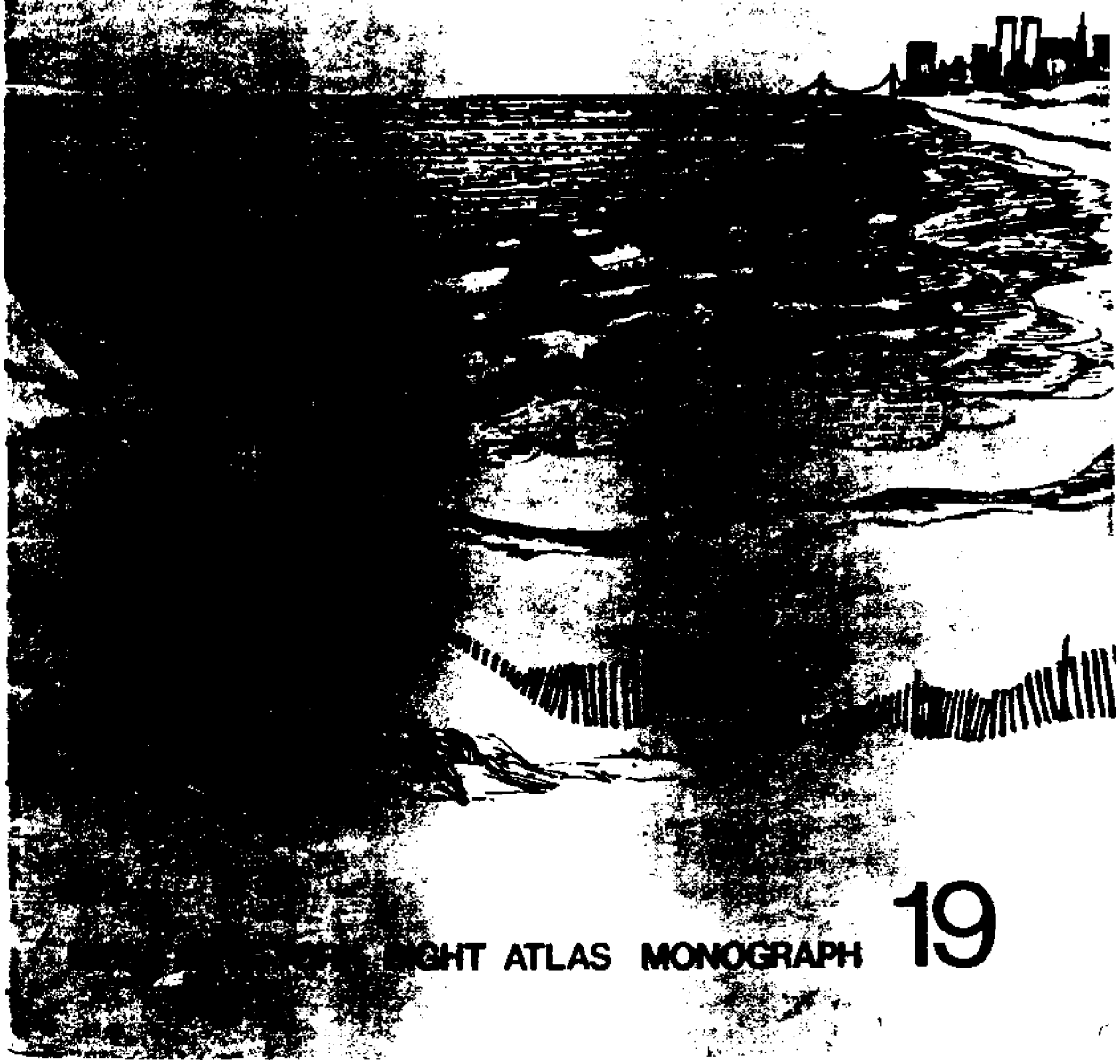
Recreation

E. Glenn Carls



GHT ATLAS MONOGRAPH 19

The offshore water in the bend of the Atlantic coastline from Long Island on one side to New Jersey on the other is known as New York Bight. This 15,000 square miles of the Atlantic coastal ocean reaches seaward to the edge of the continental shelf, 80 to 120 miles offshore. It's the front doorstep of New York City, one of the world's most intensively used coastal areas—for recreation, shipping, fishing and shellfishing, and for dumping sewage sludge, construction rubble, and industrial wastes. Its potential is being closely eyed for resources like sand and gravel—and oil and gas.

This is one of a series of technical monographs on the Bight, summarizing what is known and identifying what is unknown. Those making critical management decisions affecting the Bight region are acutely aware that they need more data than are now available on the complex interplay among processes in the Bight, and about the human impact on those processes. The monographs provide a jumping-off place for further research.

The series is a cooperative effort between the National Oceanic and Atmospheric Administration (NOAA) and the New York Sea Grant Institute. NOAA's Marine EcoSystems Analysis (MESA) program is responsible for identifying and measuring the impact of man on the marine environment and its resources. The Sea Grant Institute (of State University of New York and Cornell University, and an affiliate of NOAA's Sea Grant program) conducts a variety of research and educational activities on the sea and Great Lakes. Together, Sea Grant and MESA are preparing an atlas of New York Bight that will supply urgently needed environmental information to policy-makers, industries, educational institutions, and to interested people.

ATLAS MONOGRAPH 19 describes the availability and future of recreational resources in the New York Bight coastal region. Recreational interests of millions of people are served every day by a rich collection of beaches, dunes, ocean waters, and waterlife. But these shoreline resources are limited. For the Bight region, located in the heart of the eastern megalopolis, is increasingly in demand as a coastal recreation area. "The future of coastal recreation in New York Bight is tenuous," Carls says, "tied very closely to and dependent upon the dynamics of the region's broader social, economic, and environmental conditions."

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Recreation

E. Glenn Carls

MESA NEW YORK BIGHT ATLAS MONOGRAPH 19

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Abstract

Marine recreation in the New York Bight region is a diversified and extensive field for study. Although its shoreline resources are limited, the Bight region is increasingly in demand as a coastal recreation area. Currently, federal, state, and local authorities provide significant park and open space opportunities for recreation and related services. Private and commercial enterprises contribute important services and facilities as well (marinas and charter boat rentals, for example) and may become increasingly important in meeting future demand.

Extensive information is available on coastal recreation in the Bight region but not in a form for integration of sources or overall regional synthesis. Future study should center on problems associated with shoreline access, environmental quality, planning and management procedures, and economic analysis.

Introduction

The coastal resources of New York Bight are almost synonymous with outdoor recreation. For several generations of Americans who have lived in this region, summer vacations have meant a visit to the shore. Places like Montauk Point and Jones Beach, LI, and Long Branch and Atlantic City, NJ, are widely recognized for their many opportunities for marine recreation.

For most of its history, recreation resources in the Bight have been more than sufficient to meet the needs of a relatively small, generally local population. Schools of sport fish have been abundant for the fishermen, sand beaches have been generally available to swimmers and sunbathers, and the ocean waters have been virtually unlimited for sailing and a variety of other activities. We have learned, however, that these and other coastal resources are limited and that modern pressures of recreational use have put an increased premium on long-range planning, management, and research.

Population size may be the single most important factor in evaluating the region's coastal recreation potential. New York Bight is located in the heart of the eastern megalopolis, stretching along the Atlantic coast from Boston to Washington. New York City alone contributes a total metropolitan population of more than 12 million people. New Jersey, according to the 1970 census, is the nation's most densely populated state, with 954 persons per square mile (New Jersey Department of Environmental Protection 1973). Along with the growth of population, there have been corresponding trends toward greater individual mobility, higher incomes, and increased amounts of leisure time. The combined effect has been an intensification of demand for coastal recreation resources.

The first section of this monograph is an overview of existing federal, state, local, private, and commercial areas and facilities for recreation in the Bight. Along with Maps 1-5, which identify the location of major recreation areas, this review examines the extent and distribution of available resources. The second section examines the opportunities and problems associated with the three major activities of swimming, fishing, and boating. The final section outlines some of the problems and research needs associated with shoreline access, environmental quality, resource planning and management, and economics.

Areas and Facilities: the Supply

According to one US Army Corps of Engineers study (1971), nearly half the total New York Bight shoreline (652 km or 405 mi) is currently used for public recreation, emphasizing the important role played by government in maintaining shoreline areas for recreation (Table 1). However, private and commercial operations also provide a significant portion of available recreation services (marinas, rental boats, and lodging, for example). Maps 1-5 locate major recreation areas and services in the New York Bight region.

Federal

Of the six major areas maintained by the federal government in the Bight region, two are of particular importance: Fire Island National Seashore and Gateway National Recreation Area. Both are relatively new and have resulted in substantial shifts in federal policy.

In 1970, the Bureau of Outdoor Recreation completed a nationwide inventory of America's islands (Bureau of Outdoor Recreation 1970). Until that time, islands had largely gone unrecognized and neglected as national recreational resources, and many of the best were being appropriated for private and commercial development. In response to the need for protection, Congress and the Department of the Interior have established several national seashores to complement the system of national parks and monuments. Fire Island, a barrier island separating Long Island's Great South Bay from the Atlantic Ocean, is part of that system (Map 2). Fire Island National Seashore includes and protects an important segment of the beach and dune ecosystem that is characteristic of Long Island's ocean shoreline. It also serves to slow down the private development of the south shore which has threatened to remove additional areas from public use. Situated about midway between New York City and Montauk Point, Fire Island is convenient to a major segment of the regional population.

In a significant departure from National Park Service policy, two areas of outdoor recreation have been established in the backyards of major American cities. One is Golden Gate National Recreation Area, serving San Francisco; the other is New York City's Gateway National Recreation Area. Unlike traditional national parks, located around unique natural or historical features, the Gateways have been established to provide outdoor recreational opportunities closer to where people live.

In New York and New Jersey, Gateway consists of five major locations around New York Harbor,

Table 1. Shoreline ownership and use

	New Jersey		New York		Total	
	(mi)	(km)	(mi)	(km)	(mi)	(km)
Shore Ownership						
Federal	44	71	39	63	78	126
Other public	111	179	162	261	273	439
Private	299	481	280	450	509	819
Total	454	731	481	774	860	1,384
Shore Use						
Public recreation	229	368	176	283	405	652
Private recreation	35	56	46	74	81	130
Nonrecreation	10	16	160	257	170	274
Undeveloped	110	177	94	151	204	328
Total	384	617	476	766	860	1,384

Note: Because of divisions used by the US Army Corps of Engineers, figures include total shoreline from Cape May Point, NJ, to Orient Point, LI.

Source: US Army Corps of Engineers 1971

totaling more than 9,713 hectares (24,000 acres) of dry land, marsh, and water (Smith 1972). Established in 1972, the area is still under development and is now open only for limited public use. When completed, however, Gateway will open up many more outdoor recreational opportunities for residents of the New York metropolitan area.

Along the shores of New York Bight are also three major national wildlife refuges: Wertheim (Map 2); Barnegat (Map 4), and Brigantine (Map 5). These three are important links in the system of refuges along the Atlantic flyway, and they afford the opportunity for a variety of recreational activities. While the primary purpose of the refuge is to protect migratory waterfowl and other wildlife, compatible activities like picnicking, fishing, and nature study are also permitted.

Table 2. Federal and state outdoor recreation areas in Bight region

Name	Location	Map
Federal Areas		
Fire Island National Seashore	New York	2
Gateway National Recreation Area	New York	3
Wertheim National Wildlife Refuge	New York	2
Barnegat National Wildlife Refuge	New Jersey	4
Brigantine National Wildlife Refuge	New Jersey	5
State Areas		
Belmont Lake State Park	New York	2
Captree State Park	New York	2
Heckscher State Park	New York	2
Hither Hills State Park	New York	1
Jones Beach State Park	New York	2
Massapequa State Park	New York	2
Montauk State Park	New York	1
Palisades Interstate Park	New York-New Jersey	3
Robert Moses State Park	New York	2
Talman Mountain State Park	New York	3
Atlantic City State Marina	New Jersey	5
Barnegat Light State Park	New Jersey	4
Bass River State Forest	New Jersey	4
Forked River State Marina	New Jersey	4
Green Bank State Forest	New Jersey	5
Island Beach State Park	New Jersey	4
Leonardo State Marina	New Jersey	3
Manahawkin State Wildlife Area	New Jersey	4
Point Pleasant State Marina	New Jersey	4

State

New York and New Jersey shores are dotted with state parks, historical sites, beaches, marinas, and wildlife sanctuaries. These areas, shown on Maps 1-5 support a variety of recreational facilities and services. The large state parks usually provide a full line of outdoor services, while smaller parks may be limited to day-use activities. State-operated marinas are particularly important to boaters and fishermen.

The state parks and recreation areas in New York and New Jersey are served by a network of high quality roadways and are generally accessible by automobile from all sections of the region. Peak season use, because of the proximity of major centers of population, is heavy, and popular areas are likely to be crowded on summer weekends. Some parks, like New York's Hither Hills State Park (Map 1), have been forced to require reservations for camping during summer. In some cases, campsites must be applied for and reserved months in advance.

The Palisades Interstate Park (Map 3) extends along the Hudson River through both New York and New Jersey. The Palisades, unlike the other state parks, is administered by a separate, independent interstate commission. The park provides a scenic auto approach to New York City along the Hudson River and offers a wide range of facilities and activities.

Local

Most towns and counties provide some form of recreational areas and services for residents—parks, playgrounds, community recreation centers, playfields, and the like. A few local governments in the Bight region maintain shore sites and facilities of interest to other than just local residents. These are generally large county parks and New York City Parks that front ocean bays and harbors.

Another important type of local recreational facility is the town beach, an ocean beach owned and operated by a local community and either totally restricted to use by town residents or open to others at a higher fee. Important legal questions have been raised about town beaches, and the courts are now considering individual cases of restricted beach use. Only partial data on the number and location of town beaches are available (New Jersey Department of Conservation and Economic Development 1969).

New York City

Although New York City is also a local government unit, its size and unique character require special consideration.

The city has several existing strip and local parks fronting the shoreline; Riverside Park, Fort Washington Park, East River Park, Shore Park, and Astoria House Park are among the largest. The New York City Park Commission plans to build a 12 hectare (30 acre) park on the roof of the North River sewage treatment plant now under construction. A 5.7 hectare (14 acre) park is projected for a new convention center to be built near the Hudson River. Also, as New York Harbor piers are abandoned some may be utilized for recreational purposes.

New York City has a total of 29.6 km (18.4 mi) of public beach. Some beaches are temporarily closed because of environmental hazards and many are overcrowded on peak use days (New York City Planning Commission 1974). Coney Island (Map 3) still attracts 22 million people a year, and as many as 1 million on a peak day. Unfortunately, facilities adjacent to this famous amusement park are deteriorating.

The major problems facing waterfront recreation in New York City are water quality and the rising costs of resource acquisition and management. Goals set for water quality include rendering the Hudson and Harlem rivers fit for fishing; Long Island Sound, Jamaica Bay, and the Atlantic Ocean along Coney

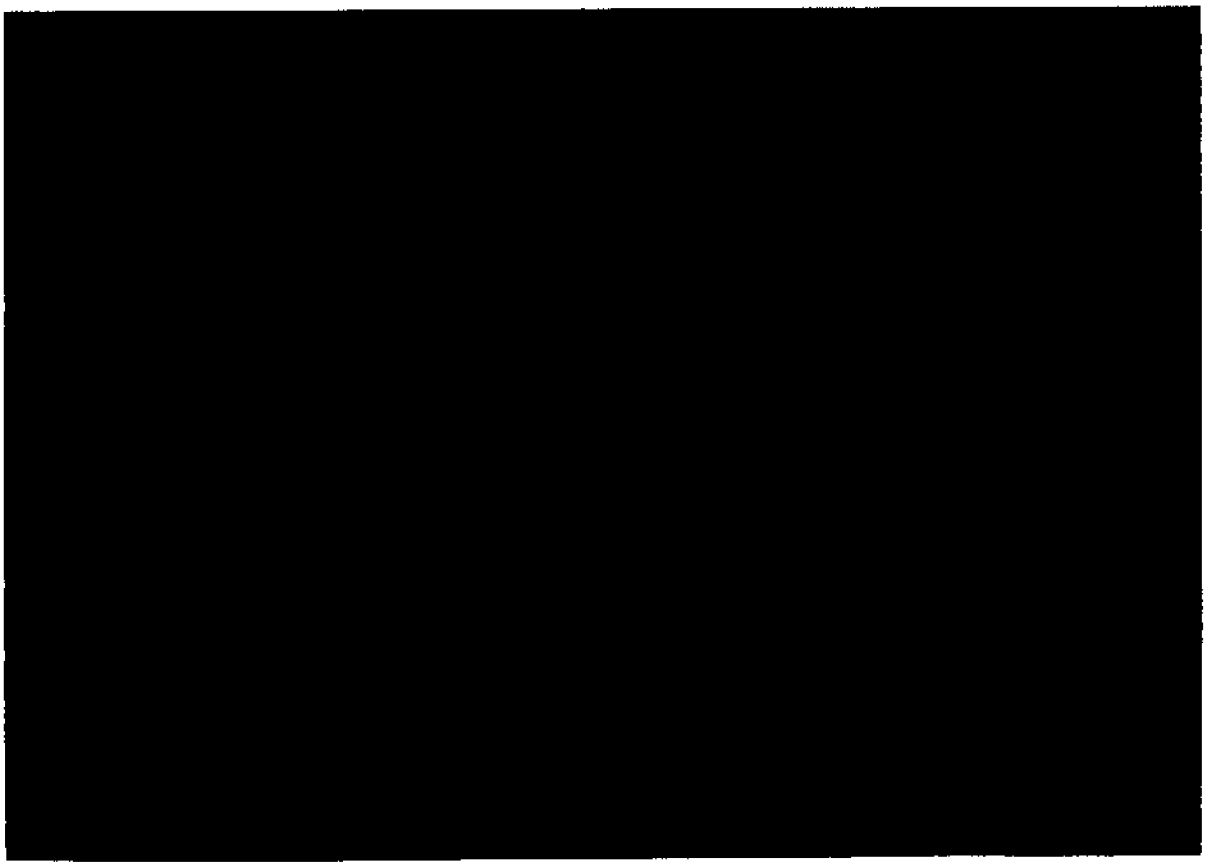


Figure 1. Charter and party boat fleet, Captree, LI (Photo by E.G. Carls)

Island fit for swimming and fishing; and the Atlantic, along the south shore of the Rockaways, and Lower New York Bay, from Great Kills to Fort Wadsworth, fit for shellfishing, swimming, and fishing (New York City Planning Commission 1974).

In fiscal year 1974-75, New York City appropriations for the improvement of waterfront recreational facilities were $5.7 million. Projects planned for the future (to 1980) will cost an estimated $47.7 million or an annual average of $9.5 million, nearly $4 million over the 1974-75 level (New York City Planning Commission 1974).

Private and Commercial

Privately owned marinas, campgrounds, charter boats, fishing piers, and similar commercial recreational operations provide important and sometimes unique opportunities for recreation. In New York, for example, an estimated two-thirds of the state's total outdoor recreation capacity is provided by private business (New York State Office of Parks and Recreation 1972*b*). In comparison, only about 50% of all recreational services in the United States is attributed to the private sector (Bureau of Outdoor Recreation 1973).

Commercial boating services and rentals are particularly important because there is relatively little governmental involvement in enterprises of this kind. Private marinas, as shown on Maps 1-5, are located throughout the region, providing a variety of needed services to boaters. Public agencies sometimes provide needed marina facilities, such as New Jersey's four coastal boat basins, but the availability of such resources is primarily a function of private enterprise.

Marine sport fishing depends heavily on large fleets of rental boats, guides, and other support services (Figure 1). Few fishermen can afford to own or maintain a vessel suitable for ocean fishing, and most prefer to hire a charter or party boat for their fishing needs. Others may rent a small rowboat for fishing in bays and coves. These services are run almost exclusively by private operators.

As public funds for outdoor recreation become more limited and the demand for areas and services increases, private support and investment will become more and more important. Auxiliary services such as motels, gas stations, bait shops, and restaurants will also continue to be vital private and commercial contributions to recreational opportunities. Some services that have been the traditional responsibility of government, like public campgrounds, may also have to be supplemented to an even greater extent by private enterprise.

Recreational Activities

Nearly all outdoor recreation, from picnicking to hiking, is enhanced by the presence of water, but participation in three of the most popular activities—swimming, fishing, and boating—depend directly on the availability of water resources.

In 1970, the Bureau of Outdoor Recreation conducted a nationwide survey of recreational interests and preferences (Bureau of Outdoor Recreation 1972). The results of that study show the relative importance of water-related activities in the overall pattern of recreational participation (Table 3). Not surprisingly, in the New York Bight region, where the sea is a prominent resource, fishing, boating, and swimming rank even higher in popularity than they do nationally.

Swimming

Swimming and sunbathing have not always been the popular activities they are today. The renowned baths of Europe and imperial Rome were a fine form of leisure, but they did not include sandy beaches and the almost religious exposure to sun characteristic of the mid-twentieth century. Even as late as the nineteenth century in America, revealing swimwear and coed beaches were strictly censored.

In New York and New Jersey, swimming is now the most popular outdoor recreation. If you were to ask Long Islanders to name their favorite outdoor activity, approximately 60% would say swimming. As if the demand for swimming areas were not great

enough now, the forecast calls for half a million new swimmers from New York City and another 800,000 from Long Island by 1990 (New York State Office of Parks and Recreation 1972*b*). In New York and New Jersey, the greatest need for swimming resources is in the cities where most of the population lives. While the demand for swimming is great in other sections of the Bight region, swimming waters and beach areas are especially scarce in and near urban centers (Figures 2 and 3).

Studies of swimmers and beach users (Hecock 1970; Spaulding 1973; Cummings, personal communication) indicate that participants as a group are heterogeneous. Variables such as age, sex, income, and family status seem to have no consistent influence on resource use, although local patterns may exist in some areas. This conclusion is generally consistent with a major finding of the Outdoor Recreation Resource Review Commission (ORRRC) (1962*a*)—the most popular activities, including swimming, are those that are the simplest and require the least amount of skill and equipment.

Fishing

Long Island and New Jersey are justifiably famous for their surf and deepwater fishing. Whether from boats, piers, or in the surf, fishing is a mainstay of marine recreation and the economy of some local communities (Figures 4, 5, and 6).

The most recent national survey of hunters and fishermen conducted by the Bureau of Sport Fisheries and Wildlife (1970) shows that in 1970 there were about 1 million fewer fishermen in the United

Table 3. Percent national recreation survey respondents participating in summer 1972 recreational activities

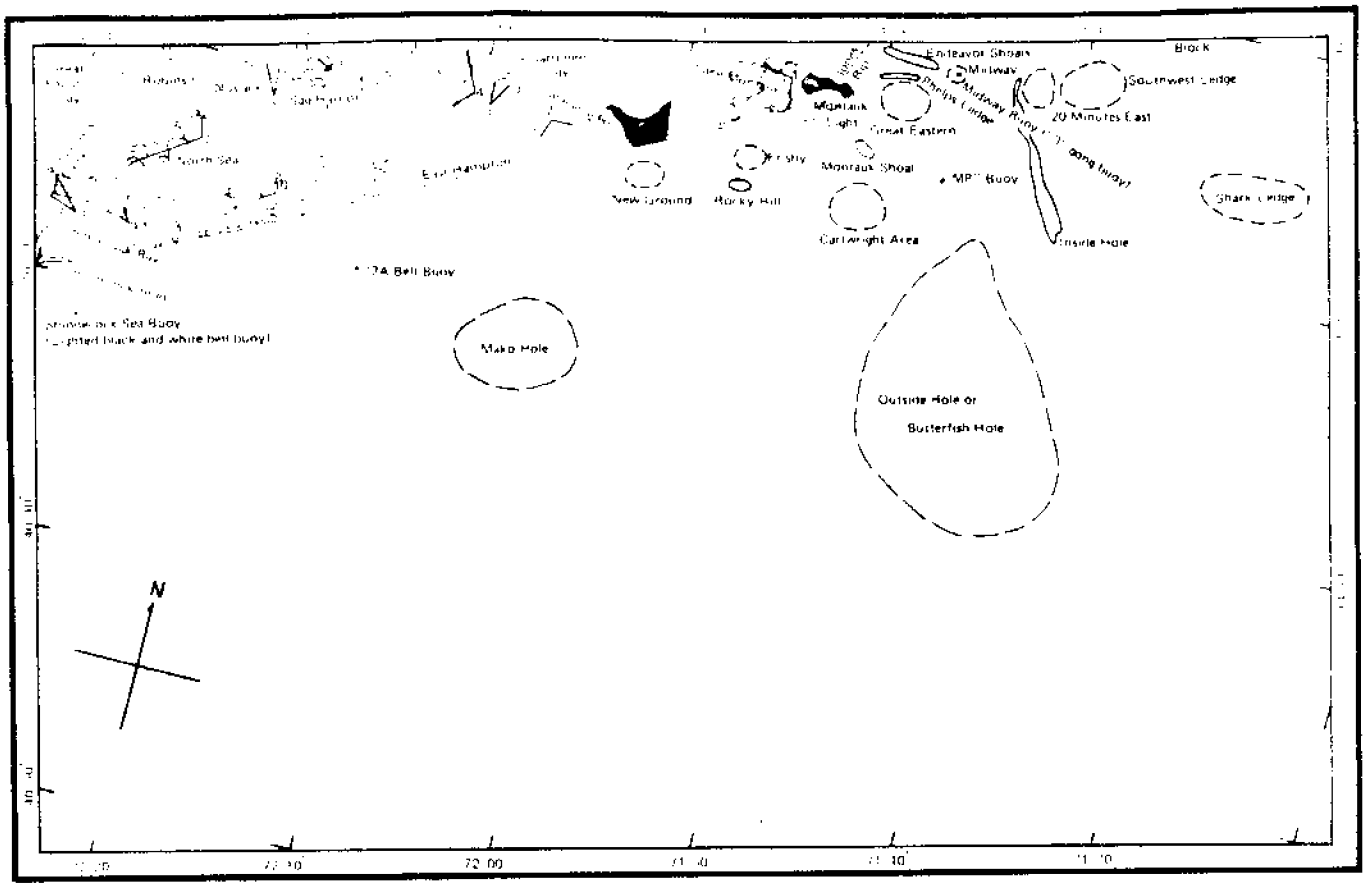
Activity	% Survey Respondents
Picnicking	47
Sightseeing	37
Driving for pleasure	34
Walking for pleasure	34
Other swimming outdoors	34
Visiting zoos, fairs, amusement parks	24
Other activity	24
Fishing	24
Playing other outdoor games or sports	22
Outdoor pool swimming	18
Nature walks	17
Other boating	15
Going to outdoor sports events	12
Camping in developed campgrounds	11
Bicycling	10
Going to outdoor concerts, plays	7
Horseback riding	5
Hiking with a pack/mount/rock/climb	5
Tennis	5
Waterskiing	5
Golf	5
Camping in remote or wilderness areas	5
Riding motorcycles off the road	5
Bird-watching	4
Canoeing	3
Sailing	3
Hunting	3
Wildlife and bird photography	2
Driving 4-wheel vehicles off the road	2

Source: Bureau of Outdoor Recreation 1973

Figure 2. Boardwalks and sand bathing beaches—characteristic recreation resources in the Bight region (Photo by E.G. Carls)

Figure 3. Crowding and over-use of facilities, Jones Beach, L (Photo by E.G. Carls)

Map 1. Block Island to Shinnecock Bay



SCALE 1:450,000

KILOMETERS

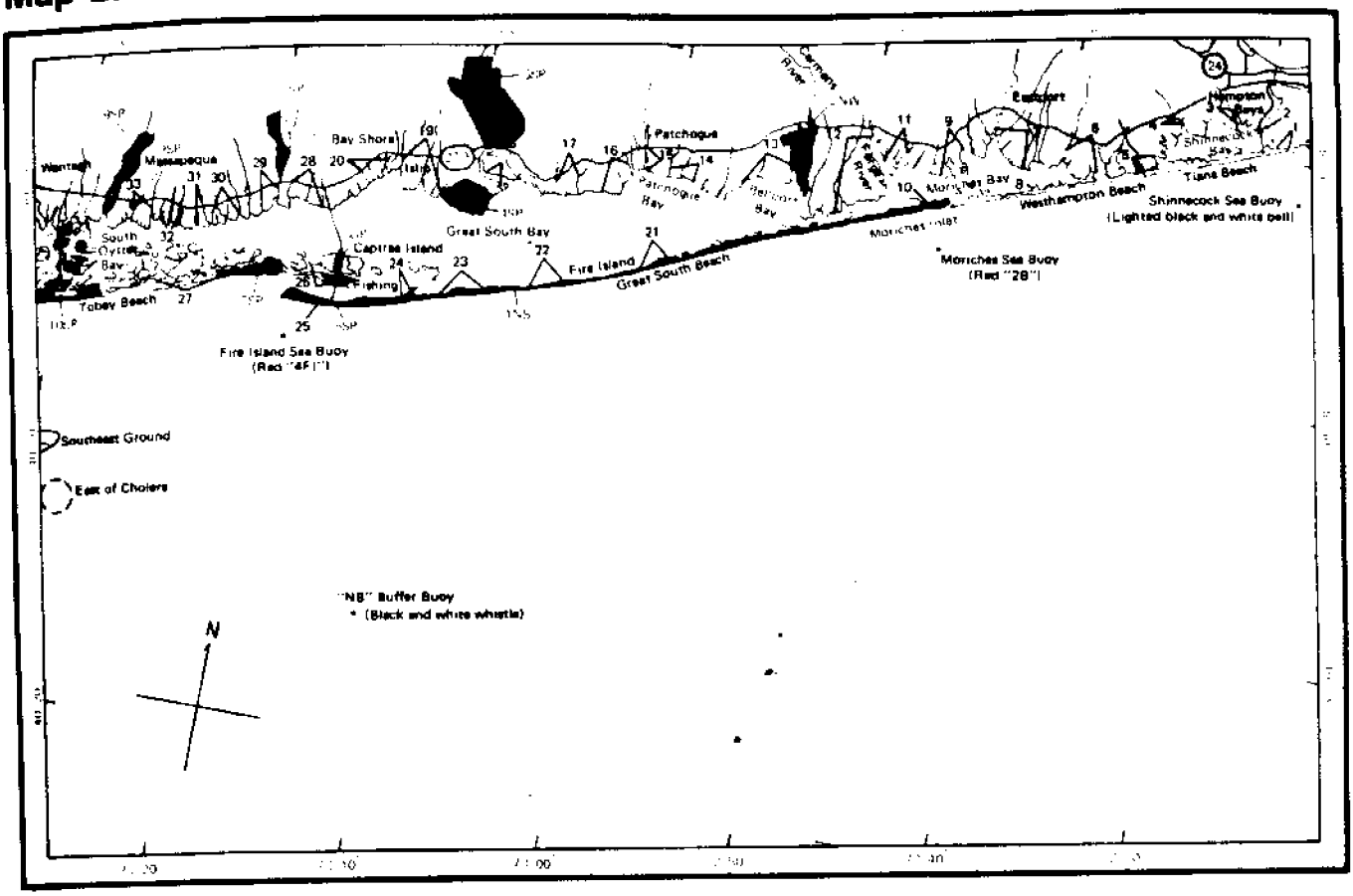
STATUTE MILES

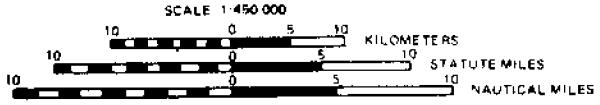
NAUTICAL MILES

No.	Location	Facilities/Location	BOAT RENTAL: Rowboat	Outboard	Charter	Party Boat	Runabout	Skiff	LAUNCHING: Ramp: Surfaced	Ramp: Natural	Hoist: Fixed	Hoist: Portable	Marine Railway	DEPTH: Tidal Range (ft)	Approach (ft)	Alongside (ft)	SUPPLIES: Bait	Tackle	Fuel: Gasoline	Fuel: Diesel	Water	Ice	Grocery	SERVICES: Mooring	Barths	Electricity	Repair: Motor	Repair: Hull	Food	Lodging	Toilet	Shower
1	Montauk	21	■	■	■	■	■	■	■	■				1.9					■	■		■	■			■	■				
2	Gardiners Bay	2	■						■					2.3					■	■												
3	Acabonack Harbor	2							■																						
4	East Hampton	11	■	■				■	■	■				2.4					■	■		■	■	■		■	■				
5	Sag Harbor	7	■	■	■				■	■				2.5					■	■		■	■	■		■	■				
6	Noyack	3	■	■					■	■				2.3					■	■		■	■	■		■	■				
7	Southampton	4	■	■					■	■									■	■		■	■	■		■	■				
8	Shinnecock Canal	11	■	■	■	■		■	■	■				2.0	2	2			■	■		■	■	■		■	■				
9	Southampton	3	■	■	■				■	■				0.5	4	4			■	■		■	■	■		■	■				
10	Mecox Bay	1																													

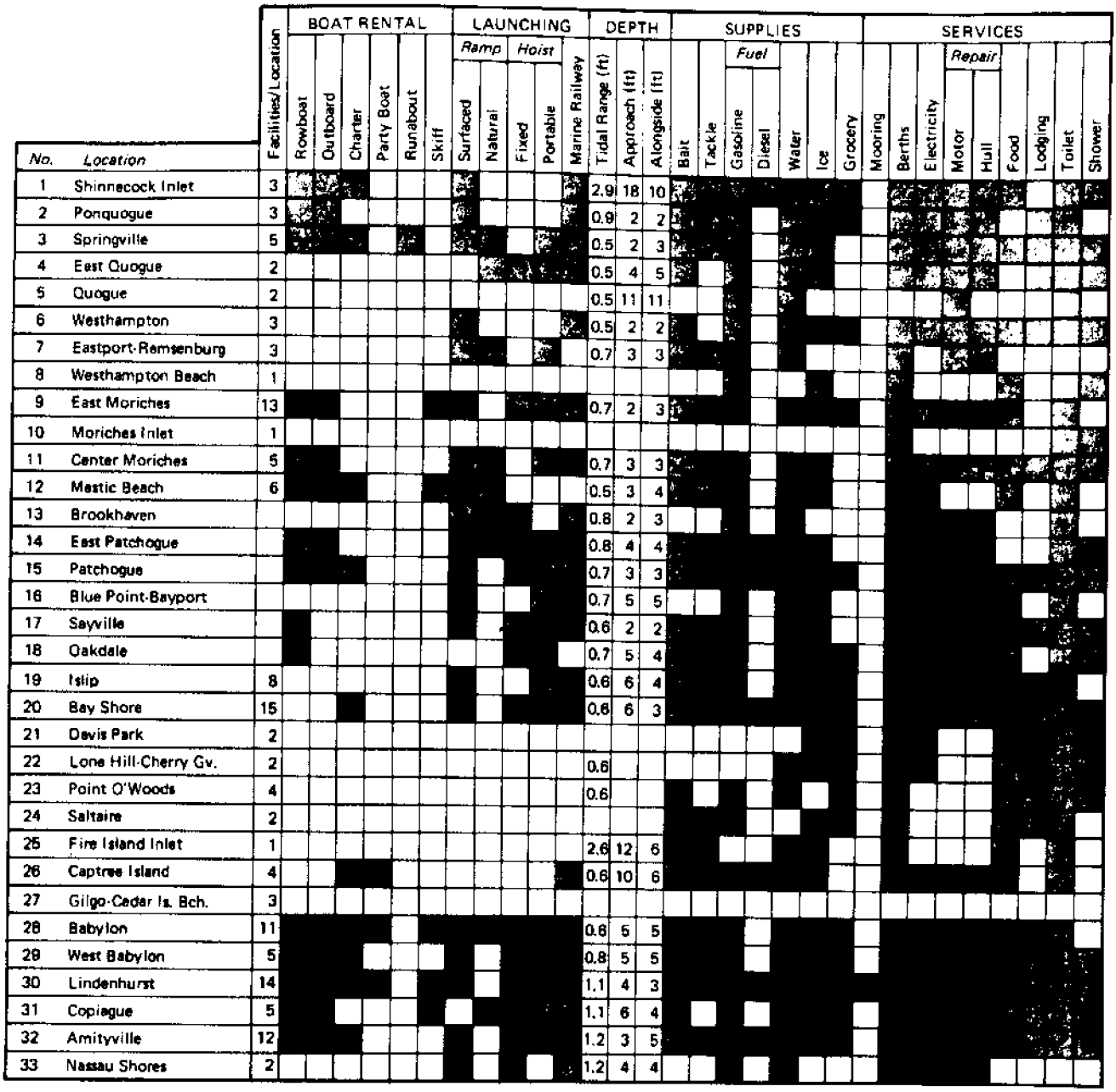
No.	Location	Recreational Areas: State: Park	State: Wildlife Area	State: Forest	National: Park	National: Wildlife Area	National: Recreational	National Seashore	Use: Day	Use: Weekend	Use: Vacation	Activities: Fishing	Activities: Boating	Activities: Picnicking	Activities: Camping
1sp	Montauk	■							■	■		■	■	■	
2sp	Hither Hills	■							■	■	■	■		■	■

Map 2. Shinnecock Bay to South Oyster Bay



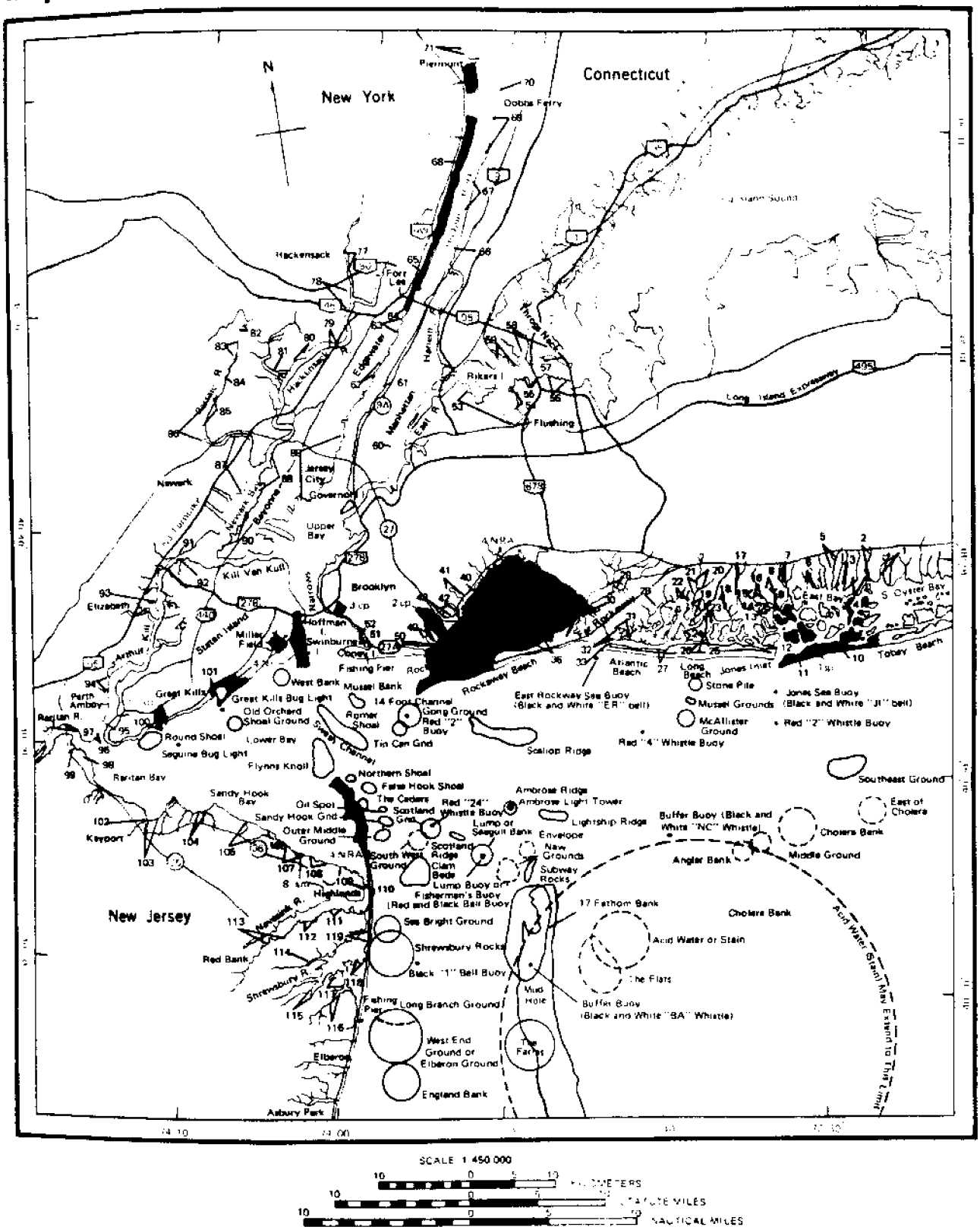


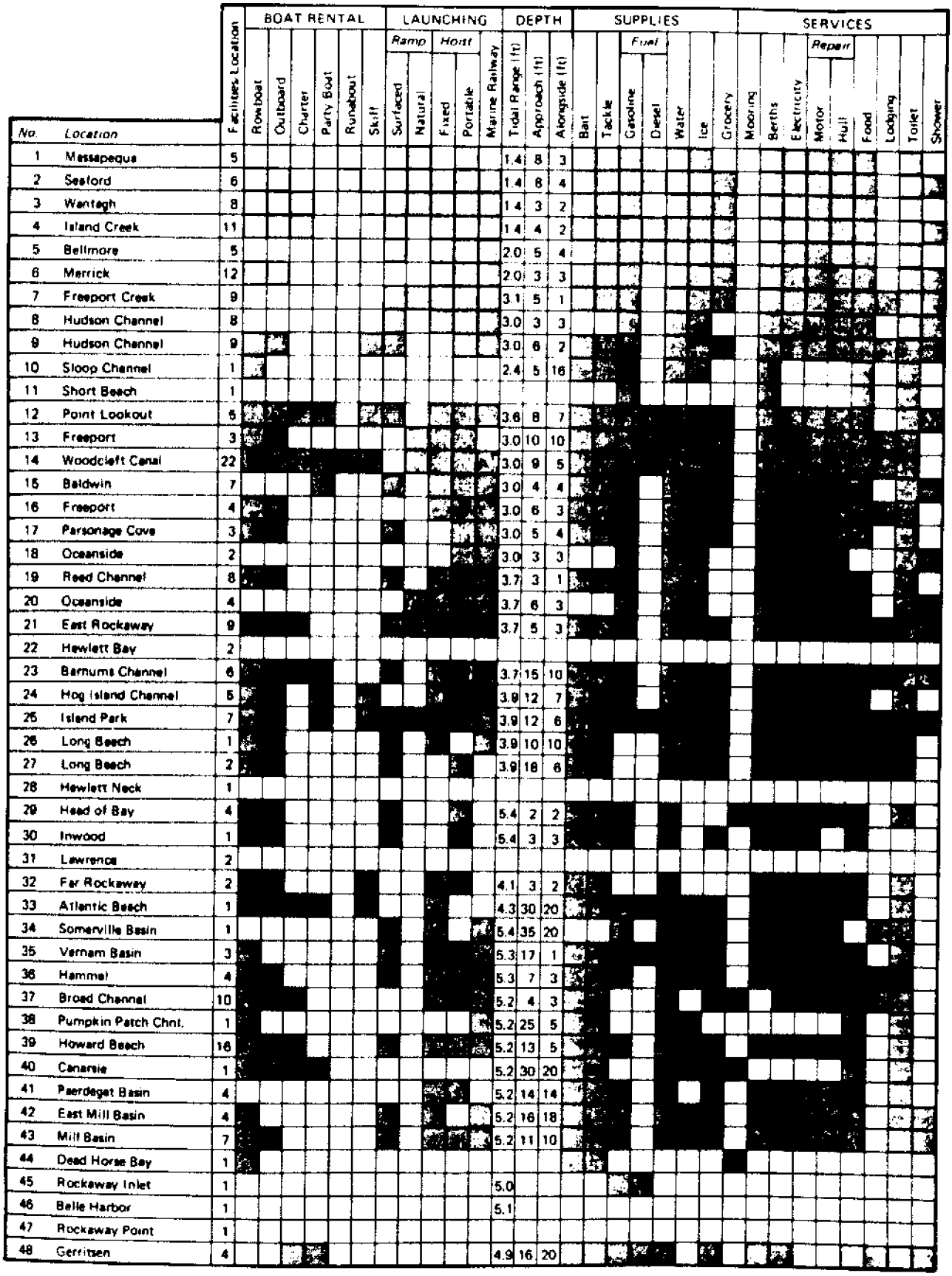
		Recreational Areas										Activities			
		State			National				Use						
No.	Location	Park	Wildlife Area	Forest	Park	Wildlife Area	Recreational	National Seashore	Day	Weekend	Vacation	Fishing	Boating	Picnicking	Camping
1ns	Fire Island							■	■	■		■	■	■	
2nw	Wertheim					■			■	■				■	
3sp	Southside Pres. (undev.)	■										■			
4sp	Heckscher	■							■	■		■	■	■	
5sp	Robert Moses	■							■	■		■	■	■	
6sp	Captree	■							■	■		■	■	■	
7sp	Gilgo (undev.)	■							■	■		■		■	
8sp	Belmont Lake	■							■	■		■	■	■	
9sp	Massapequa	■							■	■				■	
10sp	Jones Beach	■							■	■		■	■	■	



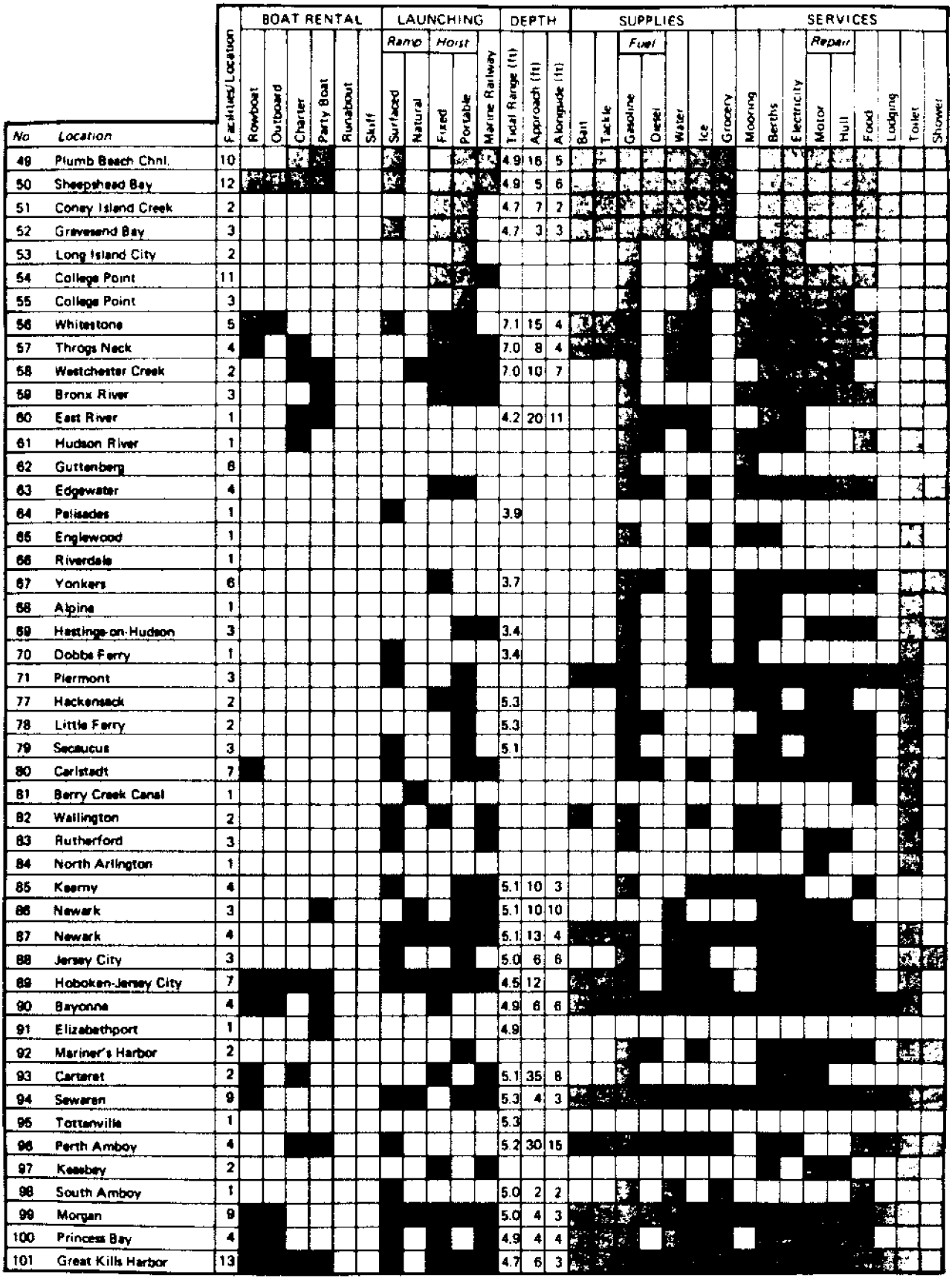
No.	Location	Facilities/Location	BOAT RENTAL: Rowboat	Outboard	Charter	Party Boat	Runabout	Skiff	LAUNCHING: Ramp: Surfaced	Natural	Hoist: Fixed	Portable	Marine Railway	DEPTH: Tidal Range (ft)	Approach (ft)	Alongside (ft)	SUPPLIES: Bait	Tackle	Fuel: Gasoline	Diesel	Water	Ice	Grocery	SERVICES: Mooring	Berths	Electricity	Repair: Motor	Hull	Food	Lodging	Toilet	Shower
1	Shinnecock Inlet	3	■	■	■				■				■	2.9	18	10	■	■	■	■	■	■	■		■	■	■	■		■	■	■
2	Ponquogue	3	■		■				■				■	0.9	2	2	■	■	■	■	■	■	■		■	■	■	■	■	■	■	■
3	Springville	5	■	■	■		■		■	■		■		0.5	2	3	■	■	■	■	■		■	■	■	■	■	■	■	■	■	■
4	East Quogue	2							■	■	■	■		0.5	4	5	■	■	■	■	■		■	■	■	■	■	■		■	■	■
5	Quogue	2												0.5	11	11	■	■	■	■		■	■		■	■	■		■	■	■	■
6	Westhampton	3							■			■	■	0.5	2	2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
7	Eastport-Remsenburg	3							■	■		■		0.7	3	3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
8	Westhampton Beach	1															■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
9	East Moriches	13	■	■					■		■	■		0.7	2	3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
10	Moriches Inlet	1																														
11	Center Moriches	5	■	■					■	■		■		0.7	3	3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
12	Mastic Beach	6	■	■	■				■	■		■		0.5	3	4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
13	Brookhaven								■	■		■		0.8	2	3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
14	East Patchogue		■	■					■	■	■	■		0.8	4	4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
15	Patchogue		■	■	■				■	■	■	■		0.7	3	3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
16	Blue Point-Bayport								■	■	■	■		0.7	5	5	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
17	Sayville		■						■	■	■	■		0.6	2	2	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
18	Oakdale		■								■	■		0.7	5	4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
19	Islip	8							■	■	■	■		0.6	6	4	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
20	Bay Shore	15			■				■	■	■	■		0.6	6	3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
21	Davis Park	2																														
22	Lone Hill-Cherry Gv.	2												0.6																		
23	Point O'Woods	4												0.6																		
24	Saltaire	2																														
25	Fire Island Inlet	1												2.6	12	6																
26	Captree Island	4			■	■							■	0.6	10	6																
27	Gilgo-Cedar Is. Bch.	3																														
28	Babylon	11	■	■	■	■			■	■	■	■	■	0.6	5	5	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■
29	West Babylon	5	■	■	■				■		■	■	■	0.8	5	5	■	■		■	■	■	■	■	■	■	■	■	■	■	■	■
30	Lindenhurst	14	■	■	■	■			■		■	■	■	1.1	4	3	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
31	Copiague	5	■	■					■		■	■	■	1.1	6	4	■		■	■	■	■	■	■	■	■	■	■	■	■	■	■
32	Amityville	12	■	■	■				■		■	■	■	1.2	3	5	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
33	Nassau Shores	2							■		■		■	1.2	4	4			■		■	■	■						■	■	■	■

Map 3. Lloyd Neck to Elberon





No.	Location	Facilities Location	BOAT RENTAL: Rowboat	Outboard	Charter	Party Boat	Runabout	Skiff	LAUNCHING: Ramp: Surfaced	Ramp: Natural	Hoist: Fixed	Hoist: Portable	Marine Railway	DEPTH: Tidal Range (ft)	Approach (ft)	Alongside (ft)	SUPPLIES: Bait	Tackle	Fuel: Gasoline	Fuel: Diesel	Water	Ice	Grocery	SERVICES: Mooring	Berths	Electricity	Repair: Motor	Repair: Hull	Food	Lodging	Toilet	Shower
1	Massapequa	5												1.4	8	3																
2	Seaford	6												1.4	6	4																
3	Wantagh	8												1.4	3	2																
4	Island Creek	11												1.4	4	2																
5	Bellmore	5												2.0	5	4																
6	Merrick	12												2.0	3	3																
7	Freeport Creek	9												3.1	5	1																
8	Hudson Channel	8												3.0	3	3																
9	Hudson Channel	9												3.0	6	2																
10	Sloop Channel	1												2.4	5	16																
11	Short Beach	1																														
12	Point Lookout	5												3.6	8	7																
13	Freeport	3												3.0	10	10																
14	Woodcleft Canal	22												3.0	9	5																
15	Baldwin	7												3.0	4	4																
16	Freeport	4												3.0	6	3																
17	Parsonage Cove	3												3.0	5	4																
18	Oceanside	2												3.0	3	3																
19	Reed Channel	8												3.7	3	1																
20	Oceanside	4												3.7	6	3																
21	East Rockaway	9												3.7	5	3																
22	Hewlett Bay	2																														
23	Barnums Channel	6												3.7	15	10																
24	Hog Island Channel	5												3.9	12	7																
25	Island Park	7												3.9	12	6																
26	Long Beach	1												3.9	10	10																
27	Long Beach	2												3.9	18	6																
28	Hewlett Neck	1																														
29	Head of Bay	4												5.4	2	2																
30	Inwood	1												5.4	3	3																
31	Lawrence	2																														
32	Far Rockaway	2												4.1	3	2																
33	Atlantic Beach	1												4.3	30	20																
34	Somerville Basin	1												5.4	35	20																
35	Vernam Basin	3												5.3	17	1																
36	Hammel	4												5.3	7	3																
37	Broad Channel	10												5.2	4	3																
38	Pumpkin Patch Chnl.	1												5.2	25	5																
39	Howard Beach	16												5.2	13	5																
40	Canarsie	1												5.2	30	20																
41	Paerdegat Basin	4												5.2	14	14																
42	East Mill Basin	4												5.2	16	18																
43	Mill Basin	7												5.2	11	10																
44	Dead Horse Bay	1																														
45	Rockaway Inlet	1												5.0																		
46	Belle Harbor	1												5.1																		
47	Rockaway Point	1																														
48	Gerritsen	4												4.9	16	20																



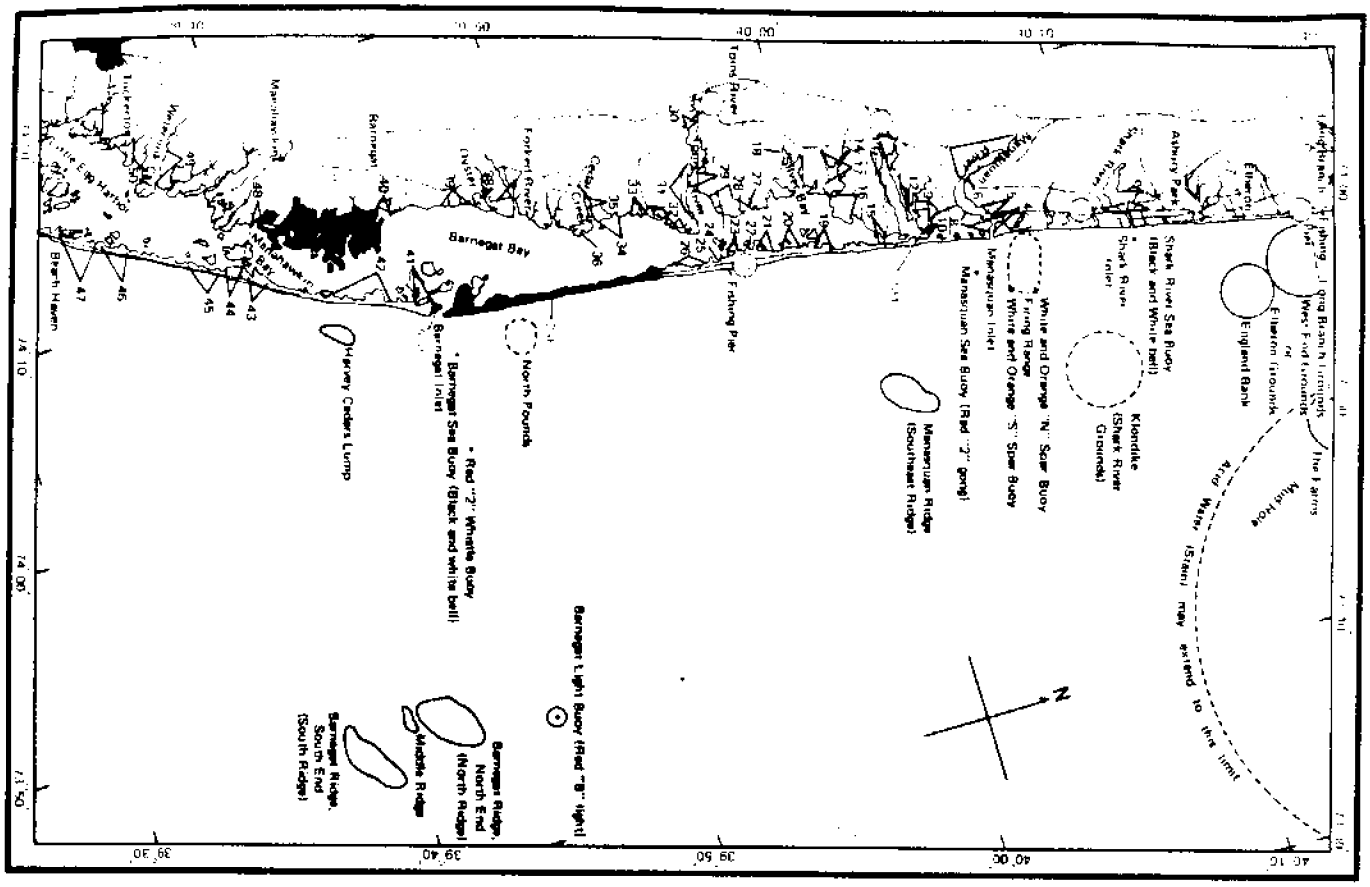
No	Location	Facilities/Location	BOAT RENTAL: Rowboat	Outboard	Charter	Party Boat	Runabout	Skiff	LAUNCHING: Ramp: Surfaced	Ramp: Natural	Hoist: Fixed	Hoist: Portable	Marine Railway	DEPTH: Tidal Range (ft)	Approach (ft)	Alongside (ft)	SUPPLIES: Bait	Tackle	Fuel: Gasoline	Fuel: Diesel	Water	Ice	Grocery	SERVICES: Mooring	Berths	Electricity	Repair: Motor	Repair: Hull	Food	Lodging	Toilet	Shower
49	Plumb Beach Chnl.	10												4.9	16	5																
50	Sheepshead Bay	12												4.9	5	6																
51	Coney Island Creek	2												4.7	7	2																
52	Gravesend Bay	3												4.7	3	3																
53	Long Island City	2																														
54	College Point	11																														
55	College Point	3																														
56	Whitestone	5												7.1	15	4																
57	Throgs Neck	4												7.0	8	4																
58	Westchester Creek	2												7.0	10	7																
59	Bronx River	3																														
60	East River	1												4.2	20	11																
61	Hudson River	1																														
62	Guttenberg	6																														
63	Edgewater	4																														
64	Palisades	1												3.9																		
65	Englewood	1																														
66	Riverdale	1																														
67	Yonkers	6												3.7																		
68	Alpine	1																														
69	Hastings-on-Hudson	3												3.4																		
70	Dobbs Ferry	1												3.4																		
71	Piermont	3																														
77	Hackensack	2												5.3																		
78	Little Ferry	2												5.3																		
79	Secaucus	3												5.1																		
80	Carlstadt	7																														
81	Berry Creek Canal	1																														
82	Wallington	2																														
83	Rutherford	3																														
84	North Arlington	1																														
85	Kearny	4												5.1	10	3																
86	Newark	3												5.1	10	10																
87	Newark	4												5.1	13	4																
88	Jersey City	3												5.0	6	6																
89	Hoboken-Jersey City	7												4.5	12																	
90	Bayonne	4												4.9	6	6																
91	Elizabethport	1												4.9																		
92	Mariner's Harbor	2																														
93	Carteret	2												5.1	35	8																
94	Sewaren	9												5.3	4	3																
95	Tottenville	1												5.3																		
96	Perth Amboy	4												5.2	30	15																
97	Keasbey	2																														
98	South Amboy	1												5.0	2	2																
99	Morgan	9												5.0	4	3																
100	Princess Bay	4												4.9	4	4																
101	Great Kills Harbor	13												4.7	6	3																

No.	Location	Facilities/Location	BOAT RENTAL						LAUNCHING					DEPTH			SUPPLIES							SERVICES									
									Ramp		Hoist								Fuel							Repair							
			Rowboat	Outboard	Charter	Party Boat	Runabout	Skiff	Surfaced	Natural	Fixed	Portable	Marine Railway	Tidal Range (ft)	Approach (ft)	Alongside (ft)	Bait	Tackle	Gasoline	Diesel	Water	Ice	Grocery	Mooring	Berths	Electricity	Motor	Hull	Food	Lodging	Toilet	Shower
102	Cliffwood Beach	1												5.0	1	5																
103	Keyport	9												5.0	2	2																
104	Keansburg	5												4.9	2	3																
105	Port Monmouth	5												4.8	1	0																
106	Belford	1												4.8	8	7																
107	Leonardo	2												4.7	2	3																
108	Atlantic Highlands	5												4.7	6	4																
109	Highlands	12												4.0	8	5																
110	Highlands Reach	5												3.5																		
111	Rumson	2												2.7	7	5																
112	Fair Haven	3												2.8	5	6																
113	Red Bank	8												3.0	3	3																
114	Parker Creek	1												1.7																		
115	Oceanport Creek	2												1.7																		
116	Branchport	3												1.7	1	1																
117	Pleasure Bay	6												1.3	4	4																
118	Monmouth Beach	3												1.0	6	6																
119	Sea Bright	9												1.9	11	11																

No.	Location	Recreational Areas										Activities			
		State			National				Use						
		Park	Wildlife Area	Forest	Park	Wildlife Area	Recreational	National Seashore	Day	Weekend	Vacation	Fishing	Boating	Picnicking	Camping
1sp	Jones Beach														
2cp	Marine Park [b]														
3cp	Dyker Beach [b]														
4NRA	Gateway														
5sp	Palisades Interstate														
6sp	Tallman Mountain														
7CoP	Wolfes Pond [c]														
8sm	Leonardo [a]														

a. State Marina *b.* City Park *c.* County Park

Map 4. Elberon to Beach Haven

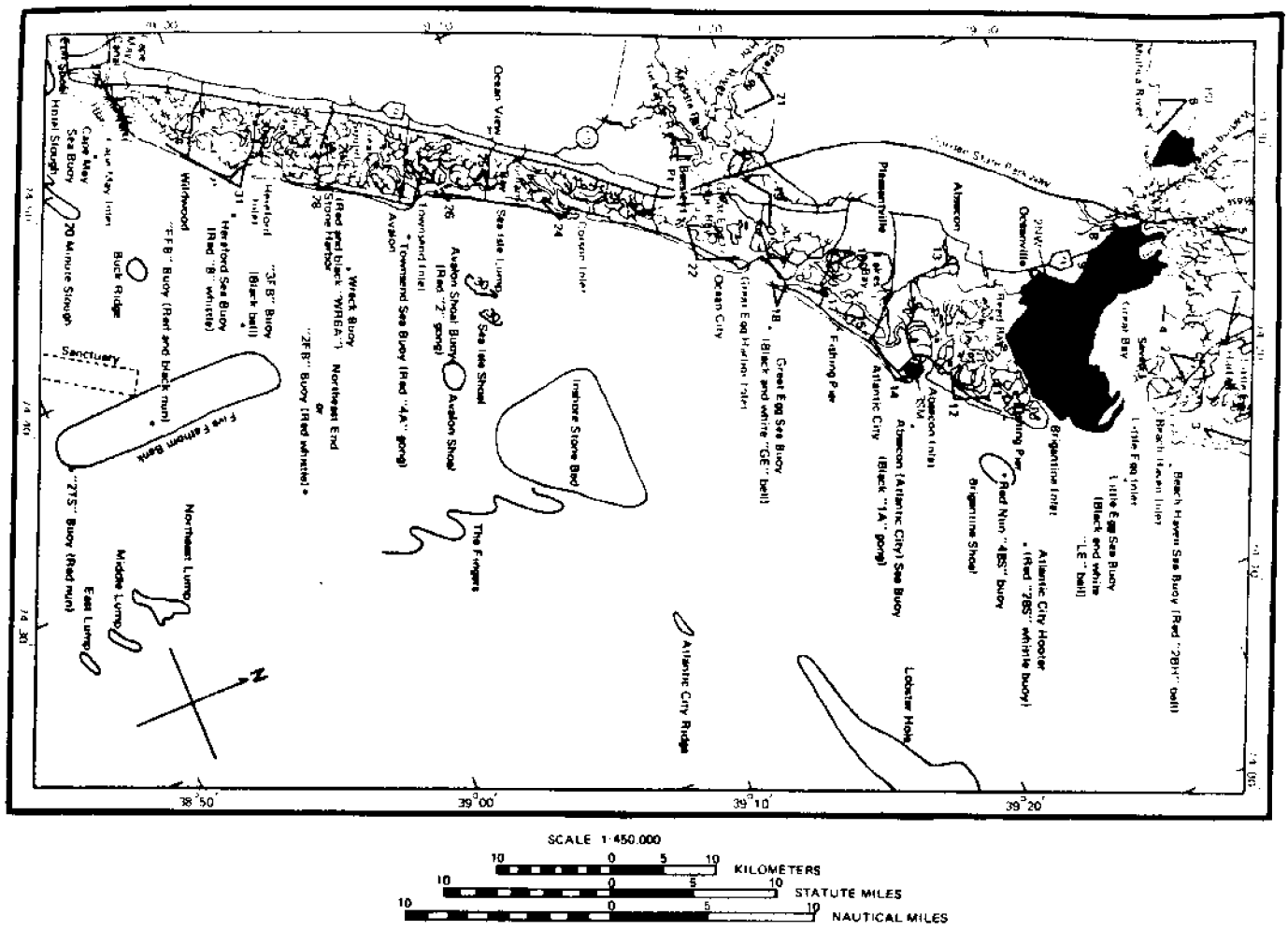


No.	Location	Recreational Areas: State Park	State Wildlife Area	State Forest	National Park	National Wildlife Area	National Recreational	National Seashore	Use: Day	Use: Weekend	Use: Vacation	Activities: Fishing	Activities: Boating	Activities: Picnicking	Activities: Camping
1sm	Point Pleasant[a]								■	■	■		■		
2sp	Island Beach	■							■	■		■		■	
3sm	Forked River[a]								■	■	■		■		
4nw	Barnegat					■									
5sp	Barnegat Light	■							■			■		■	
6sw	Manahawkin		■												
7sf	Bass River			■					■	■	■	■	■	■	■

a. State Marina

No.	Location	Facilities/Location	BOAT RENTAL							LAUNCHING					DEPTH			SUPPLIES							SERVICES									
										Ramp		Hoist								Fuel								Repair							
			Rowboat	Outboard	Charter	Party Boat	Runabout	Skiff	Surfaced	Natural	Fixed	Portable	Marine Railway	Tidal Range (ft)	Approach (ft)	Alongside (ft)	Bait	Tackle	Gasoline	Diesel	Water	Ice	Grocery	Mooring	Berths	Electricity	Motor	Hull	Food	Lodging	Toilet	Shower
1	Neptune Heights	5												3.4	4	4																	
2	Neptune	2												3.4	6	6																	
3	Belmar	6												3.4	5	6																	
4	Manasquan	7												3.9	2	2																	
5	Brielle	12												3.5	8	8																	
6	Manasquan River	1												3.1	4	4																	
7	Manasquan River	5												3.1																			
8	Point Pleasant Bch.	16												3.9	3	3																	
9	Bayhead-Manas. Chnl.	2												1.0	5	5																	
10	Bayhead	7												1.0	6	8																	
11	Beaverdam Creek	3												1.0	5	5																	
12	Wardell's Neck	5												1.0	6	4																	
13	Laurelton	10												0.5	2	3																	
14	Metedeconk River	3												0.8	4	4																	
15	Mantoloking	4												0.6	3	5																	
16	Shore Acres	3												0.6	4	6																	
17	South Kettle Creek	3												0.6	4	4																	
18	Silver Bay	1												0.5	5	6																	
19	Normandy Beach	3												0.6	4	12																	
20	Chadwick	3												0.6	4	4																	
21	Lavalette	3												0.5	4	3																	
22	Ortley Beach	2												0.5	10	12																	
23	Seaside Heights	2												0.5	6	3																	
24	Pelican Islands	4												0.5	2	3																	
25	Seaside Heights	2												0.5		3																	
26	Seaside Park	5												0.5	3	2																	
27	Shelter Cove	2												0.5	6	6																	
28	Bay Shore	8												0.5	4	7																	
29	Island Heights	4												0.6																			
30	Toms River	8												0.6	5	4																	
31	Ocean Gate	5												0.8	3	5																	
32	Goodluck Point	5												0.5	4	4																	
33	Holly Park	4												0.6	5	4																	
34	Cedar Beach	3												0.4	3	2																	
35	Cedar Creek	3												0.6	4	4																	
36	Laurel Harbor	1												0.6	4	5																	
37	Forked River	12												0.6	6	6																	
38	Oyster Creek	4												0.6	3																		
39	Waretown	9												0.6	4	5																	
40	Barnegat	9												0.8	4	8																	
41	Barnegat Light	6												2.3	6	6																	
42	Harvey Cedars	4												0.8	3	3																	
43	Surf City	4												1.0	4	3																	
44	Ship Bottom	11												1.5	2	3																	
45	Brant Beach	7												1.8	4	4																	
46	Spray Beach	7												2.2	3	2																	
47	Beach Haven	20												2.2	4	4																	
48	Manahawkin Creek	2												1.5	4	4																	
49	Westeconk Creek	4												1.8	4	4																	
50	Parker Run	1												2.2	4	4																	
51	Tuckerton	13												2.4	3	2																	

Map 5. Beach Haven Inlet to Cape May



SCALE 1:450,000

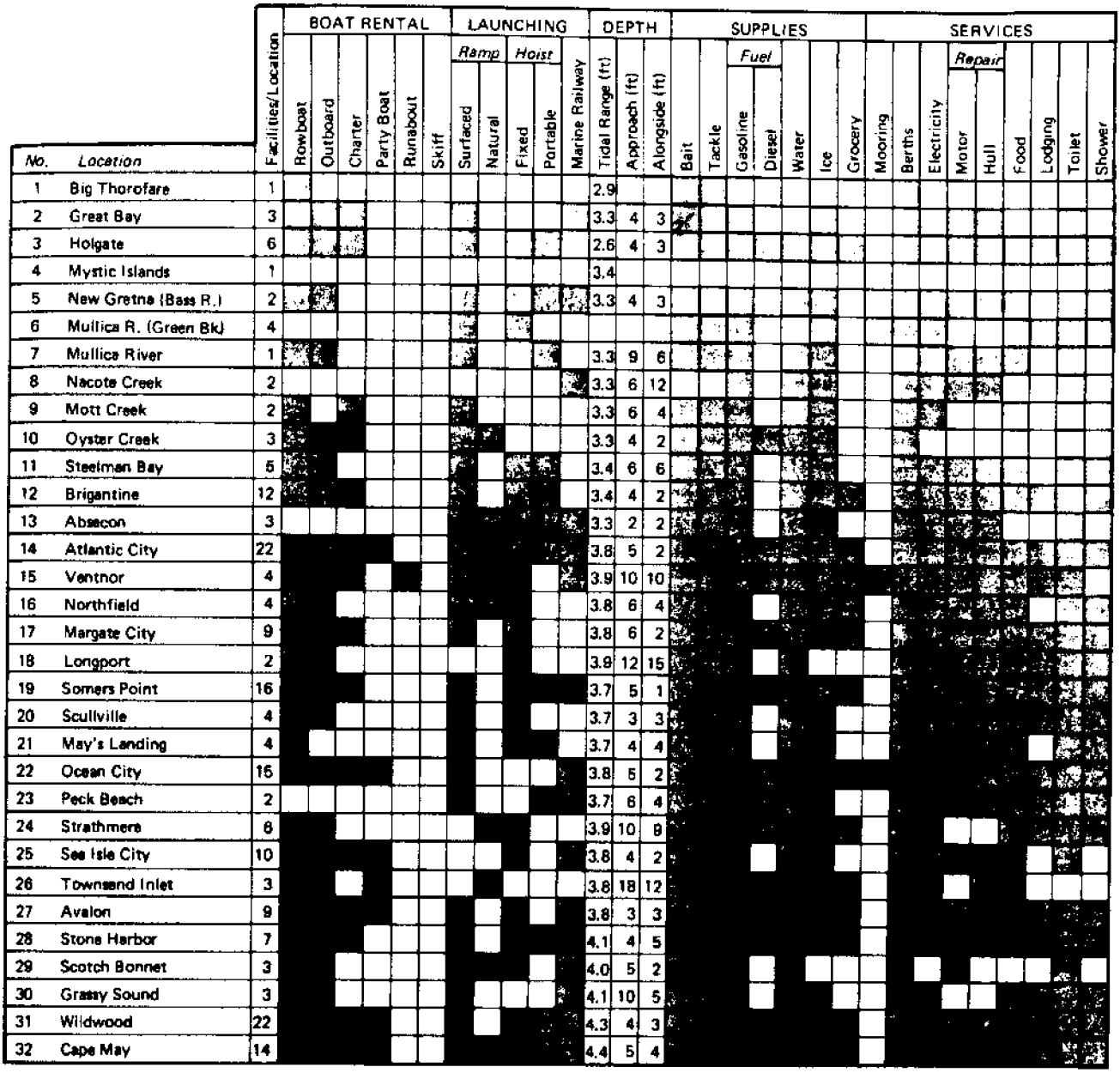
KILOMETERS 10 0 5 10

STATUTE MILES 10 0 5 10

NAUTICAL MILES 10 0 5 10

No.	Location	Recreational Areas: State: Park	State: Wildlife Area	State: Forest	National: Park	National: Wildlife Area	National: Recreational	National Seashore	Use: Day	Use: Weekend	Use: Vacation	Activities: Fishing	Activities: Boating	Activities: Picnicking	Activities: Camping
1sf	Green Bank			■					■	■		■		■	
2nw	Brigantine					■			■			■	■		
3sm	Atlantic City[a]								■	■	■		■		

a. State Marina



No.	Location	Facilities/Location	BOAT RENTAL: Rowboat	Outboard	Charter	Party Boat	Runabout	Skiff	LAUNCHING: Ramp: Surfaced	Ramp: Natural	Hoist: Fixed	Hoist: Portable	Marine Railway	DEPTH: Tidal Range (ft)	Approach (ft)	Alongside (ft)	SUPPLIES: Bait	Tackle	Fuel: Gasoline	Fuel: Diesel	Water	Ice	Grocery	SERVICES: Mooring	Berths	Electricity	Repair: Motor	Repair: Hull	Food	Lodging	Toilet	Shower
1	Big Thorofare	1												2.9																	
2	Great Bay	3												3.3	4	3																
3	Holgate	6												2.6	4	3																
4	Mystic Islands	1												3.4																	
5	New Gretna (Bass R.)	2												3.3	4	3																
6	Mullica R. (Green Bk)	4																														
7	Mullica River	1												3.3	9	6																
8	Nacote Creek	2												3.3	6	12																
9	Mott Creek	2												3.3	6	4																
10	Oyster Creek	3												3.3	4	2																
11	Steelman Bay	5												3.4	6	6																
12	Brigantine	12												3.4	4	2																
13	Absecon	3												3.3	2	2																
14	Atlantic City	22												3.8	5	2																
15	Ventnor	4												3.9	10	10																
16	Northfield	4												3.8	6	4																
17	Margate City	9												3.8	6	2																
18	Longport	2												3.9	12	15																
19	Somers Point	16												3.7	5	1																
20	Scullville	4												3.7	3	3																
21	May's Landing	4												3.7	4	4																
22	Ocean City	16												3.8	5	2																
23	Peck Beach	2												3.7	6	4																
24	Strathmere	8												3.9	10	9																
25	Sea Isle City	10												3.8	4	2																
26	Townsend Inlet	3												3.8	18	12																
27	Avalon	9												3.8	3	3																
28	Stone Harbor	7												4.1	4	5																
29	Scotch Bonnet	3												4.0	5	2																
30	Grassy Sound	3												4.1	10	5																
31	Wildwood	22												4.3	4	3																
32	Cape May	14												4.4	5	4																

States than there were in 1965. The reasons for the reduction, and whether the findings hold for the New York Bight region, are not entirely clear. Saltwater sport fishermen are not licensed, and records of their numbers and activities are largely unavailable. Although New York predicts an increase in the total number of fishermen by 1990, a combination of economic and environmental factors such as travel costs and water pollution may reduce or terminate some participation.

A recent study of Long Island surf fishermen (Carls and Besnan 1977) indicates, however, that for this group of fishermen, at least, fishing is a close-to-home activity that does not require major expenditures for travel, lodging, or other costs of participation (Figure 7). Whether this finding holds for the other kinds of sport fishing and other locations is a question for further investigation.

Quality of the fishing environment, services offered by an extended sportfishing industry, and edibility of catch will be important in the future of sport fishing in New York Bight. In a National Academy of Sciences report (1973) on water quality criteria research needs, special note was made of the need for continued research on the ability of shellfish and finfish to accumulate toxic compounds. The problem is particularly important for protection against viral infection (such as hepatitis) from infected shellfish.

Boating

Boating, including sailing, power boating, and rowing, is a popular and growing recreational activity (Figure 8). In the United States, boating has grown from about 15,000 boats in 1909 to over 9 million pleasure craft in 1971 (Cole 1973). In New Jersey, participation in all forms of boating accounts for nearly 8 million recreation days (activity participation by one person for all or part of one day) every year (New Jersey Department of Environmental Protection 1973). In New York, approximately 400,000 registered motorboats and 150,000 unregistered small craft are used by more than 3 million boaters (New York State Office of Parks and Recreation 1972*a*). Though these figures represent use on all waters, fresh and marine, they show the overall magnitude and popularity of recreational boat use.

Table 4 shows the results of a 1975 study of marinas in New York State (Noden and Brown 1975). Although these figures cover only Nassau and Suffolk counties (north and south shores of Long Island), they give an idea of the regional extent and distribution of boating facilities. For an overall view, the *Boating Almanac* (1974*a*,*b*) provides approximate comparative marina data for the three major Bight areas: Long Island (south shore)—493 marinas; New York City—163 marinas; and New Jersey—548 marinas.

In some areas, boating facilities are in short supply, and the situation is likely to become worse as participation in boating and competition for shoreline use increase. In addition, fuel and service costs are likely to continue to rise, making it more difficult to own and maintain a boat for recreation. These and other factors, such as tightened controls on the disposal of bilge and sewage wastes, will continue to challenge marina operators and individual boat owners.

Figure 4. Charter boats provide valuable opportunities for sport fishing, like this catch of blue fish, Montauk, LI (Photo by E.G. Carls)

Figure 5. Surf fishing, a popular and widespread sport along Bight shores (Photo by E.G. Carls)

Problems and Needed Research

A major problem in attempting to synthesize available information in a field as broad as recreation is the recurring conflict that arises between different sources of information. Ducsik (1974) illustrated this dilemma with methods used by various agencies to measure the same shoreline. He reported that the Corps of Engineers and the ORRRC defined the distance of the same US beaches differently because they used different criteria. The Corps was interested in any beach capable of erosion while the ORRRC dealt with only those capable of supporting recreation. The result was a notable difference in measurement results.

Also, in gathering information for this monograph, data might be identified for Long Island with no comparable or compatible data for New Jersey. As a result, complete, integrated summary data cannot be provided even when such information is available for one or more sections of the region. Part of the problem stems from the arbitrary nature of the New York Bight designation—it does not conform to most existing coastal recreation planning and management authorities. Out of this emerges a policy question of overall responsibility and whether some central clearinghouse is needed for information coordination and dissemination.

Specific problems related to recreation in the New York Bight region can be grouped into four categories: 1) shoreline access; 2) environmental suitability; 3) resource planning and management; and 4) economics.

Table 4. Boating facilities in Nassau and Suffolk counties, NY

Type of Facility	Number of Marinas[a]	
	Nassau County	Suffolk County
Commercial		
Marinas and boatyards	99	132
Berthing moorings	582	186
Berthing slips	8,057	10,327
Other marine facilities	52	85
Municipal		
Marinas	6	25
Berthing moorings	653	300
Berthing slips	746	300
Launching sites	13	18
Private		
Yacht and boat clubs	3	11
Berthing moorings	510	153
Berthing slips	22	878
Yacht clubs with no data	21	38
State		
Marinas	1	2
Berthing moorings		
Berthing slips	600	91
Launching sites		

[a]Only those facilities with 10 or more berthings are included.

Source: Noden and Brown 1976

Figure 6. Public and commercial piers provide sport for hundreds of people throughout the Bight region, such as this Captree, LI, pier (Photo by E.G. Carls)

Figure 7. The close-to-home sport of fence fishing (Photo by E.G. Carls)

Shoreline Access

The total US beach area considered suitable for recreation by the ORRRC (1962*b*) would accommodate roughly 11.5 million people at one time. That means that if only 10% of the total US coastal population of 108 million used the beach at one time, all suitable beaches would be needed to meet the demand.

In the New York Bight region, where both population density and private shoreline ownership are relatively high, competition for recreational use of shoreline is especially intense. With the exception of a few rural areas, like the eastern portion of Suffolk County, the majority of people are clustered around the major urban centers. In New Jersey nearly 50% of the population is found in the five northeastern counties that border metropolitan New York City—Bergen, Essex, Hudson, Passaic, and Union (New Jersey Department of Environmental Protection 1973). Migration from the central city to the suburbs is expected to continue but at a more moderate rate than in previous years. Moreover, the exurban areas immediately contiguous to the cities are expected to be the greatest focus of migration.

The most heavily used public beaches are those within a two-hour drive of metropolitan centers; use increases closer to the city (Outdoor Recreation Resources Review Commission 1962*b*). In the Bight region, with its advanced system of roadways, this means that virtually every foot of Long Island and New Jersey shoreline is in the prime use zone.

Nationally, this prime use zone is extremely limited. Of the 96,540 km (60,000 mi) of US mainland shoreline, less than 2% is recreational shoreline in public ownership. On the entire Atlantic coast, only 541 km (336 mi) of shoreline are publicly owned for recreation, and only 3% of this is recreational shoreline (Ditton 1974).

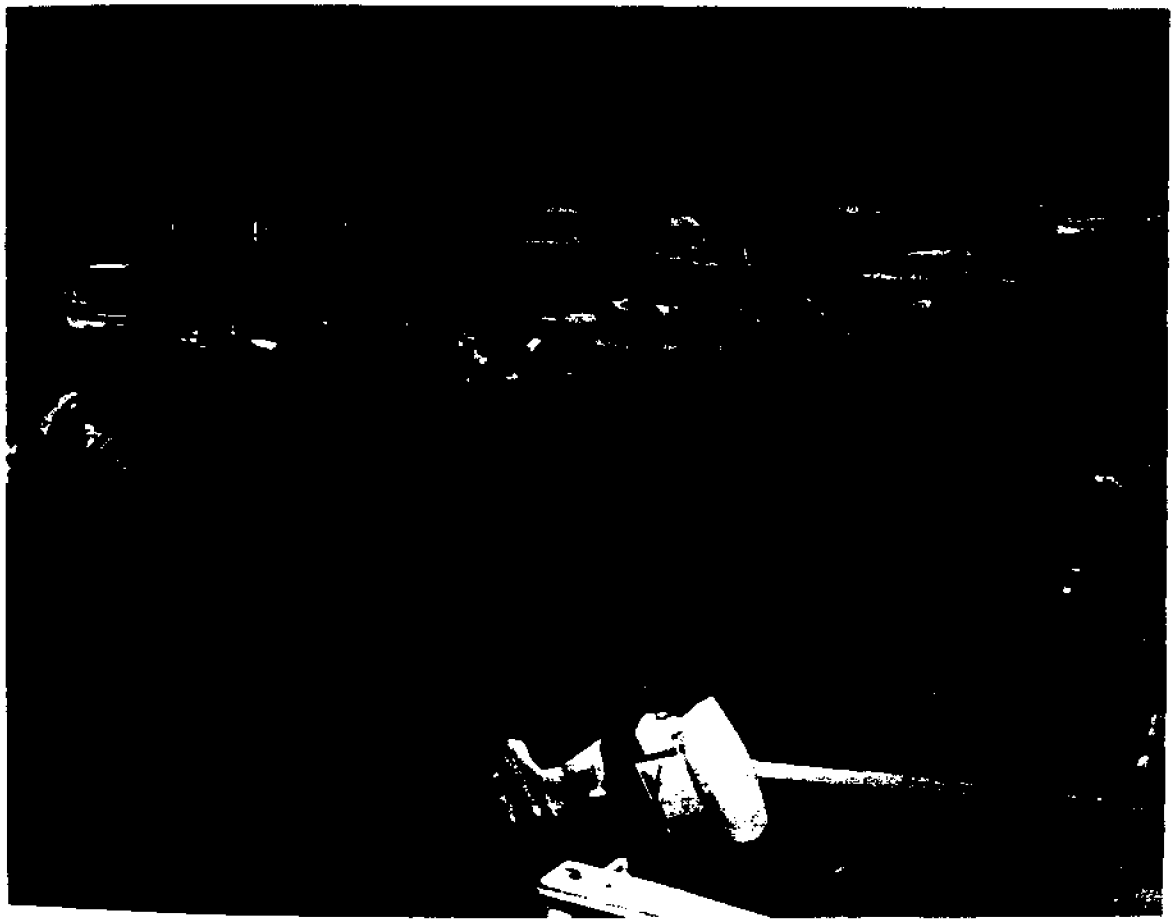


Figure 8. Sag Harbor Marina, accommodating ever-increasing numbers of pleasure craft (Courtesy of the New York State Department of Commerce)

In addition to those coastal areas (such as bluffs and marshes) naturally unsuitable for popular forms of recreation, there are two major reasons why shoreline resources may be inaccessible or unavailable for recreation. First, travel to the more desirable public beaches depends heavily on the automobile. Those without ready access to an automobile, largely the poor and the elderly, have the greatest restriction on beach visitation. Ironically, for most people the areas closest to home (like New York Harbor) tend to be the most undesirable in water quality and availability of suitable beach sites.

The second reason involves shoreline ownership.* In the North Atlantic region, 83% of the total shoreline is in private ownership (Bureau of Outdoor Recreation 1973). Privately owned beaches are characteristically unavailable for public use. Included in this same category are beaches owned by local governments that are not open to the general public, like the town beaches mentioned earlier.

Other problems, such as visual access, are more subtle and unique than direct physical access. In California, for example, an estimated 32 km (20 mi) of the 177 km (110 mi) coast of mainland Orange and Los Angeles counties have views totally blocked by various kinds of structures (Ditton 1974). Companion figures are not available for the New York Bight region, but observation of congested shoreline areas confirms the existence of similar conditions. Another problem relates to overall land use planning and development, specifically, the location of highways. In New York City much of the waterfront is surrounded by highways. In the past this was justified on two grounds: 1) expediency in economic and engineering terms of building on level shorefront terrain, and 2) added shore protection afforded by tons of steel. Driving as a recreational end in itself inspired the attitude that scenic vistas from a waterfront vantage point were the rightful property of the motorist rather than of the man on foot. Where waterfront recreation was provided, it was an adjunct to highway building (New York City Budget and Planning Committee, undated). The net effect has been a reduction in the esthetic value of the waterfront and the creation of a barrier between shoreline parks and residential neighborhoods.

Shoreline access for recreation promises to be a continuing problem as competition with other, non-recreational uses and the demand for resources continue. Research is needed in a number of different areas related to extending the availability of facilities, distribution of use loads during peak periods, opportunities for public use of private areas, public transportation systems to shoreline areas, and conflicts between competing recreation uses, and many others. The goal is to provide the best possible recreational experience for the greatest number of people.

Environmental Quality

Even though some important advances are being made to alleviate pollution, environmental conditions still rank high among the factors contributing to or detracting from the recreational experience. Water quality is particularly important to coastal recreation. Clean water enhances the enjoyment of all kinds of recreational activity in and by the sea, especially for body contact activities like swimming and skin diving. Not infrequently beaches have been closed because of restrictive levels of water pollution, especially in and around urban areas. This precaution is a necessary safeguard to public health, and it also withdraws important recreational resources from public use.

There are many indicators of environmental degradation affecting recreation. In New Jersey, for example, approximately 25% of the state's estuarine waters are closed to shellfishing because of high levels of water pollution. On Long Island, several public beaches are closed regularly or seasonally because of a combination of pollution sources—sewage treatment effluents, cesspool overflows, duck farm wastes, and discharges from pleasure craft and commercial vessels. On Great South Bay, there has been an observed reduction in the number of swimmers, generally attributed to a continuing deterioration in the quality of bay waters (Nassau-Suffolk Regional Planning Board 1966*b*; Ortolano 1970; New York State Office of Parks and Recreation 1972*b*; New Jersey Department of Environmental Protection 1973).

*Shoreline ownership is especially difficult to estimate, since different agencies use different criteria for measurement. The New Jersey Comprehensive Outdoor Recreation Plan (New Jersey Department of Environmental Protection 1973) indicates, for example, that over 70% of the state's coastline is owned by public agencies. This figure seems to represent only ocean shoreline, however, and none of the extensive bay shore.

When it comes to the question of what constitutes water quality for recreation, confusion, indecision, and lack of agreement seem to prevail. The future research task is to examine the question of environmental quality and provide information from which reasonable standards may be derived.

Planning and Management

Many elements are involved in the planning and management of coastal resources for recreation. Generally, however, the major factors can be grouped into two categories relating to resource limitations and characteristics of recreation participants.

Past problems in the management of the coastal resource have often resulted from a lack of appreciation for basic ecological processes. More than once, for example, storm tides have unceremoniously relocated Long Island and New Jersey beaches. In the natural scheme of things, these occurrences are of little more than passing consequence. Barrier islands and their beaches have been migrating up and down the Atlantic coast for thousands of years.

To build a motel, vacation home, hot dog stand, or any other permanent structure on a front dune is to violate a major principle of planning and management (Figure 9). In addition to the manifest pitfalls of sewage disposal and freshwater supply, it is likely that a storm tide high enough to breach the dune will eventually inundate all structures. A recurrence of the record hurricane of 1938, for instance, would cause an estimated $170 million (1970 dollars) in damages on Long Island's south shore.

Beaches and dunes move in a natural and ongoing process; buildings and property lines do not. Nevertheless, people persist in building their castles-by-the-sea, and elaborate, costly schemes have been devised to stabilize the shoreline. Groins extending at right angles from the beach are built to catch and hold migratory sand, robbing it from those down the path of littoral drift. In other cases, sand that will be stripped away with the next storm tide is dredged and pumped to restore deficit beaches, creating an unending, if not fruitless, cycle. Three planning guidelines of the Long Island Regional Marine Resources Council (Nassau-Suffolk Regional Planning Board 1973) are especially cogent in this context:

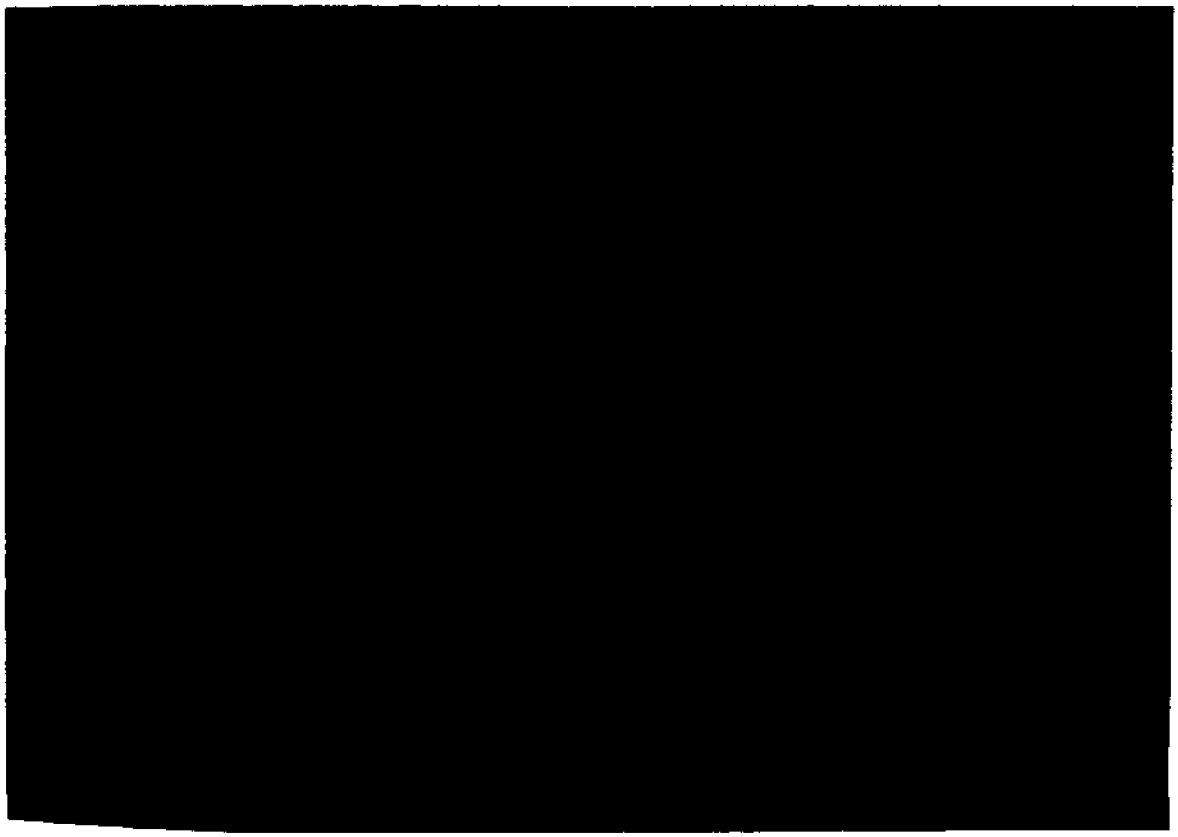


Figure 9. House fronting Long Island's south shore (Photo by E.G. Carls)

1. Accept the natural, long-term shoreline regression that is occurring along Long Island's north shore as a phenomenon that is beyond man's present capability for practical, effective control. Maintain heavily used beaches and recreation areas; and, when the need exists, establish new beach areas by means of sand nourishment techniques in locations where historical records indicate either an accretion or low to moderate erosion of the shore.

2. Emphasize dune stabilization and beach nourishment techniques, compatable with natural processes, as the primary means of minimizing storm breaching of the south shore barrier islands, and thus protect the environments of the south shore bays from sudden short-term changes.

3. Prohibit the construction of groins and other shore protection devices either by government or private persons unless it can be demonstrated that such structures will not adversely affect adjacent property.

Similar guidelines, based on fundamental research findings, are necessary for the proper management of all coastal recreation resources.

Our knowledge of what constitutes a pleasant and satisfying recreational experience is still relatively limited. A significant research literature is beginning to emerge, however, with important implications for policy and management decisions. For example, there are indications that people prefer recreational areas that are uncrowded and not highly developed (Hecock 1970; Carls 1974). Also, groups of people, possibly because of differences in cultural or social background, seek different qualities in their selection of recreational beaches (Peterson and Newman 1969).

For more than two decades the thrust of public outdoor recreation has been to provide enough space and facilities to accommodate a rapidly growing demand. Now that the limits of open space have been recognized, especially in the urbanized regions of the United States, emphasis is beginning to swing back to considerations of quality in the recreational experience. Approaches to recreational planning and management need to be based as much on the limitations of human satisfaction as on the limitations of available space.

Economics

Expenditures for outdoor recreation are made for diverse goods and services that may not be directly associated with participation in an activity—for such things as travel costs, special clothing, accessories, and food. This makes a precise assessment of total dollars spent for recreation difficult. It has been estimated, however, that Americans spend more than $100 billion annually for various forms of recreation (*US News and World Report* 1972). For shoreline recreation alone, in 1968 an estimated 112 million people participated in activities related to the ocean and spent approximately $14 billion (Ducsik 1974).

How much is spent for marine recreation and what does it mean to the economy of the New York Bight region? A few figures derived by the Nassau-Suffolk Regional Planning Board (1966*b*) illustrate the overall magnitude of expenditures on Long Island: 1) nearly $60 million are spent each year for boat upkeep, dock rentals, and other boat operating costs, 12 million gallons of gas are sold for boat use, and the sale of new boats is a $30 million industry; 2) as a conservative estimate, $45 million are derived each year by the sale of fishing tackle and the operation of party and charter boats; 3) annual sales of swimming, diving, and beach equipment range from $2 to $3 million. These figures do not represent additional money spent every year on transportation to and from the beach, jobs associated with the operation of recreational areas and services, or other expenditures associated with recreation and tourism. Neither do they take into account the large sums of money spent on projects like channel dredging, pollution control, and the propagation of fish and wildlife resources that are at least partly justified by recreational use.

So far no consolidated study of economic impact or economic benefits derived from coastal recreation has been conducted in the New York Bight region or anywhere else. Such an effort would provide an invaluable source of information for decisions related to resource allocation and development for recreation.

Summary

The coastal zone is the dominant resource for outdoor recreation in the New York Bight region. The recreational interests of millions of people are served every day by a rich collection of beaches, dunes, ocean waters, and wildlife.

Fortunately, many of the values, traditions, and opportunities that have come to be associated with coastal recreation is this region are still available today. Additional new areas, like Fire Island National Seashore, are helping to increase future opportunities.

For those who participate in marine-related recreation activities, problems are manifested in very simple ways: crowded and inaccessible beaches, reduced catches of sport fish, polluted swimming waters, and in some cases, a general decline in quality of areas and services. To coastal planners and managers, these translate into a complex of more technical problems: the skewing of supply-demand curves, a widening of benefit-cost ratios, and a tangle of laws, regulations, policies, plans, and traditions that complicate the planning/management process. In addition, the lack of overall coordination between governmental, commercial, and private groups makes evaluation and development of recreational resources on a regional basis especially difficult.

The future of coastal recreation in New York Bight is tenuous. Accurate prediction of recreation potential is made impossible by a set of ongoing and interacting changes, for example, population size and distribution, water quality, and demand for shoreline uses. The future of recreation is tied very closely to and will depend on the dynamics of the region's broader social, economic, and environmental conditions.

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