B. Socioeconomic Environment

1. The Region

Fire Island is located in the most densely populated region of the United States--some 20.8 million inhabitants live within a 100-mile radius in the states of New York, New Jersey, and Connecticut (see figure 14). The immediate environs--Nassau and Suffolk Counties, New York--comprise a land area of 1,200 square miles, with a 1976 population of approximately 2.76 million, which represents a 7.9 percent increase from the 1970 population. Nassau County, covering the western half of Long Island, listed 1,460,421 inhabitants in 1976, and Suffolk County, to the east, had a population of 1,297,256.

The rapid population growth witnessed for decades in Nassau County had sharply decreased by 1970 due to the lack of available land for housing and related development. From 1960 to 1970 the county grew by only 9.9 percent, a rate larger than the 8.4 percent increase for New York State, but well below the 13.3 percent rate of national population growth.

Much of the decline in Nassau County growth and development was counterbalanced by large population increases in eastern Suffolk County towns such as Islip, Babylon, and Brookhaven. From 1960 to 1970, Suffolk County's population increased 69 percent, while the town of Brookhaven had a dramatic 95 percent growth rate. The population of Suffolk County is concentrated in central and southern Long Island, with 65 percent of the total in the south-shore towns of Babylon, Islip, and Brookhaven. Given the existing population distribution in Suffolk County, at least 750,000 persons reside within 30 minutes of one of the Fire Island ferry staging areas.

Long Island inhabitants are relatively young. Islip, Brookhaven, Huntington, Smithtown, and Babylon rank one through five among the townships in the two-county region in size of school-age population. Migration of young families into Suffolk County accounted for at least 70 percent of the county's growth in the recent decade.

Current evidence concerning the housing market and industrial growth indicates a probable decline in the rapid growth rate of Suffolk County. The apparent abandonment of plans for a cross-sound bridge linking Suffolk County with Connecticut will also aid in slowing the growth rate, although these same factors can be expected to produce increases in local demands on recreational resources.

Recreational resources within Nassau and Suffolk Counties vary widely. Suffolk County currently has a surplus of undeveloped recreational lands; Nassau County is faced with a significant shortage. The Nassau-Suffolk Regional Planning Board predicts no significant increase in open space through the year 2000, but population increases of 900,000 people are expected by 1985.

Large populations, predominance of young families, high income levels, and increasing amounts of leisure time add to the needs for recreational resources, and needs will increase if Suffolk County repeats Nassau County's development history. Because the housing shortage is a major problem, and because little land is available in Nassau County for additional building, future residences will be high-density townhouse complexes and condominiums, with minimal recreational areas.

The barrier-beach system of southern Long Island provides recreational opportunities for a large number of the region's residents. Due to the extreme shortages of recreational space within the region, Robert Moses State Park and Smith Point County Park, both adjacent to Fire Island facilities, are heavily used on peak summer days. These two parks will continue to serve high-density recreational needs for the Fire Island region.

One of the most important industries in the vicinity of Fire Island is shellfishing, and Great South Bay has historically been a leader in the production of hard-shell clams--approximately 40 percent of the world's supply is harvested from Suffolk County's Great South Bay region. The retail value of shellfish production on Long Island has been conservatively estimated at $100 million. The hard-shell clam industry in the region is made up of private companies, individual operators, and others who harvest clams for personal use and recreation. In Suffolk County, there are approximately 8,000 licensed individuals who harvest shellfish, and approximately 500 people are employed in onshore shellfishing activities. From 1960 to 1974, shellfishing increased approximately 60 percent with 1974 dockside sales of $12.4 million. This value is probably an underestimation because some of the clam harvest is independently marketed and is not reflected in annual dockside value.

2. Fire Island

a. Access

In terms of accessibility, Long Island (and subsequently Fire Island) is one of the most isolated areas in the Northeast. Long Island Sound, the Atlantic Ocean, and most importantly the New York City metropolitan

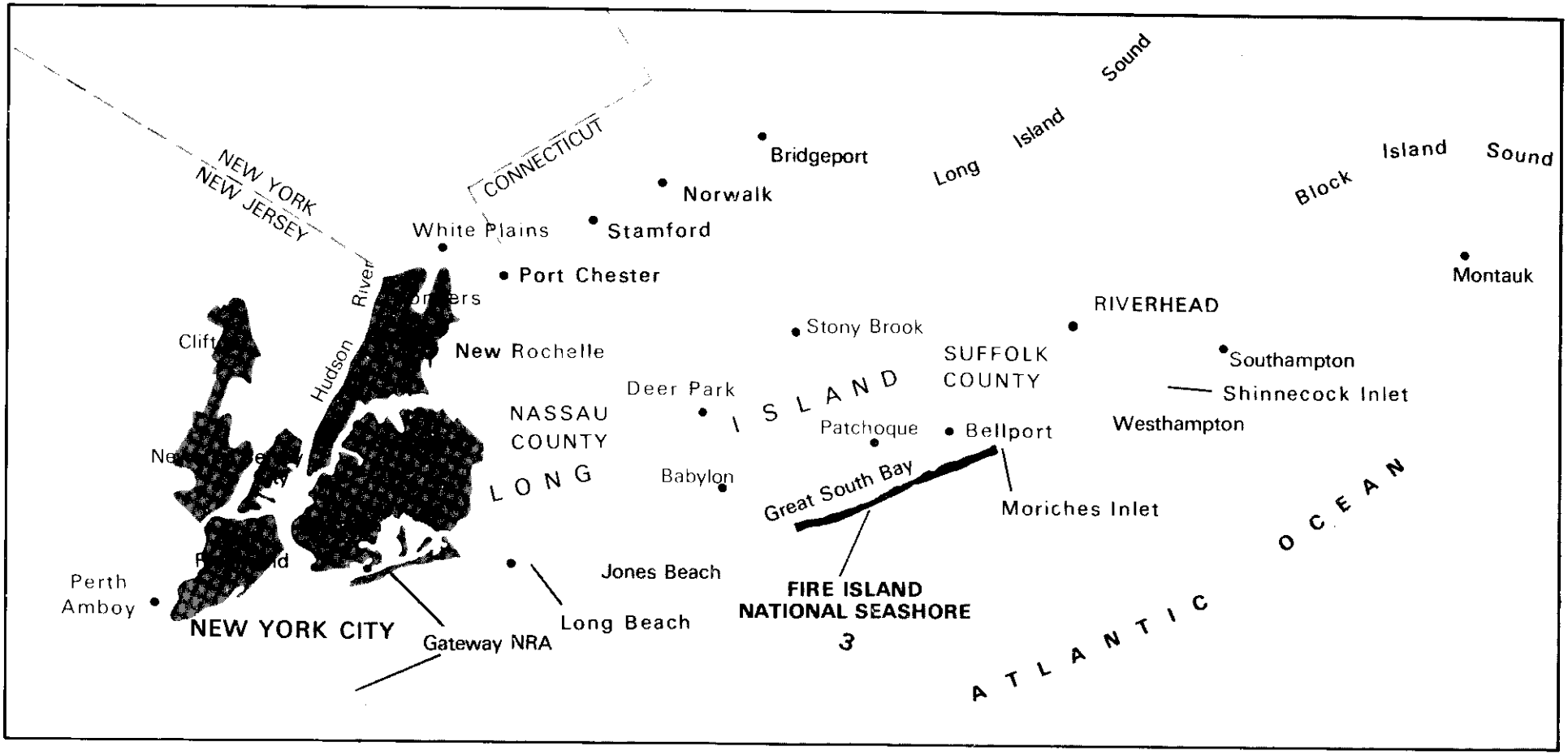

Figure 14

The Region

Fire Island National Seashore

UNITED STATES DEPARTMENT OF THE INTERIOR/NATIONAL PARK SERVICE

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DSC | MAY 76

area all act as barriers to the efficient movement of people to and from Long Island. The highway network linking Long Island and New York City is overcrowded, and the mass-transit system is often inefficient. Because New York City has impeded westward mobility for Long Island residents, restricting access to recreation areas north and west of the city, Long Island's recreational facilities have become important to island residents. Similarly, the congested highways discourage motorists from New York, New Jersey, and southern New England who might otherwise consider a trip to the national seashore. Other natural and recreational resources in more accessible locations are available for these populations.

The congested highways of Long Island provide access to the William Floyd Estate and to the ferry terminals serving Fire Island. There are only two automobile routes to Fire Island from Long Island: Robert Moses State Parkway, which goes to Robert Moses State Park and the Fire Island Lighthouse tract; and the William Floyd Parkway, which terminates at Smith Point County Park adjacent to the federal area known as Smith Point West. Once on Fire Island, there is no automobile access for seashore visitors to any other federal area unless they take in recreational vehicles at Smith Point West between September 15 and May 14. Visitors can then drive along the beach as far as Long Cove. Otherwise, visitors can walk 8 miles from Smith Point West to Watch Hill, the nearest federal area, or from the Fire Island Lighthouse tract to Sunken Forest, a distance of about 7 miles.

Boats provide the best access to the major federal activity areas on Fire Island--Watch Hill and Sunken Forest. In 1974, 66 percent of the visitors arrived by private boat and about 34 percent by public ferry. The National Seashore Ferry Service at Sayville serves Sunken Forest/Sailor's Haven, and the Davis Park Ferry Company in Patchogue serves Watch Hill. Visitors who do not have access to private boats may have to endure many frustrations before reaching the national seashore. Those who arrive at the ferry terminals by car may have to battle several hours of traffic on Long Island highways, only to become lost en route to the ferry slips because routes are poorly marked. At the ferry slips, costs for public parking range from $2 to $3 per day, and the insufficient parking area is often full. Visitors must then leave their cars some distance away, occasionally at the risk of an illegal parking fine. Their frustration may be magnified when they see many empty spaces in the parking lot, which are reserved for the exclusive use of local town residents, who pay no fee. If visitors miss a ferry connection, they may have to wait an hour or more for the next run. Round-trip ferry rides cost $3.00 to $3.75 per person; once on the ferry, visitors have about a 30-minute ride to the island. At the national

seashore, visitors disembarking from the ferry temporarily crowd the docks and nearby facilities.

Perhaps to avoid the frustrations associated with automobile access to the ferry slips, 15 percent of the visitors who took the ferry to Watch Hill (1974) and 5 percent of those who took the ferry to Sunken Forest arrived in the vicinity of the ferry terminal by means of the Long Island Railroad. From the railroad station they can take a taxi or bus to the ferry terminal, or walk.

There are other, less-used modes of access to the national seashore. Most operators now providing ferry service to Fire Island also provide water taxi service on a demand basis to all private and federal exempted communities on Fire Island from any of the three existing mainland terminals. This service is also available for lateral movement to places along the seashore that are accessible by boat. Seaplane charter service is available to any point on Fire Island and originates from either Wall Street or 23rd Street Marine Terminal on the East River. Seaplanes land in Great South Bay and taxi into non-federal marina areas.

Access for residents of the 17 exempted communities of the national seashore is somewhat different than for seashore visitors. They have all the modes of access available to seashore visitors, plus additional ferry service and limited use of motor vehicles (the National Park Service issues special permits for such access; see table 9). About 90 percent of the seashore residents arrive on Fire Island by ferry, the remainder by private vehicle or seaplane.

Walking and bicycling are popular means of circulation between the exempted communities, especially because distances are not great and most circulation takes place between adjacent villages. For movement of family goods and small parcels such as groceries and suitcases within each of the communities, the ubiquitous "little red wagon" is used. Additional circulation in Point O'Woods is provided by a small gauge railroad running from the ferry dock to Ocean Avenue, almost 1/2 mile in length.

In addition to vehicular access permits for residents, permits for recreational vehicle operation along the seashore are issued to hunters, fishermen, and recreational vehicle enthusiasts. This permit classification restricts operation to the off-season (September 15 to May 14) along the seaward side of the beach between Smith Point West and Long Cove (8-mile zone). The total number of permits issued by the National Park Service for motor vehicle access is listed in table 9.

TABLE 9

MOTOR VEHICLE PERMITS ISSUED IN 1976

Purpose	
Resident access	212
Multi-purpose access	79
Service access	88
Resident access (high dune management unit)	33
Total	**412***
Recreational use (Smith Point West to Long Cove only)	550

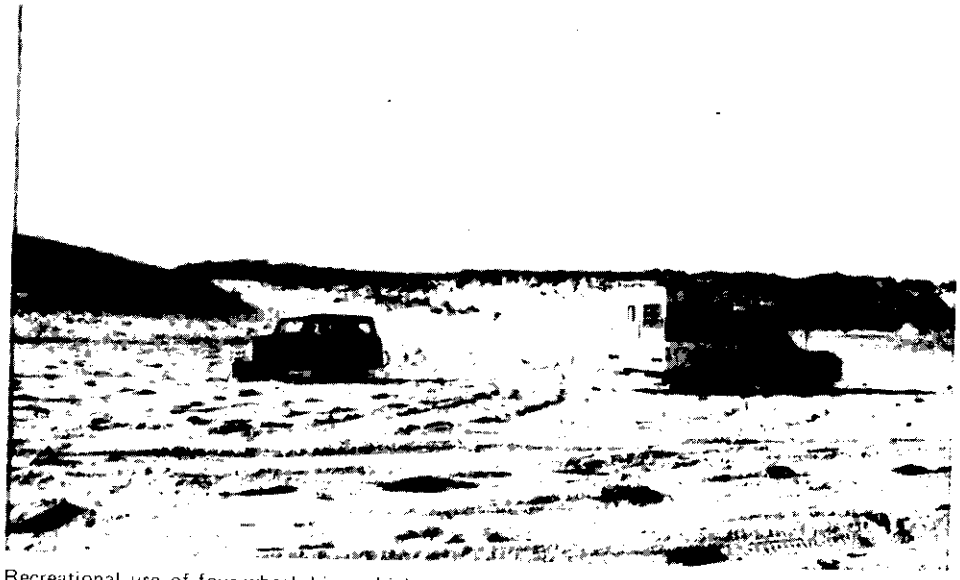
* Of the 412 permit holders, 146 enter at Smith Point West and may travel as far west as Point O'Woods; 266 enter at Fire Island Lighthouse and may travel as far east as Point O'Woods.

TABLE 10

VEHICLE ENTRIES BY CHECKPOINT – 1976

	Smith Point (recreational)	Smith Point (nonrecreational)	Fire Island Lighthouse (nonrecreational)
1975			
November	806	1,237	9,413
December	295	1,087	11,529
1976			
January	484	1,185	10,616
February	501	1,185	11,785
March	642	1,133	10,390
April	1,014	928	5,098
May	114	1,385 (estimate)	7,942
June	not allowed	1,370	3,034
July	not allowed	952	3,092
August	not allowed	777	3,254
September	1,171	940	2,955
October	1,614	1,207	6,420
November	921	1,399	6,029

Vehicle Use on Fire Island (Photograph taken in September 1974)



Recreational use of four-wheel-drive vehicles on the beach is heavy in the autumn when surf fishing and touring are popular activities. This photo was taken near the old Forge River Lifesaving Station on Suffolk County lands east of Smith Point County Park. During this sunny Sunday afternoon, a vehicle passed this point every 3-5 minutes.

Vehicular dune crossing on Suffolk County land east of Smith Point County Park. Dunes have been totally destroyed in this area, which eventually may be the site of a breakthrough by the ocean during a severe storm.

b. Existing Land Use and Development

Offshore slopes in the Atlantic Ocean are controlled by New York State. The Blue Point Company, a major regional shellfishing operation, owns most of the bay bottom in Great South Bay west of Talisman, except for a few minor federal holdings (about 91 acres) near recreational developments and areas owned by Long Island municipalities. All of the water in Moriches Bay within the boundary of the national seashore is owned by the state. The water around Fire Island is a valuable multiple-use resource, providng for a productive fishing and shellfishing industry, a network of navigation channels, and a wide assortment of recreational activities.

Land on Fire Island is used principally for summer recreation. Community developments and public parks encompass a variety of recreational resources. Public parks on Fire Island are managed by federal, state, or county agencies, and the type of recreational opportunities available depends on the managing agency. State and county parks offer high-density recreational activities, while the national seashore offers low- to medium-density activities. (See figures 1 and 2 and tables 1 and 2.)

(1) Community Developments

The community developments (1,113 acres) consist mostly of summer residences, commercial establishments, and related utilities. They are situated primarily at the western end of the island, within the boundaries of the national seashore. Collectively, these communities provide the island's greatest variety of recreational facilities (mostly private), virtually all of its overnight accommodations, and most of its commercial establishments. No highways or lateral ferry systems link the communities with public recreation areas, and public facilities in the communities are largely inaccessible to visitors who do not own boats. The residential areas are political subdivisions of Long Island's towns of Islip and Brookhaven and the island villages of Ocean Beach and Saltaire, which provide limited municipal services.

Assurance of acceptable environmental quality in these communities is in part the responsibility of the Secretary of the Interior, who may issue regulations governing land-use development and island protection and must approve all zoning ordinances pertaining to these areas. The federal government has discretionary authority to exert control over activities in these communities. In practice, however, the community developments function as semiautonomous units within the

national seashore. Park visitors are not encouraged to spend time in the communities.

Land-use control, through Department of the Interior zoning regulations, was the explicit responsibility of the four local governments controlling the 17 communities of Fire Island. Widespread confusion has developed since establishment of the national seashore regarding which governmental authority should do what to enforce land-use controls. In general, local and federal authorities have failed to exercise proper responsibility.

The use of four-wheel-drive vehicles has become an increasing concern to visitors, some property owners, local governmental officials, and National Park Service managers. Where vehicle use is particularly heavy, both federal and non-federal lands are adversely affected. The number of permits has been reduced in recent years--1,414 permits in 1975, 962 in 1976--and more restrictive measures will be required in the immediate future to provide the environmental quality due visitors and users of this unique barrier island. The reduction of vehicle use to the absolute minimum is a common objective of the federal and local governments.

(2) Municipal Parks

The towns of Islip and Brookhaven and the village of Bellport maintain five small private parks for the use of their residents. Two, Barrett Beach and Bellport Beach, are of particular importance with respect to the national seashore because they are included within major federal tracts. Barrett Beach, a 7-acre bay-to-ocean strip of land owned by the town of Islip and developed as a recreational beach, transects the federally owned Talisman tract. Both Barrett Beach and the Talisman tract are receiving increased use. The beach is ecologically important because it consists of a graded, unstabilized fill zone through the middle of the narrowest part of the island.

Bellport Beach, a similar but less extensively developed private municipal park, was constructed for the use of residents of the village of Bellport. The land is leased under a long-term special permit from the National Park Service. This 200-foot-wide strip is located in the middle of an outstanding natural area. Bellport Beach's interior swale has been covered with fill material, and the rest of the tract has been filled and graded from bay to dune line.

(3) Smith Point County Park

Smith Point County Park, a 1-mile-long bay-to-ocean strip that is managed by Suffolk County, is part of a 6.3-mile segment at the eastern end of Fire Island. The park lies completely within the authorized boundary of the national seashore and contains facilities for high-density recreation near the end of William Floyd Parkway. The county lands east of the park are largely undeveloped. Smith Point County Park's major recreational development is adjacent to the largest natural area in the national seashore. A relatively small percentage of visitors to the county park also visit this prime natural area, and the presently minimal adverse environmental effects of visitor use occur primarily within a 1- to 2-mile area west of the parking lot. Annual visitation for Smith Point County Park during 1975 was 1,130,000. During the 5-year period 1971-75, Smith Point experienced increases in visitation of approximately 10 percent annually.

(4) Robert Moses State Park

Robert Moses State Park is located at the extreme western end of the island and is reached via the Robert Moses State Parkway. High-density recreation there has little effect on activities elsewhere on Fire Island. The nearest federal development is 6 miles east at Sunken Forest, and the lighthouse tract and private communities block the eastward movement of people. Construction of recreational developments on this recently formed land probably has little short-term effect on the natural evolution of the rest of the island. The state park is an important recreation site for Long Island residents and it received 2,517,600 visits during 1975. Visitation has fluctuated since 1971, but overall it has had a 0 percent growth rate.

(5) Fire Island National Seashore

In February 1977, the National Park Service managed 5,943 acres within the seashore boundaries, of which 2,792 were owned in fee and 3,151 acres were controlled through an easement granted by New York State (from the mean high waterline seaward 1,000 feet). The lands managed by the Park Service represent about 31 percent of the total acreage of land and water (19,356.55 acres) within the boundaries. Most federally owned lands were acquired during a 6-year period following passage of the enabling act in 1964. At present, Park Service holdings on Fire Island consist of four large bay-to-ocean strips totaling 1,639 acres and six smaller bay-to-ocean strips totaling 183 acres. All of East Fire Island and its satellite islands (156 acres), as well as most of West Fire Island (102 acres), are also federal lands. In addition to

TABLE 11

LANDOWNERSHIP OF FASTLANDS WITHIN
FIRE ISLAND NATIONAL SEASHORE BOUNDARIES

	Acres
National Park Service	2,792
Suffolk County	1,212
Private Landowners	
17 exempted communities	1,113
Inholders within federal tracts	40
Local Municipalities	
On Long Island	166
On Fire Island	55
Total	**5,378**

TABLE 12

LANDOWNERSHIP IN THE COMMUNITIES OF FIRE ISLAND

(Bay-to-ocean acreages were determined by planimetry of 1973 aerial photographs. Ownership was established from 1973-74 Islip and Brookhaven tax rolls. Number of separately owned parcels is indicated in parentheses.)

	Landownership in Acres						
Community	Private	Utility	Institutional	Village	Town[1]	County	Total
Lighthouse Shores/Kismet/ Seabay Beach	40.4(241)	–	–	–	–	–	40.4(241)
Saltaire	128.1(543)	–	1.3(7)	35.6(86)	–		165.0(636)
Fair Harbor	81.4(469)	0.3(1)	–	–	0.5(4)	–	82.2(474)
Dunewood/Lonelyville/Atlantique	49.5(208)	–	–	–	–	–	49.5(208)
Robbins Rest/Fire Island Summer Club/Corneille Estates	42.2(209)	–	1.1(2)	–	–	–	43.3(211)
Ocean Beach	75.7(619)	0.4(2)	2.0(5)	5.6(34)	–	0.1(3)	83.8(663)
Seaview	95.4(413)	0.2(1)	0.1(1)	–	0.2(1)	–	95.9(416)
Ocean Bay Park	66.6(417)	–	–	–	0.7(3)		67.3(420)
Point O'Woods	147.5(283)	0.4(2)	0.3(1)	–	–	–	148.2(286)
Cherry Grove	56.3(106)	–	–	–	2.2(2)	0.02(1)	58.5(109)
Fire Island Pines	175.1(529)	0.1(1)	0.4(3)	–	0.7(5)	–	176.3(538)
Water Island	11.8(48)	–	–	–	–	–	11.8(48)
Davis Park	53.1(92)	0.3(1)	1.6(2)	–	–	0.3(1)	55.3(96)
Ocean Ridge	33.4(106)	–	0.2(1)	–	2.0(1)	–	35.6(108)
Totals	**1,056.5(4283)**	**1.7(8)**	**7.0(22)**	**41.2(120)**	**6.3(16)**	**0.4(5)**	**1,113.1(4454)**

[1] Excludes all town beaches.

TABLE 13

APPROXIMATE NUMBER OF STRUCTURES IN COMMUNITIES OF FIRE ISLAND NATIONAL SEASHORE
(Based on 1973 aerial photography. Figures in parentheses indicate known additional structures built during 1974.)

Community	Type of Structures				
	Residential	Commercial	Institutional	Total	No. Structures/Acre
Lighthouse Shores/Kismet/ Seabay Beach	178(2)	9	1	188	4.7
Saltaire	298(3)	5	8	311	1.9
Fair Harbor	342	4	4	350	4.3
Dunewood/Lonelyville/Atlantique	168	0	0	168	3.4
Robbins Rest/Fire Island Summer Club/Corneille Estates	111(3)	2	2	115	2.7
Ocean Beach	517	32	12	561	6.7
Seaview	313(5)	2	5	320	3.3
Ocean Bay Park	280	14	3	297	4.4
Point O'Woods	144	3	4	151	1.0
Cherry Grove	250(2)	19	2	271	4.6
Fire Island Pines	501(5)	6	2	509	2.9
Water Island	29(1)	0	0	29	2.5
Davis Park	156	3	5	164	3.3
Ocean Ridge	126	0	0	126	3.0
Totals	**3,413(21)**	**99**	**48**	**3,560**	**3.2**

TABLE 14

DETAILED INVENTORY OF DEVELOPMENT AND LAND USE IN THE COMMUNITIES OF OF FIRE ISLAND NATIONAL SEASHORE

Number by Category

	Apartments	Churches	Dumps	Dune and Marsh Sites (vacant)	Dune Zone Structure	Marinas	Miscellaneous Commercial	Municipal Buildings	Nature Preserve	Offices	Post Offices	Public Lodgings	Recreation Areas	Restaurants	Retail Stores	Swimming Pools (private)	Utility Buildings	Vacant Lots	Percent of Total Lots Developed (based on present zoning)
Lighthouse Shores/ Kismet/Seabay Beach	2			2	10	4		1		2		3	1	2	2			66	74
Saltaire		1		76	19			6	1	1			2		4			537	37
Fair Harbor				9	21	1				2	1		1	1	3		1	144	70
Dunewood/Lonelyville/ Atlantique				17	15			4									2	149	53
Robbins Rest/Fire Island Summer Club/Corneille Estates				18	12			1				1	1	1			1	94	55
Ocean Beach		2		15	24		3	6				9	1	11	26	1		81	87
Seaview				6	22			5		3			3		2	5		181	64
Ocean Bay Park				8	26			2	1	3		2	1	2	2	1	1	65	82
Point O'Woods		1	1	135	14		1	1			1	2			1			390	28
Cherry Grove				5	34			2		1		5	1	3	8	8		36	88
Fire Island Pines	1			20	41		1	3	1	2		1		2	9	52		159	76
Water Island				4	3													12	71
Davis Park			1	0	22			2			1	1	1	1	1	2	1	10	94
Ocean Ridge		1		0	15										1	1		2	98
Totals	**3**	**5**	**2**	**315**	**278**	**5**	**5**	**33**	**3**	**14**	**3**	**24**	**12**	**23**	**59**	**70**	**6**	**1,926**	**65**

these lands, which were included within the original boundary, Congress added in 1965 the 612-acre William Floyd Estate, a historic mainland property north of Moriches Bay near the eastern end of Fire Island.

The Department of the Interior has expended $15,731,000 of the $16 million originally authorized for land acquisition and purchases of interests in land, and the remaining $269,000 has been included in the 1977 Park Service budget request. In 1976, Congress authorized an additional $2 million for land acquisition.

Presently, approximately 60 residences (40 acres) remain occupied under tenancy options. Residential structures and associated developments on federally acquired lands are slowly being removed, and the lands are being used for public day-use recreation or natural preservation. After 1977, only 19 tenancy options will remain, and they will terminate by 1993.

The federal government does not own the beach, the primary dune line, the marshlands, or other unimproved lands on Fire Island that are outside the boundaries of its existing holdings, and it has no bay-bottom acreage, except for a small tract at Sunken Forest that is 1,000 feet out into the bay and follows a line 1,350 feet east and west of the centerline of the marina.

The enabling legislation gave the National Park Service proprietary interest (jurisdiction) over waters for a distance up to 4,000 feet in Great South Bay, as indicated by the seashore boundary on figure 1. In 1966, New York State granted the Park Service use and occupancy rights (easements) over waters for a distance of 1,000 feet into the Atlantic Ocean from the high waterline on the beach.

The concerns of the National Park Service in exercising jurisdiction in the Great South Bay are fourfold. First is the concern about the health, safety, and welfare of the general public using these waters that are within the national seashore's boundaries and the effects such uses might have on adjacent seashore lands. Within this framework, the Park Service might reasonably be expected to assure that adequate safety equipment is aboard boats within seashore waters and that the use of these boats complies with applicable U.S. Coast Guard regulations. A second area of regulatory concern relates to hunting migratory waterfowl within seashore boundaries, a concern that is addressed through a cooperative hunting agreement between the Park Service and New York State. A third area of concern is the introduction of pollutants, wastes, or other materials into bay waters, which would adversely affect the quality of bay waters or bayside shorelines and

TABLE 15

TRENDS IN THE DEVELOPMENT OF FIRE ISLAND COMMUNITIES 1928-1973 (BASED ON AERIAL PHOTOGRAPHS AND TOPOGRAPHIC MAPS[1])

Community	Approximate Number of Structures by Year										Mesa Number Structures/Year					
	1928	1938[3]	1947	1955	1962	1964	1966	1969	1972	1973	1938-1962	1938-1947	1947-1955	1955-1962	1966-1973	Years to Full Development
Lighthouse Shores/ Kismet/Seabay Beach	13	7	8	32	72	285	109	149	170	188	3	0	3	6	11	6
Saltaire	158	73	107	120	158		220	264	283	311	4	4	2	5	11	41
Fair Harbor/Dunewood/ Lonelyville/Atlantique	73	37	70	177	311	351	404	440	476	526	11	4	13	19	17	17
Robbins Rest/Corneille Estates/Ocean Beach	401	319	365	494[2]	605	834	648	637[2]	625	676	12	5	16	16	4	44
Seaview	60	90	87	161[2]	226		293	296[2]	299	320	6	0	9	9	4	45
Ocean Bay Park	20	50	61	144[2]	217	400	257	263	273	297	7	1	10	10	6	11
Point O'Woods	152	104	130	137[2]	144		146	146	149	151	2	3	1	1	1	390
Cherry Grove	49	8	64	187	150	230	263	263	265	271	6	6	15	-5	1	36
Fire Island Pines	5	7	8	97	282	332	411	434	453	509	11	0	11	26	14	11
Water Island	14	12	17	28	29	26[2]	23	25	28	29	1	1	1	0	1	12
Davis Park	3	0	7	63	123	241	152	152	154	144	5	1	7	9	-1	
Ocean Ridge	1	0	16	20	70		106	106	120	126	3	2	1	10	3	1
TOTALS	**949**	**707**	**940**	**1260**	**2387**	**2699**	**3032**	**3175**	**3295**	**3548**	**71**	**27**	**89**	**106**	**72**	**25[4]**

[1] Air Map Corporation of America 1928, 1:24000; Fairchild Aerial Surveys Inc. 1938, 1:24000; U.S. Geological Survey 1947, 1:24000; U.S. Geological Survey 1955, 1:24000; Lockwood, Kessler, & Bartlett Inc. 1962, 1:1200; Lockwood, Kessler, & Bartlett Inc. 1969, 1:4800; Webster, Sheffield, Fleischman, Hitchcock & Brookfield 1964; Grumman Ecosystems Corp. 1972, 1:4800; Aerial Data Reduction Inc. 1973, 1:4800.

[2] Data unavailable. Interpolation made based on rate of change between proximal surveys.

[3] Following the great hurricane of 1938.

[4] Based on past trends, 25 years would be the average period required for full development of presently undeveloped land

TABLE 16

STRUCTURES DAMAGED ON FIRE ISLAND BY THE MARCH 6-8, 1962, STORM

Locality	Dwellings Destroyed	Dwellings Damaged	Dwellings Endangered	Other Effects
Fire Island Lighthouse	–	10	–	
Kismet	3	1	5	
Saltaire	–	3	14	Boardwalk damaged
Fair Harbor	2	6	10	
Dunewood to Seaview	5	19	4	
Ocean Bay Park	–	7	5	
Point O'Woods	5	19	6	Hotel damaged
Cherry Grove	–	3	1	
Fire Island Pines to Talisman	32	4	21	Area evacuated
Water Island	–	3	3	
Davis Park	–	–	19	
Long Cove	–	–	1	
Ridge Island	–	3	2	
Totals	**47**	**78**	**91**	

their related marine plant and animal life. This concern could be addressed by regulating wastewater discharge into bay waters by private and commercial vessels and by encouraging boat owners to use land-based disposal facilities for both garbage and human waste products. A final concern deals with resource protection and preservation, which is covered by regulations found in the Code of Federal Regulations, Title 36, Sections 1 through 6.

The present authority of the National Park Service within the 4,000-foot jurisdiction does not permit regulation of commercial or recreational shellfishing nor the regulation of bay-bottom activities. It is the position of the Park Service, as one of the many enforcing agencies with jurisdiction in this area, not to increase its patrol function to include regular checks on all bay waters within the presently mapped boundary, but to concern itself with those areas already referred to as resources management (for example, water quality) and public safety interests.

The National Park Service staff has faced several problems in managing Fire Island National Seashore, including unsatisfactory vehicle-use controls, lack of resources management policies, inadequate zoning regulations, no appropriate national seashore headquarters or ferry terminal area, and insufficient visitor parking.

(6) Economic Effects of Storm Damage

Fire Island lies along the Atlantic coast in almost an east-west configuration, and it is the first land front that any cyclonic storm encounters in a track toward New England. Winds and waves are intensified over the extensive open-water fetch south of Fire Island, and severe storms--both extratropical (northeasters) and tropical (called hurricanes if sustained winds are greater than 74 miles per hour (mph), and great hurricanes if greater than 125 mph)--have played a major role in Fire Island's geomorphic and cultural histories.

Between 1901 and 1962, storms causing significant damage on Long Island occurred on an average of once every 1.1 years, and those causing moderate damage once every 1.3 years. Severely damaging storms occurred once every 10.1 years, and unusually severely damaging storms once every 30.5 years. The greatest damages from a northeaster occurred during the so-called Ash Wednesday Storm on March 7, 1962, when loss of property between Jones Inlet and Montauk Point totaled $16,549,000. Fifty ocean breakthroughs were recorded between Fire Island Inlet and Southampton. On Fire Island, 47 dwellings were destroyed, 78 were damaged, and 91 were endangered (see table 16). This was the latest unusually severe storm to

strike Fire Island. The most severe hurricane that has hit Fire Island during the period of record was the Great Atlantic Hurricane of September 21, 1938; ecological damages from that storm to forests on Long Island and in New England will be felt until the early 21st century. It opened up Shinnecock Inlet, and six others that soon closed. A thousand homes on Long Island were damaged or destroyed, 45 persons died, and damages exceeded $6 million (1938 dollars). Ninety percent of the primary dunes on Fire Island--where the eye of the storm crossed--were reported leveled; only those 18 feet above mean high water escaped inundation. The latest damaging hurricane to strike Long Island was Hurricane Donna, which hit in September 1960.

Since 1960 (Hurricane Donna), intensive development of the barrier beaches has taken place, especially on Fire Island. At the same time, man's manipulation of the barrier-beach environment with groins, jettied inlets, etc., has significantly increased erosion of the beach and extensive loss of dunes that might protect development. Recent calculations of storm damages that would probably be sustained by Fire Island should a storm of 1938 intensity and configuration strike indicate losses of at least $70 million. The so-called design hurricane of the Army Corps of Engineers--a standard project hurricane that assumes the most adverse meteorological conditions likely to be attained so that protective measures can be designed to withstand or to blunt the effects--assumes a wind speed of 112 mph, a wind pattern similar to the 1938 hurricane near Long Island, a radius of 50 nautical miles, a fetch of 150 nautical miles, a forward velocity of 35 mph, and a central barometric pressure of 27.50 inches. With a mean normal high tide of 1.8 feet, the project hurricane ocean tide on Fire Island would be 14.9 feet above mean sea level (msl). Neglecting wind effects, bay tides would average 8 to 10 feet above msl. Mid-1974 estimates of damage to Fire Island from this design hurricane approximate $132 million--virtually the whole assessed valuation of development on the island, and probably conservative in view of present beach and dune conditions.

Besides damaging structures, storms generally erode the beach severely, reducing the area available for recreational activities and conceivably the market for rental property on the island. Also inlets open and close during storms. Because inlets are avenues for ocean water to move back and forth from the bay, their presence or absence affects the salinity of the water in the bay. The salinity of the bay is important economically because it strongly affects the shellfishing industry.

c. Residents

While Fire Island residents are extremely diverse in their preferences for recreation and in their personal life-styles, they are generally united in feeling that the island's tranquillity, its relatively low population density, and its many features of natural beauty should be preserved. It is for this reason that the island's residents, represented by the Fire Island Association and by local property owners' groups, vigorously supported the creation of Fire Island National Seashore in 1964. It was their hope that management of the island's natural resources by the National Park Service would prevent road building and subsequent excessive urbanization of this barrier island. Although prevention of the highway project has slowed the rate of residential and commercial development, it has by no means erased the trend of increasing development in the communities.

(1) Population Characteristics and Trends

It is extremely difficult to know the actual population of Fire Island's residential communities because the U.S. Census of Population necessarily omits summer populations from its count. Partly for this reason, the National Park Service commissioned a survey of Fire Island households in July 1974. From the responses of the 1,074 residents who answered the household survey, it is possible to make estimates of the size and demographic characteristics of the residential population (table 17).

On one hand, the survey estimate of 15,480 summer residents probably falls short of the true residential population because younger families and nonfamily groups tended to be somewhat underrepresented among the respondents. On the other hand, a 1973 Suffolk County Department of Health estimate of 20,016 residents apparently overestimated the population of some Fire Island communities. Therefore, it is safe to assume that the overall summer population falls between 16,000 and 20,000 residents.

The residential population of Fire Island is composed predominantly of adults between the ages of 19 and 65; the residents reported that 71 percent of the members of their households fall within this age group, a much higher percentage than for either New York City or the United States as a whole. Difficult access alone makes Fire Island's communities somewhat less desirable than other shore communities for the aged and for families with very young children.

TABLE 17

ESTIMATED SUMMER RESIDENTIAL POPULATION OF FIRE ISLAND[1]

Age	Normal Population (Summer)	Percent	Peak Weekend Population	Percent	Percentage Point Difference
6 or less	1,037	6.7	1,143	6.9	+0.2
7-18	2,430	15.7	2,053	12.4	−3.3
19-35	4,582	29.6	5,415	32.7	+3.1
36-65	6,409	41.4	6,872	41.5	+0.1
66 or more	1,022	6.6	1,076	6.5	+0.1
Totals	**15,480**		**16,560**		

[1] Estimates based on 3,600 households with normal multiplier of 4.3 and a weekend multiplier of 4.6. Percents are based on sample data; absolute numbers are estimates.

TABLE 18

OWNERS AND RENTERS IN THE COMMUNITY POPULATIONS OF FIRE ISLAND

	Percent			
	Owner	Renter	No. of Survey Respondents	Community Rank
Total Sample	71.6	28.2	–	–
Tri-Communities	34.4	65.6	62	1
Saltaire	84.3	15.7	127	11
Fair Harbor	80.3	19.7	67	8
Dunewood/Lonelyville/ Robbins Rest/Atlantique	66.1	33.9	59	5
Ocean Beach	83.9	16.1	157	9
Seaview	87.5	12.5	104	12
Ocean Bay Park	71.4	26.4	91	6
Point O'Woods	76.5	23.5	52	7
Cherry Grove	57.3	42.7	106	3
Fire Island Pines	64.5	35.5	124	4
Water Island	81.8	18.2	23	9
Davis Park	53.9	46.1	89	2

The 1974 estimates of Fire Island's summer residential population, as shown in table 17, also suggest that the difference between the normal and peak weekend populations in the communities is not as great as might be expected. Asked to enumerate the number of residents normally in their households and the number living there on the July 4th weekend, the respondents' answers show an overall increase of 7 percent for this peak weekend. The largest increase occurs in the 19-35 age group, reflecting among other things the sharing arrangement of group renters. However, this increase is somewhat offset by a 15 percent decrease in the adolescent population, no doubt due to camp attendance and other arrangements that take children of this age group away from the island during July and August.

The length of time that residents annually spend on the island varies greatly with household type. Increasingly, July and August represent only a portion of the total time that the average household spends on the island. There are now approximately 150 year-round residential households. The permanent residents live primarily in the Kismet complex, Saltaire, and Ocean Beach. In addition to these permanent residents, occupancy data for all Fire Island residents demonstrate that over 50 percent of the 1974 survey respondents live at least part of each week on the island from April through October (figure 15). Therefore, the needs of Fire Island's year-round residents and of people for whom an island residence is a second home overlap during much more than just the peak summer season.

Future population characteristics in the communities will depend largely on the extent to which homeowners rent their properties to families or to groups during the summer season. Current home renting by community, based on the 1974 survey, is shown in table 18. These data indicate that at least 28 percent of Fire Island homes were rented during July, and that the highest levels of rental occupancy occurred in the Kismet complex, Cherry Grove, Davis Park, and Ocean Bay Park.

High levels of rental occupancy do not necessarily lead to increased household size, although there is evidence that this does occur in some Fire Island communities. For those who described their households as being composed of family members, the average number of residents was four, while for those who described their household as a group for rental purposes, the average household size was seven. In general, 13 percent of the residents described their households as a nonfamily group, but this category was significantly higher in the Kismet complex (22 percent) and Davis Park (18 percent).

Fifty-one percent of the property owners on Fire Island and 75 percent of those who rent their

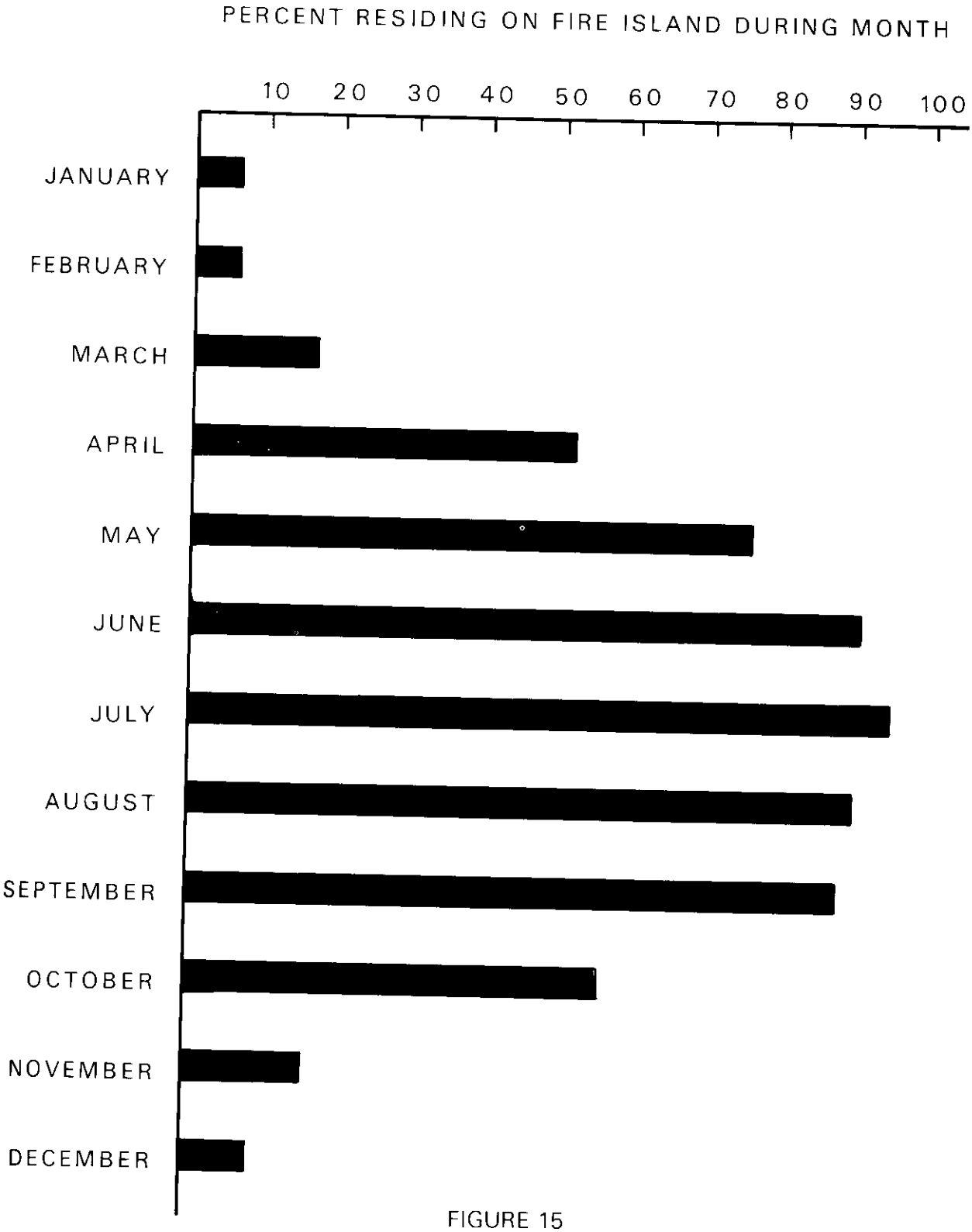


FIGURE 15

Use of Fire Island Residences by Homeowners

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homes during the summer claimed Manhattan as their place of permanent residence. Twenty-one percent of the residents said they commute to work from the island during the summer. These facts underline the importance of Fire Island as a regional resource, the tendency for day-visitors to come from towns in Nassau and Suffolk Counties being offset by a preponderance of summer residents coming from Manhattan.

A final but extremely important characteristic of the Fire Island communities is the long time most residents have lived on the island. The average length of residence for homeowners who responded to the 1974 survey was more than 16 years. This fact, coupled with the increasing off-season use of island homes, further blurs the distinction between permanent and summer residents, and forces a reevaluation of the common perception of the Fire Island home as a "summer cottage."

(2) Residents' Concerns About Fire Island's Environment

Fire Island residents who responded to the 1974 survey agreed that in general the island is either sufficiently developed now or has already passed the desirable level of development. This concern is evident in the data summarized in figure 16. Those who view development with alarm tend to associate it with such phenomena as population growth, the construction of new buildings, the increasing use of beach vehicles, the granting of commercial licenses and zoning variances, and the pressures these trends exert on the fragile barrier-island environment.

Through the various property owners' associations, and in cooperation with the Fire Island Association, homeowners throughout the island attempt to shape the course of future growth and development in the communities. Few of the communities, however, are able to exert enough influence over their residents or over outside interests to alter the trends of development even within their local boundaries. Of all the settlements, only Saltaire and Ocean Beach are incorporated villages with the authority to create bylaws, planning boards, and local taxation programs. Residents of the other communities are almost wholly dependent on the aid of town, county, and federal agencies in order to finance community services or to otherwise intervene in the course of community development. To cope with the environmental problems that the residents face, the need for appeal to levels of government higher than the local village or property owners' association becomes even greater.

Problems in maintaining the island's beach and dune system were ranked highest among all

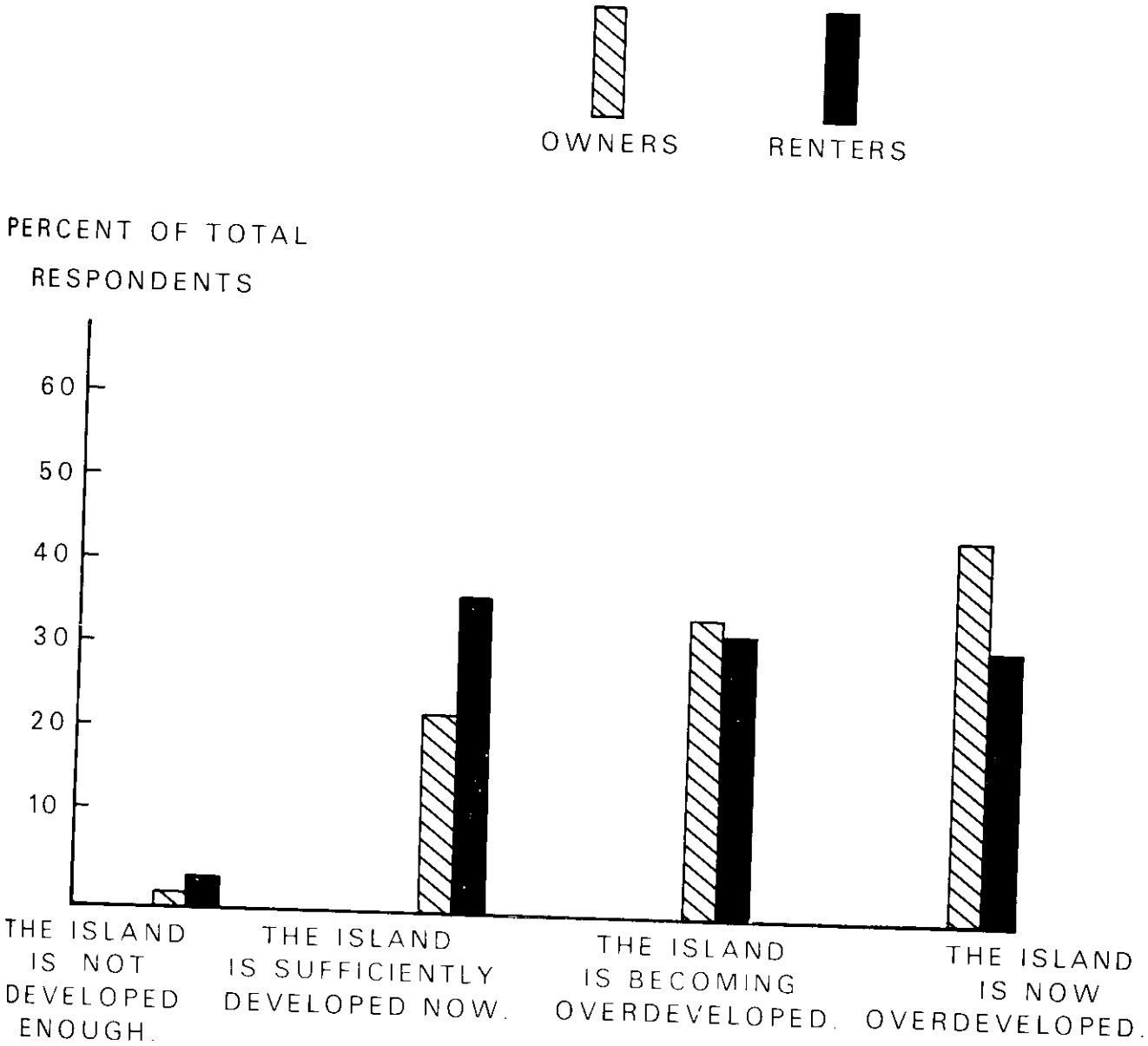

FIGURE 16

Views of Summer Residents About Level of Development on Fire Island

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environmental problems by the respondents to the 1974 survey. As shown in table 19, beach erosion and damage to the dunes by storms ranked first and second among the residents' concerns about the local environment. Problems with community support systems, with water and electrical supply, and with sewage and garbage disposal, were not considered nearly as severe as were problems on the island's oceanfront. It should be noted, however, that the respondents were asked about existing services rather than the capability of those services to meet possible future demands. It is of interest that about 78 percent of Fire Island's residences are covered by federal flood insurance, an indication of the homeowners' concern over possible flood damage (figure 17).

The residents did not voice particularly high levels of concern about problems caused by transient visitors to recreation areas within the seashore, except for the problem of littering. Nevertheless, elected representatives of a number of the community property-owners' associations did list the pressure of day-visitors on community services as a serious problem. These representatives generally urged the National Park Service to provide basic services at its western properties in order to accommodate the day-use visitors who arrive by ferry at Ocean Beach and Ocean Bay Park.

At the time the 1974 survey was conducted, the problem of beach vehicles and their regulation was identified as the issue of most immediate concern. Among respondents who wrote comments on the questionnaire, the problem of beach vehicles was most often mentioned, even before beach erosion. The residents who did offer comments were almost unanimous in their opposition to the use of vehicles on the beach. Residents of every community took extra time to write descriptions of how the use of beach vehicles endangered their safety or otherwise threatened to diminish the quality of their lives on the island. Thus 90.3 percent of the respondents said they would not request vehicle permits even if they could qualify for them. Only the permanent residents were supporters of regulated use of beach vehicles. A few senior citizens requested beach taxi service.

Although they are clearly a small minority in relation to the summer population, the permanent residents of Fire Island generally feel that any vehicle regulations promulgated by the National Park Service must take their special year-round access needs into consideration.

TABLE 19

1974 SURVEY OF RESPONDENTS' RATING OF FIRE ISLAND'S ENVIRONMENTAL PROBLEMS

Environmental Problem	Percent of Respondents Rating Problem			
	Severe	Minor	Not a Problem	Rank
Beach Erosion	79.6	18.0	2.4	1
Damage to Dunes by Residents	26.9	57.9	15.3	10
Damage to Dunes by Transients	50.4	44.8	4.8	4
Damage to Dunes by Vehicles	64.3	28.2	7.5	3
Damage to Dunes by Storms	75.1	23.2	1.6	2
Damage to Dunes by New Construction	40.9	40.5	12.6	7
Water Supply	22.5	41.3	36.2	14
Sewage Disposal	28.5	41.3	30.2	9
Garbage and Rubbish Disposal	24.3	47.6	28.2	11
Electric Power Outages	6.4	58.1	35.6	15
Mosquitoes	41.1	52.1	6.8	6
Trespassing by NPS Visitors	23.6	53.4	23.0	12
Littering by NPS Visitors	41.9	42.8	15.2	5
Noise by NPS Visitors	22.5	54.1	23.4	13
Loss of Privacy	28.6	49.3	22.1	8

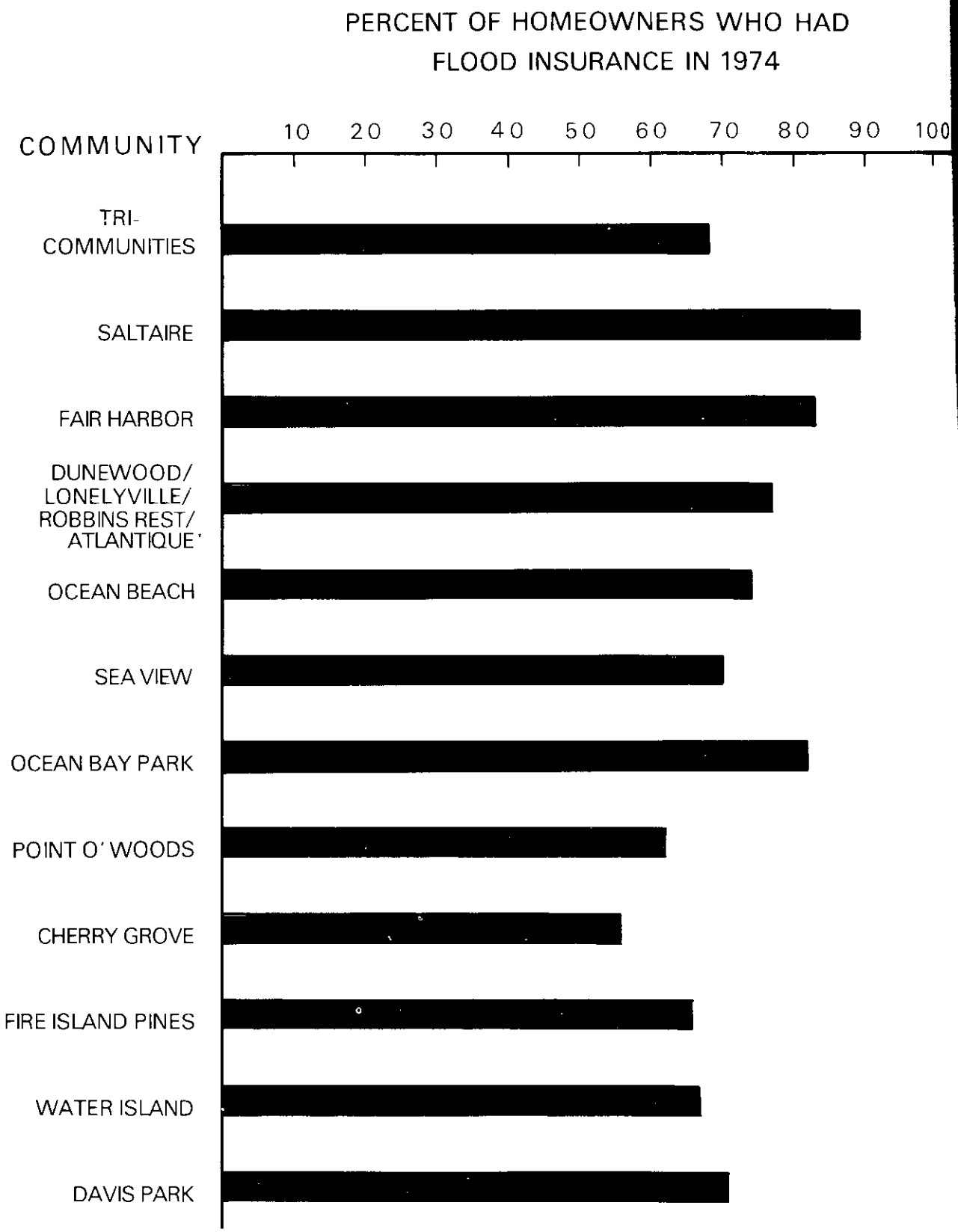

FIGURE 17

Federal Flood Insurance Coverage by Community on Fire Island

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d. Visitors

(1) Visitor Profile

The majority of visitors to federal areas within the national seashore surveyed in a 1969 study resided in the 19 south-shore Long Island communities in Nassau and Suffolk Counties, and only 7 percent came from out of state. This limited visitor use is partially explained by the difficulty of access to the Fire Island vicinity, and the scarcity of inexpensive lodging on Fire Island and in the nearby Long Island communities further limits use, particularly by those who live too far away to drive to and from Fire Island in 1 day. The analysis of survey questionnaires revealed that the national seashore primarily attracts people who inhabit single-family residences in suburban communities of small to moderate size (10,000 to 100,000 people), are well educated (typically having college degrees), have above-average incomes, and are usually employed in the professions. The seashore, therefore, serves relatively affluent New York suburbanites, and primarily those residing in Suffolk and Nassau Counties. The provision of an inexpensive, convenient means of public transportation is the only way by which the national seashore is likely to become more accessible to a variety of socioeconomic groups.

(2) Visitation Trends at Federal Developments

From 1968 to 1974, total visitation increased seventeen-fold for ferryboat visitors and four-fold for private-boat visitors. Presumably much of this increase was due to increased public awareness of available facilities since the national seashore began operating in 1965. The data do not permit prediction of future trends in use because of their great variability. However, it is clear that Fire Island has been serving progressively more people each year in the recent past and probably will continue to do so in the immediate future.

The Watch Hill campground, which contains 20 family tent sites and group camp areas with a total capacity of about 40 persons, is normally operated from May 15 through October 15. From May 15 to about June 25, and from Labor Day to October 15, the demand for space is considerably below capacity; during the rest of the time, the facility has been operating at near capacity. Variability in use is considerable and may be due, in part, to the influence of weather conditions.

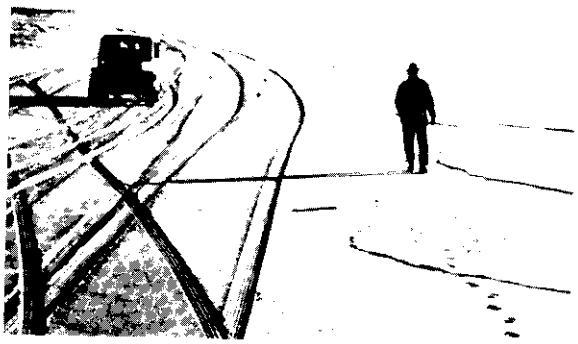
(3) The Recreational Experience

Fire Island is a relatively small piece of land compared to many other natural areas of the National Park System, but the diversity of its landscape and the variety of recreational activities that are offered are greater than in areas many times its size. Constantly reworked by wind and wave, the sand that makes up the island is molded into an orderly mosaic of dunes and flats, which are continually built, then destroyed. Fire Island's vegetative communities are widely differentiated due to great changes in environmental conditions from place to place. In some areas, visitors can take a walk through windswept grasslands, moist maritime forests, and saltwater tidal marshes--each community being associated with its own particular environment. Visitors will not feel the same on the beach as they do at the edge of a vast tidal marsh or in a secluded holly forest, and the visitors' opportunity to relate with the sounds, sights, smells, and sensations of each of these outstanding natural environments, without interference from development, is an integral part of the Fire Island recreational experience.

Although Fire Island is primarily a summer recreation area, when both air and water are warmest, other seasons bring an array of new experiences. During autumn, shrubs are often laden with edible fruits; the vegetation of the tidal marshes turns yellow, orange, and crimson; and migratory birds make seasonal stops en route to winter feeding grounds. In winter, the weather is cold, storms are frequent, and the island becomes desolate; yet, to a hardy few the starkness provides a peculiar attractiveness. The advent of spring brings the sights, sounds, and smells of reawakening life.

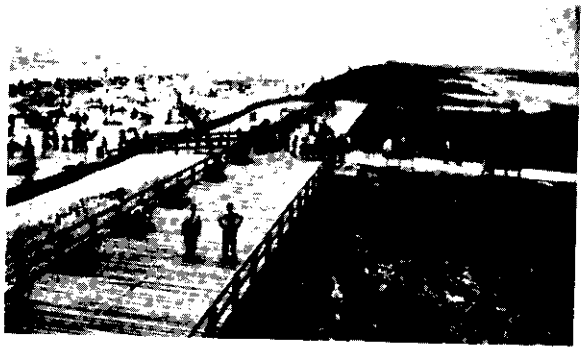
Only two areas of Fire Island National Seashore have been developed to provide for traditional recreational activities--Sunken Forest and Watch Hill. Undeveloped federal lands tend to attract visitors with special interests and use of these areas is light. The extensive tidal marshes of East Fire Island provide some of the seashore's best waterfowl habitats and excellent sites for bird-watching. The outstanding natural area between Watch Hill and Smith Point West provides opportunities for long-distance hikes and exploration by both casual and serious students of natural history.

Camping at Watch Hill.

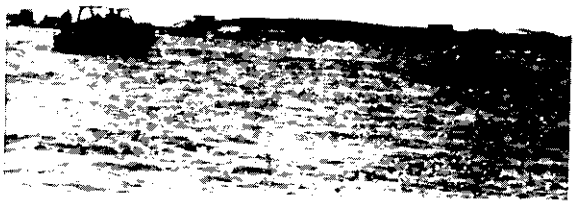


Beachcombing and vehicular use. A solitary beachcomber walks the beach as a vehicle overtakes him. To some visitors, these uses would be considered incompatible.

Hiking. A hiker passes through a crossing in the high dune line.



Beach use. Beach-oriented recreationists on the beach at Smith Point County Park on a typical summer afternoon.



Fishing from boats at Moriches Inlet. Note vehicles on Fire Island in background; all began their Fire Island excursion at Smith Point.

The park naturalist gives a nature talk to visitors to the Sunken Forest.

The self-guiding interpretive trail through the Sunken Forest provides many opportunities for an unstructured experience in the natural environment.

Interpretive experiences are also available for the handicapped.