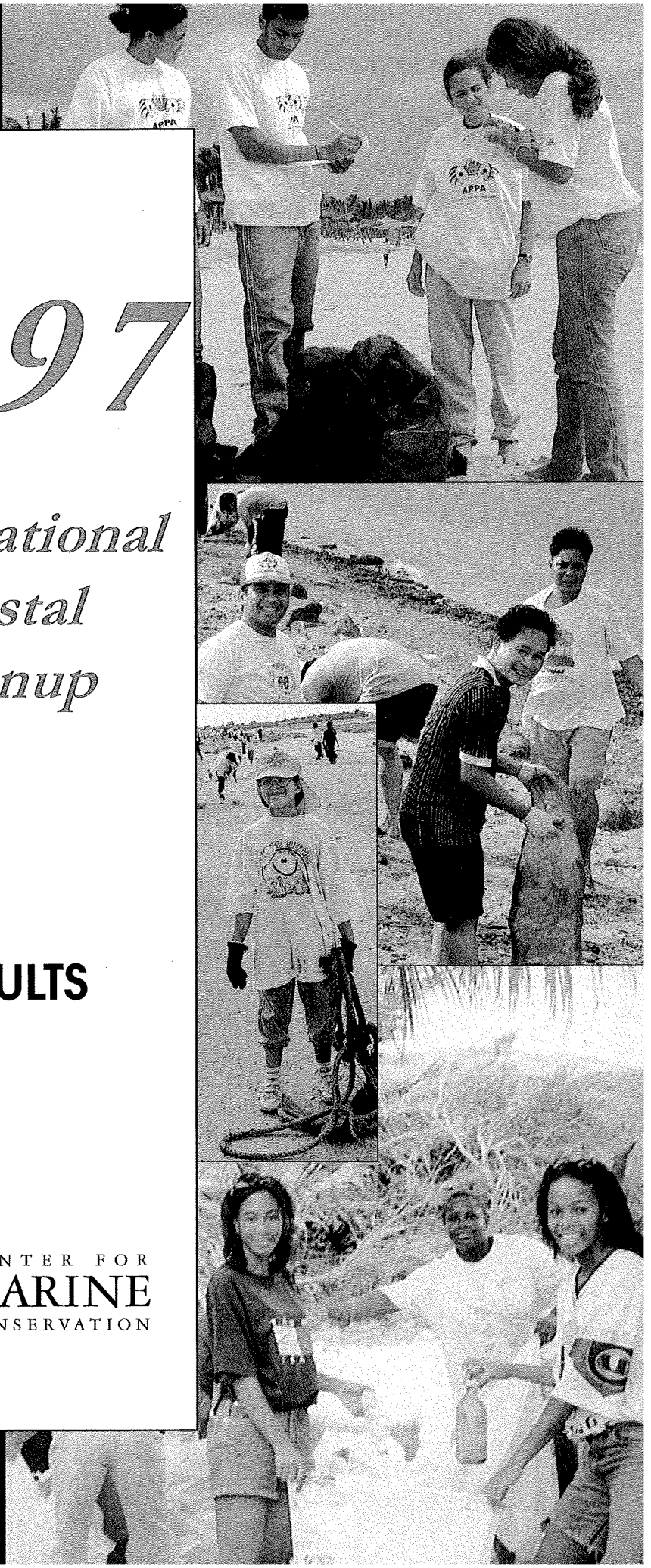
1997

International Coastal Cleanup

RESULTS



CENTER FOR MARINE CONSERVATION

1997 International Coastal Cleanup

RESULTS

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Washington, DC

The **Center for Marine Conservation** (CMC), established in 1972, is a nonprofit organization committed to protecting ocean environments and conserving the global abundance and diversity of marine life. Through science-based advocacy, research, and public education, CMC promotes informed citizen participation to reverse the degradation of our oceans.

The **International Coastal Cleanup**, part of CMC's Citizen Outreach and Monitoring Program and Clean Ocean Campaign, is supported by CMC's 120,000 members and special contributions from the following:

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The Center for Marine Conservation's International Coastal Cleanup is pleased to have the endorsement of The World Conservation Union—IUCN, and the Intergovernmental Oceanographic Commission (IOC) of the United Nations' Education, Scientific, and Cultural Organization (UNESCO).

Contents

Tables and Figures

Acknowledgments

The International Coastal Cleanup is the world's largest grassroots effort devoted to conservation of the marine environment. The Cleanup continues to exist only because of the dedication of tens of thousands of volunteers, supporters, and sponsors who give their time, resources, and energies to organize, promote, and conduct this event.

The Center for Marine Conservation would especially like to recognize the following Cleanup coordinators who worked so hard to make the 1997 International Coastal Cleanup possible. They are:

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Vanese Flood (Bermuda)
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Lynn Gape (Bahamas)
Corine Gerhardts (Netherlands Antilles)
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Dr. Rene D. Haller (Kenya)
Paul Harstad (Norway)
Wayne Hasson (Cayman Islands)
Edo Heinrich-Sanchez (Japan)
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Azusa Kojima (Japan)
David Kooistra (Netherlands Antilles)
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Deirdre Maher (Bahrain)
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Susan McCreedy (Mexico)
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Colum Muccio (Guatemala)
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Quint Newcomer (Costa Rica)
T. Nila (Malaysia)
Orville Phillip (British Virgin Islands)
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Ricky Taylor (South Africa)
Kate Thome (Singapore)
Allard van Veen (Canada)
Gina Wharwood (Trinidad and Tobago)
Jean W. Wiener (Haiti)
Ray Williams (Jamaica)
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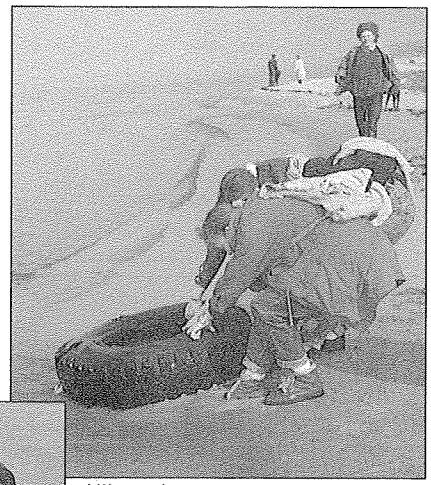
Wanda Wynne (Norway)
Miguel Zimmerman (Panama)

This report is dedicated to the 342,026 individuals
whose spirit of volunteerism and commitment to clean water
and healthy rivers, lakes, and oceans made the
1997 International Coastal Cleanup possible

Brazil



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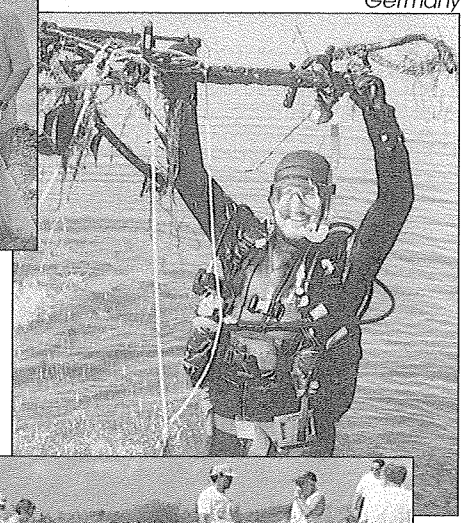

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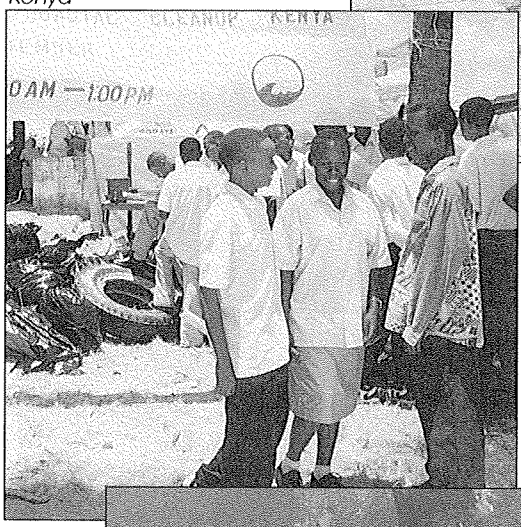
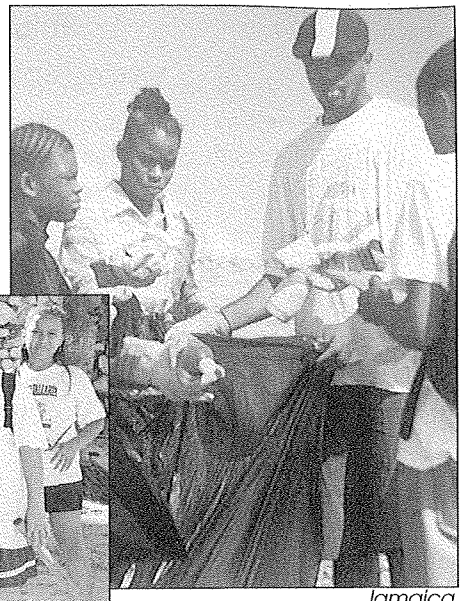


Kenya

Netherlands Antilles

Maldives

Norway



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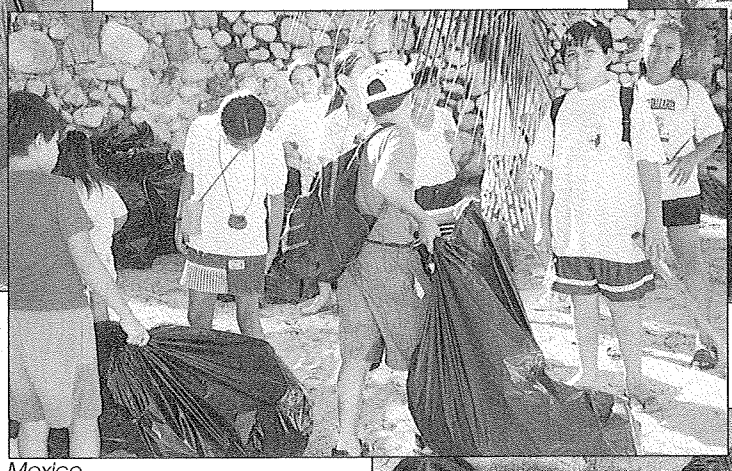

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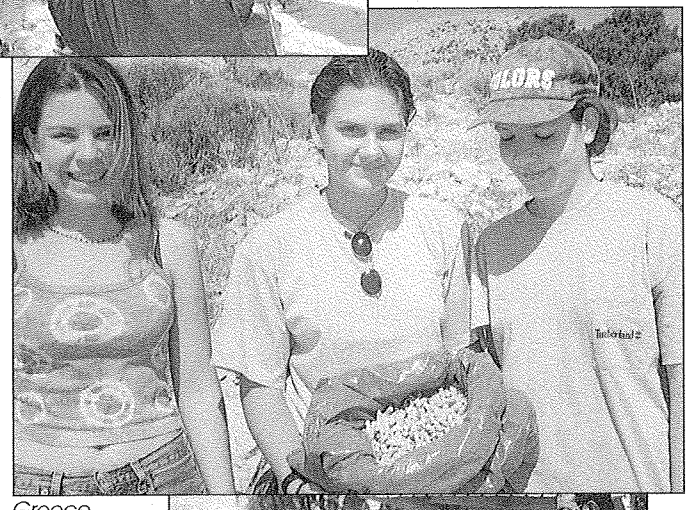

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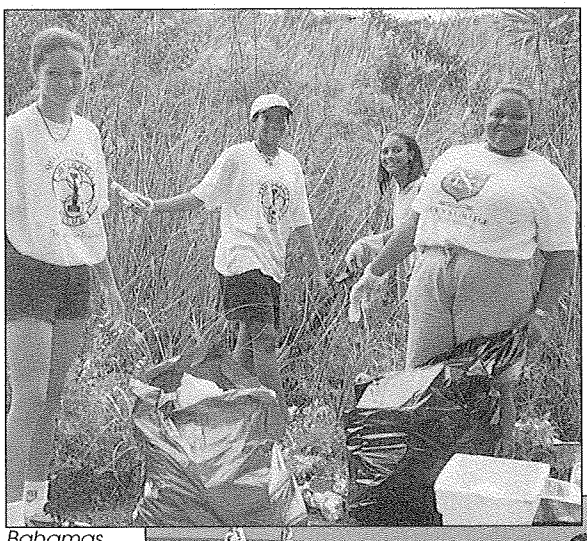
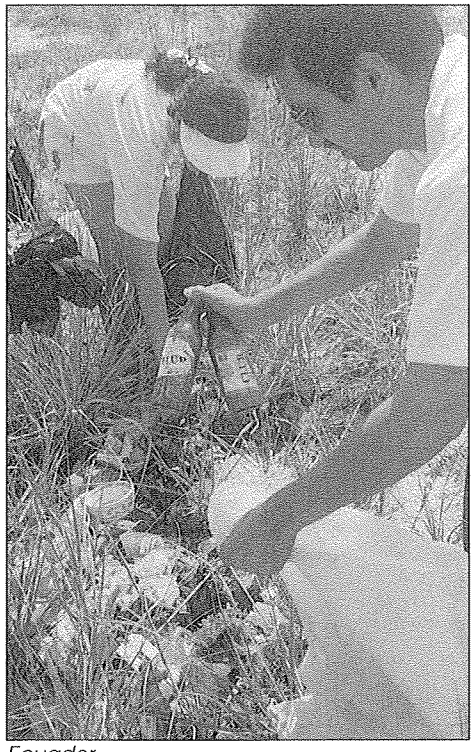


Bahamas

Italy

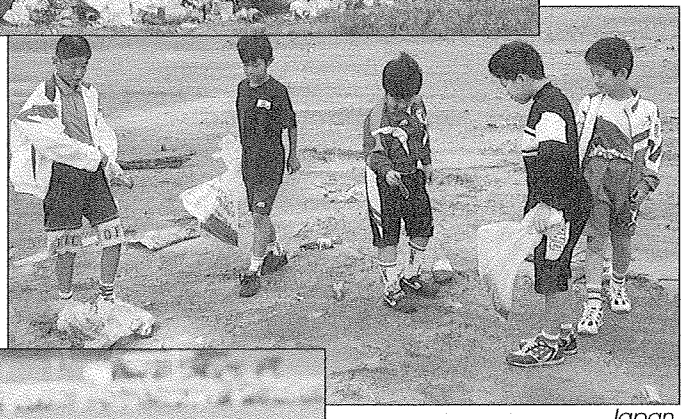
Mauritius

France



Ecuador

Slovenia



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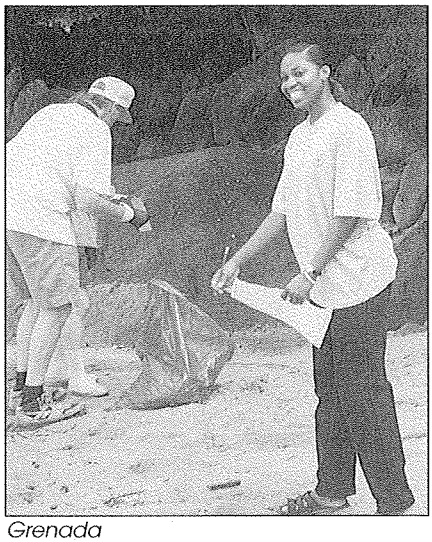
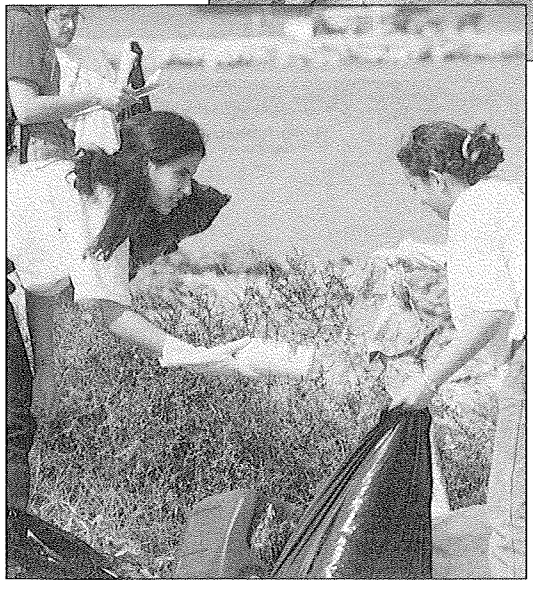


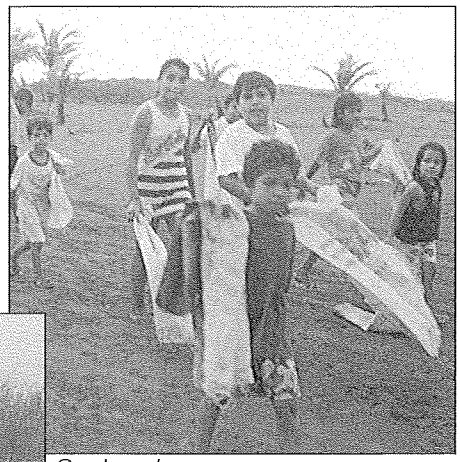
Grenada

Bahrain



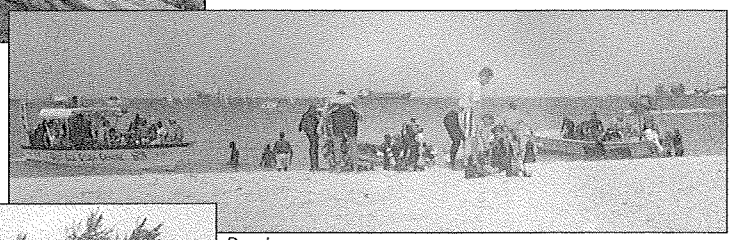
United States

Portugal



Guatemala

Canada

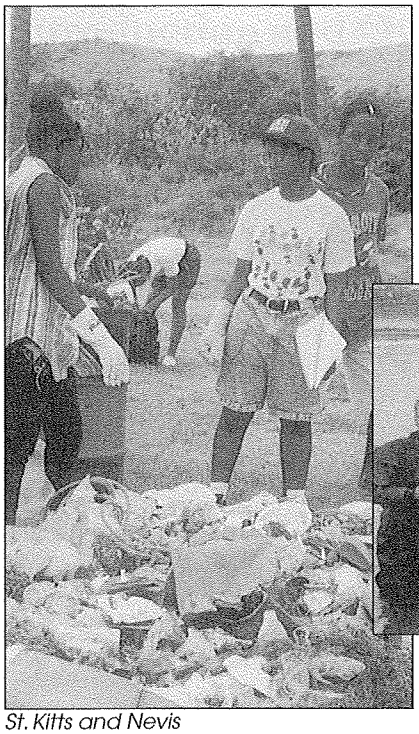


Benin

Barbados

Austria

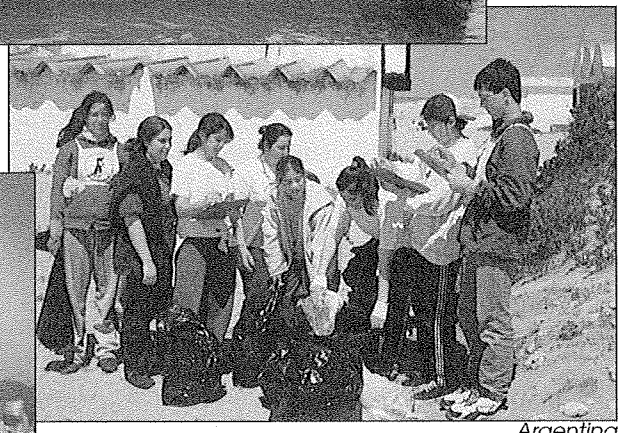
Singapore



St. Kitts and Nevis

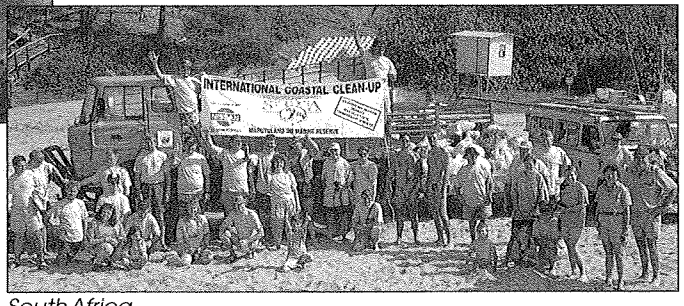
Belgium

United Kingdom



Argentina

Egypt



South Africa

Spain

New Zealand

Introduction and Overview

For more than 10 years, the **Center for Marine Conservation** (CMC) has been leading the fight against marine debris, working to clean the world's beaches, shorelines, and waterways. The Center's first cleanup took place in Texas in 1986 with 2,800 volunteers. In 1988 the Center expanded the cleanup nationwide to include every coastal state in the union; it became a North American event with the participation of Canada and Mexico in 1989. Since then, more than a million volunteers from 101 countries bordering every major body of water on our planet have taken part in the cleanup.

This environmental phenomenon is still growing. The 1997 International Coastal Cleanup was the largest cleanup ever. Total participation jumped more than 23% over 1996. The United States led in number of volunteers, with 175,006, followed by the Philippines (73,152), Venezuela, (26,525), Japan (10,583) and Panama (10,066). Total miles of beaches and waterways cleaned jumped nearly 60% over 1996, while the total pounds of trash collected increased by slightly more than 17%. ***In all, more than 340,000 people in 75 countries and sovereign territories cleaned more than 9,000 miles of 6,250,603 pounds of dangerous and unsightly trash. More than 8 million individual items were removed from coastal areas above and below the water line.*** (Tables 1 and 2)

But the goal of the Cleanup is not increased participation, nor is it to remove every last bit of trash from the shore. The goal of the International Coastal Cleanup is to trace this marine pollution problem to its source, and work to prevent it from occurring. To that end, cleanup volunteers tabulated the trash they found on specialized CMC data cards, which listed 81 possible debris items in eight major categories (plastic, foamed plastic, glass, rubber, paper, metal, wood, and cloth). The data card represents a comprehensive listing of major types of debris found worldwide.

Although 75 countries participated in the cleanup, 16 (Australia, Chile, Cyprus, El Salvador, Equatorial Guinea, Guatemala, Israel, Kiribati, Kuwait, Nepal, Palau, Panama, Seychelles, Sri Lanka, Taiwan, and United Arab Emirates) provided only the information in Table 1. They were not able to supply data for analysis. The 8,100,869 debris items from the 24,678 data cards returned by the remaining 59 countries have been analyzed and categorized to present a picture of what debris is out there and where it is coming from. The information in the following pages is the result of that analysis.

While the information in this report can help us better understand the nature of marine debris and where particular problems may lie, comparisons between sites, countries, and regions must be made cautiously. The cleanups varied, sometimes widely, in participation and scope. For example, the cleanup in Haiti collected only 81 pounds of debris, while neighboring Bahamas collected a thousand times more—8,146 pounds. But Haiti's cleanup had eight participants working only on three-tenths of a mile of beach, while the Bahamas had 455 volunteers who covered ten miles above and below the waterline. On the other hand, a cleanup site that reports a higher than average number of plastic plates, utensils, or drinking straws may indeed reveal a need for more shoreside trash bins.

Despite differences in their cleanups' size, scope, and results, every one of the 342,026 volunteers that participated in the 1997 Cleanup shares a commitment to clean shores and waterways, a belief that individuals ***can*** make a difference, and a willingness to do his or her part for future generations. To them, the Center for Marine Conservation owes its gratitude and admiration.

"I'll never litter again!"

exhausted 1997 student volunteer, Alabama, USA

Table 1a. 1997 International Coastal Cleanup: Who, How Much, and How Far: Land and Underwater Cleanups Combined

	PARTICIPANTS	WEIGHT		DISTANCE	
		Pounds	Kilograms	Miles	Kilometers
Argentina	369	4,200	1,890	6.3	10.1
Australia	556	n/r	n/r	n/r	n/r
Austria	240	4,402	2,001	n/r	n/r
Bahamas	455	8,146	3,666	10.0	16.1
Bahrain	2,350	89,760	40,400	5.6	9.0
Barbados	241	2,917	1,313	3.3	5.8
Belgium	105	2,530	1,150	n/r	n/r
Belize	412	4,050	1,823	15.5	25.0
Benin	32	59	27	1.2	2.0
Bermuda	400	28,000	12,600	8.8	14.2
Brazil	2,560	17,972	8,169	58.6	94.6
British Virgin Islands	144	667	300	4.8	7.8
Canada	1,025	36,785	16,669	31.5	51.7
Cayman Islands	72	2,800	1,260	11.0	17.7
Chile	47	1,122	510	0.3	0.5
Colombia	496	5,553	2,499	3.5	5.6
Costa Rica	139	n/r	n/r	7.4	12.0
Croatia	493	22,330	10,150	18.4	29.7
Cyprus	5,101	5,999	2,727	95.9	154.8
Dominica	475	50,510	22,730	14.5	23.3
Dominican Republic	1,545	13,404	6,032	7.7	12.3
Ecuador	1,535	17,462	7,928	17.4	28.1
Egypt	200	10,440	4,698	0.8	1.3
El Salvador	315	7,200	3,240	5.8	9.6
Equatorial Guinea	9	275	125	0.4	0.6
Finland	36	1,200	540	0.3	0.4
France	78	1,082	492	n/r	n/r
Germany	980	20,374	9,261	n/r	n/r
Greece	111	1,507	685	5.0	8.1
Grenada	250	3,063	1,378	3.0	4.8
Guatemala	1,936	20,363	9,165	3.7	6.0
Haiti	8	81	37	0.3	0.5
Indonesia	193	910	410	2.7	4.4
Ireland	22	590	266	0.3	0.5
Israel	200	5,500	2,500	3.1	5.0
Italy	1,128	22,756	10,240	n/r	n/r
Jamaica	588	18,300	8,235	8.5	13.7
Japan	10,583	88,763	40,348	33.1	53.5
Kenya	1,616	27,229	12,377	19.0	30.7
Kiribati	300	220	100	10.8	18.0
Kuwait	207	5,500	2,475	n/r	n/r
Latvia	111	1,519	691	6.5	10.5
Lithuania	973	7,700	3,500	11.8	19.0
Malaysia	523	8,234	3,713	5.9	9.4
Maldives	773	11,213	5,097	n/r	n/r
Malta	26	360	162	0.5	0.8
Mauritius	40	440	200	1.3	2.0
Mexico	4,287	92,890	42,219	68.3	110.0

	PARTICIPANTS	WEIGHT		DISTANCE	
		Pounds	Kilograms	Miles	Kilometers
Nepal	4	20	9	1.7	2.7
Netherlands Antilles	609	2,878	1,306	13.5	21.9
Netherlands	77	1,789	813	n/r	n/r
New Zealand	545	7,946	3,612	26.1	42.0
Norway	36	1,133	515	1.1	1.7
Palau	16	1,000	450	n/r	n/r
Panama	10,066	108,776	48,949	50.0	80.0
Philippines	73,152	1,585,364	720,562	577.3	931.1
Portugal	104	196	89	0.1	0.2
Saudi Arabia	551	16,489	7,495	10.1	16.3
Seychelles	26	946	430	6.8	11.0
Singapore	2,254	22	10	17.4	28.0
Slovenia	130	1,628	740	n/r	n/r
South Africa	3,243	74,709	33,959	445.8	671.0
Spain	152	2,616	1,177	n/r	n/r
Sri Lanka	600	6,000	2,724	1.0	1.6
St. Kitts & Nevis	106	2,368	1,065	5.7	9.2
Switzerland	322	5,559	2,527	n/r	n/r
Taiwan	138	853	386	0.7	1.1
Thailand	142	1,400	630	3.7	5.9
Trinidad & Tobago	270	6,083	2,765	10.5	17.0
Turkey	118	2,224	1,009	0.6	1.0
Turks and Caicos	38	1,049	472	2.0	3.2
United Arab Emirates	105	5,126	2,330	1.2	2.0
United Kingdom	3,406	55,153	25,025	105.5	170.1
United States	175,006	3,558,010	1,601,105	7,093.0	11,419.7
Venezuela	26,525	124,887	56,747	135.4	218.4
TOTALS	***342,026***	***6,250,603***	***2,822,899***	***9,022***	***14,484***

n/r = not reported

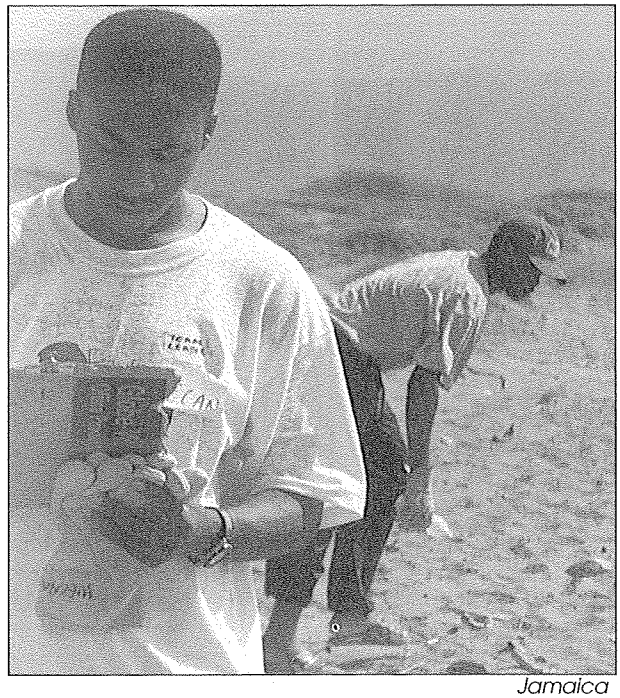
Brazil

Table 1b. 1997 International Coastal Cleanup: Who, How Much, and How Far: Land Cleanups Only

	PARTICIPANTS	WEIGHT		DISTANCE	
		Pounds	Kilograms	Miles	Kilometers
Argentina	369	4,200	1,890	6.3	10.1
Bahamas	390	7,701	3,466	7.5	12.1
Bahrain	2,350	89,760	40,400	5.6	9.0
Barbados	241	2,067	930	3.3	5.8
Belize	400	3,250	1,463	15.0	24.2
Benin	32	59	27	1.2	2.0
Bermuda	400	28,000	12,600	8.8	14.2
Brazil	2,548	17,862	8,119	58.5	94.4
British Virgin Islands	143	657	296	4.7	7.6
Canada	677	32,712	14,835	30.3	48.9
Chile	15	22	10	0.1	0.2
Colombia	144	2,275	1,024	3.0	4.8
Costa Rica	139	n/r	n/r	7.4	12.0
Croatia	493	22,330	10,150	18.4	29.7
Cyprus	5,076	5,368	2,440	94.2	152.0
Dominica	450	50,000	22,500	13.0	20.9
Dominican Republic	1,515	11,404	5,132	7.3	11.7
Ecuador	1,535	17,462	7,928	17.4	28.1
Egypt	58	520	234	0.8	1.3
El Salvador	45	300	135	0.8	1.3
Equatorial Guinea	9	275	125	0.4	0.6
Finland	36	1,200	540	0.3	0.4
Greece	75	1,364	620	2.5	4.1
Grenada	250	3,063	1,378	3.0	4.8
Guatemala	75	363	165	3.7	6.0
Haiti	8	81	37	0.3	0.5
Indonesia	98	500	225	1.5	2.4
Israel	200	5,500	2,500	3.1	5.0
Jamaica	588	18,300	8,235	8.5	13.7
Japan	9,544	87,703	39,865	22.7	36.7
Kenya	1,556	26,948	12,249	18.0	29.0
Kiribati	300	220	100	10.8	18.0
Kuwait	207	5,500	2,475	n/r	n/r
Latvia	111	1,519	691	6.5	10.5
Lithuania	973	7,700	3,500	11.8	19.0
Malaysia	395	5,342	2,412	4.5	7.2
Malta	26	360	162	0.5	0.8
Mauritius	40	440	200	1.3	2.0
Mexico	4,129	90,284	41,038	63.9	103.0
Nepal	4	20	9	1.7	2.7
Netherlands Antilles	484	2,378	1,081	12.3	19.9
New Zealand	257	4,440	2,018	15.7	25.3
Norway	14	77	35	0.9	1.4
Panama	10,046	108,376	48,769	50.0	80.0
Philippines	72,165	1,573,980	715,439	572.8	923.9
Portugal	26	n/r	n/r	0.1	0.2
Saudi Arabia	230	13,180	5,991	8.0	13.0
Seychelles	12	550	250	6.2	10.0

	PARTICIPANTS	WEIGHT		DISTANCE	
		Pounds	Kilograms	Miles	Kilometers
Singapore	2,240	n/r	n/r	17.4	28.0
South Africa	2,951	64,037	29,108	442.7	665.8
Sri Lanka	600	6,000	2,724	1.0	1.6
St. Kitts & Nevis	106	2,368	1,065	5.7	9.2
Taiwan	37	301	136	0.4	0.6
Thailand	63	835	376	2.6	4.2
Trinidad & Tobago	270	6,083	2,765	10.5	17.0
Turkey	80	1,870	850	0.5	0.8
Turks and Caicos	38	1,049	472	2.0	3.2
United Arab Emirates	10	154	70	0.3	0.5
United Kingdom	2,449	41,369	18,804	104.7	168.8
United States	169,455	2,908,251	1,308,713	6,994.0	11,260.3
Venezuela	30	900	405	3.0	4.8
TOTALS	***297,207***	***5,288,830***	***2,389,174***	***8,719***	***13,996***

n/r = not reported



Jamaica

Table 1c. 1997 International Coastal Cleanup: Who, How Much, and How Far: Underwater Cleanups Only

	PARTICIPANTS	WEIGHT		DISTANCE	
		Pounds	Kilograms	Miles	Kilometers
Australia	556	n/r	n/r	n/r	n/r
Austria	240	4,402	2,001	n/r	n/r
Bahamas	65	445	200	2.5	4.0
Barbados	n/r	850	383	n/r	n/r
Belgium	105	2,530	1,150	n/r	n/r
Belize	12	800	360	0.5	0.8
Brazil	12	110	50	0.1	0.2
British Virgin Islands	1	10	5	0.1	0.2
Canada	348	4,073	1,834	0.2	1.2
Cayman Islands	72	2,800	1,260	11.0	17.7
Chile	32	1,100	500	0.2	0.3
Colombia	352	3,278	1,475	0.5	0.8
Cyprus	25	631	287	1.7	2.8
Dominica	25	510	230	1.5	2.4
Dominican Republic	30	2,000	900	0.4	0.6
Egypt	142	9,920	4,464	n/r	n/r
El Salvador	270	6,900	3,105	5.0	8.0
France	78	1,082	492	n/r	n/r
Germany	980	20,374	9,261	n/r	n/r
Greece	36	143	65	2.5	4.0
Guatemala	1,861	20,000	9,000	n/r	n/r
Indonesia	95	410	185	1.2	2.0
Ireland	22	590	266	0.3	0.5
Italy	1,128	22,756	10,240	n/r	n/r
Japan	1,039	1,060	483	1.4	2.3
Kenya	60	281	128	1.0	1.7
Malaysia	128	2,892	1,301	1.4	2.2
Maldives	773	11,213	5,097	n/r	n/r
Mexico	158	2,606	1,181	4.4	7.0
Netherlands Antilles	125	500	225	1.2	2.0
Netherlands	77	1,789	813	n/r	n/r
New Zealand	288	3,507	1,594	10.4	16.7
Norway	22	1,056	480	0.2	0.3
Palau	16	1,000	450	n/r	n/r
Panama	20	400	180	n/r	n/r
Philippines	987	11,384	5,123	4.5	7.2
Portugal	78	196	89	n/r	n/r
Saudi Arabia	321	3,309	1,504	2.1	3.3
Seychelles	14	396	180	0.6	1.0
Singapore	14	22	10	n/r	n/r
Slovenia	130	1,628	740	n/r	n/r
South Africa	292	10,672	4,851	3.1	5.2
Spain	152	2,616	1,177	n/r	n/r
Switzerland	322	5,559	2,527	n/r	n/r
Taiwan	101	552	251	0.3	0.5
Thailand	79	565	254	1.1	1.7
Turkey	38	354	159	0.1	0.2
United Arab Emirates	95	4,972	2,260	0.9	1.5
United Kingdom	957	13,784	6,221	0.8	1.3
United States	5,551	158,160	71,172	99.0	159.4
Venezuela	84	3,352	1,508	1.0	1.6
TOTALS	***18,408***	***349,540***	***157,670***	***161***	***261***

n/r = not reported

HIGHLIGHTS

of the 1997 International Coastal Cleanup

- Car parts were found in abundance, from engines found in the Bahamas and Jamaica to batteries found in Canada, Japan, and Kenya. There was a piston in Grenada and an axle in Ireland. There was a bumper in Brazil and a dashboard in New Zealand. Car parts were too numerous to list in New Zealand and Mexico, where volunteers wrote simply "lots" and "various."

- Some finds seemed appropriate, or at least not surprising to their locations. For example, cleanup volunteers in Bahrain found crude oil and 223 tarballs, as one might expect in an oil-producing region. And, sadly, one volunteer in Croatia reported finding a piece of a bomb, "a little particle from the war."

- Other finds defied such easy explanations. Why were so many sandals (451) found in Brazil's cleanup, for example? And why were the toothbrushes found in clusters (13 in one location in Jamaica and 11 in Kenya)?

- And some items reported by 1997 cleanup volunteers defied even basic identification, including the 102 "blue foam balls" found in Canada, and the "large heavy cloth with a strong smell" reported in Bahrain.

Post-cleanup celebration, Puerto Vallarta, Mexico. The four "trash queens" are wearing outfits made of found materials, such as bleach bottles, potato chip bags, six-pack rings, etc.

Table 2. Total Number of Debris Items Collected During 1997 International Coastal Cleanups

Debris Items	TOTAL	Land	Underwater
PLASTIC:			
Food Bags/Wrappers	**393,466**	384,584	8,882
Salt Bags	**9,821**	9,628	193
Trash Bags	**102,301**	98,329	3,972
Other Bags	**136,406**	132,381	4,025
Plastic Beverage Bottles	**263,982**	251,651	12,331
Bleach Bottles	**31,694**	30,195	1,499
Milk/Water Gallon Jugs	**50,800**	48,275	2,525
Oil/Lube Bottles	**33,800**	32,635	1,165
Other Plastic Bottles	**87,391**	82,553	4,838
Buckets	**16,940**	16,121	819
Caps/Lids	**418,697**	405,250	13,447
Cigarette Butts	**1,547,346**	1,513,752	33,594
Cigarette Lighters	**47,066**	45,907	1,159
Cups/Utensils	**145,696**	139,033	6,663
Diapers	**14,396**	13,573	823
Fishing Line	**57,926**	52,752	5,174
Fishing Floats/Lures	**21,732**	20,210	1,522
Fishing Nets	**19,834**	18,352	1,482
Hard Hats	**2,320**	2,099	221
Light Sticks	**21,140**	20,677	463
Plastic Pieces	**525,972**	517,070	8,902
Pipe Thread Protectors	**9,922**	9,620	302
Rope	**121,287**	118,884	2,403
Long Sheeting	**7,868**	7,506	362
Short Sheeting	**17,787**	17,178	609
Six-Pack Holders	**27,732**	26,030	1,702
Strapping Bands	**30,405**	29,747	658
Straws	**249,202**	244,357	4,845
Syringes	**7,132**	6,908	224
Tampon Applicators	**19,811**	19,298	513
Toys	**31,563**	30,659	904
Vegetable Sacks	**12,156**	11,904	252
Write Protection Rings	**11,914**	11,633	281
Other Plastic	**189,696**	187,641	2,055
FOAMED PLASTIC:			
Buoys	**21,935**	21,327	608
Foamed Cups	**154,518**	147,480	7,038
Egg Cartons	**8,557**	8,371	186
Fast Food Containers	**51,832**	50,049	1,783
Meat Trays	**20,809**	20,532	277
Packaging Materials	**87,249**	85,280	1,969
Foamed Pieces	**454,903**	447,827	7,076
Foamed Plates	**44,250**	42,745	1,505
Other Foamed Plastic	**70,417**	69,733	684

Debris Items	TOTAL	Land	Underwater
GLASS:			
Beverage Bottles	**257,773**	236,752	21,021
Food Jars	**19,409**	17,705	1,704
Other Glass Bottles/Jars	**39,523**	37,454	2,069
Fluorescent Light Tubes	**3,784**	3,687	97
Light Bulbs	**14,340**	14,052	288
Glass Pieces	**286,746**	279,225	7,521
Other Glass	**42,034**	41,239	795
RUBBER:			
Balloons	**34,714**	33,971	743
Condoms	**12,299**	11,999	300
Rubber Gloves	**19,190**	18,825	365
Tires	**14,996**	14,197	799
Other Rubber	**58,927**	57,608	1,319
METAL:			
Bottle Caps	**179,832**	172,297	7,535
Aerosol Cans	**34,262**	32,494	1,768
Beverage Cans	**228,066**	210,269	17,797
Food Cans	**113,099**	110,188	2,911
Other Cans	**14,664**	12,475	2,189
Metal Crab/Lobster Traps	**4,037**	3,854	183
55-Gallon Rusty Drums	**5,947**	5,715	232
55-Gallon New Drums	**1,262**	1,216	46
Metal Pieces	**59,175**	56,167	3,008
Pull Tabs	**36,462**	34,655	1,807
Wire	**23,749**	22,113	1,636
Other Metal	**64,062**	61,922	2,140
PAPER:			
Bags	**67,534**	65,646	1,888
Cardboard	**48,361**	47,093	1,268
Cartons	**35,972**	34,720	1,252
Paper Cups	**67,432**	64,974	2,458
Newspapers/Magazines	**40,043**	38,230	1,813
Paper Pieces	**284,462**	276,881	7,581
Paper Plates	**28,397**	27,358	1,039
Other Paper	**66,453**	65,078	1,375
WOOD:			
Crab/Lobster Traps	**3,835**	3,765	70
Crates	**5,705**	5,520	185
Lumber Pieces	**131,631**	127,621	4,010
Pallets	**13,099**	12,803	185
Other Wood	**64,081**	63,195	886
CLOTH:			
Clothing/Pieces	**75,841**	72,244	3,597
GRAND TOTALS	**8,100,869**	**7,844,943**	**255,926**

The Most Prevalent Type of Debris on the World's Beaches and Waterways

As noted above, the CMC data card lists 81 possible debris items in eight major categories: plastic, foamed plastic, glass, rubber, metal, paper, wood, and cloth.

While the types and quantities vary from country to country and site to site, some findings are remarkable for their consistency. For example, the data from the 1997 International Coastal Cleanup reveal that, as has been the case since 1986, plastic materials are by far the most prevalent type of debris on our beaches and waterways. This is due in large part to the global dominance of plastic materials in packaging. Plastic made up 61.82% of all the debris found, making it five times as prevalent as the next most common debris type, metal (11.67%) (Figure 1).

The 1997 figure is the highest since 1991, and the latest in a five-year upward trend (see table below).

Plastic as a Percentage of all Debris Collected, 1993-1997

Year	Percentage
1993	54.00%
1994	56.97%
1995	58.82%
1996	59.54%
1997	61.82%

Although the table above may suggest more plastic is being discarded every year, given the longevity of the longevity of plastic it is more likely that a significant amount of the debris collected in 1997 was floating in our oceans, rivers, and canals for several years. And, although the International Coastal Cleanup retrieves plastic debris at the beach and from the water, it was probably not discarded there. Since December 31, 1988, dumping plastic at sea has been prohibited by Annex V of the MARPOL Treaty.[1] Although dumping at sea undoubtedly continues, research shows that 60-80% of all debris originates as trash on land.

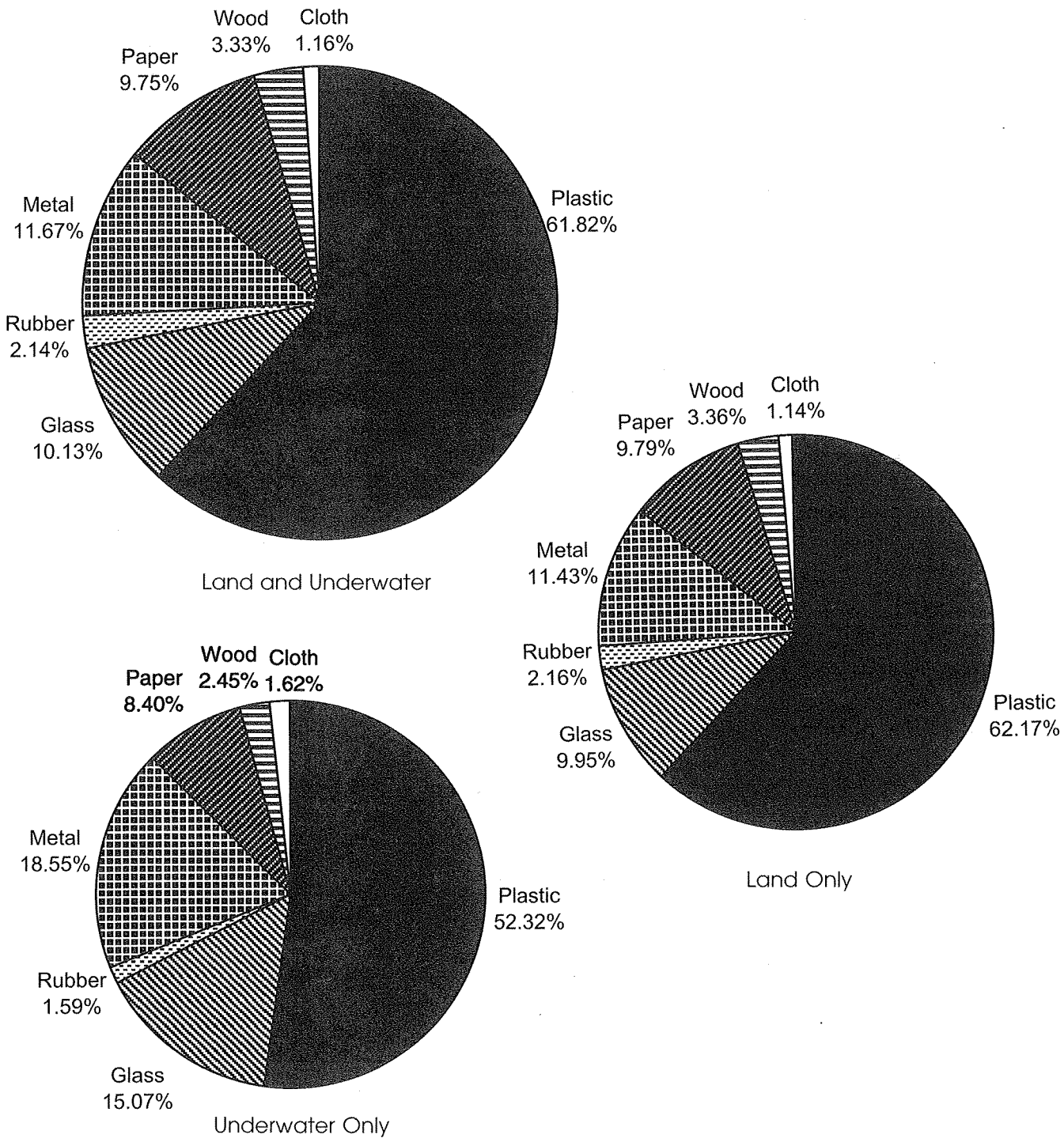
It is interesting to note that every one of the 81 possible items listed on the data card was found at both shoreline and underwater cleanups, from newspapers to clothing, syringes to plastic toys, cigarette lighters to 55-gallon drums. And they appeared in roughly the same proportions as on land. Plastic accounted for "only" 52.32% of the underwater debris, compared to 62.17% of debris found only on land. Metal and glass were somewhat more prevalent underwater (18.55% and 15.07%, respectively) than on land (11.43% and 9.95%), however.

Five regions reported plastic percentages above the worldwide average: the Black Sea (82.53%), the Indian Ocean (69.99%), North Sea (65.79%), Wider Caribbean (64.27%), and the Pacific Ocean (62.95%). Central Europe reported the lowest percentage, but still came in at 42.79%.

Of the 59 countries that submitted data for analysis, 20 exceeded the international average for plastic. Benin reported the largest percentage, at 96.80%, followed by Haiti (94.00%), Turkey (81.09%), and Trinidad and Tobago (80.65%). The other countries that exceeded the average were: Turks and Caicos (78.54%), St. Kitts and Nevis (75.46%), Barbados (74.62%), Singapore (72.20%), United Kingdom (72.59%), South Africa (71.82%), Japan (71.51%), Dominican Republic (67.55%), Argentina (65.72%), Kenya (65.70%), Netherlands Antilles (64.11%), Malta (64.09%), Grenada (63.48%), Colombia (62.57%), Thailand (62.02%), and Malaysia (61.94%).

[1] The International Convention for the Prevention of Pollution from Ships is commonly referred to as MARPOL (MARine POLlution). Ocean dumping of any ship-generated plastic is prohibited under Annex V. These restrictions apply to all countries that have ratified this portion of the treaty. As of July 1998, 88 countries are party to MARPOL Annex V.

Figure 1. Percent Composition of Material Types of Debris Reported During 1997 International Coastal Cleanups



Finland reported the least amount of plastic (7.53%). (Finland's cleanup took place at one site and most of the debris consisted of glass bottles, glass pieces, and metal bottle caps). Other countries reporting very low percentages of plastic were Mauritius (22.05%), the Netherlands (23.58%), Slovenia (23.65%), and Bermuda (29.80%).

The 1997 International Dirty Dozen

The top 12 items found in the 1997 International Coastal Cleanup, or the Dirty Dozen, consist almost entirely of consumable items used every day by everyday citizens, either in their homes or in recreational activities, and represent the most pervasive solid pollution problem we have—indiscriminate litter.

The twelve most common items found on the world's beaches and waterways in 1997 are as follows:

	Debris Items	Total Number Reported	Percent of Total Debris Collected
1.	Cigarette butts	1,547,346	19.10%
2.	Plastic pieces	525,972	6.49%
3.	Foamed plastic pieces	454,903	5.62%
4.	Plastic caps, lids	418,697	5.17%
5.	Plastic food bags/wrappers	393,466	4.86%
6.	Glass pieces	286,746	3.54%
7.	Paper pieces	284,462	3.51%
8.	Plastic beverage, soda bottles	263,982	3.26%
9.	Glass beverage bottles	257,773	3.18%
10.	Plastic straws	249,202	3.08%
11.	Metal beverage cans	228,066	2.82%
12.	Other plastic	189,696	2.34%
	Dirty Dozen TOTALS	**5,100,311**	**62.97%**

As they have been since 1990, when they were officially added to the data card in response to volunteers' requests, cigarette butts were once again the most common item found during the cleanup. Finding a cigarette butt during the 1997 cleanup was almost three times as likely as finding the next most common item, plastic pieces (note: the term "pieces" is used to identify items that are no longer intact enough to be identified. For example, a "piece" of foamed plastic from a cup could look the same as a piece from a meat tray or egg carton.)

The first 11 items have all been in the Dirty Dozen for the past four years, and cigarette butts have been at the top of the list since 1990. "Other plastic" made its first appearance in the Dirty Dozen, due in large part to the 32, 137 pieces collected in the United Kingdom.

Ten of the items above appeared in the Dirty Dozen for land-only cleanups as well as underwater-only cleanups, demonstrating that the trash we see above the water's surface really is a mirror of what we find below. Metal bottle caps and foamed plastic cups—the only items in the underwater Dirty Dozen that do not appear in the land-only or the overall list—placed 13th and 14th, respectively, in the overall and land-only rankings. Plastic straws, which placed ninth in land cleanups, placed 15th in underwater cleanups.

Filling out the Top 20 debris items for 1997 were:

	Debris Items	Total Number Reported	Percent of Total Debris Collected
13.	Metal bottle caps	179,832	2.22%
14.	Foamed plastic cups	154,518	1.91%
15.	Plastic cups, utensils	145,696	1.80%
16.	Other plastic bags	136,406	1.68%
17.	Lumber pieces	131,631	1.62%
18.	Plastic rope	121,287	1.50%
19.	Metal food cans	113,099	1.40%
20.	Plastic trash bags	102,301	1.26%
	Top 20 TOTALS	**6,185,081**	**76.36%**

Results in each country varied. Cigarette butts were number one in 14 countries: Argentina, Costa Rica, Croatia, Egypt, Germany, Greece, Italy, Japan, Malaysia, Singapore, South Africa, Spain, Switzerland, and the United States. Plastic beverage bottles and glass pieces were each number one in eight countries. Other number ones included lumber in Bahrain, Latvia, and the Philippines, salt bags in Colombia, plastic fishing line in Saudi Arabia, and foamed plastic packaging material in the Turks and Caicos.

Debris items in the Dirty Dozen and the Top 20 are, for the most part, items that we all use every day—bottles, cups, eating utensils, and packaging from consumables. There is no mystery to their origin (beachgoers, ships' galleys, storm drains). Nor are there insurmountable technological difficulties to overcome with their disposal. With the possible exception of lumber pieces and plastic rope, debris that suggests marine industrial activity, the Dirty Dozen and Top 20 can all be disposed of in home, boat, or dockside trash cans. In short, there really is no reason for the Dirty Dozen to exist. ***If all the items in the 1997 Dirty Dozen had been discarded in trash or recycling bins, the amount of trash found in the cleanup would have dropped by nearly two-thirds. Add the remaining items in the Top 20 and the debris would have diminished a whopping 76%!*** Recycling, reuse, and waste reduction strategies, combined with simply remembering to properly discard what trash remains would go a long way to reducing the amount of debris littering our shorelines and waterways.

Cigarette Butts

As noted above, more than a million and a half cigarette butts were retrieved by cleanup volunteers in 1997—more than twice the number collected in 1996 (754,656). Cigarette butts as a percentage of overall debris also increased in 1997, to 19.10%, compared to 13.14% in 1996 and 14.74% in 1995.

The United States reported the highest number of cigarette butts—1,326,695 (which represented 22.55% of all the debris collected in the U.S. cleanup). It is important to note that the United States accounted for 72.62% of all the debris collected in the 1997 International Coastal Cleanup, and 85.74% of all the cigarette butts. Japan placed a distant second, at 90,000 cigarette butts (21.15% of Japan's debris), followed by South Africa (47,363 butts; 14.53% of debris). But Greece's 1,985 cigarette butts made up 43.61% of all the debris collected in Greece. Ten countries (Cayman Islands, Dominica, Indonesia, Ireland, Mauritius, Netherlands, Portugal, Slovenia, Thailand, and Turks and Caicos) reported finding no cigarette butts.

The data can't tell us why the numbers of cigarette butts is climbing. Are more people discarding their butts on the beach or out the window or are cleanup volunteers more diligent in retrieving and recording cigarette butts? Composed of cellulose acetate, a synthetic polymer and form of plastic, cigarette butts can persist in the environment from one to five years. What the data *can* tell us is that more than 1.5 million cigarette butts are unnecessar-

ily fouling the planet's beaches and waters. And as with the Dirty Dozen, the problem isn't that an industry or business is illegally dumping waste, or that the solution is technically or economically out of reach. The solution is as simple and uncomplicated as an ash tray and a trash can.

The 1.5 million cigarette butts found worldwide in the 1997 Cleanup also give lie to the mindset that one small piece of trash is insignificant. Not only does each little cigarette butt add to the aggregate total of 1.5 million, in fact, the small pieces of debris are especially harmful for birds and other wildlife that swallow the indigestible items.

One final note: Because of their large numbers, cigarette butts present interpretation problems when analyzing the debris database as a whole. Rather than have the results skewed, we have intentionally removed cigarette butts when calculating the percent composition of debris types (Figure 1). Totals for cigarette butts are included in all other calculations.

Bottles and Associated Goods

CMC analyzes six items collectively as "bottles and associated goods"—glass and plastic beverage bottles, metal beverage cans, metal bottle caps, metal pull tabs, and plastic six-pack holders. In the 1997 International Cleanup these six items accounted for 12.27% of all debris collected, down somewhat from the 1996 percentage of 13.72%. Three of the six items (glass beverage bottles, plastic beverage bottles, and metal beverage cans) are in the 1997 and 1996 Dirty Dozen as well.

As in other areas of this report, it is important to remember that the U.S. results, because of their sheer volume, tend to mask the results from the rest of the world. The 1997 U.S. percentage of bottles and associated goods was 12.11%, very close to the international percentage. If the U.S. debris were removed from the worldwide volume of debris, the international percentage of bottles and associated goods would be much higher. In fact, 39 of the 59 reporting countries reported percentages higher than the overall percentage. Haiti had the highest percentage of bottles and associated goods to all debris collected (71.65%), followed by the Cayman Islands (64.64%) and the Netherlands (42.48%). Benin reported the lowest percentage, with 2.15%, followed by Kenya (6.82%), Japan (6.85%), and Bahrain (6.98).

Although the highest country percentages were reported in Haiti and the Cayman Islands, on a regional basis, Central Europe reported the highest percentage of bottles and associated goods, with 31.19%. The Arabian Gulf reported the lowest percentage, at 6.98%.

It is always difficult to draw firm conclusions about most of the data generated by the Cleanup, and this is particularly true for bottles and associated goods. For example, one country's high percentage of glass bottles may be the result of that country's bottling industry being primarily glass instead of the growing trend toward plastic packaging, while another country's lack of beverage cans as debris may due more to the fact that people, especially in developing countries, scour the streets and countryside for cans to redeem for cash rather than any tidiness or recycling ethic having taken hold.

The Impacts of Marine Debris on Wildlife

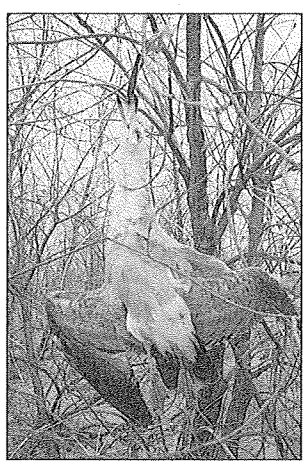
As ugly and dangerous as marine debris is to human health and safety, its impact on wildlife is far greater. Many species, from small seabirds to large sperm whales, mistake floating debris for food. Because these items are indigestible, the debris usually gets lodged in the throat, stomach or intestines, causing blockages and usually death. Debris can also maim and kill fish, birds, sea turtles, and large animals. Monofilament fishing line is a special problem. Made to withstand the pull of strong fish, it is especially durable and hard to escape once it has wrapped around an animal's flipper, leg, wings, or neck.

Data from the 1997 International Coastal Cleanup reveal an alarming trend: the number of animal entanglements in marine debris seems to be increasing. ***Volunteers in 10 countries reported a record 236 entanglement incidents involving 312 animals, the highest number ever.*** That's 92 more animals than in 1996, and 133 animals more than in 1995, or a 30% increase over 1996 and a 43% increase over 1995.

Most of the entanglements were reported in the United States (see below). In the United States, monofilament fishing line was by far the major culprit, responsible for entangling 80 animals. Of the 35 non-U.S. entanglements, 22 were due to fishing gear, including nets, crab traps, and monofilament fishing line. Fish traps were the second most common entangling item in the United States, responsible for 42 incidents. Other entangling debris included plastic bags (6 incidents), rope (2 incidents), and wire (2 incidents) (Table 3).

Country	Entangled Animals
Bahamas	2
Bahrain	11
Brazil	12
Canada	4
Dominica	1
Kenya	3
New Zealand	2
United States	277

All of these animals were discovered in just three hours on one day out of the year, and thus may represent just a fraction of all the entanglement incidents taking place every day around the world. Remember too, that these reported entanglements were what volunteers found on or near shore. We will never know about the dolphins, whales, seals, seabirds, sea turtles, and other creatures that become entangled and die at sea unreported and unnoticed.



Dead seabird entangled in fishing gear, 1997 International Coastal Cleanup, United States

Table 3. Total Debris Involved in Animal Entanglements, 1997 International Coastal Cleanups

Debris Types	Invertebrates	Fish	Reptiles	Birds	Mammals	TOTAL
crab/lobster traps	23	17		3	1	**44**
fishing line, hooks, lures, or weights	2	9		8		**19**
fishing nets/gear	8	13		5		**26**
glass bottles	6	1		1	2	**10**
metal cans	8	1			1	**10**
monofilament fishing line	14	24	2	44	4	**88**
plastic bags (food, garbage, trash)	7	6	3	8	2	**26**
plastic strapping bands	1		1	1		**3**
plastic netting	5	1	2	1	1	**10**
ribbons/string	7	4		3	2	**16**
rope	4	7	1	9	2	**23**
wire		1		1		**2**
six-pack holder	1	3		5	1	**10**
other miscellaneous items	7	8	3	4	3	**25**
TOTAL	**93**	**95**	**12**	**93**	**19**	**312**

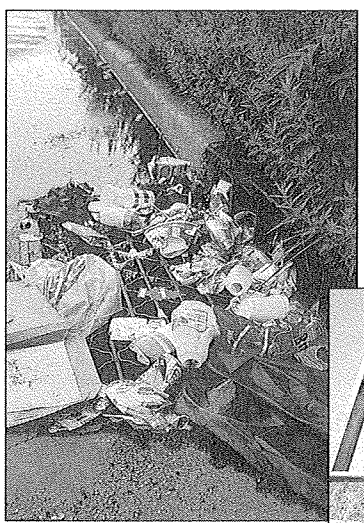
Sources of Marine Debris

The sources of marine debris can be broadly divided into two areas: trash generated on land that is washed or blown into marine areas—***land-based debris***, and trash generated at sea or at seaside, or ***ocean-based debris,*** such as boats, ships, and offshore drilling platforms.

Because most items can be used in a variety of locations for a number of purposes, positively identifying the source of a particular debris item can be difficult. Through research, CMC has identified 28 debris items that can help trace possible sources. These items are grouped into six categories; four point to ocean-based sources (commercial fishing, recreational fishing and boating, at-sea operations, galleys) and two to land-based sources (sewers, medical wastes). In the 1997 International Coastal Cleanup, debris identified as indicators of certain sources made up 8.22% of all debris collected.

The dominant indicator items found in the 1997 cleanup, as they have been since 1994, were galley wastes (2.70%) and commercial fishing wastes (2.73%). (Table 4) Underwater, however, the dominant indicator items were galley wastes (3.42%) and recreational fishing and boating wastes (2.62%). Overall, recreational wastes came in fourth, at 0.98% of all debris.

Table 4 illustrates what regions reported higher-than-average percentages of the indicator items. Galley waste (plastic trash bags, plastic milk or water gallon jugs, plastics bleach or cleaner bottles, foamed plastic meat trays, plastic vegetable sacks, and foamed plastic egg cartons) were a particular problem—nine of the 11 regions reported percentages of these items that were higher than the worldwide figure. Operational wastes (plastic strapping bands, write-protection rings, glass light bulbs, plastic pipe thread protectors, plastic sheeting longer than two feet, wooden pallets, fluorescent light tube, wooden crates, and plastic hard hats) were a problem in seven regions. Recreational fishing wastes were higher-than-average in only three regions—the Indian Ocean, the North Sea, and the Red Sea.



Marine debris includes trash from sources on land, such as storm drains (left), as well as ocean sources, such as fishing vessels (below).

Table 4. Categories and Quantities of Indicator Items Reported During 1997 International Coastal Cleanup

Category	Indicator Items	Total Number Reported	(% of Total Debris Collected)
Recreational Fishing and Boating Wastes	Plastic Fishing Line	57,926	
	Plastic Fishing Floats/Lures	21,732	
	Subtotal	**79,658**	**(0.98%)**
Commercial Fishing Wastes	Plastic Salt Bags	9,821	
	Plastic Fishing Nets	19,834	
	Plastic Light Sticks	21,140	
	Plastic Rope	121,287	
	Foamed Plastic Buoys	21,935	
	Rubber Gloves	19,190	
	Metal Crab/Lobster Traps	4,037	
	Wood Crab/Lobster Traps	3,835	
	Subtotal	**221,079**	**(2.73%)**
Operational Wastes	Plastic Hard Hats	2,320	
	Plastic Pipe Thread Protectors	9,922	
	Plastic Sheeting longer than 2 feet	7,868	
	Plastic Strapping Bands	30,405	
	Plastic Write Protection Rings	11,877	
	Glass Fluorescent Light Tubes	3,784	
	Glass Light Bulbs	14,340	
	Wooden Crates	5,705	
	Wooden Pallets	13,099	
	Subtotal	**99,320**	**(1.23%)**
Galley Wastes	Plastic Trash Bags	102,301	
	Plastic Bleach Bottles	31,694	
	Plastic Milk/Water Gallon Jugs	50,800	
	Plastic Vegetable Sacks	12,193	
	Foamed Plastic Egg Cartons	8,557	
	Foamed Plastic Meat Trays	20,809	
	Subtotal	**226,354**	**(2.79%)**
Sewage-Associated Wastes	Plastic Tampon Applicators	19,811	
	Rubber Condoms	12,299	
	Subtotal	**32,110**	**(0.40%)**
Medical Wastes	Plastic Syringes	7,132	**(0.09%)**
	Total Number of Indicator Items	**665,653**	**(8.22%)**

Conclusions

The International Coastal Cleanups have created a greater public awareness of the issue of marine debris, developing a functioning matrix to assess the types and sources of debris. They have built foundations for solutions to cope with this pervasive pollution problem. But, as this report shows, we are still facing a critical problem regarding human-made debris and its impact on our lakes, rivers, bays, and oceans.

The results of the 1997 International Coastal Cleanup tell us many things. Plastic continues to be the most abundant type of debris found along the world's waterways and beaches, and the Dirty Dozen tells us—loud and clear, year after year—that the main source of the bottles, cans, cigarette butts, balloons, and fishing line on the world's beaches and waterways is not fishermen, or merchant or cruise ships, or industrial activity. It's you and it's me, improperly discarding our trash. Every piece of trash collected from the 1997 Cleanup had a human face behind it.

And comparing the Dirty Dozen in each country confirms that, by and large, the same items that plague beaches in California show up in Bahrain and New Zealand and Argentina—items that can all be easily recycled or properly disposed of.

The data also belie a cherished notion: that technology is the final answer. While modern waste handling facilities and procedures, combined with comprehensive recycling programs, no doubt could reduce the amount of debris in some countries, cleanup data reveals that the most technologically advanced countries, such as the United States and much of Europe, have a level of marine debris about the same as countries less technologically endowed. After all, for the shiny new (and probably expensive) incinerator or recycling mill to work properly, someone has to remember to put his or her trash in the waste can which is then hauled to the facility. The trash cannot walk (or swim) itself to the recycling plant (if only it could!).

Nevertheless, with some types of debris, such as bottles as associated goods, it is clear that proper facilities for receiving and/or recycling trash, especially in poorer coastal communities, would go far to prevent common trash from become marine debris. CMC encourages countries neighboring a common body of water, such as the Caribbean or Mediterranean or Baltic Seas, to work cooperatively on innovative solutions to each others' marine debris problems.

The regional overview of marine debris "hot spots" reveals that debris from maritime activities is more prevalent in the Arabian Gulf, Indian Ocean, North Sea, Red Sea, and Wider Caribbean. MARPOL Annex V implementation and education efforts must continue and expand worldwide.

Regulations against dumping, recycling programs, and other waste management policies are effective only if we comply with them. Education is key. Significant strides have been made in broadening the public's awareness of this issue, as evidenced by the Cleanup's expansion in recent years (as well as the comments from exhausted and newly-enlightened volunteers after they have spent three hours cleaning up after someone else!). CMC and its partners in government, private industry, foundations, associations, and environmental and citizen action groups are taking what has been learned over the years to develop permanent solutions to a very solvable pollution problem.

"From this activity we are going to protect our environment."

1997 cleanup volunteer, Kenya

Table 5. Regional Overview of Marine Debris: Debris "Hot Spots"

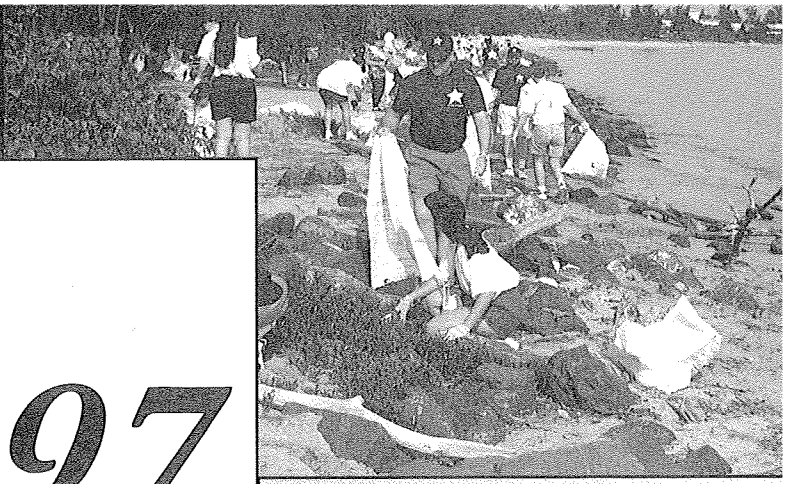
REGION	R. FISHING	C. FISHING	OPER.	GALLEY	SEWAGE	MEDICAL
Arabian Gulf		X	X	X		
Atlantic Ocean					X	
Baltic Sea			X	X		X
Black Sea		X		X		
Central Europe			X	X	X	
Indian Ocean	X	X	X	X		X
Mediterranean Sea			X	X	X	
North Sea	X	X				
Pacific Ocean				X		
Red Sea	X	X	X	X		
Wider Caribbean		X	X	X	X	X

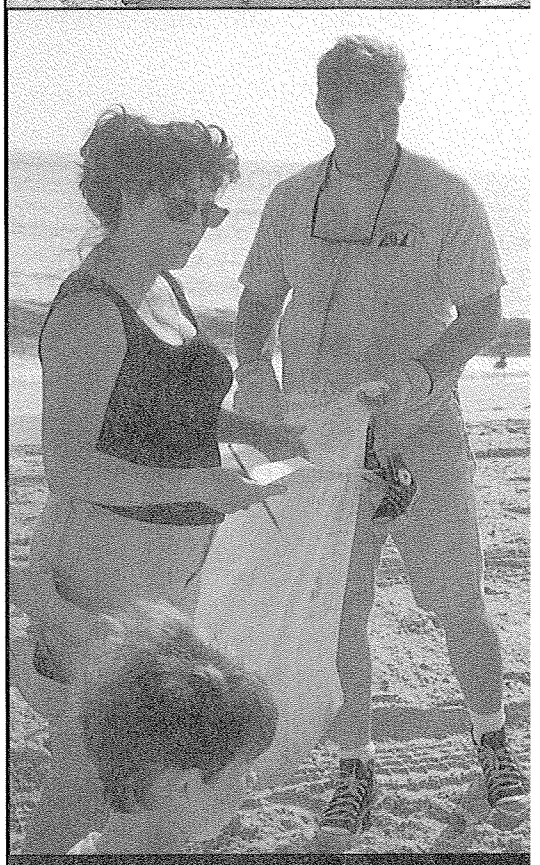
Xs indicate region's debris in that category was equal to or above the national percentage.

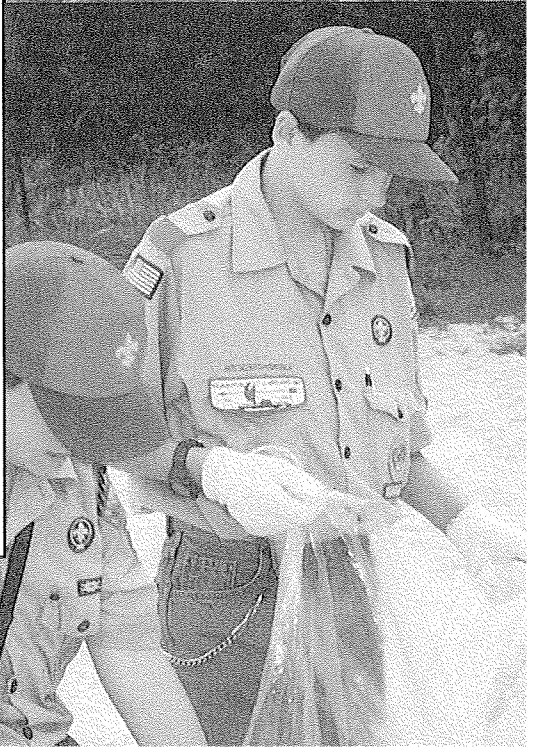
1997

International Coastal Cleanup

U.S. RESULTS







CENTER FOR MARINE CONSERVATION

The **Center for Marine Conservation** (CMC), established in 1972, is a nonprofit organization committed to protecting ocean environments and conserving the global abundance and diversity of marine life. Through science-based advocacy, research, and public education, CMC promotes informed citizen participation to reverse the degradation of our oceans.

The **International Coastal Cleanup**, part of CMC's Citizen Outreach and Monitoring Program and Clean Ocean Campaign, is supported by CMC's 120,000 members and special contributions from the following:

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The Center for Marine Conservation's International Coastal Cleanup is pleased to have the endorsement of The World Conservation Union—IUCN, and the Intergovernmental Oceanographic Commission (IOC) of the United Nations' Education, Scientific, and Cultural Organization (UNESCO).

Contents

Tables and Figures

Acknowledgments

The International Coastal Cleanup is the world's largest grassroots effort devoted to conservation of the marine environment. The Cleanup continues to exist only because of the dedication of tens of thousands of volunteers, supporters, and sponsors who give their time, resources, and energies to organize, promote, and conduct this event.

The Center for Marine Conservation would especially like to recognize the following Cleanup coordinators who worked so hard to make the 1997 U.S. Cleanup possible. They are:

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Cathy Schimmel (AL)
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Anthony Totah (NJ)
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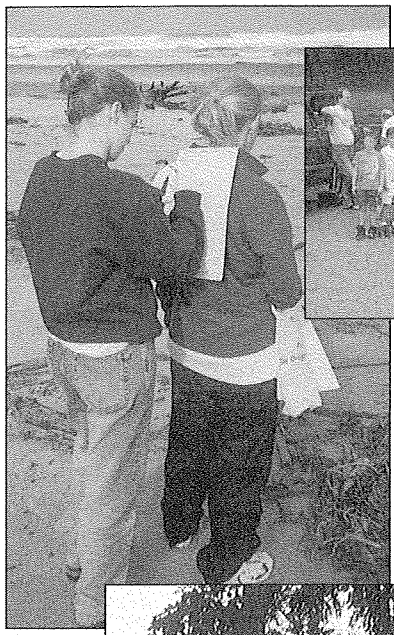
Marie Vogel (MD)
Denise Washick (FL)
Cindy Woods (MS)
Christine Woolaway (HI)
Julie Wright (NM)
Cindy Zipf (NJ)

Guam

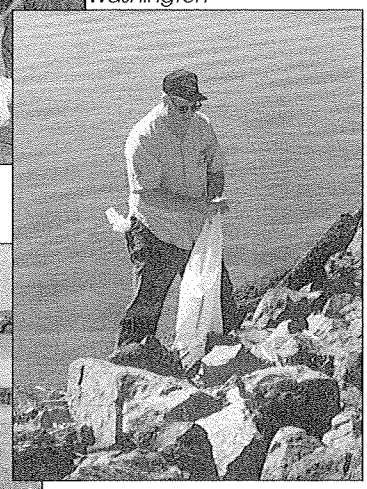
This report is dedicated to the 175,006 Americans whose spirit of volunteerism and commitment to clean water and healthy rivers, lakes, and oceans made the 1997 U.S. Coastal Cleanup possible



Oregon

New York

Washington



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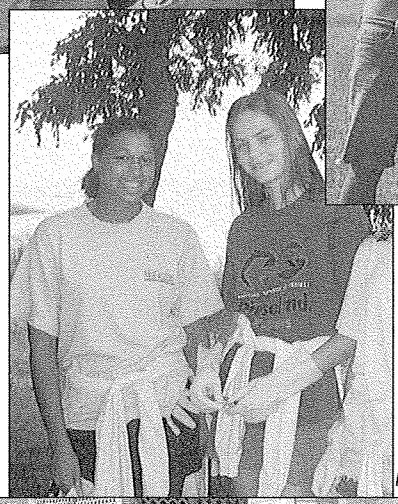
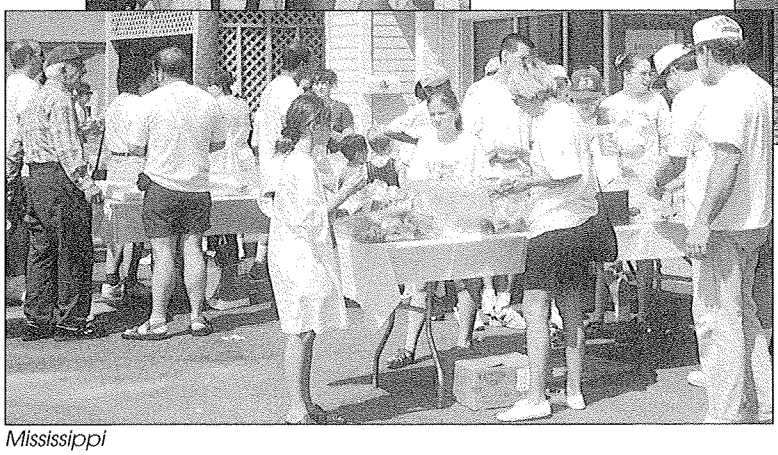


Delaware

Virginia



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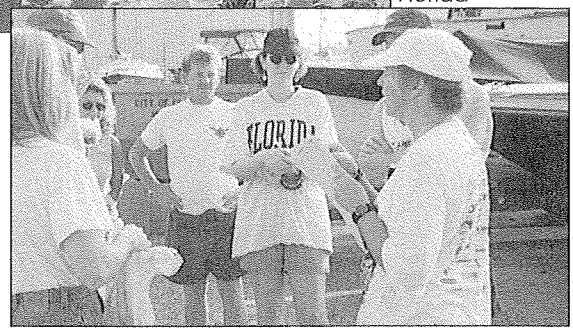

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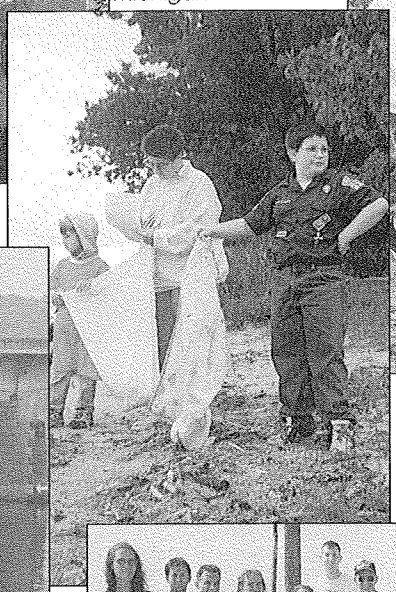
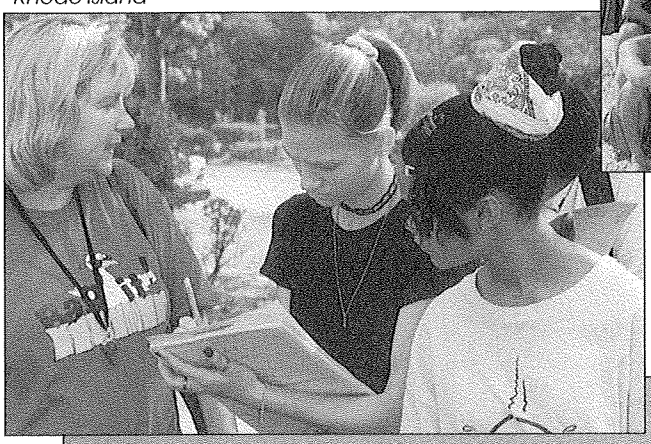


Michigan

Puerto Rico

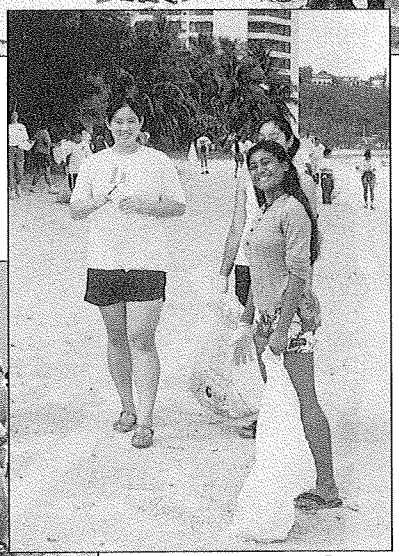
Pennsylvania

North Carolina



Rhode Island

Georgia



Guam

Introduction and Overview

For more than 10 years, the Center for Marine Conservation (CMC) has been leading the fight against marine debris, working to clean our nation's beaches, shorelines, and waterways. The Center's first cleanup took place in Texas in 1986 with 2,800 volunteers. In 1988 the Center expanded the cleanup nationwide to include every coastal state in the nation. By 1996, the cleanup included all 50 states, the District of Columbia, and the territories of Guam, Mariana Islands, Puerto Rico, and the U.S. Virgin Islands.

And it's still growing. The 1997 U.S. Coastal Cleanup was the largest ever. ***More than 175,000 people in 53 U.S. states and territories covered more than 7,000 miles, removing more than 3,000,000 pounds of dangerous and unsightly trash.*** More than 5,880,000 individual items were removed from coastal areas above and below the water line. (Tables 1 and 2). The 1997 Cleanup was the tenth annual nationwide effort, and received more publicity and press coverage than any other previous cleanup effort.

But the goal of the Cleanup is not increased participation or publicity, nor is it to remove every last bit of trash from the shore. The goal of the International Coastal Cleanup is to trace this marine pollution problem to its source, and work to prevent it from occurring. To that end, cleanup volunteers tabulated the trash they found on specialized CMC data cards, which listed 81 possible debris items in eight major categories (plastic, foamed plastic, glass, rubber, paper, metal, wood, and cloth). The data card represents a comprehensive listing of major types of debris found worldwide.

Although 53 states and territories participated in the 1997 U.S. cleanup, four states (Idaho, Iowa, Kansas, and South Dakota) returned only the data in Table 1; they were unable to supply data for analysis. The 5,882,879 individual debris items on the data cards from the remaining 49 states and territories have been analyzed and categorized to provide a picture of what debris is out there and where it is coming from.

The information in the following pages is the result of that analysis. While the information can help us better understand the nature of marine debris and where particular problems may lie, comparisons between sites, states, and regions must be made cautiously. The cleanups varied, sometimes widely, in participation and scope. Volunteers in Florida found almost eight times as much commercial fishing waste as volunteers in neighboring Alabama. This no doubt reflects Florida's large commercial fishing industry, but could also reflect current patterns in the Gulf of Mexico and Atlantic Ocean shunting other states' debris to Florida shores. On the other hand, a cleanup site that reported a higher than average number of plastic plates, utensils, or drinking straws may indeed reveal a need for more shoreside trash bins.

Despite differences in their cleanups' size, scope, and results, every one of the 175,006 American citizens that participated in the 1997 Cleanup shares a commitment to clean shores and waterways, a belief that individuals ***can*** make a difference, and a willingness to do his or her part for future generations. To them the Center for Marine Conservation owes its gratitude and admiration.

"No matter how much we picked up there was always more!"
1997 volunteer, California

Table 1. People, Pounds, and Miles of the 1997 U.S. Coastal Cleanup

	COMBINED		
STATE/TERRITORY	**PEOPLE**	**POUNDS**	**MILES**
Alabama	3,322	43,613	148.5
Alaska	52	785	8.5
Arizona	634	150,081	37.5
Arkansas	319	400	2.6
California	49,977	520,738	652.0
Colorado	82	429	3.8
Connecticut	593	15,260	17.6
Delaware	2,054	30,120	81.5
District of Columbia	326	89,990	18.0
Florida	32,565	728,767	2,531.8
Georgia	229	3,052	14.6
Hawaii	4,667	204,278	286.0
Idaho	14	55	4.0
Illinois	1,406	10,859	38.0
Indiana	367	8,052	24.0
Iowa	6	70	1.8
Kansas	35	1,500	3.5
Kentucky	37	900	1.0
Louisiana	3,692	99,915	169.0
Maine	3,329	33,702	162.5
Maryland	271	2,564	14.0
Massachusetts	4,605	65,199	216.0
Michigan	1,069	8,365	111.8
Minnesota	596	2,433	42.8
Mississippi	3,441	7,080	76.8
Missouri	54	22	6.0
Montana	26	60	1.0
Nebraska	118	1,105	9.0
Nevada	160	1,880	5.0
New Hampshire	1,126	16,687	31.6
New Jersey	1,438	5,800	59.5
New Mexico	91	1,129	0.3
New York	9,296	191,863	289.5
North Carolina	14,602	505,323	1,336.3
Ohio	545	23,784	14.0
Oklahoma	46	375	0.5
Oregon	3,373	49,261	175.0
Pennsylvania	151	7,037	3.6
Rhode Island	1,605	16,500	90.3
South Carolina	6,213	102,708	1.5
South Dakota	24	200	2.5
Tennessee	48	225	0.3
Texas	13,792	363,334	164.5
Utah	33	160	3.0
Vermont	15	350	1.0
Virginia	1,307	66,803	109.5
Washington	1,067	39,050	60.0
Wisconsin	729	4,994	10.5
American Samoa	2,983	45,090	11.7
Guam	1,113	29,791	7.0
Puerto Rico	676	41,745	19.8
Saipan	18	80	3.0
U.S. Virgin Islands	669	14,447	10.0
TOTALS	**175,006**	**3,558,010**	**7,093**

Table 1, continued

	LAND ONLY			UNDERWATER ONLY		
STATE/TERRITORY	PEOPLE	POUNDS	MILES	PEOPLE	POUNDS	MILES
Alabama	3,320	43,333	148.0	2	280	0.5
Alaska	52	785	8.5			
Arizona	544	148,141	30.0	90	1,940	7.5
Arkansas				319	400	2.6
California	49,579	519,887	650.0	398	851	2.0
Colorado	8	180	1.1	74	249	2.7
Connecticut	555	14,344	17.3	38	916	0.3
Delaware	2,036	30,000	80.0	18	120	1.5
District of Columbia	326	89,990	18.0			
Florida	31,650	724,918	2,516.0	915	3,849	15.8
Georgia	115	1,490	12.5	114	1,562	2.1
Hawaii	4,317	127,490	282.0	350	76,788	4.0
Idaho				14	55	4.0
Illinois	844	7,262	36.0	562	3,597	2.0
Indiana	322	7,004	22.0	45	1,048	2.0
Iowa				6	70	1.8
Kansas	15	1,000	2.0	20	500	1.5
Kentucky				37	900	1.0
Louisiana	3,692	99,915	169.0			
Maine	3,318	33,666	162.0	11	36	0.5
Maryland	246	2,509	13.0	25	55	1.0
Massachusetts	4,588	64,794	215.5	17	405	0.5
Michigan	986	7,155	111.0	83	1,210	0.8
Minnesota	569	2,158	41.0	27	275	1.8
Mississippi	3,394	6,800	76.0	47	280	0.8
Missouri	22	7	3.0	32	15	3.0
Montana				26	60	1.0
Nebraska				118	1,105	9.0
Nevada	66	450	1.0	94	1,430	4.0
New Hampshire	1,099	15,987	31.5	27	700	0.1
New Jersey	1,125	470	58.0	313	5,330	1.5
New Mexico				91	1,129	0.3
New York	9,105	176,393	287.0	191	15,470	2.5
North Carolina	14,457	504,773	1,336.0	145	550	0.3
Ohio	328	7,567	11.0	217	16,217	3.0
Oklahoma				46	375	0.5
Oregon	3,373	49,261	175.0			
Pennsylvania	117	7,000	3.3	34	37	0.3
Rhode Island	1,565	16,300	90.0	40	200	0.3
South Carolina	6,175	102,483	n/r	38	225	1.5
South Dakota	4	160	0.5	20	40	2.0
Tennessee				48	225	0.3
Texas	13,369	362,823	164.0	153	511	0.5
Utah	15	160	1.5	18	n/r	1.5
Vermont				15	350	1.0
Virginia	1,238	64,593	107.5	69	2,210	2.0
Washington	963	38,900	60.0	104	150	n/r
Wisconsin	481	2,994	10.0	248	2,000	0.5
American Samoa	2,983	45,090	11.7			
Guam	10,021	25,291	6.5	92	4,500	0.5
Puerto Rico	600	40,000	16.0	76	1,745	3.8
Saipan				18	80	3.0
U.S. Virgin Islands	603	6,327	9.9	66	8,120	0.1
TOTALS	**169,455**	**3,399,850**	**6,994**	**5,551**	**158,160**	**99**

n/r = not reported

Table 2. Total Number of Debris Items Collected During 1997 U.S. Coastal Cleanups

Debris Items	TOTAL	Land	Underwater
PLASTIC:			
Food Bags/Wrappers	**300,420**	296,064	4,356
Salt Bags	**4,658**	4,590	68
Trash Bags	**57,236**	56,341	895
Other Bags	**79,968**	78,693	1,275
Plastic Beverage Bottles	**169,778**	165,976	3,802
Bleach Bottles	**14,227**	14,027	200
Milk/Water Gallon Jugs	**32,199**	31,550	649
Oil/Lube Bottles	**16,728**	16,514	214
Other Plastic Bottles	**47,601**	46,775	826
Buckets	**11,726**	11,518	208
Caps/Lids	**307,133**	300,567	6,566
Cigarette Butts	**1,326,695**	1,310,052	16,643
Cigarette Lighters	**36,904**	36,307	597
Cups/Utensils	**98,899**	95,777	3,122
Diapers	**9,699**	9,476	223
Fishing Line	**41,278**	39,500	1,778
Fishing Floats/Lures	**16,083**	15,526	557
Fishing Nets	**9,631**	9,544	87
Hard Hats	**1,030**	1,016	14
Light Sticks	**16,018**	15,887	131
Plastic Pieces	**348,121**	342,786	5,335
Pipe Thread Protectors	**7,427**	7,367	60
Rope	**70,790**	70,022	768
Long Sheeting	**4,714**	4,589	125
Short Sheeting	**10,663**	10,414	249
Six-Pack Holders	**19,997**	19,166	831
Strapping Bands	**20,928**	20,701	227
Straws	**175,175**	172,215	2,960
Syringes	**4,806**	4,723	83
Tampon Applicators	**15,051**	14,880	171
Toys	**20,761**	20,287	474
Vegetable Sacks	**7,838**	7,751	87
Write Protection Rings	**9,917**	9,756	161
Other Plastic	**106,575**	105,313	1,262
FOAMED PLASTIC:			
Buoys	**12,930**	12,839	91
Foamed Cups	**125,501**	120,260	5,241
Egg Cartons	**5,518**	5,463	55
Fast Food Containers	**37,651**	36,745	906
Meat Trays	**13,131**	13,012	119
Packaging Materials	**67,379**	66,391	988
Foamed Pieces	**309,653**	303,881	5,772
Foamed Plates	**28,856**	28,101	755
Other Foamed Plastic	**50,984**	50,403	581

Debris Items	Total	Land	Underwater
GLASS:			
Beverage Bottles	**199,461**	192,498	6,963
Food Jars	**13,183**	12,596	587
Other Glass Bottles/Jars	**24,207**	23,798	409
Fluorescent Light Tubes	**2,287**	2,268	19
Light Bulbs	**11,101**	10,959	142
Glass Pieces	**200,643**	197,191	3,452
Other Glass	**28,414**	27,848	566
RUBBER:			
Balloons	**30,324**	29,891	433
Condoms	**8,290**	8,183	107
Rubber Gloves	**15,108**	14,968	140
Tires	**10,168**	9,974	194
Other Rubber	**34,552**	33,723	829
METAL:			
Bottle Caps	**131,854**	129,183	2,671
Aerosol Cans	**13,791**	13,494	297
Beverage Cans	**164,548**	157,700	6,848
Food Cans	**103,534**	102,750	784
Other Cans	**8,123**	7,953	170
Metal Crab/Lobster Traps	**3,024**	2,951	73
55-Gallon Rusty Drums	**2,984**	2,907	77
55-Gallon New Drums	**689**	672	17
Metal Pieces	**41,598**	40,537	1,061
Pull Tabs	**26,539**	25,889	650
Wire	**16,817**	16,026	791
Other Metal	**45,609**	44,414	1,195
PAPER:			
Bags	**45,134**	44,576	558
Cardboard	**36,944**	36,341	603
Cartons	**21,461**	21,106	355
Paper Cups	**53,446**	52,565	881
Newspapers/Magazines	**27,704**	27,338	366
Paper Pieces	**233,293**	228,899	4,394
Paper Plates	**20,371**	19,890	481
Other Paper	**53,767**	52,616	1,151
WOOD:			
Crab/Lobster Traps	**2,357**	2,348	9
Crates	**2,047**	2,040	7
Lumber Pieces	**84,774**	83,480	1,294
Pallets	**5,078**	5,034	7
Other Wood	**33,436**	32,734	702
CLOTH:			
Clothing/Pieces	**53,942**	52,568	1,374
GRAND TOTALS	**5,882,879**	**5,772,673**	**110,206**

HIGHLIGHTS

of the 1997 U.S. Coastal Cleanup

- From blankets to boomerangs, teapots to gun holsters, perfume bottles to needlenose pliers, refrigerators to fishing tackle, antique bottles to computer keyboards—volunteers at the 1997 cleanup found all the detritus of modern day human existence.

- Contrary to the cliché, kitchen sinks (and faucets) were found in abundance in several states, as were dishwashers, vacuum cleaners, and toilets. Lawnmowers, too, were a peculiar yet common find. (Does beach grass need mowing?) Some finds begged to be explained; the burned calculus book found in Florida, for example. Was it the victim of a school or house fire? Or merely the remnant of a graduation-day celebration bonfire?

- The oddities spanned a time continuum from a 60-year-old fuse found in South Carolina right up to a child's shoe lost in July 1997 in Texas, and included several antique bottles and pieces of silverware, a tire from a Model A Ford, a 1941 Arizona license plate (found in New York), a 1956 milk bottle, an "antique" Pepsi bottle, and a 1962 Corvair.

- The spiritual side of human nature was well represented; religious items included voodoo dolls and bottles, Santeria "paraphernalia," and two Bibles and a 22-foot church pulpit in California.

- While much of the debris characterized by volunteers as "odd" chronicled Americans' devotion to fun and pleasure (sex items, food, beer/wine/champagne, spent fireworks, and toys were plentiful from coast to coast), others were evidence of more serious pastimes. Drugs and drug paraphernalia were reported in almost every state, as were spent (and unspent) shotgun shells, bullets, and other ammunition. Volunteers in Florida found a "mysterious package;" New Hampshire volunteers found a 9mm handgun, while workers in Delaware found three suspected pipe bombs. And volunteers in upstate New York found a live, 105mm U.S. Army howitzer "blank." Ordnance experts were called in to remove it.

- But perhaps the most peculiar of all the peculiar items found during the 1997 Cleanup was the pair (trio?) of three-legged pants found in Surfside, Texas. And, as if further proof was needed that it is indeed a small world, one cleanup volunteer in California found a set of cancelled checks, and knows the owner!

The Pennsylvania cleanup benefited from the help of a team of canoeists who paddled to several islands in the Susquehanna River in Harrisburg to remove debris, including this refrigerator and lawn chair.

Although the basic activities were the same at all the cleanups, each cleanup had its own local color and features. Here is a sampling:

- Several cleanups featured politicians and other celebrities. In Guam and American Samoa local mayors led cleanup efforts in their villages. U.S. representative Jim Saxton attended a cleanup in New Jersey, Senator Judd Gregg participated in New Hampshire, and Governor Tom Carper picked up trash in Delaware.

- One of the cleanup sites in Arizona will become a four-mile-long wetlands park and wildlife reserve along the Colorado River in Yuma. The cleanup was the first step in creating the park.

- Coordinators have to be prepared for just about anything on cleanup day, including hurricanes in the Caribbean. But Puerto Rico coordinators were *not* prepared to find that local authorities in Cabo Rojo had conducted their own cleanup of the beach the day before the cleanup! So volunteers concentrated their efforts underwater, and retrieved more than 7,000 items of debris, including 1500 foamed plastic cups, 2500 glass beverage bottles, and 500 six-pack rings!

- Volunteers were rewarded for their efforts in a variety of ways. Nearly $500 in coin and cash was reported by volunteers in 11 states (the $20 bill found in Montana paid for the volunteer's dinner that night!) A few volunteers in Oregon were rewarded with the knowledge that their day at the beach truly made a difference for a pelican they found with a severely damaged wing. They brought the bird to the zone captain, who found a vet able to treat the wound.

The Most Prevalent Type of Debris on U.S. Beaches and Waterways

As noted above, the detailed data cards that volunteers fill out and return to CMC are analyzed in the Center's marine debris database. The information can show us what types of debris are fouling our beaches and waterways, and where the debris may be concentrated. Analyzed and tracked over time, this information is a powerful tool for educating the public and industry and government policymakers, creating positive change in the way we handle our waste, and ultimately preventing needless injury and death to marine wildlife.

It is interesting to note that every one of the 81 possible items listed on the data card was found at both shoreline and underwater cleanups, from newspapers to clothing, syringes to plastic toys, cigarette lighters to 55-gallon drums. And, as it has since the cleanups began, ***plastic*** was the most prevalent type of debris found at both land and underwater cleanups. This discovery is, unfortunately, nothing new, and is due in large part to the dominance of plastic materials used in packaging. Since the nationwide cleanups began in 1988, plastic has been the most common type of debris, accounting for at least 53% of debris (1993) and as much as 64% (1988). Although the U.S. Coastal Cleanup retrieves plastic debris at the beach and from the water, it was probably not discarded there. Since December 31, 1988, dumping plastic at sea has been prohibited by Annex V of the MARPOL Treaty.[1] Although dumping at sea undoubtedly continues, research shows that 60-80% of all debris originates as trash on land.

In 1997, plastic accounted for 60.32% of debris found on land, 56.51% of debris underwater, and 60.27% of all debris collected in 1997 (Figure 1). Plastic debris was almost five times as prevalent as the next most common type, metal (12.27% of all debris collected), although it is a slight decrease from 1996, when it accounted for 61.24% of all debris.

Metal was the second most common type of debris collected by volunteers in 1997, as it has been since 1995. Further, the 1997 percentage is 10% higher than 1996's percentage of 11.10 and almost 20% higher than 1995 (10.69%). Underwater, metal was also the second most common type of debris, accounting for 15.64% of all debris collected, an almost 25% drop from 1996's percentage of 20.70%.

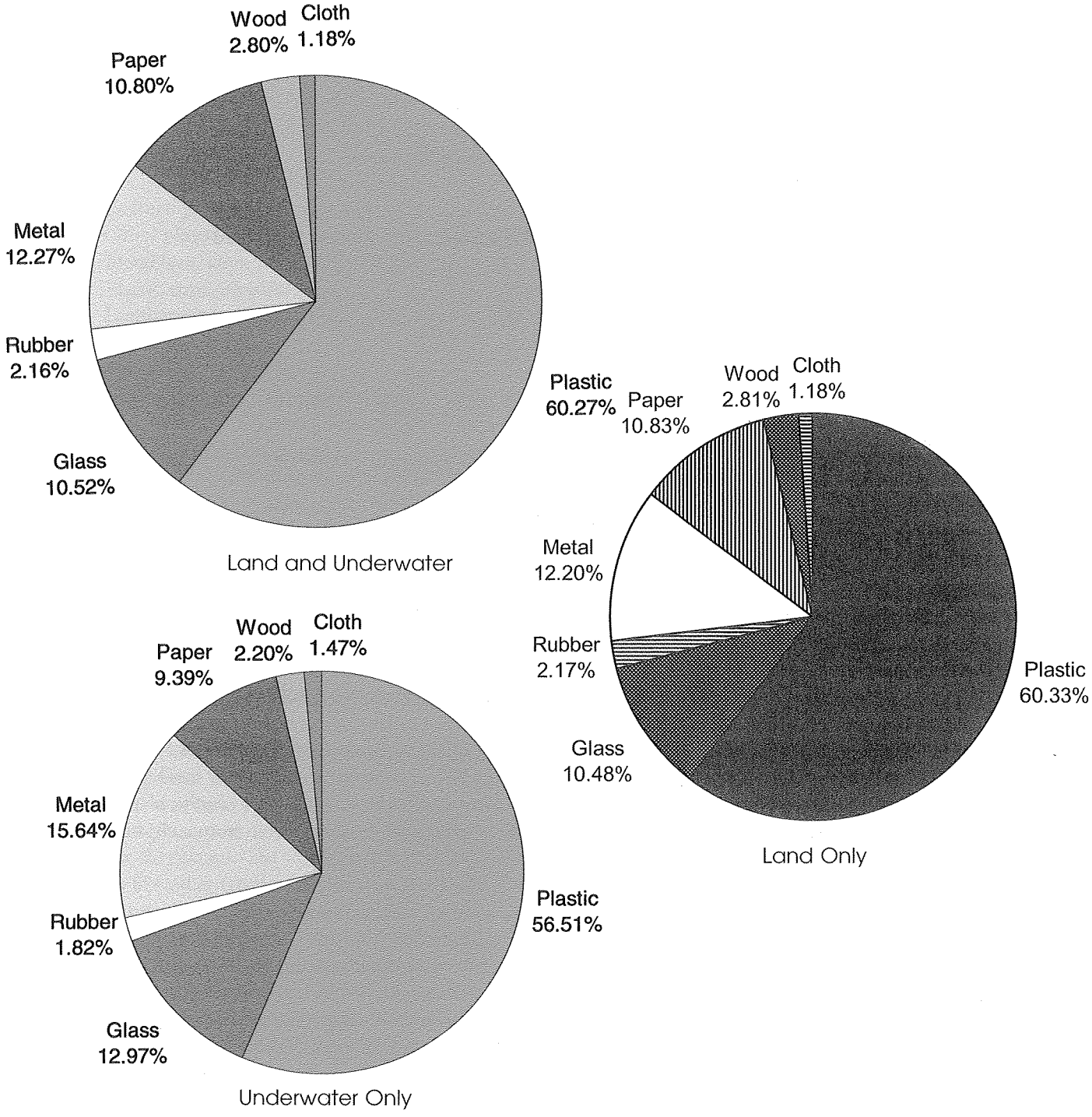
Plastic was the number one debris type in all but three states: New Mexico, Oklahoma, and Vermont. In both New Mexico and Oklahoma, metal was the most prevalent type of debris found, followed by glass and then plastic. In Vermont, glass was most prevalent, with plastic second. In Minnesota plastic was first for land cleanups, but underwater, metal was first (58.33%), followed by glass (28.57%) and plastic was a distant third at 8.34%.

Sixteen states exceeded the national percentage, led by Michigan (80.09%), New Jersey (86.88%), and Oregon (76.43%). The lowest plastic percentages were reported in New Mexico (10.75%), Oklahoma (11.52%), and Missouri (16.20%).

Regionally, the Northeast Atlantic (68.96%) and North Pacific (68.20%) had the highest percentages of plastic debris, while Great Plains and Prairies had the least, with 17.5%.

[1] The International Convention for the Prevention of Pollution from Ships is commonly referred to as MARPOL (MARine POLlution). Ocean dumping of any ship-generated plastic is prohibited under Annex V. These restrictions apply to all countries that have ratified this portion of the treaty. As of July 1998, 88 countries, including the United States, are party to MARPOL Annex V.

Figure 1. Percent Composition of Material Types of Debris Reported During 1997 U.S. Coastal Cleanups



The 1997 National Dirty Dozen

While plastic is consistently the most prevalent type of debris found, the items found most often are also the same, year after year. The top 12 items, or the Dirty Dozen, consist almost entirely of consumable items used every day by everyday citizens, either in their homes or in recreational activities, and represent the most pervasive solid pollution problem we have—indiscriminate litter.

The 12 most frequently found debris items accounted for more than 65% of all debris collected in 1997, or 3.8 million of the 5.8 million items found. In order of frequency, these items were:

	Debris Items	Total Number Reported	Percent of Total Debris Collected
1.	Cigarette butts	1,326,695	22.55%
2.	Plastic pieces	348,121	5.92%
3.	Foamed plastic pieces	309,653	5.26%
4.	Plastic caps, lids	307,133	5.22%
5.	Plastic food bags/wrappers	300,420	5.11%
6.	Paper pieces	233,293	3.97%
7.	Glass pieces	200,643	3.41%
8.	Glass beverage bottles	199,461	3.39%
9.	Plastic straws	175,175	2.98%
10.	Plastic beverage soda bottles	169,778	2.89%
11.	Metal beverage cans	164,548	2.80%
12.	Metal bottle caps	131,854	2.24%
	Dirty Dozen TOTALS	**3,866,774**	**65.74%**

As in years past, cigarette butts were the most common item found. More than 1.3 million individual butts were retrieved from U.S. beaches and waterways and recorded on CMC data cards. Cigarette butts accounted for 22.55% of all debris collected in 1997, up significantly from last year's percentage of 16.20% and 1995's percentage of 19.72. The chances of finding a cigarette butt during the 1997 cleanup were almost four times greater than the chances of finding the second most common item, plastic pieces. (The term "pieces" is used to identify items that are no longer intact enough to be identified. For example, a "piece" of foamed plastic from a cup could look the same as a piece from a meat tray or egg carton.)

The 1997 Dirty Dozen list is almost identical to the 1996 list, with the same items appearing in almost the same order. Nor were there significant differences in where the Dirty Dozen were found. In underwater cleanups the same 12 items were found with almost the same frequency as on land, and represented 65.78% of all debris collected underwater. Nine items (cigarette butts, plastic pieces, foamed plastic pieces, paper pieces, glass pieces, plastic caps and lids, glass beverage bottles, metal beverage cans, and plastic straws) have consistently appeared in the Dirty Dozen every year since 1990. These nine items accounted for 55.50% of all debris collected in 1997.

State-by-state results varied. Cigarette butts were the top item in 27 states; they were number two in nine states. Metal beverage cans were the top item in eight states. Other items that came in at number one include food cans in American Samoa, fishing line in Saipan, and plastic beverage bottles in Tennessee.

The Dirty Dozen is a harsh reminder that most marine debris is not exotic or from commercial sources. Nor is it particularly difficult to dispose of. The Dirty Dozen consists of common, everyday trash. And in most cases, the solutions are readily available, requiring no new legislation or technologies. Proper disposal, including recycling, is the key. ***If all the bottles, cans, bags, caps, straws, and cigarette butts found in the 1997 cleanup had been recycled or discarded into a trash bin, our beaches, rivers, and lakes would be cleaner by more than 60%.***

The following make up the rest of the top 20 most common marine debris items:

	Debris Items	Total Number Reported	Percent of Total Debris Collected
13.	Foamed plastic cups	125,501	2.13%
14.	Other plastic	106,575	1.81%
15.	Metal food cans	103,534	1.76%
16.	Plastic cups, utensils	98,899	1.68%
17.	Lumber pieces	84,774	1.44%
18.	Other plastic bags	79,968	1.36%
19.	Plastic rope	70,790	1.20%
20.	Foamed plastic packaging material	67,379	1.15%
	Top 20 TOTALS	**4,604,194**	**78.27%**

Cigarette Butts

As noted above, year after year cigarette butts are the most common item found by cleanup volunteers. Yet they were not even included as an official item on the early data cards. Volunteers recorded them anyway, and in 1990 they were added to the data cards, in response to the large numbers of write-in "votes." Since then they have topped the dirty Dozen list each year (and generated the largest number of disgusted comments from volunteers!)

Composed of cellulose acetate, a synthetic polymer (thus a form of plastic), cigarette butts can persist in the environment from one to five years. Some butts found in the 1997 cleanup may have been buried in the sand for years, others no doubt were discarded by beachgoers the day before. Cigarette butts are also tossed out of moving vehicles into the streets where they are washed into storm sewers that may eventually empty into the ocean. Others are thrown into the water from commercial and recreational boats. No matter how they arrive, cigarette butts, just like other types of plastic, can be deadly to marine life.

Cleanup volunteers found a record ***1.3 million cigarette butts*** in 1997, more than twice that recorded in 1996 (608,759). Are more people discarding their butts on the beach or out the window? Or are cleanup volunteers more diligent in retrieving and recording cigarette butts? The data can't tell us. What the data *can* tell us is that more than one million cigarette butts are unnecessarily fouling our nation's beaches and waters. And as with the Dirty Dozen, the problem isn't that an industry or business is illegally dumping waste, or that the solution is technically or economically out of reach. The solution is as simple and uncomplicated as an ash tray and a trash can.

Colorado reported the highest percentage of cigarette butts (65.88%), followed by South Carolina (49.23%) and Nebraska (48.19%). Two states (Missouri and Vermont) reported finding no cigarette butts.

The Cleanup has become an unintentional chronicler of Americans' smoking habits. In 1997, several volunteers noted the increasing number of cigar tips on the beach. We do not know how many, if any, were the plastic-tipped variety, but if cigar-smoking continues to grow in popularity, we may need to add another item to the data card.

One final note: Because of their large numbers, cigarette butts present interpretation problems when analyzing the debris database as a whole. Rather than have the results skewed, we have intentionally removed cigarette butts when calculating the percent composition of debris types (Figure 1). Totals for cigarette butts are included in all other calculations.

Bottles and Associated Goods

CMC analyzes six items collectively as "bottles and associated goods"—glass and plastic beverage bottles, metal beverage cans, metal bottle caps, metal pull tabs, and plastic six-pack holders. In the 1997 U.S. Cleanup these six items accounted for 12.11% of all debris collected, down slightly from the 1996 percentage of 13.33%. Four of the six items (glass beverage bottles, plastic beverage bottles, metal beverage cans, and metal bottle caps) are in the 1997 and 1996 Dirty Dozen as well.

Three states far exceeded the national percentage: Missouri (88.57%), New Mexico (77.20%), and Oklahoma (71.07%). Indiana (1.36%) and Michigan (3.80%) reported finding the fewest bottles and associated goods. Regionally, the Great Plains and Prairies far exceeded the national percentage (58.30%). The Caribbean (26.05%) and Appalachians and Ozarks (25.65%) also reported percentages higher than the national figure.

CMC began tracking bottles and associated goods as a subset of all debris in an effort to determine whether recycling programs, container deposit legislation, and/or adequate trash receptacles, would reduce the number of these items appearing as debris. Unfortunately, that has not been the case. Despite being among the most easily recycled of trash items, bottles and cans make up a significant proportion of cleanup debris every year.

The Impacts of Marine Debris on Wildlife

As ugly and dangerous as marine debris is to human health and safety, its impact on wildlife is far greater. Many species, from small seabirds to large sperm whales, mistake floating debris, especially balloons and cigarette butts, for food. Unfortunately, instead of passing through the animals' intestines, the debris usually gets lodged in the throat, stomach or intestines, causing blockages and usually death. Debris can also maim and kill fish, birds, sea turtles, and large animals. Monofilament fishing line is a special problem. Made to withstand the pull of strong fish, it is especially durable and hard to escape once it has wrapped around an animal's flipper, leg, wings, or neck.

Volunteers in the 1997 U.S. national cleanup were asked to record any entangled animals they found. Sadly, they reported ***213 incidents involving 277 animals, the highest number ever.*** That's 90 animals more than in 1996, and 118 more than in 1995, or an increase of 48% over 1996; 63% over 1995.

Monofilament fishing line was by far the major culprit, responsible for entangling 80 animals, including three sea otters, two turtles, numerous seagulls, pelicans, a cormorant, a tern, a goose, several horseshoe crabs, starfish, a sea horse, and numerous fish (Table 3). Responsible for the second greatest number of entanglements were crab and lobster traps. Some were found, not surprisingly really, with crabs inside—perhaps the traps were lost by crabbers and the crabs are lost catch. But lost or discarded traps also managed to catch an opossum, three birds including a seagull, and 17 fish, including two angelfish and a grouper.

Other entangling items discovered in the 1997 Cleanup included fishing net, rope, a milk carton, bottles, cans, balloon string, six-pack holders, plastic bags, a rubber glove, and a rubber tire—proving that almost any human-made debris can be deadly to wildlife.

Disturbing as the 1997 data are, it is even more sobering when we remember that those figures represent what people found in a few hours, one day of the year, and in discrete locations. How many more animal deaths due to debris entanglement and ingestion go undiscovered and unremarked?

Monofilament Fishing Line

As noted above, monofilament fishing line is a particularly insidious problem for marine wildlife. Eighty of the 213 entanglement incidents, or 37%, were due to monofilament fishing line.

In the 1997 U.S. cleanup, volunteers not only removed more than 41,000 pieces or bundles of fishing line, they also removed 41,000 potential animal entanglements from our nation's beaches and waters. Nevada, Saipan, and Vermont reported the highest percentages of monofilament line, with 9.4%, 8.8%, and 8.2%, respectively. Two states, Kentucky and Missouri, reported finding no monofilament line in their cleanups.

Much of the fishing line is no doubt lost accidentally, when lines get snagged and broken during fishing. But that means that recreational fishers must be especially conscientious about how they discard their used or broken line. Again, this type of debris is not difficult or expensive to dispose of properly. Many docks and marinas around the country have recycling receptacles just for used fishing line. But fishing line can't put itself into the recycling bin.

Six-Pack Holders and Balloons

Together, six-pack rings and balloons accounted for 50, 321 items out of the 5,882,879 items collected in the 1997 cleanup, or 0.85%. They deserve special mention because of the hazards they pose to marine wildlife. Fish, birds, and other animals can be entangled in six-pack loops, suffering severe injury and strangulation. Floating at the water's surface, balloons eerily resemble jellyfish, a favored prey for sea turtles. And the ribbons attached to most balloons are strong and difficult to break, and can entangle animals' legs and other limbs.

Cleanup volunteers recorded 19,997 six-pack rings in the 1997 cleanup. Saipan, Utah, and American Samoa had the highest percentages, with 5.30%, 3.45%, and 1.88%, respectively. Seven states (Indiana, Missouri, Montana, Nebraska, New Mexico, Oklahoma, and Vermont) reported finding no six-pack rings.

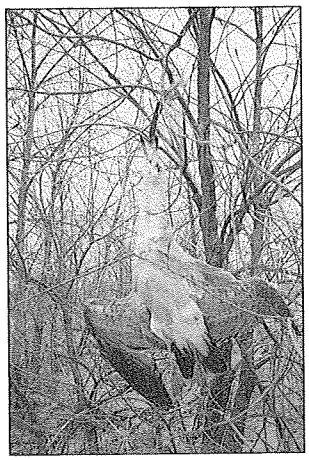
As with the other types of debris noted above, this is a problem that should not exist. Since 1988, manufacturers of ring carriers have been required to make them degradable, usually within two to three months. Further, one manufacturer, ITW Hi-Cone, conducts a nationwide six-pack ring recycling program for consumers. Finally, even if they don't recycle their rings, consumers can easily render them harmless by snipping the loops with scissors before discarding them. Six-pack rings would not pose a threat to wildlife if consumers handled them properly.

Cleanup volunteers recorded 30,324 balloons in 1997, almost 20% more than in 1996 (25,351). Although more balloons were found, they made up a bit less of the overall debris composition (0.51% in 1997; 0.67% in 1996).

Several states have passed legislation banning or restricting the release of balloons into the atmosphere. But this is no guarantee that those states are free of balloon debris. Floating on air currents, balloons can return to Earth hundreds of miles from their launch site. The highest percentages of balloons to total debris collected were reported in Michigan (1.39%), Montana (1.27%), and Wisconsin (1.11%). No balloons were reported in Colorado, Indiana, Kentucky, Missouri, Nebraska, New Mexico, Oklahoma, Saipan, Tennessee, Utah, or Vermont.

Table 3. Total Debris Involved in Animal Entanglements, 1997 U.S.Coastal Cleanup

Debris Types	Invertebrates	Fish	Reptiles	Birds	Mammals	TOTAL
crab/lobster traps	21	17		3	1	**42**
fishing line, hooks, lures or weights	2	9		8		**19**
fishing nets/gear	6	3		5		**14**
glass bottles	6	1		1	2	**10**
metal cans	8	1			1	**10**
monofilament fishing line	14	22	2	38	4	**80**
plastic bags (food, garbage, trash)	6	4	2	6	2	**20**
plastic strapping bands	1		1	1		**3**
plastic netting	5	1	2	1	1	**10**
ribbons/string	7	4		3	2	**16**
rope	4	5	1	9	2	**21**
six-pack holder	1	3		5	1	**10**
other miscellaneous items	7	5	3	4	3	**22**
TOTAL	**88**	**75**	**11**	**84**	**19**	**277**



Dead seabird entangled in fishing gear, 1997 U.S. Coastal Cleanup, New York

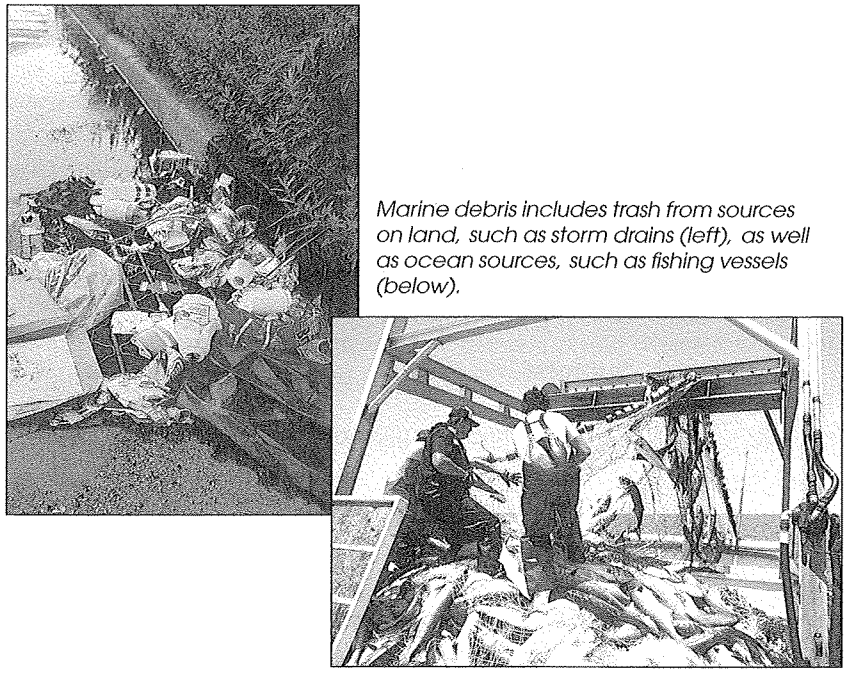
Sources of Marine Debris

The sources of marine debris can be broadly divided into two areas: trash generated on land that is washed or blown into marine areas—***land-based debris***, and trash generated at sea or at seaside, or ***ocean-based debris,*** such as boats, ships, and offshore drilling platforms.

Because most items can be used in a variety of locations for a number of purposes, positively identifying the source of a particular debris item can be difficult. Nevertheless, CMC has identified 28 debris items that can help trace possible sources. These items are grouped into six categories; four point to ocean-based sources (commercial fishing, recreational fishing and boating, at-sea operations, galleys) and two to land-based sources (sewers, medical wastes). In the 1997 U.S. cleanup, debris identified as indicators of certain sources made up 7.06% of all debris collected.

As in 1996 and 1995, the dominant indicator items found in the 1997 U.S. cleanup were commercial fishing wastes and galley wastes (2.29% and 2.21%, respectively, of all debris collected). (Table 4) Underwater, however, the dominant indicator items were recreational fishing and boating wastes, which made up 2.12% of all debris collected underwater. Overall, recreational wastes came in fourth, at 0.98% of all debris.

Regionally, commercial fishing wastes were more prevalent in the country's major fishing centers—the Gulf of Maine (6.01%), North Pacific (4.03%), and Gulf of Mexico (2.93%). Recreational fishing debris was somewhat higher than the national figure in five regions (Gulf of Mexico, Mid-Atlantic, North Pacific, South Atlantic, and South Pacific), and significantly higher in the Rockies and the Southwest, where it made up 5.13% and 3.99% of all debris collected. The Caribbean, Gulf of Mexico, and South Pacific had higher levels of galley wastes than the national figure of 2.21% (3.07%, 3.06%, and 2.87%, respectively), a finding that could be due to a combination of inadequate waste disposal/treatment facilities and a large tourist/cruise industry in those areas.



Marine debris includes trash from sources on land, such as storm drains (left), as well as ocean sources, such as fishing vessels (below).

Table 4. Categories and Quantities of Indicator Items Reported During 1997 U.S. Coastal Cleanups

Category	Indicator Items	Total Number Reported	(% of Total Debris Collected)
Recreational Fishing and Boating Wastes	Plastic Fishing Line	41,278	
	Plastic Fishing Floats/Lures	16,083	
	Subtotal	**57,361**	**(0.98%)**
Commercial Fishing Wastes	Plastic Salt Bags	4,658	
	Plastic Fishing Nets	9,631	
	Plastic Light Sticks	16,018	
	Plastic Rope	70,790	
	Foamed Plastic Buoys	12,930	
	Rubber Gloves	15,108	
	Metal Crab/Lobster Traps	3,024	
	Wood Crab/Lobster Traps	2,357	
	Subtotal	**134,516**	**(2.29%)**
Operational Wastes	Plastic Hard Hats	1,030	
	Plastic Pipe Thread Protectors	7,427	
	Plastic Sheeting longer than 2 feet	4,714	
	Plastic Strapping Bands	20,928	
	Plastic Write Protection Rings	9,917	
	Glass Fluorescent Light Tubes	2,287	
	Glass Light Bulbs	11,101	
	Wooden Crates	2,047	
	Wooden Pallets	5,078	
	Subtotal	**64,529**	**(1.10%)**
Galley Wastes	Plastic Trash Bags	57,236	
	Plastic Bleach Bottles	14,227	
	Plastic Milk/Water Gallon Jugs	32,199	
	Plastic Vegetable Sacks	7,838	
	Foamed Plastic Egg Cartons	5,518	
	Foamed Plastic Meat Trays	13,131	
	Subtotal	**130,149**	**(2.21%)**
Sewage-Associated Wastes	Plastic Tampon Applicators	15,051	
	Rubber Condoms	8,290	
	Subtotal	**23,341**	**(0.40%)**
Medical Wastes	Plastic Syringes	**4,806**	**(0.08%)**
	Total Number of Indicator Items	**414,702**	**(7.06%)**

Conclusions

The International Coastal Cleanups have created a greater public awareness of the issue of marine debris, developing a functioning matrix to assess the types and sources of debris. They have built foundations for solutions to cope with this pervasive pollution problem. But, as this report shows, we are still facing a critical problem regarding human-made debris and its impact on our lakes, rivers, bays, and oceans.

The results of the 1997 U.S. Coastal Cleanup tell us many things. The Dirty Dozen tells us—loud and clear, year after year—that the main source of the bottles, cans, cigarette butts, balloons, and fishing line on our nation's beaches and waterways is not fishermen, or merchant ships, or industrial activity. It's you and it's me, improperly discarding our trash. A human face can be found behind every piece of trash collected from the 1997 U.S. Coastal Cleanup. And plastic, commonly discarded from take-away food and drink or packaging for food and beverages, continues to be the most common type of debris found on our beaches and waterways—almost five times more common than the next most prevalent debris type.

The data confirms that, by and large, the same items that plague beaches in California show up in Oklahoma lakes and Pennsylvania rivers—items that can all be easily recycled or properly disposed of. Unfortunately, the data on the number of bottles and associated goods also show us that recycling programs and container deposit legislation are not the panaceas we thought they would be. Recycling and other solid waste solutions work only when people use them.

The regional overview of marine debris "hot spots" reveals that debris from maritime activities is more prevalent in the Gulf of Mexico and North Pacific, areas of concentrated commercial fishing and boating. While the level of maritime debris has decreased over the years, their continued presence demonstrates that education efforts for boaters, fishers, and shippers must continue.

Sewage associated wastes are most prevalent in the Great Lakes, the Northeast Atlantic, and the Gulf of Maine, generally areas with older, densely populated cities and antiquated sewer systems. Beaches in these regions are also frequently closed due to poor water quality conditions. Sewage-related solid waste found at beach cleanups, such as tampon applicators and condoms, is a good indicator of other, invisible water quality problems.

While much of the data from the 1997 U.S. Cleanup mirrors the findings of previous years, the startling increase in animal entanglements is cause for concern. As noted earlier, the number of animals affected by debris jumped by 48% over 1996, and by 63% over 1995 figures. Part of the increase could be explained by an increase in participation from earlier years, and thus more miles were covered. Yet participation rose by only 16% over 1996 (29% over 1995), while the miles covered rose by only 29% over 1996 and 20% over 1995's mileage. Why the huge increase in entanglements? The Center for Marine Conservation began our marine debris work in part out of our concern for its effects on marine wildlife. While much has been accomplished over the last 12 years by CMC and our partners in private industry, government, and environmental and citizen action groups, it is clear that much more still needs to be done, especially in reducing debris' wildlife victims.

Finally, regulations against dumping, recycling programs, and other waste management policies are effective only if we comply with them. Education is key. Significant strides have been made in broadening the public's awareness of this issue, as evidenced by the Cleanup's expansion in recent years (as well as the comments from exhausted and newly-enlightened volunteers after they have spent three hours cleaning up after someone else!). CMC and its partners in government, private industry, foundations, associations, and environmental and citizen action groups are taking what has been learned over the years to develop permanent solutions to a very solvable pollution problem.

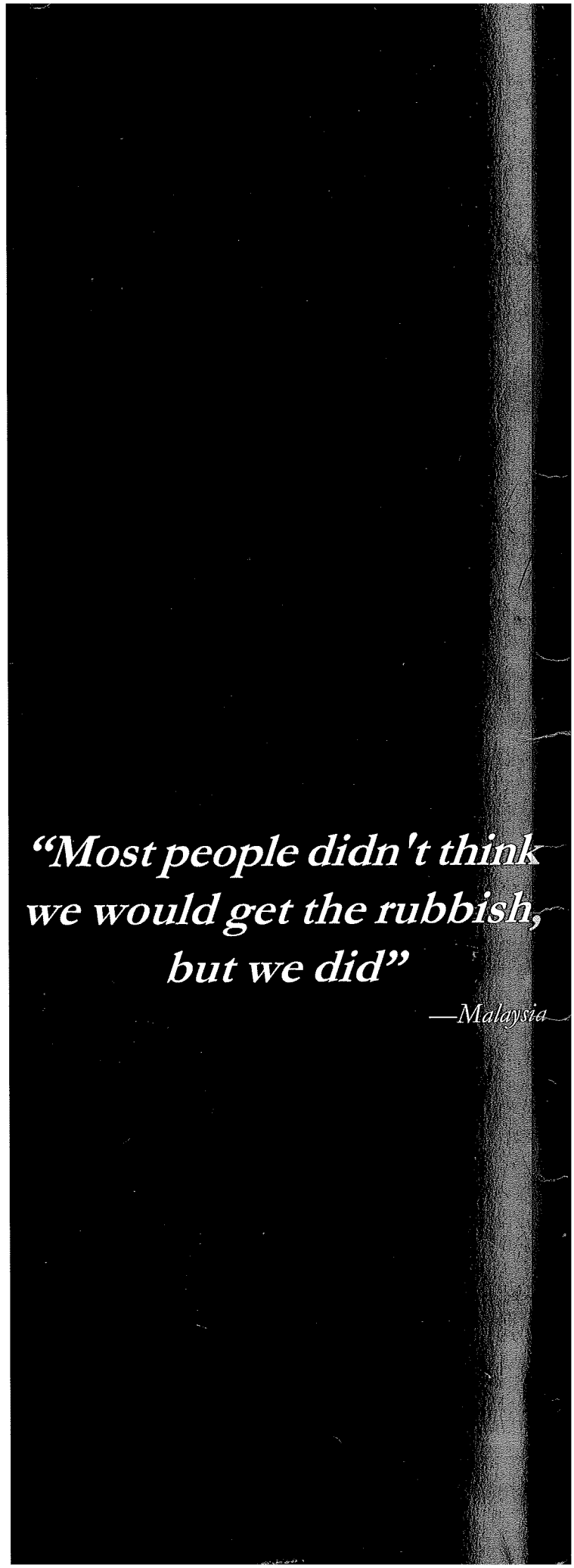
Table 5. Regional Overview of Marine Debris: Debris "Hot Spots"

REGION	R. FISHING	C. FISHING	OPER.	GALLEY	SEWAGE	MEDICAL
Appalachians and Ozarks (AR, MO, TN)						
Caribbean (PR, VI)			X	X		X
Great Lakes (IL, IN, MI, MN, NY, OH, PA, WI)					X	
Great Plains and Prairies (NE, OK)						
Gulf of Maine (MA, ME, NH)		X	X		X	
Gulf of Mexico (AL, FL, LA, MS, TX)	X	X	X	X		
Mid-Atlantic (DC, DE, MD, VA)	X					
North Pacific (AK, OR, WA)	X	X	X	X		
Northeast Atlantic (CT, MA, NJ, NY, RI)		X			X	X
Pacific (CA)						X
Rockies (CO, MT, NV, UT)	X					
South Atlantic (FL, GA, NC, SC)	X		X			
South Pacific (GU, HI, SA, AS)	X			X		X
Southwest (AZ, NM)	X					

Xs indicate region's debris in that category was equal to or above the national percentage.

"It was a pleasant and very adventurous exercise"

—Kenya



"Most people didn't think we would get the rubbish, but we did"

—Malaysia

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