fish Kill Reports by Major Pollution Source Operation (Total 760)



OF THE FIVE MAJOR SOURCES OF POLLUTION, INDUSTRIAL OPERATIONS LED IN THE NUMBER OF REPORTED INCIDENTS IN 1972 . . .

. . . with Municipal Operations in second place. Figure 2 shows the number of reported fish kill incidents for each pollution source operation. The unknown category (unidentified pollution sources) has been added to show the distribution of total reported incidents. Kills from natural causes are not included.

tural causes. In many cases an investigator is not notified that a fish kill occurred until it is too late to identify a specific pollution agent due to the deterioration of fish.

In 1972, pollution from unknown operations was responsible for 163 reports (Figure 2). The source of pollution was unidentifiable for approximately 21 percent of all reports received. In 1971, pollution from unknown operations was responsible for 219 reports; the source of pollution was unidentifiable in approximately 25 percent of all reports received.

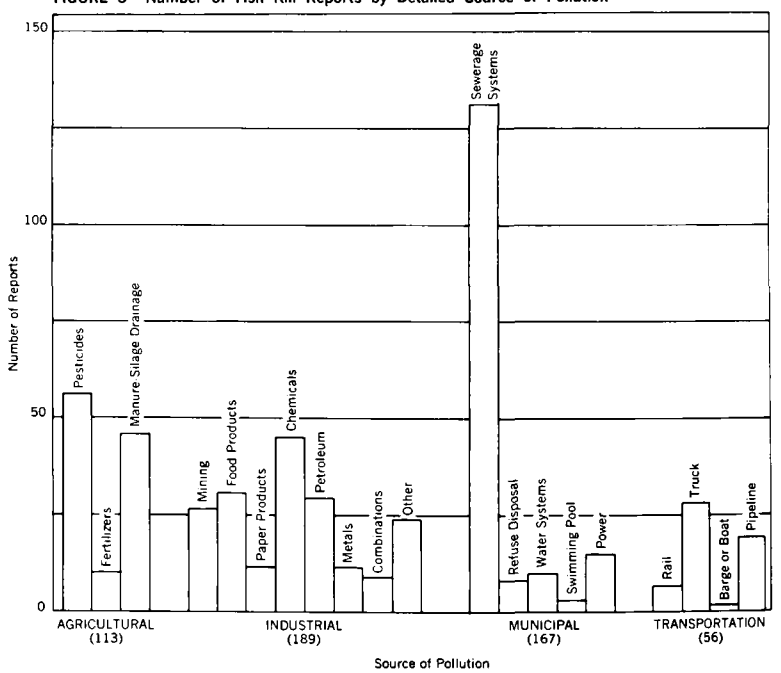
Figure 3 summarizes the number of fish kill reports by detailed source of pollution within each of the preceding major pollution source operations.

Figure 4 summarizes the number of fish reported killed by each major pollution source operation. Municipal operations ranked first (8.4 million), followed by industrial operations (4.7 million), agricultural operations (1.8 million), and transportation operations (0.5 million). Figure 5 summarizes the number of fish reported killed by each detailed pollution source operation.

SEWERAGE SYSTEMS UNDER MUNICIPAL OPERATIONS . . .

. . . led all other individual sources of pollution in the number of reported fish kill incidents. Figure 3 shows the number of reported incidents for each individual pollution source.

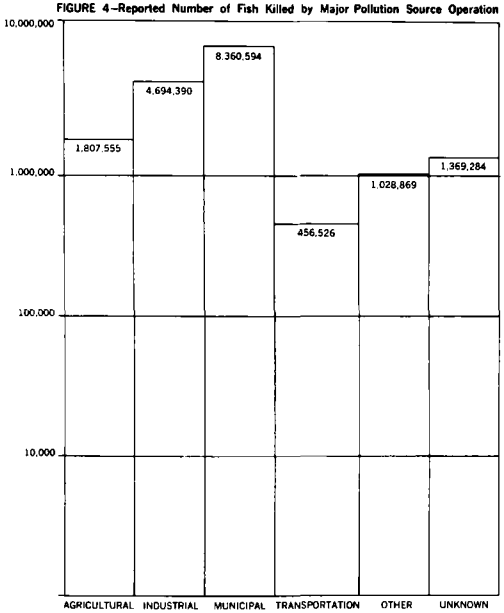
FIGURE 3—Number of Fish Kill Reports by Detailed Source of Pollution



OF THE TWENTY-ONE DETAILED SOURCES OF POLLUTION . . .

. . . power plant operations was the leading killer of fish in 1972 according to State reports. Figure 5 shows how many fish were killed by each kind of pollution source.

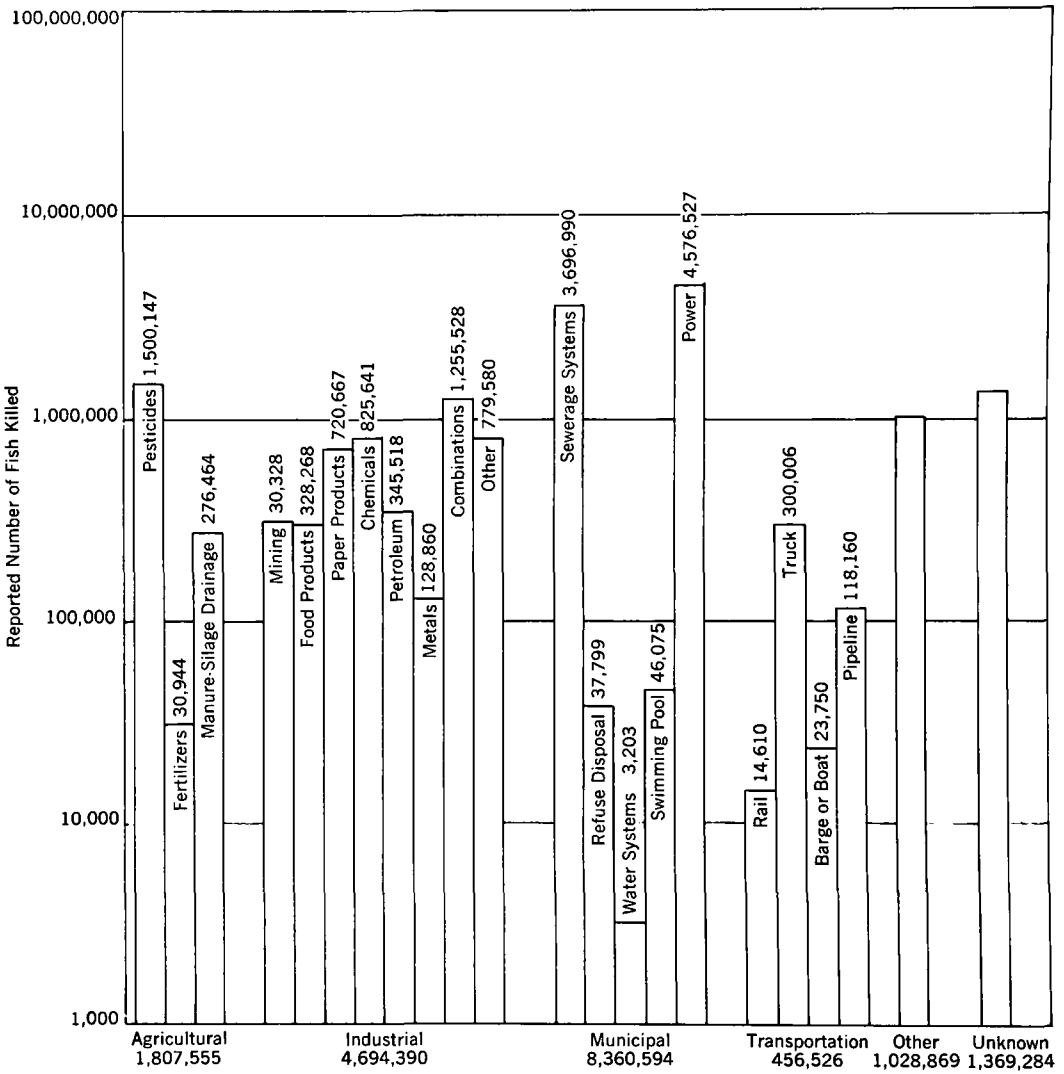
FIGURE 4—Reported Number of Fish Killed by Major Pollution Source Operation



OF THE FIVE MAJOR SOURCES OF POLLUTION, MUNICIPAL OPERATIONS LED IN THE NUMBER OF FISH REPORTED KILLED . . .

. . . with industrial operations in second place. Figure 4 shows the number of fish reported killed by each pollution source operation. Due to the large number of fish kill incidents by unidentifiable pollution sources, the unknown category has been added to this graph.

FIGURE 5—Reported Number of Fish Killed by Detailed Pollution Source Operation



Regional Data . . .

Table 9 summarizes the reported number of pollution-caused fish kill incidents and pollution source operations within each Environmental Protection Agency Region. This table permits a comparison of the frequency of reported incidents in different sections of the U.S. due to different pollution sources. Figures 6 through 15 are bar charts for each Environmental Protection Agency Region. These charts indicate the percent of reported incidents within a given region for individual sources of pollution, and also list the states within each respective region. Figures in the charts are derived from Table 9.

Agricultural Operations

In 1972, manure-silage drainage in Region VII (18 reports) was the most frequently reported individual source of pollution under agricultural operations for any of the ten regions. In 1971, manure-silage drainage in Region V (21 reports) was reported most frequently for all regions.

In 1972, pesticides were responsible for 11 reported incidents in Region I, 12 reported incidents in Region IV, and 8 reported incidents in Region IX, making it the leading agricultural source of reported fish kill incidents for all regions combined. In 1971, pesticides were also the leading agricultural source of reported incidents for all regions combined with 16 incidents in Region VI, and 15 incidents in both Regions IV and IX.

In 1972, fertilizers were reported as the pollution source in 10 fish kill incidents from Regions III, V, VII, and VIII, but represented only 8.8 percent of the agricultural operations total. In 1971, fertilizers were the pollution source reported in 11 fish kill incidents from Regions III, V, and VII, but represented only 8.3 percent of the total for agricultural operations.

The total number of reported pollution-caused fish kill incidents from agricultural operations declined from 132 reported incidents in 1971 to 113 in 1972, a difference of 19 reported incidents. Pesticides alone accounted for 18 of these incidents.

Municipal Operations

In 1972, sewerage systems in all regions was the most frequently reported individual source of pollution under municipal operations, totalling 131 reported fish kill incidents. Regions III, IV, V, and VI accounted for 99 reported incidents, or 75 percent of all pollution-caused fish kill incidents resulting from municipal operations.

In 1971, sewerage systems was also the most frequently reported pollution source, totalling 133 reported pollution-caused fish kill incidents. Regions III, IV, V, and VI accounted for 105 reported incidents, or 79 percent of all reported incidents.

In 1972, the total number of reported pollution-caused fish kill incidents for sewerage systems was 131 incidents, while the 1971 total was 133 incidents, a negligible change. However, a significant change occurred in Region VI, where the number of reported incidents decreased from 32 incidents in 1971 to 19 incidents in 1972, reflecting a 41 percent change.

Industrial Operations

In 1972, industrial operations accounted for more pollution-caused fish kill incidents (189) than any other pollution source operation, a decrease of 41 reported incidents from the 231 incidents reported in 1971, reflecting an 18 percent change.

In 1972, petroleum in Region III (14 reports) was the most frequently reported individual source of pollution under industrial operations for any given region while chemicals (45 reports) was the most frequently reported individual source of pollution for all regions combined.

In 1971, chemicals in Region III (14 reports) was the most frequently reported individual source of pollution under industrial operations for any given region, and also for all regions combined (49 reports).

Transportation Operations

In 1972, transportation operations (56 reports for all regions) had the smallest number of reported fish kill incidents of any major pollution source operation. With the exception of truck operations in Region III (10 reported incidents, or 18 percent of

the regional total), no other individual source of pollution under transportation operations exceeded 11 percent of the regional total for any given region. Truck operations, an individual source of pollution, accounted for 50 percent of the total incidents for all regions under transportation operations.

In 1971, transportation operations (52 reports for all regions) also had the smallest number of reported fish kill incidents of any major pollution source operations. No individual source of pollution under this category exceeded 7 percent of the regional total.

Other Operations

Other operations are a general category for those identifiable sources of pollution which do not fall under the other four categories.

In 1972, Region III, with 16 reported fish kill incidents accounted for 22 percent of the total 72 reported incidents caused by pollution from other operations. In 1971, 16 fish kill incidents were also reported under Region III; these 16 incidents represented 25 percent of the total 64 fish kill incidents reported under the other operations category.

Table 9 summarizes the number of reported pollution-caused fish kill incidents by individual source of pollution for each EPA region. Region VIII reported the smallest number of fish kill incidents (15 reports) while Region IV (149 reports) led in the number of reported incidents.

TABLE 9—Number of Fish Kill Reports by Source of Pollution Within EPA Regions, 1972

Source of pollution:	EPA Regions										
	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
Agricultural:											
Pesticides	11	2	4	12	2	7	3	2	8	6	57
Fertilizers	.....	.....	1	.....	6	.....	2	1	.....	.....	10
Manure-silage drainage	.....	1	5	3	10	5	18	3	1	.....	46
Subtotal	**11**	**3**	**10**	**15**	**18**	**12**	**23**	**6**	**9**	**6**	**113**
Industrial:											
Mining	.....	.....	10	7	3	.....	4	2	1	.....	27
Food products	.....	7	4	2	8	4	3	1	1	1	31
Paper products	.....	.....	.....	9	1	.....	.....	.....	.....	2	12
Chemicals	1	4	11	9	7	9	2	.....	1	1	45
Petroleum	1	.....	14	1	2	7	3	.....	.....	1	29
Metals	.....	2	4	.....	2	2	1	.....	1	.....	12
Combinations	.....	.....	.....	1	.....	8	.....	.....	.....	.....	9
Other	.....	3	6	6	4	1	.....	1	2	1	24
Subtotal	**2**	**16**	**49**	**35**	**27**	**31**	**13**	**4**	**6**	**6**	**189**
Municipal:											
Sewerage systems	3	11	18	33	29	19	11	.....	6	1	131
Refuse disposal	.....	1	3	2	.....	.....	2	.....	.....	.....	8
Water systems	1	.....	1	2	3	1	1	1	.....	.....	10
Swimming pool	1	.....	1	1	.....	.....	.....	.....	.....	.....	3
Power	6	1	2	.....	6	.....	.....	.....	.....	.....	15
Subtotal	**11**	**13**	**25**	**38**	**38**	**20**	**14**	**1**	**6**	**1**	**167**
Transportation:											
Rail	.....	.....	3	.....	3	.....	.....	1	.....	.....	7
Truck	1	5	10	4	4	2	.....	.....	1	1	28
Barge or boat	.....	.....	1	.....	.....	1	.....	.....	.....	.....	2
Pipeline	1	.....	6	1	4	1	4	1	1	.....	19
Subtotal	**2**	**5**	**20**	**5**	**11**	**4**	**4**	**2**	**2**	**1**	**56**
Other Operations:	**5**	**7**	**16**	**4**	**14**	**13**	**2**	**1**	**2**	**8**	**72**
Unknown:	**12**	**11**	**9**	**52**	**22**	**11**	**10**	**1**	**23**	**12**	**163**
Total:	**43**	**55**	**129**	**149**	**130**	**91**	**66**	**15**	**48**	**34**	**760**

REGION I
Connecticut
Maine
Massachusetts
New Hampshire
Rhode Island
Vermont

REGION II
New Jersey
New York

REGION III
Delaware
District of Columbia
Maryland
Pennsylvania
Virginia
West Virginia

REGION IV
Alabama
Florida
Georgia
Kentucky
Mississippi
North Carolina
South Carolina
Tennessee

REGION V
Illinois
Indiana
Michigan
Minnesota
Ohio
Wisconsin

REGION VI
Arkansas
Louisiana
New Mexico
Oklahoma
Texas

REGION VII
Iowa
Kansas
Missouri
Nebraska

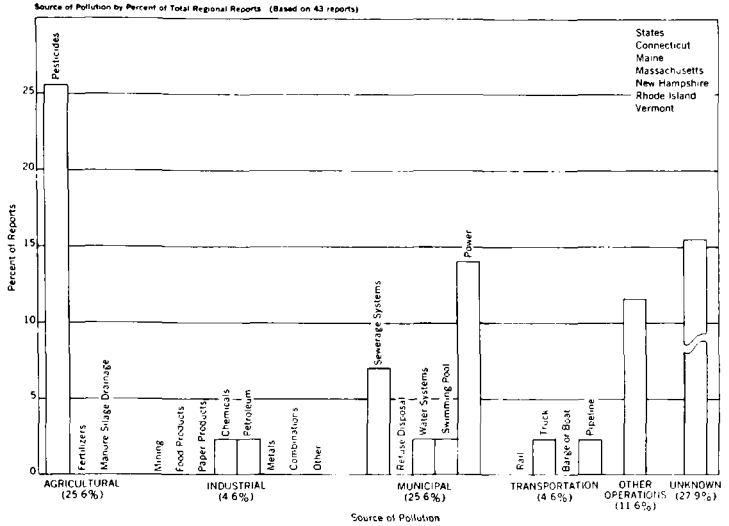
REGION VIII
Colorado
Montana
North Dakota
South Dakota
Utah
Wyoming

REGION IX
Arizona
California
Hawaii
Nevada

REGION X
Alaska
Idaho
Oregon
Washington

FIGURE 6—Pollution-Caused Fish Kills in Region I

Source of Pollution by Percent of Total Regional Reports (Based on 43 reports)

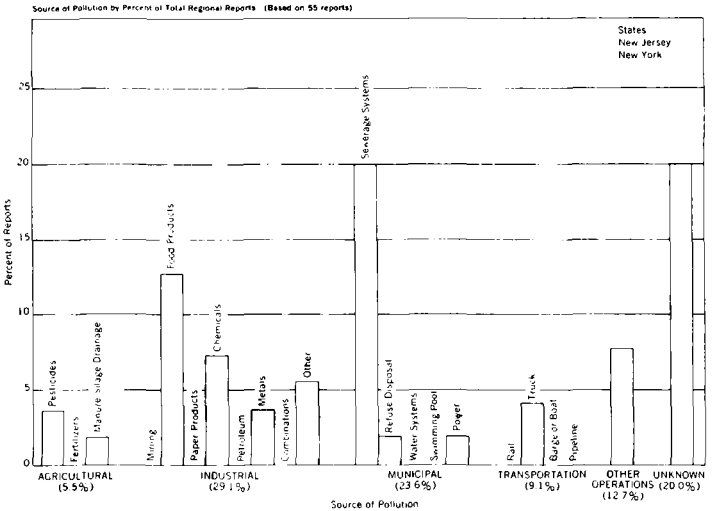


IN 1972 "PESTICIDES" LED IN REGION I . . .

. . . among individual sources of pollution (Figure 6) with 25.6 percent of the total number of reported fish kill incidents in the region, while "power" was second with 14.0 percent of the reported total. These percentages are based on 43 fish kill reports in Region I.

FIGURE 7—Pollution-Caused Fish Kills in Region II

Source of Pollution by Percent of Total Regional Reports (Based on 55 reports)

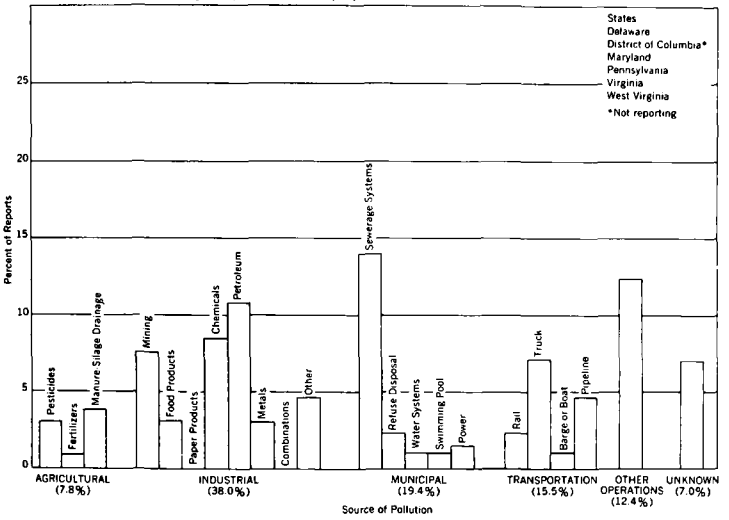


IN 1972, "SEWERAGE SYSTEMS" LED IN REGION II . . .

. . . among individual sources of pollution (Figure 7) with 20.0 percent of the total number of reported fish kill incidents in this region, while pollutants due to "food products" operations were second with 12.7 percent of the reported total. These percentages are based on 55 fish kill reports in Region II.

FIGURE 8—Pollution-Caused Fish Kills in Region III

Source of Pollution by Percent of Total Regional Reports (Based on 129 reports)

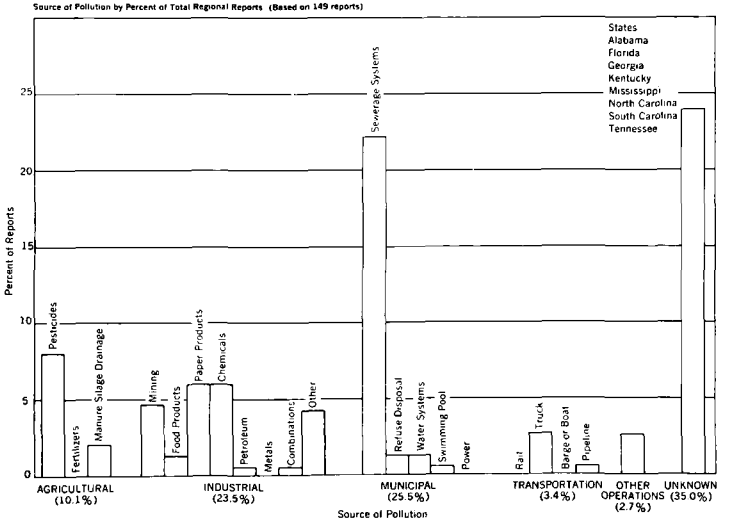


IN 1972, "SEWERAGE SYSTEMS" LED IN REGION III . . .

. . . among individual sources of pollution (Figure 8) with 14.0 percent of the total number of reported fish kill incidents in this region, while "petroleum" was second with 10.9 percent of the reported total. These percentages are based on 129 fish kill reports in Region III.

FIGURE 9—Pollution-Caused Fish Kills in Region IV

Source of Pollution by Percent of Total Regional Reports (Based on 149 reports)

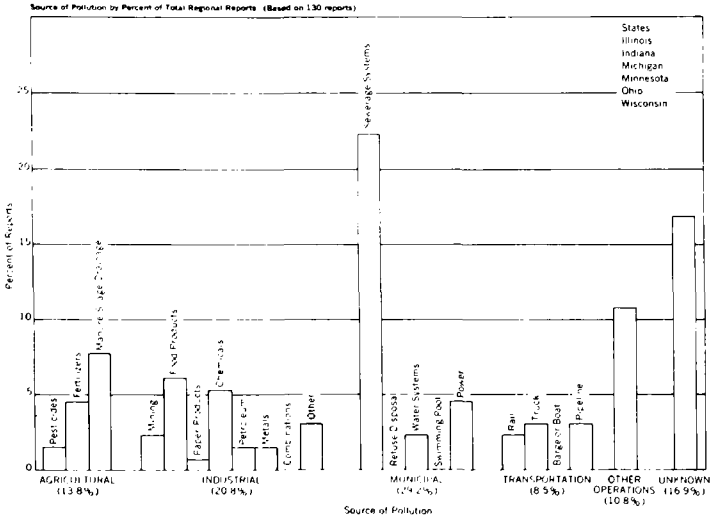


IN 1972, "SEWERAGE SYSTEMS" LED IN REGION IV . . .

. . . among individual sources of pollution (Figure 9) with 22.2 percent of the total number of reported fish kill incidents in this region, while "pesticides" was second with 8.1 percent of the reported total. These percentages are based on 149 reports in Region IV.

FIGURE 10—Pollution-Caused Fish Kills in Region V

Source of Pollution by Percent of Total Regional Reports (Based on 130 reports)

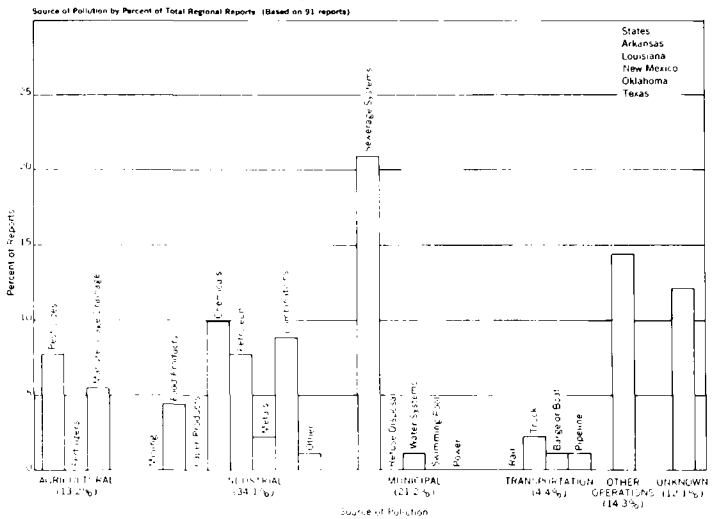


IN 1972, "SEWERAGE SYSTEMS" LED IN REGION V . . .

. . . among individual sources of pollution (Figure 10) with 22.3 percent of the total number of reported fish kill incidents in this region, while "manure-silage drainage" was second with 7.7 percent of the reported total. These percentages are based on 130 reports in Region V.

FIGURE 11—Pollution-Caused Fish Kills in Region VI

Source of Pollution by Percent of Total Regional Reports (Based on 91 reports)

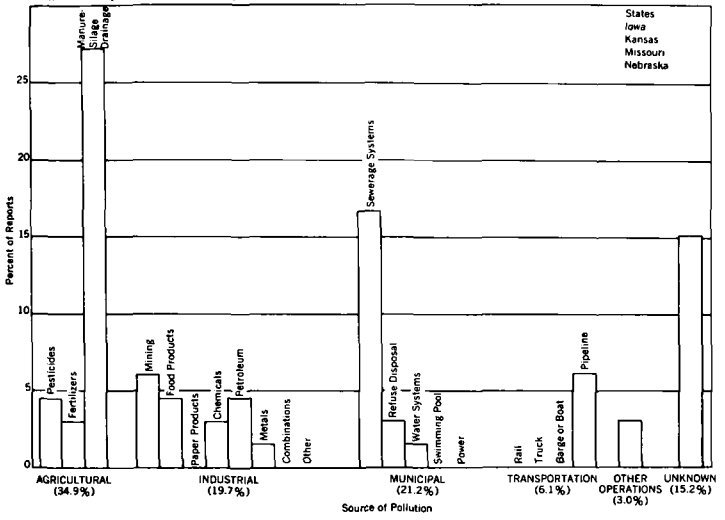


IN 1972, "SEWERAGE SYSTEMS" LED IN REGION VI . . .

. . . among individual sources of pollution (Figure 11) with 20.9 percent of the total number of reported fish kill incidents in this region, while "chemicals" was second with 9.9 percent of the reported total. These percentages are based on 91 reports in Region VI.

FIGURE 12—Pollution-Caused Fish Kills in Region VII

Source of Pollution by Percent of Total Regional Reports (Based on 66 reports)

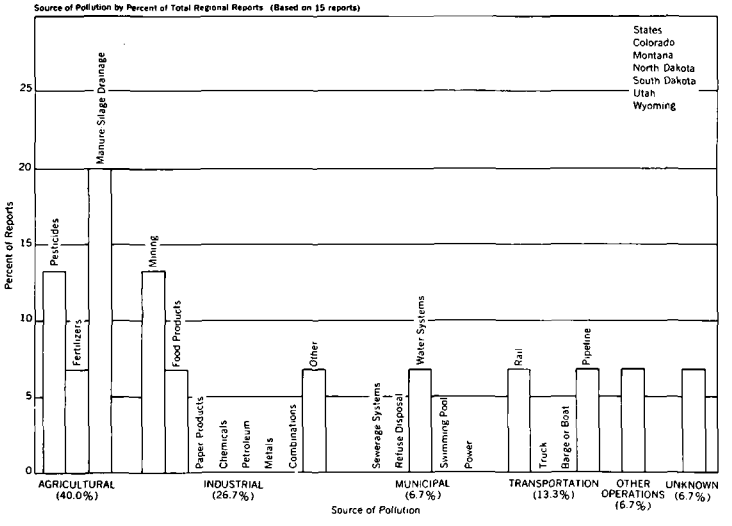


IN 1972, "MANURE-SILAGE DRAINAGE" LED IN REGION VII . . .

. . . among individual sources of pollution (Figure 12) with 27.3 percent of the total number of reported fish kill incidents in this region, while "sewerage systems" was second with 16.7 percent of the reported total. These percentages are based on 66 reports in Region VII.

FIGURE 13—Pollution-Caused Fish Kills in Region VIII

Source of Pollution by Percent of Total Regional Reports (Based on 15 reports)

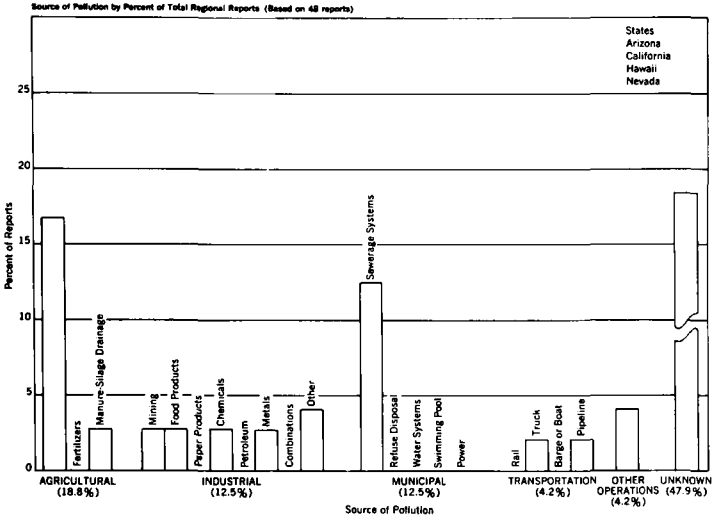


IN 1972, "MANURE-SILAGE DRAINAGE" LED IN REGION VIII . . .

. . . among individual sources of pollution (Figure 13) with 20.0 percent of the total number of reported fish kill incidents in the region, while "pesticides" and "mining" tied for second place with 13.3 percent of the reported total. These percentages are based on 15 reports in Region VIII.

FIGURE 14—Pollution-Caused Fish Kills in Region IX

Source of Pollution by Percent of Total Regional Reports (Based on 48 reports)

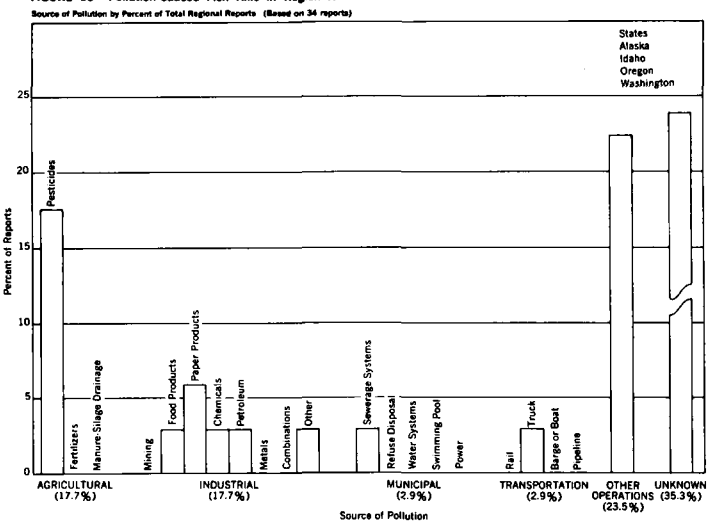


IN 1972, "PESTICIDES" LED IN REGION IX . . .

. . . among individual sources of pollution (Figure 14) with 16.7 percent of the total number of reported fish kill incidents in this region, while "sewerage systems" was second with 12.5 percent of the reported total. These percentages are based on 48 reports in Region IX.

FIGURE 15—Pollution-Caused Fish Kills in Region X

Source of Pollution by Percent of Total Regional Reports (Based on 34 reports)



IN 1972, "PESTICIDES" LED IN REGION X . . .

. . . among individual sources of pollution (Figure 15) with 17.7 percent of the total number of reported fish kill incidents in the region, while "paper products" was second with 5.9 percent of the reported total. These percentages are based on 34 reports in Region X.

Special Analyses . . .

This portion of the report is an analysis of pollution-caused fish kill data reported between 1960 and 1972 for twenty one major rivers and bays (Table 10).

These water bodies were originally selected for intensive study by the Environmental Protection Agency because: they are among the ten longest rivers in the continental United States; the ten rivers with the highest volume of water flow; or are specifically located near one of the ten largest U.S. Standard Metropolitan Statistical Areas. Of the 3.5 million estimated miles of rivers and streams in the United States, approximately 20,000 are included in the 21 rivers selected (Figure 16).

During the 13 years from 1960 through 1972, there were 276 reports of fish killed in these major rivers, accounting for about 10,000,000 fish, and 2,148 miles of river (and 27,456 acres of bays). The reports are particularly significant because:

- Most of the rivers are fairly large in volume, indicating that significant quantities of pollutants must have been present to achieve conditions bad enough to kill fish.
- Based on length of river, the major rivers had more than their "share" of kills. While the major rivers account for less than 1 percent of the total river and stream miles in the country, they account for 3.8 percent (276) of the total reports (7,157) of fish kills and 3.3 percent (10 million) of the total fish reportedly killed (300 million) for the period.
- The number of miles affected by fish kills are not always reported reliably, but if they are believed, they indicate that at least 1 mile of every 10 on the 22 major U.S. rivers has experienced a fish kill at some time during the past 13 years.

Data reported and received during these years are separated into three time periods: 1960 through 1962; 1963 through 1967; and 1968 through 1972. Most of the reported fish kills (112) occurred between 1963 and 1967, while 83 occurred between 1968 and 1972.

Data concerning acres of polluted water surface areas could be misleading, since one incident in a reservoir on the Sacramento River in 1962 accounted for 20,100 acres compared to 7,356 in all other reports combined.

During the 1960–1972 period, pollution from industrial operations accounted for 66.8 percent of the total of 276 reports received, followed by municipal operations (18.3 percent), agricultural operations (9.3 percent) and transportation operations (5.6 percent).

The Mississippi River ranked first in terms of reported polluted river miles (475 miles, 17 reports), followed by the Ohio-Allegheny Rivers (353 miles, 31 reports), and the Alabama-Coosa-Mobile Rivers (234 miles, 12 reports).

Los Angeles Harbor accounted for the largest number of reported fish kill incidents (50). However, only one incident was reported for this area between 1968 and 1972.

TABLE 10—Data on Reported Pollution-Caused Fish Kills in Major U.S. Rivers, 1960 through 1972

Rivers	Number of reports			Number of fish reported killed			Areas of pollution extent (miles-acres)			Major pollution source*			Totals			
	1960-62	1963-67	1968-72	1960-62	1963-67	1968-72	1960-62	1963-67	1968-72	1960-62	1963-67	1968-72	Miles**	Acres**	(1000) Fish killed	Reports
Alabama—Coosa—Mobile	2	4	6	200.0	88.6	15.5	125M	76M	1A 33M	Ind.	Ind.	Ind.	234	1	304.1	12
Arkansas	1	7	4		876.1	41.9	25M	169M	3,210A 35M	Ind.	Agr.	Mix	137	3,210	918.0	12
Boston Harbor		4			211.3			14M			Mun.		14		211.3	4
Brazos			1			0.9			2M			Mun.	2		0.9	1
Chicago	6	5	3	59.8	7.6	0.2	21M	18M	2M	Mun.	Mix	Mix	41		67.6	14
Colorado		2	1		71.5	3.5		11M	1M		Agr.	Agr.	12		75.0	3
Columbia—Snake	1	5	6	250.0	506.5	556.6	3A	25M	11A 149M	Ind.	Ind.	Mix	174	14	1,313.1	12
Delaware	12	17	4	130.1	40.0	0.2	148M	8A 50M	4M	Ind.	Ind.	Mix	130	8	170.3	33
Detroit	4	7	5	26.5	5.5	0.6		8M	2M	Agr.	Mun.	Mix	10		32.6	16
Hudson	2	2	2	0.6	0.4	1.0			1M	Mix	Mix	Mun.	1		2.0	6
Los Angeles Harbor	30	19	1	786.1	1,653.2	0.2	3,114A	1,326A		Ind.	Ind.			1,005	2,439.5	50
Mississippi	4	10	3		20.3	0.2	205M	461M	10M	Mun.	Mix	Mix	475			17
Missouri					28.0			150M					150		28.0	2
Ohio—Allegheny	3	15	13	15.0	1,233.9	235.6	60M	122M	204M	Ind.	Ind.	Ind.	353		1,484.5	31
Potomac	2						2M			Mix			2			2
Red		1	6		32.5	0.4		17M	1A 91M		Trans.	Mix	108	1	32.9	7
Rio Grande			5			1.9			1A 19M			Ind.	19	1	1.9	5
Sacramento—San Francisco Bay	9	5	9	0.1	117.8	2.9	22,005A 10M	1,043A	25M	Ind.	Mix	Ind.	19	23,048	120.8	23
Susquehanna	5	2	3	1,460.0	12.7	1,294.0	172M	4M	11M	Ind.	Mun.	Mun.	185		2,776.7	10
Tennessee		4	10		7.1	33.3		150A 74M	19A 6M		Ind.	Ind.	80	169	40.4	14
Willamette		1	1			0.5			2M			Trans.	2		0.5	2
Totals	**81**	**112**	**83**	**2,928.2**	**4,913.0**	**2,189.4**	**25,122A 768M**	**2,527A 1,199M**	**3,243A 597M**				**2,148**	**27,456**	**10,030.6**	**276**

* Entries indicate that 50 percent or more of reports were attributed to agricultural operations (Agr.), industrial operations (Ind.), municipal operations (Mun.), or transportation operations (Trans.). If no category showed a majority, then "Mix" is entered.

** Repetitive reports are excluded from these totals.

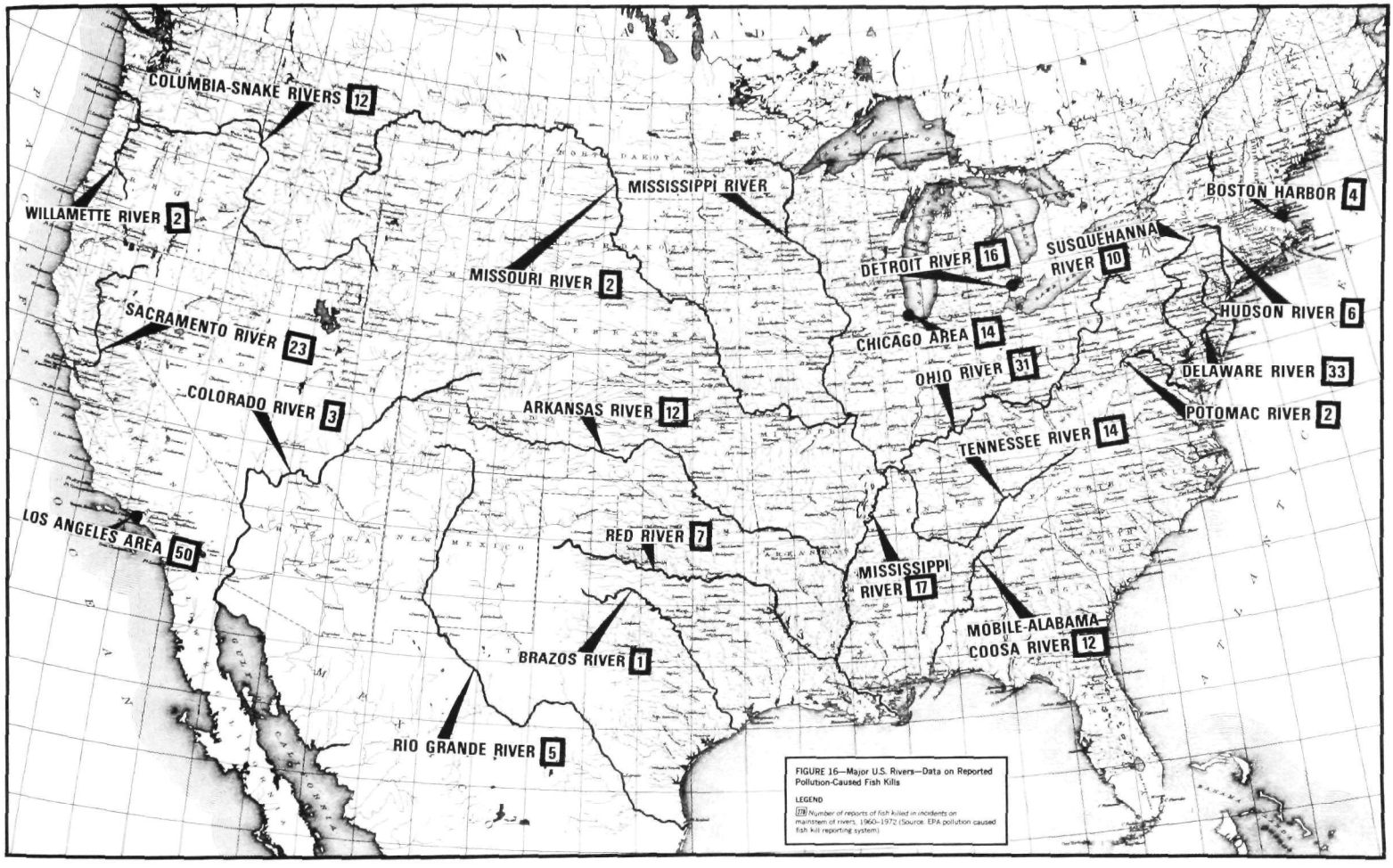


FIGURE 16—Major U.S. Rivers—Data on Reported Pollution-Caused Fish Kills

Table 11 lists the 597 reported fish kills for which the pollution-source was specified. Tabular heading information for each fish kill includes state, body of water, city or town, date of kill, cause, type of fish killed (game or non-game), percent of fish having commercial value, estimated number of fish killed, severity, extent of damage, and duration.

TABLE 11—Report of Fish Kills, 1972—Cause Identified

Body of water	City or town	Date	Cause [1] see code page 29	Type of fish killed: Percent game	Type of fish killed: Percent non-game	Percent kill with commercial value	Estimated fish killed	Severity [2] see code page 29	Estimated miles or acres affected [3] page 29	Duration Days	Duration Hrs.
ALABAMA											
Bayou la Batre	Bayou la Batre	7 25 72	22	...	100	100	100,000	3	1M	1	....
Sipsey R	Bazemore	9 28 72	31	60	40	...	1,200	3	7M	5	....
Buzzard Roost Cr	Cherokee	8 13 72	11	61	39	19	1,072	2	2M	1	....
Chickasaw Cr	Chickasaw	10 23 72	31	2	98	1	35,099	3	6M	4	....
W Fk Flint Cr	Danville	8 24 72	11	75	25	8	3,169	2	10M	....	....
Clark Spring Cr	Decatur	9 12 72	31	20	80	...	261	2	2M	2	....
Dry Cr	Decatur	9 14 72	28	11	89	...	106,664	1	1M	2	....
Hurricane Cr	Greenfield	8 12 72	11	28	72	...	4,792	2	4M	2	....
Cosa R	Leesburg	9 07 72	11	...	...	...	...	2	20M	2	....
Chickasaw Cr	Mobile	9 07 72	23	17	83	1	343	4	1M	1	....
Chickasaw Cr	Mobile	4 21 72	31	54	46	...	424	4	1M	....	....
Dog R	Mobile	8 23 72	31	...	100	100	15,000	4	1M	....	6
Dog R	Mobile	6 20 72	31	1	99	99	132,103	2	1M	1	....
Dog R	Mobile	7 14 72	31	...	100	100	100,000	3	1M	....	....
Dog R	Mobile	7 31 72	31	1	99	99	34,741	3	1M	1	3
Dog R	Mobile	6 20 72	31	...	100	100	770	4	1M	....	....
Dog R	Mobile	6 22 72	31	1	99	99	132,000	3	1M	....	....
Dog R	Mobile	8 23 72	31	...	100	100	15,000	4	1M	....	1
Garrows Bend	Mobile	6 07 72	23	...	100	99	166	4	1M	1	....
Garrows Bend Chl	Mobile	6 13 72	23	...	100	100	200	4	1M	....	....
Garrows Bend Chl	Mobile	8 15 72	23	...	100	100	200,000	3	2M	2	....
Garrows Bend Chl	Mobile	9 05 72	23	...	100	100	500,000	2	1M	1	....
Hollingers Is Ch	Mobile	9 30 72	24	...	99	99	2,500	4	1M	....	....
Hollingers Is Ch	Mobile	10 19 72	24	...	100	100	200	4	1M	....	1
Industrial Canal	Mobile	7 28 72	31	...	100	100	42,000	3	1M	....	....
Kitty Cr	Mobile	9 13 72	31	1	99	99	337,111	4	1M	1	1
Mobile R	Mobile	6 29 72	23	...	100	100	10,000	4	3M	1	....
Mobile R	Mobile	8 01 72	23	...	100	100	3,000	4	1M	2	....
Mobile River	Mobile	9 20 72	31	...	100	100	501	4	1A	....	3
Robinson Bayou	Mobile	10 04 72	50	...	100	100	334,800	3	1M	....	3
Three Mile Cr	Mobile	7 22 72	31	...	100	100	1,795,000	2	1M	1	....
Three Mile Cr	Mobile	8 09	31	...	100	100	56,000	3	1M	....	....
Catoma Cr	Montgomery	5 28 72	31	2	98	98	102	2	1M	4	....
Fish Trap Cr	Portre	9 20 72	21	47	53	...	3,500	2	1M	6	....
Norton Cr	Saraland	7 02 72	31	100	...	...	1,016	4	2M	....	....
D Olive Bay	Spanish Fort	8 12 72	28	...	100	...	801	4	...	2	....
Black Warrior R	Tuscaloosa	8 07 72	27	...	100	...	28	4	9M	1	8
Carroll Cr	Tuscaloosa	6 23 72	11	41	59	39	784	2	1M	....	12
Conecuh R	Union Springs	7 07 72	31	75	25	25	2,028	2	4M	....	....
ALASKA											
Silver Bay	Sitka	7 31 72	23	...	...	100	50	4	1280A	....	30
ARKANSAS											
Old River La	Gapland City	7 — 72	28	...	...	...	...	...	...	15	....
Midsouth Gas-La	Hazen	8 22 72	11	5	95	...	5,000	4	80A	1	....
Old River Lake	Scott	8 26 72	11	50	50	1	1,500	4	40A	1	....
CALIFORNIA											
J A Ford Park Pd	Bell Gardens	10 16 72	24	...	...	...	...	1	...	....	....
Imperial Irrig	Brawley	10 12 72	11	10	90	...	3,500	3	1M	2	....
Winters Canal	Esparto	6 29 72	11	98	2	...	206	4	4M	....	24
Arroyo Cr	Fairfax	9 21 72	50	50	50	...	250	4	1M	....	....
Lone Tree Cr	French Camp	11 30 72	13	...	100	...	750	3	1M	1	....
Mid Fk-Smith R	Gasquet	7 13 72	42	100	...	...	52,000	2	2M	....	3
Whiskey Slough X	Holt	3 30 72	11	80	20	...	1,250	2	1M	3	....
Pear Canal	Imperial County	12 03 72	11	25	75	...	5,500	2	20M	1	....
Indian Cr Resrvr	Markleeville	3 04 72	31	100	...	...	5,000	2	160A	....	....
Whitewater R	Mecca	2 24 72	22	5	95	...	500	...	3M	....	....
2nd Lateral Ca	Nicolaus	7 14 72	11	35	65	...	2,000	4	4M	....	24
Oxnard Flood Dr	Port Hueneme	9 21 72	31	...	100	...	4,000	2	1M	2	....
Lt Squaw Cr Arm	Redding	5 12 72	21	100	...	...	10	4	6A	....	....
Shasta La	Redding	5 12 72	28	100	...	...	8	4	...	....	....
Shasta La-Lt Sqw	Redding	6 01 72	26	98	2	...	59	3	...	....	....
Drain N of W Rd	Richvale	6 16 72	11	10	90	...	550	3	3M	....	24
Palo Verde Lag	Ripley	10 08 72	11	15	85	...	15,000	2	...	....	....
Sacramento R	Sacramento	2 25 72	31	100	...	...	250	2	1M	....	....
Pajaro R	Santa Cruz Co	1 04 72	31	14	86	...	15	1	...	....	....
Pajaro R	Santa Cruz Co	1 05 72	31	5	95	...	38	2	...	....	....
Pajaro R	Santa Cruz Co	1 07 72	31	80	20	...	241	2	...	....	....
Santa Rosa Lag	Santa Rosa	6 01 72	11	...	100	...	54	4	...	....	....
Walker Cr	Seiad Valley	7 17 72	28	100	...	...	350	2	...	....	....
COLORADO											
So Platte R	Denver	6 27 72	41	...	100	...	10,000	1	3M	....	20
Aqueduct Ditch	Fort Collins	7 10 72	11	1	99	...	200	2	2M	1	....
Chicago Creek	Idaho Springs	5 12 72	28	100	...	...	22	3	1M	....	....
Lt Thompson R	Johnstown	6 26 72	12	...	100	...	200	2	2M	2	....
Saint Vrain R	Larimer Co	8 28 72	50	1	99	...	112,000	1	15M	9	....
Purgatory R	Las Animas	7 — 72	21	50	50	...	6,000	2	2M	3	....
CONNECTICUT											
Quarry Pd-Noname	Cromwell	5 01 72	31	...	100	...	200	3	1A	....	....
Northfield Impdm	Litchfield	10 07 72	31	100	...	...	35	2	20A	....	....
Pond Brook	Newtown	7 16 72	25	2	98	...	50	4	3M	....	....
Long Island Snd	Niantic	4 30 72	35	...	...	100	25,000	2	...	7	....

Thomaston Resrvr	Plymouth	5 06 72	33	100	....	....	50	4	....	....	....
Unnamed Pond	Southbury	6 08 72	42	100	....	....	75	3	1A	1	....
E Br Naugatuck R	Torrington	7 21 72	50	....	100	....	600	3	1M	....	....
Mad R-Still R	Winsted	6 16 72	24	....	100	....	3,000	2	1M	....	3
Nonnewang R	Woodbury	10 19 72	50	10	90	....	1,500	1	2M	....	....
DELAWARE											
Atlantic Ocean	Bethany Beach	8 05 72	43	....	....	....	1,250	....	....	....	....
Dragon Run	Delaware City	7 21 72	31	....	100	....	200	4	2M	....	....
Mispillon R	Milford	9 07 72	31	....	100	....	250	....	1M	....	....
Cool Run	Newark	6 09 72	41	....	100	....	65	4	1M	....	....
FLORIDA											
Bear Br-Peace R	Bartow	6 04 72	24	92	8	....	962	4	3M	3	....
Banana La	Lakeland	6 13 72	31	17	83	....	73,499	2	342A	2	....
GEORGIA											
Hurricane Cr	Alma	9 30 72	31	60	40	....	....	2	5M	5	....
Raper Cr	Clarksville	8 17 72	42	18	82	....	10,433	1	2M	2	....
Chattahoochee R	Columbus	6 17 72	28	7	93	6	11,390	3	8M	....	4
Cordele Hatchery	Cordele	8 14 72	11	100	....	....	79,529	4	15A	7	....
HAWAII											
Drainage Ca-Bech	Honolulu	6 14 72	50	10	90	....	1,319	3	1M	2	....
Kapakahi Stream	Waipahu	10 17 72	44	....	100	....	100,000	2	1M	1	....
IDAHO											
N Fk Clearwater	Ahsahka	3 19 72	50	100	....	....	120,000	3	2M	1	....
Dry Bed-Snake R	Lewisville	2 08 72	22	100	....	....	210	3	2M	2	....
ILLINOIS											
Sangamon R	Decatur	6 28 72	31	3	97	....	16,028	4	5M	1	....
Macoupin Cr	Farmersville	5 09 72	12	31	69	15	4,092	2	4M	3	....
Brushy Cr	Harco	6 16 72	21	89	11	5	465	2	2M	2	....
Trib-Kickapoo Cr	Heyworth	7 21 72	13	6	94	12	30,281	2	6M	3	....
S Brandi Kishwau	Huntley & Union	5 27 72	31	29	71	42	12,448	1	12M	4	....
Ill & Mich Ca	Morris	2 29 72	23	60	40	6	3,908	3	1M	7	....
Weinel Pond	Ofallon	4 24 72	31	99	1	....	1,856	2	1A	2	....
Crooked Cr	Salem	5 30 72	31	88	12	8	1,378	3	1M	2	....
Asa Creek	Sullivan	5 20 72	12	92	8	83	5,437	1	3M	1	....
Embarrass R	Urbana	6 08 72	50	12	88	1	62,646	3	29M	3	....
INDIANA											
Cyprus Cr	Boonville	9 30 72	31	10	90	....	50	4	10M	1	....
Lick Creek	Connersville	9 11 72	31	1	99	....	14,140	1	1M	....	13
Eagle Cr	Indianapolis	6 07 72	31	....	100	....	17	4	2M	....	....
Grassy Cr	Julietta	9 26 72	31	50	50	....	100	3	3M	5	....
Lt Flatrock R	Milroy	9 15 72	22	25	75	....	1,500	1	1M	4	....
Lick Cr	Paoli	9 07 72	50	60	40	....	100	3	1M	....	....
Patoka R	Patoka	7 17 72	21	10	90	15	2,000	2	10M	....	....
White Lick Cr	Plainfield	7 24 72	31	....	....	....	....	2	3M	....	....
City Pond	Princeton	5 21 72	12	95	5	....	5,000	1	2A	....	....
Rock Cr	Walton	3 23 72	42	10	90	....	....	2	16M	3	....
Cedar Cr	Waterloo	9 07 72	31	....	100	....	1,100	2	5M	2	....
IOWA											
Yellow River	Myron	5 20 72	12	....	100	....	2,000	4	2M	....	....
KANSAS											
Republican Cr	Andover	11 04 72	31	100	....	100	500	3	1M	2	....
Walnut R & W Br	El Dorado	2 18 72	25	12	88	30	80,000	3	50M	10	....
Badger Cr	Emporia	7 12 72	13	50	50	70	28,123	1	11M	5	....
Trib Cottonwood	Emporia	5 12 72	22	10	90	15	2,500	1	2M	2	....
Spring Cr	Eureka	8 29 72	44	20	80	30	8,000	2	3M	4	....
Trib Arkansas R	Fort Dodge	7 16 72	13	25	75	30	500	3	2M	1	....
Arkansas R	Garden City	5 08 72	22	1	99	80	129,400	2	9M	....	24
Smoky Hill R	Lindsborg	5 01 72	13	100	....	100	100	4	1M	....	2
Crooked Cr	Montezuma	8 31 72	13	50	50	20	75,000	2	5M	3	....
Fall R	Neodesha	5 06 72	25	20	80	30	12,000	2	6M	2	....
S Fk Solomon R	Osborne	5 22 72	13	30	70	30	3,000	3	12M	4	....
Ewd Fry Farm Pd	Sublette	9 01 72	13	100	....	100	1,000	3	2A	1	....
KENTUCKY											
Case & Hammon C	Anderson	6 23 72	31	....	....	....	4,330	....	2M	....	....
Salt R	Anderson	7 06 72	28	....	....	....	810	....	1M	....	....
Yellow Cr	Bell	9 23 72	24	....	....	....	15	....	15M	....	....
Yellow Cr	Bell	9 20 72	24	....	....	....	25	....	13M	....	....
Yellow Cr	Bell	9 22 72	24	....	....	....	10	....	15M	....	....
Big Reedy Cr	Butler	6 04 72	11	....	....	....	69,249	....	10M	....	....
Collins Fk	Clay	10 03 72	21	....	....	....	25	....	1M	....	....
Sexton Cr	Clay & Owsley C	10 04 72	21	....	....	....	19,395	....	20M	....	....
Fleming Cr	Fleming	8 24 72	31	....	....	....	23	4	1M	....	....
Huskens Run	Harrison	5 11 72	22	....	....	....	348	....	3M	....	....
Richland Crs	Knox	7 13 72	11	....	....	....	480	....	1M	....	....
Tennessee R	Marshall	5 09 72	24	....	....	....	3,000	....	1M	....	....
Lees Cr	Mason	7 31 72	25	....	....	....	50	....	2M	....	....
Elk Fork	Morgan	5 08 72	21	....	....	....	115,638	....	18M	....	....
Salt R	Spencer	8 25 72	11	....	....	....	800	....	1M	....	....
LOUISIANA											
Red R	Alexandria	5 25 72	31	....	100	....	75	4	1M	1	....
Bayou Bourbeaux	Arnaudville	4 10 72	31	5	95	60	1,000	2	3M	1	....
Comite R	Comite	10 04 72	42	10	90	....	2,000	3	1M	....	....
Caney Cr	Leesville	11 06 72	25	97	3	2	....	4	1M	1	....
Bayou Teche	New Iberia	10 26 72	22	10	90	10	3,000	3	15M	1	....
Calcasieu R	Oakdale	5 27 72	50	75	25	10	....	4	1M	1	....
Sm Drainage Dtch	Oberlin	4 24 72	25	25	75	50	20	4	1M	1	....
Red River	Pineville	10 22 72	50	5	95	90	....	2	20M	2	....
Bulltail Bayou	Plaquemine	7 03 72	43	50	50	....	22,500	2	3M	....	....
Cross Bayou	Shreveport	6 12 72	31	....	100	....	50	3	1M	1	....
Martel Canal	Supreme	10 23 72	22	10	90	....	500	4	1M	....	....
Kiecse Cr	Winnfield	6 06 72	50	....	....	....	....	4	1M	1	....

See footnotes at end of table.

TABLE 11—Report of Fish Kills, 1972—Cause Identified—Continued

Body of water	City or town	Date	Cause [1] see code page 29	Type of fish killed: Percent game	Type of fish killed: Percent non-game	Percent kill with commercial value	Estimated fish killed	Severity [2] see code page 29	Estimated miles or acres affected [3] page 29	Duration Days	Duration Hrs.
MAINE											
Yuong Bk & Trib	Blaine	8 09 72	11	95	5			2	2M	6	
Farnum Brook	*Caribou*	*7 21 72*	*11*	*100*			*750*	*1*	*2M*		
Deblois Hatchery	Deblois	7 24 72	11	100		25	10,000	3			
Amsden Brook	Ft Fairfield	7 22 72	11	100			250	1	1M	3	
Everett Bk & Trb	Ft Fairfield	7 21 72	11	70	30		2,000	1	3M		
Webster Bk	Limestone	7 14 72	11	98	2		420	2	4M	3	
MARYLAND											
Ammons Pd	Auth Village	4 16 72	31	100		90	59,000	2	4A	3	
Stonehouse Bay	Baltimore	5 10 72	24								
Green Spring Run	Clear Spring	9 24 72	42	2	98	33	5,671	1	2M		
Basin Run	Colora	5 25 72	13								
Cabin Br	*Florence*	*9 16 72*	*50*					*1*	*1M*		
Carroll Cr	Frederick	1 24 72	25					1			
Carroll Cr	Frederick	10 08 72	24	62	82	28	1,041	1	1M		
Dorsey Br	Glenelg	9 04 72	50	18	38	100	245	1	2M		
Murphy-Georges R	Hampstead	5 13 72	12	9	91	1	1,000	1	4M		
Lanes Run	Indian Springs	4 19 72	50		100	98	10,500	2	3M	1	
Picture Frame Br	Odenton	2 09 72	28	100		90	100				
Patapsco R	Sparrows Pt	6 14 72	26		100	100	114,244	4	143A		12
MASSACHUSETTS											
Great Pd	Falmouth	6 03 72	11		100			3	4A		3
Great Pd	*Falmouth*	*7 14 72*	*11*		*100*			*1*	*4A*		*6*
Great Pd	Falmouth	7 27 72	11		100		1,000,000	2	6A		4
Great Pd	Falmouth	8 11 72	11		100		18,000	3	4A	2	
Nipmunk Pd	Mendon	6 13 72	50		100		85	4	2A	3	
Cape Cod Ca	Sandwich	9 26 72	35			100	300	4	1A		1
Cape Cod Ca	Sandwich	9 14 72	35			100	10,000	3	1A		1
Cape Cod Ca	Sandwich	9 25 72	35			100	1,000,000	2	1A		1
Cape Cod Ca	Sandwich	9 09 72	35			100	20,000	3	1A		1
Cape Cod Ca	Sandwich	9 22 72	35			100	5,000	3	1A		1
Lees River	Somerset	5 12 72	50		100	100		4			
Mill Pd	Westborough	6 22 72	50		100		500	2	30A	3	
Lewis Bay	*Yarmouth*	*8 31 72*	*11*		*100*			*3*		*1*	
MICHIGAN											
Gordon Dr-Black	Carsonville	6 19 72	42				700	1			
Saginaw Bay	Essexville	10 21 72	50	1	99		3,000	1		1	
MINNESOTA											
Red Cedar R	Austin	5 15 72	35	50	50		461	2	1M	2	
Budd La	Fairmont	7 21 72	33	100			235	4			
Crow R	Hutchinson	2 24 72	35	20	80		673	2	2M	7	
Mississippi R	Monticello	12 01 72	35	4	96		207	4			3
MISSISSIPPI											
Tangipahoa R	McComb	11 — 72	28	90	10		50,000	1	60M	4	
Pearl River	Monticello	10 — 72	23	80	20		3,000	3	6M		8
Strong R	Pinola	9 — 72	13	95	5		6,000	1	2M		6
MISSOURI											
Cuivre Cr	Bowling Green	5 21 72	31		100		1,100	3	1M		12
Big Piney R	Cabool	11 20 72	24	5	95		115,000	2	15M	4	
Mid Fk Tebo Cr	Calhoun	9 20 72	21				29,000	1		5	
Sand Cr	Calhoun	9 20 72	21				26,000	2		5	
Mineral Br	*California*	*5 05 72*	*44*		*100*		*26*	*4*	*2M*		*6*
Center Cr	Carthage	7 31 72	24					4	1M		
Spring R	Carthage	7 29 72	26				70	4	1M		
Harmony Cr	Columbia	6 25 72	33				764	3	1M	2	
Perche Cr	Columbia	9 18 72	21	10	90		88,000	2	6M	2	
Rocky Fork	Columbia	9 23 72	32	30	70		8,998	2	3M	2	
Drainage Ditch	Dexter	5 10 72	11	70	30		340	3	1M	5	
Bonne Femme Cr	Fayette	6 11 72	31				2,763	2	1M	2	
Bear Cr	Hannibal	8 21 72	32	5	95		1,500	3	1M		
Stouts Creek	Ironton	7 17 72	13	11	89		6,444	1	1M	2	
N Fk Salt R	Kirksville	9 15 72	31					3	6M	2	
Steer Cr	*Kirksville*	*6 11 72*	*31*				1,970	2	4M	7	
Muddy Cr	Lamar	8 05 72	13				500	3	2M	2	
S Fk Salt R	Mexico	3 28 72	25	9	91		222,000	2	30M	13	
Burress Pond	Moberly	2 23 72	50		100		200	2	1A	1	
Inter Br-No Name	Monroe City	5 13 72	13					4	1M		
Montrose La	Montrose	9 21 72	21	10	90		6,000	3	18A	5	
Little Tarkio R	Mound City	5 14 72	11	10	90		1,035	3	8M		
Birch Br	Nevada	8 03 72	31				65	4	1M		
Waterfork-Spr Br	Powell	4 17 72	13		100		1,003	3	1M	1	
Flat Cr	Sedalia	6 16 72	31	1	99		299	3	1M		
Wilson Cr	Springfield	4 13 72	31		100		100	4	2M	1	
Yates Pond	*St James*	*6 30 72*	*11*					2	1A		
Jims Cr	Vienna	3 10 72	44		100			2	2M		
Wolf Cr	Vienna	3 10 72	44		100		400	2	1M	2	
Miss R Slough	West Chester	3 07 72	13					4			
Peruque Cr	Wright City	6 04 72	31	82	18		1,205	2	2M	2	
MONTANA											
Donovan Cr	Clinton	1 10 72	44	20	80			1	1M	70	
Prickley Pear Cr	East Helena	7 12 72	21					2	1M	30	
Fairgrounds Cr	Helena	9 28 72	33	20	80		50	2	1M		12
NEBRASKA											
Little Blue R	Fairbury	7 22 72	31	5	95		20,360	2	6M		12
Wood River	Grand Island	2 12 72	31	1	99		55,126	1	10M		24
Moffett Drain	Minatare	10 10 72	13	10	90		60	2	1M		6
Nine Mile Cr	Minatare	11 03 72	13	5	95		650	3	2M		6

Gravel Pit West	Odessa	8 23 72	50	12	88	....	1,700	3	1A	1	....
Ravenna State L	Ravenna	7 30 72	12	100	....	....	167	4	2A	1	....
Grove Rearing St	Royal	7 26 72	13	100	....	....	41,070	2	1M	....	3
Grove Rearing St	Royal	5 13 72	13	100	....	....	4,008	2	1M	....	2
Woods Bros Pit	Schuyler	4 22 72	22	5	95	....	5,637	2	6A	2	....
Peterson Pond	Scotia	7 27 72	13	100	....	....	1,050	2	1A	1	....
Elfeldt Pond	Southerland	9 02 72	13	90	10	....	1,250	3	4A	2	....
Obermeyers Lake	Wisner	5 05 72	13	10	90	....	2,475	3	1M	....	24
NEW HAMPSHIRE											
Merrimack R	Concord	8 21 72	31	....	100	....	3,000	2	6M	2	....
Unnamed Pond	Sanbornton	8 16 72	44	....	100	....	100	2	1A	3	....
NEW JERSEY											
Peters Brook	Bridgewater Twp	4 07 72	24	....	100	....	1,800	1	3M	2	....
Trout Brook	Chester Twp	6 08 72	50	90	10	....	50	2	1M	4	....
Newton Cr	Collingswood	3 07 72	50	....	100	....	300	4	....	2	....
Oyster Cr	Forked River	1 29 72	35	....	....	100	500,000	1	....	4	....
Western Elec Pd	Hopewell	11 28 72	28	....	100	....	300	2	5A	3	....
Lopatcong Cr	Lopatcong Twp	10 03 72	26	90	10	....	50	4	1M	....	4
S Br Rancocas Cr	Marlton	6 04 72	31	50	50	....	100	4	1M	2	....
India Brook	Mendham Twp	4 09 72	31	10	90	....	50	4	1M	....	2
Bound Brook	Middlesex	9 01 72	32	20	80	....	2,500	3	1M	4	....
Hughes Pd	Passaic	9 10 72	28	....	100	....	100	2	4A	1	....
Dottys Brook	Piscataway	9 15 72	50	20	80	....	500	1	2M	2	....
Chestnut Br	Pitman	4 26 72	28	....	100	....	100	4	1M	1	....
Carnegie La	Princeton	6 04 72	50	....	100	....	100	4	....	....	....
Whitehead Pd	Trenton	8 11 72	24	10	90	....	24,000	2	10A	1	....
NEW YORK											
Ellicott Cr	Amherst	8 21 72	31	....	100	....	200	3	1M	....	3
Marsh Ditch	Arkport	6 13 72	22	50	50	....	50	2	2M	....	12
Brockport Cr	Brockport	7 08 72	42	....	100	....	100	1	1M	....	12
Canadaigua La O	Canandaigua	9 03 72	31	5	95	....	500	3	6M	....	4
Trib-Rythus Cr	Eden	6 19 72	26	....	100	....	200	4	1M	....	6
Thomas Cr	Fairport	5 23 72	42	....	100	....	2,500	2	2M	....	12
Tr-Irondequoit C	Fishers	5 10 72	11	5	95	....	200	2	1M	1	....
Canadaway Cr	Fredonia	8 10 72	31	1	99	....	250	4	2M	1	....
Otter Kill	Goshen	9 06 72	31	20	80	....	350	2	1M	1	....
Paddy Hill Cr	Greece	6 14 72	42	....	100	....	200	2	2M	2	....
Cold Brook	Hammondsport	8 21 72	22	....	100	....	1,000	2	1M	....	2
Chaumont R	La Fargeville	8 27 72	22	1	99	....	1,000	2	9M	1	....
English Brook	Lake George	5 19 72	42	40	60	....	100	3	2M	1	....
Oatka Cr	Le Roy	8 21 72	31	5	95	....	10,000	2	1M	2	....
Trib La Ontario	Lyndonville	6 05 72	22	5	95	....	500	2	5M	5	....
Little Inlet	Mayville	5 18 72	22	1	99	....	5,000	2	1M	1	....
Trib I-Jeddo Cr	Middleport	8 15 72	50	....	100	....	100	4	1M	1	....
Cold Spring Bk	Monticello	4 19 72	42	1	99	....	2,000	2	1A	2	....
Cayuga Cr	Niagara Falls	6 19 72	24	....	100	....	10,000	1	2M	15	....
Trib-5-Deer R	North Lawrence	8 29 72	22	....	100	....	1,000	1	1M	3	....
Tr 6-Catherine C	Odessa	10 30 72	13	....	100	....	100	2	2M	1	....
Two Mile Cr	Olean	11 06 72	24	....	100	....	200	2	2M	....	3
Little Black Cr	Rochester	8 13 72	31	20	80	....	300	2	1M	2	....
E Br Cazenovia C	South Wales	5 24 72	11	....	100	....	10,000	2	2M	1	....
Minisceongo Cr	Thiells	9 08 72	31	5	95	....	1,000	1	1M	1	....
Minisceongo Cr	Thiells	8 15 72	50	2	98	....	3,000	1	1M	1	....
W Br Delaware R	Walton	8 23 72	22	1	99	....	10,000	2	5M	1	....
Big Cr	Waterville	7 26 72	31	10	90	....	2,000	2	2M	1	....
Shipbuilders Cr	Webster	8 18 72	31	5	95	....	10,000	1	3M	2	....
Hunter Brook	Yorktown Hghts	8 13 72	50	1	99	....	2,500	2	1M	....	6
NORTH CAROLINA											
Swannanoa R	Asheville	8 05 72	31	1	99	....	200	1	1M	3	....
Pigeon R	Canton	8 24 72	33	25	75	....	215	3	1M	1	7
Cattle Pond	Coats	9 01 72	11	100	....	50	200	2	10A	1	....
Juniper Cr	Harris	8 17 72	11	47	53	....	219	3	5M	6	....
Eno R	Hillsboro	9 29 72	31	100	....	30	100	4	1M	1	....
Richardson Cr	Monroe	8 22 72	31	59	41	....	210	2	1M	5	....
Lake Wylie	Mt Holly	8 12 72	31	35	65	....	1,607	4	4M	....	....
Mountain Cr	New London	8 21 72	13	72	28	....	633	1	3M	....	....
Drainage Ditches	Plymouth	9 15 72	50	55	45	....	500	3	....	....	....
Roanoke R	Roanoke Rapids	4 09 72	23	....	....	....	....	4	....	2	....
Tr To Town Cr	Rocky Mount	11 16 72	42	10	90	....	110	4	1M	....	....
Richlands Cr	Waynesville	10 31 72	42	100	....	....	57,000	1	8M	....	16
NORTH DAKOTA											
Heinrich Lake	Ashley	7 25 72	13	20	80	....	22,000	1	100A	4	....
Plum Cr	Lefor	5 15 72	22	20	80	80	....	1	14M	8	....
Crown Butte Dam	Mandan	8 30 72	13	90	....	....	13,500	2	35A	10	....
Northgate Dam	Northgate	6 30 72	11	100	....	....	27,500	1	150A	14	....
Powers Lake	Powers Lake	8 20 72	13	100	....	....	4,500	3	400A	2	....
OHIO											
E Fk Eagle Cr	Adams Co	6 22 72	28	....	....	....	166	....	....	....	....
Flat Run	Adams Co	7 26 72	13	....	....	....	62	....	....	....	....
Lost Cr-Ottawa R	Allen Co	7 16 72	24	....	....	....	67,538	....	....	....	....
Ottawa R	Allen Co	5 01 72	50	....	....	....	739	....	....	....	....
Riley Cr	Allen Co	2 07 72	50	....	....	....	879	....	....	....	....
Bend Fk Cr	Belmont Co	4 29 72	31	....	....	....	105,806	....	....	....	....
Slabcamp Run	Brown Co	6 28 72	31	....	....	....	2,219	....	....	....	....
Gr Miami R	Butler Co	10 15 72	31	....	....	....	750	....	....	....	....
Big Sandy Cr	Carroll Co	8 08 72	31	....	....	....	1,068	....	....	....	....
Gilroy Ditch	Clark Co	7 26 72	31	....	....	....	1,045	....	....	....	....
Lt Miami R	Clark Co	10 05 72	41	....	....	....	5	....	....	....	....
Tr E Fk L Miami	Clermont	11 30 72	31	....	....	....	15	....	....	....	....
Twelve Mile Cr	Clermont Co	8 04 72	31	....	....	....	2,114	....	....	....	....
Andersons Fk	Clinton Co	9 08 72	13	....	....	....	6,281	....	....	....	....
Turkey Ft Cr	Columbiana	12 03 72	44	....	....	....	100	....	....	....	....
N Fk Lt Beaver C	Columbiana Co	6 01 72	50	....	....	....	1	....	....	....	....
Mill-By-Pass	Cuyahoga Co	4 14 72	50	....	....	....	239	....	....	....	....
Swamp Cr	Darke Co	8 28 72	31	....	....	....	39	....	....	....	....
Trib-Gordon Cr	Defiance	11 01 72	42	....	....	....	73	....	....	....	....
Mills Cr	Erie Co	7 24 72	22	....	....	....	34,181	....	....	....	....

See footnotes at end of table.

TABLE 11—Report of Fish Kills, 1972—Cause Identified—Continued

Body of water	City or town	Date	Cause [1] see code page 29	Type of fish killed: Percent game	Type of fish killed: Percent non-game	Percent kill with commercial value	Estimated fish killed	Severity [2] see code page 29	Estimated miles or acres affected [3] page 29	Duration Days	Duration Hrs.
Sandusky Bay	Erie Co	2 01 72	28				500				
Lt Walnut Cr	Fairfield Co	4 19 72	12				5				
Paint Cr	Fayette Co	8 12 72	31				236				
Beaver Cr	Greene Co	7 25 72	31				98				
S Br Ceasars Cr	Greene Co	7 31 72	24				13				
Sycamore Cr	Hamilton	7 22 72	31				3				
W Fk Mill Cr	Hamilton Co	5 05 72	31				572				
Blanchard R	Hancock Co	2 11 72	33				9				
Trib Blanchard R	Hancock Co	5 27 72	50				1,654				
Trib Rocky Ford	Hancock Co	9 02 72	24				1,863				
Maumee R	Henry Co	1 21 72	33				30				
Trib Hammer Cr	Henry Co	9 15 72	41				1,193				
Harpers Run	Hocking Co	6 26 72	25				3,350				
Norwalk Cr	Huron Co	8 21 72	35				15				
Norwalk Cr	Huron Co	7 28 72	35				2,391				
Symmes Cr	Jackson Co	9 08 72	31				794				
Center Run	Knox Co	7 12 72	22				558				
Grand R	Lake Co	6 02 72	24				374,095				
Lake Erie	Lake Co	10 29 72	35				2,922,480				
Mentor Lagoons	Lake Co	7 11 72	50				147				
Ice Cr	Lawrence Co	5 24 72	13				9,797				
Rocky R	Lorain Co	7 21 72	50				175				
Ottawa R	Lucas Co	9 28 72	28				5,566				
Sugar Run	Madison Co	7 18 72	13				6				
Sweeney Run	Madison Co	4 15 72	12				5				
Island Cr	Mahoning Co	5 02 72	22				29				
Island Cr	Mahoning Co	6 19 72	22				5				
W Br Mill Cr	Mahoning Co	6 12 72	31				169				
Trib Rocky R	Medina Co	6 21 72	42				28				
Leading Cr	Meigs Co	8 08 72	21				482				
Brush Cr	Miami Co	7 20 72	13				445				
Brush Cr	Miami Co	9 14 72	13				30				
Lt Beaver Cr	Montgomery Co	10 13 72	50				250				
Ditch-Rush Cr	Ottawa Co	4 27 72	50				1				
Lt & Big Beaver	Pike Co	9 28 72	24				13,504				
Lt 4 Mile Cr	Preble Co	9 08 72	31				191				
Mckelligan Ditch	Preble Co	8 02 72	13				75				
Sevenmile Cr	Preble Co	2 16 72	26				208				
Cranberry Cr	Putnam Co	8 17 72	50				261,390				
Paint Cr	Ross & Highland	8 24 72	31				526				
Lick Run Cr	Scioto Co	6 06 72	11				414				
Tiffin E Ditch	Seneca Co	8 08 72	28				35				
E Br Nimishillen	Stark Co	8 09 72	26				6				
Mid Fk Sugar Cr	Stark Co	5 24 72	22				50				
Tr Nimishellen C	Stark Co	6 01 72	13				6,437				
Tr Nimisila Cr	Stark Co	6 05 72	25				34				
Pigeon Cr	Summit Co	9 01 72	24				9,331				
Tr Lt Cuyahoga R	Summit Co	6 21 72	24				52				
S Fk Indian Run	Union-Franklin	7 20 72	22				500				
Hoaglin Cr	Van Wert Co	6 12 72	12				13,038				
Jennings Cr	Van Wert Co	9 08 72	22				11				
E Turtle Cr	Warren Co	6 07 72	13				193				
Turtle Cr	Warren Co	7 19 72	31				8				
Dtch-1895-Maumee	Wood Co	7 09 72	44				2,196				
Mid Br Portage R	Wood Co	7 09 72	44				5				
Needles Cr	Wood Co	9 11 72	50				2,813				
Sister Cr	Wood Co	5 05 72	31				375				
OKLAHOMA											
Caddo Cr	Ardmore	2 08 72	25		100	100	300	1	6M	3	
Mineral Bayou	Armstrong	8 11 72	22	5	95		500	3	3M		
Caney River	Bartlesville	8 27 72	26	10	90	10	2,800	2	6M	4	
Eliza Cr	Bartlesville	6 06 72	26		100		123	2	1M	1	
Chikaskia R	Blackwell	6 20 72	50	5	95		2,875	3	3M	2	
Cedar Cr	Cleveland	5 02 72	44	3	97		205	4	1M		2
Sallisaw Cr	Marble City	5 17 72	24	50	50		3,000	2	2M	1	
Washita R	Maysville	10 04 72	42	25	75		150,000	2	12M	2	
Deer Cr	Oklahoma City	2 01 72	31		100		200	4	1M	1	
Northeast La	Oklahoma City	5 17 72	11	50	50		4,000	4	10A	3	
N Fk Red River	Tipton	8 22 72	11	20	80		100	4	1M	1	
Coal Cr	Wagoner	6 25 72	31		100		165	4	3M	1	
Wewoka Cr	Wetumka	7 03 72	11	1	99		5,000	3	2M	1	
OREGON											
Fourth La	Albany	3 28 72	25	10	90		100	2	2A	3	
Row River	Culp Creek	8 09 72	28	4	96		563,140	2	4M	2	
Kane Cr	Gold Hill	5 25 72	11	100			4,503	2	1M		3
Beaver Cr	Gov'mnt Camp	1 07 72	42	31	69		130	3	1M	3	
S Fk Coquille R	Powers	7 27 72	50	90	10		100	3	1M	2	
Basket Slough	Rickreall	6 20 72	50	5	95		25	4	1M	10	
Clagget Cr	Salem	8 03 72	31	10	90		150	3	1M	7	
Rock Creek	Sherwood	7 10 72	24		100		200	3	1M	1	
Wright Pond	Union	7 16 72	11	100			11	1	1A	1	
PENNSYLVANIA											
Trib-Lt Muddy Cr	Adamstown	4 27 72	28	100			353	1	1M		4
Kooser Run	Bakersville	12 06 72	21	100			2,500	3	1M	1	
Trib-Martins Cr	Bangor	5 01 72	26	50	50		100	1	1M	1	
Tipton Run	Bellwood	8 28 72	50	7	93		750	2	1M	1	
Meadowbrook Cr	Bethayer	9 20 72	31	100			700	2	1M	2	
Monocacy Cr	Bethlehem	6 06 72	50	100			100	2	1M		12
Dunkard Cr	Brave	5 24 72	24	25	75		5,000	2	2M		20
Monocacy Creek	Brodhead	10 17 72	21	50	50		457	2	1M		18
Wolfe Lake	Chambersburg	11 29 72	22	88	12		97	4	1A	2	
Charleston Cr	Charleston Twp	8 24 72	50	25	75		457		1M		3

Pd-Tr Petters Cr	Clairton	9 14 72	24	100	....	....	....	500	1	8A	....	....
Patterson Pond	Commodore	1 14 72	21	100	....	....	....	40	1	1A	....	....
Brush Cr	Criders Corners	8 15 72	31	10	90	....	....	335	4	1M	7	....
Park Run	Downingtwn	4 24 72	34	....	100	....	....	250	2	1M	....	24
Sandy Lake	Dravosburg	2 21 72	32	100	....	....	....	300	1	2A	2	....
Sanders Run	Ebensburg	6 29 72	21	67	33	....	....	2,356	1	2M	2	....
Big Conneautee	Edinboro	6 11 72	31	50	50	....	....	301	2	1M	1	....
Conoy Cr	Elizabethtown	8 14 72	31	29	71	....	....	13,766	2	5M	2	....
Connoquenessing	Ellwood City	8 07 72	31	14	86	....	....	140,000	2	2M	1	....
Millcreek	Erie	9 14 72	42	29	71	....	....	200	3	2M	1	....
Presque Isle Bay	Erie	4 02 72	35	100	....	....	....	60,000	2	1920A	....	18
Presque Isle Bay	Erie	3 27 72	35	100	....	....	....	30,000	2	1920A	....	24
Walnut Cr	Erie	8 11 72	31	10	90	....	....	10,770	1	2M	1	8
Trib-Pennbrook	Foster Twp	5 25 72	44	....	100	....	....	32	4	2M	....	....
Lower Two Mi Rn	Franklin	4 06 72	44	77	23	....	....	3,000	1	7M	3	....
Conneaut Outlet	Geneva	7 25 72	50	100	....	....	....	450	4	3M	3	....
Oil Cr	Hanover	10 24 72	24	28	72	....	....	3,760	1	4M	2	....
Sindeldecker Br	Harrisonville	11 30 72	28	100	....	....	....	100	4	3M	....	4
S W Res-Tr Hurst	Hecla Southwest	6 26 72	21	....	100	....	....	233	1	1A	4	....
Leonard Run	*Heilwood*	7 19 72	21	50	50	....	....	942	2	6M	....	16
Yellow Cr	Heilwood	3 11 72	21	100	....	....	....	300	....	8M	7	....
Spring Cr	Houserville	3 01 72	42	100	....	....	....	3,604	2	7M	....	24
Trib Kellock Run	Hummelstown	7 15 72	32	....	100	....	....	3,000	1	2M	....	....
Raystown Br	Huntingdon	6 09 72	50	50	50	....	....	50	4	1M	10	....
Trib to Stony Cr	Jim Thorpe	5 16 72	42	100	....	....	....	66	1	1M	....	4
Marks Run	Karthaus	11 20 72	25	100	....	....	....	100	4	5M	6	....
2 Pds Middle Cr	Kleinfeltersvle	2 13 72	25	100	....	....	....	4,578	1	5A	7	....
Monocacy Cr	Lower Nazareth	7 24 72	21	50	50	....	....	100	2	1M	....	2
Tionesta Cr	Lynch	6 06 72	42	70	30	....	....	4,300	2	10M	....	8
Pine Cr	Merwin	8 29 72	24	....	100	....	....	125	3	2M	....	16
Wyomissing Cr	Mohnton	8 01 72	50	14	86	....	....	930	2	1M	3	....
Lt Shannon Run	Mount Morris	7 03 72	44	....	100	....	....	....	4	2M	....	6
Manhattan Run	Mt Wolf	8 20 72	31	9	91	....	....	1,500	1	1M	2	....
Trib to Big Run	New Castle	5 12 72	24	....	100	....	....	450	4	1M	....	6
Private Pond	New Cumberland	1 18 72	24	90	10	....	....	5,000	1	10A	10	....
Mill Cr	New Holland	9 01 72	31	....	100	....	....	250	2	10M	99	....
Robinson Run	Nixon	5 25 72	44	....	100	....	....	3,722	1	3M	2	....
Stony Cr	Norristown	3 29 72	42	....	100	....	....	6,000	2	2M	2	....
Little Marsh Cr	Orrtanna	7 10 72	25	....	100	....	....	75	2	7M	2	....
Perkiomen Cr	Perkiomenville	9 13 72	50	100	....	....	....	200	3	1M	1	....
Ohio R	Pittsburgh	2 09 72	26	1	99	....	....	6,000	4	1M	2	....
Snitz Cr	Quentin	10 27 72	44	....	100	....	....	174	4	2M	....	8
Schuylkill R	Reading	9 16 72	31	13	87	....	....	1,248	2	1M	2	....
Tr-Schuylkill R	Reading	1 26 72	42	6	94	....	....	601	2	1M	1	....
Allegheny R	Reno	7 28 72	25	13	87	....	....	571	4	1M	....	....
Tohickon Cr	Richlandtown	7 02 72	32	84	16	....	....	418	3	3M	4	....
Elk Cr	Ridgway	9 17 72	25	100	....	....	....	6	4	1M	1	....
Middle Cr	Rothsville	5 12 72	28	100	....	....	....	2,590	1	2M	1	....
Trib to Thorn Cr	Saxonburg	4 18 72	24	40	60	....	....	2,793	2	3M	1	....
Mc Coulgh Run	Sharpsville	8 13 72	22	3	97	....	....	125	....	3M	99	....
Trib to Laurel R	Springs	6 20 72	13	....	100	....	....	150	3	1M	2	....
Trib Buffalo Cr	Taylorstown	11 29 72	44	....	100	....	....	100	4	3M	1	....
Ten Mile Cr	Ten Mile	9 13 72	31	100	....	....	....	200	4	1M	....	....
Tr-S Br French C	Union City	5 10 72	25	....	100	....	....	100	3	1M	2	....
Tr-Jennings Run	Uniontown	6 19 72	25	....	100	....	....	150	2	3M	2	....
Mauses Cr	Valley Twp	10 25 72	31	....	100	....	....	50	3	1M	3	....
Mauses Cr	Valley Twp	9 03 72	50	4	96	....	....	835	2	1M	2	....
Tr-Conneaut Otlt	Vernon Twp	6 29 72	13	....	100	....	....	350	1	2M	2	....
Georges Run	Washington	7 14 72	24	....	100	....	....	45	3	1M	3	....
Mill Cr	Waterford	8 30 72	33	60	40	....	....	25	4	1M	....	3
Tannery Run	Watsontown	11 01 72	50	50	50	....	....	600	1	1M	1	....
E Br Wolf Cr	Wesley	6 18 72	21	....	100	....	....	250	3	2M	2	....
Br White Clay Cr	West Grove	5 27 72	11	....	100	....	....	3,000	2	1M	....	24
Sucker Run	Westwood	7 17 72	11	31	69	....	....	1,150	2	1M	....	24
Trib Park Cr	Willow Grove	4 20 72	50	65	35	....	....	1,500	2	1M	2	....
W Br Lt Bushkill	Wind Gap	7 30 72	31	50	50	....	....	7,262	2	2M	3	....
3-Mi Run Tr Mill	York	9 18 72	24	....	100	....	....	82	....	1M	....	6
SOUTH CAROLINA												
Cox Cr	Anderson	1 31 72	44	10	90	....	....	100	1	2M	10	....
3 & 20 Cr-La	Anderson	4 13 72	24	67	33	....	....	195	2	2M	....	24
N Saluda R	Slater	7 20 72	33	30	70	....	....	1,825	1	2M	....	2
TENNESSEE												
Embayment-Key La	Big Sandy	4 29 72	11	5	95	....	....	1,225	3	5A	....	....
Coalmont City La	Coalmont	1 01 72	21	100	....	....	....	....	2	72A	45	....
Wagner Cr	Decherd	5 25 72	13	17	83	....	....	652	3	2M	2	....
North Indian Cr	Erwin	2 05 72	50	....	100	....	....	1,800	3	1M	5	....
Liberty Br	Gallatin	6 09 72	32	5	95	....	....	21,083	3	1M	....	....
Dudley Cr	Gatlinburg	4 13 72	31	....	100	....	....	100	4	1M	....	....
Dale Hollow Resr	Jamestown	7 30 72	21	....	100	....	....	1,407	3	....	....	....
Dale Hollow Resr	Jamestown	10 02 72	21	....	100	....	....	64	4	3M	....	....
Lt Limestone Cr	Jonesboro	10 17 72	31	....	100	....	....	297	3	2M	....	8
Big Bigby Cr	Mt Pleasant	9 14 72	24	....	100	....	....	72,634	2	2M	1	....
Stones R-W Fk	Murfreesboro	8 27 72	31	22	78	....	....	37,583	2	3M	2	....
Richland Cr	Nashville	5 18 72	31	4	96	....	....	1,458	3	1M	1	....
Mountain Cr	Red Bank	6 08 72	34	20	80	....	....	45,625	2	1M	1	....
Caney Cr	Rockwood	1 25 72	42	25	75	....	....	1,093	3	3M	....	8
Fall Cr	Smithville	4 17 72	31	5	95	....	....	50	4	1M	7	....
Garrison Fk Cr	Wartrace	7 11 72	28	12	88	....	....	36,090	2	3M	....	....
Trace Cr	Waverly	8 21 72	50	20	80	....	....	162	1	1M	....	....
Beech Cr	Waynesboro	3 11 72	32	....	....	....	....	....	2	2M	3	....
Stones R-E Fk	Woodbury	7 22 72	31	7	93	....	....	169,601	2	4M	1	....
TEXAS												
Trinity R	Anahuac	9 — 72	24	....	....	....	....	10,000	2	....	....	....
Bayport Ship Chl	Bayport	7 — 72	27	....	....	....	....	1,000	3	....	....	....
Poesta Cr	Beeville	5 18 72	31	50	50	....	....	300	2	....	10	....
Nolan Cr	Belton	8 — 72	31	....	....	....	....	100	4	....	....	....
Beals Cr	Big Spring	7 — 72	24	....	....	....	....	500	2	....	....	....
Crystal Cr	Conroe	5 — 72	25	....	....	....	....	....	....	....	....	....
Corpus Christi B	Corpus Christi	8 — 72	50	....	....	....	....	1,000	4	....	....	....
Ship Channel	Corpus Christi	7 — 72	27	....	....	....	....	1,000	3	....	....	....
Chambers Cr	Corsicana	6 — 72	50	....	....	....	....	500	4	....	....	....

See footnotes at end of table.

TABLE 11—Report of Fish Kills, 1972—Cause Identified—Continued

Body of water	City or town	Date	Cause [1] see code page 29	Type of fish killed: Percent game	Type of fish killed: Percent non-game	Percent kill with commercial value	Estimated fish killed	Severity [2] see code page 29	Estimated miles or acres affected [3] page 29	Duration Days	Duration Hrs.
Lake Rita Blanca	Dalhart	7 — 72	13				1,000	4			
Trinity River	Dallas	5 — 72	31								
Turtle Cr	Dallas	9 — 72	11				50,000	1			
W Fk Trinity R	Dallas	5 — 72	33								
Chacon Cr	Devine	9 14 72	13	50	50		300				
Hideaway Lakes	El Paso	8 — 72	11				1,000	3			
Running Water Dr	Farwell	9 — 72	13				1,000	1			
Cottonwood Cr	Fort Worth	9 — 72	24				5,000	1			
Pedernales Canal	Fredericksburg	8 — 72	50				2,000	3			
Dow Intake Canal	*Freeport*	*6 — 72*	*24*				*81,000*	*2*			
Bayou Vista	Galveston	7 — 72	27				500	3			
Halls Bayou	Galveston	6 — 72	24				1,000	2			
Chocolate Bayou	Hoskins Junc	9 — 72	24				1,000	3			
Clear Cr	Houston	1 — 72	31								
Clear Lake	Houston	9 — 72	31				2,000	3			
Galveston Bay	Houston	6 — 72	27				1,000	4			
Galveston Bay	Houston	9 — 72	24				5,000	3			
Galveston Bay	Houston	9 — 72	27				1,250,000	2			
Galveston Bay	Houston	8 — 72	27				1,000	4			
Galveston Bay	Houston	9 — 72	25				5,000	3			
Highlands Bayou	Houston	9 — 72	31				15,000	2			
San Jacinto R	Houston	9 — 72	31				10,000	3			
Stone Chimney Cr	Jacksonville	6 — 72	31				1,000	3			
Baylor Cr	La Grange	5 — 72	13								
Sabine R	Longview	9 25 72	31	25	75	75	50,000	1	15M	3	
Cypress Cr	Mount Pleasant	6 — 72	27				1,000	3			
Chacon Cr	Noonan	9 — 72	13					1			
Freezer Basin	Palacios	7 — 72	22				500	4			
Manson Cr	Palestine	6 — 72	31				1,000	3			
Hildebrandt Bayu	Port Arthur	6 — 72	31				1,000	3			
Sabine Lake	Port Arthur	9 — 72	50				40,000	2			
Lake Nasworhy	San Angelo	7 — 72	50				100	4			
Red Arroyo Draw	San Angelo	5 — 72	50								
Olmos Cr	San Antonio	10 24 72	31	50	50		3,000	2	2M	2	
Salado Cr	San Antonio	5 15 72	24	50	50		1,000	4			
San Anonio R	San Antonio	3 — 72	31	50	50		100,000	2			
Old Hamlin La	Sweetwater	8 — 72	50				1,000	3			
W Hamlin La	Sweetwater	5 — 72	50								
Victoria Brge Ca	Victoria	5 — 72	27								
Aquilla Cr	Waco	7 — 72	50				2,000	3			
Brazos River	Waco	3 03 72	31	50	50		894	4	2M		12
Little Brushy Cr	Yoakum	6 — 72	25				500	2			
Little Brushy Cr	Yoakum	7 — 72	25				500	2			
VERMONT											
W Br Batten Kill	Manchester	7 22 72	34	45	55		200	3	2M	1	
VIRGINIA											
Private Pd	Accomac Co	5 29 72	11	100			4,645	1	4A	3	
Tarrara Cr	Boykins	8 25 72	28	90	10		374	2	1M	3	
Big Cr	Coaldan	9 25 72	41		100		2,000	1	3M		
Lickinghole Cr	Crozet	8 13 72	22	5	95		24,567	1	4M	1	
Indian Run	Fairfax Co	1 24 72	31		100		48	4	1M	1	
N Fk Dogue Cr	Fairfax Co	1 15 72	31	100			100	2	2M	1	
Private Pd	Forest	6 02 72	50	5	95		236	1	1A	1	
Trib-So Anna R	Hanover Co	1 21 72	42	30	70		22	3	1M	1	
Lake Barcroft	Lake Barcroft	1 02 72	25	10	90		131	3	1M	2	
Trib-Cannon Br	*Manassas*	*4 02 72*	*41*	*100*			*347*	*3*	*1M*	*1*	
Minnow Pds	Marion	12 15 72	11			100	35,000	1	1A	1	
Cockrell Cr	Reedville	7 27 72	22			100	5,000	2	1M		
Clear Fork	Rocky Gap	8 26 72	42					4	1M	1	
Hell Point Cr	Va Beach	6 05 72	13	1	99		53	4	4M	1	
Hell Point Cr	Va Beach	5 16 72	13		100		5,636	2	1M	1	
Kings Grant La	Va Beach	6 16 72	28	100			21	4	1A	2	
WASHINGTON											
Chehalis R	Aberdeen	6 10 72	23					4		1	
Wynoochee R	Aberdeen	9 03 72	50	100				2	4M	3	
Mission Cr	Cashmere	8 15 72	11	100			10,000	2	3M	1	
Oak Bay	Chimacum	4 27 72	50					4			
Lind Coulee Cr	Ephrata	5 30 72	11		100		1,000	3	10M	1	
Hood Canal	Hoodsport	4 26 72	50					4		1	
Schuts Cr	Illahee	1 01 72	50	100			45,000	1	1M	99	
N Fk Kalama R	Kalama	1 17 72	50	100				4	1M		
Duqualla Bay	Mount Vernon	6 20 72	11	100			2,000	4		1	
Spring Cr	Union Gap	4 04 72	11	100			110,000	2	1M	1	
WEST VIRGINIA											
Buckhannon R	Alton	7 18 72	21	10	90		1,500	1	7M		
Dunkard Cr	Blacksville	5 24 72	26	1	99		5,000	3	8M		
Little Coal R	Blair	6 08 72	42	5	95		1,000	2	3M		
Rocky Fork	Cross Lanes	6 16 72	31	5	95		500	2	2M	2	
Fourpole Cr	Huntington	9 01 72	50	1	99		500		1M		
Cow Cr	Hurricane	9 20 72	25		100		6,360	1	1M	3	
Stewarts Run	Pennsboro	7 28 72	25	1	99		1,181		1M	1	
Whiskey Run	Pennsboro	10 07 72	25	1	99		1,100	2	1M	1	
Derrick Cr	Sissonsville	6 21 72	25	3	97		7,150	2	1M		
So Fk Hughes R	Smithburg	6 08 72	25	70	30		112	3	1M		
Rock Run	West Union	5 20 72	50		100		120	4	1M		
WISCONSIN											
Neshote R	Denmark	6 03 72	31	10	90		1,000	2	1M		6
Holt Cr	Galloway	7 19 72	11	100			1,553		3M	30	
Fourche Cr	Saxon	11 18 72	44	50	50			1	1M	3	
Bear Cr	Superior	10 05 72	41	5	95		1,000	1	1M	3	

CODES

[1] CAUSE:

10 Agricultural Operations
- 11 Pesticides (Herbicides, Insecticides, etc.)
- 12 Fertilizers
- 13 Manure, Silo, Feedlot Drainage, etc.

20 Industrial Operations
- 21 Mining
- 22 Food & Kindred Products
- 23 Paper & Allied Products
- 24 Chemicals
- 25 Petroleum
- 26 Metals
- 27 Combinations
- *28 Other*

30 Municipal Operations
- 31 Sewerage System
- 32 Refuse Disposal
- 33 Water System
- 34 Swimming Pool
- 35 Power

40 Transportation Operations
- 41 Rail
- 42 Truck
- 43 Barge or Boat
- 44 Pipe Line

50 Other Operations

[2] SEVERITY:
- 1 Complete
- 2 Heavy
- 3 Moderate
- 4 Light

[3] ESTIMATED MILES OR ACRES AFFECTED
A = Acres
M = Miles

NOTE: The following reports from the State of Florida were received too late to be processed as publication statistics. They are, however, included as additional information.

Body of Water	City or town	Date	Cause	Estimated fish killed
FLORIDA				
Wards Basin, Blackwater Bay	Santa Rosa Co.	3 14 72	50	2,500
Perdido Bay	Escambia Co.	4 8 72	28	.....
Escambia Bay	Santa Rosa Co.	4 24 72	28	550
Blackwater Bay	Santa Rosa Co.	4 30 72	28	22
East Bay	Santa Rosa Co.	5 4 72	28	200
Escambia River	Santa Rosa Co.	5 26 72	50	22,500
Parker Bayou	Bay Co.	6 29 72	23	100*
Hoffman Bayou	Santa Rosa Co.	8 11 72 to 8 29 72	50	250,000
Bayou Texar	Escambia Co.	8 21 72	31	200,000*

*Estimated from data on the report.

Table 12 lists the 163 individual fish kills with pollution source not specified. Kills from natural causes are not included.

TABLE 12—Report of Fish Kills, 1972—Cause Not Specifically Identified

Body of water	City or town	Date	Type of fish killed: Percent game	Type of fish killed: Percent non-game	Percent kill with commercial value	Estimated fish killed	Severity [1] see code page 32	Estimated miles or acres affected [2] page 32	Duration: Days	Duration: Hrs.
ALABAMA										
Fly Cr	Mobile	9 17 72	1	99	99	3,000		1M		
Soldier Cr	Josephine	7 29 72		100		1,000,000	2		69	
Village Br	Hartselle	7 05 72	74	26	3	124	3	1M	1	
Wheeler Res	Decatur	2 08 72	1	99		502	4	1M		
ALASKA										
Thimbleberry Bay	Sitka	7 07 72				3,000	2	8A	1	
CALIFORNIA										
Alameda Cr	Sunol	2 09 72		100		3,000	1	3M	1	
Bel Marin Keys	Novato	5 15 72	100			200	3			
Briones Res	San Pablo	7 07 72	100			1,000	2			
Carquinez Strait	Contra Costa Co	5 01 72	99	1		1,763	2	30M		
Dogwood Canal	El Centro	10 12 72	25	75		3,500	2			
Drainage Canals	Knights Landing	5 26 72		100		500	3	3M	2	
Glen Echo Cr	Oakland	9 11 72		100		3,000	2			
Gray Lodge-Area	Gridley	2 07 72	5	95		380	3	1M	1	
Loch Lomond Res	Ben Lomond	8 08 72	100			1,000	2			
Middle Cr	Redding	11 24 72	100			275	2	1M		
Outer Fish Harbr	Long Beach	11 10 72	1	99	50	2,000	3	20A		8
Pd Off San Joaqn	Tracy	9 11 72	100			1,000		4A		
Private Pd	Sacramento	11 01 72	25	75		103	3	2A	3	
Salinas R	Monterey Co	2 28 72		100		50	1	1M		
Salinas R	Salinas	5 30 72	70	30		600	3			
San Joaquin R	Tracy	4 26 72	100			750	4	4A		24
San Joaquin R	Stockton	7 27 72	100			6,000	3	6M	2	
Seaside La	Seaside	9 14 72		100		3,000	2			
Spring Cr	Mt Shasta	8 25 72	100			50	1	1M		
Spring Cr	Mt Shasta	8 25 72	100			50	1	1M		
Whitewater Wash	Mecca	2 24 72	100			500	3	3M		
CONNECTICUT										
E Br Naugatuck R	Torrington	8 24 72		100		50	4	1M		
Mt Tom Pd	Bantam	6 16 72		100		600	2	1A		
Pond Brook	Newtown	8 11 72		100		75	4	1M		
Quinnipiac R	Wallingford	10 14 72		100		45	4	1M		
Steele Brook	Watertown	8 11 72		100		500	3	1M		
FLORIDA										
Bear Br	Polk Co	6 07 72				13,500				
Bear Cr	Walton Co	6 23 72				190				
Bear Cr	Walton Co	4 24 72				500				
Big Econlckhtche	Orange Co	9 26 72								
Braddocks Pd	Alachua Co	8 26 72				500				
Canal C-54	Brevard Co	4 10 72								
Cypress Cove	Gulf Co	4 22 72				4,000				
Econlockhatche R	Orange Co	7 31 72				100				
L Econlockhatche	Orange Co	6 15 72				300				
La Mary Prairie	Orange Co	8 28 72				2,000				
La-McCoy AFB	Orange Co	7 31 72								
La-Sherwood Golf	Brevard Co	11 28 72					1			
Lake Florence	Orange Co	6 28 72				2,000				
Lake Harvey	Seminole Co	7 31 72				200				
Lake Kathryn	Seminole Co	9 18 72								
Lake Lawsona	Orange Co	8 24 72								
Lake Neal	Volusia Co	6 15 72								
Lake Seminole	Walton Co	4 29 72				210				
Lake Susan	Volusia Co	7 05 72				200				
Lake Weston	Orange Co	8 24 72								
Longs Br	Union Co	9 30 72				700				
Lt Pottsburg Cr	Duval Co	6 12 72				60				
Lt Pottsburg Cr	Duval Co	7 27 72				60				
Lt St Marys R	Baker Co	9 19 72				79				
Moncrief Cr	Duval Co	4 11 72				200				
Sky La	Orange Co	9 16 72								
Strawberry Cr	Duval Co	4 25 72				18				
Trout R	Duval Co	8 21 72				100				
W Palm Bch Dr Ca	Palm Beach Co	7 12 72								
Williamson Cr	Duval Co	4 28 72				12				
Willis Br	Duval Co	5 08 72				50				
GEORGIA										
Lake-Pulaski Co	Hawkinsville	1 — 72	90	10		1,600	4	4A	30	
Pikes Pd-Lt R	Hahira	10 13 72					2	1A	1	
HAWAII										
Kapalama Dr Ca	Honolulu	8 28 72		100		1,000	3	1M	1	
Salt Lake	Honolulu	11 21 72		100		5,000	4	1A	3	
ILLINOIS										
Big Muddy R	Colp	7 20 72	38	62	23	6,804	3	13M	1	
Consumer Quarry	Lemont	5 22 72	100			7,558	4	1A		
Kaskaskia R	Bondville	8 14 72	80	20	5	4,161	3	3M	1	
Soldier Cr	Kankakee	9 22 72	19	81	67	1,183	1	1M		30
Sugar Cr	Milford	7 14 72	2	98	6	59,242	3	4M	1	
INDIANA										
Byrd Branch Cr	Russellville	6 22 72		100		171	3	1M		
Hinkle Cr	Noblesville	7 09 72	2	98		600	3	2M	1	

Reinhart Ditch	Francisco	6 16 72	100	....	....	250	2	1M	....	....
Turkey Cr	Windfall	9 05 72	5	95	....	84	4	1M	....	....
KANSAS										
Stranger Cr	Monrovia	6 15 72	40	60	50	500	4	2M	....	24
Turkey Cr	Seneca	6 15 72	90	10	90	1,000	4	4M	2	....
KENTUCKY										
Beaver Cr	Wayne	7 12 72	....	....	....	3,034	....	2M	....	....
Clover Fork	Harlan Co	10 16 72	....	....	....	15,312	....	8M	....	....
Cox & Froman Crs	Nelson	5 24 72	....	....	....	12,475	....	1M	....	....
Dry Run Cr	Shelby	7 17 72	....	....	....	10	4	2M	....	....
Herrington La	Garrard	7 30 72	....	....	....	20	....	....	....	....
Plum Cr	Spencer	8 23 72	....	....	....	200	....	1M	....	....
Willgreen La	Madison	5 09 72	....	....	....	300	....	....	....	....
LOUISIANA										
Grays Creek	Port Vincent	7 20 72	50	50	....	7,500	2	3M	1	....
MARYLAND										
Cr-Tr Pocomoke R	Snow Hill	3 29 72	100	....	96	1,600	1	1M	....	....
MASSACHUSETTS										
La Quinsigamond	Worcester	6 16 72	....	100	....	200	4	10A	2	....
Oyster Pond	Edgartown	1 — 72	....	....	....	....	2	400A	....	....
Sampson Pd	Carver	5 02 72	50	50	....	2,000	2	200A	7	....
Spindleville Pd	Hopedale	1 13 72	....	100	....	1,000	3	1M	2	....
Spring Pd	Peabody	6 16 72	....	100	....	58	4	10A	1	....
W Washacum Pd	Sterling	6 15 72	1	99	....	300	3	....	2	....
MISSOURI										
Baker Br	Joplin	5 03 72	....	100	....	1,875	3	2M	1	....
Muddy Cr	Pettis City	7 07 72	10	90	....	20,296	1	3M	3	....
N Fk Salt R	Kirksville	8 10 72	....	....	....	194	4	1M	....	....
NEBRASKA										
Dilsaver Pond	Brewster	5 21 72	100	....	....	2,000	....	1A	....	....
Grove La Recr Ar	Royal	5 17 72	99	1	....	500	4	5A	1	....
Looking Glass Cr	Monroe	5 05 72	....	100	....	3,500	2	4M	....	....
Round Lake	Whitman	5 10 72	....	100	....	5,000	4	245A	9	....
Yankee Creek	Crab Orchard	7 27 72	....	100	....	45	4	1M	1	....
NEW HAMPSHIRE										
Silver La State	Hollis	5 16 72	5	95	....	200	4	....	....	....
NEW JERSEY										
Cedar Bridge Br	Bricktown	6 14 72	95	5	....	400	3	1M	....	12
Kingsland Cr	North Arlington	10 03 73	....	100	....	500	4	1M	....	12
Mill Brook	Franklin Twp	10 03 72	100	....	....	150	1	1M	....	....
Peters Brook	Bridgewater Twp	10 25 72	....	100	....	200	3	2M	1	....
Prescott Brook	Clinton Twp	4 18 72	1	99	....	600	2	1M	2	....
Rahway R	Union	4 23 72	10	90	....	500	3	1M	....	12
Red Valley Pd	Red Valley	7 02 72	90	10	....	3,000	3	....	2	....
Whippany R	Whippany	8 22 72	....	100	....	2,500	2	1M	....	12
NEW YORK										
Eastman La Inlet	Irondequoit	8 15 72	100	....	....	75	1	1M	1	....
Trib 3-Salmon Cr	Williamson	9 23 72	....	100	....	500	1	2M	1	....
Trib-Oriskany Cr	Clinton	5 30 72	5	95	....	200	2	1M	1	....
NORTH CAROLINA										
Bear Cr	Oakboro	10 01 72	27	73	....	3,151	1	3M	3	....
Salem Lake & Cr	Winston Salem	8 16 72	38	62	....	1,600	3	25A	4	....
Second Cr	Rockwell	8 18 72	40	60	....	405	3	1M	....	....
Stewarts Cr	Union County	8 12 72	62	38	....	412	....	6M	....	....
OHIO										
Ashtabula R	Ashtabula Co	6 01 72	....	....	....	24,000	....	....	....	....
Gr Miami R	Montgomery Co	8 23 72	....	....	....	96	....	....	....	....
Highlandtown La	Columbiana Co	6 01 72	....	....	....	400	....	....	....	....
Indian Cr	Butler Co	9 22 72	....	....	....	70	....	....	....	....
Indian Trail	Holmes Co	7 27 72	....	....	....	387	....	....	....	....
Lt Gr Run	Athens Co	5 02 72	....	....	....	318	....	....	....	....
Lt Riley Cr	Allen Co	6 14 72	....	....	....	51	....	....	....	....
N Fk Lt Beaver C	Columbiana Co	9 25 72	....	....	....	63	....	....	....	....
Newark Cr	Wayne Co	7 14 72	....	....	....	130	....	....	....	....
Spring Fk	Madison Co	9 14 72	....	....	....	35	....	....	....	....
Todds Fk	Clinton	9 29 72	....	....	....	68	....	....	....	....
Williams Ditch	Lucas Co	8 24 72	....	....	....	230	....	....	....	....
Willow Cr	Seneca Co	7 23 72	....	....	....	633	....	....	....	....
PENNSYLVANIA										
Conneaut Outlet	Conneaut Lake	6 03 72	....	100	....	200	2	1M	....	....
Elk Cr	St Marys	7 28 72	90	10	....	375	4	5M	2	....
Harveys Cr	West Manticoke	8 23 72	8	92	....	358	3	1M	....	3
Mahoning Cr	Danville	4 19 72	....	100	....	800	3	1M	1	....
Monongahela R	Elizabeth	8 08 72	100	....	....	450	1	7M	2	....
Thompsons Run	Houserville	4 19 72	35	65	....	440	1	2M	....	4
TENNESSEE										
Bledsoe Cr	Gallatin	8 04 72	49	51	....	3,276	2	1M	3	....
Bradley Cr	Manchester	7 09 72	100	....	....	60	4	1M	....	....
Mansker Cr	Goodletsville	7 08 72	5	95	....	3,904	....	1M	....	....
Seven-Mile Cr	Nashville	7 06 72	1	99	....	1,652	....	1M	....	9
TEXAS										
Brady Reservoir	Brady	7 — 72	....	....	....	100	4	....	....	....
Colorado R	Colorado City	5 — 72	....	....	....	....	....	....	....	....
Drainage Ditch	Houston	6 — 72	....	....	....	1,000	3	....	....	....
H I Water Supply	High Island	7 — 72	....	....	....	500	4	....	....	....
Lake Lavon	Lavon	3 10 72	35	65	60	4,000	3	1M	....	....
Oyster Cr	Sugarland	8 — 72	....	....	....	1,000	4	....	....	....
Rio Grande R	Del Rio	7 — 72	....	....	....	400	3	....	....	....

See footnotes at end of table.

TABLE 12—Report of Fish Kills, 1972—Cause Not Specifically Identified—Continued

Body of water	City or town	Date	Type of fish killed		Percent kill with commercial value	Estimated fish killed	Severity [1] see code page 32	Estimated miles or acres affected [2] page 32	Duration	
			Percent game	Percent non-game					Days	Hrs.
San Antonio R	San Antonio	9 08 72	50	50	....	300	....	....	....	....
System A Canal	Freeport	9 — 72	....	....	....	2,000	4	....	....	....
Trinity R	Fairfield	3 04 72	....	65	65	5 500	3	3M	11	....
VIRGINIA										
Meherrin R	Emporia	1 13 72	95	5	....	142	4	1M	5	....
WASHINGTON										
Grays Harbor	Ocean Shores	6 05 72	....	100	....	1,000	3	1A	1	....
Kelsey Cr	Bellevue	7 25 72	95	5	....	100	4	....	1	....
Salmon Cr	Sumner	4 03 72	75	25	....	....	3	1M	1	....
Salmon Cr	Sumner	4 10 72	100	....	....	1,500	4	1M	1	....
Schellabarger Cr	Edmonds	7 18 72	100	....	....	200	4	1M	1	....
Spring Cr	Union Gap	3 27 72	....	100	....	100	4	1M	1	....
Summit Lake	McCleary	9 11 72	....	....	....	....	4	....	....	....
Thornton Cr	Seattle	7 20 72	100	....	....	50	4	....	1	....
Unnamed Cr	Bellevue	9 01 72	....	....	....	....	4	1M	1	....
Unnamed Cr	Edmonds	8 02 72	100	....	....	15	4	....	1	....
Wildcat Cr	McCleary	7 05 72	50	50	....	67,420	1	2M	1	....
WEST VIRGINIA										
Buckhannon R	Hall	9 08 72	75	25	....	3,100	2	2M	....	....
WYOMING										
Popo Agie R	Lander	4 12 72	....	100	....	300	4	1M	1	....

CODES

1 SEVERITY:
- 1 Complete
- 2 Heavy
- 3 Moderate
- 4 Light

2 ESTIMATED MILES OR ACRES AFFECTED
- A = Acres
- M = Miles

NOTE: The following reports from the State of Florida were received too late to be processed as publication statistics. They are, however, included as additional information.

Body of water	City or town	Date	Cause [1]	Estimated fish killed
FLORIDA				
East Bay	Santa Rosa Co.	7 24 72	90	3
Escambia Bay	Escambia & Santa Rosa Cos.	9 7 72	90	17,500
Perdido Bay	Escambia Co.	9 14 72	90	2
East Bay River		9 18 72 to 10 13 72	90	750,000
Wards Basin, Blackwater Bay	Santa Rosa Co.	10 11 72	90	2,000

CODES

1 CAUSE:
- 90 Unknown

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