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THE FISH FAUNA OF LAKE MAUREPAS, AN OLIGOHALINE PART OF THE LAKE PONTCHARTRAIN ESTUARY

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ABSTRACT: Lake Maurepas is a slightly saline body of water located at the upper end of the Lake Pontchartrain estuary. Of 67 fish species collected during 1983-84, 33 species (49%) are primarily freshwater, 6 (9%) are primarily marine, and 28 (42%) are estuarine or diadromous, commonly occurring in both freshwater and marine habitats. Major freshwater species (*e.g. Ictalurus furcatus, I. punctatus,* and *Aplodinotus grunniens*) were present throughout the year, whereas most marine and estuarine species were seasonally present (*e.g. Anchoa mitchilli, Brevoortia patronus,* and *Micropogonias undulatus*), or were present during periods of higher (up to 2.5 o/oo) salinity (*e.g. Cynoscion arenarius, Leiostomus xanthurus,* and *Pogonias cromis*). Literature records indicate that larger percentages of marine species are present during years when salinities are higher (up to 8 o/oo).

Lake Maurepas is a shallow (<2.1 m), oligohaline body of water encompassing 233 sq. km. draining via Pass Manchac into the west end of Lake Pontchartrain in southeastern Louisiana (Figure 1). As with other oligohaline habitats within estuaries (Hackney and de la Cruz, 1981, Rozas and Hackney, 1984), its fauna has not been intensively studied. Only superficial surveys have been completed during several previous projects. Davis *et al.* (1970) reported a total of 29 fish species taken from Lake Maurepas, at two otter trawl stations near the mouths of the Amite and Blind Rivers and at three trammel net stations at the mouths of the Amite, Blind, and Tickfaw Rivers. Price and Kuckyr (1974) recorded 11 species in collections at two trawl stations in Lake Maurepas. Tarver and Savoie (1976) collected 19 species of fish at their single trawl station in Lake Maurepas, but failed to list collections by station and generally did not distinguish between Lake Maurepas and Lake Pontchartrain. Several tributaries to Lake Maurepas have been sampled for fishes, including the Amite River (Lantz, 1970; Laiche, 1980), Blind River (Watson *et al.,* 1981), and Tickfaw River (Saul, 1974). Saul's (1974) collections also included one station in Lake Maurepas (near the mouth of the Tickfaw River), but collections at that station were not distinguished from those within the river. Our report presents the first comprehensive list of the fishes occurring in this major, low-salinity portion of the estuary, and complements previous reports on fishes of the Lake Pontchartrain system.

METHODS

Fishes were collected with gill net and otter trawl during six bimonthly sampling periods from September 1983 to October 1984 at seven stations. Stations were identified and relocated by a

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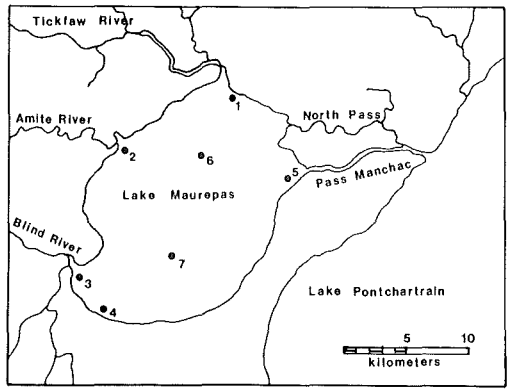

Figure 1. Sampling stations in Lake Maurepas, Louisiana.

LORAN C APL-900 electronic navigator so that sampling was always conducted in the same 3.4 sq. km. (one sq. nautical mile) area. Stations 1-5 were located around the lake perimeter and Stations 6-7 in mid-lake (Figure 1). Sampling dates are given in Table 1.

Gill net effort at each station included four multimesh multifilament nylon nets 45.7 m long and 2.4 m deep composed of six 7.6 m sections of 8.9, 7.6, 6.3, 5.1, 3.8, and 2.5 cm bar mesh, and two large-mesh multifilament nylon nets 61 m long and 2.4 m deep with 11.4 cm mesh. Gill nets were set to fish for approximately 12 hours. Catch per unit effort (CPUE) for gill nets (excluding large mesh nets, for which catch was usually negligible) was calculated as number of fish caught per net set.

Standard otter trawl sampling involved three 10-minute tows with a 4.9 m trawl with 1.9 cm bar mesh and a 0.6 cm mesh cod end for the capture of small specimens. Usually one trawl tow was taken in late evening and two were taken in early to mid-morning of the following day. CPUE for trawls was calculated as number of fish caught per 10-minute tow.

Table 1. Sampling dates and effort for Lake Maurepas fish survey.

Period	Dates	Method	Stations Sampled	Number of Samples
1	19 Sep - 6 Oct 1983	Multimesh Gill Net	1 - 7	27
		Large Mesh Gill Net	1 - 7	14
		Trawl	1 - 7	21
2	31 Oct - 15 Nov 1983	Multimesh Gill Net	1 - 7	28
		Large Mesh Gill Net	1 - 7	14
		Trawl	1 - 7	21
3	16 Jan - 10 Feb 1984	Multimesh Gill Net	1 - 7	28
		Large Mesh Gill Net	1 - 7	14
		Trawl	1 - 7	21
4	26 Mar - 16 Apr 1984	Multimesh Gill Net	1 - 7	27
		Large Mesh Gill Net	1 - 7	14
		Trawl	1 - 6	18
	4 May - 11 May 1984	Rotenone	1 - 5	10
5	6 Jun - 20 Jun 1984	Multimesh Gill Net	1 - 7	28
		Large Mesh Gill Net	1 - 7	14
		Trawl	1 - 7	21
	31 Jul - 7 Aug 1984	Rotenone	1 - 5	5
6	10 Sep - 5 Oct 1984	Multimesh Gill Net	1 - 7	28
		Large Mesh Gill Net	1 - 7	14
		Trawl	1 - 7	21
	27 Sep - 28 Sep 1984	Rotenone	1 - 5	5

Samples collected by gill net and large specimens collected by trawl were identified, measured (total length) and weighed in the field, and released. Trawl collections were preserved in 10% buffered formalin and returned to the laboratory for identification and length-weight determinations.

Rotenone was used to sample shorelines at Stations 1-5. A 0.5 ha shoreline area measuring approximately 29 m x 3 m was enclosed with a block net (0.64 cm mesh) and treated with 5% liquid rotenone to produce a 1-3 ppm concentration. Affected fish were dip-netted, preserved in 10% buffered formalin, and returned to the laboratory for processing. Shoreline stations were sampled twice during May, 1984, and twice during July-September 1984.

Reference specimens have been archived at Southeastern Louisiana University, Department of Biological Sciences.

RESULTS

A total of 74,202 individuals representing 67 species and 28 families was collected during this study (Table 2). Overall catch was dominated numerically by bay anchovy (*Anchoa mitchilli*), which constituted 70% of the total catch. Ten predominant species accounted for 97.2% of the total catch. Most individuals (60,750) were taken by trawl, but the largest number of species (41) was taken by rotenone. Trawls tended to catch primarily smaller size classes of common open water species while gill nets caught mostly larger size classes of open water species. Rotenone catches were quite different from those taken by net, since they included a relatively large number of species associated with the cypress swamp and vegetational shelter characteristic of the lake shoreline.

The bay anchovy was collected almost exclusively by trawl (51,642 individuals) and dominated the trawl catch (85% of catch). Other important species (>0.5% of catch) taken by trawl were blue catfish (*Ictalurus furcatus*), channel catfish (*I. punctatus*), Atlantic croaker (*Micropogonias undulatus*), gulf menhaden (*Brevoortia patronus*), freshwater drum (*Aplodinotus grunniens*), and hogchoker (*Trinectes maculatus*). Predominant species (>1.0%) collected by multimesh gill net were gulf menhaden, blue catfish, gizzard shad (*Dorosoma cepedianum*), spot (*Leiostomus xanthurus*), skipjack herring (*Alosa chrysochloris*), striped mullet (*Mugil cephalus*), channel catfish, and longnose gar (*Lepisosteus osseus*). Large mesh gill nets captured only 56 individuals (9 species), of which 37 (66%) were black drum (*Pogonias cromis*) and 6 (11%) were longnose gar. Major species collected by rotenone included several open water species especially sensitive to rotenone, such as gulf menhaden, inland silverside (*Menidia beryllina*), hogchoker, and bay anchovy. Species associated with sheltered shoreline habitats that were collected primarily by rotenone included naked goby (*Gobiosoma bosci*), longear sunfish (*Lepomis megalotis*), bluegill (*Lepomis macrochirus*), least killifish (*Heterandria formosa*), mosquitofish (*Gambusia affinis*), gulf killifish (*Fundulus grandis*), and gulf pipefish (*Syngnathus scovelli*).

Among the 67 species collected during the study, 33 (49%) are freshwater, 6 (9%) are marine, and 28 (42%) occur in both fresh and marine water (Robins *et al.*, 1980). Euryhaline species include four that occur mostly in freshwater, 21 that are primarily marine, and three that are diadromous. Catch statistics for gill net and trawl suggest a marked trend of fewer species, as well as individuals, in the winter. There was also an increase in

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Table 2. Total numbers of fishes collected by trawl, multi-mesh gill net, large mesh gill net, and rotenone in Lake Maurepas.

SCIENTIFIC/COMMON NAME	OCCURRENCE*	TRAWL	MULTI MESH GILL NET	LARGE MESH GILL NET	ROTENONE	TOTAL
Dasyatis sabina - Atlantic stingray	A-F		1			1
Polyodon spathula - Paddlefish	F	2		2		4
Lepisosteus oculatus - Spotted gar	F		29		4	33
Lepisosteus osseus - Longnose gar	F	1	63	6		70
Lepisosteus spatula - Alligator gar	F		16	3	1	20
Amia calva - Bowfin	F				2	2
Elops saurus - Ladyfish	A-F		5			5
Anguilla rostrata - American eel	A-F	1			19	20
Myrophis punctatus - Speckled worm eel	A				35	35
Clupeid juv.		1			4	5
Alosa alabamae - Alabama shad	A-F	1	1			2
Alosa chrysochloris - Skipjack herring	A-F	6	160			166
Brevoortia patronus - Gulf menhaden	A	1682	2342		5142	9166
Dorosoma cepedianum - Gizzard shad	A-F	1	410			411
Dorosoma petenense - Threadfin shad	A-F-P	255	12			267
Anchoa mitchilli - Bay anchovy	A-F	51642			122	51764
Cyprinus carpio - Carp	F(I)		1			1
Notemigonus crysoleucas - Golden shiner	F				2	2
Notropis emiliae - Pugnose minnow	F				2	2
Carpiodes carpio - River carpsucker	F		1			1
Ictiobus bubalus - Smallmouth buffalo	F	1	6	1		8
Ictalurus furcatus - Blue catfish	F	2088	783	1	2	2874
Ictalurus melas - Black bullhead	F		1			1
Ictalurus natalis - Yellow bullhead	F				6	6
Ictalurus punctatus - Channel catfish	F	1807	80		7	1894
Noturus gyrinus - Tadpole madtom	F				1	1
Pylodictus olivaris - Flathead catfish	F	1			8	9
Arius felis - Sea catfish	A-F		1			1
Bagre marinus - Gafftopsail catfish	A	1	7			8
Aphredoderus sayanus - Pirate perch	F	13			6	19
Strongylura marina - Atlantic needlefish	A-F	1	1		6	8
Cyprinodon variegatus - Sheepshead minnow	A-F				2	2
Fundulus chrysotus - Golden topminnow	F				3	3
Fundulus grandis - Gulf killifish	A-F				71	71
Fundulus pulvereus - Bayou killifish	A-F				1	1
Lucania parva - Rainwater killifish	A-F-P				3	3
Gambusia affinis - Mosquitofish	A-F				87	87
Heterandria formosa - Least killifish	F				95	95
Menidia beryllina - Inland silverside	A-F	2			402	404
Labidesthes sicculus - Brook silverside	F				1	1
Syngnathus scovelli - Gulf pipefish	A-F	1	1		60	62
Morone chrysops - White bass	F		8			8
Morone mississippiensis - Yellow bass	F	27	12		2	41
Morone saxatilis - Striped bass	A-F-P		14			14
Lepomis juv.					9	9
Elassoma zonatum - Banded pygmy sunfish	F				4	4
Lepomis gulosus - Warmouth	F					6	6
Lepomis macrochirus - Bluegill	F					98	98
Lepomis megalotis - Longear sunfish	F	2				212	214
Lepomis microlophus - Redear sunfish	F					13	13
Lepomis punctatus - Spotted sunfish	F					14	14
Lepomis symmetricus - Bantam sunfish	F					6	6
Micropterus salmoides - Largemouth bass	F					8	8
Pomoxis annularis - White crappie	F			2			2
Pomoxis nigromaculatus - Black crappie	F					2	2
Caranx hippos - Crevalle jack	A			1	2		3
Archosargus probatocephalus - Sheepshead	A-F	1		4	2		7
Aplodinotus grunniens - Freshwater drum	F	730		32	2	20	784
Cynoscion arenarius - Sand seatrout	A	203		25			228
Leiostomus xanthurus - Spot	A-F	57		167			224
Micropogonias undulatus - Atlantic croaker	A-F	1728		10		9	1747
Pogonias cromis - Black drum	A			8	37		45
Mugil cephalus - Striped mullet	A-F-P	1		140		30	171
Gobionellus shufeldti - Freshwater goby	A-F	1					1
Gobiosoma bosci - Naked goby	A-F	2				2273	2275
Microgobius gulosus - Clown goby	A-F	3					3
Citharichthys spilopterus - Bay whiff	A-F	1		2			3
Paralichthys lethostigma - Southern flounder	A-F	4		4			8
Trinectes maculatus - Hogchoker	A-F	483				246	729
Total Number of Individuals		60750		4350	56	9046	74202
Total Number of Species (excluding unidentified juveniles)		32		34	9	41	67

*Occurrence — from Robins *et al.* (A = Atlantic, P = Pacific, F = Freshwater, I = Introduced).

number of species, as well as individuals, during the latter part of the study (Table 3). For gill net catches, numbers of species and individuals were higher (ANOVA, $F = 25$ and 279, $P < 0.0005$) in September, 1984, than in September 1983. Trawl catches showed the same trends but were not as definitive (ANOVA, $F = 3.1$ and 3.3, $P < 0.10$). Such variations in catch appear to be correlated primarily with changes in abundance of various euryhaline and marine species. Most freshwater species were caught consistently throughout the year, whereas major marine and euryhaline species tended to be seasonal in their occurrence. The winter decline in number of species present was most striking for gill net catches of marine and euryhaline marine species. The larger size classes of these species were absent from the January catches. However, some marine species were only present (or were more numerous) when salinity increased in Periods 5 and 6 (June - September, 1984).

Catch records for individual species reveal three major occurrence patterns for dominant species in Lake Maurepas. One pattern is primarily characteristic of freshwater species that tend to be present throughout the year, but show winter peaks of juvenile occurrence. This pattern is best shown by blue catfish, channel catfish, and freshwater drum (Table 4). Adult blue catfish, 250-400 mm total length (TL), were collected in relatively large numbers (2-7 per

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Table 3. Seasonal distribution of species richness and number of individuals taken by trawl and gill net in Lake Maurepas.

	Sample Period					
	1 Sep 83	2 Nov 83	3 Jan 84	4 Apr 84	5 Jun 84	6 Sep 84
Trawl:						
Number of Individuals	12635	6475	1845	3259	18983	17553
Number of Species (Total)	11	12	12	13	14	16
Freshwater	5	5	7	7	3	4
FW-Euryhaline	1	2	0	0	2	1
Mar-Euryhaline	4	3	5	4	7	8
Marine	1	1	0	1	2	3
Gill Net:						
Number of Individuals	468	478	159	208	1693	1400
Number of Species (Total)	19	16	9	18	18	25
Freshwater	8	9	7	10	8	10
FW-Euryhaline	3	3	1	3	3	2
Mar-Euryhaline	6	3	0	2	3	7
Marine	2	1	0	1	3	5

multimesh gill net set) during each sampling period. Juveniles, 50-150 mm TL, were more numerous in trawl catches in January and April than during other periods. In addition, trawl catches were lower in September, 1984, than in September, 1983 (Mann Whitney Test, $U = 356$, $P<0.05$). The largest size class of channel catfish taken included individuals mostly about 200-300 mm TL that were less numerous (0.1-1.0 per multimesh gill net set) than blue catfish,

Table 4. Catch per unit of effort (CPUE) for most abundant species present throughout the study period. (CPUE = mean catch per net haul ± standard error; N = number of samples).

	Period	N	*I. furcatus*	*I. punctatus*	*A. grunniens*	*T. maculatus*
Trawl:	1 - Sep 83	21	17.43 ± 3.93	2.90 ± 1.23	0.29 ± 0.14	1.10 ± 0.44
	2 - Nov 83	21	15.29 ± 5.83	20.43 ± 9.16	10.38 ± 5.84	4.86 ± 2.59
	3 - Jan 84	21	26.43 ± 4.66	31.62 ± 7.20	21.52 ± 4.13	6.81 ± 1.71
	4 - Apr 84	18	31.83 ± 8.16	25.28 ± 6.68	3.00 ± 0.65	6.61 ± 1.92
	5 - Jun 84	21	6.81 ± 3.51	4.05 ± 2.65	0	1.52 ± 0.80
	6 - Sep 84	21	6.19 ± 3.46	5.38 ± 4.25	0	3.05 ± 1.73
Gill net:	1 - Sep 83	27	4.56 ± 0.67	0.33 ± 0.12	0.15 ± 0.09	0
	2 - Nov 83	28	7.18 ± 0.98	0.54 ± 0.12	0.25 ± 0.10	0
	3 - Jan 84	28	4.39 ± 0.76	0.14 ± 0.08	0	0
	4 - Apr 84	27	2.96 ± 0.63	1.00 ± 0.23	0.07 ± 0.05	0
	5 - Jun 84	28	2.54 ± 0.37	0.46 ± 0.16	0.43 ± 0.12	0
	6 - Sep 84	28	6.61 ± 1.06	0.43 ± 0.17	0.25 ± 0.10	0

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but were still present throughout the year. Juvenile channel catfish occurrence was quite similar to that of blue catfish, with peak catches in January and April, but with high numbers also occurring in November. Freshwater drum (most about 300-600 mm TL) were collected in small numbers during each sampling period, and juveniles about 75-150 mm TL were abundant during November and January.

Other common species that consistently occurred throughout the study were longnose gar, alligator gar (*L. spatula*), and yellow bass (*Morone mississippiensis*). These species were not common, however, and distinctive patterns for juveniles and adults cannot be determined, except for a lack of small juveniles. The hogchoker, defined as a euryhaline-marine species, was similar to these freshwater species in that juveniles were present throughout the study, and were most numerous during November, January, and April (Table 4).

Catches of several euryhaline species revealed a definite seasonal pattern with the species rare or absent during winter (Table 5). This pattern is demonstrated by the bay anchovy, the

Table 5. Catch per unit of effort (CPUE) for most abundant euryhaline species with seasonal occurrence patterns. (CPUE = mean catch per net haul ± standard error; N = number of samples).

	Period	N	*A. mitchilli*	*B. patronus*	*D. cepedianum*	*D. petenense*	*A. chrysochloris*	*M. undulatus*	*M. cephalus*
Trawl:	1 - Sep 83	21	571.62 ± 90.17	2.81 ± 1.99	0	4.05 ± 1.90	0	1.33 ± 0.35	0
	2 - Nov 83	21	248.95 ± 72.92	0.48 ± 0.33	0.05 ± 0.05	7.19 ± 2.93	0	0.52 ± 0.26	0
	3 - Jan 84	21	0.33 ± 0.33	0	0	0	0	0	0
	4 - Apr 84	18	50.06 ± 28.32	28.28 ± 13.08	0	0	0	35.56 ± 8.71	0
	5 - Jun 84	21	829.29 ± 92.85	47.24 ± 14.24	0. ± .	0.52 ± 0.25	0.29 ± 0.10	10.05 ± 2.44	0
	6 - Sep 84	21	766.05 ± 100.41	5.33 ± 2.73	0	0.38 ± 0.15	0	39.90 ± 22.71	0.05 ± 0.05
Gill net:	1 - Sep 83	27	0	7.41 ± 1.87	1.07 ± 0.41	0.19 ± 0.09	2.33 ± 0.46	0.07 ± 0.05	0.26 ± 0.13
	2 - Nov 83	28	0	6.00 ± 1.63	0.64 ± 0.24	0.04 ± 0.04	1.21 ±0.26	0	0.11 ± 0.08
	3 - Jan 84	28	0	0	0.25 ± 0.12	0	0	0	0
	4 - Apr 84	27	0	0.41 ± 0.12	1.00 ± 0.28	0.15 ± 0.09	0.26 ± 0.11	0.07 ± 0.05	0
	5 - Jun 84	28	0	47.64 ± 6.25	5.11 ± 1.12	0.07 ± 0.05	1.54 ± 0.30	0.11 ± 0.08	1.21 ± 0.33
	6 - Sep 84	28	0	22.46 ± 3.46	6.64 ±1.37	0	0.46 ± 0.20	0.11 ± 0.06	3.43 ± 0.77

most abundant species in trawl collections for all periods except January. Other species with similar occurrence patterns were gulf menhaden, gizzard shad, threadfin shad (*Dorosoma petenense*), skipjack herring, Atlantic croaker, and striped mullet. Of these, gulf menhaden, gizzard shad, Atlantic croaker, and striped mullet were significantly more numerous (number captured per net) in September, 1984, than in September, 1983 (Mann Whitney, $U = 584$, 685, 344, and 632, respectively, $P<0.05$). In contrast threadfin shad and skipjack herring were less numerous in 1984 ($U = 299$ and 610, respectively, $P<0.05$).

Marine species that became common during 1984 when salinity increased are sand seatrout (*Cynoscion arenarius*), spot (*Leiostomus xanthurus*), and black drum (*Pogonias cromis*) (Table 6).

DISCUSSION

Lake Maurepas is the upper oligohaline portion of a large estuary. It is populated primarily by freshwater fish species but with a major estuarine component. Of the 67 fish species collected during the study, 55% occur primarily in

Table 6. Catch per unit of effort for most abundant marine species with occurrence correlated with salinity increase. (CPUE = mean catch per net haul ± standard error; N = number of samples).

Trawl:	Period	N	*C. arenarius*	*L. xanthurus*	*P. cromis*
	1 - Sep 83	21	0	0	0
	2 - Nov 83	21	0	0	0
	3 - Jan 84	21	0	0	0
	4 - Apr 84	18	0	0	0
	5 - Jun 84	21	2.76 ± 0.55	0.52 ± 0.31	0
	6 - Sep 84	21	6.90 ± 3.10	2.19 ± 0.78	0
Gill net:	1 - Sep 83	27	0	0	0
(Multimesh)	2 - Nov 83	28	0	0	0
	3 - Jan 84	28	0	0	0
	4 - Apr 84	27	0	0	0
	5 - Jun 84	28	0.21 ± 0.09	0	0.04 ± 0.04
	6 - Sep 84	28	0.68 ± 0.14	5.96 ± 0.83	0.25 ± 0.10
Gill net:	1 - Sep 83	14	0	0	0
(Large mesh)	2 - Nov 83	14	0	0	0
	3 - Jan 84	14	0	0	0
	4 - Apr 84	14	0	0	0
	5 - Jun 84	14	0	0	0.21 ± 0.11
	6 - Sep 84	14	0	0	2.43 ± 1.65

freshwater, 40% are primarily marine, and 4% are diadromous. Of the 20 most frequently caught species (totaling over 99% of the total catch), ten usually occur in freshwater, and ten are primarily marine, emphasizing the mixed nature of the system.

During this study period, salinity in Lake Maurepas was quite low, ranging from near zero to 2.5 o/oo (mean = 0.4). The salinity remained near zero through February 1984 and then gradually rose to an average of about 0.8 o/oo, where it remained for the remainder of this study. Such low salinities contributed to reduced occurrence of marine-oriented species in the lake. Marine species tended to be seasonal in their occurrence, but several were more numerous in fall, 1984, than in fall, 1983. In addition, several not present early in the study appeared late in 1984, possibly the result of the higher salinity.

Salinity varies considerably in Lake Maurepas with 30 year records at Pass Manchac ranging from 0.02 - 8.00 o/oo (mean = 1.37) (Sikora and Kjerfve, 1985). In a study conducted during 1967-68, when salinity in the lake was 3.5-4 o/oo in March-May, Davis *et al.* (1970) collected a larger marine component. Of 29 species collected with trammel nets and otter trawl (compared to 47 collected with gill nets and otter trawl during our study), 15 (51%) were freshwater species, and 14 (48%) were marine. Five marine species collected by Davis *et al.* (1970) were not recorded during our study (striped anchovy, *Anchoa hepsetus*; pinfish, *Lagodon rhomboides*; spotted seatrout, *Cynoscion nebulosus*; red drum, *Sciaenops ocellatus*; and Spanish mackerel, *Scomberomorus maculatus*). Tarver and Savoie (1976) reported salinity as high as 5.5 o/oo in 1972 and collected 20 species, 14 (70%) of which were marine. One of their marine species, the lined sole (*Achirus lineatus*) was not collected in the current study. Saul (1974) reported four marine species, including pinfish and lyre goby (*Evorthodus lyricus*), not collected in our study, but did not list other species collected. Such results indicate that during years when salinity is higher, marine fish are a more important component of the fish fauna.

In general, however, species richness in Lake Maurepas showed a seasonal pattern typical of many estuarine areas (McErlean *et al.*, 1973; Haedrich and Haedrich, 1974; Livingston, 1976), with winter minimums and late summer or fall maximums. Abundance of individuals also varied seasonally with the same pattern. Such variations are associated primarily with the occurrence of marine species, since common freshwater species were present generally throughout the year.

Thompson and Verret (1980) listed 107 species known to occur in Lake Pontchartrain, plus another ten species collected only in surrounding marsh habitats. Of these 117 species, 48 have not been reported from Lake Maurepas. All but two of those are marine species, a distinction to be expected in view of the generally higher salinity in Lake Pontchartrain. In contrast, 18 species collected during our study of Lake Maurepas were not collected by Thompson and Verret in Lake Pontchartrain, although they did collect seven of these in Lake Pontchartrain marshes and six were noted as having been taken during previous studies. The remaining five species, (Alabama shad, *Alosa alabamae,* smallmouth buffalo, *Ictiobus bubalus,* tadpole madtom, *Noturus gyrinus,* bantam sunfish, *Lepomis symmetricus,* and white crappie, *Pomoxis annularis*) as well as those collected only in marsh habitats, are freshwater-oriented species. Of the 20 most abundant species listed by Thompson and Verret for their lake collections, 13 are also among the 20 most abundant species in Lake Maurepas. Thus, the fish faunas of the two lakes are quite similar, but Lake Pontchartrain has a preponderance of marine species, because of its higher salinity and nearness to the Gulf of Mexico, whereas those occurring in Lake Maurepas are predominantly freshwater species.

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