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A SMALL MAMMAL TRAPPING STUDY OF THE FLOATING FRESHWATER MARSHES SURROUNDING LAKE BOEUF, LOUISIANA

Floating marshes, known locally as "flotant" comprise about 100,000 ha of Louisiana's 1.6 million ha of marsh (O'Neil, 1949). With the exception of the game and furbearing species, very little is known about the fauna of these marshes. Since these marshes are rarely if ever inundated by high water they may have higher populations of mammals than non-floating marshes.

The objectives of this study were to document which small mammal species occur in the areas around Lake Boeuf and to determine if the species composition is different in floating marsh, floating wax myrtle thicket, spoil bank, and cypress-tupelo swamp habitats. Species composition in the Lake Boeuf marshes was also compared to other habitats in Louisiana and across the nation.

DESCRIPTION OF STUDY AREA

Three thousand ha of freshwater floating marsh surround Lake Boeuf, a 640 ha freshwater lake located 19 km east of Thibodaux, LA. (Fig. 1). Cypress-tupelo swamp encircles the marsh. Oil access canals cross the lake and marsh at several points. There are three major habitat types in the marsh surrounding Lake Boeuf: floating marsh, floating wax myrtles, and spoil banks.

Floating mats of marsh cover approximately 2700 ha peripheral to the open water. The mats are 10-60 cm thick and float as much as 1.5 m above the lake bed. Maidencane (*Panicum hemitomon*) is the dominant species, comprising 70% of the total dry biomass. Marsh fern (*Thelypteris palustris*) and

royal fern (*Osmundo regalis*) account for an additional 10%, and the vines yellow cowpea (*Vigna luteola*) and tear-thumb (*Polygonum sagittatum*) produce another 5% of the total dry biomass of the plant community. Other less important yet commonly occurring species are arrowhead (*Sagittaria latifolia*), swamp loosestrife (*Decodon verticillatus*), rice cutgrass (*Leersia oryzoides*), and goldenrod (*Solidago sp.*) (Sasser et al., 1982). These floating marshes are burned in the winter on an irregular schedule.

Floating stands of wax myrtle (*Myrica cerifera*) cover 320 ha. These stands occur both as islands and as stands within the maidencane marsh, and are generally so dense that few understory plants grow.

The lake and marsh are crossed by 41 km of oil access canals. These canals have spoil banks along one or both sides. The banks are not floating and may be either submerged or up to 0.5 m above the level of the marsh. They average 4-5 m wide and support dense stands of black willow (*Salix nigra*) and blackberry

Figure 1. Location of study area.

(*Rubus* sp.).

A mature cypress-tupelo swamp surrounds the entire lake and marsh. Dominant tree species are baldcypress (*Taxodium distichum*), water tupelo (*Nyssa aquatica*), and red maple (*Acer rubrum*). Up to one meter of water covers the swamp much of the year with only a few areas of high ground exposed. The areas trapped were old spoil banks approximately 8-m wide and 0.5 m above the water. Sugarberry (*Celtis laevigata*), sweetgum (*Liquidambar styraciflua*), and black willow joined cypress and tupelo as dominant species. There was no underbrush and these spoil banks were the only dry ground within sight.

METHODS AND MATERIALS

Two U-shaped transects were established in each of the floating marsh and wax myrtle habitats and two straight transects were established on the spoil banks in 1982. These transects consisted of 40 sample points, 20-m apart in the floating marsh and spoil bank and 10-m apart in the wax myrtle thickets. In 1983, two new transects of 20 points each were established in each habitat including the swamp forest which was not sampled in 1982. Three museum special snap traps were placed within 2 m of each sample point in places likely to catch mammals (Austin *et al*, 1976; Petticrew and Sadleir, 1970; Gentry *et al*, 1968). This size trap catches mammals up to the size of rats. The number of traps set daily varied from 57 to 120 per transect, due to loss, removal by raccoon (*Procyon lotor*) or nutria (*Myocastor coypus*), and available time. All traps were baited with peanut butter in 1982 and with a peanut butter, bacon grease and oatmeal mixture in 1983.

The traps were set on March 25, 1982 and they were checked and rebaited each morning for 3 days. Weather during the trapping period was overcast and rainy with temperatures ranging from 4°C to 16°C. A 15-30 kph wind blew constantly from the north and the moon was dark. In 1983, the traps were set on March 10 and checked and rebaited each morning until they were retrieved on March 13. The weather was clear and temperatures ranged from 4°C-15°C. A 30 kph wind blew from the north constantly and the moon was dark.

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RESULTS AND DISCUSSION

Table 1 lists the numbers of mammals trapped by species and habitat. All species seem to be habitat dependent. When a species was captured in two or more habitats, a chi-square test was run to determine if captures among habitats deviated from a random distribution.

Fulvous harvest mice (*Reithrodontomys fulvescens*) were captured fairly uniformly throughout the marsh, wax myrtle, and spoil bank habitats ($\chi^2 = 3.53$, NS). They were absent from the swamp transects. Chatagnier's study (1971) of small mammals in St. Martin Parish, LA found fulvous harvest mice to prefer dense dry cover. We found them to prefer dense cover but not necessarily dry.

Rice rats (*Oryzomys palustris*) were not captured in the swamp forest. Their capture rates were fairly uniform in the floating marsh and wax myrtle habitats and they seemed to prefer the spoil banks ($\chi^2 = 7.76$, $p < .05$). Chatagnier (1971) again found similar results. Rice rats could survive in very wet conditions but needed thick cover, shunned wooded areas, and preferred dryer areas.

House mice (*Mus musculus*) were captured only on spoil banks and were found to be more common near oil rigs.

Table 1. Numbers of mammals trapped, and captures per 100 trap nights (CTN) by species and habitat. Species trapped were fulvous harvest mouse (FHM), rice rat (RR), house mouse (HM) and white-footed mouse (WFM).

Habitat	Floating Marsh				Wax Myrtle				Spoil Bank				Swamp				Total	Percent
Transect	1	2	3	4	1	2	3	4	1	2	3	4	1	2				
Year	82	82	83	83	82	82	83	83	82	82	83	83	83	83			total	
FHM	13	14	0	0	19	4	10	7	9	23	0	0	0	0			99	58.6
RR	2	1	7	1	0	1	5	4	6	1	11	4	0	0			43	25.4
HM	0	0	0	0	0	0	0	0	2	14	0	0	0	0			16	9.5
WFM	0	0	0	0	0	0	0	0	0	0	0	4	4	3			11	6.5
Total	15	15	7	1	19	5	15	11	17	38	11	8	4	3			169	100.0
Trap Nights	295	360	180	180	348	354	171	180	291	369	178	180	179	180			3445	
CTN	5.1	4.1	3.9	.6	5.5	1.4	8.8	6.1	5.8	10.3	6.2	4.4	2.2	1.7			4.9	

TOTALS							
No. Caught		CTN		No. Caught		CTN	
FHM	27	2.7		40	3.8	32	3.1
RR	11	1.1		10	.9	22	2.2
HM	0	0		0	0	16	1.6
WFM	0	0		0	0	4	.4
Total	38	3.7		50	4.7	74	7.3

Fourteen were caught on one transect near a rig. They were noticeably absent from one transect that had a hunting camp on it. House mice seemed to prefer dry, dense cover areas. Chatagnier (1971) placed greater emphasis on close proximity to human dwellings.

White-footed mice (*Peromyscus leucopus*) were most often captured in

the swamp ($\chi^2 = 31.75$, $p < .001$). None were caught in the marsh or wax myrtles. The only spoil bank to produce them was over one meter high with large (> 30 cm DBH) sugarberry and willow trees. This spoil bank was also the only one connected to the swamp surrounding Lake Boeuf. Chatagnier (1971) found white-footed mice associated with trees and

Table 2. Comparison of captures per 100 trapnights (CTN).

Habitat	CTN	State	Reference
Floating Marsh	3.7	LA	This study
Fresh Marsh	7.0	LA	Brown and Helm, 1978.
Lowland Grass	6.0	SC	Golley <i>et al</i> , 1965.
Aster	10.4	SC	Golley <i>et al</i> , 1965.
Grass-Forbs	12.2	SC	Golley <i>et al</i> , 1965.
Broomsedge-Forbs	7.7	SC	Golley <i>et al</i> , 1965.
Broomsedge	4.1	SC	Golley <i>et al</i> , 1965.
Pasture-Fields	6.1	LA	Chatagnier, 1971.
Wax Myrtle	4.7	LA	This study
Spoil Bank	7.3	LA	This study
Spoil Bank	27.0	LA	Brown and Helm, 1978.
Cottonwood-willow	.3	LA	Hebert, 1977.
Swamp	1.9	LA	This study
Bottomland Hardwood	2.0	LA	Hebert, 1977.
Cypress-tupelo	.2	LA	Hebert, 1977.
Swamp and Upland	8.0	NC	Pardue <i>et al</i> , 1975.
Upland Hardwood	2.4	SC	Golley <i>et al</i> , 1965.
Lowland Hardwood	4.4	SC	Golley <i>et al</i> , 1965.
Grasslands	1.5-9.7	IN	Krebs <i>et al</i> , 1971.
Farmslands	11.0	MN	Beer <i>et al</i> , 1966.
Western NC Mtns.	8.6	NC	Gentry <i>et al</i> , 1968.
Pinyon-Juniper	9.0	UT	Austin and Urness, 1976.

our study concurs.

The spoil banks produced the greatest trapping success with captures per 100 trap nights (CTN) of 7.3 and all species were present. This could be due to the edge effect. On spoil banks three diverse habitats, floating marsh, dry forest, and open water meet in a small area. The swamp produced the poorest trapping success at 1.9 CTN, possibly due to the lack of cover and the flooding water.

This is the first report of small mammal densities from floating marshes. Trapping success varied from 1.9 CTN in the swamp to 7.3 CTN on the spoil banks with an average of 4.9 CTN. The capture rates of 3.7 to 4.7 are lower than Brown (1978) found in fresh marshes in the Atchafalaya delta. The swamp habitat yielded more captures than Hebert (1977) achieved in his study of swamp forest the Atchafalaya basin. Rates over all habitats were quite similar to those Golley (1965) found in South Carolina and Chatagnier (1971) found in St. Martin Parish, LA (Table 2).

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