

Coastal Zone Management Program

September
Sweep

LOUISIANA'S 1987 BEACH CLEANUP

COASTAL ZONE
INFORMATION CENTER

Dianne M. Lindstedt
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Louisiana Geological Survey
Baton Rouge, Louisiana
1988

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SEPTEMBER SWEEP

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by

Dianne M. Lindstedt
Joseph C. Holmes, Jr.
Louisiana Geological Survey

a report to the
Coastal Management Division
Louisiana Department of Natural Resources

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1988

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FOREWORD

In 1982, people concerned about the degradation and destruction of coastal resources began what came to be known as the national Coastweek celebration. They set aside this time to learn about, and to educate others about, the nation's coastal areas and the many benefits and problems associated with these vanishing resources. The word of their good works spread across the nation, especially among environmental groups, and soon a number of other states had begun planning Coastweek activities of their own.

By 1984, Louisiana's environmental groups and state agencies, such as the Sierra Club and the Department of Natural Resources' coastal zone management program, had begun a series of educational programs and publications inspired by Coastweek. At a Sierra Club meeting in New Orleans in September 1985, with that year's official Coastweek activities about a month away, someone suggested, "We should do something to celebrate Coastweek! Let's have a beach cleanup at Grand Isle!"

Not expecting to get into any trouble, Margie Vicknair Shoenfeld, coordinator of the Louisiana Nature and Science Center's "Recycle New Orleans" program, heard the question and volunteered that she knew several people who would likely help in such an effort. The operative word here is *volunteered*--Margie was named to head the effort.

After calling upon the resources of Recycle New Orleans, Margie contacted Calvin Fair, Executive Director of the newly formed Clean Team. Calvin put the wheels in motion in Baton Rouge and a few weeks later, at 5:30 a.m., two buses rolled out of Baton Rouge onto the highway to Grand Isle, joining another bus and a number of cars from New Orleans.

That first year the cleanup included over 125 participants who picked up 22 dump truck loads of trash from 6 miles of Grand Isle's public beaches and then relaxed with picnic lunches at Grand Isle State Park. Tommy Marullo, then mayor of Grand Isle, was so impressed he invited the group back, promising a party for the next year's participants.

In September 1986, "Mayor Tommy" made good on his promise with a shrimp boil for the more than 350 volunteers who returned for Louisiana's second annual beach cleanup at Grand Isle. During the two-day event, participants enjoyed numerous activities including workshops about coastal erosion in Louisiana, barrier islands, beach litter, and plastics pollution in the Gulf of Mexico. Villere Reggio, Rigs to Reefs Coordinator for the U.S. Department of the Interior's Minerals Management Service, and a volunteer from New Orleans, suggested that the activities be expanded to a statewide effort in 1987.

In April 1987, we accepted the challenge at the Louisiana Coastal Cleanup '87 organizational meeting. Over 60 participants gathered at the Rockefeller Refuge meeting, organized by Reggio and hosted by Cameron Parish officials. What followed, on September 19, 1987, was Louisiana's first statewide beach cleanup. Over 3,000 participants volunteered their time, effort, and services to make Louisiana's cleanup among the best in the nation and the only one we know of that was run by volunteers without direct state funding. Industries, including many oil and other offshore companies, donated staff, equipment, services, and cash to help with the massive project. Others donated food, drinks, and entertainment

as well, for the celebrations that followed all across the Louisiana Gulf Coast. We may not have the biggest cleanup in the Gulf Coast area (yet!), but we sure do throw the best parties!

This report records and analyzes the results of surveys taken during the 1987 cleanup. Although it is just a beginning, we hope it also brings an ending to the tons of trash and debris defacing our beautiful coasts and causing so much needless harm to marine life. We hope our efforts have brought more attention to the serious problems of coastal erosion; for, as we joked with some of the volunteers at the second cleanup on Grand Isle after Hurricane Juan had washed away areas we had cleaned only a year before, "If we don't work to stop coastal erosion, we won't have to drive very far to do beach cleanups!" A sad statement, that happens to be true. Help us help Louisiana. We love our state and we hope you do too--enough to do something for it.

Margie Vicknair Schenfeld

Calvin E. Fair

-- Margie M. Vicknair
Calvin E. Fair
State Coordinators 1985, 1986, 1987

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The authors thank the Coastal Management Division of Louisiana's Department of Natural Resources for providing the funding to complete this publication. Special thanks go to all the volunteers who picked up trash at the cleanup and recorded information about it, and to the beach captains who kept them organized. We also thank Bo Blackmon and Mike Liffman for reviewing the manuscript; Dean Roome and Steve Rabalais for supplying us with some of the photos; Dolores Falcon for typing the report; Elizabeth Willis and Kristin Stegall for entering all the data; Ed Koch, Ed Babin, and Matthew Armand of the LGS Cartographic Section for producing the graphics; and Jacquelyn Monday for editing the report.

Introduction

The September Sweep of the Beach, the first statewide Louisiana Coastal Cleanup, was held on September 19, 1987. Some 3300 volunteers helped "lend a hand in the sand" by removing about 200 tons of litter from beaches in Cameron, St. Mary, Terrebonne, Lafourche, Jefferson, and Plaquemines parishes.

Earlier recognition that Louisiana's beaches were littered with unsightly and often dangerous trash and debris had prompted local cleanup efforts at Grand Isle in 1985 and 1986. Texas' 1986 coastwide cleanup focused Gulfwide attention on the problem and inspired a larger project. Education efforts and an increase in public involvement resulted in Louisiana's expanded statewide effort in 1987. The cleanup, planned to coincide with the nationwide observance of "Coastweek" and on the same day as Texas' second statewide effort, afforded the opportunity to involve the public in gathering data on the composition, distribution, and hence, possible sources of litter on Louisiana's beaches (figure 1). Information gathered by the cleanup participants and compiled here provides the first statewide overview of coastal debris.

The Litter Problem

Litter (defined as any discarded manufactured object of plastic, metal, wood, glass, paper, or natural fiber) on beaches worldwide is a relatively recent phenomenon. For centuries standard practice for merchant ships has been to dispose of wastes overboard. This caused few problems in the oceans or coastal areas because of the biodegradable nature of the wastes. During the 1960s and 1970s, however, plastics and polystyrene (widely known by a trade name, Styrofoam), which may take up to 500 years to decompose, replaced much of the glass, paper, and wood formerly used as packaging. Cotton and hemp ropes, fish nets, and fishing lines were replaced by polypropylene and other durable plastic-like materials. The continued practice of overboard waste disposal by ships, the loss or disposal of synthetic netting by fishing fleets, and improper trash disposal by recreational boaters and others have contributed to the ubiquitousness of plastic debris in the world's oceans and on beaches from Louisiana to Antarctica.

In addition to being aesthetically unpleasant on a beach, marine debris, particularly that made of plastic, has had serious impacts on marine life. Photographs of seals, seabirds, marine turtles, and fish entangled in discarded fishing nets, six-pack yokes, and rope have become common in newspapers and magazines. Less graphic but of equally serious proportions (because of its greater ecological significance) is the ingestion of plastic materials by sea life. Endangered and threatened whales, sea turtles, and seabirds have been known to ingest plastics--a practice which commonly results in death. While most of the publicized evidence of marine entanglement and ingestion of plastics has come from the northwest Pacific Ocean and the Hawaiian Islands, such incidents have also occurred in the Gulf of Mexico. Since 1976, there have been eleven documented cases of entanglement of sea turtles in the Gulf; in 1984 a pygmy sperm whale which had beached itself at Galveston died as a result of ingesting plastics; in 1988 a minke whale which stranded itself at Matagorda Beach in Texas died of starvation stemming from plastics accumulated in its digestive tract.

Photo by Dean Roome



Figure 1. Volunteers cleaning Rutherford Beach.

Photo by Dean Roome



Figure 2. Debris on typical Louisiana beach.

The extent of marine litter worldwide is enormous. In 1985, Horsman estimated that at least 450,000 plastic containers were dumped daily by shipping fleets. Although this estimate is impressive, it still does not include plastic items such as packing pellets, bands, polystyrene, or six-pack rings. Horsman also estimated that commercial fishing fleets contribute about 23,000 tons of plastic packaging to worldwide litter annually.

Louisiana's coastal litter problem stems from debris washed ashore from several different sources, such as merchant ships, oil and gas platforms, fishing vessels, navy vessels, and river runoff; and from litter left on the beach by people engaged in such recreational activities as camping, fishing, and swimming. The Louisiana Geological Survey (LGS) has recently determined that from 5000 to 23,000 pieces of litter mar each mile of Louisiana beach (figure 2).

Cleanup Organization

Louisiana's statewide cleanup in 1987 was mainly a private undertaking. The state coordinators, Calvin Fair and Margie Schoenfeld, donated their time to plan, coordinate, and carry out the project. Many people contributed services, money, and supplies. (See Appendix A for a list.) Several state- and federally funded organizations, such as the LGS, the Department of Natural Resources' (DNR) Coastal Management Division (CMD), Louisiana Sea Grant at Louisiana State University (LSU), and the U.S. Minerals Management Service (MMS), contributed employee time and other resources to make the cleanup a success.

The state was divided into two areas (east and west), and then into five zones, each with designated zone coordinators (listed in Appendix B) responsible for organizing cleanup operations in their zones. The zone coordinators recruited and organized beach captains and helped recruit other volunteers. They provided the beach captains with the materials needed for a successful cleanup and data collection. They arranged for the distribution of trash bags and pickup and disposal of the collected trash. They developed communications between state coordinators and beach captains; coordinated media coverage and press releases; arranged for buses, carpools, and discounts for local lodging; and coordinated and obtained funding for the post-cleanup celebrations.

The beach captains identified and marked segments of beaches for cleanup operations, coordinated with zone coordinators, and talked to local civic and sporting groups promoting the cleanup. They made sure that volunteers had data collection materials and trash bags. They also directed volunteers to cleanup sites and worked out transportation plans and arranged for trash pickup at the sites. Beach captains advised the zone coordinator of the number of bags collected, number of volunteers, and number of miles cleaned. They also collected completed data cards and photographed the event.

The collected litter was disposed of differently in each zone. For example, in the Chandeleur zone, U.S. Fish and Wildlife Service personnel collected the bags and transported the litter for disposal. At Grand Isle, the litter was gathered by Conoco and the town of Grand Isle and transported to a Jefferson Parish landfill. In the Fourchon zone, Solid Waste Contractors of LaRose picked up the trash bags and took them to a Raceland landfill. In the Timbalier zone litter was transported by boat to trash receptacles at the Louisiana Universities Marine Consortium (LUMCON). The Office of State Parks picked up

the Acadiana zone bags and transported them to a landfill. In Cameron the litter was collected in dumpsters which were then transported to a landfill outside the parish.

Louisiana was unique in extending its cleanup to relatively inaccessible areas of the coast. Boy Scout Troop 107 from New Orleans, led by Villere Reggio, cleaned up North Breton Island with the assistance of Shell Offshore, Inc., U.S. Fish and Wildlife Service, and Kerr McGee, a week before the statewide cleanup. The Gulf Coast Conservation Association, aided by Mid-Continent Oil and Gas, Louisiana Land and Exploration, Tenneco LaTerre, Chevron, and Texaco, organized a "boat flotilla" to bring 350 volunteers to Timbalier Island and Isles Dernieres (figure 3).

Publicity was handled by the state coordinators, zone coordinators, and the beach captains. Several public service announcements on the radio, radio talk shows, newspaper stories, and television spots publicized the event a few weeks in advance. Statewide publicity was furthered by the Louisiana Sea Grant College Program and by the Coastal Management Division of DNR. They prepared and/or funded posters, flyers, public service announcements, educational materials, and workshops. Celebrations varied with zones and beaches, some with music, others with educational displays and talks. Sandwiches, crabs, shrimp, hot dogs, soft drinks, and beer were consumed statewide. Although the weather was stormy, rainy, and hot, the first statewide cleanup was a huge success. Overall 3300 volunteers cleaned about 60 miles of Louisiana beaches in two hours, filling about 16,000 bags which altogether weighed about 200 tons.

Photo by Steve Rabalais

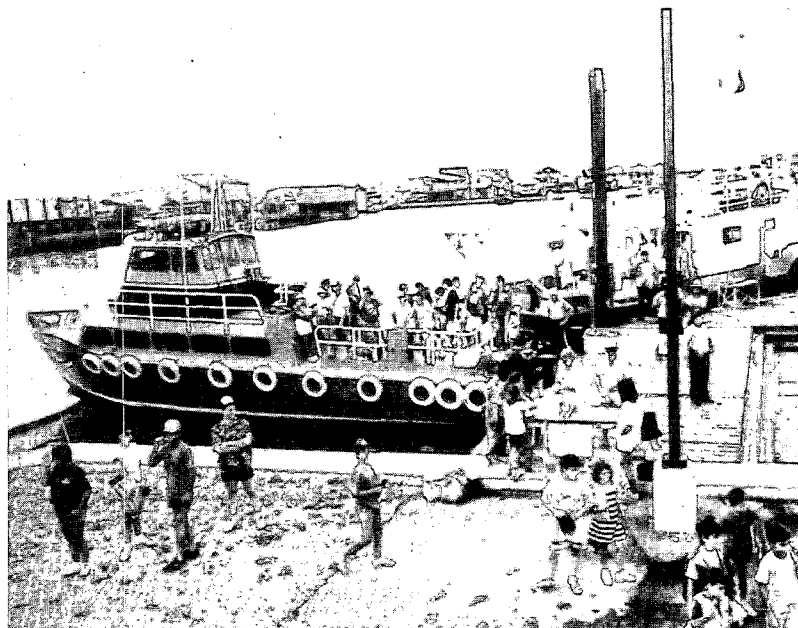


Figure 3. A boat flotilla transported cleanup volunteers to Timbalier Island and Isles Dernieres.

More important, many volunteers grew to appreciate the enormity of the problem of litter and trash disposal not only on the beaches but throughout the state. Many volunteers were amazed by what they found littering Louisiana beaches, and will think more about what happens to their own trash and make an effort to properly dispose of or recycle it.

Data Collection

Data cards originally designed for the 1986 Texas cleanup by the Center for Environmental Education, a national environmental action group, were modified for the Louisiana cleanup. The changes were based on preliminary beach surveys conducted by the LGS as part of a year-long study of trash and debris on Louisiana beaches. This study, funded by the Coastal Management Division of the Louisiana Department of Natural Resources, provided additional information about the seasonality and geographical distribution of debris on Louisiana's beaches.

The data card lists 70 items grouped primarily by composition (plastic, rubber, glass, styrofoam, metal and paper). Figure 4 is a sample data card used during the cleanup. One category, fishing gear, contains items of various composition but with a common purpose. The "total number of bags filled" box was important in extrapolating data for the entire cleanup.

Data cards were distributed to volunteers on the day of the cleanup, along with pencils and instructions on recording data and litter recognition. The cards were collected by the beach captains at the end of the day. A few completed cards were mailed in late. Of the 485 cards returned to the LGS, 412 cards representing 14 beaches contained usable data, which the LGS evaluated and analyzed.

Statewide Results

The location of the beaches is shown in figure 5: eight were within the Cameron zone, one in the Acadiana zone, two in the Timbalier zone, one in the Fourchon zone, two in the Grand Isle zone, and one in the Chandeleur zone. Table 1 summarizes the distribution of volunteers, volume of litter collected, number of bags collected, and miles of beaches cleaned. Over 60 miles of beach were cleaned by about 3300 volunteers. About one-half of the litter was collected along Cameron beaches where about one-half of the volunteers were in action.

The number of data cards completed and returned by zone and beach is listed in table 2. The greatest response came from Fourchon Beach (152), Grand Isle (76), and Timbalier Island (83). Responses were greater there because several organized groups at those beaches, such as the Louisiana Department of Environmental Quality, LSU's Department of Geography and Anthropology and the Center for Wetland Resources, the U.S. Minerals Management Service, and the Sierra Club, had been briefed about the data cards before the cleanup. In addition, a morning rain in Cameron made data collection more difficult there.

Less than 1% of all the litter was of foreign origin, but this type of litter was more interesting to the volunteers and researchers because it is a

ITEMS COLLECTED

You may find it helpful to work with a buddy as you clean the beach, one picking up trash and the other taking notes. An easy way to keep track of the items you find is to make tick marks like this:

bags <u>THH THF FII</u>	TOTAL <u>13</u>	(Please note foreign items by making an "F" as shown to the left.)
-------------------------	--------------------	--

	TOTAL NUMBER OF ITEMS		TOTAL NUMBER OF ITEMS
PLASTIC		STYROFOAM	
bags _____	_____	cups _____	_____
blue salt bags _____	_____	food trays _____	_____
caps, lids _____	_____	egg cartons _____	_____
6-pack holders _____	_____	packing _____	_____
bottles: _____	_____	pieces _____	_____
pop _____	_____		
cleaners _____	_____	METAL	
food _____	_____	cans: _____	
rope _____	_____	pop _____	_____
cups, utensils _____	_____	beer _____	_____
milk, water jugs _____	_____	food/juice _____	_____
large sheeting _____	_____	aerosol cans _____	_____
strapping bands _____	_____	bottle caps _____	_____
vegetable sacks _____	_____	pull tabs _____	_____
straws _____	_____	other cans _____	_____
"write protection" rings _____	_____	large containers _____	_____
gloves _____	_____	drums: rusty _____ new _____	_____
toys _____	_____	wire _____	_____
buckets _____	_____	pieces _____	_____
diapers _____	_____	other (specify) _____	_____
lighters _____	_____		
hardhats _____	_____	FISHING GEAR	
tobacco "cans" _____	_____	net fragments _____	_____
pipe thread protectors _____	_____	fishing line _____	_____
baskets/crates _____	_____	buoys _____	_____
filters _____	_____	net floats _____	_____
other (specify) _____	_____	light sticks _____	_____
		crab traps _____	_____
		other (specify) _____	_____
RUBBER			
tires _____	_____	PAPER	
other (specify) _____	_____	bags _____	_____
		cups _____	_____
GLASS		cartons _____	_____
bottles/jars: _____	_____	newspaper _____	_____
pop _____	_____	pieces _____	_____
beer _____	_____	other (specify) _____	_____
wine coolers _____	_____		
food _____	_____	WOOD (do not include driftwood, twigs, etc.)	
light bulbs _____	_____	pallets _____	_____
fluorescent light tubes _____	_____	crates _____	_____
pieces _____	_____	pieces _____	_____
other (specify) _____	_____	other (specify) _____	_____

TOTAL NUMBER OF BAGS FILLED _____

Figure 4. Data card used during 1987 cleanup.

BEACH CLEANUP DATA CARD

DIRECTIONS

1. Complete the information below.
2. Open card to record items collected during cleanup.
3. After cleanup, answer the questions on the back of this card and return it to your Beach Captain or mail it to LGS at the address above.

Name _____ Affiliation _____
Address _____ Zip _____ Phone _____
Occupation _____ M _____ F _____ Age _____
Today's Date: Month _____ Day _____ Year _____ Name of your Beach Captain _____
Location of beach cleaned _____ Nearest City _____
How did you hear about the cleanup? _____

SAFETY TIPS

1. Do not go near any large drums; report their location to your beach captain.
2. Wear shoes and gloves.
3. Do not handle any marine mammals or sea turtles; report their location to your beach captain.
4. Stay out of dune areas.
5. Be careful with sharp objects.
6. Do not pick up dead fish.
7. Do not pick up trash that may be harmful.
8. Do not lift anything too heavy.

COMPLETE THIS PORTION AFTER CLEANUP

Estimated miles of beach cleaned _____ Number of bags filled _____
We are particularly interested in identifying the SOURCES of marine debris. If possible, please list all items that have labels or company names. Indicate country of origin of foreign items.

EXAMPLE: Clarasol (green plastic bottle) _____

OBSERVATIONS OF STRANDED AND/OR ENTANGLED MARINE MAMMALS OR SEA TURTLES.

What was the most peculiar item you collected? _____

Comments _____

PLEASE RETURN THIS CARD TO YOUR BEACH CAPTAIN OR MAIL IT TO:

Louisiana Geological Survey
P. O. Box G, University Station
Louisiana State University
Baton Rouge, LA 70893

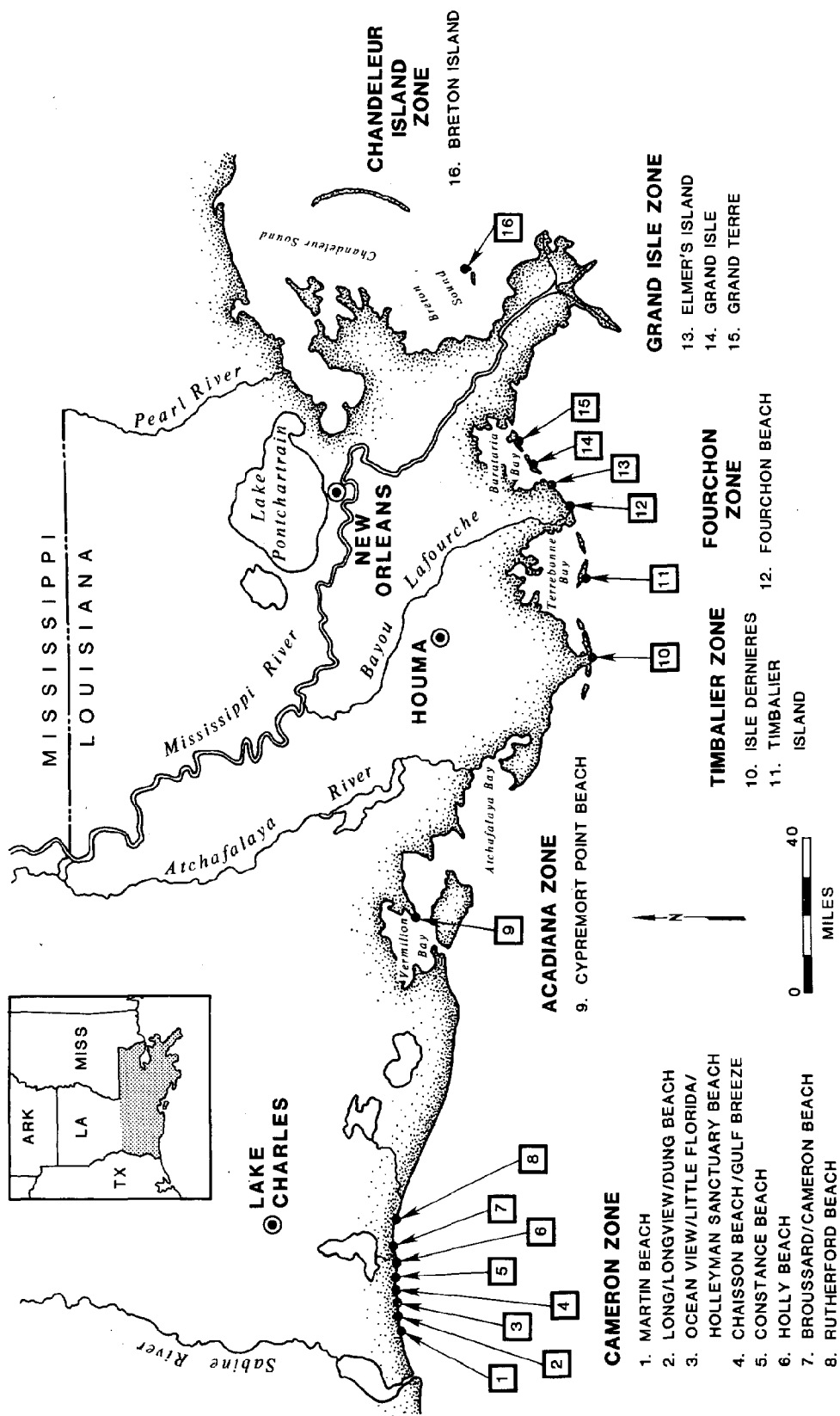


Figure 5. Louisiana coastal cleanup areas. (Elmer's Island targetted but not cleaned.)

Table 1. Summary of 1987 cleanup, by zone.

<u>Zone</u>	<u>Number of Volunteers</u>	<u>Weight (Tons)</u>	<u>Bags (Number)</u>	<u>Miles Cleaned</u>	<u>Beaches</u>
Cameron	1500+	100+	8,000	40+	Martin Beach Long Beach Ocean View Chaisson Beach Constance Beach Holly Beach Broussard Rutherford Beach
Acadiana	200+	2+	210	1	Cypremort Point Beach
Timbalier	350+	22+	1,750	12+	Isles Dernieres Timbalier Island
Fourchon	575+	13+	1,000	6+	Fourchon Beach
Grand Isle	600+	56+	4,500	8+	Grand Isle Grand Terre
Chandeleur	26	2.5	110	2	North Breton Island
	<u>3251+</u>	<u>195+</u>	<u>15,500</u>	<u>69+</u>	<u>15</u>

Table 2. Number of completed data cards collected and used for data analysis, by beach.

	<u>Collected</u>	<u>Used</u>
<u>Cameron Zone</u>		
Martin Beach	3	3
Long Beach		
Ocean View	2	2
Chaisson Beach	6	6
Constance Beach	16	16
Holly Beach	12	12
Broussard	55	33
Rutherford Beach	23	23
Unidentified	<u>14</u>	<u>14</u>
	131	109
<u>Acadiana Zone</u>		
Cypremort Point Beach	0	0
<u>Timbalier Zone</u>		
Isles Dernieres	23	19
Timbalier Island	83	59
Unidentified	<u>4</u>	<u>4</u>
	110	82
<u>Fourchon Zone</u>		
Fourchon Beach	152	143
<u>Grand Isle Zone</u>		
Grand Isle	76	62
Grand Terre	<u>7</u>	<u>7</u>
	83	69
<u>Chandeleur Zone</u>		
North Breton Island	9	9
TOTAL	485	412

novelty. Litter with foreign labels ranged from bathroom cleaners and detergent to aerosol cans and food bottles. Litter from these 17 countries was collected: Belgium, Brazil, China, France, Germany, Greece, Japan, Korea, Malaysia, Mexico, The Netherlands, Norway, Singapore, Spain, Thailand, the U.S.S.R., and Venezuela.

Virtually anything imaginable was collected during the cleanup, from air conditioning filters to Zatarain's spice bottles (see Appendix C). Some unusual items included a dog dish, hair curlers, deodorant, ear plugs, a dust pan, a flower pot, and makeup. Large objects included tires, crates, refrigerators, dryers, washing machines, a reclining chair, propane tanks, and boat hulls. Many items found were not listed on the data sheet. Some of the most common "write in" items were cigarette butts (166 recorded) and fishing tackle (137 recorded). Others were nails, cigarette packs, rubber work gloves, aluminum foil, pieces of plastic, paper plates, oil bottles, rubber hoses, and shotgun shells. Some people found useful items such as money, unopened beer and soft drinks, undamaged fishing lures, and popping corks. In addition, 42 medicine bottles and 35 syringes were recorded, along with medical vials, intravenous bags, and surgical masks. Such medical wastes have recently become a national concern.



Figure 6. Polystyrene cups are the most common type of litter on Louisiana beaches.

The ten most common items found statewide were:

- | | |
|--------------------------|-----------------------------|
| 1) Polystyrene cups | 6) Beer cans |
| 2) Polystyrene pieces | 7) Glass soft drink bottles |
| 3) Plastic caps and lids | 8) Rope |
| 4) Plastic bags | 9) Soft drink cans |
| 5) One-gallon milk jugs | 10) Polystyrene food trays |

One-half of these items are beverage-related, indicating that much of the beach litter cannot be traced to a particular group of people. Polystyrene cups were the most common item found statewide (figure 6). Although this type of cup is widely used, many oil companies use large quantities of such containers on their rigs daily. During the cleanup, volunteers from Conoco Oil Company noticed the abundance of polystyrene cups and recommended to their company that it change to paper cups, which are more biodegradable.

Statewide, plastics were the most common type of litter, comprising 42% of all the items (figure 7). Polystyrene was second, comprising 23% of the litter, followed by metal (13%), glass (12%), paper (5%), and rubber (1%). More than one-half (65%) of the litter was made of plastic or polystyrene, which may take from 400 to 500 years to decompose (figure 8).

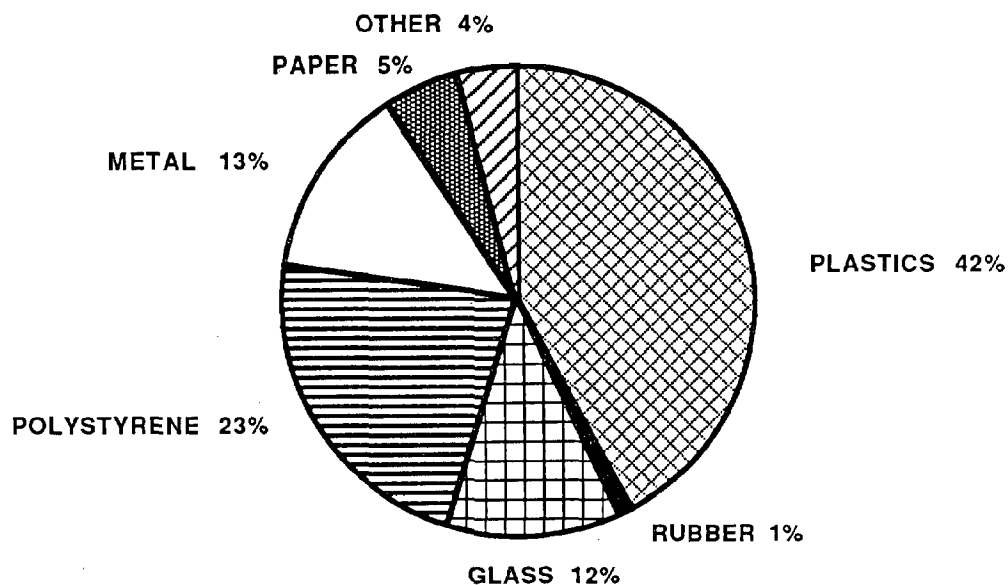


Figure 7. Material composition of litter, by number of items.

The abundant litter on Louisiana's beaches comes from many sources. Some items are attributable to specific user groups. For example, hard hats and pipe thread protectors come from the oil and gas industry; light sticks (plastic tubes containing luminescent chemicals, which are used to attract swordfish) and plastic 50-pound salt bags come from the commercial fishing industry; foreign cleaner bottles from foreign commercial fishing boats or the merchant shipping industry; beer cans and bottles from recreational fishermen and beach users. Many items, however, could originate from any or all of these sources. Placing items into categories yields an overview of litter types and identifies industries or activities which may be the sources. The categories of litter and the items included in each are listed in table 3.



Figure 8. Plastics may take 400-500 years to decompose.

Table 3. Categories of litter and items included in each.

<u>Beverage-Related</u>	
plastic soft drink bottles	plastic cups
6-pack holders	one-gallon milk jugs
straws	glass soft drink bottles
polystyrene cups	beer bottles
beer cans	wine cooler bottles
food/juice cans	bottle caps
paper cups	pull tabs
<u>Fishing Gear</u>	
salt bags	nets
plastic gloves	buoys
plastic baskets, crates	fishing line
light sticks	floats
crab traps	
<u>Cargo Wastes</u>	
sheeting	
strapping bands	
pallets	
wooden crates	
polystyrene packing	
<u>Galley Wastes</u>	
plastic bags	polystyrene food trays
plastic caps and lids	egg cartons
plastic food bottles	food and juice cans
vegetable sacks	glass food bottles
<u>Operational Wastes</u>	
rope	large metal containers
buckets	drums
filters	wire
fluorescent lights	rope
light bulbs	cleaner bottles
aerosol cans	
<u>Oil and Gas Industry</u>	
hard hats	
pipe thread protectors	
drums	
write-protect rings	
<u>Personal</u>	
tobacco cans	clothing
diapers	newspaper
lighters	toys

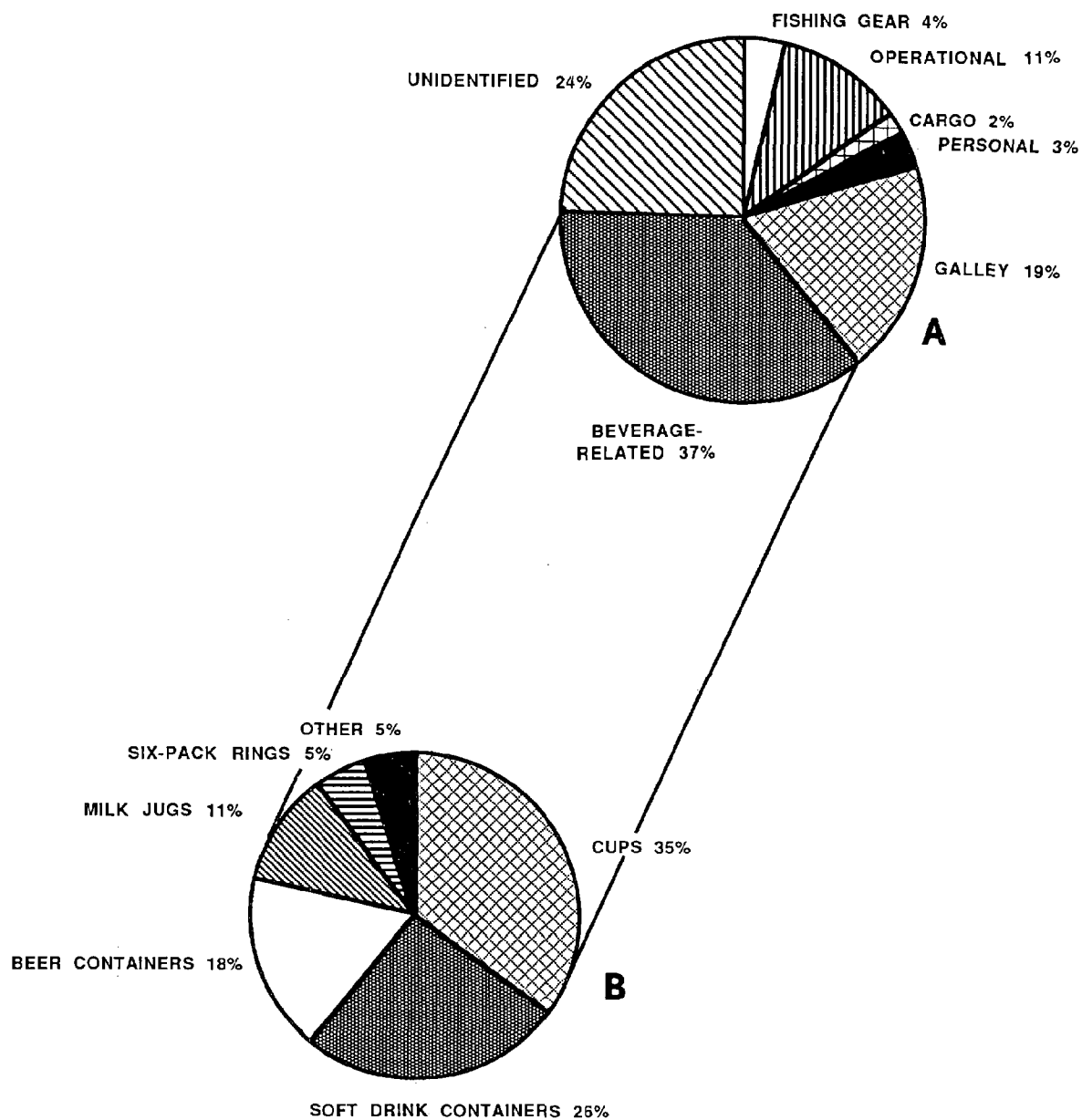


Figure 9. A. Categories of litter and their sizes, by number of items, statewide.
 B. Composition of beverage-related litter, by number of items, statewide.

Statewide, beverage-related items were the most prevalent type of litter at 37%, followed by galley wastes (19%), operational wastes (11%), fishing gear (4%), personal (3%), and cargo wastes (2%) (figure 9). Oil and gas industry wastes were included in operational wastes (figure 10). Between 2% and 4% of all the litter collected could readily be assigned to the oil and gas category. Twenty-four percent could not be classified.

Beverage-related litter was broken down into separate categories. Thirty-five percent of the beverage-related wastes were cups, most of which were polystyrene. Soft drink containers made up 26%, beer containers 18%, and one-gallon milk jugs 11% of the beverage-related litter (see figure 9). About one-fourth of the beverage litter was cans; 18% was made up of bottles.

Estimates of the total amount of litter collected during the cleanup were made by extrapolating from the number of bags accounted for on the data sheets. The total number of items collected was estimated to be 800,173. Table 4 lists the estimates for each item. Almost 85,000 polystyrene cups; 41,000 plastic bags; 27,000 soft drink cans; 33,000 beer cans; and about 311,000 plastic objects were gathered during the cleanup.

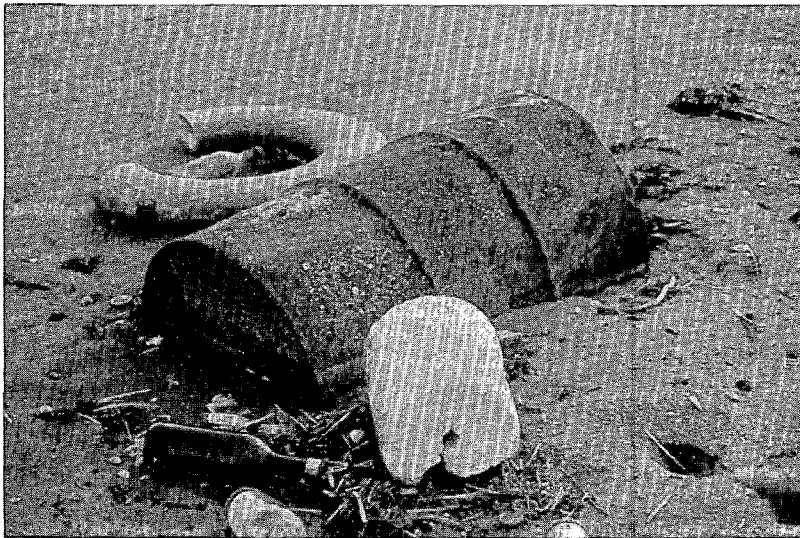


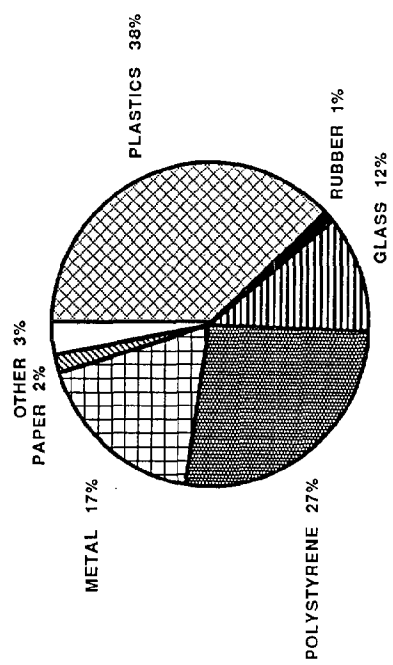
Figure 10. Operational wastes.

Table 4. Statewide estimates of litter.

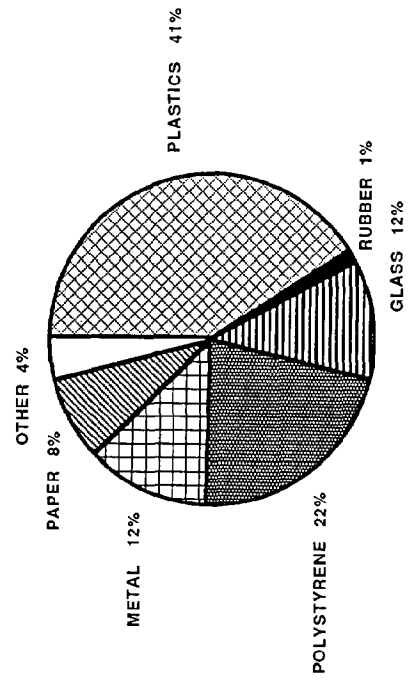
	TOTAL COUNTED	ESTIMATE FOR WHOLE STATE
FILLED BAGS	1,388	16,000
PLASTIC		
bags	3,536	40,761
blue salt bags	196	2,259
caps, lids	4,044	46,617
6-pack holders	1,172	13,510
bottles		
miscellaneous	85	980
soft drink	1,469	16,934
cleaners	1,896	21,856
food	1,073	12,369
rope	2,103	24,242
cups, utensils	1,716	19,781
milk, water jugs	2,689	30,997
large sheeting	387	4,461
strapping bands	439	5,061
vegetable sacks	114	1,314
straws	288	3,320
write-protection rings	130	1,499
gloves	339	3,908
toys	193	2,225
buckets	213	2,455
diapers	151	1,741
lighters	337	3,885
hardhats	27	311
tobacco "cans"	530	6,110
pipe thread protectors	93	1,072
baskets/crates	104	1,199
filters	147	1,695
pieces	1,261	14,536
other	<u>2,236</u>	<u>25,775</u>
TOTAL PLASTIC	26,968	310,870
RUBBER		
tires	109	1,256
other	<u>510</u>	<u>5,879</u>
TOTAL RUBBER	619	7,135
GLASS		
bottles/jars		
miscellaneous	101	1,164
soft drink	2,374	27,366
beer	1,414	16,300
wine cooler	408	4,703
food	1,000	11,527
light bulbs	726	8,369
fluorescent tubes	220	2,536
pieces	1,210	13,948
other	<u>288</u>	<u>3,320</u>
TOTAL GLASS	7,741	89,233
POLYSTYRENE		
cups	7,359	84,830
food trays	2,338	26,951
egg cartons	887	10,225
packing	655	7,550
pieces	<u>5,876</u>	<u>67,735</u>
TOTAL POLYSTYRENE	17,115	197,291

	TOTAL COUNTED	ESTIMATE FOR WHOLE STATE
METAL		
cans		
soft drink	2,341	26,986
beer	2,891	33,326
food/juice	476	5,487
aerosol	832	9,591
bottle caps	611	7,043
pull tabs	279	3,216
other cans	431	4,968
large containers	110	1,268
drums		
rusty	72	830
new	5	58
wire	220	2,536
pieces	430	4,957
other	528	6,086
TOTAL METAL	9,226	106,352
FISHING GEAR		
net fragments	267	3,078
fishing line	507	5,844
buoys	154	1,775
net floats	227	2,617
light sticks	327	3,769
crab traps	24	277
other	320	3,689
TOTAL FISHING GEAR	1,826	21,049
PAPER		
bags	395	4,553
cups	506	5,833
cartons	648	7,470
newspaper	137	1,579
pieces	1,096	12,634
other	822	9,476
TOTAL PAPER	3,604	41,545
WOOD		
pallets	42	484
crates	52	599
pieces	1,396	16,092
other	149	1,718
TOTAL WOOD	1,639	18,893
CLOTHING		
shoes/sandals	254	2,928
caps	11	127
underwear	10	115
shirts	12	138
rags	147	1,695
socks	21	242
other	82	945
TOTAL CLOTHING	537	6,190
OTHER	140	1,614
TOTAL	69,415	800,173

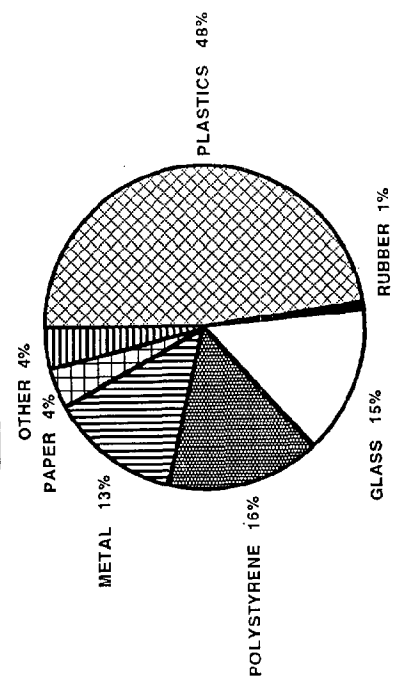
BARRIER ISLANDS



FOURCHON



CAMERON



GRAND ISLE

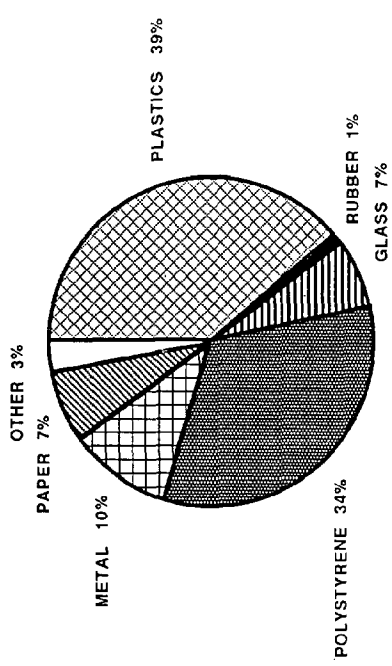


Figure 11. Material composition of litter, by number of items, in each area.

Results by Area

The beaches in the cleanup can be meaningfully divided into four groups: the Cameron beaches in the southwestern part of the state; the barrier islands, which are inaccessible except by boat and therefore have few day users; the Grand Isle beach, which is an accessible barrier island; and the mainland Fourchon beach. Comparison of the amount of litter collected in these areas is difficult, but the material composition and categories are comparable.

Table 5 compares the items collected in each area. The Cameron beaches had the highest proportion of plastics (48%) and the barrier islands had the lowest (38%). Grand Isle had the most polystyrene (34%) and Cameron the least (16%). Cameron had the highest proportion of glass (15%) and Grand Isle the lowest (7%) (figure 11).

The proportion of beverage-related litter in each area ranged from 33% at Grand Isle to 40% along the barrier islands (see figure 12). The proportion of drinks may be lower at Grand Isle and Cameron because these beaches are cleaned regularly or because the recyclable aluminum is collected. Galley wastes were fairly stable among the areas, ranging from 18% to 20%, but operational wastes ranged from 7% on Grand Isle to twice that in Cameron (15%). This may be an indication that Grand Isle is regularly cleaned or that prevailing ocean currents move some of the material westward. The barrier islands also had a high proportion of operational wastes, indicating that the source of that category of litter is probably offshore. Most of the barrier islands are west of Fourchon and Grand Isle and may also be affected by the prevailing currents.

Fishing gear constituted from 3% to 6% of the litter collected. Cameron beaches had the highest proportion of fishing gear. About one-third of the fishing gear collected there was light sticks; over 2% of all the litter in this area was light sticks, compared to less than 1% of the litter in all the other areas (figure 13).

Photo by Dean Roome



Figure 13. Wastes from commercial fishing.

Table 5. Comparison of litter in each area.

	CAMERON BEACHES	BARRIER ISLANDS	GRAND ISLE BEACHES	FOURCHON BEACH	STATE TOTAL
PLASTIC					
bags	1,334	544	521	2,209	4,608
blue salt bags	105	56	49	102	312
caps, lids	1,429	1,358	1,286	970	5,043
6-pack holders	777	207	248	493	1,725
bottles					
miscellaneous	14	54	4	31	103
soft drink	619	382	193	813	2,007
cleaners	789	845	226	662	2,522
food	581	428	122	383	1,514
rope	1,301	528	464	770	3,063
cups, utensils	523	328	408	789	2,048
milk, water jugs	1,211	1,000	427	1,047	3,685
large sheeting	196	93	61	223	573
strapping bands	267	145	90	123	625
vegetable sacks	101	24	20	64	209
straws	195	38	80	130	443
write-protection					
rings	86	33	28	33	180
gloves	441	64	50	129	684
toys	130	45	37	59	271
buckets	165	76	36	75	352
diapers	72	14	25	110	221
lighters	202	114	89	94	499
hardhats	39	9	4	6	58
tobacco "cans"	241	195	84	164	684
pipe thread					
protector	74	38	8	40	160
baskets/crates	49	53	9	40	151
filters	94	61	26	44	225
pieces	420	287	631	348	1,686
other	872	615	345	842	2,674
TOTAL PLASTIC	12,327	7,634	5,571	10,793	36,325
RUBBER					
tires	66	11	11	81	169
other	151	147	79	267	644
TOTAL RUBBER	217	158	90	348	813
GLASS					
bottles/jars					
miscellaneous	28	74	1	29	132
soft drink	1,013	822	286	1,091	3,212
beer	553	211	268	838	1,870
wine cooler	265	134	44	133	576
food	582	470	71	253	1,376
light bulbs	547	346	120	140	1,153
fluorescent tubes	229	69	24	36	358
pieces	689	219	148	659	1,715
other	100	117	51	81	349
TOTAL GLASS	4,006	2,462	1,013	3,260	10,741
POLYSTYRENE					
cups	1,719	2,505	1,824	2,946	8,994
food trays	570	788	534	938	2,830
egg cartons	638	303	111	279	1,331
packing	189	250	185	168	792
pieces	1,067	1,627	2,438	1,755	6,887
TOTAL POLYSTYRENE	4,183	5,473	5,092	6,086	20,834

	CAMERON BEACHES	BARRIER ISLANDS	GRAND ISLE BEACHES	FOURCHON BEACH	STATE TOTAL
METAL					
cans					
soft drink	636	1,114	356	761	2,867
beer	668	1,274	543	899	3,384
food/juice	354	141	37	131	663
aerosol	485	332	92	297	1,206
bottle caps	477	109	160	157	903
pull tabs	114	14	38	173	339
other cans	331	127	49	205	712
large containers	103	22	7	57	189
drums					
rusty	44	22	11	38	115
new	1	4	1	1	7
wire	132	17	29	156	334
pieces	143	143	30	255	571
other	157	161	104	246	668
TOTAL METAL	3,645	3,480	1,457	3,376	11,958
FISHING GEAR					
net fragments	126	55	85	126	392
fishing line	173	52	215	258	698
buoys	53	91	19	48	211
net floats	95	98	46	63	302
light sticks	412	83	20	35	550
crab traps	3	6	12	7	28
other	69	70	93	142	374
TOTAL FISHING GEAR	931	455	490	679	2,555
PAPER					
bags	269	39	59	257	624
cups	219	97	112	330	758
cartons	213	91	75	481	860
newspaper	28	4	48	89	169
pieces	222	138	351	673	1,384
other	123	99	437	282	941
TOTAL PAPER	1,074	468	1,082	2,112	4,736
WOOD					
pallets	33	21	4	13	71
crates	25	22	8	14	69
pieces	597	337	323	540	1,797
other	65	39	38	62	204
TOTAL WOOD	720	419	373	629	2,141
CLOTHING					
shoes/sandals	103	72	45	135	355
caps	5	1	2	6	14
underwear	5	6	1	5	17
shirts	3	4	2	6	15
rags	72	20	17	87	196
socks	2	6	1	13	22
other	47	11	15	41	114
TOTAL CLOTHING	237	120	83	293	733
OTHER	51	32	23	57	163
TOTAL	27,391	20,701	15,274	27,633	90,999

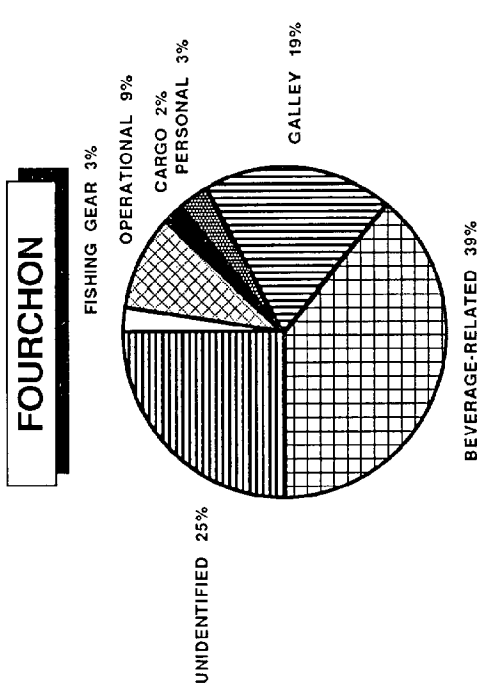
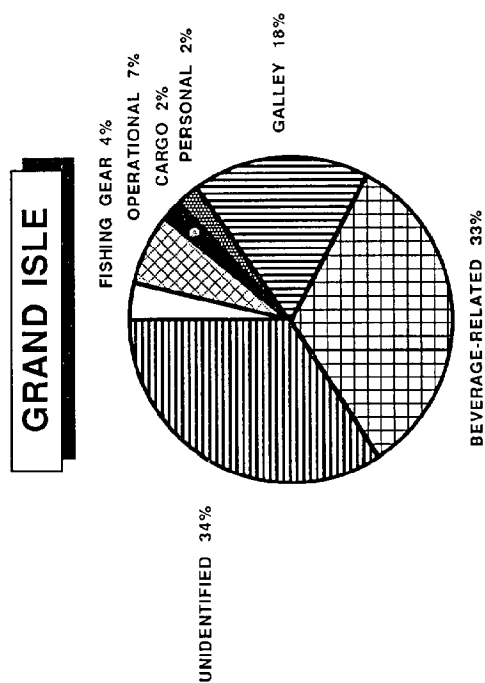
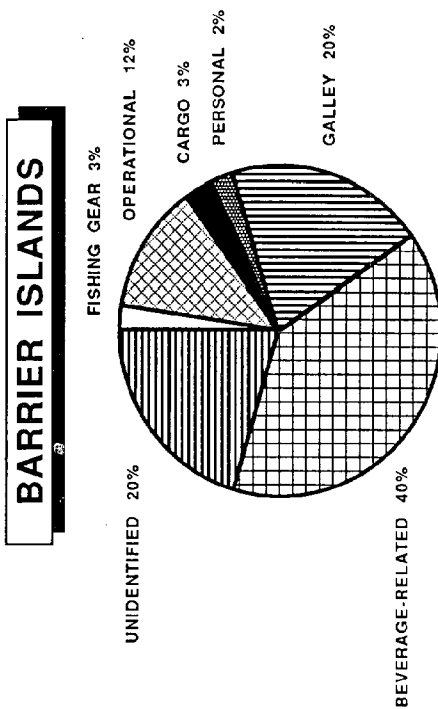
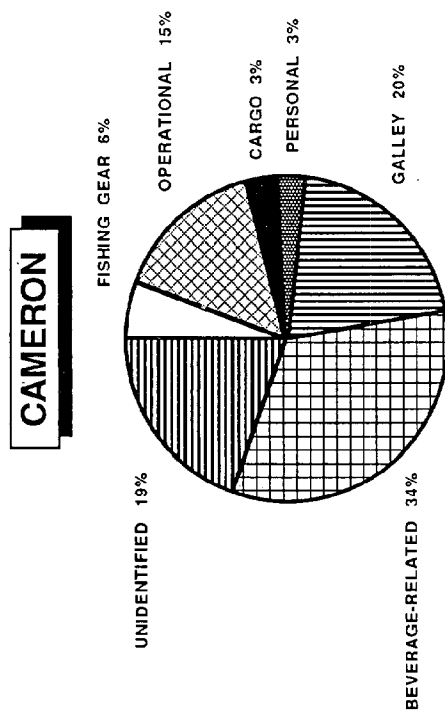


Figure 12. Proportion of items in each category of litter, by area.

Personal items, such as diapers, clothing, and tobacco cans, constituted 2%-3% of all the litter in each area. This is probably a low estimate because such objects as shampoo, deodorant, and toothpaste containers were included in other categories, such as "plastic bottles." Cargo wastes also ranged from 2% to 3% of all the litter collected.

Figure 14 illustrates the proportion of different beverage containers to all the beverage-related litter. Cups ranged from 47% of all the beverage litter at Grand Isle to 26% at Cameron. Most of these cups are polystyrene, and probably came from offshore facilities. The barrier islands had the second-highest proportion of cups (35%), further implicating an offshore source. Soft drinks were the second-most-abundant beverage container except at Cameron, where they were first. The proportions ranged from 29% at the barrier islands to 17% at Grand Isle. Beer containers ranged from 16% to 19%, while milk jugs ranged from 8% to 12%.

Table 6 lists the ten most common items in each area. Polystyrene pieces and cups followed by plastic bags and caps and lids were the most abundant items. Cameron beaches had a higher proportion of plastic cleaner bottles and a lower proportion of beer cans than the other areas. The data from each beach can be found in Appendix D.

Table 6. Ten most common items found, by area.

<u>Grand Isle</u>	<u>Fourchon</u>	<u>Barrier Islands</u>	<u>Cameron</u>
1) Polystyrene pieces	Polystyrene cups	Polystyrene cups	Polystyrene cups
2) Polystyrene cups	Plastic bags	Polystyrene pieces	Plastic caps and lids
3) Plastic caps and lids	Polystyrene pieces	Plastic caps and lids	Plastic bags
4) Plastic pieces	Glass soft drink bottles	Beer cans	Rope
5) Beer cans	One-gallon milk jugs	Soft drink cans	One-gallon milk jugs
6) Polystyrene food trays	Plastic caps and lids	One-gallon milk jugs	Polystyrene pieces
7) Plastic bags	Polystyrene food trays	Plastic cleaner bottles	Glass soft drink bottles
8) Rope	Beer cans	Glass soft drink bottles	Other plastic
9) Paper	Other plastic	Polystyrene food trays	Plastic cleaner bottles
10) One-gallon milk jugs	Beer bottles	Other plastic	Six-pack holders

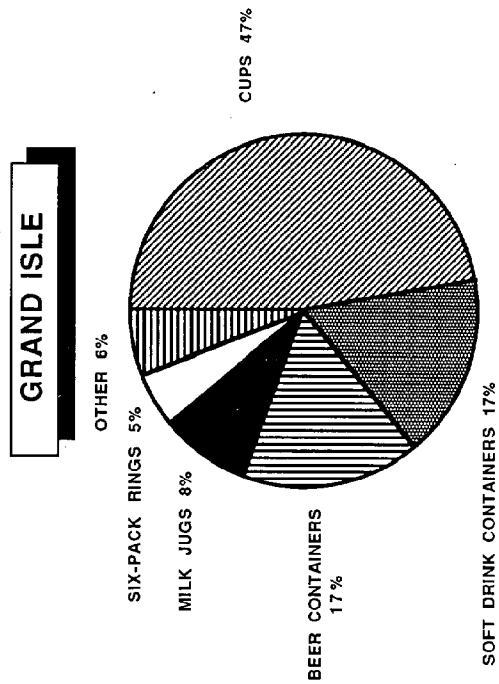
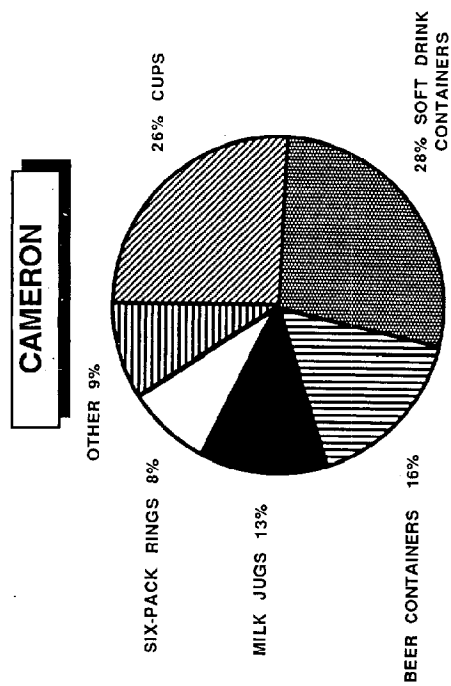
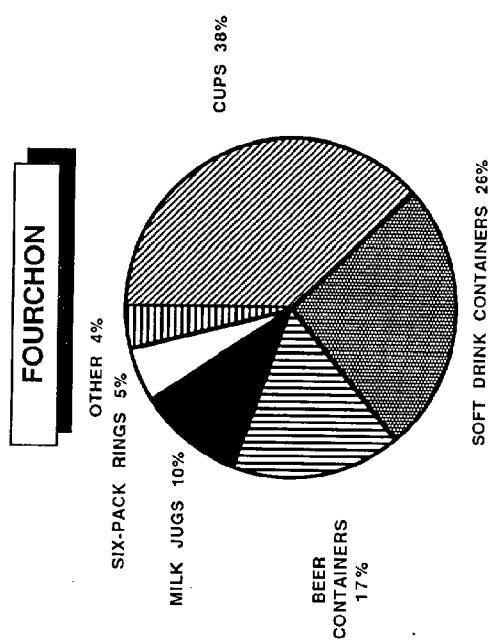
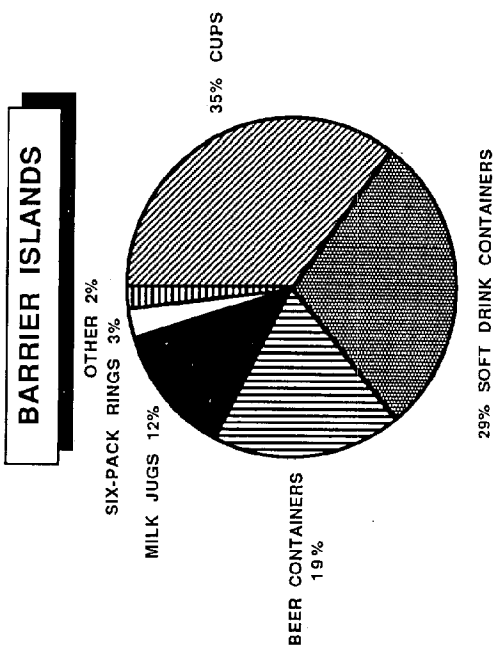


Figure 14. Composition of beverage-related litter in each area.

Extended Data Collection

Exceptionally complete information about beach litter is available for Fourchon Beach. This is because, due to the support of the Lafourche Parish Council, CMD, and the U.S. Minerals Management Service (New Orleans office), a tremendous number of well-informed volunteers participated in the September cleanup at Fourchon Beach. About 1012 bags were filled from six miles of beach and almost half of it was recorded on the data sheets. Second, MMS personnel were the first group to "adopt" a portion of a Louisiana beach for periodic cleanup. In each of their subsequent visits to Fourchon Beach during 1987 and 1988, they recorded all of the items collected along "their" beach.

The MMS personnel cleaned the beach in December 1987, April 1988, and July 1988. Table 7 summarizes the numbers of items collected during the year (a complete list of data is in Appendix E). The number of bags filled remained around 200 except in December, when only 120 bags were filled. However, during the course of the year the total number of items decreased to about one-half of the original collection. In September, MMS collected 10,128 items along their section of beach and in July 1988 they found only 4,379.

**Table 7. Summary of litter collected at
MMS adopted beach at Fourchon, 1987-1988.**

<u>Category of litter</u>	September 1987	December 1987	April 1988	July 1988
PLASTIC	3,886	2,072	2,160	1,611
RUBBER	119	24	50	21
GLASS	1,104	473	951	858
POLYSTYRENE	1,966	815	709	653
METAL	1,487	516	1,036	426
FISHING GEAR	330	114	131	63
PAPER	894	489	398	660
WOOD	169	42	191	39
CLOTHING	139	59	66	46
OTHER	<u>34</u>	<u>6</u>	<u>52</u>	<u>2</u>
TOTAL	10,128	4,610	5,744	4,379

The composition of the litter fluctuated during the year, but the proportion of polystyrene items decreased overall from 20% to 15% and glass and paper increased (from 11% to 20%, and from 9% to 15%, respectively) (table 8).

The proportion of waste types fluctuated also (table 9). During the winter and spring the proportion of drink containers decreased by almost 10%. This may be because recreational users and/or offshore workers are consuming fewer beverages then. In addition, the beach itself is probably used less by recreational users such as campers and surf fishermen during that part of the year. This last possibility is feasible because the volume of glass is low in the winter and increases in the spring and summer. Galley wastes varied from a high of 25% in December to a low in July (18%). Operational wastes were highest in the spring (11%) and lowest in the summer (5%).

Table 10 breaks down beverage-related litter for the year at the MMS-adopted beach. The proportion of polystyrene cups decreased from 23% to 13% during the year while the proportions of beer bottles, glass soft drink bottles, and plastic soft drink bottles increased. A decrease in the number of polystyrene cups could be a result of decreased use of them on platforms during the summer, or it may be that companies are switching to paper. If the latter is the case, an increase in paper cups can be anticipated.

Table 8. Material composition of litter on MMS adopted beach at Fourchon, 1987-1988.

	September 1987	December 1987	April 1988	July 1988
Plastics	41%	47%	40%	38%
Polystyrene	20%	18%	13%	15%
Glass	11%	10%	17%	20%
Rubber	1%	1%	1%	<1%
Metal	15%	11%	18%	10%
Paper	9%	11%	7%	15%
Wood	2%	1%	3%	1%
Clothing	1%	1%	1%	1%
Other	<1%	<1%	1%	<1%

**Table 9. Categories of litter and their relative sizes,
by number of items, on MMS adopted beach at Fourchon 1987-1988.**

	September 1987	December 1987	April 1988	July 1988
Beverage-related	40%	32%	34%	42%
Galley	20%	25%	19%	18%
Operational	7%	7%	11%	5%
Cargo	1%	2%	1%	1%
Personal	3%	4%	2%	3%
Fishing Gear	4%	4%	4%	3%
Unidentified	25%	26%	29%	28%

**Table 10. Composition of beverage-related litter, by number of items, on
MMS adopted beach at Fourchon, 1987-1988.**

	September 1988	December 1987	April 1988	July 1988
Polystyrene cups	23%	21%	23%	13%
Beer cans	11%	12%	14%	9%
Glass soft drink bottles	9%	11%	10%	13%
Beer bottles	9%	9%	13%	18%
Plastic soft drink bottles	9%	7%	6%	12%
Six-pack rings	6%	6%	3%	6%
Plastic cups	9%	6%	6%	9%
One-gallon milk jugs	7%	7%	8%	4%
Soft drink cans	6%	6%	6%	4%
Juice cans	1%	3%	2%	1%
Metal bottle tops	2%	2%	3%	2%
Pull tabs	3%	1%	1%	2%
Paper cups	3%	6%	3%	4%
Straws	1%	1%	1%	1%
Wine cooler bottles	1%	2%	1%	3%

Litter Laws

Although litter along Louisiana's coast is extremely prevalent, international agreements, federal laws and regulations, and state and parish laws do exist to control this type of pollution and to promote proper disposal of trash and debris in and around marine activities.

Federal dumping laws were first established in the late 1890s to prevent obstruction of navigation channels, not necessarily to prevent deleterious effects on the environment. It was common practice and, in fact, legal for ocean-going vessels to dispose of trash at sea until 1972 when the Ocean Dumping Act was adopted by Congress. However, this legislation was aimed at purposeful transportation of wastes for disposal at sea. Normal ship-generated wastes were not affected.

Disposal of trash in the ocean is a common practice worldwide. In 1975 the Center for Environmental Education estimated that 14 billion pounds of trash are disposed of at sea each year. The current practice of at-sea disposal will soon be prohibited worldwide. In November 1987, the United States ratified Annex V of the International Convention for the Prevention of Pollution from Ships Treaty. Commonly called MARPOL (for "marine pollution"), Annex V prohibits the disposal of plastics at sea, including wastes from ships and oil and gas platforms. It prohibits the disposal of certain types of floating garbage within 25 miles of the nearest coastline and food wastes, paper, glass, and metal refuse within 12 miles unless ground up, and then within 3 miles of shore. The treaty also provides for the establishment of special areas where no trash dumping will be allowed. The treaty will go into effect in late 1988.

In U.S. waters the oil and gas industry is regulated by OCS orders (issued by MMS) which prohibit the deliberate dumping of solid wastes into the marine environment (OCS Order No. 7). Another OCS Order (No. 1) requires identification numbers on materials weighing more than 40 pounds. In addition, oil companies have trained their personnel in the proper control and disposal of wastes.

While Louisiana law prohibits littering, the problem still remains. Louisiana has one of the strongest anti-litter laws in the country. Penalties can include fines up to \$3000, one-year suspension of driver's license, six months in prison, or a combination of these. Offenders may also be required to clean up sections of highways and streets as part of their penalties. State law also mandates the placement of litter receptacles at public places such as fast food restaurants, parking lots, shopping centers, beaches, service stations and numerous other locations. This law also makes it the responsibility of the owners of such public places to provide and maintain the receptacles.

Although the laws do exist, they are difficult to enforce. Periodic cleanups can only temporarily improve a locale. Awareness and changes in individual attitudes and behavior about litter are more permanent solutions. The Louisiana Litter Control and Recycling Commission has developed an Adopt A Road program and an Adopt A Beach program and has provided public information about litter and recycling. The CMD has been focusing on litter problems in the coastal zone, and developing a public campaign and information base to help curb litter along beaches, bayous, swamps, and marshes.

Adopt A Beach Program

Louisiana's Adopt A Beach Program's goal is "to rid Louisiana beaches and barrier islands of debris and litter." The program invites corporations, civic organizations, local government agencies, and individuals to adopt a minimum of one mile of beach for regular litter patrols at least three times annually.

The employees of the New Orleans-based Gulf of Mexico Office of the Minerals Management Service, U.S. Department of the Interior, along with their families, adopted 2 miles of Fourchon Beach in Lafourche Parish--the first adoption of a Louisiana beach. They have conducted quarterly cleanups and recorded the type and amounts of litter gathered during 1987-1988 beginning with the September Sweep statewide cleanup. The information collected by the MMS provided a unique opportunity to monitor rates of litter accumulation and seasonal variations of types and amounts of beach litter.

To date, nine areas have been adopted, accounting for 16 miles of beach. The beaches and the adopting organizations and individuals are listed below.

Center for Wetland Resources, Louisiana State University, Baton Rouge; 1 mile of Rutherford Beach

Chevron USA employees, Lafayette; 1 mile of Fourchon Beach

Harry and Nadine Lancon, Sulphur; 1 mile of Chaisson Beach

Louisiana Land and Exploration Co., New Orleans; 3 miles on Timbalier Island

Louisiana Office of State Parks, Baton Rouge; 1 mile at Cypremort Point Beach and 1 mile on Grand Isle

Mobile Oil, Lake Charles; 1 mile at Martin Beach

Southeast Louisiana Girl Scout Council, New Orleans; 1 mile at Fourchon Beach

Texaco, New Orleans; 4 miles on Timbalier Island

U.S. Department of the Interior, Minerals Management Service, New Orleans; 2 miles at Fourchon Beach

Sea Turtles

Another benefit of the 1987 beach cleanup was the unique opportunity it provided to have every stretch of Louisiana beach searched at the same time for stranded sea turtles. There has been an ongoing cooperative effort in Louisiana to determine the extent and density of several species of these endangered animals but, because they are rare, information about them is limited and it is difficult to survey the entire coast regularly.

The cleanup provided data about five stranded sea turtles: one unidentified turtle found in the Chandeleur zone; two Kemp's ridleys found on Grand Isle; one

hawksbill from Fourchon; and one loggerhead in the Cameron zone. Information researchers obtain from examining them will help in formulating federal and state policies for their continued protection. The cleanup also reminded many people of the rare and endangered animals that can be found in Louisiana.

Conclusion

A cleaner beach is only the temporary result of beach cleanups; their real value lies in the public awareness they foster. Cleanups are a unique educational opportunity for both children and adults. For those who participated in the 1987 cleanup, seeing the quantity of litter collected was a staggering experience. Many said they had not realized how much litter accumulated along the beaches. Some questioned why "somebody doesn't DO something." And some found that they could do something by becoming more aware of the problems of solid waste disposal and learning about recycling.

The disposal of the beach litter collected during the cleanup only transferred the problem elsewhere, as some volunteers observed (figure 15). The routine disposal of solid wastes is not only a serious statewide concern but is a tremendous national problem as well. Increasing volumes of solid waste and decreasing sanitary landfill facilities have placed financial burdens on local governments. The problem is acute in coastal Louisiana where geological and hydrological conditions preclude most sanitary landfills. Many coastal parishes must transport solid wastes to inland parish landfills, and those landfills are filling up. Since 1979, 3,500 landfills have been closed nationwide. Of the 16,000 remaining, one-third will be filled in a few years. Alternative solid waste disposal measures must be addressed now.

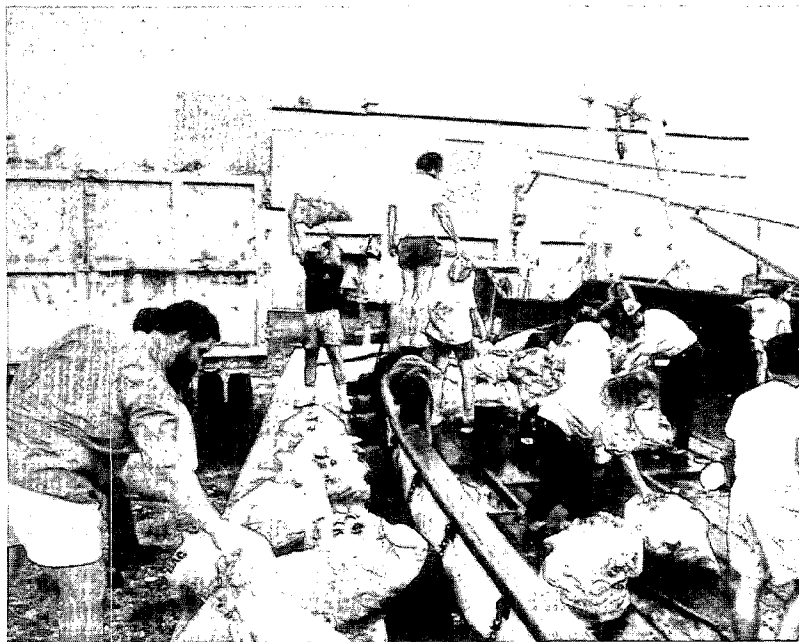


Figure 15. Once collected, beach litter must be transported for disposal.

Solutions to the problem of increasing volumes of garbage and decreasing disposal space must involve everyone. Recycling usable cans, glass, paper, and plastics and using biodegradable packaging will reduce the volumes of trash which must be disposed of and also conserve energy and natural resources. Incinerating trash at high temperatures and using this energy to generate electricity may be another way to use trash and garbage and conserve valuable landfill space. To reduce waste, some towns and counties in other states have banned the use of plastic grocery bags, while others have banned many plastic containers or require such containers to be biodegradable. Many states have passed "bottle bills" resurrecting the returnable bottle, thus reducing packaging, encouraging recycling, decreasing local litter, and decreasing solid waste.

While some of these solutions are up to local, state, and federal officials, individuals can take action to reduce the amount of trash they generate and thereby reduce litter in the local area. Some ideas include:

- Use litter receptacles at public and private facilities. When there is none, carry your trash until you can properly dispose of it.

- Form a group and adopt a beach; help with statewide and local cleanups.

- Make the most of reusable containers; recycle when possible.

- Reduce the amount of packaging you use.

- Never throw anything from your car or boat onto the road or into the water.

- When picnicking, camping, sunbathing, or fishing, leave the public area you have used cleaner than you found it.

- Cast your line and not your litter.

- Help make Louisiana a cleaner state.

Many of these suggestions may be followed with a little effort that soon becomes habit. If everyone learns to respect our natural areas, they will be clean and safe for everyone to enjoy.

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APPENDIX A

CONTRIBUTORS OF MAJOR SERVICES, FOOD, DRINKS, EQUIPMENT, and CASH FOR THE 1987 LOUISIANA COASTAL CLEANUP

STATEWIDE CONTRIBUTORS FOR THE 1987 LOUISIANA COASTAL CLEANUP

Amoco Production Company
Bobby Charles Guidry (theme song)
Cities Service Oil and Gas Corp.
Conoco, Inc.
Dixie Printing and Supply Company
Louisiana Department of Natural Resources/Coastal Management Division
Louisiana Sea Grant College Program
Louisiana State University
Marathon Oil
Maxus Energy Corp.
Mobil Oil Exploration and Producing SE, Inc.
Dr. Judith Patrick
Rollins Environmental Services
Shell Offshore, Inc.
Sonat Exploration
Tenneco
US T-Shirts

ZONE CONTRIBUTORS FOR THE 1987 LOUISIANA COASTAL CLEANUP

Cameron Zone Cleanup

Alphagraphics
American Red Cross
Audubon Society, Baton Rouge
BFI Waste Systems
Billy Navarre Chevrolet
Bolo Ice Company
Boy Scouts of America
Brown's Food Center
Cameron 4-H Clubs
Cameron Parish Assessor's Office
Cameron Parish Police Jury
Cameron Parish Recreation District #6
Cameron Parish Registrar of Voters Office
Cameron Parish Sheriff's Department
Orrie Canik
Coastal Concern Association
Creole K.C. Council
Don's Auto Service
Gulf Coast Conservation Association
Holston's Ambulance
Imperial Calcasieu Planning and Development District
Johnson Bayou Volunteer Fire Department
Jones, Jones and Alexander
Kajon

Knights of Columbus Council 8323
Lagniappe
Lake Charles Hi-Noon Lions Club
Louisiana Cooperative Extension Service
Louisiana Department of Environmental Quality
Louisiana Sea Grant College Program
Marathon Oil
McDaniels Welding Service
Mobil Oil Company
Phillips Petroleum
Pine Shadows Golf Course
Southwest Daily News
South Cameron Memorial Hospital
Tidex Inc.
Transco Exploration Company
Waste Management
West Cal-Cam Hospital

Acadiana Zone

Acadiana Bottling Company, Inc.
Acadiana Sierra Club
Boy Scouts of America
Girl Scouts of America
Paul Hardy
Keep America Beautiful Systems
Louisiana Department of Culture, Recreation and Tourism
Louisiana Department of Environmental Quality
Louisiana Department of Natural Resources
Louisiana Fishermen for Fair Laws
Louisiana Litter Control and Recycling Commission
Office of State Parks

Timbalier Zone

Acadian Ambulance Service
Black Guidry and The Emotional's
Buquet Distributing Company
Cenec Iswing Company
Chevron USA
Coca Cola Bottling Company
Teddy Duhe
Elwin Duplantis
Luke Grezaffi
Gulf Coast Construction Association
Dr. Tommy Haydel
Louisiana Department of Wildlife and Fisheries
Louisiana Land and Exploration Company
Louisiana Universities Marine Consortium (LUMCON)
Mid-Continent Oil and Gas Association
Pumpkin Air
Dr. Frederick Rau
Renco
Senator Leonard Chabert

Sun Oil Company
Tenneco Inc.
Tenneco La Terre
Tenneco Oil Company
Texaco
Two-R Drilling Company

Fourchon Beach Zone

American Legion Auxiliary
American Waste/Port-O-Let
Caillouet Land Corporation
Chevron
Chick's Bait Shop
Cub Scouts of America
Delgrandile Insurance Agency
Delta Distributing Company
Dow Chemical
Edward Wisner Donation Advisory Committee
Fourchon International Shipping Terminal, Inc.
Frank's Supermarket
Freeport McMoran
Fry Diner and Bar
G and P Service Station
Galliano IGA Supermarket
Gee Gee's Gulfside Restaurant
Golden Meadow Rotary Club
Greater Lafourche Port Commission
Griffin Marina
J. Wayne Plaisance, Inc.
John Adam Supermarket
Kentwood Water
Lafourche Ambulance District #1
Lafourche Parish Council
Lafourche Parish School Board
Lafourche Parish Recreation District
Lafourche Parish Sheriff's Office
Ledet Supermarket
Leonard Miller Allstate Insurance
Little Eagle
Loop, Inc.
Louisiana Coca Cola Bottling Co., Ltd.
Louisiana Department of Environmental Quality
Louisiana Department of Natural Resources/Coastal Management Division
Louisiana Geological Survey/Louisiana State University
Martin Texaco
Music Factory
National Guard
Nolty J. Theriot, Inc.
Robie's Sporting Goods
Shell Offshore, Inc.
Solid Waste Disposal, Inc.
Steve Shook Gulf Coast Fishing Charter
Stone Motors
Stuff Food Store

Superior Shipyard
Thoma-Sea Ice and Fuel
Valentine Paper Company

Grand Isle Zone

Archbishop Blenk High School
Joseph Arnona/Gulfstream Apartments
BFI Waste Systems
Boy Scouts of America
Charles Chips
Chevron USA
Clean City Committee of New Orleans
Conoco, Inc.
Delta Transit Company
Delta Distributing Company
Duke and BB/WWOZ Radio
Exxon
Girl Scouts of America
Hazleton Company
Jefferson Parish Council
Jefferson Parish Dept. of Public Works/Mr. Lavelle's office
Jefferson Parish President Willie Hof
Jefferson Parish School Board
Jefferson Parish Sheriff's Office
John Curtis Christian School
Kaiser Chemicals
Key Clubs of the Greater New Orleans Area
Louisiana Coca Cola Bottling Company
Louisiana Department of Environmental Quality
Louisiana Department of Wildlife and Fisheries
Louisiana Geological Survey/Louisiana State University
Office of State Parks
Orleans Audubon Society
Orleans Parish School Board
Parkview Baptist Church
Red Cross of Louisiana
Reynold's Aluminum Recycling
Shell Offshore, Inc.
Tenneco Oil Co.
Town of Grand Isle and Mayor Tommy Marullo
U.S. Senator J. Bennett Johnston
U.S. Senator John Breaux
Women for a Better Louisiana
Zapp's Potato Chips

Chandeleur Zone

Boy Scouts of America
Kerr McGee Oil and Gas
Louisiana Department of Wildlife and Fisheries
Louisiana Geological Survey/Louisiana State University
Minerals Management Service/U.S. Department of the Interior
Shell Offshore, Inc.
U.S. Fish and Wildlife Service

APPENDIX B

ORGANIZERS AND COORDINATORS OF 1987 LOUISIANA COASTAL CLEANUP

STATE COORDINATORS FOR THE 1987 LOUISIANA COASTAL CLEANUP

Margie Vicknair Schoenfeld	Calvin Fair
Coordinator	Executive Director
Louisiana Nature and Science Center's	Louisiana Clean Team
"Recycle New Orleans" project	Baton Rouge, LA
New Orleans, LA	

ORGANIZERS FOR THE 1987 LOUISIANA COASTAL CLEANUP

LSU Center for Wetland Resources/Office of Sea Grant Development
Louisiana Clean Team
Louisiana Nature and Science Center
Minerals Management Service, U.S. Department of the Interior
Sierra Club-Delta Chapter
Louisiana Geological Survey/Louisiana State University
Coastal Management Division/Louisiana Department of Natural Resources

ZONE COORDINATORS AND BEACH CAPTAINS

Cameron Zone

Coordinator: Ed Kelly
Chairman, Cameron Parish Tourist Sub-Committee

Beach Captains:

Daniel Billiot	Martin Beach
Scott Henry	Long Beach
Rodney Guilbeaux, Jr.	Constance Beach
Dean Roome	Rutherford Beach
Paul Hannen	Little Florida/Oceanview Beach
Harry Lancon	Chaisson Beach
Gerald Touchet	Holly Beach
Clifton Cabell	Holly Beach
Baton Rouge Audubon Society	Hollyman Sanctuary Beach

Acadiana Zone

Coordinator: Barbara Coltharp
Louisiana Litter and Recycling Commission

Beach Captains:

Randy Trahan	Cypremort Point Beach
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Timbalier Zone

Coordinator: Steve Rabalais
LUMCON

Beach Captain:

Mark Hilzim

Isles Dernieres/Timbalier Islands

Fourchon Zone

Coordinator and Beach Captain: Ed Fike Fourchon Beach
Lafourche Parish Council

Grand Isle Zone

Coordinator: Lydia Guillot
Delta Chapter Sierra Club

Beach Captains:

John Johnston III

Elmer's Island

Martha Brown

Grand Isle

Mark Chatry

Grand Terre

Chandeleur Zone

Coordinator and Beach Captain: Villere Reggio North Breton Island
Minerals Management Service
U.S. Department of the Interior

OTHER CONTRIBUTORS:

Mike Liffmann/Elizabeth Coleman/Sandy Lewis-Ruckstuhl: Louisiana Sea Grant and
Louisiana State University Center for Wetland Resources

C.C. Lockwood/T.H. Casanova: Louisiana Clean Team

Wayne Kewley: Conoco, Inc.

James H. "Bo" Blackmon/Peggy E. Rooney: Coastal Management Division/Department
of Natural Resources

Dianne Lindstedt/Joe Holmes: Louisiana Geological Survey/Louisiana State
University

Bob Hanna/Dugan Sabin: Department of Environmental Quality

Geography Anthropology Society: Department of Geography and Anthropology/
Louisiana State University

APPENDIX C

MISCELLANEOUS ITEMS COLLECTED STATEWIDE

Air conditioner filter	Buoy	Cigarette lighter	Old Spice	Rod holder	Stir stick
Aerosol cans (F)*	Bolts	Cigarette pack	Packing material	Rollers	Stopper cap
After-shave lotion (F)	Bottles (F)	Clay pot	Paint bottle	Roofing	Strap
Air freshener	Bottle cap (F)	Cleaners (F)	Paintbrush	Roofing shingle	String/twine
Air mattress	Bow holder	Cleaning mask	Paintbrush handle	Rubber band	Strips (rubber)
Aluminum furniture frame	Bowl	Clothes basket	Paint can	Rubber stamp	Sun tan lotion
Alcohol bottle	Boxes	Clothes pin	Paint mask	Sacks	Sun visor
Aluminum foil	Bricks	Coaxial antenna	Paint pans	Sail piece	Surgical mask
Aluminum tape	Brochure	Coat hangers	Paint roller	Salt barrel paddle	Surveyor's tape
Aluminum top	Broom	Coats	Paneling	Sample vial	Swimming mask
Aluminum tubing	Broom handle	Coleman lantern	Paper towel holder	Sand paper	Syringe
Ammonium tubing	Brushes	Cologne bottle	Pen	Sanitary napkins	Syrup container
Ammonia bottle	Bubble level	Comb	Pencil	Scientific sample bottle	Tang
Antenna	Bucket cover	Comet can	Pepto Bismol bottle	Scissors	Tally cards (pack)
Antifreeze bottle	Building felt	Compound	Personal supplies	Scoop	Tampon applicator
Aquarium plant (plastic)	Bullet	Computer reel	Pine oil	Scotch bottle (F)	Tape
Arm chair rest	Bumper guard	Condoms	Ping pong ball	Scotch tape	Tar ball
Asbestos shingle	Burlap bags	Cooking oil bottles	Pipe	Scotch tape dispenser	Tar paper
Asphalt piece	Butane tank	Cord	Pipe wrapping	Screen	Tarp
Auto parts	Butter dish	Cork	Pitcher	Screen tubing tarp	Teflon
Baby bottle	Cable	Cork rings	Plate	Screw	Telephone receiver
Baby doll arm	Cans (F)	Cosmetic bottles	Plotter pens	Screwdriver	Tennis racket
Baby nipple	Candle	Cotton	Plug	Scrub brush	Tent
Baby powder	Candy wrappers	Cough syrup	Plywood	Sealer (rubber)	Tent lining
Bag (plastic) (F)	Caps, lids (F)	Cow horns	Poison acid container	Seasoning (F)	Tent poles
Bag ties	Car belts (rubber)	Cup holder	Pole	Seat	Tent stake
Balls	Car mat	Cups, utensils (F)	Polyurethane	Shampoo bottle	Thermos jug
Balloon	Car seat	Curriers	Pop bottle/can (F)	Shelf paper	Tile
Barbecue pit	Car shift	Curtain	Pot (plastic)	Shingle	Timber
Barbecue sauce bottle	Carbon dioxide cylinder	Cylinder (paper)	Potato chip bag	Shirt sleeves	Tin can top
Barrette	Carburetor filter holder	Deodorant	Propane tank	Shot cup	Tire part
Barrel (metal)	Cardboard	Deodorizer	Propeller	Shotgun filter	Tires (F)
Baskets/crates (F)	Car-free cur? (plastic)	Detergent bottle (F)	PVC plug	Shotgun shell	Tissue
Bathroom cleaner (F)	Carpet	Dish (metal)	Radio	Shovel	Tobacco paper
Battery	Cartons (F)	Dishwashing liquid	Raft	Shrimp culling box	Toilet paper
Battery casing	Casing protector	Dog collar	Raincoat	Siding	Toilet tank
Battery cover	Cassette	Dog dish	Razor	Sign	Tool box
Battery parts (metal)	Caulking tubes	Douch dispenser	Recorder pen	Siphon	Toothbrush
Battery piece (plastic)	Cement pieces	Drill set box	Recliner	Soft drink can (F)	Toothpaste tube
Bay marker	Ceramic toilet piece	Drops	Reel	Soy drinks (F)	Torch pipe
Beads (plastic)	Cereal box liner	Drums (plastic and metal)	Refrigerator door	Spare tire cover	Touch of Butter tub
Bed rail	Chain	Drum lid	Ribbon	Spark plug	Towel
Bed springs	Chair	Duct tape	Rice bag (F)	Spike	Trash can
Beer can and bottles (F)	Chair arm	Dust pan	Rim (metal)	Splash zone	Trawl boards
Boards	Chapstick	Ear plug	Ring	Sponge	Trawl net
Boat log (book)	Child's innertube	Electric switch	Rod	Spoon	Tray (F)
Boat paddle	Cigar tips		Rod and reel	Spotlight	Tubs
Boat parts	Cigarettes		Rod handle	Spray top	Tube (F)
Boat seat	Cigarette holder			Squirt	Tube pieces
				Steel mat	TV
				Sticker backing	TV antenna
					TV back

*F indicates that at least one foreign item was collected

Electrical cord	Grease tube	Lipstick	TV dinner tray
Empty shell boxes	Grill (plastic)	Liquor bottle	TV tube
Engine part	Hair brush	Lotion bottle	Twister seals
Eyedrop bottle	Hair net	Lug wrench	Typewriter (plastic)
Eyeglass frame	Hair spray can	Lunch box	Umbrella
Eye wash station	Hammer	Lure bags	Vaccine vial
Eyeball (plastic)	Hammer handle	Lure holder	Vial
Facial cleaner (F)	Hand lotion bottle (F)	Lure wrapper	Vinyl
Fan belt	Handle	Lure/tack	Volley ball
Fan belt	Hard hat liner	Magazine	Washer/dryer
Fiberglass sack	Hatch cover	Magic marker	Watch box
Film	Headlamp	Magnetic tape	Water filter
Filter gasket	Hemp rope	Magnetic top	Wax
Filters (F)	Honey jar	Makeup bottles	Webbing
Fingernail polish	Hook	Makeup brush	Wine bottle
Fire extinguisher	Hook retriever	Masks	Wine coolers (F)
Fireworks	Hose (rubber)	Mascara	Wipers
Fishing equipment bag	Hubcap	Mask	Wire
Fishing gear	Ice bags	Masking tape	Wire brush
Fishing line	Ice chest	Mat	Wood table
Fishing pole	Ice chest parts	Matches	Wooden gig
Flag	Ice cream bowl	Mattress	Wooden blocks
Flag sticks	Ice cube tray	Medical vials	Wrapping paper
Flashlight	Ink cartridge	Medicine bottle	Yarn
Float (styrofoam)	Insecticide cans	Melted chunk (plastic)	Zatarain's bottle
Floor finish	Insulation	Milk crate	Zepi bottle water top
Fluorescent light	Insulin container	Milk rings	10-gallon cover
Flow chart pen	Iron pipe	Milk, water jug (F)	5-gallon bucket
Flower (plastic)	IV bag	Millipore filter	5-gallon can
Flower pot	Jars	Mineral oil (F)	5-gallon tops
Foam	Jugs	Money	6-pack holders (F)
Foam mattress	Jug with waste oil	Mop	
Food jars (plastic & glass) (F)	Juice bottle	Mop handle	
Food trays	Kentwood bottle	Mud flaps	
Food wrap	Key chain	Muffler	
Food/juice (F)	Kickboard	Mustard container	
Formica piece	Knife	Nails	
Freon can	Label	Navigation sign	
Fruit drink	Ladder	Necklace	
Fruit juice bottle	Linoleum	Needles	
Funnel	Large boat lamps	Net floats (F)	
Garbage can	Large motor	Newspaper	
Gas can	Lawn chair frame	Nose guard	
Gas can cover	Lawnmower blade	Nose spray	
Gas cylinder	Lead weight	Nut and bolt	
Gasket	Leather	Nylon pieces	
Gasoline jug	Lei (plastic)	O-ring	
Glass (F)	Life jacket	Odoreater	
Glasses	Life ring (styrofoam)	Off can	
Glove	Light	Oil bottle	
Glue bottle (plastic)	Light container	Oil cans	
Goggles	Light floatation	Oil drums	
Golf tee	Lighter fluid can	Oil field protector	
Graduated cylinder	Light stick	Oil filter	
Grease casing	Liner		

APPENDIX D LITTER COLLECTED AT EACH BEACH

	Fourchon	Grand Isle	Grand Terre	North Breton Island	Timbalier Island	Isles Dernieres	Unidentified (Barrister Island)	Chaisson	Constance	Unidentified (Constance/Oceanview)	Unidentified (Johnson)	Oceanview	Martin	Holly Beach	Rutherford Beach	Broussard
PLASTIC																
Bags	2,209	521	55	137	208	134	9	87	119	60	23	23	1	108	300	613
Blue salt bags	102	49	10	12	11	22	1	0	15	12	0	0	0	7	22	49
Caps, lids	970	1,286	220	80	725	281	52	165	278	155	17	32	3	70	346	383
Can, food	493	248	20	24	116	41	6	32	115	22	16	22	2	31	137	337
Bottles	31	4	7	29	3	15	0	6	0	4	0	0	0	0	4	0
miscellaneous	813	193	45	76	137	118	6	91	75	67	4	0	4	35	135	202
soft drink	662	226	89	67	434	241	14	81	73	116	14	13	1	65	90	336
Cleaners	383	122	62	58	171	126	11	80	40	53	4	4	5	40	79	276
Food	779	454	39	21	329	120	19	26	207	133	11	38	3	69	171	419
Rope	789	185	48	92	130	103	4	125	88	61	37	48	20	100	165	462
Milk, water jugs	1,047	427	90	92	600	203	15	4	128	81	0	17	1	5	187	485
Large sheeting	223	61	0	40	40	45	0	10	12	14	0	0	0	0	53	84
Strapping bands	123	90	4	6	93	38	4	22	32	29	5	9	0	16	59	95
Vegetable sacks	64	20	8	0	6	10	0	0	2	13	10	3	0	4	16	53
Straws	130	80	0	0	32	3	3	7	29	13	10	2	0	18	67	49
Shoes	53	18	2	12	12	30	1	16	5	13	5	0	2	14	39	53
Gloves	129	59	2	18	27	36	1	48	3	19	1	0	0	22	43	23
Tools	59	37	9	9	27	6	1	10	25	9	1	0	0	0	20	21
Buckets	75	36	4	10	46	14	2	16	9	11	2	5	0	4	30	88
Diapers	110	25	1	4	9	0	0	0	3	9	4	0	0	10	27	19
Lighters	94	89	23	13	55	22	1	23	31	26	7	4	2	34	28	47
Hardhats	16	4	1	0	6	2	0	4	3	5	0	0	1	10	5	20
Hardhats "cane"	4	4	5	0	13	42	10	4	47	37	2	0	0	16	14	32
Pipe/thread protectors	40	8	4	21	11	14	2	14	7	7	0	0	2	16	14	24
Baskets/crates	40	9	2	7	29	14	1	3	4	4	3	0	0	4	10	21
Filters	44	26	4	11	34	11	1	7	3	10	4	2	1	24	23	20
Pieces	348	631	46	55	165	11	10	0	162	55	0	4	2	25	124	48
Other	895	345	24	70	335	156	30	12	58	143	1	17	0	35	172	434
TOTAL PLASTIC	10,793	5,571	813	891	3,907	1,816	207	1,087	1,545	1,131	182	279	52	891	2,857	4,500
RUBBER																
Tires	81	11	0	0	4	7	0	13	12	4	6	0	0	2	2	27
Other	267	75	5	10	19	42	11	17	20	17	0	9	3	7	51	27
TOTAL RUBBER	348	90	5	10	83	49	11	30	32	21	6	9	3	9	53	54
GLASS																
Bottles/jars	29	1	3	25	21	25	0	7	4	1	0	3	0	0	11	2
miscellaneous	1,091	296	146	163	245	251	17	103	66	57	45	11	5	86	199	441
soft drink	838	268	31	36	52	84	8	31	47	32	10	18	0	105	98	212
beer	133	44	8	17	58	46	5	48	26	23	15	2	2	59	59	72
wine cooler	253	71	40	104	136	115	15	105	56	39	0	3	4	36	78	253
food	140	10	2	13	106	83	7	43	24	41	0	14	0	28	49	72
Light bulbs	36	24	3	13	26	24	4	20	21	14	0	1	1	28	49	72
Fluorescent tubes	659	148	18	6	129	54	23	76	209	124	20	15	1	43	123	278
Pieces	81	51	5	31	87	49	1	439	34	18	0	14	0	5	23	78
Other	3,260	1,013	276	478	847	791	70	439	522	352	98	82	13	362	700	1,438
TOTAL GLASS																
POLYSTYRENE																
Food trays	2,946	1,824	224	224	1,447	575	41	225	150	156	38	38	31	139	372	520
Food trays	598	524	65	65	428	175	10	52	80	61	16	13	8	92	102	195
Egg cartons	279	111	16	16	155	77	6	69	56	41	25	22	6	43	124	183
Packing	168	195	22	22	180	9	2	9	34	27	5	16	1	12	56	29
Pieces	1,755	2,438	155	155	1,025	187	60	19	286	253	7	23	1	38	202	238
TOTAL POLYSTYRENE	6,086	5,092	494	596	3,235	1,029	119	394	606	538	91	112	47	324	856	1,215

APPENDIX E
LITTER COLLECTED AT MMS ADOPTED BEACH
AT FOURCHON, 1987-1988

<u>Litter Category</u>	September 1987	December 1987	April 1988	July 1988
PLASTIC				
bags	1,016	591	534	370
blue salt bags	15	17	16	27
caps, lids	274	215	221	151
six-pack holders	227	92	63	102
bottles				
miscellaneous	17	0	0	0
soft drink	364	109	109	228
cleaners	161	54	80	36
food	156	49	94	61
rope	217	104	260	96
cups, utensils	372	93	123	160
milk, water jugs	266	107	151	82
large sheeting	67	54	14	12
strapping bands	25	22	19	15
vegetable sacks	23	23	7	8
straws	50	9	13	17
write-protect rings	6	3	4	0
gloves	36	50	62	18
toys	15	15	14	15
buckets	15	8	15	3
diapers	59	34	15	52
lighters	28	43	11	16
hardhats	2	1	1	0
tobacco "cans"	29	20	24	32
pipe thread prot.	1	5	5	0
baskets/crates	17	9	6	6
filters	12	10	12	3
pieces	173	225	63	59
other	243	110	224	42
TOTAL PLASTIC (no. of items)	3,866	2,072	2,160	1,611
RUBBER				
tires	23	9	10	2
other	96	15	40	19
TOTAL RUBBER (no. of items)	119	24	50	21
GLASS				
bottles/jars				
miscellaneous	6	4	40	7
soft drink	373	158	189	246
beer	369	132	264	321
wine cooler	38	23	23	48
food	64	45	79	47
light bulbs	27	34	35	12
fluorescent tubes	3	2	10	1
pieces	222	75	283	166
other	2	0	28	10
TOTAL GLASS (no. of items)	1,104	473	951	858
POLYSTYRENE				
cups	942	303	456	234
food trays	353	137	56	103
egg cartons	81	42	47	26
packing	50	17	15	9
pieces	540	316	135	281
TOTAL POLYSTYRENE (no. of items)	1,966	815	709	653

	September 1987	December 1987	April 1988	July 1988
METAL				
cans				
soft drink	240	82	119	82
beer	453	183	280	163
food/juice	58	43	39	18
aerosol	77	63	124	19
bottle caps	72	35	57	33
pull tabs	132	17	16	30
other cans	85	24	34	23
large containers	22	2	5	3
drums				
rusty	8	0	0	1
new	0	0	1	0
wire	81	12	74	11
pieces	124	24	102	17
other	135	31	185	26
TOTAL METAL (no. of items)	1,487	516	1,036	426
FISHING GEAR				
net fragments	71	11	26	2
fishing line	146	71	71	18
buoys	19	4	4	2
net floats	30	17	9	4
light sticks	10	4	14	2
crab traps	4	2	3	1
other	50	5	4	34
TOTAL FISHING GEAR (no. of items)	330	114	131	63
PAPER				
bags	118	74	58	118
cups	128	84	55	68
cartons	175	72	64	109
newspaper	39	10	11	13
pieces	264	165	172	172
other	170	84	38	180
TOTAL PAPER (no. of items)	894	489	398	660
WOOD				
pallets	1	1	5	0
crates	3	3	2	1
pieces	151	36	164	31
other	14	2	20	7
TOTAL WOOD (no. of items)	169	42	191	39
CLOTHING				
shoes/sandals	47	21	18	10
caps	0	2	0	1
underwear	3	1	2	0
shirts	4	3	4	2
rags	48	16	15	21
socks	5	7	11	4
other	32	9	16	8
TOTAL CLOTHING (no. of items)	139	59	66	46
OTHER				
	34	6	52	2
TOTAL	10,128	4,610	5,744	4,379

