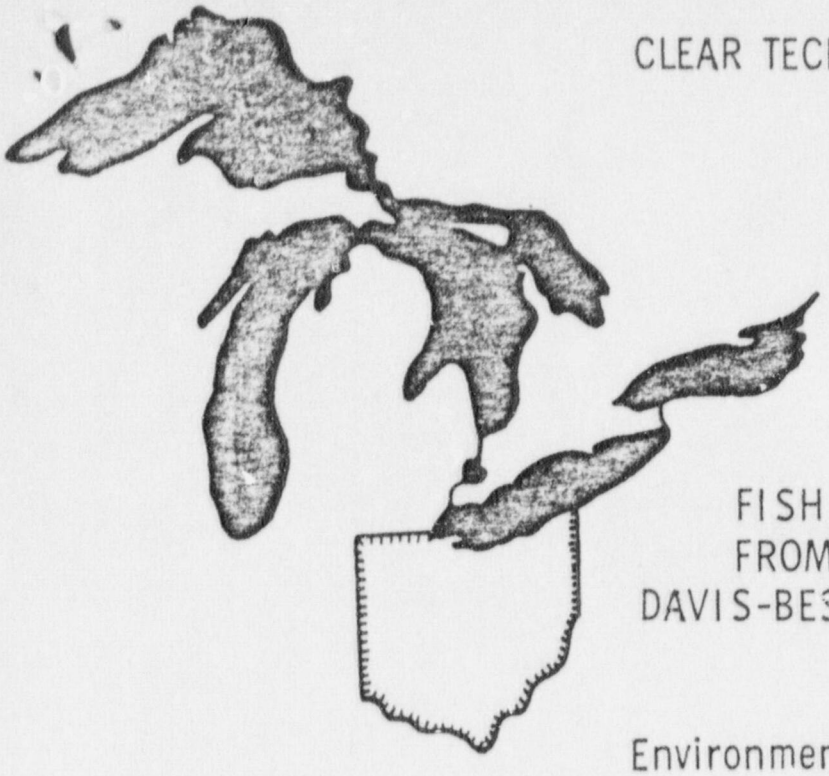


CLEAR TECHNICAL REPORT NO. 87

FISH POPULATION STUDIES FROM LAKE ERIE NEAR THE DAVIS-BESSE NUCLEAR POWER STATION DURING 1977

Environmental Technical Specifications
Sec. 3.1.2.a.3 Fisheries Population Studies

Prepared by

Jeffrey M. Reutter

Prepared for

Toledo Edison Company
Toledo, Ohio

THE OHIO STATE UNIVERSITY

CENTER FOR LAKE ERIE AREA RESEARCH

COLUMBUS, OHIO

April 1978

3.1.2.1.3 Fisheries Population Studies

Procedures

Fish populations at Locust Point were sampled by 3 methods, gill nets, shore seines, and trawls, from April through November 1977 (Table 1). All fish captured were weighed, measured, and identified to species (Trautman, 1957 and Bailey et al., 1970). All results were keypunched and stored on magnetic tape at The Ohio State University Computer Center. Results were reported as catch per unit effort (CPE).

Gill Nets. Experimental gill nets were set parallel to the intake pipeline at Stations 8 and 26 and parallel to the discharge pipeline at Stations 3 and 13 (Figure 1). Stations 3 and 26, control stations, were positioned 3000 feet northwest of Station 13 (plume area) and 8 (intake), respectively. Each gill net measuring 125 ft x 6 ft and consisting of five 25-ft contiguous panels of 1/2, 3/4, 1, 1-1/2, and 2 inch bar mesh, was fished for approximately 24 continuous hours monthly (Table 1). One unit of effort consisted of one 24-hr set with one of these gill nets.

Shore Seines. Shore seining was accomplished monthly (Table 1) with a 100-ft bag seine (1/4 inch or 6 mm bar mesh) at Stations 23, 24, and 25 (Figure 1). The seine was stretched perpendicular to the shoreline until the shore brail was at the water's edge. The far brail was then dragged through a 90° arc back to shore. Two hauls were made at each station. One unit of effort consisted of two hauls with the above mentioned seine.

Trawls. Four 5-minute bottom tows with a 16-ft trawl were conducted monthly (Table 1) on a transect between Stations 8 (intake) and 13 (thermal plume area) at a speed of 3-4 knots/hr. For comparative purposes similar tows were conducted on a transect between Stations 3 and 26. One unit of effort consisted of four 5-minute tows.

Results

Of the 47 species reported from the Locust Point vicinity since 1963, 27 were captured during 1977 including one new species, the shorthead redhorse (Moxostoma macrolepidotum)(Table 2). The 3 fishing methods combined yielded 14,697 fish of which 36.7% occurred in gill nets, 53.8% in shore seines, and 9.5% in trawls (Table 3). The combined results from all three methods of capture indicated that the dominant species in the Locust Point vicinity in order of abundance were gizzard shad (42.5%), emerald shiner (22.1%), yellow perch (12.7%), alewife (7.6%), spottail shiner (6.9%), white bass (4.0%), and freshwater drum (1.2%) (Table 4). No other species constituted more than 1.0% of the catch by number.

Gill Nets. Gill nets set from April through October yielded 5,400 fish weighing 307.9Kg and representing 21 species (Table 5). Monthly catches ranged from 245 in May (CPE = 61) to 1,800 in June (CPE = 450)

TABLE 1

DATES OF SAMPLING DURING 1977-

FISHERIES

GEAR / DATE	Gill Nets	Shore Seines	Trawls
April	18-19	18	3
May	16-17	16	18
June	13-14	13	23
July	12-13	12	19
August	9-10	9	23
September	13-14	13	27
October	20-21	20	24
November	*	*	8

* Inclement weather prohibited collection of these samples.

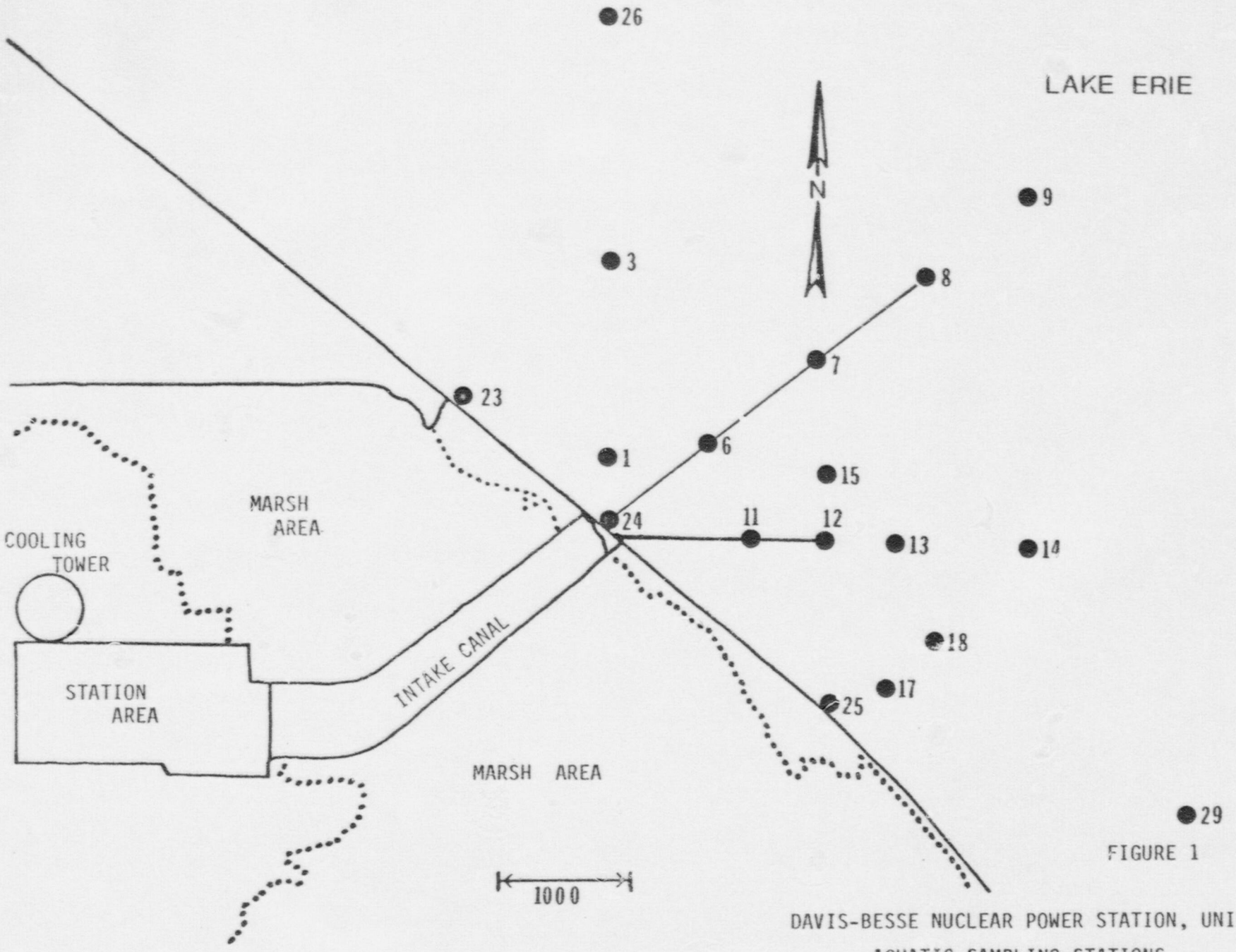


FIGURE 1

DAVIS-BESSE NUCLEAR POWER STATION, UNIT 1

AQUATIC SAMPLING STATIONS

TABLE 2

SPECIES FOUND IN THE LOCUST POINT AREA 1963 - 1977[1]

1972	1973	1974	1975	1976	1977	Scientific Name[2]	Common Name
						Amiidae	
*		*	*			Amia calva	bowfin
						Atherinidae	
		*	*	*	*	Labidesthes sicculus	brook silversides
						Catostomidae	
*				*	*	Carpiodes cyprinus	quillback carpsucker
*	*	*	*	*	*	Catostomus commersoni	common white sucker
		*				Minytrema melanops	spotted sucker
*						Moxostoma erythrurum	golden redhorse
					*	Moxostoma macrolepidotum	shorthead redhorse
*						Ictiobus cyprinellus	bigmouth buffalo fish
				*		Hypentelium nigricans	hog sucker
						Centrarchidae	
		*				Ambloplites rupestris	northern rockbass
	*	*	*			Lepomis cyanellus	green sunfish
		*	*			L. gibbosus	pumpkinseed sunfish
	*	*				L. humilis	orangespotted sunfish
		*	*			L. macrochirus	northern bluegill sunfish
	*					L. microlophus	redear sunfish
*	*	*				Micropterus dolomieui	smallmouth bass
	*	*				M. salmoides	largemouth bass
	*	*	*	*	*	Pomoxis annularis	white crappie
*	*	*	*	*	*	P. nigromaculatus	black crappie
						Clupeidae	
*	*	*	*	*	*	Alosa pseudoharengus	alewife
*	*	*	*	*	*	Dorosoma cepedianum	gizzard shad
						Cyprinidae	
*	*	*	*	*	*	Carassius auratus	goldfish
*	*					C. auratus x Cyprinus carpio	carp x goldfish hybrid
*	*	*	*	*	*	Cyprinus carpio	carp
	*	*	*	*	*	Hybopsis storeriana	silver chub
*	*	*	*	*	*	Notropis atherinoides	emerald shiner
*	*	*	*	*	*	N. hudsonius	spottail shiner
	*		*	*	*	N. spilopterus	spotfin shiner
	*		*			N. volucellus	mimic shiner
			*			Pimephales promelas	fathead minnow
						Esocidae	
						Esox lucius	northern pike

TABLE 2 (CON'T)

SPECIES FOUND IN THE LOCUST POINT AREA 1963 - 1977[1]

1972	1973	1974	1975	1976	1977	Scientific Name[2]	Common Name
						Ictaluridae	
		*	*		*	Ictalurus melas	black bullhead
*	*	*				I. natalis	yellow bullhead
*	*	*	*	*	*	I. nebulosus	brown bullhead
*	*			*	*	I. punctatus	channel catfish
						Noturus flavus	stonecat madtom
						Lepisosteidae	
		*		*	*	Lepisosteus osseus	longnose gar
						Osmeridae	
*	*	*	*	*	*	Osmerus mordax	rainbow smelt
						Percidae	
			*		*	Etheostoma nigrum	johnny darter
*	*	*	*	*	*	Perca flavescens	yellow perch
	*	*	*	*	*	Percina caprodes	logperch darter
			*	*	*	Stizostedion canadense	sauger
*	*	*	*	*	*	S. v. vitreum	walleye
						Percichthyidae	
*	*	*	*	*	*	Morone chrysops	white bass
						Percopsidae	
	*	*	*	*	*	Percopsis omiscomaycus	troutperch
						Petromyzontidae	
		*				Petromyzon marinus	sea lamprey
						Salmonidae	
*		*				Oncorhynchus kisutch	coho salmon
						Sciaenidae	
*	*	*	*	*	*	Aplodinotus grunniens	freshwater drum
23	28	34	30	25	27		

[1] Including those collected on Federal Aid Project F-41-R.

[2] Bailey et al. (1970)

TABLE 3

NUMBER OF FISH COLLECTED AT LOCUST POINT FROM APRIL-NOVEMBER 1977

WITH EQUAL MONTHLY EFFORT[1] WITH EACH PIECE OF FISHING EQUIPMENT

METHOD OF CAPTURE	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		TOTAL	
	No. of Fish	No. of Species	No. of Fish	No. of Species	No. of Fish	No. of Species	No. of Fish	No. of Species	No. of Fish	No. of Species	No. of Fish	No. of Species	No. of Fish	No. of Species	No. of Fish	No. of Species	No. of Fish	No. of Species
Gill Net[2]	586	14	245	13	1,800	14	346	11	1,145	12	515	11	763	8	No Sample		5,400	21
Shore Seine[3]	64	5	544	6	40	3	3,297	7	305	5	642	11	3,013	4	No Sample		7,905	13
Trawl[4]	104	4	18	3	85	9	425	10	208	14	70	8	340	11	142	12	1,392	18
TOTAL	754	16	807	15	1,925	17	4,068	14	1,658	16	1,227	17	4,116	13	142	12	14,697	26

1 These values represent the sum of the CPE results from all stations at which each piece of fishing equipment was used each month.

2 Four units of effort/month.

3 Three units of effort/month.

4 Two units of effort/month. Results from April and May were adjusted accordingly (Table 7).

TABLE 4

MONTHLY CATCH OF INDIVIDUAL FISH SPECIES AT LOCUST POINT WITH EQUAL EFFORT* USING GILL NETS, SHORE SEINES, AND TRAWLS-1977 (EXPRESSED AS NUMBER OF INDIVIDUALS)

SPECIES \ MONTH	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov**	TOTAL
Alewife	11		861	27		10	210		1119
Black Crappie					2				2
Brook Silversides		1				3			4
Brown Bullhead					4				4
Carp		9	9	31	29	9	1	5	93
Channel Catfish	27	7	4	53	8	3	1	1	104
Emerald Shiner	30	510	108	258	25	73	2248	3	3255
Freshwater Drum	55	24	11	35	18	20	6	3	172
Gizzard Shad	14	18	33	3047	957	717	1408	47	6241
Goldfish	1			3	2	2			8
Johnny Darter					1				1
Logperch Darter	1		4						5
Longnose Gar		1							1
Quillback Carpsucker		1	1		3	1	3	1	10
Rainbow Smelt			7	4		1	36		48
Sauger	5	4	2	1					12
Shorthead Redhorse	1								1
Silver Chub	1	1	1						3
Spotfin Shiner				4		1			5
Spottail Shiner	231	136	192	97	76	147	107	34	1020
Troutperch	8	2			1		2	1	14
Walleye	25	1	20	7	21	1	1	7	83
White Bass	6		45	384	73	24	38	20	590
White Crappie			1			1		1	3
White Sucker	19	2	1		1	2			25
Yellow Perch	319	89	625	117	437	212	55	19	1873
Number of Species	16	15	17	14	16	17	13	12	26
TOTAL	754	807	1925	4068	1658	1227	4116	142	14,697

* Four units of effort (gill net), 3 units of effort (shore seine), and 2 units of effort (trawl) per month.

** Gill nets and shore seines were not used in November due to inclement weather.

TABLE 5

SUMMARY OF GILL NET RESULTS AT LOCUST POINT DURING 1977 *

Date	Species	Number	Length (mm)		Weight (g)	
			Mean	Range	Mean	Total
18 April 1977	Carp	6	301.8	226.0 - 346.0	392.2	2411.0
	Channel Catfish	3	324.3	199.0 - 411.0	422.0	1266.0
	Freshwater Drum	7	214.3	161.0 - 367.0	165.6	1444.0
	Gizzard Shad	4	347.9	313.0 - 400.0	433.4	1954.0
	Goldfish	1	266.0	266.0 - 266.0	283.0	283.0
	Logperch Darter	1	120.0	120.0 - 120.0	19.0	19.0
	Sauger	5	269.7	220.0 - 440.0	249.8	1818.0
	Shorthead Redhorse	1	345.0	345.0 - 345.0	396.0	396.0
	Silver Chub	1	178.0	178.0 - 178.0	46.0	46.0
	Spottail Shiner	213	114.2	103.0 - 133.0	13.2	2930.0
	Walleye	25	318.0	201.0 - 377.0	314.6	8217.0
	White Bass	5	156.6	90.0 - 264.0	80.4	475.0
	White Sucker	19	249.6	107.0 - 426.0	259.5	1788.0
	Yellow Perch	295	173.4	129.0 - 220.0	56.2	16546.0
	subtotal	*586*				*39593.0*
16 May 1977	Carp	1	270.0	270.0 - 270.0	762.0	762.0
	Channel Catfish	4	344.0	256.0 - 402.0	440.3	1825.0
	Emerald Shiner	6	104.3	100.0 - 112.0	7.9	53.0
	Freshwater Drum	24	201.2	120.0 - 350.0	103.9	3437.0
	Gizzard Shad	4	318.5	300.0 - 370.0	354.0	1440.0
	Quillback Carpsucker	1	311.0	311.0 - 311.0	463.0	463.0
	Sauger	4	220.3	205.0 - 248.0	106.7	556.4
	Silver Chub	1	162.0	162.0 - 162.0	39.0	39.0
	Spottail Shiner	106	111.6	92.0 - 126.0	10.8	231.0
	Troutperch	2	110.5	106.0 - 115.0	11.5	23.0
	Walleye	1	367.0	367.0 - 367.0	475.0	475.0
	White Sucker	2	314.5	286.0 - 343.0	403.5	807.0
	Yellow Perch	89	175.5	63.0 - 280.0	63.7	5753.0
	subtotal	*245*				*15914.4*

* Total catch from nets set monthly at Stations 3, 8, 13, and 26 (4 units of effort/month).

TABLE 5 (CON'T)

SUMMARY OF GILL NET RESULTS AT LOCUST POINT DURING 1977 *

Date	Species	Number	Length (mm)		Weight (g)	
			Mean	Range	Mean	Range
13 June 1977	Alewife	861	180.5	170.0 - 191.0	29.0	200.0
	Carp	9	341.2	233.0 - 390.0	601.0	5441.0
	Channel Catfish	1	191.0	191.0 - 191.0	200.0	200.0
	Emerald Shiner	93	109.0	95.0 - 130.0	8.0	787.0
	Freshwater Drum	11	231.5	140.0 - 331.0	198.8	2187.0
	Gizzard Shad	29	327.6	232.0 - 410.0	406.0	12170.0
	Sauger	2	235.0	155.0 - 315.0	186.0	372.0
	Silver Chub	1	182.0	182.0 - 182.0	52.0	52.0
	Spottail Shiner	165	115.9	105.0 - 132.0	13.9	2292.0
	Walleye	1	382.0	382.0 - 382.0	500.0	500.0
	White Bass	7	188.6	140.0 - 272.0	112.0	1216.0
	White Crappie	1	86.0	86.0 - 86.0	12.0	12.0
	White Sucker	1	436.0	436.0 - 436.0	896.0	896.0
	Yellow Perch	618	160.5	95.0 - 220.0	45.2	27941.0
	subtotal	*1800*				*54266.0*
12 July 1977	Carp	28	316.2	240.0 - 410.0	747.6	19744.1
	Channel Catfish	50	150.7	116.0 - 218.0	44.8	2317.2
	Emerald Shiner	1	90.0	90.0 - 90.0	4.0	4.0
	Freshwater Drum	35	171.7	100.0 - 273.0	118.4	3113.3
	Gizzard Shad	104	250.7	62.0 - 437.0	341.9	31721.4
	Goldfish	1	205.0	205.0 - 205.0	227.0	227.0
	Sauger	1	216.0	216.0 - 216.0	84.0	84.0
	Spottail Shiner	11	97.5	80.0 - 111.0	14.3	123.3
	Walleye	3	255.0	219.0 - 316.0	469.3	1408.0
	White Bass	5	196.6	130.0 - 287.0	123.7	618.6
	Yellow Perch	107	147.7	80.0 - 190.0	57.7	6145.3
	subtotal	*346*				*65506.2*

* Total catch from nets set monthly at Stations 3, 8, 13, and 26 (4 units of effort/month).

TABLE 5 (CON'T.)

SUMMARY OF GILL NET RESULTS AT LOCUST POINT DURING 1977 *

Date	Species	Number	Length (mm)		Weight (g)	
			Mean	Range	Mean	Total
9 August 1977	Brown Bullhead	1	266.0	266.0 - 266.0	240.0	240.0
	Carp	26	365.0	312.0 - 441.0	648.4	17723.0
	Channel Catfish	2	199.0	198.0 - 200.0	91.0	182.0
	Freshwater Drum	13	168.6	62.0 - 330.0	112.6	1572.0
	Gizzard Shad	601	161.8	40.0 - 378.0	86.2	35100.0
	Goldfish	2	297.0	250.0 - 344.0	510.0	1020.0
	Quillback Carpsucker	1	257.0	257.0 - 257.0	255.0	255.0
	Spottail Shiner	30	111.9	95.0 - 133.0	19.0	412.0
	Walleye	6	245.9	120.0 - 390.0	223.5	1341.0
	White Bass	44	108.4	77.0 - 840.0	9.9	622.0
	White Sucker	1	188.0	188.0 - 188.0	78.0	78.0
	Yellow Perch	418	178.8	67.0 - 221.0	69.8	29153.0
	subtotal	*1145*				*87698.0*
13 September 1977	Alewife	7	101.2	94.0 - 110.0	9.8	68.7
	Carp	8	357.7	325.0 - 370.0	643.9	4895.6
	Channel Catfish	1	488.0	488.0 - 488.0	559.0	559.0
	Freshwater Drum	19	87.7	76.0 - 97.0	6.9	129.6
	Gizzard Shad	130	169.7	88.0 - 367.0	83.6	5395.8
	Goldfish	1	285.0	285.0 - 285.0	340.0	340.0
	Spottail Shiner	123	108.7	85.0 - 130.0	11.7	1495.7
	Walleye	1	216.0	216.0 - 216.0	87.3	87.3
	White Bass	17	121.9	70.0 - 148.0	23.5	409.5
	White Sucker	2	400.0	400.0 - 400.0	783.4	1566.8
	Yellow Perch	206	170.8	85.0 - 215.0	61.9	12750.0
	subtotal	*515*				*27698.0*
20 October 1977	Alewife	210	108.2	79.0 - 146.0	12.0	2404.0
	Gizzard Shad	405	127.4	71.0 - 400.0	27.0	10008.0
	Quillback Carpsucker	1	141.0	141.0 - 141.0	35.0	35.0
	Rainbow Smelt	36	150.3	131.0 - 175.0	22.0	732.0
	Spottail Shiner	56	109.8	100.0 - 130.0	13.0	740.0
	Troutperch	1	107.0	107.0 - 107.0	12.0	12.0
	White Bass	9	133.1	125.0 - 167.0	33.0	345.0
	Yellow Perch	45	165.3	90.0 - 226.0	62.0	2836.0
	subtotal	*763*				*17112.0*
	TOTAL	5400				307937.9

* Total catch from nets set monthly at Stations 3, 8, 13, and 26 (4 units of effort/month).

(Table 5). Monthly catches from all stations ranged from 32 at Station 8 in May to 1,090 at Station 26 in June.

Shore Seines. Shore seining in 1977 yielded 7,905 fish weighing 65.8Kg and representing 13 species (Table 6). Monthly catches ranged from 40 in June (CPE = 13.3) to 3,297 in July (CPE = 1,099). This large catch in July was due to young-of-the-year (YOY) gizzard shad (2,919--mean length 37.2 mm).

Trawls. Trawling in the Locust Point vicinity during 1977 yielded 1,392 fish weighing 42.0Kg and representing 18 species (Table 7). Monthly CPE results from both transects ranged from 4 for transect 8-13 in May to 274 for transect 8-13 in July. Gizzard shad, spottail shiners, and white bass were the dominant species.

Analysis

The Lake Erie fish community at Locust Point as observed during 1977 was quite similar to that observed in previous years. The 6 dominant species (numerically) in 1976 were alewife, gizzard shad, white bass, emerald shiner, yellow perch, and spottail shiner, respectively (Reutter and Herdendorf, 1977). Although the ranking was different in 1977, the same species constituted the top 6 numerically.

The major difference between 1977 and previous years was that fewer fish were captured in 1977. This was primarily due to a reduction in the shore seine catch. In July of 1976 over 30,000 YOY alewives and 24,000 YOY gizzard shad were collected in the shore seines following large collections in the ichthyoplankton (Reutter and Herdendorf, 1977). If this shore seining had been conducted one week earlier or later, it is quite likely that these large catches would have been missed. Results of this type are typical with schooling species, alewife and gizzard shad, and can become even more misleading as the frequency of sampling is reduced.

As in the past, a comparison of gill netting results from individual stations indicated that fish densities were generally greater closer to shore. With the exception of June, Station 3 or 13 (≈1200 feet off shore) always yielded the greatest number of fish, and Station 8 or 26 (3000 feet off shore) always yielded the fewest fish (Figure 2). In June a school of 860 alewives swam into the gill net at Station 26. No trend of attraction to or repulsion from the intake, Station 8, or the plume area, Station 13, was observed (Figure 2). Furthermore, trawling results indicated fish populations in the vicinity of the intake and discharge complex (Stations 8 and 13) were exhibiting trends similar to fish populations around the control stations (3 and 26) (Figure 3). Figure 3 also indicates that populations could be slightly larger in the intake/plume complex (8-13). This is quite possible due to increased "cover" for fish provided by the rip-rap material at these stations, but it is not supported by Figure 2.

In conclusion, fish populations observed in 1977 were similar to those observed in the past. No indication of adverse impact due to the Davis-Besse Nuclear Power Station was observed.

TABLE 6

RESULTS OF SHORE SEINING IN LAKE ERIE
AT LOCUST POINT DURING 1977

Date	Species	Number	Length (mm)		Weight (g)	
			Mean	Range	Mean	Total
18 April 1977	Carp	5	430.8	85.0 - 562.0	1853.4	9267.0
	Emerald Shiner	30	56.5	43.0 - 105.0	1.8	52 6
	Gizzard Shad	10	287.4	130.0 - 386.0	305.3	3053.0
	Spottail Shiner	18	85.7	69.0 - 132.0	8.1	145.7
	White Bass	1	132.0	132.0 - 132.0	24.0	24.0
	subtotal	*64*				*12542.3*
16 May 1977	Brook Silversides	1	72.0	72.0 - 72.0	2.2	2.2
	Carp	8	489.4	350.0 - 622.0	1903.0	15231.0
	Emerald Shiner	491	55.0	40.0 - 72.0	1.5	725.8
	Gizzard Shad	14	319.5	167.0 - 395.0	596.5	8351.0
	Longnose Gar	1	810.0	810.0 - 810.0	1359.0	1359.0
	Spottail Shiner	29	79.5	65.0 - 105.0	5.5	158.5
	subtotal	*544*				*25827.5*
13 June 1977	Emerald Shiner	10	65.9	41.0 - 75.0	2.6	26.0
	Gizzard Shad	4	132.8	29.0 - 184.0	44.5	178.0
	Spottail Shiner	26	97.6	79.0 - 125.0	10.0	260.0
	subtotal	*40*				*464.0*
12 July 1977	Alewife	27	35.5	29.0 - 40.0	1.0	27.0
	Carp	1	555.0	555.0 - 555.0	2725.0	2725.0
	Emerald Shiner	243	77.0	34.0 - 113.0	3.2	778.0
	Gizzard Shad	2919	37.2	26.0 - 79.0	0.5	1557.0
	Spotfin Shiner	4	63.8	59.0 - 71.0	2.8	11.0
	Spottail Shiner	86	38.8	32.0 - 49.0	0.9	41.0
	White Bass	57	52.7	26.0 - 159.0	3.3	188.0
	subtotal	*3297*				*5327.0*
9 August 1977	Channel Catfish	1	59.0	59.0 - 59.0	2.0	2.0
	Emerald Shiner	20	81.5	33.0 - 111.0	3.3	66.4
	Gizzard Shad	272	27.0	8.0 - 121.0	1.9	459.4
	Spottail Shiner	3	54.3	52.0 - 56.0	1.3	4.0
	White Bass	9	90.4	81.0 - 110.0	8.4	76.0
	subtotal	*305*				*607.8*

*Data presented as the sum of the catch per unit effort (2 seine hauls) results from stations 23,24,& 25.

RESULTS OF SHORE SEINING IN LAKE ERIE
AT LOCUST POINT DURING 1977

cont'd.

Date	Species	Number	Length (mm)		Weight (g)	
			Mean	Range	Mean	Total
13 September 1977	Alewife	3	43.0	40.0 - 45.0	1.0	3.0
	Brook Silversides	3	62.7	61.0 - 65.0	1.0	3.0
	Carp	1	610.0	610.0 - 610.0		
	Channel Catfish	1	71.0	71.0 - 71.0	3.0	3.0
	Emerald Shiner	73	69.3	24.0 - 101.0	3.1	223.0
	Gizzard Shad	544	73.9	20.0 - 155.0	5.9	3222.0
	Goldfish	1	320.0	320.0 - 320.0	640.0	640.0
	Spotfin Shiner	1	70.0	70.0 - 70.0	3.0	3.0
	Spottail Shiner	8	74.5	65.0 - 85.0	4.0	32.0
	White Bass	6	112.0	91.0 - 141.0	17.0	102.0
	White Crappie	1	65.0	65.0 - 65.0	3.0	3.0
	subtotal	*642*				*4276.0*
20 October 1977	Emerald Shiner	2241	65.1	42.0 - 102.0	4.2	9431.0
	Gizzard Shad	768	81.5	45.0 - 308.0	5.5	4215.0
	Quillback Carp-sucker	1	562.0	562.0 - 562.0	3060.0	3060.0
	White Bass	3	117.0	91.0 - 165.0	28.0	84.0
	subtotal	*3013*				*16790.0*
	TOTAL	7906				65834.6

*Data presented as the sum of the catch per unit effort (2 seine hauls) results from stations 23,24, & 25.

TABLE 7 - RESULTS OF TRAWLING IN LAKE ERIE AT LOCUST POINT DURING 1977

Date	Transect	Species	Number	Length (mm)		Coef. of	Weight (g)	
				Mean	Range	Cond. (K)	Mean	Total
3 April 1977	8 - 13 (0.25 units of effort)	Channel Catfish	3	152.7	138.0 - 168.0	0.859	31.3	94.0
		Freshwater Drum	6	174.7	166.0 - 187.0	1.073	57.3	344.0
		Troutperch	1	88.0	88.0 - 88.0	1.174	8.0	8.0
		Yellow Perch	3	181.3	173.0 - 190.0	1.293	77.3	232.0
		subtotal	*13*					*678.0*
	3 - 26 (0 eff.)	*						
		TOTAL	13					678.0
18 May 1977	8 - 13 (0.75 units of effort)	Channel Catfish	1	140.0	140.0 - 140.0	0.875	24.0	24.0
		Emerald Shiner	1	95.0	95.0 - 95.0	0.700	6.0	6.0
		Spottail Shiner	1	78.0	78.0 - 78.0	0.843	4.0	4.0
		subtotal	*3*					*34.0*
	3 - 26 (0.50 units of effort)	Channel Catfish	1	166.0	166.0 - 166.0	0.918	42.0	42.0
		Emerald Shiner	6	60.7	50.0 - 70.0	0.657	1.5	9.0
		subtotal	*7*					*51.0*
		TOTAL	10					85.0
23 June 1977	8 - 13 (1.00 units of effort)	Emerald Shiner	4	94.8	70.0 - 105.0	0.835	7.5	30.0
		Logperch Darter	1	28.0	28.0 - 28.0	4.555	1.0	1.0
		Rainbow Smelt	5	33.8	29.0 - 37.0	2.699	1.0	5.0
		Spottail Shiner	1	88.0	88.0 - 88.0	0.880	6.0	6.0
		Walleye	5	50.8	44.0 - 60.0	0.903	1.2	6.0
		White Bass	27	24.8	20.0 - 28.0	6.902	1.0	27.0
		Yellow Perch	3	129.3	33.0 - 194.0	1.770	48.3	145.0
		subtotal	*46*					*220.0*
	3 - 26 (1.00 units of effort)	Channel Catfish	3	197.7	156.0 - 280.0	1.025	105.3	316.0
		Emerald Shiner	1	107.0	107.0 - 107.0	0.816	10.0	10.0
		Logperch Darter	3	27.0	25.0 - 30.0	5.264	1.0	3.0
		Quillback Carpsucker	1	395.0	395.0 - 395.0	1.369	844.0	844.0
		Rainbow Smelt	2	36.0	35.0 - 37.0	2.153	1.0	2.0
		Walleye	14	50.1	41.0 - 64.0	0.975	1.2	17.0
		White Bass	11	24.2	20.0 - 29.0	7.747	1.0	11.0
		Yellow Perch	4	55.3	28.0 - 135.0	3.549	9.3	37.0
		subtotal	*39*					*1240.0*
		TOTAL	85					1460.0

* No sample collected due to inclement weather.

TABLE 7 (CON'T.)

RESULTS OF TRAWLING IN LAKE ERIE AT LOCUST POINT DURING 1977

Date	Transect	Species	Number	Length (mm)		Coef. of	Weight (g)	
				Mean	Range	Cond. (K)	Mean	Total
19 July 1977	8 - 13 (1.00 units of effort)	Channel Catfish	3	233.3	189.0 - 310.0	1.032	165.7	497.0
		Emerald Shiner	6	94.3	71.0 - 107.0	0.759	6.8	41.0
		Gizzard Shad	13	54.8	34.0 - 66.0	1.275	2.2	28.0
		Goldfish	1	309.0	309.0 - 309.0	1.949	575.0	575.0
		Rainbow Smelt	3	43.7	39.0 - 49.0	1.265	1.0	3.0
		Spottail Shiner	34	44.6	37.0 - 59.0	1.178	1.0	35.0
		Walleye	3	107.3	103.0 - 111.0	0.964	12.0	36.0
		White Bass	202	47.1	20.0 - 77.0	2.079	2.0	408.0
		Yellow Perch	9	60.9	45.0 - 115.0	1.300	4.1	37.0
		subtotal	*274*					*1660.0*
	3 - 26 (1.00 units of effort)	Carp	2	359.5	270.0 - 449.0	1.125	622.5	1245.0
		Emerald Shiner	8	84.4	72.0 - 109.0	0.751	4.9	39.0
		Gizzard Shad	11	64.3	53.0 - 82.0	1.175	3.4	37.0
		Goldfish	1	420.0	420.0 - 420.0	1.053	780.0	780.0
		Rainbow Smelt	1	38.0	38.0 - 38.0	1.822	1.0	1.0
		Spottail Shiner	6	45.2	38.0 - 52.0	1.146	1.0	6.0
		Walleye	1	89.0	89.0 - 89.0	0.993	7.0	7.0
		White Bass	120	54.0	22.0 - 79.0	1.863	2.8	338.0
		Yellow Perch	1	185.0	185.0 -185.0	1.279	81.0	81.0
		subtotal	*151*					*2534.0*
		TOTAL	425					4194.0
23 August 1977	8 - 13 (1.00 units of effort)	Black Crappie	2	119.5	44.0 - 195.0	1.342	56.5	113.0
		Brown Bullhead	1	220.0	220.0 - 220.0	1.484	158.0	158.0
		Channel Catfish	4	82.3	58.0 - 135.0	1.034	7.8	31.0
		Freshwater Drum	2	108.5	92.0 - 125.0	1.077	15.0	30.0
		Gizzard Shad	67	130.4	107.0 - 284.0	1.199	29.8	1999.0
		Quillback Carpsucker	2	405.0	405.0 - 405.0	1.728	1753.0	3506.0
		Spottail Shiner	16	72.6	57.0 - 104.0	0.990	4.4	70.0
		Troutperch	1	89.0	89.0 - 89.0	0.993	7.0	7.0
		Walleye	13	152.5	137.0 - 170.0	0.930	33.8	439.0
		White Bass	16	72.6	33.0 - 134.0	1.527	7.6	121.0
		Yellow Perch	12	163.9	77.0 - 199.0	1.293	63.5	762.0
		subtotal	*136*					*7236.0*

TABLE 7 (CON'T.)

RESULTS OF TRAWLING IN LAKE ERIE AT LOCUST POINT DURING 1977

Date	Tran-sect	Species	Number	Length (mm)		Coef. of	Weight (g)	
				Mean	Range	Cond.(K)	Mean	Total
23 August 1977 (cont'd.)	3 - 26 (1.00 units of effort)	Brown Bullhead	2	258.5	243.0 - 274.0	1.433	245.0	490.0
		Carp	3	429.7	374.0 - 505.0	1.114	888.3	2665.0
		Channel Catfish	1	58.0	58.0 - 58.0	1.025	2.0	2.0
		Emerald Shiner	5	48.6	43.0 - 59.0	0.927	1.0	5.0
		Freshwater Drum	3	64.7	59.0 - 75.0	1.028	3.0	9.0
		Gizzard Shad	17	117.7	96.0 - 160.0	1.259	21.9	372.0
		Johnny Darter	1	31.0	31.0 - 31.0	3.357	1.0	1.0
		Spottail Shiner	27	83.3	59.0 - 121.0	1.003	6.9	187.0
		Walleye	2	142.5	137.0 - 148.0	0.956	28.0	56.0
		White Bass	4	76.3	47.0 - 90.0	1.182	6.3	25.0
		Yellow Perch	7	145.0	81.0 - 211.0	1.282	52.9	370.0
		subtotal	*72*					*4182.0*
		TOTAL	208					11418.0
27 September1977	8 - 13 (1.00 units of effort)	Channel Catfish	1	390.0	390.0 - 390.0	1.177	698.0	698.0
		Freshwater Drum	1	335.0	335.0 - 335.0	1.176	442.0	442.0
		Gizzard Shad	43	141.3	111.0 - 191.0	1.103	32.7	1404.0
		Quillback Carpsucker	1	290.0	290.0 - 290.0	1.730	422.0	422.0
		Rainbow Smelt	1	63.0	63.0 - 63.0	0.400	1.0	1.0
		Spottail Shiner	11	105.1	75.0 - 122.0	0.983	12.3	135.0
		White Bass	1	146.0	146.0 - 146.0	1.414	44.0	44.0
		Yellow Perch	5	138.8	86.0 - 198.0	1.175	44.4	222.0
		subtotal	*64*					*3368.0*
	3 - 26 (1.00 units of effort)	Spottail Shiner	5	63.2	31.0 - 75.0	1.389	2.8	14.0
		Yellow Perch	1	87.0	87.0 - 87.0	1.063	7.0	7.0
		subtotal	*6*					*21.0*
		TOTAL	70					3389.0
24 October 1977	8 - 13 (1.00 units of effort)	Emerald Shiner	5	72.8	62.0 - 94.0	0.677	2.8	14.0
		Freshwater Drum	1	123.0	123.0 - 123.0	1.021	19.0	19.0
		Gizzard Shad	166	134.0	92.0 -165.0	1.073	23.9	3975.0
		Quillback Carpsucker	1	173.0	173.0 - 173.0	1.294	67.0	67.0
		Spottail Shiner	22	101.6	80.0 - 131.0	0.961	11.0	241.0
		White Bass	23	146.9	108.0 - 247.0	1.441	52.1	1198.0
		Yellow Perch	6	174.7	142.0 -192.0	1.198	65.8	395.0
		subtotal	*224*					*5909.0*

TABLE 7 (CON'T.)

RESULTS OF TRAWLING IN LAKE ERIE AT LOCUST POINT DURING 1977

Date	Transect	Species	Number	Length (mm)		Coef. of	Weight (g)	
				Mean	Range	Cond. (K)	Mean	Total
24 October 1977 (cont'd.)	3 - 26 (1.00 units of effort)	Carp	1	392.0	392.0 - 392.0	1.177	709.0	709.0
		Channel Catfish	1	77.0	77.0 - 77.0	1.095	5.0	5.0
		Emerald Shiner	2	96.5	64.0 - 129.0	0.847	11.0	22.0
		Freshwater Drum	5	106.6	92.0 - 125.0	1.101	13.8	69.0
		Gizzard Shad	69	128.0	98.0 - 159.0	1.112	23.0	1584.0
		Spottail Shiner	29	95.7	66.0 - 115.0	1.019	9.6	279.0
		Troutperch	1	71.0	71.0 - 71.0	0.838	3.0	3.0
		Walleye	1	224.0	224.0 - 224.0	1.005	113.0	113.0
		White Bass	3	152.0	119.0 - 170.0	1.418	55.7	167.0
		Yellow Perch	4	184.8	158.0 - 207.0	1.252	82.0	328.0
		subtotal	*116*					*3273.0*
		TOTAL	340					9188.0
8 November 1977	8 - 13 (1.00 units of effort)	Carp	3	420.0	319.0 - 480.0	1.685	1354.7	4064.0
		Freshwater Drum	1	352.0	352.0 - 352.0	1.032	450.0	450.0
		Gizzard Shad	24	136.5	118.0 - 175.0	1.120	29.0	697.0
		Spottail Shiner	24	108.3	65.0 - 132.0	1.007	13.8	332.0
		Walleye	2	205.5	179.0 - 232.0	0.945	85.0	170.0
		White Bass	10	163.7	149.0 - 188.0	1.475	66.0	660.0
		White Crappie	1	89.0	89.0 - 89.0	1.560	11.0	11.0
		Yellow Perch	7	190.4	166.0 - 216.0	1.245	88.9	622.0
		subtotal	*72*					*7006.0*
	3 - 26 (1.00 units of effort)	Carp	2	301.0	240.0 - 362.0	1.589	453.5	907.0
		Channel Catfish	1	62.0	62.0 - 62.0	1.259	3.0	3.0
		Emerald Shiner	3	64.7	56.0 - 72.0	0.690	2.0	6.0
		Freshwater Drum	2	324.5	288.0 - 361.0	1.319	450.5	901.0
		Gizzard Shad	23	124.2	92.0 - 161.0	1.064	21.0	484.0
		Quillback Carpsucker	1	145.0	145.0 - 145.0	1.443	44.0	44.0
		Spottail Shiner	10	105.3	80.0 - 125.0	0.990	12.5	125.0
		Troutperch	1	75.0	75.0 - 75.0	0.948	4.0	4.0
		Walleye	5	216.8	204.0 - 225.0	0.925	94.8	474.0
		White Bass	10	157.1	142.0 - 177.0	1.490	59.6	596.0
		Yellow Perch	12	186.3	134.0 - 248.0	1.223	86.3	1035.0
		subtotal	*70*					*4579.0*
		TOTAL	142					11585.0
		GRAND TOTAL	1293					41997.0

FIGURE 2

COMPARISON OF GILL NET RESULTS FROM STATIONS 3, 8, 13, AND 26 DURING 1977

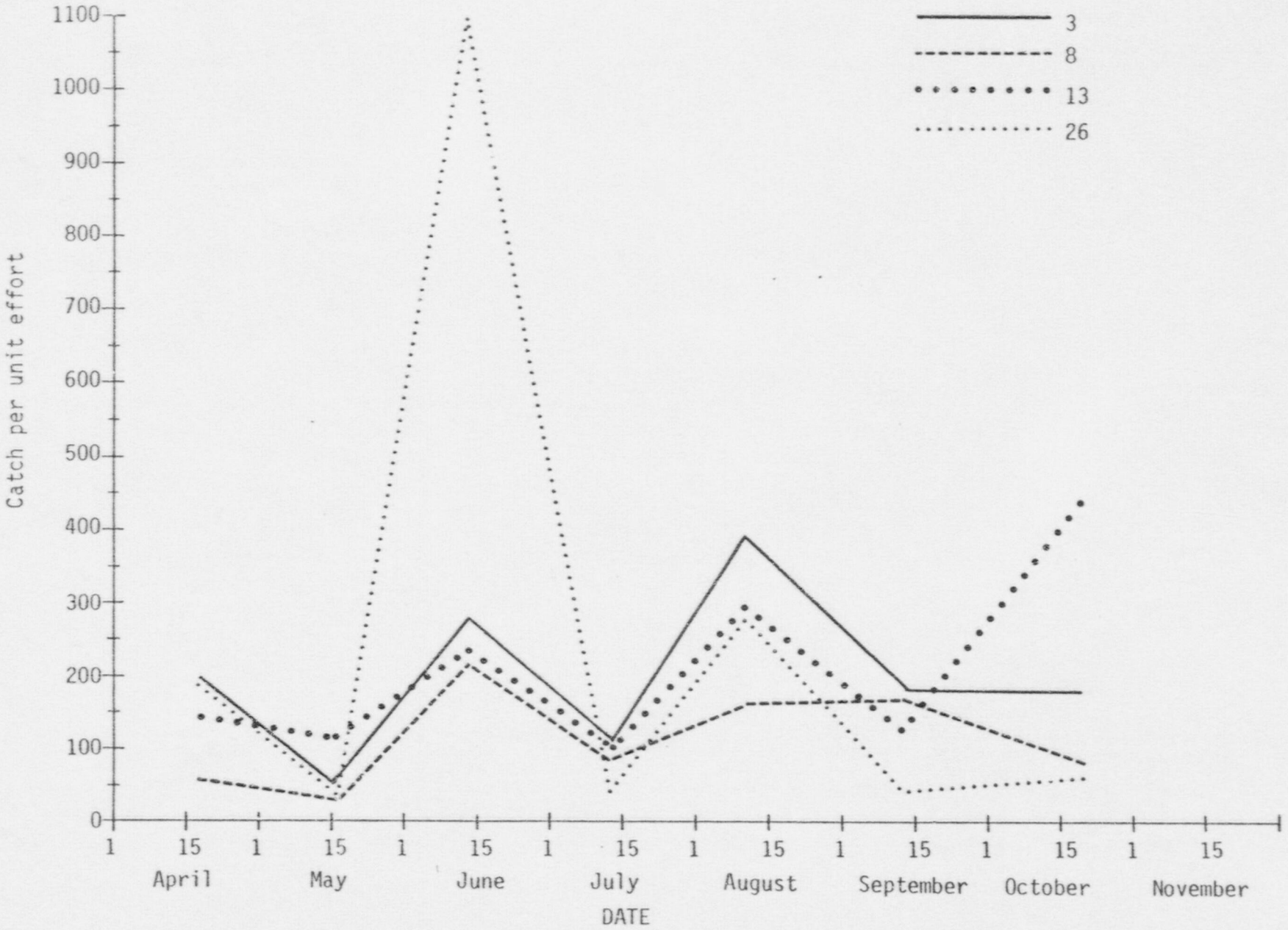
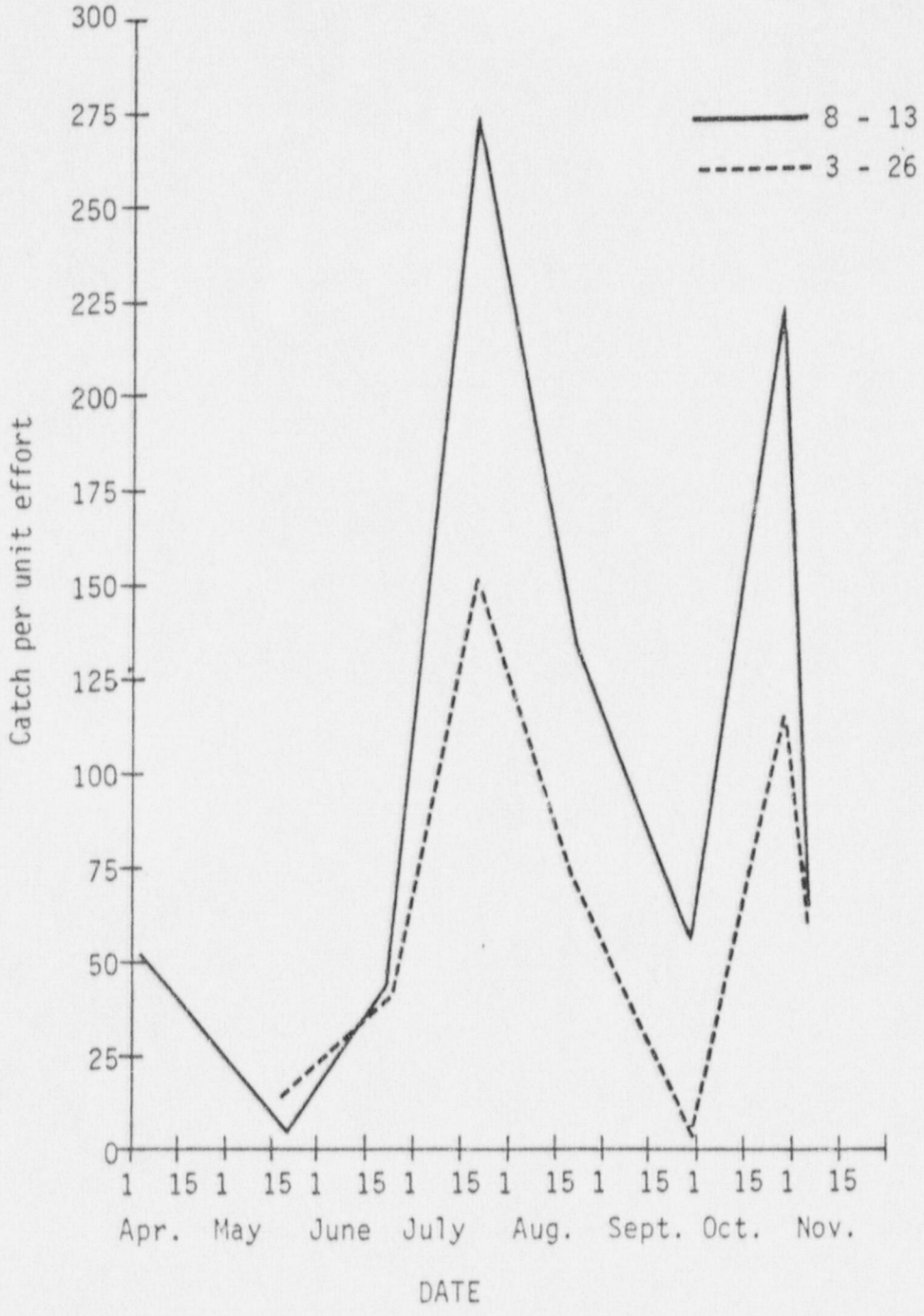


FIGURE 3

COMPARISON OF TRAWL CATCH PER UNIT EFFORT FROM TRANSECT 8 - 13 AND 3 - 26



LITERATURE CITED

Bailey, R.M., J.E. Fitch, E.S. Herald, E.A. Lachner, C.C. Lindsey, R.C. Robins, and W. B. Scott. 1970. A list of common and scientific names of fishes from the United States and Canada. Third ed. Amer. Fish. Soc. Spec. Pub. No. 6. 150 pp.

Reutter, J.M. and C.E. Herdendorf. 1977. Pre-operational aquatic ecology monitoring program for the Davis-Besse nuclear power station, unit 1. The Ohio State Univ., Columbus, Ohio. Progress Rept. July 1 - Dec. 31, 1976. Toledo Edison Co. 205 pp.

Trautman, M.B. 1957. The Fishes of Ohio. The Ohio State Univ. Press, Columbus, Ohio. 683 pp.