THE MAINE COAST:

RECREATION AND OPEN SPACE

Appendix Volume

by
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July 1978

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See individual appendices for separate citations.

INTRODUCTION

In September, 1976, the Maine Bureau of Parks and Recreation, in cooperation with the State Planning Office, initiated a study to identify sites of outstanding significance in Maine's coastal area which would be suitable for one or more forms of outdoor recreation and which could be considered worthy of protection because of the importance of their natural features. As it has evolved, the project has been broadened to include a review of coastal properties currently held by the Bureau of Parks and Recreation.

The document The Maine Coast: Recreation and Open Space, Recommendations for Consideration has been prepared to summarize the work of the study. It presents information - much of it brought together for the first time - which, when studied systematically, suggests a framework for a program of coastal conservation - conservation, that is, for the protection of areas which in many cases are most suitable for outdoor recreation, wildlife habitat, historic interpretation, scenic viewing, environmental study or other uses which contribute to the quality of life in Maine.

Several papers and inventories have been prepared to provide additional background information to the discussion and recommendations of the principal report. These are bound together in this appendix volume.

The goal of Maine's Coastal Program is to achieve a balance between conservation and development in the coastal area that will satisfy the short and long term social, economic, and environmental needs and aspirations of the people of the State of Maine. However, the growth of population, tourism, and residential, commercial and industrial development, together with increasing interest in conservation and concern for the fragile coastal environment, are resulting in frequent conflicts over the use of coastal resources. To improve the process of making decisions on the use of coastal resources and to insure that irreversible changes are not inflicted on areas which are outstanding in their natural state, it is important to identify these areas of particular significance.

The report The Maine Coast: Recreation and Open Space, along with the papers in this appendix volume, have been prepared with the assistance of the State Planning Office and the Bureau of Parks and Recreation, but as an independent project. None have been adopted or endorsed as a program of action by the Bureau of Parks and Recreation, though they will be carefully reviewed by Bureau staff. It is hoped that the information presented will be useful in the resolution of coastal issues and the selection of policy alternatives affecting the development and conservation of the Maine coast.

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June 1978

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INTRODUCTION

Purpose

This paper presents background information for the report The Maine Coast: Recreation and Open Space, Recommendations for Consideration, which was prepared for the Governor's Advisory Committee on Coastal Development and Conservation. One of the objectives of the report was to assess the need for additional open space sites for outdoor recreation and resource protection in Maine's coastal area.

To address this objective it was clear that information was needed on existing open space areas and recreational use and preferences. This data has been organized here by Bureau of Parks and Recreation administrative unit.

Coastal Area

The extent of Maine's coastal area was established in 1969 when the State's Coastal Program was initiated. The area includes all coastal towns and townships on tidewaters, all coastal islands, and the sea to the limits of the State's jurisdiction. The inland boundary of the coastal area is, therefore, the inland line of coastal town boundaries (see Figure 1); the seaward boundary is the outer limit of the United States territorial sea.

One hundred and forty-three minor civil divisions are located in the Maine coastal area. These are listed in Table A by Bureau of Parks & Recreation administrative unit. Figure 1 illustrates the six administrative units of the Bureau of Parks & Recreation in the coastal area. These units were chosen to facilitate analysis of use, ownership and prefernce data relative to existing programs of the Bureau. Information in this Appendix is organized by administrative unit for the entire coast.

Table A

Coastal Area Minor Civil Divisions

Southern A

Cumberland
Freeport
Yarmouth

Southern B

Arundel
Biddeford
Cape Elizabeth
Eliot
Falmouth
Kennebunk
Kennebunkport
Kittery
Old Orchard Beach
Portland
Saco
Scarborough
South Berwick
South Portland
Wells
York

Southern C

Alna
Arrowsic
Augusta
Bath
Boothbay
Boothbay Harbor
Bowdoinham
Brunswick
Chelsea
Dresden
Edgecomb
Farmingdale
Gardiner
Georgetown
Hallowell
Harpswell
Perkins Twp.
Phippsburg
Pittston
Randolph
Richmond
Southport
Topsham
West Bath
Westport
Wiscasset
Woolwich

Southern D

Belfast
Bremen
Bristol
Camden
Cushing
Damariscotta
Frankfort
Friendship
Isle au Haut
Islesboro
Lincolnville
Matinicus
Monhegan
Newcastle
Nobleboro
North Haven
Northport
Owls Head
Prospect
Rockland
Rockport
Searsport
So. Bristol
So. Thomaston
St. George
Stockton Springs
Thomaston
Vinalhaven
Waldoboro
Warren
Winterport

Eastern W

Bangor
Bar Harbor
Blue Hill
Brewer
Brooklin
Brooksville
Castine
Cranberry Isles
Deer Isle
Ellsworth
Franklin
Gouldsboro
Hancock
Hampden
Lamoine
Long Island Plt.
Mt. Desert
Orrington

Eastern W (cont'd)

Penobscot
Sedgewick
Sorrento
Southwest Harbor
Stonington
Sullivan
Surry
Swans Island
Tremont
Trenton
T7 SD
T8 SD
T9 SD
T10 SD
Winter Harbor

Eastern E

Addison
Beals
Calais
Centerville
Cherryfield
Columbia
Columbia Falls
Cutler
Dennysville
East Machias
Eastport
Edmunds
Harrington
Jonesboro
Jonesport
Lubec
Machias
Machiasport
Marion
Marshfield
Milbridge
Pembroke
Perry
Pleasant Point
Robbinston
Roque Bluffs
Steuben
Trescott
Whiting
Whitneyville

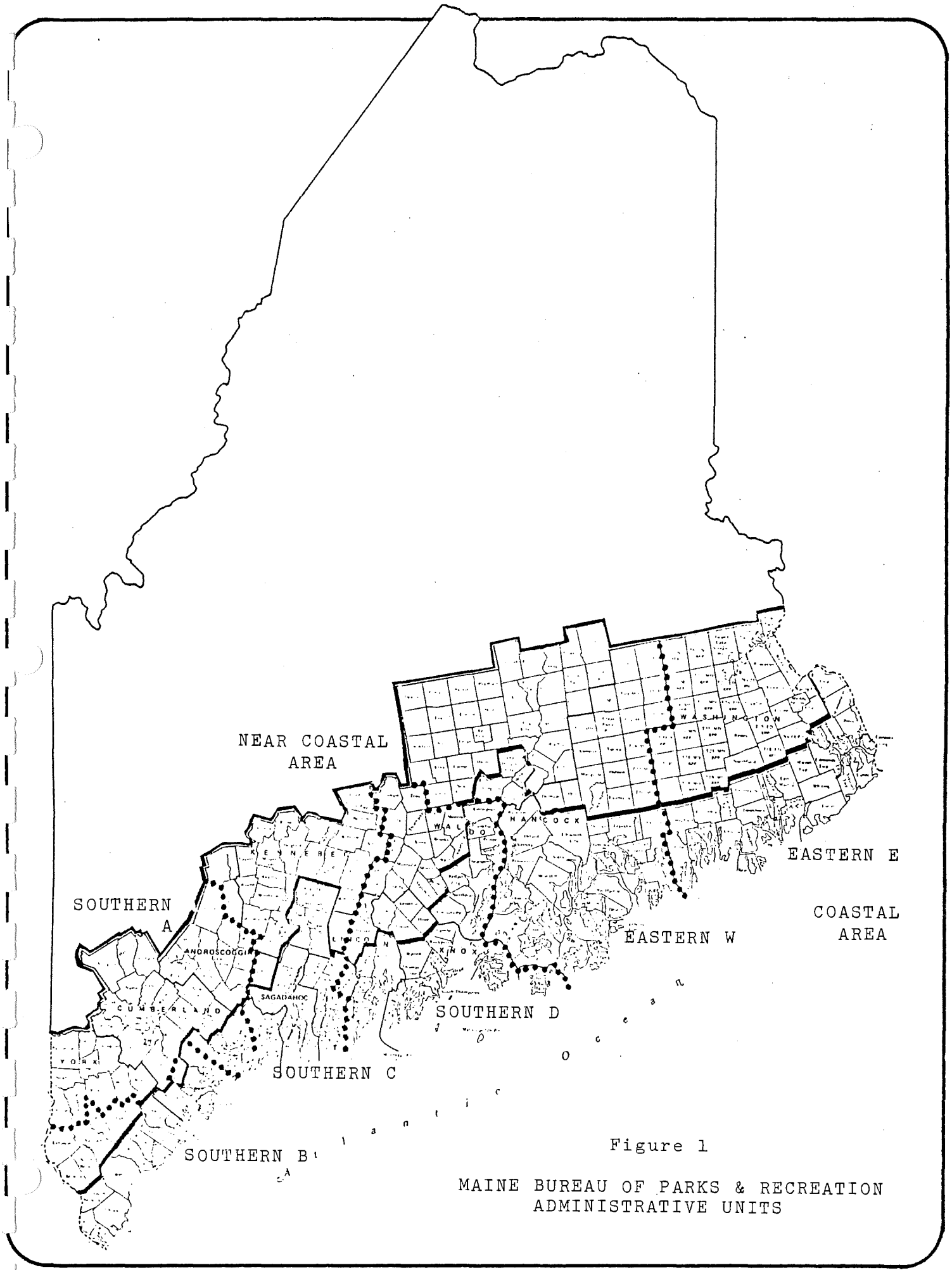


Figure 1

MAINE BUREAU OF PARKS & RECREATION
ADMINISTRATIVE UNITS

COASTAL OWNERSHIP SUMMARY

COASTAL OWNERSHIP SUMMARY

There are 2,449,969 acres in the 143 minor civil divisions of Maine's coastal area (excluding most coastal submerged lands). Of this, about 2,348,000 acres (95.9%) are privately owned. The balance, about 101,900 acres, is open space land maintained in a natural condition by public agencies or private conservation organizations. Figure 2 illustrates land ownership in the coastal area. Figure 3 gives a breakdown of the public and private conservation open space lands by jurisdiction for the coast.

Federal

Federal agencies, notably the National Park Service and the Fish and Wildlife Service, hold about 50,000 acres, or 2.1% of the total coastal area acreage. This does not include Coast Guard lighthouses and military installations which are closed to the general public and General Services Administration properties. The largest block of federal land ownership on the coast is the 34,370 acres of Acadia National Park in Hancock and Knox Counties.

State

Slightly more than 25,000 acres are controlled by various state agencies in the coastal area excluding the 1,299 small coastal islands under the jurisdiction of the Bureau of Public Lands. This acreage is equal to approximately one percent of the total coastal land area. The Bureau of Parks and Recreation controls in its coastal state parks and memorials more than 13,500 acres of this 25,000. The other state agency with substantial coastal open space properties is the Department of Inland Fisheries and Wildlife.

Municipal

The coastal cities and towns control about 17,900 acres of open space lands maintained in a natural condition. Not included in this figure are some small local parks (under 10 acres), tax delinquent lands and coastal beaches. Beach areas were not included because of the difficulty in defining boundaries and the confusion over ownership. In any case, excluding these beach open spaces does not significantly affect acreage figures for the coast as a whole.

Private Conservation*

A total of nearly 8,400 acres are owned by private conservation organizations in the coastal area. The Nature Conservancy is the largest single land owner in this category with 3,724 acres. State designated game sanctuaries have been included here where acreages

*Private conservation lands are included in this report because they accrue some public benefit from their open space values by having restrictions on their use or development. Although in many cases they are, in some cases they are not, available for public recreational use.

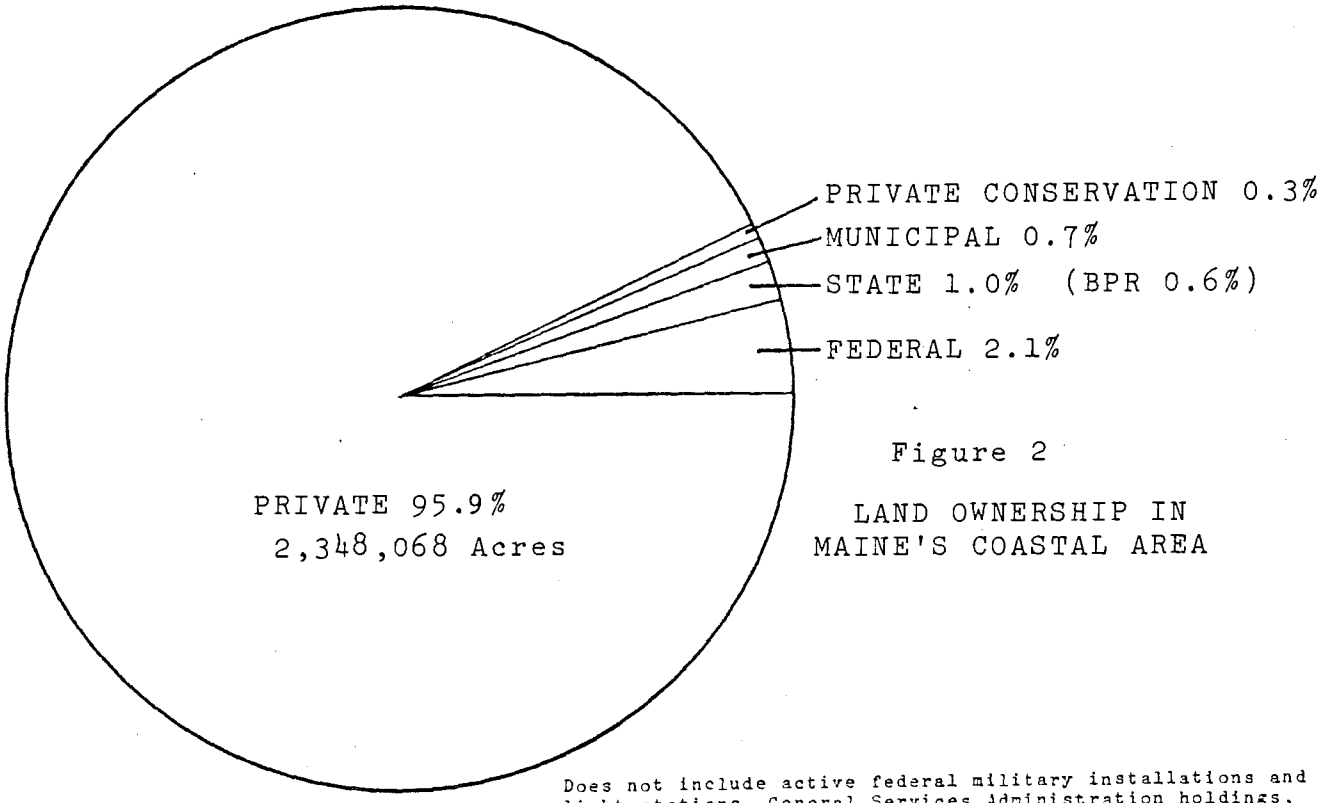


Figure 2

LAND OWNERSHIP IN MAINE'S COASTAL AREA

Does not include active federal military installations and light stations, General Services Administration holdings, Maine Department of Transportation properties, unregistered State owned islands, and some municipal beaches.

Figure 3

OWNERSHIP OF PUBLIC AND PRIVATE CONSERVATION OPEN SPACE LAND IN MAINE'S COASTAL AREA

101,901 ACRES

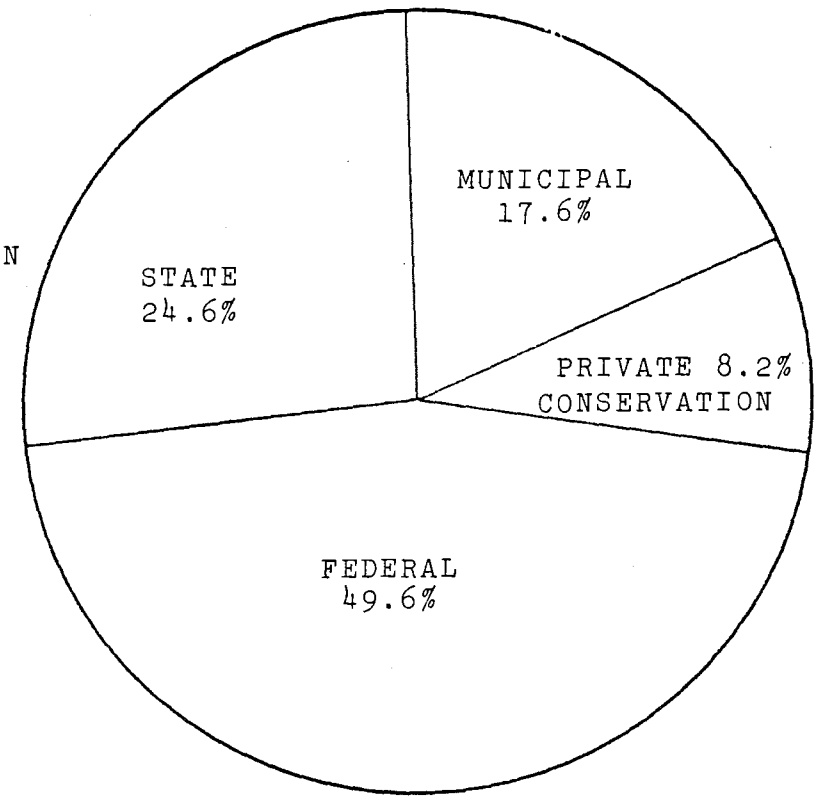
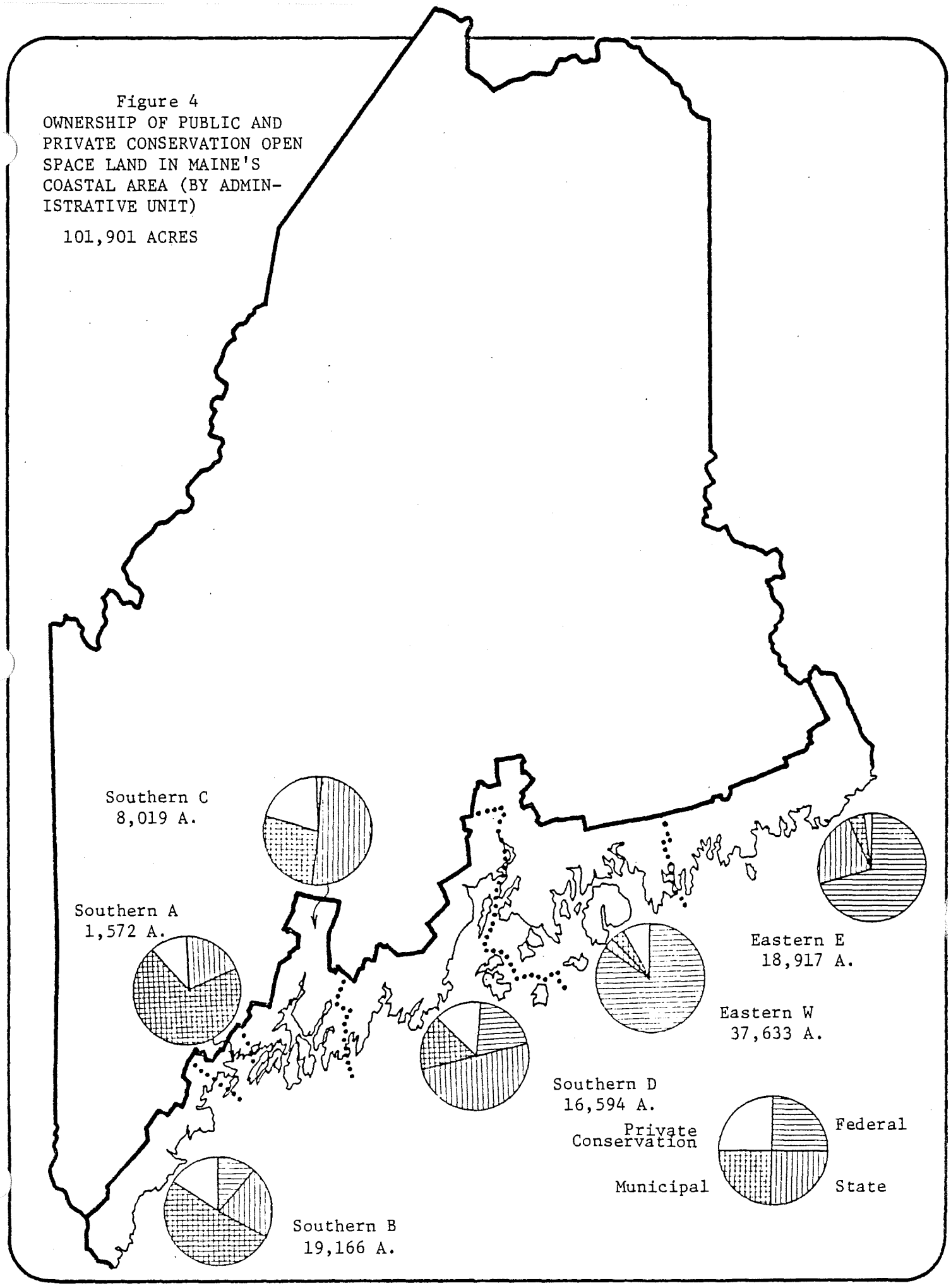


Figure 4
OWNERSHIP OF PUBLIC AND PRIVATE CONSERVATION OPEN SPACE LAND IN MAINE'S COASTAL AREA (BY ADMINISTRATIVE UNIT)

101,901 ACRES



were known. In addition to these areas, there are about 9,000 acres of private lands encumbered with conservation easements which restrict development to various degrees. These areas have not been included in the inventory because for the most part they do not allow public access. These lands under easement do, however, constitute an important floral, wildlife and aesthetic resource. The Bureau of Parks and Recreation has responsibility for monitoring 13 separate coastal conservation easements totaling about 900 acres.

Table B

MAINE COASTAL PUBLIC AND PRIVATE CONSERVATION OPEN SPACE LAND OWNERSHIP

By Administrative Unit

	ADMINISTRATIVE UNIT												COAST		
	Southern A		Southern B		Southern C		Southern D		Eastern W		Eastern E				
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Total Acres	% of Total Acres	% of Total Public & Private Conservation
Coastal Acreage	46,599	100	375,315	100	369,988	100	445,402	100	650,352	100	562,313	100	2,449,969	100	-
Federal	0	0	2,641	0.7	30	*	3,215	0.7	31,584	4.9	13,133	2.3	50,603	2.1	49.6
State (BPR)	289 (288)	0.6 (0.6)	4,210 (1,080)	1.1 (0.3)	4,272 (1,465)	1.2 (0.4)	8,423 (6,016)	1.9 (1.4)	3,333 (2,656)	0.5 (0.4)	4,504 (2,039)	0.8 (0.4)	25,031 (13,544)	1.0 (0.6)	24.6 (13.5)
Municipal	1,107	24	9,695	2.6	2,172	0.6	2,761	0.6	1,094	0.2	1,067	0.2	17,896	0.7	17.6
Private Conservation	176	0.4	2,620	0.7	1,545	0.4	2,195	0.5	1,622	0.2	213	*	8,371	0.4	8.2
Total Public & Private Conservation	1,572	3.4	19,166	5.1	8,019	2.2	16,594	3.7	37,633	5.8	18,917	3.4	101,901	4.2	100

* Less than 0.1%

UNIT ANALYSES

UNIT ANALYSES

Format

The detailed analyses presented here are broken out on the basis of Bureau of Parks and Recreation administrative units. While the coast is a distinct portion of Maine, it cannot be considered wholly separate from the rest of the State. For the purposes of this report, then, a near-coastal inland region has been delineated largely following county boundaries as shown in Fig. 1. None of the communities within this region are more than about 50 miles (80.5 kilometers) from the seashore - a reasonable driving distance for a day trip to, say, a coastal state park. Each unit analysis follows the same format:

A. Since a prime goal of the study is to identify those sites in the Maine coastal area with outstanding natural features which may be protected, it is important, first of all, to look at existing parks to get an idea of what natural features and outdoor recreational opportunities are already available. All state parks in the coastal area, both developed and undeveloped, are briefly described indicating their present or potential recreational use.

B. Next a synopsis of recent park and memorial visitor use is presented with a coastal/inland breakdown.

C. Third, areas along the coast which are now managed for resource use and protection by public and quasi-public agencies are listed. In addition to Bureau properties these coastal open space areas include principally those held by the National Park Service, the US Fish & Wildlife Service, the Maine Bureau of Public Lands, the Maine Department of Inland Fisheries and Wildlife, the National Audubon Society, the Maine Chapter of the Nature Conservancy, The Maine Audubon Society, and those municipalities in the coastal area. Coastal conservation easements have been included in separate listings.

   In a similar fashion, near-coastal inland open space areas are also listed.

D. From the existing supply of open space areas, including those managed both by the Bureau of Parks and Recreation and by other agencies, the types of natural features which appear to be deficient in a unit are listed. Those which are not physically represented by significant examples in a unit are also mentioned. Normally if at least one or two significant examples of a particular type of natural feature are present no deficiencies are listed for that type. Thus, because a natural feature type is not listed as deficient

does not mean that other examples of the same type should not be protected. Deficiencies listed are only intended to suggest minimums.

For the purposes of this document, natural features of the coastal area have been broken down into the following types:

sand beaches	forests
sand dunes	grasslands
cobble beaches	bogs & heaths
rocky headlands	freshwater marshes
hills	estuaries & salt marshes
lakes and ponds	sub-alpine habitats
rivers & streams	intertidal flats

A glossary of natural feature definitions is presented in Appendix F.

E. As an indication of recreational preferences in a given unit, four sources are cited:

Maine: An Appraisal by the People. Prepared by Northeast Markets, Inc. for the Maine State Planning Office, September 1973.

Citizen Evaluation of Public Policy in the Coastal Zone. Prepared by the Social Science Research Institute of the University of Maine at Orono for the Maine State Planning Office, May 1975.

Recreation In Maine: Utilization and Need. Prepared by the Social Science Research Institute of the University of Maine at Orono for the Maine Bureau of Parks & Recreation, November 1976.

Maine Resident Outdoor Recreation Participation and Preferences. Prepared by Northeast Markets, Inc. for the Maine Bureau of Parks and Recreation, April 1977.

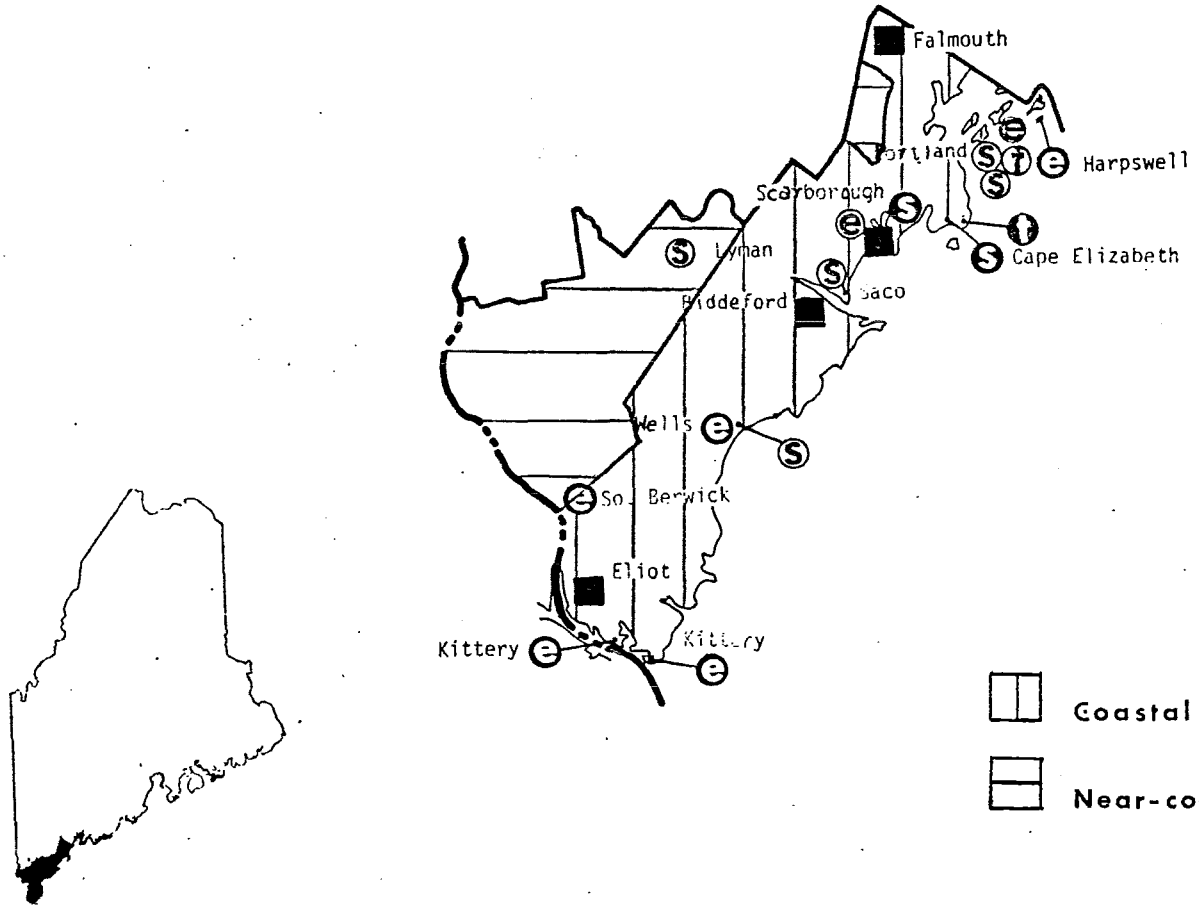
F. As part of the study for this plan, sites in the Maine coastal area which have outstanding natural features and recognized recreational potential have been identified. Those areas now in private ownership which were deemed to be outstanding natural features then, are listed here as worthy of indepth study and serious consideration for protection.

G. Recommendations based on the information gathered for this study are presented in the text of the report.

UNIT SOUTHERN B

SOUTHERN B

Population-
Total-224,956
Coastal-181,958



TYPE OF AREA	DEVELOPED	UNDEVELOPED
Day Use - Swimming/Picnicking	Ⓢ	Ⓢ
Day Use - Trails/Picnicking	ⓣ	ⓣ
Day Use - Educational/Cultural	ⓔ	ⓔ
Camping	▲	△
Boat Access	■	□

1/77

SCALE
0 5 10 15 20 25 M
0 10 20 30 KIL

Coastal Parks

There are at present four developed state parks in the coastal section of Unit Southern B.

Crescent Beach is a salt water park in Cape Elizabeth largely serving the Greater Portland area as a regional swimming-picnicking day use area. As shown in Table 1, since the park opened in 1962, public use has increased fairly steadily topping 168,000 visits in 1976. The park has an instant design capacity of 3,753. Expansion of parking facilities and development of an interpretive trail system and picnic area would be possible.

Scarborough Beach (aka Jordan's Beach) is a salt water park in the town of Scarborough which, like Crescent Beach, primarily serves the Greater Portland area as a regional swimming-picnicking day use area. However, unlike Crescent only a very small fraction of the beach is actually owned by the Bureau, 67 linear feet to be precise. Users of the park tend to spill over onto the privately owned beach on either side of the Bureau's land.

Before Scarborough Beach was operated as a state park, the 300 car parking lot was run as a private concern. Since the park opened in 1972, annual use has more than doubled. There is no room for expansion of parking facilities on the Bureau's holdings.

Two Lights, a park in Cape Elizabeth near Crescent Beach, is used as a trails-picnicking day use area. Located on the site of a former World War II military battery, the coastal views of the rocky shore both north and south make this a popular park both with local and out-of-state residents. Visitor use has risen steadily since the park opened in 1960, totaling almost 136,000 in 1972. There is no significant room for expansion of parking facilities at the park and use of the vegetated headland is already showing the signs of erosion problems.

Vaughan Woods Memorial on the Salmon Falls River in South Berwick is a wooded area used for walking, horseback riding and picnicking day use. The park is apparently available only for passive recreation. The will of the donor, Elizabeth R. Vaughan, reads, in part, that the "land, woods and forest shall forever be retained and used...for a State Forest, public park and public recreation purposes, shall forever be left in the natural wild state and forever be kept as a sanctuary for wild beasts and birds...". Since 1961 visitor use has increased slowly from 1,723 to an estimated 10,137 in 1977. The current instant design capacity of 81 visitors appears adequate to accommodate anticipated use in the immediate future.

The Bureau now owns six undeveloped coastal properties in the Unit. Two of these would be suitable primarily to serve beach use only: Ferry Beach in Saco, and Andrew's Beach on Long Island in Portland. To enhance the use of Andrew's Beach, Vaill (aka Marsh) Island should be protected as a natural area.

Laudholm Farm in Wells has been proposed as a multiple-use, trails-picnicking-swimming-open space day use park. Priority for development of this area should be high as it could serve as a park of diversified opportunities in a region of rapid population and tourist growth.

The Bureau owns 55 acres on the Scarborough River at Blue Point. The land bordering the river is managed as part of the Scarborough Marsh Wildlife Management Area. The upland portion of the parcel, it is expected, will be developed for recreational use by the town.

In Casco Bay the Bureau has two islands in the Unit with important state park potential; Jewell and Little Chebeague. These islands are treated in more detail in Appendix B.

Inland Parks

Inland in the Unit there are no developed state parks. There is one 142 acre parcel of land on Bunganut Pond in Lyman which is leased to the town for swimming and picnicking day use.

Visitor Use

Public use of existing State Parks and Memorials in Unit Southern B totalled 289,229 persons in 1977 (Table 1). All of this use took place in coastal facilities as there are no developed inland parks in the Unit.

Public and Private Conservation Open Space Lands

The total area of the coastal towns in Unit Southern B is 375,315 acres. Of this, 2,641 acres or 0.7 percent is now in federal ownership. This brings to slightly over eleven percent the federal portion of the total public and private conservation coastal open space lands in the Unit. When all of the proposed acquisitions for the Rachel Carson National Wildlife Refuge are completed, a total of 4,011 acres is expected to be in federal ownership.

Approximately 4,310 acres or 1.1 percent of the coastal area in the Unit is in State ownership. This is 22 percent of the public and private conservation open space lands. Bureau of Parks and Recreation properties account for one-quarter of these State owned lands.

An estimated 9,695 acres or 2.6 percent of the coastal land is town-owned open space or property available for low intensive recreation. Municipal open space lands account for more than half of the public and private conservation open space acreage. Actually this is something of an underestimate since coastal beach lands have not been included here due to uncertainty over ownership and instability in beach size.

Over 2,600 acres or 0.7 percent of the coastal land in the Unit is managed by private conservation organizations or private landowners as game sanctuaries. In sum these land managers hold 13.7 percent of the total public and private conservation lands in the Unit.

Taken together, the total open space land managed by public or private conservation agencies along the coast in Unit Southern B is approximately 10,166 acres. In other words, about five percent of the area in the coastal communities - the region undergoing the most rapid growth in Maine - has been set aside as open space.

Natural Feature Deficiencies

There appear to be deficiencies in the Unit of the following types of protected natural features: hills, heaths, sub-alpine habitats, and freshwater marshes. Of these, sub-alpine habitats are not physically available in the coastal portion of the Unit.

Recreational Preferences

The survey of Maine people prepared for the State Planning Office in 1973 indicated that the top recreation priorities of respondents in the York and Cumberland Districts were for coastal beaches and scenic areas, natural areas, wild and scenic rivers, inland beaches and scenic areas, and campsite areas. Coastal beaches were far and away the favorite (61% in York, 70% in Cumberland).

The 1975 citizen evaluation of public policy indicated that 50% or more of the respondents in the Southern Coastal Area favored more spending for the following coastal projects, in decreasing order: wildlife habitats, historic areas, public beaches and picnic areas, scenic road turnoffs, campsites, and marinas and boat ramps.

The results of the 1976 panel surveys conducted by the Social Science Research Institute listed what participants felt state recreation priorities should be. In order of decreasing priority for the Southern Region, these were: camping areas, saltwater boat launches, state parks, backpacking trails, and upgrading

existing facilities. For the Southern Maine Region the state recreation priorities agreed upon by 50% or more of the meeting participants were;

1. camping (70%)
2. educational programs (70%)
3. saltwater boat launches (60%)
4. stocking brooks and 1 akes (60%)
5. state parks (50%)
6. saltwater access (50%)
7. wildlife management (50%)
8. freshwater boat launches (80%)
9. small man-made ponds (50%)

The 1977 survey of the attitudes of residents toward spending for coastal facilities showed that a majority of both coastal and inland respondents favored increased State spending for (in decreasing popularity statewide): bike trails, nature areas, swimming areas, picnic areas, camping areas, hiking and backpacking trails, historic areas, ski touring trails, scenic road turnoffs and boat ramps and access points.

While all of these studies are not directly comparable, a qualitative evaluation reveals that there is little consistency in the activities people would prefer to participate in in southern coastal Maine. These inconsistencies may be due to changes over the past few years in outdoor recreation preferences. Coastal beaching, for example, seems to be giving way among residents of the area to other preferences such as boating, lake beaching, natural areas and trail activities of all sorts. The pressures for camping facilities appear to be holding fairly steady. It may be that as more and more non-residents crowd the southern coastal beaches, local residents are shifting to other, mostly inland, activities and activities associated with urban preferences.

Outstanding Private Natural Features

Large sand beach ecosystems (beaches, dunes, wetlands) are the predominant coastal natural features in the Unit, Between the longshore beaches are reaches of rocky headland interspersed with small sand and gravel pocket beaches. Inland for a considerable distance most of the landscape is quite flat, the hills of York providing an interesting contrast in landform. In the Unit the most important unprotected coastal area open spaces include the following:

- Gerrish Island - Cutts Island, a compact area of unusual ecological diversity in close proximity to a rapid growth center; being developed now for housing;

- Upper York River area, an important wildlife habitat;

- Bald Head and York Cliffs in York, one of the few stretches of bold rocky headland along the southern Maine coast;

- Mt. Agamenticus watershed area in York and So. Berwick, long recognized as an unusual, relatively undeveloped area in close proximity to a fast growth region;

- Biddeford Pool, a tidal bay which has been described as the most significant area in Maine for migratory shorebird concentrations;

- shore between Scarborough and Higgins Beach, a headland of particularly colorful scenic quality;

- Richmond Island in Cape Elizabeth, an island of statewide and possibly national historical significance and present day aesthetic importance;

- Saco Heath, one of the largest inland sphagnum wetlands in southern Maine;

- all of the privately owned coastal beaches including Moody and Wells Beaches in Wells, Crescent Surf and Parsons Beaches in Kennebunk, Goose Rocks Beach in Kennebunkport, the private Biddeford, Saco and Scarborough Beaches, Ram Island Farm in Cape Elizabeth and the island beaches in Casco Bay (see Appendix C on coastal beaches).

Table 1

STATE PARK AND STATE MEMORIAL ESTIMATED VISITOR USE: 1967 - 1977

Southern B

Park/Memorial	Type of Use	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1977 Instant Design Capacity
*Crescent Beach	Day Use	97,459	94,908	126,239	146,769	144,038	112,940	132,273	148,547	150,069	168,379	144,295	3,753
*Fort McClary	Day Use	32,797	43,507	56,735	57,088	60,653	61,565	52,389	48,237	50,549	47,020	36,625	171
*Scarborough B.	Day Use						25,732	39,212	53,376	65,687	73,315	62,211	1,350
*Two Lights	Day Use	84,525	102,563	112,382	126,424	121,212	111,997	120,216	117,497	134,166	147,336	135,961	833
*Vaughan Woods	Day Use	4,385	4,104	5,274	6,115	7,708	8,373	9,540	8,509	8,991	10,506	10,137	81

*Coastal

Table 2

Southern B
Summary

PUBLIC AND PRIVATE CONSERVATION COASTAL OPEN SPACE LAND

	ACRES	PERCENT OF COASTAL ACREAGE	% OF TOTAL PUBLIC AND PRIVATE CONSERVATION ACREAGE
COASTAL ACREAGE	375,315	100	--
FEDERAL	2,641	0.7	13.8
STATE (BPR)	4,210 (1,080)	1.1 (0.3)	21.9 (5.6)
MUNICIPAL	9,695	2.6	50.6
PRIVATE CONSERVATION	2,620	0.7	13.7
TOTAL	19,166	5.1	100

Table 3

BUREAU OF PARKS & RECREATION COASTAL OWNERSHIP

Southern B

SITE	DEVELOPED	UNDEVELOPED	TYPE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES	FEET SALT SHORELINE
Crescent Beach SP	X		Park	Cape Elizabeth	beach, dunes	s, p	243.9	7,840
Scarborough Beach SP	X		Park	Scarborough	beach, dunes	s/ns	2.8	67
Two Lights SP	X		Park	Cape Elizabeth	headland	sv, p	41.1	2,000
Jewell Island		X	Park	Portland, Cumberland	conifer forest, harbor	b, c, t, p	191	16,650
Little Chebeague Is.		X	Park	Portland, Cumberland	open field, forest	p, t, s	81	10,020
Ferry Beach		X	Park	Saco	beach, pond	s, p, t, ns	109.8	490
Laudholm Farm		X	Park	Wells	beach, salt marsh, forest	s, p, t	198.5	1,800
Long Is. (Andrews Beach)		X	Park	Portland	beach	s	16.5	930
Vaughan Woods	X		Memorial Park	So. Bristol	forest	t, p	165.4	
Fort McClary	X		Memorial	Kittery	fort, bluff	h, p	27.5	2,300
John Paul Jones	X		Memorial	Kittery	monument	h	1.8	--
Storer Garrison	X		Memorial	Wells	fort	h	0.3	--
Meetinghouse Eddy	X		Boat	Biddeford		b	10	1,170
Nonesuch	X		Boat	Scarborough		b	1.9	
Piscataqua River	X		Boat	Eliot	bluff	b, p	7	460
Buttermilk Cove		X	Boat	Brunswick		b	1.2	

Table 3 (continued)

BUREAU OF PARKS & RECREATION COASTAL OWNERSHIP — Southern B (cont'd)

SITE	DEVELOPED / UNDEVELOPED	TYPE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES	FEET SALT SHORELINE
The Brothers		Easement	Falmouth	bird islands	ns	6	
Pine Point		Easement	Scarborough	beach	s		
Timber Island		Easement	Biddeford	forest, rocky shore		24	

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = trails
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

Table 4

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Southern B

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
FEDERAL	FWS	Rachel Carson N.W.R.	Kittery, York, Wells, Kennebunk, Kennebunkport, Biddeford, Scarborough, Cape Eliz.	Estuary, Forest	t,ns,b	2,641
STATE	BPL	Bragdon Forest	Kennebunk		r	87
	IFW	Inner Green Island	Portland	Duck Nesting	r	3
	IFW	Outer Green Island	Portland	Duck Nesting	r	5
	IFW	Peaks Island WMA	Portland	Fresh Marsh		22
	IFW	Scarborough WMA	Scarborough	Tidal Marsh	b,ns	3,013
MUNICIPAL	City	Baxter Blvd.	Portland			33
	Town	Blackstrap	Falmouth			8.3
	KKWWD	Branch Brook	Wells, Kennebunk	Water protection	r	308
	City	Capisic Pond Park	Portland			18.5
	Town	Casco Hall Area	Falmouth			11
	YWD	Chases, Welches Ponds Shore	York	Water protection	r,p,sv	1,200
	City	Deering Oaks	Portland			53.7
	City	Diamond Riverside Park	Saco			6
	City	East End Beach	Portland	400' beach	s	
	City	Evergreen Cemetery	Portland	Open Space	p	368
	Town	Falmouth Foreside Pres.	Falmouth	Forest		34

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Southern B

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
MUNICIPAL	Town	Ferry Beach	Scarborough	Sand beach	s	
	KWD	Folly, Middle, Boulter Ponds Shore, Smelt Brook	York	Water protection	r	1,150
	City of Portland	Forest City Cemetery	So.Portland		p	100
	City	Fort Foster	Kittery	Beach,headland	s,t,p	92
	City	Fort Gorges	Portland	Fort	h	1.5
	Town	Fort Williams	Cape Eliz.	Headland	p,h,sv	100
	City	Fortunes Rocks Beach	Biddeford	Sand beach	s	
	Tow Town	Goochs Beach	Kennebunk	Sand beach	s	
	Town	Goodrich Park	York			40
	City	Gulliver Field	Portland			22
	Town	Higgins Beach	Scarborough	Sand beach	s	
	City	Hills Beach	Biddeford	Sand beach	s	
	City	Hinckley-Knight Pd.	So.Portland		sk, p	32
	Town	Jasper St. Skating Area	Scarborough		sk	35
	Town	Kennebunk R. Land	Kennebunk			90
	City	Larry Rowe Golf Course	So.Portland		g	30.6
	Town	Lions Field	Cape Eliz.		t	37

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Southern B

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
MUNICIPAL	Town	Long Sands Beach	York		s	
	Town	Massacre Pond	Scarborough		ns	35
	City	Mayor Baxter Woods	Portland			30
	City	Mill Creek Park	So. Portland			9
	Town	Moulton Park	York		sk	40
	Town	Old Orchard Beach	Old Orchard	Sand beach	s	
	Town	Ogunquit Beach	Wells	Sand beach	s	
	Town	Old Town Farm	Kittery			70
	Town	Old Trolley Trail	Wells		t, h	1 mile
	Town	Open Space	Eliot			25
	Town	Open Space	Cape Eliz.	Water protection	r	150+
	Town	Open Space (3)	Falmouth			78
	Town	Open Space	Wells			450+
	City	Payson Park	Portland			47.8
	City	Peaks Island Reservation	Portland			100
	Town	Pine Grove Park	Falmouth			15
	City	Pine Grove Park	Portland			6.2
	Town Leased	Powder House Hill	So.Berwick		sk	20
	City	Presumpscot Park & Baxter Pines	Portland		t	34

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Southern B

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
MUNICIPAL	City	Putnam Park	Biddeford			60
	City	Ram Island	Kittery			2
	Town	Ramancescho Land	Arundel			182
	Town	Reservoir Land	Kennebunk	Watershed Protection		200
	Town	Reservoir Land	Wells	"		100
	City	Riverside Municipal Golf Course	Portland		g,t	187
	City	Rogers Park	Kittery		t	25
	Town Leased	Scarborough R.Area	Scarborough	Open field	ns	55
	School	School Forest	Kennebunk	50A.wooded		50
	School	School Forest	Kittery	26A.wooded		26
	School	School Forest	Wells	25A.wooded		25
	Town	Scottows Hill	Scarborough	Hill	sk	25
	City	Seapoint Beach	Kittery	Sand beach	s	2
	Town	Short Sands Beach	York	Sand beach	s	
	Town	Town Farm	Kittery	65A,wooded		70
	Town	Town Farm	Wells	75A.wooded		75
	Town	Town Forest	Kennebunkport	500A.wooded		500
	Town	Town Forest	Scarborough	79A.wooded		79
	Town	Town Forest	So. Berwick	90A.wooded		90
	City	University Park	Portland			8.7

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Southern B

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
MUNICIPAL	City	Western Promanade	Portland		p	18.9
	City	Willard Beach	So.Portland	Sand beach	s	3
	City	Wood Island	Kittery			1.3
	Town	York Harbor Beach	York	Sand beach	s	
PRIVATE	IFW	Back Bay Sanctuary	Portland	Tidal flats	p	6
	TNC	Butler Preserve	Kennebunk	Forest		30
	PNA	Bluff & Stratton Is.	Saco	Bird nesting	r	50
	CIA	Cushing Island	Portland		r	50
	IFW	Drake's Is. Game Sanctuary	Wells	Wildlife		
	MAS	East Point Sanctuary	Biddeford	Pebble beaches	ns,t, sv	21
	MAS	Fore River Sanctuary	Portland	Salt marsh		76
	MAS	Gilsland Farm	Falmouth	Open field	ns,t,p	70
	TNC	Marshall Preserve	Arundel	Forest	ns	181
	TNC	Mill Cove	So. Portland	Tidal flat	ns	30
	TNC	Mill Creek Preserve	Falmouth	Salt marsh	ns	20
	IFW	Ocean Park Game & Bird Sanctuary	Old Orchard B.			
	IFW	Prout's Neck - Richmond's Island - Cape Elizabeth Sanctuary	Cape Eliz.	Beach	r	1,927
	TNC	Redin's Island	Cape Porpoise		ns	6
	TNC	Ritchey Preserve	Portland	Headland	ns	60

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Southern B

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
PRIVATE	MAS	Stage & Wood Islands	Biddeford	Bird nesting	r, ns	45
	TNC	Vaughn's Island	Kennebunkport		ns	48
	IFW	Wells Sanctuary	Wells		ns	
	IFW	Wells & York Sanctuary	Wells, York			

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = trails
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

MANAGEMENT AGENCY

BPL = Bureau of Public Lands
CIA = Cushing Island Association
FWS = U.S. Fish & Wildlife Service
IFW = Dept. of Inland Fisheries & Wildlife
KKWWD = Kennebunk, Kennebunkport, and Wells Water District
KWD = Kittery Water District
MAS = Maine Audubon Society
PNA = Prouts Neck Audubon
TNC = The Nature Conservancy
YWD = York Water District

Table 5
CONSERVATION EASEMENTS

Southern B

SITE	MUNICIPALITY	RECIPIENT AGENCY	APPROX. ACREAGE	RESTRICTIONS
Biddeford Pool	Biddeford	Maine Audubon Society	9	no development

Table 6

NEAR-COASTAL INLAND OPEN SPACE AREAS

Southern B

MANAGEMENT AGENCY		SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
FEDERAL	USFS	Messabesic Exp. Forest	Lyman, Dayton, Sanford	forest	r	3,700
STATE	BPR	Bunganut Pond	Lyman	1300' beach	s,p	142
MUNICIPAL	Town	Little River Town Lot	Berwick			12
	Town	Reservoir Land	Sanford	58A. wooded		58
	School	School Forest	Dayton			13
	School	School Forest	Lebanon	5A. wooded		10
	School	School Forest	Sanford	20A. wooded		70
	Town	Town Farm	Lebanon	79A. wooded		79
	Town	Town Farm	Lyman			100
	Town	Town Farm	Sanford	24A. wooded		90
	Town	Town Forest	Berwick	25A. wooded		40
	Town	Town Forest	Lebanon	100A. wooded		100

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = trails
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

MANAGEMENT AGENCY

BPR = Bureau of Parks and Recreation
USFS = US Forest Service

Table 7

RECREATION PREFERENCES

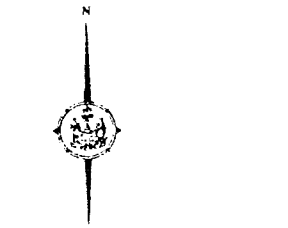
Southern B

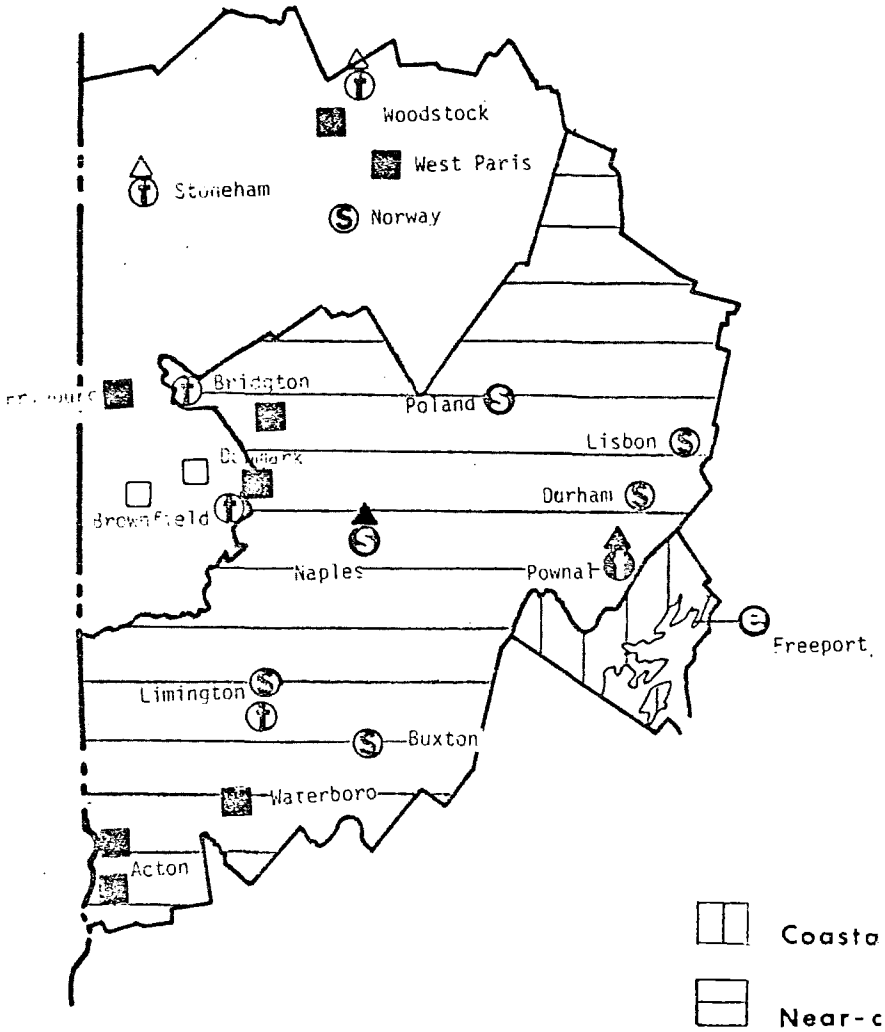
STUDY (YEAR)	Coastal Beaching	Lake Beaching	Coastal Boating	Freshwater Boating	Picnicking	Wild & Scenic Rivers	Historic Sites	Camping	Snowmobiling	Hiking/Back Packing	Bicycling	Horseback Ridding	Interpretive	Ski Touring	Snow Skiing	Natural/Wildlife Areas	Sightseeing	Hunting and Fishing
1973	X	X				X		X								X	X	
1975	X		X		X		X	X								X	X	
1976			X	X				X		X						X		
1977	X		X		X		X	X			X			X		X	X	

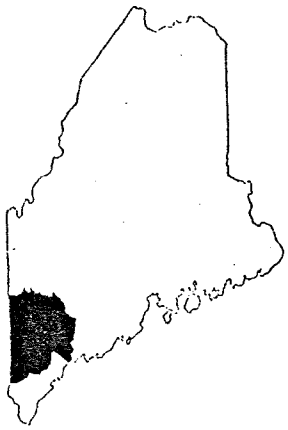
UNIT SOUTHERN A

SOUTHERN A

Population-
Total-169,293
Coastal-13,731







Coastal

Near-coastal

TYPE OF AREA	DEVELOPED	UNDEVELOPED
Day Use - Swimming/Picnicking	Ⓢ	Ⓢ
Day Use - Trails/Picnicking	Ⓣ	Ⓣ
Day Use - Educational/Cultural	Ⓔ	Ⓔ
Camping	▲	△
Boat Access	■	□

1/77

SCALE
0 5 10 15 20 25
0 10 20 30 KILOMETE

UNIT SOUTHERN A

Coastal Parks

There is only one state park in the coastal section of this Unit, Wolf Neck in Freeport. This is a 244 acre park with a variety of habitats including wooded upland, salt marsh, rocky shore, and open fields. Interpretive trails crisscross the park making it the most fully developed educational state park in the system. The popularity of the park is illustrated by the fact that public use increased five-fold between 1973 and 1977. The park is used yearround, cross-country skiing being the most popular winter recreation activity. The natural qualities of Wolf Neck State Park are further enhanced by a conservation easement directly adjacent to the park which protects the scenic vistas both from and to the park.

There is one separate undeveloped island in this administrative unit, Bangs Island in Casco Bay. A treeless, 54 acre island with limited recreation potential due to the fragility of its soils, this area would best be protected as wildlife habitat.

Inland Parks

There are a number of properties, both developed and undeveloped, held by the Bureau inland in this Unit. Bradbury Mountain State Park in Pownal is one of the oldest holdings in the State Park system and one of the few not located on water. It is used both for day use (picnicking, walking, scenic viewing) and camping (averaging about 11,300 visitors annually). Just north of Bradbury Mountain is an undeveloped park at Runaround Pond (145 acres) which is leased to the town of Durham. North of this area is Beaver Park (338 acres) which is leased to the town of Lisbon for use principally as open space.

Three other parks in the Unit can be considered to be of reasonable distance from the coast to be regarded as available recreation alternatives. Salmon Falls in Buxton (61 acres) is a parcel once slated for development but rendered much less desirable when CMP built a dam downstream which flooded the formerly picturesque gorge. Currently it is leased to the town which has failed to improve the site. It is used mainly for public picnicking and trail use.

A 38 acre parcel on Pequawket Pond in Limington is being developed by the Bureau of Parks and Recreation for swimming-picnicking day use. It will be maintained by the town as a regional park. It is unlikely, however, that the carrying capacity of the beach could tolerate much over 500-600 people at any given time.

Finally, Sebago Lake State Park in the Naples area is by far the most heavily used camping park in the system and the second most popular day use area after Reid. The heavy use the area receives suggests that perhaps the Bureau ought to be developing other camping areas in the southern and western sections of the state.

While all of these inland parks are important supplements to the parks on the coast, they cannot really be considered as alternatives since for the most part they offer natural features and recreation opportunities different from those intrinsic to the coast.

Visitor Use

Public use of existing State Parks and Memorials in Unit Southern A totalled 378,948 persons in 1977 (Table 8). Of this, 11 percent occurred at Wolf Neck, the only developed coastal facility in the Unit. Inland facilities dominate current public use in the Unit both for camping and day use.

Public and Private Conservation Open Space Lands

The total area of the coastal towns in Unit Southern A is 46,599 acres. This includes no significant federal open space holdings.

State open space properties total 289 acres, all but one of which is land owned by the Bureau of Parks and Recreation. This is equivalent to 0.6 percent of the coastal acreage and 18.4 percent of the public and private conservation land in the Unit.

More than 1,100 acres in the coastal communities are locally owned. This accounts for only 2.4 percent of the total coastal acreage but seven-tenths of the total public and private conservation open space areas.

Private conservation organizations hold 176 acres in the Unit - 11.2 percent of the open space lands.

Something less than 1,600 acres total, then, is in public or private conservation ownership in the three coastal communities in the Unit. This equals only 3.4 percent of the land area in the three towns - one of the fastest growing urban centers in the State. Clearly the most important current open space land holders in the Unit are the coastal municipalities.

Natural Feature Deficiencies

There appear to be deficiencies in the Unit of the following types of protected natural features: coastal beaches, sand dunes, rivers

and streams, cobble beaches, heaths, fresh water marshes, estuary/salt marshes and sub-alpine habitats. Of these, significant beaches, sand dunes, heaths, and sub-alpine habitats are not physically available in the coastal portion of the Unit. It should be noted that many of the deficiencies may be alleviated by protected areas in adjacent administrative units.

Recreation Preferences

The survey of Maine people done for the State Planning Office in 1973 indicated that the top recreation priorities of respondents in the Cumberland District were for coastal beaches and scenic areas, natural areas, wild and scenic rivers, inland beaches and scenic areas, historic areas, and campsites. Coastal beaches were far and away the favorite.

The 1975 citizen evaluation of public policy indicated that 50% or more of the respondents in the Southern Coastal Area favored more spending for the following coastal projects, in decreasing order: wildlife habitats, historic areas, public beaches and picnic areas, scenic road turnoffs, campsites, and marinas and boat ramps.

The results of the 1976 panel surveys conducted by the Social Science Research Institute listed what participants felt state recreation priorities should be. In order of decreasing priority for the Southern Region, these were: camping areas, saltwater boat launches, state parks, backpacking trails, and upgrading existing facilities. For the Southern Maine Region the state recreation priorities agreed upon by 50% or more of the meeting participants were:

1. camping (70%)
2. educational programs (70%)
3. saltwater boat launches (60%)
4. stocking brooks and lakes (60%)
5. state parks (50%)
6. saltwater access (50%)
7. wildlife management (50%)
8. freshwater boat launches (80%)
9. small man-made ponds (50%)

The 1977 survey of the attitudes of residents toward spending for coastal facilities showed that a majority of both coastal and inland respondents favored increased State spending for (in decreasing popularity statewide): bike trails, nature areas, swimming areas, picnic areas, camping areas, hiking and backpacking trails, historic areas, ski touring trails, scenic road turnoffs and boat ramps and access points.

An evaluation of all of these studies reveals the same basic inconsistencies as were found for the southern coastal area. The most pressing preferences appear to be for camping, beaching, boating facilities, and natural areas. Because of the heavy permanent concentration of urban population in the Portland area,

priority preferences for all types of recreation activities may be greater in this Unit than along the southern coastal section. The differences are not in kind so much as in degree,

Outstanding Private Natural Features

The islands of Casco Bay as a group are the dominant coastal natural feature, a unique resource worthy of immediate attention. These are treated in the Appendix paper on coastal islands. On the mainland, in the coastal portion of this Unit, the area of greatest significance is the upper Harraseeket River area along Wolf Neck to the Mast Landing Sanctuary.

Table 8

STATE PARK AND STATE MEMORIAL ESTIMATED VISITOR USE: 1967 - 1977

Southern A

Park/Memorial	Type of Use	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1977 Instant Design Capacity
Bradbury Mt.	Day Use	16,242	18,966	16,368	21,029	19,917	20,128	22,910	20,812	21,588	26,598	23,684	608
	Camping	8,255	10,590	11,670	12,246	14,901	12,829	10,146	7,819	9,277	9,868	9,827	228
Range Pond	Day Use	38,694	37,355	38,505	47,813	64,703	50,739	46,614	19,987	23,345	30,590	24,173	2,475
Sebago Lake	Day Use	111,937	126,248	169,321	129,767	159,843	151,139	157,551	151,502	167,808	176,408	157,626	2,943
	Camping	93,066	95,338	122,130	132,283	106,713	105,040	101,954	93,824	93,628	97,658	88,979	1,148
*Wolf Neck	Day Use							8,038	16,759	27,000	33,606	41,148	436

*Coastal

Table 9

PUBLIC AND PRIVATE CONSERVATION COASTAL OPEN SPACE LAND

Southern A Summary

	ACRES	PERCENT OF COASTAL ACREAGE	% OF TOTAL PUBLIC AND PRIVATE CONSERVATION ACREAGE
COASTAL ACREAGE	46,599	100	--
FEDERAL	0	0	0
STATE (BPR)	289 (288)	0.6 (0.6)	18.4 18.4
MUNICIPAL	1,107	2.4	70.4
PRIVATE CONSERVATION	176	0.4	11.2
TOTAL	1,572	3.4	100

Table 10

BUREAU OF PARKS & RECREATION COASTAL OWNERSHIP

Southern A

SITE	DEVELOPED	UNDEVELOPED	TYPE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES	FEET SALT SHORELINE
Wolf Neck SP	X		Park	Freeport	mixed forest, estuary, birds	t, p, ns	243.8	10,300
Bangs Island		X	Park	Cumberland			54.2	10,200
Jewell Island		X	Park	Cumberland, Portland	conifer forest, harbor	b, c,	191	16,650
Little Chebeague Is.		X	Park	Cumberland, Portland	open field, forest	p,t	81	10,020
Wolf Neck			Easement	Freeport	open fields	sv	200	

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = trails
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

Table 11
OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Southern A

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
STATE	IFW	West Branch Cow Island	Cumberland	Duck nesting	r	1
MUNICIPAL	Town	Chebeague Is, Beach	Cumberland	Beach	s,p,b	11
	Town	Cousins Island Beach	Yarmouth	150' beach	s,p	
	Town	Cousins Island Preservation	Yarmouth	Flowers		20
	Town	Open Space	Freeport			42
	Town	Royal River Park	Yarmouth		p,t	40
	School	School Forest	Cumberland	5A. wooded		220
	School	School Forest	Freeport	6A. wooded		19
	School	School Forest	Yarmouth	20A. wooded		125
	Town	Town Forest	Cumberland	400A. wooded	t	400
	Town	Val Halla Golf Course	Cumberland		g	150
	Town	Winslow Park	Freeport		c	80
PRIVATE	TNC	Basket Island	Cumberland	Mixed growth	ns	9
	MAS	Mast Landing Sanctuary	Freeport	Old Dam Site	t,p,h, ns	167

RECREATION USE OR POTENTIAL

s = swimming
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p = picnicking
b = boating/canoeing
t = trails
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

MANAGEMENT AGENCY

IFW = Dept. of Inland Fisheries & Wildlife
MAS = Maine Audubon Society
TNC = The Nature Conservancy

Table 12

CONSERVATION EASEMENTS

Southern A

SITE	MUNICIPALITY	RECIPIENT AGENCY	APPROX. ACREAGE	RESTRICTIONS
So. Freeport	Freeport	Town	10	1 residence with site specified

Table 13

NEAR-COASTAL INLAND OPEN SPACE AREAS

Southern A

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
STATE	BPR	Bradbury Mt. State Park	Pownal	Hill	p,c,t	297
	IFW	Dry Mills Hatchery	Gray		r	162
	BPL	Hebron Agricultural Land	Hebron			466
	BPR	Little Ossippee R.	Limington		b	1,193
	BPR	Middle Pond	Hiram, Denmark, Wildlife Sebago		ns	1,880
	IFW	Newfield WMA	Newfield, Shapleigh		r, ns	4,374
	IFW	New Gloucester Hatchery	New Gloucester		r	53
	IFW	Northwest River WMA	Sebago	Fresh marsh	r,ns	47
	BPR	Pequawket Pond	Limington	1200' beach	s, p	38
	BPL	Pineland Agricultural Land	Pownal, Gray, New Gloucester			1,055
	BPR	Range Pond State Park	Poland	Beach	s, p	753
	BPR	Sabatis Island	Bridgton		sv, p	15
	BPR	Sebago Lake State Park	Naples, Casco	Beach	s,c,t	1,338
	IFW	State Game Farm	Gray		p, r	111
MUNICIPAL	Town Leased	Beaver Park	Lisbon	Two ponds	s	338
	Town	Conservation Areas (2)	Gray			20

NEAR-COASTAL INLAND OPEN SPACE AREAS

Southern A

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
MUNICIPAL	City	Mt. Apatite	Auburn	Hill	t	370
	Town	Open Space	New Gloucester			100
	Town	Perley Mem. Woods	Bridgton			52
	Town	Recreation Area	Greene		t	102
	Town	Reservoir Land	Lewiston			33
	Town	Reservoir Land	Lisbon	15A. wooded		15
	Town Leased	Runaround Pond	Durham	Wildlife	ns	145
	Town Leased	Salmon Falls	Buxton			61
	School	School Forest	Gray	5A. wooded		40
	School	School Forest	Lewiston			215
	School	School Forest	Lisbon			
	School	School Forest	Mechanic Falls	25A.wooded		73
	School	School Forest	Poland			13.5
	School	School Forest	No. Yarmouth	12A.wooded		25
	PWD	Sebago Lake	Standish, Gorham		r	1,440
	Town	Town Farm	Baldwin	175A.wooded		175
	Town	Town Farm	Bridgton			100
	Town	Town Farm	Buxton			177
	Town	Town Farm	Cornish			12
	Town	Town Farm	Harrison			60
	Town	Town Farm	Hollis	65A. wooded		94

NEAR-COASTAL INLAND OPEN SPACE AREAS

Southern A

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
MUNICIPAL	Town	Town Farm	Lewiston	33A. wooded		133
	Town	Town Farm	Lisbon	40A. wooded		40
	Town	Town Farm	Otisfield	150A. wooded		165
	Town	Town Farm	Poland	217A. wooded		217
	Town	Town Farm	Standish	450A. wooded		500
	Town	Town Farm	Wales			5
	Town	Town Forest	Hollis	120A. wooded		120
	Town	Town Forest	No.Yarmouth	120A. wooded		120
	Town	Town Forest	Sabattus	40A. wooded		40
	Town	Town Forest	Shapleigh	90A. wooded		140
	Town	Town Forest	Turner			482
	Town	Town Forest	Waterboro	50A. wooded		50
PRIVATE	TNC	Douglas Mt.	Sebago	Hill	sv	150
	IFW	Dry Pond Sanctuary	Gray		r	
	IFW	Gray Game Sanctuary	Gray		r	
	IFW	Limington, Hollis and Waterboro Sanctuary	Limington, Hollis, Waterboro		r	
	IFW	Narragansett Game Sanctuary	Gorham		r	3,600
	IFW	Sebago Lake Basin WMA	Standish, Windham		r	
	NEWPS	H.Butler Wild-flower Preserve	Springvale		ns	24
	IFW	Standish Sanctuary	Standish		r	

NEAR-COASTAL INLAND OPEN SPACE AREAS

Southern A

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
PRIVATE	IFW	Thoncrag-Stanton Bird Sanctuary	Lewiston		r,ns,t	45
	Auburn YMCA	Town Beach	Poland		s	15

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = trails
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

MANAGEMENT AGENCY

BPR = Bureau of Parks and Recreation
BPL = Bureau of Public Lands
MAS = Maine Audubon Society
IFW = Dept. of Inland Fisheries & Wildlife
NEWPS = New England Wildflower Preservation Society
PWD = Portland Water District
TNC = The Nature Conservancy

Table 14

RECREATION PREFERENCES

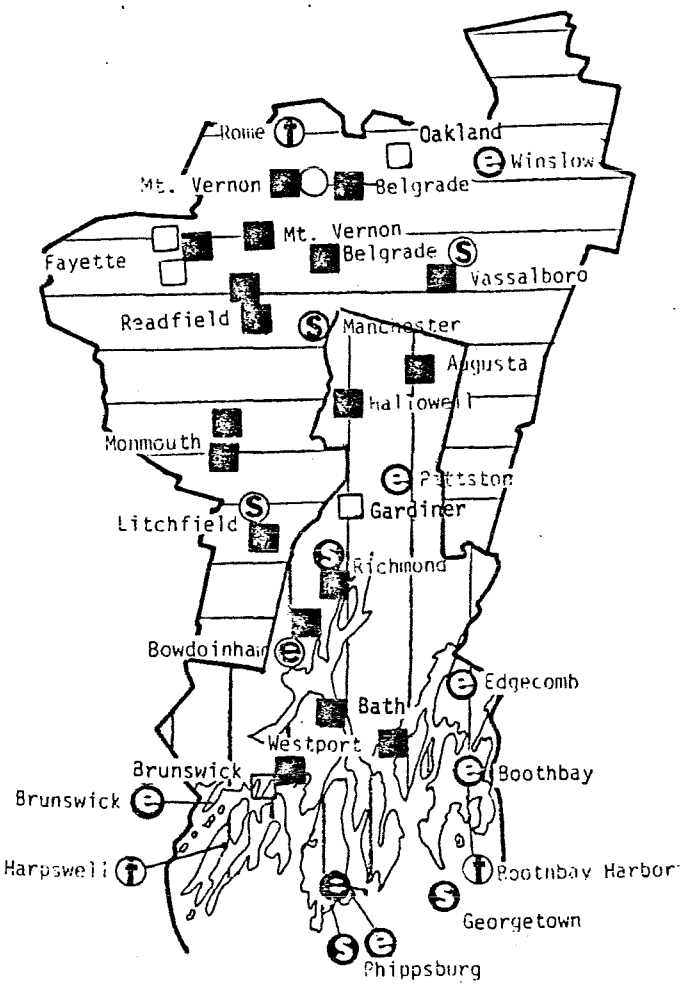
Southern A

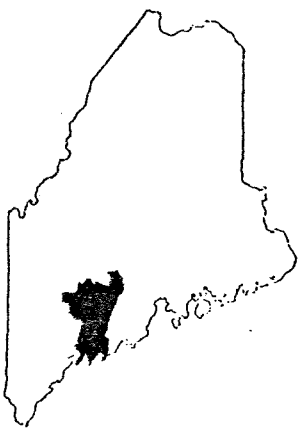
STUDY (YEAR)	Coastal Beaching	Lake Beaching	Coastal Boating	Freshwater Boating	Picnicking	Wild & Scenic Rivers	Historic Sites	Camping	Snowmobiling	Hiking/Back Packing	Bicycling	Horseback Riding	Interpretive	Ski Touring	Snow Skiing	Natural/Wildlife Areas	Sightseeing	Hunting and Fishing
1973	X	X				X	X	X								X	X	
1975	X		X		X		X	X								X	X	
1976			X	X				X		X						X		
1977	X		X		X		X	X			X			X		X	X	

UNIT SOUTHERN C

SOUTHERN C

Population-
Total-153,457
Coastal-87,477





SCALE
0 5 10 15 20 25 MILES
0 10 20 30 KILOMETERS

1/77

TYPE OF AREA	DEVELOPED	UNDEVELOPED
Day Use - Swimming/Picnicking	Ⓢ	Ⓢ
Day Use - Trails/Picnicking	ⓣ	ⓣ
Day Use - Educational/Cultural	ⓔ	ⓔ
Camping	▲	△
Boat Access	■	□

Coastal

Near-coastal

UNIT SOUTHERN C

Coastal Parks

There are two developed state parks in the coastal section of this Unit, Popham Beach and Reid. Popham, a popular swimming-picnicking day use park in Phippsburg, was acquired in 1965. Since it officially opened in 1968, annual visitor use of the park has tripled.

With its extensive sand beaches, rocky headlands, and wetlands, Reid State Park offers one of the most compact areas of diversified coastal resources on the entire Maine coast. And the enthusiasm of the public for the area matches this physiological diversity. Since 1970 Reid has been the most heavily used day use park in the Maine State Park System with an annual average of almost 200,000 visitors. Currently the park has an instant design capacity of 2,943 persons. Within the boundaries of the park is undeveloped land which would be suitable for trail walking, nature study and other low intensive recreational uses.

The Bureau also owns ten acres of land on Lobster Cove in Boothbay Harbor which has been developed into a local park to be operated by the town.

There is one small undeveloped day use park on Clark Cove in Harpswell which offers a good view of Merriconeag Sound. This site may be of primarily local significance.

Bordering on the tide waters of Merrymeeting Bay, the Bureau also has a 435 acre parcel in Bowdoinham which is managed by cooperative agreement by the Department of Inland Fisheries and Wildlife. In a report prepared for the Department of Conservation in 1975 it was recommended that a "nature/visitors/education center with overlook to tidal flats, exhibit area, and nature conservation trails that illustrate the ecology of the Bay" be developed on this site.

Inland Parks

There are a number of inland parks in this Unit, most of them undeveloped. Peacock Beach on Pleasant Pond in Richmond is state operated but the area is one of the least used of all state parks. The area might better be run as a local or regional park. A parcel on Woodbury Pond in Litchfield would be suitable as a day use swimming area. A 127 acre parcel around Tyler Pond in Manchester and Augusta is being developed by the Bureau and will be maintained by the City of Augusta. A 251 acre parcel on Spectacle Pond in Vassalboro would be suitable as day use recreation area.

Lastly, two parcels, one 63 acres and one 71 acres, in Mt. Vernon and Rome could be developed as day use areas of regional importance.

Visitor Use

Public use of existing State Parks and Memorials in Unit Southern C totalled 293,520 persons in 1977 (Table 15). Almost 97 percent of this use took place in coastal day use facilities. There are no State camping areas in the Unit.

Public and Private Conservation Open Space Lands

The total area of the coastal communities in Unit Southern C is 369,988 acres. Of this, only 30 acres is federally administered open space.

State agencies control nearly 4,300 acres or 1.2 percent of the total coastal land. More than one-third of this acreage is held by the Bureau of Parks and Recreation. Aggregate State holdings account for over fifty percent of the total public and private conservation open space areas.

Municipal open space ownership equals 2,172 acres or a mere 0.6 percent of coastal acreage in the Unit.

Private organizations own 1,545 acres or 0.4 of the coastal land in the Unit. This is about one-fifth of the total public and private conservation land.

In all, 8,019 acres are maintained as public or private conservation open space lands in the coastal area communities of Unit Southern C leaving nearly 98 percent of the land in private ownership.

Natural Feature Deficiencies

There appear to be deficiencies in the Unit of the following types of protected natural features: hills, heaths, sub-alpine habitats and cobble beaches. Of these, hills, heaths, sub-alpine habitats are not significantly available in the coastal portion of the Unit.

Recreation Preferences

The survey of Maine people done for the State Planning Office in 1973 indicated that the top recreation priorities of respondents in the Midcoastal District were for, in decreasing order, coastal beaches and scenic areas, natural areas, wild and scenic rivers, campsite areas, inland beaches and scenic areas, and historic areas.

The 1975 citizen evaluation of public policy indicated that 50% or more of the respondents in the Midcoast Area favored more spending for the following coastal projects, in decreasing order: wildlife habitats, historic areas and picnic areas, public beaches,

scenic road turnoffs, campsites, coastal highways, and marinas and boat ramps.

The results of the 1976 panel surveys conducted by the Social Scenic Research Institute listed what participants felt state recreation priorities should be. In order of decreasing priority for the Midcoast Region, these were: inland camping and wilderness parks, trails for biking/walking, picnic areas, public beaches, and boat launches.

For the Midcoast Region the state recreation priorities agreed upon by 50% or more of the meeting participants were:

1. day-use facilities (82%)
2. public beaches (74%)
3. wildland preservation (74%)
4. trails - hike/bike/nature (50%)

The 1977 survey of the attitudes of residents toward spending for coastal facilities showed that a majority of both coastal and inland respondents favored increased State spending for (in decreasing popularity statewide): bike trails, nature areas, swimming areas, picnic areas, camping areas, hiking and backpacking trails, historic areas, ski touring trails, scenic road turnoffs and boat ramps and access points.

Taken together these surveys seem to indicate a fairly strong preference for ocean beaching and boating, camping, picnicking and sightseeing opportunities as well as historic sites and natural areas. There also appears to be a growing preference for bicycle, skiing and hiking trails.

Outstanding Private Natural Features

The coastal area between Brunswick and Boothbay is characterized by islands and peninsulas with a diversity of topographic relief not found in the southern coastal plains. Some towns, such as Arrowsic and Georgetown, are located entirely on large coastal islands. Separating the heavily forested islands and peninsulas are tidal rivers and bays lined with salt marshes and estuaries. In fact, the area has one of the highest concentrations of tidal and salt marshes of the entire coast though extensive marshes such as those found along the southern coast are absent. There are only two major beach systems in the Unit, the Popham-Seawall complex in Phippsburg and the Reid State Park complex in Georgetown.

Other than the coastal islands, which are treated separately in Appendix B, the most important private coastal area natural features in the Unit include:

- Merrymeeting Bay, a unique tidal bay formed by the confluence of six rivers which is perhaps most important as waterfowl habitat;

- Lands End on Bailey Island in Harpswell, one of the best examples of bold rocky shore with an excellent view of Casco Bay readily accessible by automobile;

- East Cundy Point in Cundys Harbor (Harpswell), a compact system of many typical habitats and landforms including rocky shore, softwood forest, sand beach and salt marsh in addition to cellar holes of possible historical significance;

- the southern portion of Arrowsic Island, an area of historic interest, broad salt marshes, thick forests and high promontories with excellent views north up the Back River, west across to Phippsburg village and south down the wide Kennebec River to Popham;

- the Basin in Phippsburg, a natural, protected shelter for small watercraft;

- the Cape Small - Hermit Island complex of sand beaches and dunes, rocky headlands, sheltered harbors, tidal flats and ponds in Phippsburg;

- the entire Popham peninsula region at the mouth of the Kennebec River in Phippsburg, an area of diverse topography, scenic islands, salt marshes, sand beaches and dunes and historical significance;

- Parker's Head in Phippsburg, site of early colonial farmsteads and a promontory with outstanding views overlooking the historic Kennebec River;

- Clarke and Lake Company Archeological Site in Arrowsic, an important early colonial site first established in 1654. This settlement can provide rare information on the economy, architecture, and lifestyles of 17th century Maine; today a scenic natural area, the site has been nominated to the National Register of Historic Places.

Table 15

STATE PARK AND STATE MEMORIAL ESTIMATED VISITOR USE: 1967 - 1977

Southern C

Park/Memorial	Type of Use	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	Instant Design Capacity
*Eagle Island	Day Use				438	1,216	1,448	1,735	2,219	2,660	2,170	2,667	
*Ft. Edgecomb	Day Use	14,950	16,720	15,151	18,609	17,971	16,764	12,676	10,985	9,707	12,688	11,455	122
Ft. Halifax	Day Use	412	1,208	1,012	1,110	1,268	983	1,189	1,103	1,435	1,290	1,282	18
*Fort Popham	Day Use	8,019	9,690	10,188	11,314	16,757	22,114	14,057	18,985	14,365	31,404	41,779	144
Peacock Beach	Day Use		9,017	14,843	14,517	13,797	12,354	12,537	24,169	16,599	10,377	10,914	292
*Popham Beach	Day Use		41,126	68,545	90,315	91,862	88,182	100,669	108,401	122,887	111,079	128,154	1,980
*Reid	Day Use	150,211	164,096	168,671	196,833	200,843	194,091	192,143	199,343	200,633	202,716	197,269	2,943

*Coastal

Table 16

PUBLIC AND PRIVATE CONSERVATION COASTAL OPEN SPACE LAND

Southern C Summary

	ACRES	PERCENT OF COASTAL ACREAGE	% OF TOTAL PUBLIC AND PRIVATE CONSERVATION ACREAGE
COASTAL ACREAGE	369,988	100	--
FEDERAL	30	*	0.4
STATE (BPR)	4,272 (1,465)	1.2 (0.4)	53.3 (18.3)
MUNICIPAL	2,172	0.6	27.1
PRIVATE CONSERVATION	1,545	0.4	19.2
TOTAL	8,019	2.2	100

* Less than 0.1%

Table 17

BUREAU OF PARKS & RECREATION COASTAL OWNERSHIP

Southern C

SITE	DEVELOPED	UNDEVELOPED	TYPE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES	FEET SALT SHORELINE
Popham Beach SP	X		Park	Phippsburg	beach, dunes, salt pond	s, p	554.7	12,380
Reid SP	X		Park	Georgetown	beach, dunes, headland	s, p	770	15,360
Clark Cove		X	Park	Harpswell	bluff, beach	p	20.4	1,600
Lobster Cove	X		Town Park	Boothbay Hbr.		p	9.8	1,880
Eagle Island	X		Memorial	Harpswell	Adm. Perry House	h	17	4,100
Fort Edgecomb	X		Memorial	No. Edgecomb	fort	h	3.1	720
Fort Popham	X		Memorial	Phippsburg	fort	h	4.4	2,425
Mere Point	X		Memorial	Brunswick	monument	h	0.2	---
Fort Baldwin		X	Memorial	Phippsburg	fort, tower hill	h	45.1	385
Fort Island		X	Memorial	Boothbay	fort site	b, p, h, c	37.6	5,350
N.&S. Sugarloaf Is		X	Memorial	Phippsburg	bird nesting	ns, h	3.0	2,020
Ferry Landing	X		Boat	Westport	DOT operated	b	10	
Kennebec River	X		Boat	Hallowell		b	1.5	383
Pleasant Pond		X	Boat	Gardiner		b	6.5	250
Whaleboat Island			Easement	Harpswell	wildlife		100	
Merrymeeting Bay		X	IFW admin.	Bowdoinham	wildlife area		435	5,776

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = trails
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

Table 18

OTHER PUBLIC AND PRIVATE CONSERVATION COASTAL OPEN SPACE AREAS Southern C

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
FEDERAL	FWS	Pond Island N.W.R.	Phippsburg	Bird nesting	r	10
	USGS	Sequin Island	Georgetown	Lighthouse	p,b,h	20
STATE	BPL	Augusta Agricultural Land	Augusta	Forest, grassland	t	361
	BF	Austin Carry Tree Farm	Harpswell		r	
	IFW	Bachman Lot	Bowdoinham			150
	BPL	B. Baxter Memorial Forest	Topsham		r	125
	IFW	Gov. Hill Hatchery	Augusta			171
	IFW	Muddy River	Topsham	Tidal marsh	r, ns	169
	IFW	Oakes Lot	Bowdoinham			6,2
	IFW	Powell Lot	Dresden	Tidal marsh	r, ns	200
	BPL (City leased)	Hallowell Agricultural Land	Hallowell	Grassland	t, sk	32
	IFW	Swan Island WMA	Perkins Twp.	Wildlife	r,ns,pc	1,570
	IFW	Winship Island	Arrowsic	Salt marsh		23
MUNICIPAL	City	Bath Recreation Park	Bath			24
	City	Butlers Cove	Bath	Headland	sv	135
	Town	Clough Point Cons. Area	Westport			8
	City	Coffin Pond	Brunswick	±400' beach	s, t	142
	Town	Elm Island	Harpswell			10
	Town	Five Islands Open Space	Georgetown			27

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Southern C

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
MUNICIPAL	Town	Kennebec River Lot	Farmingdale			7
	Town	Knickerkane Island	Boothbay	±100' beach		1
	Town	Lewis Park	Boothbay Hbr.			5
	Town Leased	Lobster Cove	Boothbay Hbr.		p	10
	Town	Long Reach Mt.	Harpswell			9
	Town	Open Space	Chelsea			28
	Town	Open Space	Farmingdale			10
	Town	Open Space	Richmond			22
	Town	Pat's Pond Park	Boothbay Hbr.			8
	Town	Perkins Island	Georgetown	Lighthouse	h,p,pc	9
	Town	Recreation Area	Bowdoinham			13
	City	Reservoir Land	Brunswick	87A. wooded		158
	Town	Reservoir Land	Dresden			20
	Town	Reservoir Land	Hallowell			700
	Town	Reservoir Land	Southport	15A. wooded		20
	City	Sawyer Park	Brunswick			18
	School	School Forest	Augusta			105
	School	School Forest	Bath	15A. wooded		41
	School	School Forest	Dresden	20A. wooded		38
	School	School Forest	Gardiner			64
	School	School Forest	Richmond			55
	School	School Forest	Woolwich			18

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Southern C

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
MUNICIPAL	Town	Southport Beach	Southport	±500' beach	s	
	City	Town Common	Brunswick	86A. wooded		195
	City	Town Farm	Brunswick			51
	Town	Town Farm	Topsham			80
	Town	Town Forest	Phippsburg	20A. wooded		20
	Town	Town Forest	Richmond	90A. wooded		90
	City	Trailwood Arboretum	Brunswick			31
PRIVATE	MAS	Appalachie Sanctuary	Boothbay Hbr.	Lake	r, ns	35
	Augusta Nt. Club	Augusta Nature Center	Augusta			17
	YMCA	Bath YMCA Summer Camp	Bath		r	50
	AMC	Beals Island	Georgetown		r,pc,b	64
	YMCA	Boothbay YMCA Day Camp	Boothbay	±1,500' beach	s	100
	Bowdoin College	Bowdoin Pines	Brunswick	Forest		
	MAS	Cow Island	Topsham	Freshwater marsh	r	20
	TNC	Damariscove Island	Boothbay Hbr.	Rocky, open	ns,h,p	209
	TNC	Doughty Island	Harpswell	Forest		2
	TNC	Doughty Point	Harpswell	Salt marsh	ns	40
	TNC	Eustis Preserve	Georgetown	Forest	r, ns	43
	TNC	Heron Islands	Phippsburg			5

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Southern C

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
PRIVATE	ISA	Isle of Springs	Boothbay Hbr.		r	75' shore band
	NEWPS	Coffin Wild Flower Reservation	Woolwich	Tidal marsh	ns	175
	IFW	Merrymeeting Bay Game Sanctuary	Bowdoinham, Woolwich		r	
	TNC	Montsweag Preserve	Woolwich	Open field	ns, sv	45
	TNC	Morse Mt.	Phippsburg	Hill, sand, dunes	ns, sv	30
	MAS	Newman Sanctuary	Georgetown	Marsh, pines	t, ns, h	200
	PTCS	Newagen	Southport		ns	470
	HGC	Stove Point Marsh	Harpswell			4

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = trails
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

MANAGEMENT AGENCY

AMC = Appalachian Mountain Club
BF = Bureau of Forestry
BPL = Bureau of Public Lands
HGC = Harpswell Garden Club
FWS = U.S. Fish & Wildlife Service
IFW = Dept. of Inland Fisheries & Wildlife
ISA = Isle of Springs Assoc.
MAS = Maine Audubon Society
NEWPS = New England Wildflower Preservation Society
PTCS = Pine Tree Conservation Society
TNC = The Nature Conservancy
USCG = U.S. Coast Guard

Table 19

CONSERVATION EASEMENTS

Southern C

SITE	MUNICIPALITY	RECIPIENT AGENCY	APPROX. ACREAGE	RESTRICTIONS
Damariscotta River frontage	Boothbay	Town of Boothbay	24	no development
Gray, Maine	Gray	Town of Gray	17.9	forever wild
Merrymeeting Bay	Bowdoinham	IFW	200	1 residence now; no future residences
Morse River/ Morse Mtn.	Phippsburg	TNC	600	no residences; construction of research bldgs. permitted, 1200' set back; controlled public access
Oak Island	Woolwich	IFW	65	1 residence set back 100'; 1 dock

KEY

RECIPIENT AGENCY

IFW - Department of Inland Fisheries & Wildlife
TNC - The Nature Conservancy

Table 20

NEAR-COASTAL INLAND OPEN SPACE AREAS — Southern C

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
STATE	IFW	Augusta/Windsor WMA	Augusta, Windsor			2,425
	BPR	Blueberry Hill	Rome	Hill	sv,p	71
	IFW	Gawler Lot	Belgrade			98.8
	BPR	Long Pond	Rome, Mt. Vernon	5200' lakeshore	s,p	63
	BPR	Peacock Beach SP	Richmond	Beach	s,p	100
	BPR	Spectacle Pond	Vassalboro	Sand beach	s,p	251
	BPR	Woodbury Pond	Litchfield	350' beach	s,p	17
MUNICIPAL	Town	Open Space	Monmouth			300+
	Town	Open Space	Vassalboro			10+
	School	School Forest	Litchfield			25
	School	School Forest	Readfield			10
	School	School Forest	Sidney			30
	School	School Forest	Waterville			41
	Town	Town Farm	Leeds			75
	Town	Town Forest	Albion			10
	Town	Town Forest	Bowdoin			900
	Town	Town Forest	Litchfield			507
	Town	Town Forest	Manchester			247
	Town	Town Forest	Readfield			100
	City of Augusta leased	Tyler Pond	Manchester, Augusta	24A pond	t,p,s	127

NEAR-COASTAL INLAND OPEN SPACE AREAS

Southern C

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
PRIVATE	IFW	Colby College WMA	Waterville		r	640
	Colby College	Colby-Marston Bog	Oakland		t, ns	21
	IFW	Oak Grove WMA	Vassalboro		r	
	IFW	Readfield & Winthrop Sanctuary	Readfield, Winthrop		r	
	IFW	Thorncrag-Stanton Bird Sanctuary	Monmouth		ns	132

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = trails
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

MANAGEMENT AGENCY

BPR = Bureau of Parks and Recreation
IFW = Dept. of Inland Fisheries & Wildlife

Table 21

RECREATION PREFERENCES

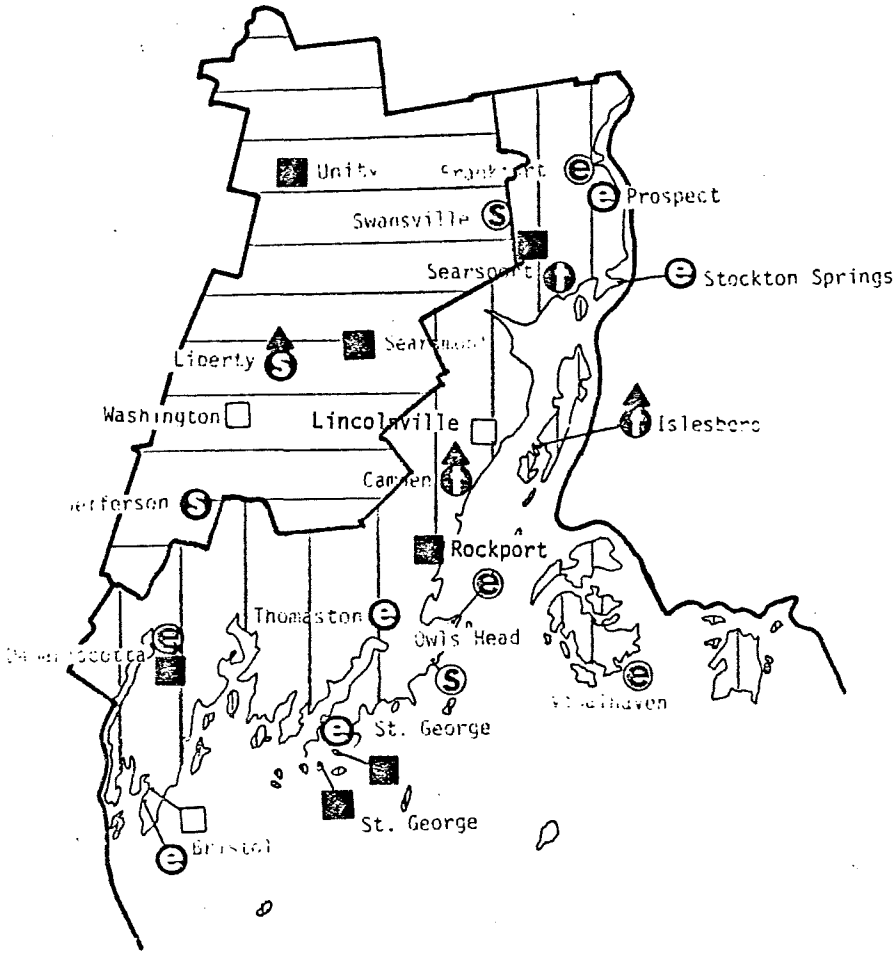
Southern C

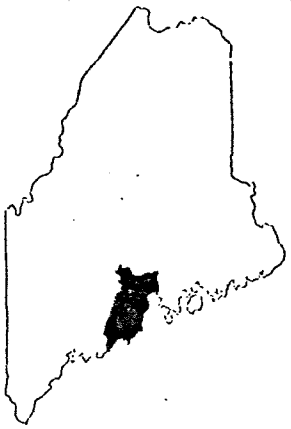
STUDY (YEAR)	Coastal Beaching	Lake Beaching	Coastal Boating	Freshwater Boating	Picnicking	Wild & Scenic Rivers	Historic Sites	Camping	Snowmobiling	Hiking/Back Packing	Bicycling	Horseback Ridding	Interpretive	Ski Touring	Snow Skiing	Natural/Wildlife Areas	Sightseeing	Hunting and Fishing
1973	X	X				X	X	X								X	X	
1975	X		X		X		X	X								X	X	
1976	X		X		X			X		X	X					X		
1977	X		X		X		X	X			X			X		X	X	

UNIT SOUTHERN D

SOUTHERN D

Population -
Total - 63,017
Coastal - 49,373





SCALE
0 5 10 15 20 25 MILES
0 10 20 30 KILOMETERS

1/77

TYPE OF AREA	DEVELOPED	UNDEVELOPED
Day Use - Swimming/Picnicking	Ⓢ	Ⓢ
Day Use - Trails/Picnicking	ⓣ	ⓣ
Day Use - Educational/Cultural	ⓔ	ⓔ
Camping	△	△
Boat Access	■	□

Coastal

Near-coastal

Coastal Parks

There are four developed state parks in the coastal section of this Unit.

Camden Hills is an extensive wooded park offering trails, camping, picnicking and scenic viewing. The park, originally developed by the Civilian Conservation Corps as a National Recreation Demonstration Area was transferred to the State in 1939. The coastal hills in Camden and Lincolnville are second in height only to the Norumbega hills of Hancock County. The views of Penobscot Bay from Mt. Megunticook and the summit of Mt. Battie are unsurpassed. Of the four coastal state parks offering camping Camden Hills is by far the most heavily used. Since 1970 the park has averaged over 50,000 campers annually. In addition, more than three times as many day use visitors make use of the park's facilities each year. There is land available for expansion of both day use and overnight facilities. Serious consideration should be given to establishing a network of pack-in campsites throughout the park.

Moose Point is a day use park with fine views of Upper Penobscot Bay. Visitor use has apparently been somewhat variable in recent years. In 1977, about 75,000 people visited Moose Point. Facilities, particularly walking trails, could be expanded on existing park land.

Warren Island off Islesboro is currently the only coastal island in the state park system formally offering camping to the general public. Most of the park's use, however, is by day trippers. An increase in the use of overnight facilities can be expected if public pressures for island camping grow, if more people are turned away from the Acadia National Park campsites on Isle au Haut, and if more people learn of Warren Island.

Fort Point on Cape Jellison is most important for its proximity to the historic Fort Pownal site. However, a great deal could be done with the undeveloped land at Fort Point. At the least, the access roads to the park should be improved.

In addition to these parks, the Bureau's properties at Pemaquid (Colonial Pemaquid, Fort House and Fort William Henry) and Fort Knox are also popular coastal outdoor recreation areas.

There are three undeveloped state parks on the coast in the Unit. Birch Point Beach in Owls Head has a beach of unusual quality for the region though the area might best be developed as a regional park. Owls Head Light is a picnic spot with good vistas to the North and East and a view of the cliffs at Dodge point. Mt. Waldo in Frankfort has historical importance for the quarrying once carried on in the area and recreation potential for hiking and picnicking.

The Bureau also holds Carvers Island off Vinalhaven and a cobble beach at Duck Trap. Carvers Island is a significant bird nesting

site which could be transferred to the Department of Inland Fisheries and Wildlife for management. Duck Trap beach was acquired as a boat launch site.

Inland Parks

Outside of the coastal area in the Unit, there are three swimming-picnicking day use parks. Lake St. George in Liberty is a 354 acre park which offers camping as well as day use activities.

The annual visitor rate at this park has been fairly stable over the past decade at about 25,000 day users and 10,000 camping visitors.

Damariscotta Lake is a small beach park used by about 17,000 people each year. The Bureau is expanding facilities at the park to increase capacity by 70 percent.

Swan Lake in Swansville (60 acres) was acquired to provide a day use swimming-picnicking area to serve the residents of the Bangor-Belfast region. The Bureau is trying to acquire an additional small parcel of land for this park. Development funds are available for construction of public facilities; however, construction will not be started until operations and maintenance funds are available.

Visitor Use

Public use of existing State Parks and Memorials in Unit Southern D totalled 671,695 people in 1977 (Table 22). Over 92 percent of day use activity took place on the coast while 83 percent of the camping in the Unit was in coastal parks.

Public and Private Conservation Open Space Lands

The total area of the coastal towns in Unit Southern D is 445,402 acres. Over 3,200 acres or 0.7 percent of this is federal open space.

State agencies manage 8,423 acres or 1.9 percent of the coastal acreage in the Unit. The Bureau of Parks and Recreation holds 6,016 acres, most of it in Camden Hills State Park. This is 36.3 percent of the total public and private conservation open space.

Municipal open space totals 2,761 acres or 0.6 percent of the coastal acreage.

Conservation groups own about 2,195 acres in the coastal towns. This is one-half of one-percent of the coastal acreage or 13.2

percent of the total public and private conservation open spaces.

Together nearly 16,600 acres of land are controlled by public or private conservation agencies in coastal Unit Southern D. This amounts to less than four percent of the total coastal acreage in the Unit.

Natural Feature Deficiencies

There appear to be deficiencies in the Unit of the following types of protected natural features: sand dunes, grasslands, sub-alpine habitats and intertidal flats. Of these, sand dunes, grasslands and sub-alpine habitats are not significantly available in the coastal portion of the Unit.

Recreation Preferences

The survey of Maine people done for the State Planning Office in 1973 indicated that the top recreation priorities of respondents in the Midcoastal District were for, in decreasing order: coastal beaches and scenic areas, natural areas, wild and scenic rivers, campsite areas, inland beaches and scenic areas, and historic areas.

The 1975 citizen evaluation of public policy indicated that 50% or more of the respondents in the Midcoast Area favored more spending for the following coastal projects, in decreasing order: wildlife habitats, historic areas and picnic areas, public beaches, scenic road turnoffs, campsites, coastal highways, and marinas and boat ramps.

The results of the 1976 panel surveys conducted by the Social Scenic Research Institute listed what participants felt state recreation priorities should be. In order of decreasing priority for the Midcoast Region, these were: inland camping and public beaches, and boat launches.

For the Midcoast Region the state recreation priorities agreed upon by 50% or more of the meeting participants were:

1. day use facilities (82%)
2. public beaches (74%)
3. wildland preservation (74%)
4. trails - hike/bike/nature (50%)

The 1977 survey of the attitudes of residents toward spending for coastal facilities showed that a majority of both coastal and inland respondents favored increased State spending for (in decreasing popularity statewide): bike trails, nature areas,

swimming areas, picnic areas, camping areas, hiking and backpacking trails, historic areas, ski touring trails, scenic road turnoffs and boat ramps and access points.

Taken together these surveys seem to indicate a fairly strong preference for ocean boating and beaching, camping, picnicking and sightseeing opportunities, as well as natural areas and historic sites. There also appears to be a growing preference for bicycle, skiing and hiking trails.

Outstanding Private Natural Features

The coastal area of Unit D is made up of large rocky peninsulas, scattered hilly areas and groups of islands of all sizes. Lowland shoreline wetlands are limited to a few small, isolated pocket beaches tucked away into rocky caves and a couple of expansive estuary and salt marsh areas.

Other than the coastal islands, which are addressed separately in Appendix B, the most important privately owned natural features identified in the coastal area of the Unit include:

- Upper Sheepscot River Estuary area in Alna, Wiscasset, and Newcastle, one of the cleanest and most pastural estuarine tidal regions on the coast, and a region of archeological and historic significance;

- Salt Bay linking Damariscotta River and Damariscotta Lake in Nobleboro, Newcastle and Damariscotta, a large tidal embayment offering good wildlife habitat;

- Boot Neck-Goose River area on the Waldoboro-Friendship town line, a compact area of many habitats and landforms offering an opportunity for interpretive trails, open playfields, picnic spots, tidal bay canoeing - all with very good road accessibility;

- Mt. Waldo in Frankfort, a 1,064 foot high hill of granitic bedrock with fine views of Penobscot Bay on which the Bureau of Parks and Recreation already owns 124 acres;

- Mosquito Island off Port Clyde (St. George), a large particularly scenic island with a fine stone homestead and a variety of microhabitats;

- Allen Island in St. George, a 420 acre island in Muscongus Bay supporting a unique stand of ancient yellow birches.

Table 22

STATE PARK AND STATE MEMORIAL ESTIMATED VISITOR USE: 1967 - 1977

Southern D

Park/Memorial	Type of Use	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1977 Instant Design Capacity
*Camden Hills	Day Use	131,275	173,946	174,342	182,105	150,620	138,083	146,768	139,738	148,988	153,535	171,343	260
	Camping	46,384	46,757	48,829	55,214	56,535	50,262	49,280	46,033	49,744	48,196	47,212	448
*Colonial Pemaquid	Day Use				28,754	23,132	12,032	11,759	10,926	20,446	36,387	23,284	243
Damariscotta Lake	Day Use				15,038	17,737	16,487	16,465	20,582	18,102	16,976	18,855	450
*Fort Knox	Day Use	67,877	79,654	76,207	73,225	78,375	81,738	73,004	77,815	75,185	83,051	91,429	675
*Fort William Henry	Day Use	16,817	21,307	18,944	18,630	18,721	19,312	16,277	15,297	28,446	36,062	18,955	54
*Fort Point & Fort Pownal	Day Use	3,817	3,928	5,826	6,777	2,907	2,031	3,328	10,811	10,724	9,324	8,714	446
Lake St. George	Day Use	23,356	25,195	23,362	25,447	25,640	23,242	25,397	25,404	29,928	24,351	25,699	621
	Camping	9,006	9,179	9,607	9,832	11,583	10,498	11,083	9,787	10,335	11,094	9,810	124
*Montpelier	Day Use	9,190	9,013	9,225	9,302	9,062	8,716	8,353	6,987	7,707	9,052	6,465	68
*Moose Point	Day Use	95,126	100,440	110,509	118,192	118,675	106,185	74,800	48,819	78,686	104,697	75,043	360
*Warren Is.	Day Use	1,035	1,993	2,612	3,348	3,167	2,883	3,062	2,620	1,763	1,927	2,796	
	Camping	287	525	799	942	1,642	1,637	1,375	870	673	630	747	

*Coastal

Table 23

Southern D
Summary

PUBLIC AND PRIVATE CONSERVATION COASTAL OPEN SPACE LAND

	ACRES	PERCENT OF COASTAL ACREAGE	% OF TOTAL PUBLIC AND PRIVATE CONSERVATION ACREAGE
COASTAL ACREAGE	445,402	100	--
FEDERAL	3,215	0.7	19.4
STATE (BPR)	8,423 (6,016)	1.9 (1.4)	50.8 (36.3)
MUNICIPAL	2,761	0.6	16.6
PRIVATE CONSERVATION	2,195	0.5	13.2
TOTAL	16,594	3.7	100

Table 24

BUREAU OF PARKS & RECREATION COASTAL OWNERSHIP

Southern D

SITE	DEVELOPED	UNDEVELOPED	TYPE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES	FEET SALT SHORELINE
Camden Hills SP	X		Park	Camden, Lincolnville	hills, forest	t,p,c, sv	5,406.7	1,750
Fort Point	X		Park	Stockton Springs	fort site	h,p,b	149.5	6,300
Moose Point SP	X		Park	Searsport	conifers, open field	p	146.6	3,100
Warren Island	X		Park	Islesboro	forests	c,p,b	70.4	7,900
Birch Point Beach		X	Park	Owls Head	beach	s,p	56.3	1,345
Carver's Island		X	IFW managed	Vinalhaven	bird nesting	ns	15	3,000
Mt. Waldo		X	Park	Frankfort	quarry	h,p,t	124	
Owls Head Light		X	Park	Owls Head	lighthouse	sv,p	12.9	2,235
Colonial Pemaquid		X	Memorial	Bristol	digs	h	17.7	1,644
Fort House	X		Memorial	Bristol	fort site	h	1.25	--
Fort Knox	X		Memorial	Prospect	fort	h, p	124.5	3,400
Fort Pownal	X		Memorial	Stockton Spgs	fort site	h	5	--
Fort Wm. Henry	X		Memorial	Bristol	fort	h,p,b	1.7	300
Montpelier	X		Memorial	Thomaston	Knox home	h	4.3	--
Fort St. George		X	Memorial	St. George	fort site	h	2.6	1,130
Shell Heaps		X	Memorial	Damariscotta	shell heaps	h	4.5	--
Rockport Harbor	X		Boat(town)	Rockport		b,h,p	3.4	625
Duck Trap		X	Boat	Lincolnville		b, s	7.2	275
emaquid River		X	Boat	Bristol		b	6	215
Lake Megunticook			Easement	Camden			25	--
Round Pond			Easement	Bristol			50	

BUREAU OF PARKS & RECREATION COASTAL OWNERSHIP

Southern D

SITE	DEVELOPED	UNDEVELOPED	TYPE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES	FEET SALT SHORELINE
Seavey Island			Easement	St. George			25	
Thrumcap Is.			Easement	Islesboro			1	
Sheep Island			Easement	Owls Head			8.8	

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = tra-ls
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

Table 25

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Southern D

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
FEDERAL	NPS	Acadia National Park	Isle au Haut	Hills	p, pc	2,870
	FWS	Franklin Island NWR	Friendship	Bird Nesting	r	12
	USCG	Matinicus Rock	Matinicus	Bird Nesting	r,h	8
	FWS	Seal Island Nat'l Wildlife Refuge	Isle au Haut	Bird Nesting	r	65
	USFS		Winterport	Blueberry Fields		260
STATE	BPL	Durham Forest	Northport			105
	IFW	Eastern Duck Rocks	Monhegan	Duck Nesting	r	2
	IFW	Garden Island	So.Thomaston	Duck Nesting	r	1
	IFW	Goose Island	North Haven	Duck Nesting	r	5
	IFW	Great Spoon Island	Isle au Haut	Duck Nesting	r	64
	IFW	Green Ledge	Isle au Haut	Duck Nesting	r	4
	IFW	H. Mendall WMA	Frankfort, Prospect	Duck Nesting	r	221
	IFW	Little Burnt Island	St. George	Duck Nesting	r	8
	IFW	Little Green Island	Vinalhaven	Duck Nesting	r	2
	IFW	Old Hemp Ledge	St. George	Duck Nesting	r	2
	IFW	Robinson;s Rock	North Haven	Duck Nesting	r	2
	IFW	Sandy Pt. WMA	Stockton Springs	Freshwater Marsh	ns	540
	IFW	Shark Island	St. George	Duck Nesting	r	2
	IFW	Sparrow Island	Isle au Haut	Duck Nesting	r	3
	IFW	Spoon Ledge	North Haven	Duck Nesting	r	1
	BPL	Thomaston Agricultural Land	Warren, Thomaston			973

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Southern D

MANAGEMENT AGENCY		SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
STATE	IFW	The Cow Pen	Isle au Haut	Duck nesting	r	3
	IFW	Weskeag WMA	So.Thomaston, Rockland, Thomaston, Owls Head	Tidal marsh	ns	533
MUNICIPAL	Town	Ambrust Hill Park	Vinalhaven		t	20
	Town	Barrets Cove	Camden	Lake	s	6
	Town	Bok Amphitheater	Camden		h	6
	Town	Curtis Island	Camden	±25' beach	s,p	6
	Town	DARA Woods	So. Bristol	woods, boulders	t, p	48
	Town	Laite Beach	Camden	±200' beach	s,p	1.5
	Town	Lands End	Camden	±40' beach	s,p	4
	Town	Lighthouse Park	Bristol	Headland	p,sv	6
	Town	Marine Park	Waldoboro			20
	Town	Mullinhead Pk.Campground	No. Haven		pc	260
	Town	Open Space	Islesboro			
	Town	Open Space	Thomaston			75+
	Town	Pemaquid Beach Park	Bristol	Sand beach	s	8
	Town Leased	Pendleton Beach	Islesboro	±200' rocky beach		7
	Town	Ragged Mt.	Camden		t	53+
	School	School Forest	Islesboro			17
	School	School Forest	Thomaston			46

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Southern D

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
MUNICIPAL	School	School Forest	Winterport	100+ wooded		120
	Town	Snow Bowl	Camden	Hill	sk,t,p	265
	Town	Sprague's Beach	Islesboro	±500' beach	s	
	Town	Town Farm	Rockland	38A. wooded		63
	Town	Town Forest	Frankfort	1,300A.wooded		1,300
	Town	Town Forest	Northport			225
	Town	Town Forest	St. George	20A. wooded		20
	Town	Town Forest	Waldoboro	56A. wooded		56
	Town	Town Forest	Warren	20A. wooded		20
	Town	Town Park	Stockton Sprgs			8
	Town	Tracy Property	South Bristol	Forest	ns, t	33
	Town	Walker Park	Rockport	±15' beach		1.5
	Town	Wyman Park	Northport	±300' beach		115
PRIVATE	American Legion	American Legion Pk.	Vinalhaven	±1,400'beach		5
	IFW	Bartlet Island WMA	Mount Desert		r	
	TNC	Bass Rock Preserve	Round Pond	Headland	ns	12
	IFW	Beauchamp Sanctuary	Camden, Rockport		r	
	TNC	Big Garden Island	Vinalhaven	Forest,beach	ns	18
	TNC	Big White Island	Vinalhaven	Mixed forest	ns	20
	HCTPR	Black House	Ellsworth		t	178
	IFW	Carver's Pond Waterfowl Sanctuary	Vinalhaven		r	

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Southern D

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
PRIVATE	CF	Chewonki Neck	Wiscasset	Forest	r	168
	NAS	Eastern Egg Rock	St. George	Bird nesting	r	9
	TNC	Fernald's Neck	Camden, Lincolnville	Lake		315
	IFW	Glencove Sanctuary	Rockport			
	TNC	Harkness Grant	Rockport	Hard woods	ns	5
	TNC	Lane's Island	Vinalhaven	Moors	ns	29
	TNC	LaVerna Preserve	Round Pond	Spruce-fir	ns	119
	TNC	Mark Island	North Haven	Bird nesting	r	30
	IFW	Megunticook Lake Sanctuary	Camden, Hope, Lincolnville		r	
		Merryspring	Rockport	Horticulture Park		50
	Monhegan Associates	Monhegan Is.Trust	Monhegan Plt.	Headlands	t, sv	100
	IFW	Monroe Island Game Sanctuary	Owl's Head		r	
	NAS	Mulford Sanctuary	Bristol	Bird nesting	r	11
	TNC	Osborne Finch Preserve	Waldoboro	Softwoods	ns	11
	TNC	Plummer Point	So. Bristol	Forest	r	77
	MCA	Rockland Bog	Rockland	Bog		27
	TNC	St. Clair Tract	Northport	Spruce-fir	ns	240
	TNC	Salt Pond	Bristol	Mixed forest	ns	78
	TNC	Simonton Corner Quarry	Rockport	Lime quarries	h	11

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Southern D

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
PRIVATE	TNC	Smith Island	Vinalhaven	Treeless	ns	12
	NAS	Ten Pound Island	Knox County		r, ns	28
	NAS	Todd Wildlife Sanctuary	Breman		r, ns	345
	MCA	Van Dyne Sanctuary	Waldoboro	Mixed forest	t, ns	±25
	NAS	Western Egg Rock	Bristol	Bird nesting	r	100

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = trails
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

MANAGEMENT AGENCY

BPL = Bureau of Public Lands
CF = Chewonki Foundation
FWS = U.S. Fish & Wildlife Service
HCTPR = Hancock County Trustees of Public Reservations
HIOBS = Hurricane Island Outward Bound School
IFW = Dept. of Inland Fisheries & Wildlife
MCA = Mid-Coast Audubon
NAS = National Audubon Society
NPS = National Park Service
TNC = The Nature Conservancy
USCG = U.S. Coast Guard
USFS = U.S. Forest Service

Table 26

CONSERVATION EASEMENTS

Southern D

SITE	MUNICIPALITY	RECIPIENT AGENCY	APPROX. ACREAGE	RESTRICTIONS
Ames Knob	North Haven	ANP	60	no development
Babbidge	North Haven	ANP	70	no development
Barter Island		IFW	3	no development
Burnt, Mouse & Wheat Island	Isle au Haut	ANP	102	7 buildings there now; 2 future residences
Clark Island	St. George	IFW	35	no development
Cranberry Island	Friendship	Audubon	40	1 residence now; 1 future cabin and 2 future docks; cabin to be set back 100'
Damariscotta R.	So. Bristol	IFW	40	1 residence now; no additional residences
Gull Point	Islesboro	IFW	18.5	2 houses and 1 cabin now; no additional houses or cabins
Great Spoon I.	Isle au Haut	ANP	50	no structures now; 1 future residence in Area 1; 1 dock and 1 boathouse in Area II
Harbor Island	Friendship	Audubon	66	no development
John River	So. Bristol	IFW	20	no development
Kimball Island	Isle au Haut	TNC	35	no development
Little Spoon Is.	Isle au Haut	ANP	12	no more than 1 residence and 1 dock
Monroe Island	Owl's Head	IFW	225	1 residence now; no more than total of 5 residences; 100' set back
Oar Island	Bremen	IFW	27	no development

CONSERVATION EASEMENTS

Southern D

SITE	MUNICIPALITY	RECIPIENT AGENCY	APPROX. ACREAGE	RESTRICTIONS
Pell Island	Isle au Haut	ANP	20	no back houses now 3 future houses - 100', 3 docks, 1 boathouse
Rockport	Rockport	IFW		no residences permitted
Rockport	Rockport	Town	175	farming/selective timbering permitted; 2 residences now; 1 future residence located in same area as existing dwellings
Sheep Island	North Haven	TNC	25	no development
The Dumplings	North Haven	ANP	3	no development
Westport Island	Westport	IFW	200	

KEY

RECIPIENT AGENCY

ANP - Acadia National Park
IFW - Department of Inland Fisheries & Wildlife
TNC - The Nature Conservancy

Table 27

NEAR-COASTAL INLAND OPEN SPACE AREAS

Southern D

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
FEDERAL	FWS	Carlton Pond Waterfowl Production Area	Troy		p	1,068
STATE	BPR	Damariscotta Lake SP	Jefferson	Beach	s	19
	IFW	Frye Mt. WMA	Montville		p, ns	5,176
	BPR	Lake St. George SP	Liberty		s, c	354
	IFW	Ruffington WMA	Montville, Searsmont		r, ns	610
	BPR	Swan Lake	Swanville	2500' lakefront	s	60
MUNICIPAL	School	School Forest	Somerville	20A.wooded		25
	Town	Town Forest	Appleton	150A.wooded		150
	Town	Town Forest	Brooks			145
	Town	Town Forest	Freedom			40
	Town	Town Forest	Liberty	268A.wooded		268
	Town	Town Forest	Troy	1300A.wooded		1,300
	Town	Town Forest	Union	150A.wooded		175
PRIVATE	TNC	Appleton Bog	Appleton	White cedar	ns	84
	TNC	Dyer's Neck	Jefferson	Spruce-fir	ns	260
	IFW	Jefferson & Whitefield Sanctuary	Jefferson, Whitefield		r	
	WEES	Walters Ecological Station	Palermo		ns	100

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = trails
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

MANAGEMENT AGENCY

BPR = Bureau of Parks and Recreation
FWS = U.S. Fish & Wildlife Service
IFW = Dept. of Inland Fisheries & Wildlife
TNC = The Nature Conservancy
WEES = Walters Ecological Experiment Station

Table 28

RECREATION PREFERENCES

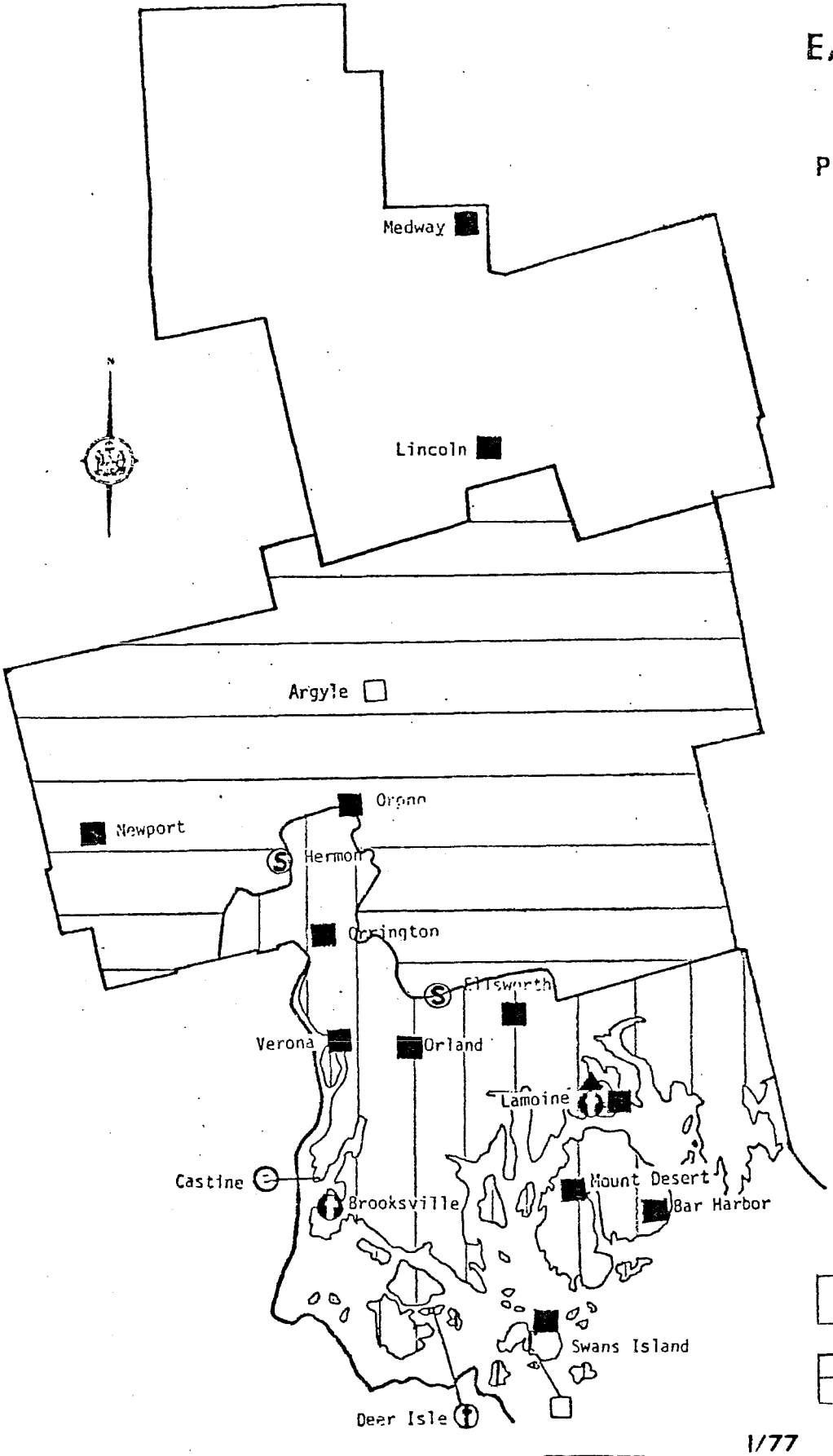
Southern D

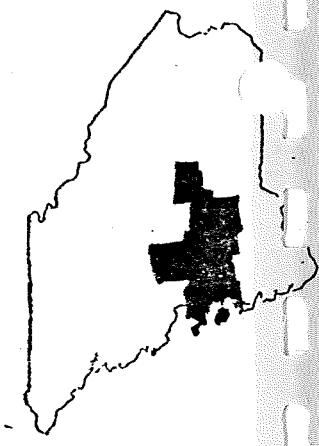
STUDY (YEAR)	Coastal Beaching	Lake Beaching	Coastal Boating	Freshwater Boating	Picnicking	Wild & Scenic Rivers	Historic Sites	Camping	Snowmobiling	Hiking/Back Packing	Bicycling	Horseback Riding	Interpretive	Ski Touring	Snow Skiing	Natural/Wildlife Areas	Sightseeing	Hunting and Fishing
1973	X	X				X	X	X								X	X	
1975	X		X		X		X	X								X	X	
1976	X		X		X			X		X	X					X		
1977	X		X		X		X	X			X			X		X	X	

UNIT EASTERN W

EASTERN W

Population -
Total-157,938
Coastal-82,938





Coastal

Near-coastal

1/77

TYPE OF AREA	DEVELOPED	UNDEVELOPED
Day Use - Swimming/Picnicking	Ⓢ	Ⓢ
Day Use - Trails/Picnicking	ⓣ	ⓣ
Day Use - Educational/Cultural	ⓔ	ⓔ
Camping	▲	△
Boat Access	■	□

SCALE
0 5 10 15 20 25 MILES
0 10 20 30 KILOMETERS

EASTERN REGION

Because of the great expanse of territory and the diversity of natural features covered by this management region, the region has been divided into two sections, each roughly equivalent in size. Those towns in Penobscot, Hancock and Waldo Counties are treated as the western section (Unit Eastern W). Those in Washington County are treated as the eastern section (Unit Eastern E).

UNIT EASTERN W

Coastal Parks

Due to the presence of Acadia National Park in this Unit, the Bureau has in the past been reluctant to provide state parks when such a large park was already located here. Consequently, there is only one developed park in the Unit, Lamoine. Lamoine State Park is located on the mainland just north of Mt. Desert Island and offers camping and a picnicking day use spot as well as a boat launching site. Though it has fine views of the Mt. Desert hills, it functions, like many of the private campgrounds in the area, as a spillover park catching some of the overflow from Acadia. Fifteen to twenty thousand people use the camping facilities at Lamoine each year.

There are several undeveloped parks in the coastal towns of this Unit. Holbrook Island Sanctuary is a large, wild area on Cape Rosier in Brooksville which was donated to the Bureau to be maintained for nature study and very low intensitive recreation activities such as hiking and picnicking. Some improvements might be made on a small portion of the Sanctuary to make the area more available for the uses for which its donor intended. Pickering Cove is a parcel on Deer Isle which has a rocky shoreline and both open field and forest cover in addition to an interesting cave. Pickering Cove could be developed for picnicking and trail use, with a possible boat launching site, if the town would make some improvements to the main access road.

There is one other park in the coastal area though not on salt water. That is the 1,272 acre wooded parcel on Branch Lake in Ellsworth. Unfortunately most of this land is not well suited for recreational use. A boat-accessible, lakeshore picnic site has been suggested for the area.

Inland Parks

There are no developed parks inland in Unit Eastern W. There is one undeveloped area on Hermon Pond (24 acres) which could be developed into a day use swimming area for the residents of the

Greater Bangor region. Already this area is used by the public though it is not formally operated as a park by the Bureau.

Visitor Use

Public use of existing State Parks and Memorials in Unit Eastern W totalled 38,535 in 1977 (Table 29). All of this recorded use took place in coastal facilities as there are no developed inland parks in the Unit.

Public and Private Conservation Open Space Lands

The coastal area of Unit Eastern W comprises 650,353 acres. Almost five percent of this (31,584 acres) is federally managed, the bulk being in Acadia National Park (Table 30).

The State controls 3,333 acres or 0.5 percent of the coastal land area. All but 0.1 percent of this is Parks and Recreation property.

The towns of the Unit hold 1,094 acres or less than 0.2 percent of the coastal acreage.

Private organizations own over 1,600 acres or 4.3 percent of the total public and private conservation open space land.

The largest proportion of any of the coastal administrative units (5.8%) is held cumulatively by public and private conservation agencies in Unit Eastern W. Acadia National Park definitely dominates all holdings in the Unit in size, natural features and recreation facilities.

Natural Feature Deficiencies

There appear to be deficiencies in the Unit of the following types of protected natural features: sand dunes, rivers and estuaries and salt marshes. Of these, dunes are not significantly available in the coastal portion of the Unit.

Recreation Preferences

The survey of Maine people done for the State Planning Office in 1973 indicated that the top recreation priorities for respondents in the Eastern Maine (Downeast) District were, in decreasing order: coastal beaches and scenic areas, natural areas and inland beaches, campsite areas, wild and scenic rivers, and historic areas.

The 1975 citizen evaluation of public policy indicated that 50%

or more of the respondents in the Midcoast Area favored more spending for the following coastal projects, in decreasing order: wildlife habitats, historic areas and picnic areas, public beaches, scenic road turnoffs, campsites, coastal highways, and marinas and boat ramps.

The results of the 1976 panel surveys conducted by the Social Science Research Institute listed the following as state recreation priorities named by respondents in Eastern Maine (in decreasing order): freshwater beaches, roadside parks/picnic areas, camping areas, boat launches, bike paths, and wilderness camping areas.

The 1977 survey of the attitudes of residents toward spending for coastal facilities showed that a majority of both coastal and inland respondents favored increased State spending for (in decreasing popularity statewide): bike trails, nature areas, swimming areas, picnic areas, camping areas, hiking and backpacking trails, historic areas, ski touring trails, scenic road turnoffs and boat ramps and access points.

Considering all of these surveys together there appears to be preferences for camping facilities, particular primitive campsites, for beaching, boating and picnicking opportunities, and for additional historic, natural and sightseeing areas.

Outstanding Private Natural Features

The predominant natural features of the Unit are the coastal islands and the glacial hills rising close to the shore. The best example of these features in one compact place is on Mt. Desert Island. Acadia National Park takes in the most spectacular of the island's natural features. There are, however, a number of important areas which should be studied for possible protection including:

- Gouldsboro Hills region on the eastern Hancock County border, one of the very few hilly areas on the coast and a region significant for its forest and other flora, lakes, wildlife, fish, geology and historic sites;

- Bagaduce River area in Castine, Brooksville, Penobscot and Sedgewick, a tidal river running through one of the most picturesque and historically and ecologically important areas on the Maine coast;

- Blue Hill in the town of Blue Hill, a well known landmark offering good vistas of Mt. Desert Island and Blue Hill Bay;

- Naskeag Point in Brooklin, one of the most important archeological sites known on the coast;

- Pond Island, a geologically unusual 32 acre island in upper East Penobscot Bay with a diversity of habitats and a history of public recreational use;

- Salt Pond - Blue Hill Falls area, in Blue Hill, Brookline and Sedgewick, made up of a tidal pond, a reversing falls, a section of rocky coast, a locally important historic site and an unusual wildlife area set in an agricultural setting;

- Taunton-Egypt-Hog Bays in Franklin, Hancock and Sullivan, an important estuary on the fringe of the eastern midcoast growth center around Ellsworth;

- Skillings River area in Lamoine and Hancock, a series of embayments and coves which together form one of the most scenic and still largely undisturbed estuaries on the coast of Maine;

- Long Island in Blue Hill, the largest island in Blue Hill Bay and one of the few remaining large, undeveloped islands on the coast;

- Grand Heath in Gouldsboro, one of the most extensive coastal heaths in Hancock County.

Table 29

STATE PARK AND STATE MEMORIAL ESTIMATED VISITOR USE: 1967 - 1977

Eastern W

Park/Memorial	Type of Use	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1977 Instant Design Capacity
*Fort George	Day Use	3,810	8,635	8,132	9,222	6,125	5,839	11,149	9,800	9,950	12,865	8,210	36
*Holbrook Island						2,935	2,176	2,992	1,999	1,606	2,906	3,784	27
*Lamoine	Day Use	7,397	5,216	6,575	12,560	16,460	18,455	17,687	21,218	20,840	11,355	13,037	225
	Camping	9,816	13,453	14,636	17,223	20,720	19,622	16,608	15,793	19,669	14,696	13,504	224

*Coastal

Table 30

Eastern W Summary

PUBLIC AND PRIVATE CONSERVATION COASTAL OPEN SPACE LAND

	ACRES	PERCENT OF COASTAL ACREAGE	% OF TOTAL PUBLIC AND PRIVATE CONSERVATION ACREAGE
COASTAL ACREAGE	650,352	100	--
FEDERAL	31,584	4.9	83.9
STATE (BPR)	3,333 (2,656)	0.5 (0.4)	8.9 (7.1)
MUNICIPAL	1,094	0.2	2.9
PRIVATE CONSERVATION	1,622	0.2	4.3
TOTAL	37,633	5.8	100

Table 31

BUREAU OF PARKS & RECREATION COASTAL OWNERSHIP

Eastern W

SITE	DEVELOPED	UNDEVELOPED	TYPE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES	FEET SALT SHORELINE
Holbrook Island		X	Park	Brooksville	forest	ns, p, t	1,230.3	12,730
Lamoine SP	X		Park	Hancock	open field	sv, c	55	2,520
Branch Lake		X	Park	Ellsworth	lakeshore	b, p	1,272	-
Pickering Cove		X	Park	Deer Isle	forest, cave	p, t	94	4,450
Fort George	X		Memorial	Castine	fort site	h	2.75	-
Fort O'Brien	X		Memorial	Machiasport	fort ruins	h	2	357
Battery Gosselin		X	Memorial	Castine	fort battery site	h	0.3	-
Penobscot River	X		Boat	Orrington		b	2.5	1,320
Verona Island	X		Boat	Verona Island		b	2	635
Long Pond		X	Boat	Somesville		b	2.7	-
Toddy Pond		X	Boat	Oakland		b	2.4	-
Northeast Creek			Easement	Bar Harbor			13	
Skillings River			Easement	Hancock			65	
Boat Park		X	Boat	Swans Island		b	2.5	

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = tra-ls
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

Table 32

OTHER PUBLIC AND PRIVATE CONSERVATION COASTAL OPEN SPACE AREAS Eastern W

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
FEDERAL	NPS	Acadia National Pk.	Bar Harbor, Mt Desert, Southwest Harbor, Tremont, Cranberry Isles, Gouldsboro, Swans Island Trenton, Winter Harbor	Hills, headlands, ponds beaches, forests	s,c, sv,h, ns	31,300
	FWS	Craig Brook National Fish Hatchery	Orland			135
	USCG	Great Duck Island	Long Is.Plt.	Lighthouse	r	10
	FWS	Green Lake Fish Hatchery	Ellsworth			129
	USCG	Mount Desert Rock	Offshore	Lighthouse	r	10
STATE	IFW	Barred Island	Deer Isle	Duck nesting	r	5
	IFW	Buck Island	Brooksville	Duck nesting	r	0.5
	DOT	Dorothea L. Dix Rest Area	Hampden	Mixed forest	p	23
	IFW	Grass Ledge	Deer Isle	Duck nesting	r	1
	IFW	Little Eaton Is.	Deer Isle	Duck nesting	r	2
	IFW	Phoebe Island	Stonington	Duck nesting	r	2
	BPL	Public Reserved Lot	T8 SD			640
	IFW	Sloop Island Ledge	Deer Isle	Duck nesting	r	1
	IFW	Spirit Ledge	Isle au Haut	Duck nesting	r	1

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Eastern W

MANAGEMENT AGENCY		SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
STATE	IFW	Thrumcap Island	Brookville	Duck nesting	r	1
MUNICIPAL	City	Brookside Park	Bangor			4
	City	Graham Lake	Ellsworth	2,500' shore		40
	Town	Grant Park	Bar Harbor	±150' beach	s	2
	Town	Hadley's Point Park	Bar Harbor	±150' beach	s	2
	Town	High School Open Space	Bar Harbor			35
	Town	Hockamock Head	Swans Island			50
	Town	Hoet's Mill Pond Area	Stonington			±22
	City	Kenduskeag Park	Bangor		b	51
	Town Leased	Lamoine Beach	Lamoine	940' beach		12.8
	Town	Lapaus Point Beach	Tremont	±500' beach	s	2
	Town	Municipal Beach	Castine	±300' beach	s	
	Town	Municipal Beach	Surry			
	City	Municipal Golf Course	Bangor		g, t	169
	Town	Open Space	Winter Harbor	±400' beach		
	City	Prentiss Woods	Bangor		t	36
	Town	Reservoir Land	Brewer			150
	Town	Richardson Lot	Orrington			105+
	Town	Fine Sand Beach	Swans Island	±250' beach	s	

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Eastern W

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
MUNICIPAL	School	School Forest	Brewer			75
	School	School Forest	Holden	32A.wooded		67
	School	School Forest	Mt. Desert			10
	Town	Seal Harbor Beach	Mt. Desert	±1,000'beach		
	City of Ellsworth	Simmons Pond Area	Hancock	Mixed forest		120
	Town	Stinson Memorial Park	Stonington			
	Town	Town Beach	Franklin	±50' beach		
	City	Town Forest	Bangor	25A.woodland		25
	Town	Town Forest	Brooklin	10A.woodland		30
	Town	Town Forest	Southwest Hbr.	80A.woodland		86
PRIVATE	TNC	Barred Island	Sunset	Shore birds	ns	5
	TNC	Blagdon Preserve	Bar Harbor	Spruce,headland	ns	110
	TNC	Bradbury Island	Deer Isle	Headland	ns	46
	Bangor YMCA	Camp Jorden	Ellsworth		r	127
	TNC	Crockett Cove Woods	Deer Isle	Forest	ns	100
	IFW	Deer Isle & Stonington WMA	Deer Isle, Stonington		r	
	TNC	Dram Island	Sorrento	Spruce	ns	6
	AMC	Echo Lake Camp	Mt. Desert		r	13
	MAS	Echo Lake	Mt. Desert	Mixed forest, lake	ns	8

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Eastern W

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
PRIVATE	TNC	Ketterlinus Preserve	Tremont	Spruce-fir shore	ns	20
	NAS	Little Duck Island	Offshore	Bird nesting	r	367
	TNC	Long Porcupine Island	Gouldsboro	Headland, birds		125
	EGC	Mariners Park	Deer Isle			23
	FON	McGlathery & Little McGlathery Islands	Stonington			105
	MAS	Northeast Creek	Bar Harbor	Freshwater marsh	b,ns	70
	IFW	Orrington Game Sanctuary	Orrington		r	86
	TNC	Round Island	Stonington	Forest, headland	ns	36
	TNC	Sheep Island	Deer Isle	Bird nesting	r, ns	5
	SF	Stanwood Wildlife Sanctuary	Ellsworth		ns,t	28
	TNC	Stave Island Preserve	Gouldsboro	Spruce-fir	ns	132
	TNC	Turtle Island	Winter Harbor	Spruce-fir	ns	140
	TNC	Wreck Island	Stonington	Spruce	ns	70

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = trails
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

MANAGEMENT AGENCY

BPL = Bureau of Public Lands
DOT = Dept. of Transportation
EGC = Evergreen Garden Club
FON = Friends of Nature
FWS = U.S. Fish & Wildlife Service
IFW = Dept. of Inland Fisheries & Wildlife
MAS = Maine Audubon Society
NAS = National Audubon Society
NPS = National Park Service
SF = Stanwood Foundation
TNC = The Nature Conservancy
USCG = U.S. Coast Guard

Table 33

CONSERVATION EASEMENTS

Eastern W

SITE	MUNICIPALITY	RECIPIENT AGENCY	APPROX. ACREAGE	RESTRICTIONS
Bald Island	Deer Isle	ANP	5	no residences now; 1 future residence set back 75'; 1 future dock
Barred Islands, Chain Links	Deer Isle	TNC	14	1 cabin & 1 dock now; 1 future dock & residence to be set back 75'; Chain Lake - forever wild
Bartlett Narrows	Mt. Desert	ANP	6	2 residences now; no more residences
Bass Harbor	Tremont	ANP	2.5	no residences now; 1 future residence
Bean Island	Sorrento	ANP	27	no residences now; 2 future residences set back 100'; 1 future dock
Big Babson Island	Brooklin	ANP	22	no development
Big Coombs Island	Stonington	TNC	13	no development
Big Hay Island	Deer Isle	ANP	4	no development
Black Island	Swans Island	ANP	81	Area 1 - no development; Area II- no more than 1 house per 15 acres
Black Island	Long Island Plantation	ANP	349	no residences now; no more than maximum of 4 residences set back 100'; 1 future pier
Black Island	Long Island Plantation	ANP	1	no structures now; 1 future residence set back 100' and 1 future dock
Black Island	Long Island Plantation	ANP	80	no structures now; no more than total of 2 residences & 2 cabins, 1 dock

CONSERVATION EASEMENTS

Eastern W

SITE	MUNICIPALITY	RECIPIENT AGENCY	APPROX. ACREAGE	RESTRICTIONS
Buckle Island	Stonington	ANP	8	no development
Buckle Island, Duck Island	Swans Island	ANP	25	1 cabin now; 1 additional residence
Butter Island, Barred Island	Deer Isle	ANP	360	no houses now; no more than 5 future structures of any type; must be set back 100'
Carroll Farm	Southwest Hbr.	ANP	80	1 residence now; no more residences
Chatts Island	Brooklin	ANP	5	no development
Clark Cove	Bar Harbor	ANP	43	1 residence now; no more than 2 future houses & 2 docks & pier
East Torry Island	Brooklin	ANP	25	no development
Fernald Point	Southwest Hbr.	ANP	3	1 residence now; no more residences; 1 future pier
Fernald Point	Southwest Hbr.	ANP	3.84	1 residence now; no more residences; 1 future pier
Fernald Point	Southwest Hbr.	ANP	10.15	1 residence now; no more residences; 1 future pier
Fernald Point	Southwest Hbr.	ANP	3	1 residence now; no more residences; 1 future pier
Fernald Point	Southwest Hbr.	ANP	7	1 residence now; no more residences; 1 future pier
Fernald Point	Southwest Hbr.	ANP	3	1 residence now; no more residences; 1 future pier
Gooseberry Island	Stonington	ANP	8	no development

SITE	MUNICIPALITY	RECIPIENT AGENCY	APPROX. ACREAGE	RESTRICTIONS
Great Gotts Island	Tremont	IFW	6,92	1 residence now; no additional residences
Great Gotts Island	Tremont	IFW	14.43	no houses now; 1 future residence with 75' setback
Great Sprucehead Island	Deer Isle	TNC	306	no development
Hardwood Island	Tremont	ANP	205	2 residences now; 1 boathouse & dock; 2 future houses set back 300'
Hat Island	Swans Island	ANP	14	1 future residence; 100' setback & height restriction
Heart Island	Deer Isle	ANP	2	no residences now; 1 future residence with size restrictions
Hog Island	Brooklin	ANP	90	no development
Indian Point	Bar Harbor	ANP	27,7	no residences; 3 future residences set back 75'
Indian Point	Bar Harbor	ANP	15	
Indian Point	Bar Harbor	ANP	46	1 residence now; no more residences
Indian Point	Bar Harbor	ANP	146	2 residences now; no more than 1 residence per 15 acres
Indian Point	Bar Harbor	ANP	15.75	1 residence now; 1 future residence set back 250'
Indian Point	Bar Harbor	ANP	14.5	1 residence now; 1 future house set back 75'

CONSERVATION EASEMENTS

Eastern W

SITE	MUNICIPALITY	RECIPIENT AGENCY	APPROX. ACREAGE	RESTRICTIONS
John's Island	Swans Island	ANP	15	Area I - no development; Area II - no more than 1 residence per 15 acres
Lamoine	Lamoine	IFW	11+	1 residence set back 300' from shore
Little Gott Is.	Tremont	ANP		1 cabin now; 1 future residence
Little Gott Is.	Tremont	ANP	56	2 cabins now ; 1 boathouse now; no more than a total of 4 residences at any one
Little Island	Brooklin	ANP	3	no development
Lopaus Point	Tremont	ANP	7	1 residence now; no more
Lopaus Point	Tremont	ANP	16.5	1 residence now; 2 future houses set back 200'
Moose Island	Tremont	ANP	44	no residences now; 1 future house set back 100'
Northeast Harbor	Mt. Desert	ANP	8.75	2 residences now; 2 additional residences set back 75'
Northwest Cove	Bar Harbor	ANP	57.3	1 residence now; 3 additional residences permitted
Old Point	Lamoine	IFW	120	1 residence & 1 barn now; 3 future residences in specified areas; 300' set back, 1 future pier & 1 small pond

SITE	MUNICIPALITY	RECIPIENT AGENCY	APPROX. ACREAGE	RESTRICTIONS
Opeechee Island	Swans Island	ANP	16	Area I - no development; Area II - no more than 1 residence per 15 acres
Orono Island	Swans Island	ANP	30	no houses now; 1 future house and 1 future dock
Outer Scott Island	Deer Isle	TNC	7	no development
Pond Island	Long I. Plt.	ANP	235	200' strip; no development saltmarsh; no development remainder of island; no more than total of 6 residences
Preble Island	Sorrento	ANP	83	2 cabins now; no more residences
Pretty Marsh	Mt. Desert	ANP	4.8	no residences now & none in the future; 1 future bathhouse
Round Island	Swans Island	ANP	8.5	1 residence now; no more residences
Saddleback Island	Stonington	ANP	49.5	forever wild
Scrag Island	Deer Isle	ANP	4	1 residence, 1 guest house now; 1 future dock
Second Island	Stonington	TNC	2	no residences now; 1 future cabin set back 100'
Shabby Island	Deer Isle	ANP	11	no development
Sheep Island	Deer Isle	ANP	8.6	no development
Shingle Island	Stonington	TNC	10	1 single family residence, 100', 1 dock
Somes Harbor	Mt. Desert	Town	5	

SITE	MUNICIPALITY	RECIPIENT AGENCY	APPROX. ACREAGE	RESTRICTIONS
Somesville	Mt. Desert	ANP	5.4	1 residence now; 1 future residence to be set back 150'; 1 boathouse
Spruce Island	Stonington	ANP	50	no residences now; 5 future residences set back 300'
Spruce Point	Gouldsboro	ANP	78	no development
Sutton Island	Cranberry Isles	ANP	8.69	2 future residences plus docks & floats
Sutton Island	Cranberry Isles	ANP	8.1	1 residence & 1 boathouse now; 1 future residence
Sutton Island	Cranberry Isles	ANP	11.3	1 residence now; 3 future houses & 1 pier
Sutton Island	Cranberry Isles	ANP	28.02	1 residence & 1 pier now; 3 future houses
Sutton Island	Cranberry Isles	ANP	8	1 residence now; 1 future residence & future pier
Sutton Island	Cranberry Isles	ANP	35.07	1 residence & 1 boathouse now; 2 future residences and 1 future boat-house
Sutton Island	Cranberry Isles	ANP	28	1 residence & 1 boathouse now; 1 future residence and 1 pier
Sutton Island	Cranberry Isles	ANP	1.79	no residences now; 1 future residence set back 100'; 1 dock
Sutton Island	Cranberry Isles	ANP	2.05	

CONSERVATION EASEMENTS

Eastern W

SITE	MUNICIPALITY	RECIPIENT AGENCY	APPROX. ACREAGE	RESTRICTIONS
Sutton Island	Cranberry Isles	ANP	1.1	1 house, 1 cabin now; future - 1 swimming pool, 1 greenhouse, 1 dock
Sutton Island	Cranberry Isles	ANP		2 residences now; no additional residences permitted
Swans Island	Swans Island	ANP	72	3 residences now; future residence set back 100' & 1 dock & boathouse
Swans Island	Swans Island	ANP	42.6	no residences now; 1 future residence 200' setback
Swans Island	Swans Island	ANP	367	no residences now; 5 future residences to be set back 100'
Swans Island	Swans Island	ANP	80	1 residence, 1 boathouse & dock now; no more than a total of 3 residences ever
The Hub, Birch I., The Ledges, John Island	Mt. Desert	ANP	1	forever wild
Tunk Lake	T10 SD	IFW	6	1 cabin & 1 dock
Welch Island	Sorrento	TNC	3/8	no development
Western Sister Island	Swans Island	ANP	50	1 residence now; 1 future dock; no more residences
West Torry Island	Brooklin	ANP	15	no development
Bartlett Island	Mt. Desert	Town	2500	

KEY

RECIPIENT AGENCY

IFW - Department of Inland Fisheries & Wildlife
NAS - National Audubon Society
TNC - The Nature Conservancy

Table 34

NEAR-COASTAL INLAND OPEN SPACE AREAS — Eastern W

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
FEDERAL	USAF	Dow Pines	Great Pond Plt.	Forest	s,p,c, t	375
	USFS	Penobscot Exp. Forest	Bradley	Forest	r	4,000
STATE	UM	Fay Hyland Bog	Orono	Bog	ns	350
	BPR	Hermon Pond	Hermon	Beach	s,p,c	24
	UM (Trust)	Hirundo Wildlife Refuge	Old Town	Beach	ns, t	356
	UM	Lagrange Forest	Lagrange	Forest	ns	200
	IFW	Lyle Frost WMA	Eastbrook, Franklin	Freshwater marsh	r, ns	1,813
	BPL	Duck Lake Public Reserved Lands	T4 ND, T41 MD	Lake		21,638
	IFW	Old Farm Pond WMA	Maxfield, Howland		r, ns	600
	BPL	Public Reserved Lots	Great Pond Plt. Osborn T3 ND	Forest Forest Forest		752 960 960
	UM	University Forest	Orono	Forest	ns,t	1,700
MUNICIPAL	Town	Reservoir Land	Dedham	1900A.wooded		1,900
	School	School Forest	Dexter			50
	School	School Forest	Glenburn			10
	School	School Forest	Greenfield	160A. wooded		160
	School	School Forest	Hermon	22A. wooded		90
	School	School Forest	Old Town	57A. wooded		69

NEAR-COASTAL INLAND OPEN SPACE AREAS

Eastern W

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
MUNICIPAL	School	School Forest	Orono	23A. wooded		26
	City	Sewall Park	Old Town		s,p	30
	Town	Town Farm	Aurora	10A. wooded		90
	Town	Town Farm	Bradford	130A. wooded		1,107
	Town	Town Farm	Burlington	1214A. wooded		1,220
	Town	Town Farm	Eddington	18A. wooded		85
	Town	Town Farm	Garland	202A. wooded		237
	Town	Town Farm	Newburgh			385
	Town	Town Farm	Orono	101A. wooded		284
	Town	Town Farm	Plymouth	9A. wooded		10
PRIVATE	TNC	Mullen Woods	Newport	Mixed forest	ns	115

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = trails
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

MANAGEMENT AGENCY

BPL = Bureau of Public Lands
BPR = Bureau of Parks and Recreation
IFW = Dept. of Inland Fisheries & Wildlife
UM = University of Maine
USFS = U.S. Forest Service
TNC = The Nature Conservancy
USAF = U.S. Air Force

Table 35

RECREATION PREFERENCES

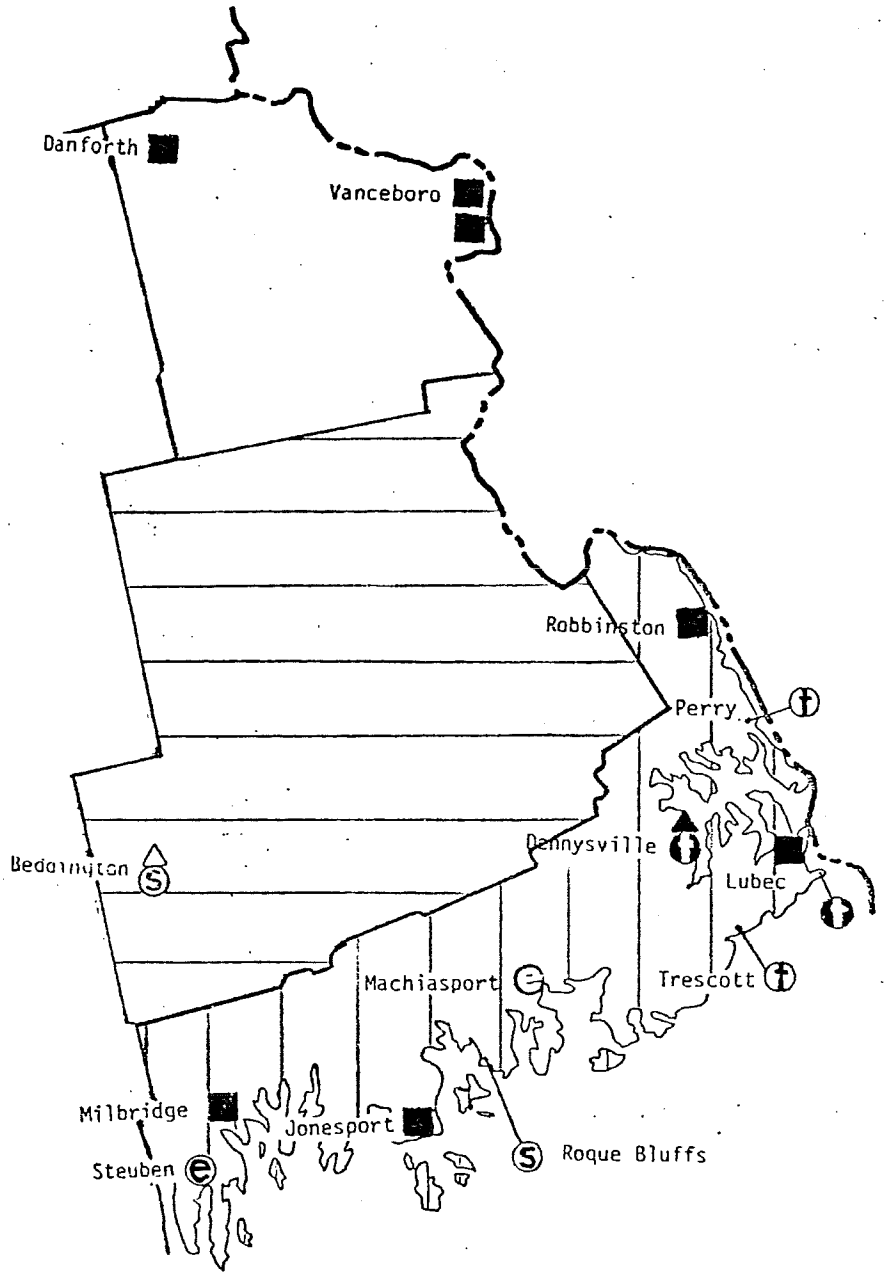
Eastern W

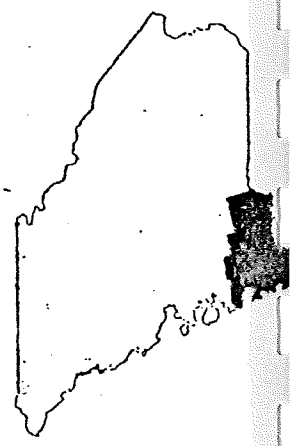
STUDY (YEAR)	Coastal Beaching	Lake Beaching	Coastal Boating	Freshwater Boating	Picnicking	Wild & Scenic Rivers	Historic Sites	Camping	Snowmobiling	Hiking/Back Packing	Bicycling	Horseback Riding	Interpretive	Ski Touring	Snow Skiing	Natural/Wildlife Areas	Sightseeing	Hunting and Fishing
1973	X	X				X	X	X								X	X	
1975	X		X		X		X	X								X	X	
1976		X	X	X	X			X			X					X		
1977	X		X		X		X	X			X			X		X	X	

UNIT EASTERN E

EASTERN E

Population -
Total-29,859
Coastal-22,904





1/77

TYPE OF AREA	DEVELOPED	UNDEVELOPED
Day Use - Swimming/Picnicking	Ⓢ	Ⓢ
Day Use - Trails/Picnicking	ⓕ	ⓕ
Day Use - Educational/Cultural	ⓔ	ⓔ
Camping	△	△
Boat Access	▣	□

Coastal

Near-coastal

SCALE
0 5 10 15 20 25 MILES
0 10 20 30 KILOMETERS

UNIT EASTERN E

Coastal Parks

There is one park in Washington County which is developed for both camping and day use. Cobscook Bay State Park in Edmonds Township is on the bay of "boiling water" as it was called by the Passamaquoddy Indians. The park has been leased from the U.S. Fish and Wildlife Service and is adjacent to the Moosehorn National Wildlife Refuge. The present lease runs out in 2000. It is interesting to note that while camping use has remained relatively stable over the last six years at about 23,000 to 26,000, day use visits have increased steadily reaching an estimated 20,500 in 1977.

There are two day use state parks in this Unit: Quoddy Head and Roque Bluffs. Quoddy Head in Lubec is a 532 acre park with high rock ledges rising from the sea 50 feet or more, and a bog at Carrying Place Cove which has been described as the best raised bog in Maine. The park is currently used for hiking and picnicking, and affords spectacular views of both the famous stripped Quoddy Head lighthouse and the sheer cliffs of Grand Manan Island in the Bay of Fundy.

Roque Bluffs is a new addition to the state park system. For the first time in 1977 it offered formal facilities for visitors using the beach, one of the best in eastern Maine. Much of the 274 acres in the park remains unutilized. Some of the upland could be used for a variety of outdoor recreation activities including perhaps camping.

Along the coast in this Unit, there are two undeveloped parks. A 100 acre parcel at Gleason's Point in Perry consists of open field with good views of Passamaquoddy Bay and a gravel spit extending into the mouth of the Little River. The lot is located just off Rt. 1 with good road access. It could be used as an off-highway picnic site and possibly for camping.

Eastern Head in Trescott Township is a 263 acre parcel with excellent rocky cliffs, a fine sand beach, and forested upland areas.

In addition, the Bureau has a tiny lot at Good's Point in Steuben. As this lot is not of statewide significance, it would best be transferred to another management agency (such as leased to the town) or otherwise disposed of.

Inland Parks

There are no developed inland parks in this Unit, but there is one 338 acre undeveloped area at Pleasant River Lake in Beddington which has excellent sand beaches and would be suitable for swimming, picnicking and perhaps camping.

Visitor Use

Public use of existing State Parks and Memorials in Unit Eastern E totalled 115,946 in 1977 (Table 36). All of this recorded use took place in coastal facilities as there are no developed inland parks in the Unit.

Public and Private Conservation Open Space Lands

The total area of the coastal minor civil divisions in Unit Eastern E is 562,313 acres. Federal open space lands total 13,133 acres with Moosehorn National Wildlife Refuge being the largest single block of public open space in the Unit.

The State holds 4,504 acres, roughly half of which is in wildlife management areas and half in state parks.

Municipally owned open space in the coastal communities totals 1,067 acres. This is 5.6 percent of the total public and private conservation open space.

Private conservation lands total 213 acres. In size, this is a negligible fraction of the land in the Unit.

Taken together the total open space land managed by public or private conservation agencies in Unit Eastern E is approximately 18,917 acres or 3.4 percent of the coastal acreage.

Natural Feature Deficiencies

There appear to be deficiencies in the Unit of the following types of protected natural features: sand dunes, hills, sub-alpine habitats and cobble beaches. Of these, hills and sub-alpine habitats are not significantly available in the coastal portion of the Unit.

Recreation Preferences

The survey of Maine people done for the State Planning Office in 1973 indicated that the top recreation priorities for respondents in the Eastern Maine (Downeast) District were, in decreasing order: coastal beaches and scenic areas, natural areas and inland beaches, campsite areas, wild and scenic rivers, and historic areas.

The 1975 citizen evaluation of public policy indicated that 50% or more of the respondents in the Northern Coastal Area favored spending more for the following coastal projects, in decreasing order: public beaches, historic areas, scenic road turnoffs, coastal highways and wildlife habitats, campsites, picnic areas, marinas and boat ramps.

The results of the 1976 panel surveys conducted by the Social Science Research Institute listed the following as state recreation priorities named by respondents in Eastern Maine (in decreasing order): freshwater beaches, roadside parks/picnic areas, camping areas, boat launches, bike paths, and wilderness camping areas.

Taken together the surveys appear to indicate preferences for campsites and natural areas as well as for coastal beaching, boating, picnicking, sightseeing and historic facilities.

Outstanding Private Natural Features

The predominant natural features of this Unit are longitudinal peninsulas fringed by large near-shore islands between Steuben and Cutler; steep, rocky headlands from Cutler to Lubec facing the open ocean; and the Cobscook Bay complex with its exceptionally high tides. The most important private coastal natural features identified in the Unit include:

- the Roque Island constellation of islands in Englishman Bay with some of the finest sand beaches, forests and headlands of any islands on the Maine coast;

- Great Wass Island in Beals, an island with ancient sphagnum heaths, a unique stand of jack pine, even a small sand dune;

- The Ruins in East Machias, site of colonial defenseworks, Fort Foster, and the spot from where the first naval battle of the American Revolution was launched; offers excellent views of Machiasport as well as up the Machias and East Machias Rivers;

- Howard Cove Beach in Machiasport, perhaps the largest and most scenic cobble beach in Maine;

- Boot Cove/Head in Lubec, an active large cobble beach and geological fissure with caves;

- the shore along Cutler including Western and Ferry Heads, a coast of bold, rocky headlands;

- Pleasant River-Bay area in Harrington, Addison, Columbia Falls, and Columbia, - the most extensive complex of mudflats, salt marshes, and mature spruce-fir forests east of the Kennebec River.

Table 36

STATE PARK AND STATE MEMORIAL ESTIMATED VISITOR USE: 1967 - 1977

Eastern E

Park/Memorial	Type of Use	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1977 Instant Design Capacity
*Cobscook Bay	Day Use	7,685	8,147	10,976	7,788	8,842	10,715	9,117	12,751	15,715	20,296	20,521	126
	Camping	9,109	13,212	16,836	20,435	25,437	25,402	23,830	20,945	26,627	22,684	24,696	500
*Fort O'Brien	Day Use	1,548	2,868	3,486	4,810	6,876	7,208	7,954	4,512	7,918	6,691	5,135	45
*Quoddy Head	Day Use	25,876	36,480	44,828	56,340	57,884	62,040	64,264	59,372	62,852	53,572	65,594	90

*Coastal

Table 37

PUBLIC AND PRIVATE CONSERVATION COASTAL OPEN SPACE LAND

Eastern E
Summary

	ACRES	PERCENT OF COASTAL ACREAGE	% OF TOTAL PUBLIC AND PRIVATE CONSERVATION ACREAGE
COASTAL ACREAGE	562,313	100	--
FEDERAL	13,133	2.3	69.5
STATE (BPR)	4,504 (2,039)	0.8 (0.4)	23.8 (10.8)
MUNICIPAL	1,067	0.2	5.6
PRIVATE CONSERVATION	213	*	1.1
TOTAL	18,917	3.4	100

Table 38

BUREAU OF PARKS & RECREATION COASTAL OWNERSHIP

Eastern E.

SITE	DEVELOPED	UNDEVELOPED	TYPE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES	FEET SALT SHORELINE
Cobscook Bay SP	X		Park	Edmunds Twp.	forest, flats	c,p,t	868	27,200
Quoddy Head SP	X		Park	Lubec	headland, forest	p,s,v, t/c	531.9	19,660
Gleason Point		X	Park	Perry	open field, bluff	p,b, c	100	6,500
Good's Point		X	Park	Steuben			0.3	--
Eastern Head		X	Park	Trescott Twp	headland, sand beach	p,t,c, sv	263	15,900
Roque Bluffs	X		Park	Roque Bluffs	beach	s/p,c, t	273.6	7,200
Fort O'Brien	X		Memorial	Machiasport	fort ruins	h	2	357
Jonesport Marina	X		Boat	Jonesport		b	1.8	546
Lubec Town Landing	X		Boat	Lubec		b	1.7	280
Narraguagus River	X		Boat	Milbridge		b	5	1,050
St. Croix River	X		Boat	Calais		b	7.5	
Foster Island			Easement	Harrington			400±	

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = tra-ls
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

Table 39

OTHER PUBLIC AND PRIVATE CONSERVATION

COASTAL OPEN SPACE AREAS

Eastern E

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
FEDERAL	USCG	Libby Island	Machiasport	Lighthouse	r	45
	USCG	Little River Island	Cutler	Lighthouse	r	15
	USCG	Machias Seal Island	Cutler	Bird nesting	r	25
	FWS	Moosehorn N.W.R.	Calais, Edmunds	Mixed forest	ns,t	11,035
	FWS	Petit Manan N.W.R.	Steuben	Bird nesting	r,ns	1,999
	NPS	St.Croix Nat'l Mon.	Calais	Historic Site	h,pc	14
STATE	IFW	Back Bay WMA	Milbridge	Salt Marsh	r,ns	86
	IFW	Englishman R,WMA	Roque Bluffs	Tidal Marsh	r,ns	120
	IFW	Great Works WMA	Edmunds Twp.	Fresh Marsh	r,ns	640
	IFW	Green Island	Steuben	Bird nesting	r	11
	IFW	Jonesboro WMA	Jonesboro	Softwoods	r,ns	713
	IFW	Orange River WMA	Whiting	Flowage rights		588
	IFW	Pennamaquam WMA	Pembroke	Fresh Marsh	r,ns	293
	IFW	Pleasant R. Salt Marsh	Columbia Falls	Salt marsh	r,ns	24
MUNICIPAL	Town	Fred Grant Mill	Cherryfield			8
	Town	McCellan Park	Milbridge			7
	City	Nashs Lake	Calais			640
	Town	Reversing Falls	Pembroke	Tides	t,p,c	50
	Town	Round Island	Machiasport	Salmon Run	pc	5

OTHER PUBLIC AND PRIVATE CONSERVATION COASTAL OPEN SPACE AREAS

Eastern E

MANAGEMENT AGENCY		SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
MUNICIPAL	School	School Forest	Calais			50.5
	School	School Forest	Jonesport			10
	School	School Forest	Machias	10A. wooded		13
	School	School Forest	Pembroke	60A. wooded		70
	School	School Forest	Robinston	3A. wooded		10
	Town	Town Forest	Calais	28A. wooded		153
	Town	Town Forest	Marshfield	50A. wooded		50
PRIVATE	TNC	Flint Island	Harrington	Fossil	h, ns	134
	IFW	Stone Island	Machiasport	Spruce, headland	ns	60
	IFW	Sillow Water Game Sanctuary	Perry		r	
	TNC	Wolfe Preserve	Perry	Open field	ns,sv	5
	NAS	Little Hardwood Island	Jonesport			5
	NAS	Inner & Outer Man Islands	Jonesport			9

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = trails
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

MANAGEMENT AGENCY

FWS = U.S. Fish & Wildlife Service
IFW = Dept. of Inland Fisheries & Wildlife
TNC = The Nature Conservancy
USCG = U.S. Coast Guard

Table 40

CONSERVATION EASEMENTS

Eastern E

SITE	MUNICIPALITY	RECIPIENT AGENCY	APPROX. ACREAGE	RESTRICTIONS
Cutler Headland	Cutler	IFW	77	no development
Hog Island	Harrington	TNC	10	no development
Mink Island	Harrington	TNC	1	no development
Narrows Island	Harrington	TNC	50	1 house, 2 cabins, 1 dock now; no additional residences permitted
Perry	Perry	TNC	50	1 house, 1 cabin, 2 camps now; no additional residences permitted
Raspberry Island	Harrington	TNC	50	no development
Trafton Island	Harrington	IFW	100	2 cabins now; no more than a total of 6 residences permitted, 75' setback; 1 future pier, 1 boathouse
Steel Harbor Island	Jonesport	NAS	422	no development

KEY

RECIPIENT AGENCY

IFW - Department of Inland Fisheries & Wildlife
NAS - National Audubon Society
TNC - The Nature Conservancy

Table 41

NEAR-COASTAL INLAND OPEN SPACE AREAS

Eastern E

	MANAGEMENT AGENCY	SITE	MUNICIPALITY	OUTSTANDING FEATURE	RECREATION USE OR POTENTIAL	ACRES
FEDERAL	FWS	Moosehorn NWR	Baring, Meddybemps, Charlotte	Forest		11,630
STATE	IFW	Canal Point	Baring		r	25
	BPL	Great Heath	T18 MD	Heath	ns, b	3,277
	IFW	Machias River Area			r	35
	BPR	Pleasant River Lake	Beddington	Sand beach	s,c,b	338
	BPL	Public Reserved Lots	Grand Lake Stream Plt.	Forest		960
			T42 MD	Forest		1,485
			T18 MD	Forest		64
			T24 MD	Forest		320
			T6 MD	Forest		960
			No. 14 Plt.	Forest		960
			No. 21 Plt.	Forest		960
	BPL	Rocky Lake	T18 ED	Forest & lake		9,754
	IFW	St. Croix River	Baileyville			25
PRIVATE	IFW	Moosehorn Game Sanctuary	Calais			

KEY

RECREATION USE OR POTENTIAL

s = swimming
c = camping
p = picnicking
b = boating/canoeing
t = trails
h = historic
sv = scenic vista
r = public use restricted or limited
g = golf
pc = primitive camping
ns = nature study
sk = skiing/ice skating

MANAGEMENT AGENCY

BPR = Bureau of Parks and Recreation
BPL = Bureau of Public Lands
IFW = Dept. of Inland Fisheries & Wildlife
FWS = U.S. Fish & Wildlife Service

Table 42

RECREATION PREFERENCES

Eastern E

STUDY (YEAR)	Coastal Beaching	Lake Beaching	Coastal Boating	Freshwater Boating	Picnicking	Wild & Scenic Rivers	Historic Sites	Camping	Snowmobiling	Hiking/Back Packing	Bicycling	Horseback Ridding	Interpretive	Ski Touring	Snow Skiing	Natural/Wildlife Areas	Sightseeing	Hunting and Fishing
1973	X	X				X	X	X								X	X	
1975	X		X		X		X	X								X	X	
1976		X	X	X	X			X			X					X		
1977	X		X		X		X	X			X			X		X	X	

APPENDIX B

MAINE'S COASTAL ISLANDS:

RECREATION AND CONSERVATION

by

James A. St. Pierre
Hugh MacArthur

July 1978

Disclaimer

The opinions, conclusions, or recommendations expressed in this report are those of the authors and do not necessarily reflect the views of the Bureau of Parks and Recreation, Maine Department of Conservation.

Correct Citation

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CONTENTS

TABLES

1.0 INTRODUCTION

Islands possess of themselves a magnetism not vouchsafed to any spot of the mainland. In cutting loose from the continent a feeling of freedom is at once experienced that comes spontaneously, and abides no longer than you remain an islander.

--Samuel A. Drake, Nooks and Corners of the New England Coast

1.0 INTRODUCTION

In September 1976, the Maine Bureau of Parks and Recreation, in cooperation with the State Planning Office, initiated a study to identify sites of outstanding significance in Maine's coastal area. Sites were sought which would be suitable for one or more forms of outdoor recreation and which could be considered worthy of protection because of the importance of their natural features.

Early in the project it became clear that due to their many unique characteristics, Maine's coastal islands would be best treated apart from mainland sites.

This document is a working paper summarizing efforts undertaken during 1977-78 to outline island recreation and conservation considerations from a state level perspective. It is background information for a larger report, The Maine Coast: Recreation and Open Space, prepared for the Department of Conservation and the Committee on Coastal Development and Conservation.

Although in recent years there has been a great deal of development, recreation and conservation activity relating to the islands along the Maine coast, there has been no systematic attempt to review the pressures for island use, the need for wildlife habitat protection and the potential for future island resource conservation for recreation. Recent studies have dealt in part with the need for habitat protection. This report focuses on island conservation for recreation.

The objectives of the report are;

- to compile, update, and coordinate information on recreation/conservation activities and potential activities on Maine coastal islands;
- to make this information available to various public and private agencies concerned with the use of coastal islands; and
- to offer suggestions, based on data gathered, for the management of coastal islands for protection and recreation by public and private conservation agencies.

Many people assisted in supplying information for the document. A sincere thank you to each of them. In particular, the cooperation of the Massachusetts Audubon Society Environmental Intern Program is acknowledged.

Where the mountainous ridges and the valleys lay at an angle to the coast, the sea ran far up between the hills and occupied the valleys. This was the origin of the deeply indented and exceedingly irregular coast that is characteristic of much of Maine. The long narrow estuaries of the Kennebec, the Sheepscot, the Damariscotta and many other rivers of the sea, are the drowned valleys in which grass and trees grew in a geologic yesterday. The rocky, forested ridges between them probably looked much as they do today. Offshore, chains of islands jut out obliquely into the sea, one beyond another--half submerged ridges of the former land mass.

--Rachel Carson, The Edge of the Sea

2.0 PHYSIOGRAPHY

2.1 Island Defined

Precisely defining what constitutes an island is not an easy task. Depending on the tide and whom one asks, there are roughly 3000 islands along the coast of Maine.

In terms of conservation, an island must be considered part of the ecosystem within which it exists because its integrity depends upon the quality of the ecosystem. A significant change in the ecosystem can result in a significant change in the island. An island can be described as a natural land formation protruding above surface water level at normal high tide and the surrounding waters and lands with which the land is irrevocably linked. Commonly, islands occur in groups which form a single ecosystem.

For recreation purposes, too, it is essential to recognize individual islands as part of larger systems which include the intertidal lands, submerged lands and coastal waters as well as nearby insular and mainland areas. Inasmuch as the coastal waters in Maine are a recreational playground, the islands help define the limits of the playground.

For practical purposes, it is more convenient to speak of islands as discrete units. For the purposes of this discussion, then, islands shall be treated as individual parcels of real property circumscribed by the normal limit of the tides.

2.2 Geography

The islands, and more broadly, the entire coastal region of Maine, lie within the seaboard lowland section of New England, which extends northeast from Massachusetts and New Hampshire (Fenneman 1938). This lowland section is part of a great series of peneplains which form much of the general landscape of New England. The elevations along the Maine coast average near 100 feet (304m) (Toppan 1935), but this uniformity is broken by monadnocks, isolated hills and mountains. These monadnocks include the Camden Hills, Blue Hill, and the hills of the Norumbaga range. The highest peak on the North American east coast is Cadillac Mountain (1,532 feet/466m) on Mt. Desert Island.

The coast of Maine is a submerged coastline, inundated after the last glacial period. The islands are the tops of submerged ridges and mountains which made up the former dry land. The Maine Coastal Island Registry, a comprehensive accounting of all tidal islands and high water ledges, presently lists nearly 3,050 islands. The Registry is continually being corrected and updated. None of the other contiguous forty-eight states have as many rocky islands.

Maine's islands are rugged, vary greatly in size and shape, and have a long history of human activity. Most of the islands lie within a band parallelling the coast ten miles (16 kilometers) from shore (see Figure 1).

Starting at the southwestern end of the coast and proceeding northeast to Cape Elizabeth, the coast shows a greatly curving outline, composed of long sand beaches and marshy estuaries. Northeast of Cape Elizabeth the coastline abruptly changes to a highly indented, rocky, and irregular shore which continues to the Canadian border. The occurrence of the islands directly corresponds to this change in shape of the Maine coast. There are few islands to be found west of Cape Elizabeth; the great majority lie in and near the many bays and estuaries east of Portland.

York County contains 131 coastal islands. These are concentrated in four areas: Kittery, Cape Porpoise, Biddeford Pool, and in the Isles of Shoals. The Isles are rocky, almost treeless, islands which lie approximately 7.5 miles (12 km) from Kittery. Four of the major islands in the Isles of Shoals are in the State of Maine; the remainder lie within New Hampshire. The islands near Kittery, Cape Porpoise, and Biddeford are small, wooded and open islands lying close to shore.

Cumberland County includes a total of 459 islands along its coast. Almost all of these are found within Casco Bay. The most notable exception is Richmond Island, just south of Cape Elizabeth, which was the site of a very early European settlement. The islands of Casco Bay vary greatly in size, shape and cover. The largest islands are Great Chebeague, Great Diamond, Peaks, Cushing, Long, Bailey, and Orrs. All of these are built up with summer and year-round residences. The rest are, for the most part, undeveloped or only lightly developed.

The 478 islands of Sagadahoc and Lincoln Counties are scattered among the long necks and estuaries around the outlets of the Kennebec, Sheepscot and Damariscotta Rivers, and in the western half of Muscongus Bay. There are several large islands in the Kennebec and Sheepscot areas which comprise whole towns. These are the islands of Georgetown, Southport, Arrowsic, and Westport (see Table 1). They are surrounded by many smaller islands in the channels and estuaries enclosing them.

Knox and Waldo Counties encompass the eastern half of Muscongus Bay and the north and western parts of Penobscot Bay. Six hundred forty-nine islands are found in these two counties. The major islands are Friendship Island in Muscongus Bay and North Haven, Vinalhaven, Islesboro, and Isle au Haut in Penobscot Bay. Friendship Island is one of the ten or so islands in eastern Muscongus Bay of substantial size. Vinalhaven and North Haven form the nucleus for a large number of islands and ledges in lower Penobscot Bay. These islands are mostly forested with rocky shores. Villages and isolated residences have been established on many of these islands.

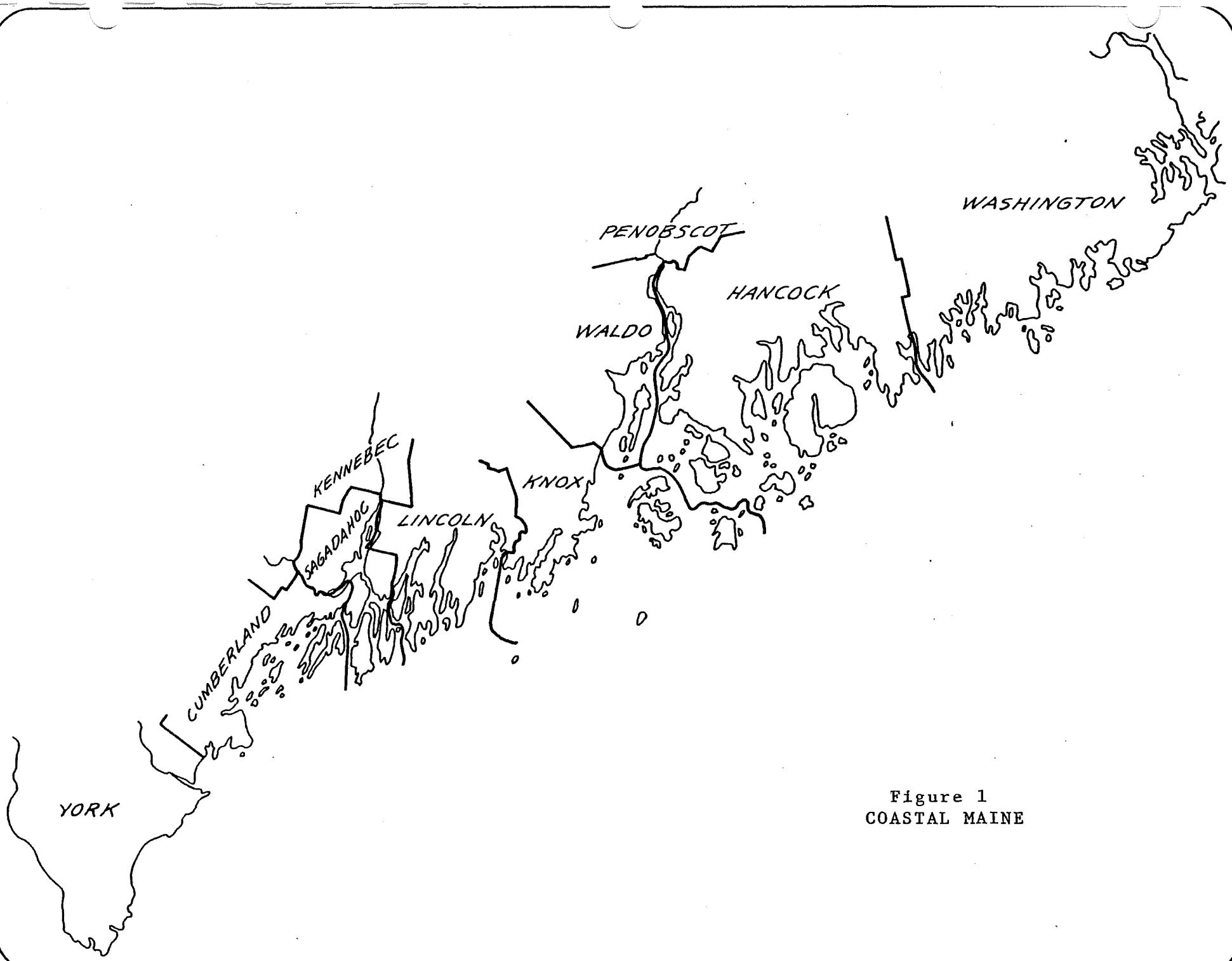

Figure 1
COASTAL MAINE

Table 1

ISLANDS OVER THREE SQUARE MILES IN AREA

Island	Municipality	Area Sq. Mi.	Area (Sq.Km)
Mount Desert Island	Bar Harbor, Mount Desert, Southwest Harbor, Tremont	107.8	(280.3)
Deer Isle	Deer Isle, Stonington	27.7	(72.0)
Vinalhaven	Vinalhaven	20.7	(53.8)
Georgetown	Georgetown	17.3	(45.0)
Islesboro	Islesboro	11.2	(29.1)
Swan's	Swan's Island	10.8	(28.1)
North Haven	North Haven	10.5	(27.3)
Isle au Haut	Isle au Haut	10.3	(26.8)
Sebascodegan	Harpswell	9.2	(23.9)
Westport	Westport	8.6	(22.4)
Arrowsic	Arrowsic	7.9	(20.5)
Long	Blue Hill	7.0	(18.2)
Verona	Verona	6.2	(16.1)
Southport	Southport	4.5	(11.7)
Great Wass	Beals	4.2	(10.9)
Little Deer	Deer Isle	3.7	(9.6)
Bartlett	Mt. Desert	3.4	(9.8)
Eastport (Moose)	Eastport	3.3	(8.6)

SOURCE: Attwood, S. The Length and Breadth of Maine, 1946(corrected).

The largest number of islands on the coast of a single county is found in Hancock County. Six hundred seventy-one islands occupy eastern Penobscot Bay, Blue Hill Bay, and Frenchman Bay. Deer Isle dominates eastern Penobscot Bay with a cluster of many small, wooded and barren islands to the south in Merchant Row and to the west a group of high, forested islands. Swan's Island, in Jericho Bay forms the center of another cluster, including two large islands, Long Island and Marshall Island. Another Long Island is found in upper Blue Hill Bay. Blue Hill Bay is separated from Frenchman Bay by Mount Desert Island, which, with its high hills, is a landmark for miles. Several island groups surround Mount Desert Island, including the Cranberry Islands to the south, the Great Gott's Island group and Bartlett Island in Blue Hill Bay, and the hummocky Porcupine Islands in Frenchman Bay.

The Washington County coast is dotted with 654 islands. Two major circular island groups are found midway between Schoodic Point and Eastport. One of these near Jonesport is comprised of Beals, Great Wass, and Head Harbor Islands. The other, in Englishman Bay to the east, includes Roque Island and Great Spruce Island. Further downeast are the islands of Cobscook Bay. These islands, tucked away among the many coves of the bay, are almost totally undeveloped.

2.3 Geology

The shoreline of Maine exhibits the characteristics of a recently submerged coast. The islands and coastal heights were once the hilltops and ridges which formed the uplands above a wide coastal plain. This plain extended well out into what is now the Gulf of Maine, terminating in the area of the George's Banks. Relatively few effects of shoreline processes such as wave carved cliffs are in evidence on the Maine coast. The topography of the estuaries indicates that these were once river valleys.

The strike of the bedrock underlying the coast is the primary cause of the deeply indented shoreline east of Casco Bay. These rocks were weathered parallel to the axis of folding, which lies at right angles to the present shore, and so the bays follow the valleys which were formed along this axis. To the west of Casco Bay, the strike runs parallel to the shore, thus the coastline is much smoother. The bedrock of the Maine coast was formed primarily through igneous, volcanic, and metamorphic processes during the Poleozoic period. The rocks of this region at various times have been compressed, uplifted, and eroded (Fenneman 1938).

Approximately 20,000 years ago the coast was buried beneath ice formed during the last of the four glaciations which covered Maine in the Pleistocene period. The ice had spread generally south over New England from Labrador, but veered to the southeast over Maine due to the prevailing slope, reaching its furthest extent at the George's Banks in the Gulf of Maine (Borns 1974). As the ice sheet covered New England, it pushed the land surface down several hundred feet below its present level. This was well below sea level, although the sea level was lower than today because much of the ocean's

waters were held in ice. The glaciers receded, reaching the present Maine coastline approximately 13,000 years ago. The land rebounded with the removal of the weight of the ice. At this time the rate of ice melt exceeded the rate of rebound and the sea inundated the land as the ice receded. During this time marine sediments were deposited over the earlier glacial deposits. The sea level then dropped as the rebound rate exceeded the melt rate and the receding ocean in places reworked exposed glacial deposits (Griffith 1976).

Since approximately 8,500 years ago the sea level has been rising. It is still rising, although at a much faster rate than before. Unlike other types of islands on the Atlantic seaboard, such as the Virginia barrier islands or the semitropical Florida keys, the islands of coastal Maine generally have solid substrate which must rigidly bear the full force of the sea and the wind. Sandy barrier islands are dynamic; they change form and position as tides and currents shift. By contrast, Maine's rocky islands have changed little since they were formed during the retreat of the last great glaciers.

The effect of the glaciation can be seen in the rounding off of hill and mountain tops, the scouring away of surface layers, the striations or grooves worn in rocks, and the abundance of moraines and other forms of glacial deposits (Fenneman 1938).

The low, rounded aspects of many of the coastal islands can be attributed to the wearing effects of the ice. The glaciation is also responsible for the half-teardrop profile of some islands, which gradually slope from the north to an abrupt dropoff on the south. This is due to the advance of the ice wearing and smoothing the northern portion of an island and "plucking" chunks of rock from the southern end (Jorgensen 1971).

The sand and gravel beaches found along the Maine coast are primarily the result of deposition of glacial material. The cobble beaches found on some islands are commonly formed from glacial tills, the fine sediments being removed by wave action. High cliffs have been carved in some softer or more fractured rocks and glacial sediments.

2.4 Climate

Changeability is a major quality which characterizes Maine's climate. There are large ranges of temperature, both daily and annually; there are differences in the same seasons in different years; and there is considerable diversity from place to place within Maine. Maine lies in the north temperate region of the prevailing westerlies and, due to the interactions of three large air masses - cold, dry, subarctic air; warm, moist air moving overland from the Gulf of Mexico; and cool, damp North Atlantic air - Maine has a greater proportion of storm systems passing through its area then most other parts of the United States. The combination of these differing air masses brings about a change from fair to cloudy or stormy an average of two times per week (Lautzenheiser 1972).

The climate of much of the Maine coast is classified as "perhumid", the most humid category (Thornthwaite 1948). The perhumid climate is unusual in the United States, only occurring on the Northwest coast, on the western slopes of the Cascades and the Sierras, and in small "islands" at high elevations in the Rockies and Appalachians.

The proximity of the ocean's moderating influence makes coastal areas cooler in summer and warmer in winter than the interior portions of the state. Average coastal temperatures in the summer are close to 65°F (18°C), a little cooler than the average of close to seventy degrees (21°C) for the southern and central interior. Average winter temperatures are around 20°F (-6°C) along the coast, compared with 10°F (-12°C) in the north and 17°F (-8°C) in the southern interior (Forbes 1946). The mean annual temperature is close to 45°F, above the averages of 40°F (4°C) and 44°F (7°C) for the northern and southern interior respectively (Lautzenheiser 1972). Gardeners enjoy a longer growing season on the coast of 140-160 frost free days than those inland where the season varies from 100-140 days.

Coastal precipitation is evenly distributed throughout the year, as in the rest of Maine. The cool ocean air somewhat suppresses the formation of thunderstorms in summer and the winter "northeasters" increase the amount of precipitation, causing a reversal in the pattern of more precipitation in summer than in winter which occurs in the interior sections. Around 4" (10 cm) falls each month in winter and close to 3" (7.5 cm) each month in summer for an average of over 44" (110 cm) per year (compared with 40" (100 cm) for interior areas). Precipitation in winter is mainly either rain or wet snow (Lautzenheiser 1972).

The winter winds are primarily from the north or northwest and in summer the prevailing winds are from the south and southwest. Continental air masses, which have stagnated over the Atlantic in spring, move onshore with the east wind, cooling the coastal areas in spring and early summer (Forbes 1946).

Another cooling agent in summer is fog, which reaches maximum occurrence during July and August. The number of days with fog increases downeast and decreases sharply towards bayheads and in the southwestern coastal area (Forbes 1946). "Nor'easters" (i.e. storms blowing from the northeast) often bring heavy winter rain or snow to the coast. These can be accompanied by ice storms which coat trees, roads, and all exposed surfaces with a sheet of ice. During a nor'easter tides can be abnormally high, driven by strong winds as happened during a severe storm which struck the Maine coast on February 6-7, 1978.

2.5 Hydrology

2.51 Salt Water - The Maine coastal islands are washed by waters from contrasting origins. Oceanic waters flow into the Gulf of Maine from the Nova Scotia Current, an extension of the Labrador Current, which brings cold, arctic water as it moves southwest down the Nova Scotia coast. The surface waters flow in a counterclockwise direction, northeast up the western Nova Scotia coast to

southwest along the Maine coast. Gulf waters are fed in the spring and the fall by the Nova Scotia Current and all year long by cold, abyssal water moving in over the Georges Banks (Hunter 1976).

The salty influence of waters from the open ocean are modified by fresh water inflow from the many rivers and streams emptying into the Gulf. The St. John, St. Croix, Penobscot, Kennebec, Androscoggin, and Saco Rivers contribute most of this freshwater. The average yearly volume of water from these rivers is less than one per cent of the total volume of water in the Gulf of Maine. However, this inflow is enough to measurably freshen the waters along the coast. In May, the season of maximum river flow, a strip of freshened water develops off of the New England coast. The inshore water becomes consistent with the Gulf waters again in December, the season of minimum river flow. The effect of freshwater inflow varies widely from season to season and from year to year, according to the amount of runoff from inland areas (Meade 1971).

In summer, land breezes tend to push the warm surface water away from the coast, allowing colder, deep water to well up. This deep water brings with it nutrients which are important to the marine communities along the coast (Hunter 1976).

Temperatures in the surface water along the coast can vary from 32.9°F (0.5°C) in March to 54.1°F (12.3°C) in August (Hunter 1976) although it can get significantly warmer in shallow, sheltered inlets and bays. In addition to seasonal changes in water temperature, long term changes are occurring over the years. These cyclical fluctuations have a significant affect on the abundance and distribution of many species of marine organisms which inhabit coastal waters.

2.52 Fresh Water - The sole source of freshwater on the islands is precipitation in the form of rain or snow. Approximately 20% of the precipitation which falls on the islands infiltrates the ground, slowly migrating down through soil pore spaces and fractures in the rock. This water forms a saturated zone below the land surface, the upper limit of which is called the water table (Caswell in Griffith 1976).

The elevation of the ground water table is higher than mean sea level and mimics the topography of the land. Its elevation depends upon a balance between recharge from precipitation and discharge through springs, seeps, and wells. This elevation may vary seasonally in response to differing amounts of precipitation. The water table is above the ocean surface, therefore, the flow of water is always towards the ocean (Caswell in Griffith 1976)

Fresh water is less dense than salt and tends to float upon it. The body of freshwater associated with an island is much greater below sea level. Its shape in cross section resembles a lens. The division between fresh water and salt water is called the freshwater-saltwater interface. Because freshwater flows seaward, this interface is located such that freshwater is discharged below the point

of contact between the ocean surface and the land. This interface varies with the tides, the water bearing medium, and changes in the water table. It is not a line, but grades from salt water to fresh water (Caswell 1974).

2.6 Soils

Coastal island soils are the result of soil forming processes which have been going on for approximately 13,000 years, since the retreat of ice during the last glaciation. The ice scoured away existing soil, leaving exposed bedrock, glacial till, and glacial outwash sediments which, with marine deposits laid down after the ice melted, are the parent material of our present day island soils.

This parent material has been affected over the years by the cool, moist climate of the coast, and by the spruce-fir forest which still covers many of the coastal islands. The interactions of the climate, time, topography and vegetation acting upon parent materials have formed the soils of coastal islands.

The major soil forming process on the coastal islands is podzolization. Podzolization occurs when organic material (in this case from predominantly spruce-fir forest), iron, and aluminum are leached from the upper mineral layer of the soil and deposited in a lower mineral layer. The resulting soils are classified as Spodosols, soils in which this leaching process has formed a red to reddish black layer. Soils classified as Inceptisols, are soils in which the process has not been intensive enough for red to reddish black layers to form. Spodosols and Inceptisols are generally acid and infertile. The island soils are usually shallow, and are composed of various mixtures of gravel, sand, silt, and clay. Where marine deposits are present silt and clay predominate. There is usually a surface layer of organic material present; the thickness of this organic layer increases on islands to the northeast.

In some very poorly drained areas on the islands, layers of saturated organic material have accumulated and bog soils have formed. Bog soils are classified as Histosols.

Rock outcrop, areas in which more than 90% of the surface is exposed bedrock, also occur on many islands, especially along the shorelines and at higher elevations (Gary T. Hedstrom and Kenneth J. LaFlamme, personal communication).

2.7 Flora

Islands stand at the interface of two contrasting environments, marine and terrestrial. The influence of the marine environment is strong upon the terrestrial ecosystems, modifying the climate, cooling and moistening the summers and warming the winters. Roughly 1700 of the islands on the Maine coast are forested. The cool maritime climate of the coast has been a major factor in the development of what appears to be the dominant natural forest type on many of Maine's coastal islands, the spruce-fir forest. Blowdowns on the islands are a natural occurrence and happen with almost predictable regularity.

Where the forest floor is densely shaded and the soil highly acidic, only a few sparsely distributed species of herbaceous plants and shrubs are found. Chief among these are Canada mayflower, starflower, bunchberry and low-sweet blueberry (Davis 1966). More abundant than the herbaceous plants are mosses and lichens, which cover large parts of the forest floor.

The cool, moist climate also allows species typical of far northern areas, such as baked-appleberry, roseroot, black crowberry and Labrador tea to become established. The occurrence of these northern species tends to increase as one moves northeast along the coast (Norton 1913).

Coastal islands are often covered, partially or completely by vegetation composed of herbaceous and/or low, woody growth. This barren cover or coastal scrub can be caused by several factors. Probably the major factor limiting the growth of terrestrial shore plants is salt. Wind driven salt sinks into wind caused abrasions in branches and stems, causing the death of branches on the windward side (Boyce 1954). Colonial seabird colonies can also have a significant effect on island vegetation. The phosphate and ammonia rich environment caused by large congregations of auks, terns, puffins and other seabirds screens out many, if not all woody plants from some offshore islands (Hodgdon and Pike 1969). Land birds and semi-terrestrial birds can have an expanding effect on the flora, bringing new species to islands through seeds transported in their digestive systems.

Because of the influence of humans in clearing land for agriculture or timber, there often occur open fields or areas in some stage of reversion to forest. These areas are characterized by changing vegetation, in various stages of succession. Grasses and members of the composite family, asters, goldenrods and daisies may be common, as well as shrubs such as alders, cherries, and meadowsweet, young birch, aspen, maple, and spruce. On the Isle of Springs farming ceased in 1889. Since that time mixed softwood and hardwood forests have replaced the open agricultural land. Many of the coastal islands in Maine have been cleared and used for sheep grazing. Where this has occurred, biotic communities can be drastically altered. On Damariscove Island, for instance, trees have still not returned since the island was abandoned as a sheep range (Fefer 1978).

Bogs are found on many of the islands where drainage is blocked and organic matter can accumulate in the resulting standing water. The extreme moisture and high acidity of bog areas supports the growth of a distinctive flora which includes unusual plants such as sundews, pitcher plants, and several species of orchids. Common bog plants are sedges, sphagnum moss, ericaceous shrubs such as bog laurel and leather leaf, black spruce, and tamarack.

2.8 Fauna

Terrestrial island fauna has three characteristics which separates it from the mainland fauna: (1) fewer species, (2) those species present are often extremely abundant, and (3) species often occupy

a broader range of habitat. The limited diversity and size of habitats, and the barrier to colonization presented by exposure of salt water are the main factors limiting species diversity on islands (Crowell 1975). On the larger islands, such as Isle au Haut, several species of fishes and herpetiles may occur and a diluted version of the mainland mammalian fauna is usually present. White tailed deer, otter, mink, snowshoe hare, starnosed mole have been found on this island. Conspicuously absent from Isle au Haut are such species as porcupine, chipmunk, and beaver (Manville 1964). The meadow mole is common on the small, as well as the large islands and seems to do well on the smaller islands with their relative absence of predators (Crowell 1975).

Species on islands are often more likely to find themselves free of normal predators than on the mainland. One form of rabbit on Seguin Island, for example, became overabundant in the absence of any predation. It eventually disappeared due to unknown causes. Damariscove Island became drastically overpopulated by muskrats in the presence of only very small numbers of mink predators. Beginning in the early 1970's the muskrats had to be controlled by trapping (Fefer 1978).

Many of the coastal islands are of great importance for a number of migratory and resident bird species. Islands are preferred to the mainland as they offer safer nesting sites due to the absence of terrestrial mammalian predators and human disturbance during the nesting season. About 300 of the islands in Maine are nesting sites for seabirds such as herring gulls, great blackbacked gulls, eider ducks, arctic and roseate terns, puffins, black guillemots, double-crested cormorants and Leach's storm petrels. Several islands support significant heron rookeries, osprey nests, and endangered bald eagle aeries. The Maine coastal islands are the southern breeding limit for several of these species, including common eiders, Leach's storm petrels, black guillemots, Atlantic puffins and razorbill auks. The coastal islands are the northern breeding limit for black-crowned night herons. The larger islands support an abundance of nonseabirds as well.

2.9 Shore Environments

Island shores represent the zone of transition from marine to terrestrial environments. The most common shoreline type found on the islands is the rocky shore. This shore is either exposed to the force of constant wave action, or sheltered by promontories or lee exposure. The large rise and fall of the tides cause a wide range of exposure to sun and air. This is the main factor in the formation of a definite zonation of life forms which characterizes the rocky shore. This zonation can be thought of as a continuum from fully marine to fully terrestrial organisms. In the area above high tide, reached by the salt spray from incoming breakers, are found several salt tolerant terrestrial species, including seaside goldenrod, cord grass, seaside plantain, orach, and glasswort (Edey 1972; Johnson & Skutch 1920). At its lower end, this area overlaps with the first of the intertidal zones, the black zone (Carson 1955). This zone is inhabited primarily by blue-green algae, protected from the drying affects of sun and wind by gelatinous sheaths, and by lichens. It is covered by water only during

the highest spring tides.

Rough periwinkles are the most common organism of the next zone, the periwinkle zone. This zone is covered during the fortnightly spring tides and provides an abundant crop of algae, upon which the periwinkles feed. Below the mean high tide level is the barnacle zone. Here rock or acorn barnacles are firmly attached to withstand the strong wave action which occurs here. These filter feeders are preyed upon by dog whelks, another common inhabitant of the barnacle zone.

Between the barnacle zone and the mean tide level is the rockweed zone. Fucus species and Ascophyllum species are the dominant plants here, covering the rocks with a slippery mat when the tide is out. These brown algae provide an important, sheltering microenvironment for common periwinkles, smooth periwinkles, crabs and limpets. The blue mussel is also an important inhabitant of this zone, which is probably the most varied of the rocky tidal zones. Just below the low tide level is the Irish moss zone, exposed only at the lowest mean tides. Dulse, sea lettuce and encrusting, pink, corralline algae are secured to the rocks, while among them move crabs, sea urchins, and starfish. In the subtidal zone are found the kelps or Laminarians, which forms thick forests of long, slender blades. This zone is never exposed, enabling fully marine organisms, such as jellyfish and marine worms to live among the kelps. Starfish, sea urchins and crabs are also found in this zone.

The coastal islands provide habitat for a variety of rare, threatened and endangered species including the northern bald eagle, American peregrine falcon, Arctic peregrine falcon, Atlantic puffin, heron, razorbill auk, harbor seal and gray seal. Casco Bay, for instance, is the southern peripherial range of gray seals in Maine. The population of gray seals is estimated to be only about 125 animals, though archeological evidence suggests they were more common in the pre-Colonial era (LaBastille 1973). Harbor seals are much more common. Population estimates range from 5,000 to 6,000 (Richardson 1975).

Coastal islands often form the boundaries of embayment estuaries. These semi-enclosed bodies of coastal water have free connection with the sea. Within the estuary sea water is measurably diluted by fresh water inflow from streams and rivers. The interactions of fresh and salt water are the major factors affecting the complex ecology of estuaries. Temperature, salinity, and water volume vary daily, monthly, seasonally, and over the years with changes in tidal influence, fresh water inflow, sea level, etc.

Because of these variations, estuaries act as nutrient traps. The detritus from the surrounding communities of salt marsh, eel grass, and benthic algae along with phytoplankton growing in estuarine waters form the basis of a complex food web. The detritus and plankton feeders such as molluscs, crustaceans, and annelid worms are preyed upon by larger arthropods, fish, and birds.

Estuaries are usually very productive areas, more so than marine or fresh water ecosystems. They are nurseries for many species of marine fish such as striped bass and herring, and are feeding areas for anadramous fish such as Atlantic salmon and smelts, passing through on their way from the ocean to spawn in fresh water. A number of these species are very important to Maine's commercial fisheries. Winter congregations of aquatic birds are common in the ice free, sheltered waters of estuaries. Diving species forage easily in the relatively shallow waters and shorebirds find ready access to the intertidal areas.

Sandy beaches are present on some island shorelines. Although they present a barren appearance to beach walkers, beneath the surface life flourishes. Most of this life remains below the surface but many species come out at high tide or at night to feed. As on rocky shores, the flora and fauna show zonation in response to tide levels. However, this zonation is much less distinct than that on rocky shores. On the surface of a sand beach can be found shorebirds such as dowitchers and sandpipers. When high tide covers the sand surface flounders come in and stir the sand in search of food. Under the sand, polychaete worms, bivalve molluses, crustaceans, and sand dollars burrow. Many of these creatures come to the surface at high tide to feed. Most of the categories of marine invertebrates inhabit the subsurface sand beach, mostly in small forms. The only plant species present are diatoms and blue-green algae, which show as a greenish film on the sand when they bloom (Hunter 1976).

Cobble and gravel beaches form a relatively common island shoreline, the most extensive examples being found in Penobscot Bay and Cobscook Bay. Except for a single one time survey undertaken in 1978, no information is available as to what species are present in what quantities on cobble and gravel beaches in Maine. Historically these beaches have been regarded as harsh environments, all but devoid of life, due to the abrasive quality of the sediment. It is known, however, that cobble and gravel beaches have both a higher diversity and higher mean numbers of individuals in a given area than sand beaches. To a large degree, the amount of wave action a beach is subject to determines species composition and count. Many beaches in Maine are lower energy environments than cobble and gravel beaches elsewhere. In areas of dampened wave action, larger cobbles may support macroalgae communities similar to those found on rocky shores, though less diverse. Maine's beaches have low productivity so animals must depend on imported nutrients (Larson and Daggett 1978).

Mud flats sometimes make up the island shoreline in sheltered areas where the lack of turbulent waters allows fine particles of silt and clay to be deposited. The surface of a mud flat is exposed to the same environmental extremes and instability as a sand beach and shows the same paucity of species. Eeelgrass, once present in abundance, is now making a comeback in mud flat areas. Where it occurs, it is an important source of nutrient rich detritus for the many invertebrates, such as molluses, polychaete worms, and crustaceans burrowing in the mud.

Salt marshes occur along the protected estuarine shores of a few islands. Salt marshes are formed when a mud flat is invaded by salt marsh cord grass. Detritus and sediments accumulate around the roots of these plants allowing them to grow and spread. Only a few species are adapted to the tide stressed environment of a salt marsh. Salt marsh cord grass dominates the intertidal zone; above the high tide line salt meadow cord grass occurs in patches along with spike grass. The extremely high productivity of a salt marsh contributes significant amounts of organic matter to the adjacent estuary. This organic matter in turn is decomposed, eventually being ingested by crustaceans and molluses, and becoming part of the estuary food web. Many species of birds and mammals forage and find shelter on salt marshes, although few reside there permanently.

In short, the development of island ecosystems is probably most peculiarly affected by size and distance from the mainland. Generally the smaller the size of the island, the more restricted the diversity of possible habitats. Island isolation presents barriers to colonization from the mainland or other islands. Studies of island biogeography in other areas have shown that only in exceptional cases do islands have the diversity of species which would be found on the mainland.

On the other hand, Maine coastal islands tend to be well defined, defensible ecological units. They also have a large ratio of land surface area to water-land interface length. The ecotone of this interface adds markedly to the diversity of island flora and fauna. Besides those species found exclusively on land or in the sea are a variety of species which depend on both the terrestrial and marine environments. For these reasons, those coastal islands in Maine which are still natural and have not been permanently disturbed ought to be considered high priority for protection from an ecological point of view.

3.0 HISTORY

An island is a community living in circumstances which intensify all aspects of life-including the difficulty of surviving at all.

--James Shaw Grant, in the National Trust for Scotland Guide

3.0 HISTORY

3.1 Prehistory

As the great ice sheets which covered the coast of Maine during the Pleistocene period receded approximately 10,000 years ago, allowing the return of vegetation and animal life, the first known human inhabitants of Maine appeared. These were the Paleo-Indians, a largely nomadic, hunter-gatherer people who subsisted primarily on the meat of giant bison, mammoth, giant beaver, reindeer, and other, smaller mammals more familiar to us today. Although no sites have yet been found, the Paleos may have wandered the coast of Maine, and in their travels may have visited some of the coastal islands in their search for good hunting. As the climate tempered, around 8,000 years ago, the Paleo-Indians disappeared.

The Paleos were followed, around 6,000 years ago, by the Early Archaic Indians. These people were less nomadic than the Paleos; they lived in semi-permanent campsites which changed with the seasons. They hunted, fished, and gathered the edible plants which were part of the more varied flora which was now growing in Maine (Ferriss 1976).

The Red Paint Indians flourished approximately 5,000 years ago. They were called the Red Paints because of the red ocher (a form of iron oxide used as a pigment) found on many of their gravesites. Between twenty-five and fifty Red Paint gravesites are known in the state and have yielded implements which indicate that these people were the most technologically advanced of all the Indians who lived in Maine at various times. The Red Paints were very familiar with the coast, using large dugout canoes to paddle offshore to fish for cod and swordfish, and to hunt seals, porpoises and small whales.

During a brief period, from 3,700 to 3,000 years ago, the Indians of the Susquehanna Tradition occupied Maine. Although their time in Maine was relatively short, it is thought that these Indians were the first here to develop the birch bark canoe. A 1,000 year gap followed during which there were apparently few human inhabitants in Maine.

The first Maine Indians to make and use ceramics comprised the Ceramic group, who appeared close to 2,000 years ago. In addition to producing vessels, the Ceramics were early makers of human sculpture. These Indians were the first to maintain stable communities. Faunal evidence from several archeological sites indicates that, up until the arrival of European explorers in the 1500's, these Indians were occupying the coast in late winter and early spring, exploiting marine resources such as seabirds and seals in addition to land food sources. By 1550 European explorers observed and recorded the activities of Indians who spent the late spring and summer on the coast, clamming, hunting, and fishing, moving inland in the fall to live on the rivers and streams until the

following spring. This change in coastal living from late winter - early spring to late spring-summer-early fall may have been due to one or more of three factors: (1) a climatic change, (2) the spread of agriculture to Maine Indians, or (3) the increasing contact with Europeans for trade (Bourque 1973).

These seasonal coastal dwellers made extensive use of the islands, leaving many large shell middens, or piles of shells which remained from the quantitites of shellfish consumed. There are many pre-historic archaeological sites on the islands, as yet unearthed, which may tell much more about these early inhabitants (Ferriss 1976). Maine's present Indian tribes, among them the Passamaquoddy and the Penobscots, are descendents of the Ceramic group. As recently as fifty years ago Indians traveled to coastal islands, such as Isle au Haut, to gather sweetgrass for basketmaking and to sell their baskets (Pratt 1976).

Other peoples, prior to the explorers who came from Western Europe, in the late 15th Century, may have visited and lived on Maine's coast. On Manana Island, near Monhegan, runes, or inscriptions forming letters, have been found etched into the flat face of a boulder. Runes have also been found on numerous other island and coastal mainland sites. The runes are indecipherable and have not been attributed to any of the aboriginal peoples or historical European occupants of the coast (John Briggs, personal communication).

3.2 European Exploration and Settlement

It is known that the Norsemen, sailing from Greenland and Scandinavia, explored the eastern coast of North America close to 1,000 years ago. The Norseman Biarne, seeking to land on Greenland, instead came upon a thickly forested coast. He was followed by Leif Ericson, who is thought to have sailed past Labrador and Nova Scotia to a pleasing land he and his followers called "Vineland the Good". It may have been upon the islands along the coast of Maine that Ericson planted a settlement - one which was abandoned and re-established twice before being left for good (Elkins 1924).

In 1498 Sebastian Cabot, the first of the European explorers to come looking for the fruitful lands of the New World, sailed the Maine coast under the British flag. Corte-Real of Portugal followed two years later. Twenty-five years passed before Verrazano, sailing for the King of France, explored the Maine coast. As early as 1526 Gomez was claiming for Spain land along the Penobscot River, which he named the Rio de Gomez. The Penobscot was again sailed thirty years later by the Frenchman Thevet. In 1602 Bartholomew Gosnold landed on the Isles of Shoals. The next year Martin Pring, with the "Discoverer" and the "Speedwell" sailed up the Penobscot River, past an island group he named the Fox Islands (North Haven and Vinalhaven) (Elkins 1924; Varney 1886).

A band of 79 French settlers under the leadership of the nobleman, Sieur de Monts, came to the mouth of the St. Croix River in 1604, intent upon establishing a colony. Because of its sheltered harbor,

fertility, and ease of defense, they chose St. Croix Island for their settlement. After a flourishing summer and fall, a hard winter, during which 35 of the colonists died, put an end to their settlement. The following spring, when ships arrived with provisions from France, Sieur de Monts had them all taken to Nova Scotia. During that summer of settlement, Samuel de Champlain, who had accompanied Sieur de Monts, explored west along the coast. On the return trip a leak forced them to land near a high and barren-looking island which Champlain named "L' Isle des Monts Deserts" (Elkins 1924).

Even at this early time the French and the English were keeping an eye upon each other. In 1605 George Waymouth in the "Archangel" came to Maine to explore the coast and watch the French for King James. He landed on Monhegan where he obtained wood and water before sailing up the St. George River. His explorations are notable for the many friendly contacts he made with the Indians of this region. However, his kidnapping of five Indians whom he hoped to convert to Christianity, tarnished those good relations.

Among other short lived colonies at this time were the Popham Colony at Sabino in 1607 and the Jesuit colony at Saint Sauveur on "L'Isle des Monts Deserts" or Mount Desert Island. A missionary expedition sailed from France for the Penobscot River in 1613. They became lost in the fog off of Grand Manan and the first land they could make was Mount Desert Island. There, because of the richness of the soil, good harbor, and the friendly persuasion of the Indians and one of the priests accompanying the voyage, Father Baird, they decided to stay and settle. Within a year the colony was wiped out by an English ship commissioned by King James to oust the French. Eight of the settlers were killed, 13 were taken to Jamestown and 15 were released to return to Nova Scotia.

By the early 1600s fishing and trading vessels were well acquainted with the Maine coast, finding abundant fish as well as opportunities to trade for furs with the Indians. The early fisheries during this period were excellent; each summer many ships were sent to the Maine coast from Europe. In 1622 thirty boats were counted anchored at Damariscove Island. The intrepid adventurer John Smith landed at Monhegan in 1614, fishing for whales and looking for copper, but "fell back on fish and fur". Smith encouraged his men that fishing, too, could be a lucrative business saying, "Let not the word fishe distaste you, for it can afford as good gold as the mines of Guiana with less hazard and more certainity and felicity " (Elkins 1924).

Fishing accounts for most of the early European settlements on the Maine islands. Damariscove Island and Monhegan both had seasonal fishing settlements on them as early as 1610. Many other islands were used for provision stops, shelters in stormy weather and as bases to conduct trade with the Indians. However, permanent settlements were soon to be established. Stratton's Island and Richmond Island (near presentday Cape Elizabeth) were settled from c. 1620 and c. 1626 on, respectively (John Briggs, personal communication).

Richmond Island in the mid 1600's was the site of a prosperous colony, as were many other islands during this period. Once the investment of a well-to-do Englishman, the formal settlement was established in 1632 as a fishing and trading station. The trade with the Indians was poor so its main business was to send fish, dried and salted, to England. Receiving such goods as "Malaga sacke, pease, oyles, beefe, musketts, all riggen for three boats" cloth and clothing, other food, and seeds from England and the Virginia colonies, the settlement sent back thousands of pounds of cod, haddock and pollack. Bread was baked using wheat flour from England and native corn meal. Saws, knives, adzes, and hammers brought from England were used to build and repair the buildings, boats and docks essential to the fishing. Cows, pigs, horses and other animals provided the colonists with milk, meat and power to farm the land (Baxter 1884).

The pattern of settlement along the Maine coast hinged greatly on the patents and grants made in the early days of the colonies by England and France. Land was often granted through powerful compainies or councils which derived their authority from the rulers of each country. The rights of the aboriginal inhabitants had little relevance to the makers of these grants.

In 1620 the Great Charter of New England was signed. This Charter granted all the North American continent between latitude 40° North and 48° North to the Plymouth Council of England. Sir Ferdinando Gorges and John Mason in 1622 received a patent from the Plymouth Council for all the land between the Merrimac and Kennebec Rivers, extending to the headwaters of each river and sixty miles inland from the coast, including all the islands within five leagues of shore. Much of the early settlement of Maine can be traced back to grants made by Gorges. Prior to 1635 the Plymouth Council, due at least in part to lack of accurate geographical information on the Maine coast, made many conflicting grants of land. Eventually, in 1635, Gorges came to hold a patent for that part of the original grant which lay between the Piscataqua and the Kennebec Rivers. In 1692 the Province of Maine, as it was then known, was made a part of Massachusetts. However, the conflicts over national titles to land lasted throughout the colonial period, and have even continued to recent times (Simmons 1914).

The conflicts over land ownership along the Maine coast had much to do with the political climate in Europe at the time. These disputes were closely tied to the struggles between and within England, France, and Spain as they maneuvered for world trade and influence.

The French and Indian Wars between the English and French had an especially devastating effect on the coast of Maine. Localized hostilities over trade and territory had occurred since the raid of the British ship "Treasure" on the Jesuit Colony at Saint Sauveur. Full war broke out in 1675 with the attack on Saco by the Indians and French. Many settlers removed to the islands for protection, where they often chose one or two of the strongest houses to fortify with pallisades and rifle loopholes. The British colonists also

built several small forts on the islands, the first of many fortifications buildt along the coast. However, these defense efforts did not prevent the destruction or abandonment of almost every island settlement during this time. The wars were a period of great hardship and fear for many coastal settlements, which did not fully ease until 1763, after the capture of Quebec and the Peace of Paris ended the wars (Elkins 1924; Rich 1962; Simpson 1960).

With the threat of war removed, life on the islands, as well as the rest of the coast, again prospered. Corn was the first island crop to be exported; many other crops were grown for subsistence. Sheep were raised for wool and meat on many islands, and formed an important commercial resource. Most farmers were hunted and fished as well. It was common for a farming family to build and sail their own boat on fishing and trading voyages. Fish was the commercial mainstay of the islands. Salted and dried fish were exported to the West Indies where they were traded for sugar, molasses, rum, tobacco, and spices and to Europe where they were exchanged for tools and household goods.

Shipbuilding, of course, accompanied the fisheries and many island settlements had their boatyards where the native pine and oak was fashioned into seaworthy vessels. The King of England laid a heavy hand on the shipbuilders by claiming and marking with the "King's Broad Arrow" all of the straight and true pines over two feet thick one foot from the ground for masts to equip his navy. The independent islanders had other uses for these trees, the lumber often going to step the masts and supply the spars and planking of their own boats. Lumbering itself was an important activity, with shingles, siding, and large quantities of cooperage stock coming from the seemingly limitless forests. Vinalhaven was a center of this lumbering activity. The fine timber for the construction of boats and buildings was gone from the islands by 1812. But the cutting of cordwood, used to heat the houses of Boston in the 1700's, as well as wood for cooperage stock and lime slaking remained significant uses of the island's forests (Rich 1962; John Briggs, personal communication).

The active trade in fish, lumber, corn, lime, and furs along the coast brought about the establishment of a familiar island structure, the lighthouse. The use of Maine's islands as navigational aids predates the American Revolution. The islands themselves were used as landfalls by early European explorers, fishers, and traders. Islands like Monhegan, Mount Desert, and the Isles of Shoals were often landmarks which indicated a ship's position after the long Atlantic crossing. One of the first lighthouses on the Maine coast was built on Seguin Island in 1797. Another early lighthouse was erected on Matinicus Rock in 1827. The Lighthouse Service, established in 1791, was an important part of island life for over a century and a half.

War again intervened from 1775 to 1785 with the eruption of the American Revolution. During the war the Maine coast was constantly raided by the British and their Indian allies. The British found it essential to keep the booming ports and shipyards of Maine under close wraps, which took much effort away from the

rest of their wartime involvement.

The movements of the earth, moon, and sun played an interesting part in bringing about a spirit of cooperation between the two warring parties in the Revolutionary War. In 1780 scientists from the University at Cambridge brought telescopes and other astronomical equipment to Long Island (Islesboro) which was then under the rule of the British garrison at Castine. These scientists had been granted permission by the British commander to come and observe a total solar eclipse which was to occur over this part of the East coast. They set up their instruments on the land of a local farmer, who was quite happy at this diversion from wartime concerns, made their observations of the eclipse in the short time allotted them and departed, leaving this story as an example of the recognition by two nations at war that the cause of scientific inquiry can at times transcend the differences which separate them (Farrow 1893).

3.3 After the Revolution

After the Revolutionary War the traditional island activities continued: farming, fishing, ship and boat building, trade, and lumbering. Southport, Verona, and Vinalhaven were centers for shipbuilding and Vinalhaven also was an important lumbering center. The Maine coast experienced a population expansion mostly from immigration which more than doubled the population between 1790 and 1810 (Rich 1967).

In the process of organizing a new nation, it became a matter of concern to the newly formed states just how much land they held title to. In 1784 and 1785, the Commonwealth of Massachusetts had the coast and lands adjoining the principal rivers from Cobscook Bay to the Penobscot River surveyed to ascertain her title in these lands. This, the first survey to include Maine's coastal islands, found "360 islands, being all of the islands between Passamaquoddy Bay and Penobscot Bay" including the Fox Islands. Another motive for this survey was found in the advertised sale, in 1785, of the lands in this area owned by the Commonwealth, including the islands (Simmons 1914).

War loomed again when, in 1807, President Jefferson signed the Embargo Act, which prohibited all trade with other nations. This Act, which was intended to ease the harassment of U.S. Ships by the British, created quite substantial smuggling activities at Eastport. On dark nights much illegal merchandise was rowed from Moose Island into Canada (Elkins 1924). By 1812 the interference with American sea trade - the impressment of sailors, the confiscation of ships and cargo - became too much for the U.S., which then declared war on Great Britain. One of the most well known naval battles of the War, the fight between the British ship "Boxer" and the American vessel "Enterprise", occurred off the shores of Monhegan, where it was watched with great excitment by the island dwellers. The British occupied the Maine coast as far west as the Penobscot River before they were finally defeated and the safety of U.S. shipping was assured (Rich 1962).

The ill feelings of the people of the Province of Maine toward the Commonwealth of Massachusetts because of their neglect before, and lack of protection during, the War of 1812 led to the Secession of Maine from the Commonwealth in 1816. As part of the Act of Separation, carried out in 1820, the public lands in Maine previously owned by the Commonwealth of Massachusetts were divided equally between the Commonwealth and the newly formed State of Maine. In 1822, this agreement was extended specifically to the islands along the Maine coast. Before the separation, 150 islands had already been sold by the Commonwealth. Additionally, many of the major groups such as the Fox Islands and Mount Desert had gone into private hands through the early grants of Gorges and others. In 1822, one half of the islands not yet conveyed by Massachusetts went to Maine and one half went to Massachusetts. Financial difficulties for both states made them eager to realize a profit from these islands. In the following years, ending in 1853 when the few remaining islands were conveyed to Maine, Massachusetts sold many islands, including Monhegan. Between 1820 and 1876, however, Maine sold few islands (Simmons 1914).

In those years of early statehood, shipbuilding reached its peak. Almost every coastal mainland and island town had its ship or boatyard which produced craft of beautiful design and workmanship for Maine, Atlantic coast, and overseas owners. Important shipbuilding communities developed on the islands of Southport, Vinalhaven, and Verona. Maine led the world in shipbuilding. Maine schooners, Down Easters and clipper ships were known in ports from Liverpool to Hong Kong. An extensive trade developed with the southern states, centering on cotton. Lumber, ice, lime, and granite were among the cargoes carried by these ships, which sailed the Atlantic coast as well as the great trade routes around the Horn to San Francisco and the Orient, and east to Europe, the Mediterranean, and Africa (Rich 1962).

The demand for high quality building and paving stones gave rise to the granite industry which began with the first cargo of granite quarried and shipped from Vinalhaven in 1829 (Rich 1962). This industry drew its life blood from the immense deposits of granite found on many of the coastal islands. Stonington and the rest of Deer Isle were important centers of quarrying, as was Vinalhaven. There were major quarries on Hurricane Island in Penobscot Bay, Pleasant Island, Dick's Island in the Penobscot River, Swan's Island, Mount Desert Island, and the Muscle Ridge Islands in Muscongus Bay (Bureau of Industrial and Labor Statistics of Maine 1902). The quarries flourished from 1835 to 1915, when changes in architecture to the use of concrete and steel caused its demise (John Briggs, personal communication; Gross 1977).

By 1812 lumbering along the Maine coast was seriously declining, most of the big trees having been cut from the islands. As the loggers moved inland up the rivers to exploit the northern woods, sheep raising helped to fill the economic gap left by the declining timber industry. Many islands were used for grazing from 1815 to 1860, the wool and mutton going to clothe and feed the growing Eastern population.

Life on the islands in those days was probably much like it had been in colonial times. A sensitive look at the daily lives of an island family during this time is portrayed in the story of John Gilley, an island fisherman and farmer, by Charles Eliot. The Gilley family made their living both from the land and the sea. They kept oxen, cattle, cows, sheep, hogs, and chickens, and raised potatoes, hay, and vegetables for their own use. They made their own shoes and made clothes from the wool supplied by their sheep. The butter and eggs from the livestock gave them a small cash income as did the feathers from ducks and seabirds hunted by John and his brothers. Before marrying, John sailed and captained several small coasting schooners carrying paying stones, and occasionally dried fish, to Boston. When he became settled on his farm he continued to fish, selling the dried and salted, or smoked fish (Eliot 1940).

Lobstering became an important part of this fishing trade in the early 1800's. In the mid 1800's canneries were established on many islands for processing lobsters. Lobster smacks sailed from Boston and New York to pick up the abundant catch taken from island waters. Other boats from Boston were also reaching the islands in the years just prior to the Civil War. Steamships were bringing passengers and freight along the coast, stopping at various ports from Portland to Machias.

The advent of good overland transportation took away from the importance of coastal waterways. The post roads, built to connect the inland watersheds in the early 1800's, and the railroads, which reached as far as Bangor in 1855, took the islands somewhat out of the mainstream. The decline of shipbuilding which began just before the Civil War also took its toll on island economies (John Briggs, personal communication; Farrow 1893).

3.4 Post Civil War

The Civil War completed the decline of shipbuilding along the Maine coast. Throughout the war, Union shipping was harassed. Many Maine ships were captured or burned by Confederate privateers. Before the War, forts had been erected - Fort Gorges on Hog Island Ledge in Portland Harbor among them - to protect the ports, but these could have little effect on attacks occurring on the high seas. Damariscove Island was the only site on the coast of Maine actually landed on by Confederate forces. These forces stopped here before they sailed into Portland Harbor in a captured Southport boat, where they seized and burned a federal revenue cutter (Rich 1962).

Islesboro, Mount Desert Island, and other major islands had frequent steamship service in the period following the Civil War. Among the passengers coming by steamship to the coast were the first summer visitors to the Maine islands. Painters and artists had been coming to the coast beginning in the 1830s. In 1844 the famous landscape painter, Thomas Cole, came to Mount Desert Island and subsequently spread the word to other artists who then flocked there. Following the artists, and possibly attracted by their portrayals of the Maine coast, came the "rusticators" or summer people.

Appledore Island, among the Isles of Shoals, was one of the original resorts in Maine. The Casco Bay islands, Cushings, Peaks, Long, Little and Great Diamond among them, soon became popular resorts and summer colonies. The Ottawa House, on Cushings Island, was one of the first "grand hotels" built along the coast. Squirrel Island and the Isles of Springs attracted wealthy businessmen to the Boothbay Harbor area who bought the islands and developed hotels and cottages on them. Vacationers brought by the Bangor and Boston Steamship Company helped stimulate the building of hotels and summer residences in the Penobscot Bay area. Since the 1890's, artists have been attracted to the spectacular headlands of Monhegan. Vinalhaven, Northhaven, Deer Isle, Islesboro, and Eagle Island were among the many islands which have hosted concentrations of summer people since the nineteenth century (Briggs 1976; Simpson 1960).

The great increase in resorts and summer residences began in the 1870's, and Mount Desert Island was in the thick of it. From 1867, when the first hotel and the first summer home were built, through the 1880's and 90's when the Rockefellers, Morgans, and Vanderbilts were putting their fortunes into their "cottages", the accommodations for summer visitors grew by leaps and bounds. At the turn of the century Mount Desert Island was the site of the first major park effort in Maine. The 6,000 acres acquired through a private trust in 1913 formed the basis for present day Acadia National Park (Briggs 1967).

On Mount Desert, perhaps more than any other island, substantial changes occurred in the economic and social structure as a result of the influx of summer residents. There was increased year round employment for ship and boat builders, carpenters, road builders, caretakers, dressmakers, and mechanics. In the summer, gardeners, boatmen, waitresses, waiters and cooks were needed. New markets appeared for handcrafts, fish, and farm produce. These new opportunities helped to take up the slack from the decline in fishing, lumbering, shipbuilding and trade. Due in part to the prominent politicians and industrialists who summered on the Maine coast, the state remained in the nation's eye. The outside influence broadened the outlook of the coastal natives and no doubt their traditional values had an effect on the well-to-do who took their vacations here.

Another change occurring was the rise in coastal land values. With islands in increasing demand for resorts and summer places, their value went up. As a result, the State of Maine soon became aware that all the islands it owned, previously thought to be of little worth, were now, in many cases, prime real estate. The 1875 Annual Report of the Maine Land Agent summarized the situation:

> Among the very numerous islands in the ocean and bays which skirt the shores of Maine, many are still the property of the State, but exactly which is not known. No full schedules have ever been made of them, though plans of them exist among the documents donated to the State by Massachusetts. During the past year progress has been made in ascertaining

> the state of the title to these islands, but the difficulty of the task and very great number of them makes the work a slow one. Frequent applications are made for the purchase of one or another, but no sales have been ventured in the present state of the records. The perfecting of these schedules with proper entries of the character, position, and other necessary information respecting the property, forms an important duty yet to be performed.

Auctions were held in 1876 and 1877 in which seventy-seven islands were sold for a total of approximately $1,300. Islands were sold for as little as 25 cents and most went for a few dollars. This was hardly enough to pay for the surveys to ascertain state title to the islands which preceded the auctions. By 1882 the State had changed its mind, recognizing that the value of islands was increasing due to resort and second home development. In 1908, the Governor and Executive Council decided to keep the State's remaining islands and in 1913 the Legislature passed a law to retain for public use those State islands not yet conveyed (Simmons 1914).

3.5 Twentieth Century

The traditional occupations of fishing, ship and boat building, and farming continued into the twentieth century, although significant changes occurred in the way in which these activities were pursued. Diesel and gasoline engines brought the offshore fisheries into much easier reach, while electronic navigational gear made the trips an island fisherman took safer. Different species became important as shrimp and herring joined lobster and cod as significant commercial species. Many fish canneries were located on the Maine islands in the 1920's, though most of them are gone, now.

The advent of fiberglass and the demand for pleasure boats has changed the methods of construction and design practiced in island boatyards. World War I and II gave a big boost to Maine boatyards and shipyards, including those of the islands. The demand for vessels of all kinds for the war effort substantially increased the productivity of island boatyards. This boom has since decreased, however, boatyards still remain a part of island life.

The war years also brought renewed military activity on the islands, particularly in Casco Bay. Extensive observation and personnel facilities were developed on Jewell Island, for instance. Nearby Little Chebeague Island was used for recreation and other purposes. At the same time, observation towers were built on Gerrish Island in Kittery and Bailey Island in Harpswell.

Farming since the turn of the century has been primarily to supply households with produce and hay for livestock. Sheep have been pastured in quantities on the islands at various times in the last seventy-eight years. As of 1974, there were sizeable herds on suc. islands as York Island, off of Isle au Haut (Pratt 1974). After

the turn of the century, the expansion of the paper industry has once again made lumbering a profitable industry on the islands. The forests on many islands were cut for pulpwood until the 1970's.

The nature of summer visitors to the islands has changed also. Day trippers of all income levels, coming to the islands by ferry and in their own boats, have largely replaced the wealthy rusticators of the late 1800's. Now, many islands are visited for one or two days, often by private boaters who come to moor near or camp on the islands. Acadia National Park attracts over three million visitors annually to Mount Desert Island, many of whom stay in public and private campgrounds and the numerous motels on the island.

In recent years island life has continued to be a balancing of the hardships brought by the inaccessibility, exposure, and lack of human contact islanders experience, with the independence and itimacy they feel and the beauty which surrounds them. Ferry systems, such as those which service North Haven, Vinalhaven, Islesboro, Long Island, the Casco Bay Islands have helped to ease the isolation of island communities. The mail boats which reach some islands, including Isle au Haut, Matinicus, Monhegan and the Cranberry Islands off of Mount Desert Island also maintain contact with the mainland for food, supplies, and visits.

Close to the turn of the century the Friendship sloop Hope began voyages for the Maine Seacoast Missionary Society. The Society was founded in 1905 to bring ministers to the islands and other isolated parts of the coast. This work is now carried on by the Sunbeam, a diesel powered craft which has been a familiar sight among the islands. Its services include use as an icebreaker, emergency vessel, to distribute clothing, and to bring medical clinics to island communities. Among its particular benefactors have been, at least until recently, the many remote stations of the Lighthouse Service and U.S. Coast Guard. In the period beginning in the early sixties many of the lighthouses have become automated, ending an era when lighthouse tending was a way of life for many island families.

The advent of diesel and gasoline powered boats made the islands more accessible, but it also meant that the islands no longer held as great an advantage over the mainland in being closer to the fisheries. Many island families moved to the mainland to enjoy the benefits of electricity, closeness to shopping areas and schools, and other support functions. Population on many of the remote islands has decreased. Between 1870 and 1970 average population decline in the larger, permanent island communities in the midcoast area was over fifty percent (Haskell 1975). As these families move, schools have been closed. Most of the remaining island children board with mainland families that they still might attend school.

Bridges, such as the Jonesport-Beals Bridge built in 1958, have brought some islands closer to the mainland, replacing the old car ferries and passenger dories. These changes are seen with some mixed feelings by the island dwellers, however enough of the old ways

and natural beauties of the islands persist to keep some natives and draw new people to take on a unique way of life,

One result of the decline of intensive human activities on the islands is that, in some respects, they are less disturbed than at any time in the past 200 years or so. With the end of quarrying, clearcutting, heavy grazing and egg gathering many of the islands have reverted to a natural condition incompatible with heavy island use. Many island owners and users today are sensitive to the fagilities of island ecosystems. The notion of stewardship appears to be gaining broadening acceptance. In short, the most pressing island use pressures may be from the growing numbers of visitors more than the intensity of use.

Landing on a sea island, even a familiar one, is like arriving in another world. The experience is always an exciting one, even when the island lies so close to shore that the mainland is visible on the horizon. No matter how you get there, whether by sea or by air, the moment you set foot on island soil you know you have arrived at a special place.

--N.J. Berril and M. Berril,
The Life of Sea Islands

4.0 USE PRESSURES

Quantifying the use of Maine's coastal islands is no simple task. Few data are available which directly indicate use, particularly recreational use. On the other hand, a variety of indicators, such as organized and unorganized use and real estate values, can be used to suggest the kinds and amounts of use being made of the islands in recent times.

4.1 Organized Use

4.11 Programs - Use of coastal islands in Maine under the sponsorship of organized programs has been growing in recent years. Since 1970 at least ten new programs have been started. In many ways these programs are quite diverse. They range from photography training sessions to environmental education courses, from leisurely vacation cruises to highly strenuous survival programs. Some programs have as few as nine participants; others have hundreds each season. Use covers nearly the entire coast, but is most concentrated in the Penobscot Bay region. If there is a common thread to each of the programs, it is that in every case care and protection of the natural coastal environment is of paramount concern. For conservation of the islands is in the interest of all of the organizations making use of them. Table 2 is a synopsis of the programs making use of coastal islands in Maine for recreational and environmental education purposes.

4.12 Single Visit - A less easily measured form of organized use of coastal islands is one time visitation by groups ranging from scientific research teams to high school tours, from artist excursions to senior citizen outings. Most of this sort of use is concentrated on a small number of developed islands. The Corcoran School of Art, for example, makes use of High Island in Tenant's Harbor for artist training. School groups visit the Cornell Swans Island Marine Station and the Shoals Marine Laboratory on Appledore Island. Twelve to fifteen hundered people visit the Outward Bound School on Hurricane Island every year.

4.2 Island Use by Individuals

4.21 Use Estimates - Assessing the amount of use coastal islands receive from private individuals is considerably more difficult than for organized programs. Use which in the past was mostly extensive, appears to be becoming more concentrated. Popular islands and bay boating areas now experience serious peak season crowding. At the same time, due to the increased level of boating activity, island use may be dispersing. When choice islands are occupied, less desirable islands are used. Only for a few islands do we have reliable estimates of use. There are but two State owned islands developed for public use, Warren and Eagle.

Warren Island in Penobscot Bay has been held by the Bureau of Parks and Recreation since 1959. Visitation estimates are available for the years 1967-77; these are presented in Table 3. During

Table 2

ORGANIZED USE OF MAINE COASTAL ISLANDS
FOR RECREATION AND ENVIRONMENTAL EDUCATION

Program	Purpose	First Year	Ages	Participants (1977)	Islands Used	Restrictions	Contact
Audubon Workshop in Maine	Environmental education	1936	18-70	220	Hog, E & W EggRocks, Franklin, Pond, Bremen-Long, Wreck, Harbor	Adults only	Duryea Morton Audubon Workshops 950 Third Avenue New York, New York
Coastal Explorations	Environmental awareness; no trace camping	1974	11-14	350	Damariscove, Little Sprucehead, Metinic Warren, McGlathery	Knox-Lincoln County residency	Jerry Gay Knox-Lincoln Counties Extension Association 375 Main Street Rockland, Maine 04841
Hurricane Island Outward Bound School	Human development by participation in strenuous physical & mental challenges	1964	14½+	1100	Use upwards of 200 islands from Small Point to Machias Bay	Must pass physical	HIOBS P.O. Box 429 Rockland, ME 04841
Island/ Wilderness Expeditions, LTD	Train naturalists in photography & photographers in nature	1973	14-65	36	Isle Au Haut, Hen, Neck, Saddle, Calderwood	Physically fit serious photographers only	David Lyman Maine Photo Workshops Rockport, ME 04856
Maine Coast Horizons	Marine environmental awareness	1977	13-23	300	Pond	Mostly students from Maine schools esp. York County; some MA	Capt. Roger Brainerd Box 151 W. Brooksville, ME 04617
Maine 4-H Century III Challenge Program	Leadership training; environmental awareness; no trace camping	1978	13-16	26	Jewell		Paul Horn, Coop. Ex. Service, 96 Falmouth St.,Portland,ME 04102
		1976	10-14	50	Vaughn's		Edmund Wakelin,Coop. Ex. Service, Court House Annex, Alfred, Maine 04002
Maine Island Ecology	Ecological & environmental studies	1970	15-18	32	Hardwood		Dennis M. Wint,Direc. Hardwood Island Biolog. Sta. 4578 River Street Willoughby, Ohio 44094

ORGANIZED USE OF MAINE COASTAL ISLANDS
FOR RECREATION AND ENVIRONMENTAL EDUCATION

Program	Purpose	Year	Ages	Participants (1977)	Islands Used	Restrictions	Contact
Mariners	Teach seamanship, natural history, coastal heritage; character development	1974	14-16	9	Have ± 30 coastal use permissions, use ± 10/year; use esp. Isle Au Haut	Boys only	Tim Ellis Chewonki Foundation Wiscasset, ME 04578
Marine Resources	Environmental awareness; marine sciencies; boat handling	1977	14-16	16	Perkins, Arrowsic, Georgetown	Mid-coast Jr. High School Science Students	Adolph Ipcar, Program Coordinator Star Rt. 2 Bath, ME 04530
Shoals Marine Laboratory	Marine science education	1966	± 20-23	70	Appledore	Serious marine science students only	Dr. John Kingsbury, Director Shoals Marine Lab. Ithaca, NY 14850
Appalachian Mt. Club Tidewater Islands	Provide opportunites for recreation, education & conservation in mid-coast region	1969	Day-all Camp-18+	351 (Beal)	Beal, Swan, Fort	Open fires only on beach, cut no live wood	Carol & Bob Rehn 75 Wiltshire Park Needham, MA 02192
Baker Island Cruise	Natural & Human History Interpretation of Acadia Archipeligo		All	4,650	Baker, Little Cranberry, MDI		Jacques Williams Seawall Road Manset, ME 04656
Cabbage Island Clambake	Outdoor recreation	1956	All	Trip Cap. 100±	Cabbage		Cabbage Island Inc. Boothbay Harbor, ME 04538
Field Trips	Environmental education; outdoor recreation	1973	7+	645	Isle Au Haut, Monhegan, Swan, Machias Seal, Matinicus Rock, Isle of Shoals, Casco Bay, Little Cranberry, Wood	Some trips members only, physical fitness	D. Cowperthwaite, Field Trip Coordina. Maine Audubon Society 118 U.S. Rt. One Falmouth, ME 04105
Islesford Historic Cruise	Natural & Human History Interpretation of Acadia archipeligo		All	4,600	Little Cranberry, MDI		Beal & Bunker Great Cranberry Isle Maine 04675

ORGANIZED USE OF MAINE COASTAL ISLANDS FOR RECREATION AND ENVIRONMENTAL EDUCATION

Program	Purpose	Year	Ages	Participants (1977)	Islands Used	Restrictions	Contact
Maine Coast Cruises	Vacation cruise on Victory Chimes	1932	14+	700	Monhegan, Isle au Haut, Mt.Desert, Deer Isle, North Haven, Swans, others		Capt. F. B. Guild P.O. Box 368 Rockland, ME 04841
Maine Windjammer Cruises	Vacation cruise on Mattie, Mercantile, Mistriss	1935	12+	500	Deer Isle, others		Capt. Les Bex Maine Windjammer Cruises, Inc. Camden, ME 04843
Schooner Harvey Gamage	Vacation cruise	1975	All	±325	Use many islands in Greater Penobscot Bay		Dirigo Cruises 39 Waterside Lane Clinton, CT 06413
Nathaniel Bowditch of Cape Rosier, Inc.	Vacation cruise	1976	14+	200	Deer, Swans, Butter, Round, Babbige, Pickering, McGlathery		Nathaniel Bowditch of Cape Rosier, Inc. Harborside, ME 04642
Schooner Isarc H. Evens	Vacation cruise	1973	16+	325	Deer Isle, Merchant Row, Wreck, McGlathery Potato, Isle Au Haut, Brunt, Swans, Mt.Desert Pickering, others		Capt. D. K. Lee P.O. Box 482 Rockland, ME 04841
Schooner J&E Riggin	Vacation cruise	1977	16+	190	Isle au Haut, Swans, Fox, Deer, Long, Potato, others		Capt. David Allen P.O. Box 571 Rockland, ME 04841
Schooner Lewis R.French	Vacation cruise	1976	16+	325	Deer Isle, Merchant Row, Wreck, McGlathery Potato, Isle Au Haut, Brunt, Swans, Mt.Desert Pickering, others		Capt. John G. Foss Northend Shipyard Rockland, ME 04841
Schooner Mary Day	Vacation cruise	1949	14+ girls 16+ boys	430	Use islands from Boothbay Harbor to Mt.Desert Island including Vinalhaven and Monhegan		Capt. M. S. Hawkins Schooner Mary Day Camden, ME 04843

ORGANIZED USE OF MAINE COASTAL ISLANDS
FOR RECREATION AND ENVIRONMENTAL EDUCATION

Program	Purpose	Year	Ages	Participants (1977)	Islands Used	Restrictions	Contact
Schooner Stephen Taber	Vacation cruise	1975	16+	310	Warren, Fox, McGlathery, others		Capt. Mike Anderson P.O. Box 736 Camden, ME 04843
Schooner Timberwind	Vacation cruise	1970	16+	250	McGlathery, Islesboro, Warren, Deer Isle, Swans, Isle Au Haut, Fox		Timberwind Marine Services P.O. Box 247 Rockport, ME 04856
Yankee Schooner Cruises	Vacation recreation on Adventure and Roseway	1964	16+	900	Use many islands from Casco-Frenchman Bay, especially Warren, Eagle, McGlathery, Round, Wreck, Pond		Capt. James Sharp Yankee Schooner Cruises Box 696 Camden, ME 04843
Sail and Rolls	Bicycling-Cruising Vacation	1978	16+	-	Isle au Haut, Vinalhaven, others Penobscot Bay Islands		Overland Rolls, Inc. Dept. 1A, Station A Portland, ME 04101
Isle au Haut	Natural and human history interpretation		All		Isle au Haut		Capt. H. Aldrich Isle au Haut, ME 04645
Maine Coast History	Undergrad level natural and human history				Various islands		William Carpenter College of the Atlantic Bar Harbor, ME 04609
R.S. Friedman Cobscook Bay Laboratory	Undergrad marine environment courses				Williams		Arthur J. West II Suffolk University 41 Temple Street Boston, MA 02114
Swans Island Marine Station	College level marine science				Swans		Hans G. Borei Leidy Laboratory Univ of Pennsylvania Philadelphia, PA 19174
University of Maine at Machias	Undergrad marine science course	1978	18		Little River		Charles Towle University of Maine Machias, ME 04654
Whale Watching	Whale population research		All		Mt. Desert Rock	Must undergo training	Greg Stone College of the Atlantic Bar Harbor, ME 04609
Challenge	Survival trainning, marine education	1978	13-18	12	Trott	Must belong to Kennebunk Beach Improvement Assn.	William Sargent KBIA Kennebunk, ME 04043

the early 1970's when shuttle boat service was available from Islesboro, use increased markedly. When the shuttle was ended, use dropped, suggesting there is a demand for island recreation opportunities for those without their own transportation. Interestingly, according to camper registration cards for overnight visitors on Warren Island during 1977, average party size was 4.1 persons. People tend to come in multiples of two. Although incomplete, the data for Warren follow:

NUMBER IN PARTY	NUMBER OF PARTIES
2	23
3	6
4	18
5	2
6	10
7	2

Between 1970 and 1977 the use of Eagle Island in Casco Bay increased six fold, though there is no camping on the island (see Table 3). Access to the island has always been by private vessel only.

The first year that accurate figues on visitation of the Isle au Haut unit of Acadia National Park was 1976 (Table 4). Over 1800 day users and 1250 campers used the island that summer. The wet 1977 season caused use to drop by one-fourth. Counts for mid May through June, 1978 are 101 day visits and 231 camper overnights.

In the past few years camping on Isle au Haut has become so popular that most reservations have been filled within hours of the opening of Park headquarters on the second of January. All sites have been reserved for the full season by the third week of the month. Starting in 1979, reservations for Isle au Haut will not be accepted prior to April 1. It is anticipated that most will be filled within the first ten days of the reservation period.

To accommodate some of the demand for island camping the Park Service proposed in 1976 to acquire Marshall Island for overnite use. Following strong local opposition to this proposal, however, the Park Service agreed to reconsider. Acquisition of Marshall Island will not be included in the Acadia master plan.

With more and more private individual island owners restricting use of their islands, public visitation appears to be concentrating on islands held by private, nonprofit conservation organizations. Damariscove Island off Boothbay Harbor is perhaps the most heavily used such island. During the summer of 1975, a student lived on the island 49 out of 59 of the days between June 19 and August 23.

Table 3

Eagle Island and Warren Island Estimated Visitor Use

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Eagle Island Day Use				438	1,216	1,448	1,735	2,219	2,260	2,170	2,667
Warren Island Day Use	1,035	1,193	2,612	3,348	3,167	2,883	3,062	2,620	1,763	1,927	2,796
Camping	287	525	799	942	1,642	1,637	1,375	870	673	630	747

Table 4

ACADIA NATIONAL PARK, ISLE AU HAUT ESTIMATED VISITOR USE

Month	Number of Day Visitors		Average Visitors/Day		Number of Camper Overnights		Average Campers/Night	
	1976	1977	1976	1977	1976	1977	1976	1977
June	192[1]	113	6.4	3.8	310[1]	223	10.3	7.3
July	487	378	15.7	12.2	247	248	8.0	8.0
August	983	663	31.7	21.4	293	258	9.5	8.3
September	159	209	5.3	7.0	120	157	4.0	5.3
October	8[2]	12[3]	0.9	0.1	68[2]	40[3]	4.0	2.5
TOTAL	1829	1375	12.0	10.0	1257	926	6.8	6.7

[1] Estimates

[2] Figures are for first 17 days of month only.

[3] Figures are for first 16 days of month only.

According to the visitor log notes, 1444 visitors stopped at the island. Four weekend days more than 100 people visited Damariscove.

4.3 Boating Activity

A second indicator of unorganized coastal island use is boating activity since many boaters land on and boat among the islands. Indeed the islands are an indespensible part of the boating experience along the Maine coast. Boating activity can be approximated from a number of indicators, including boat ownership, registration and service facilities.

4.31 Boat Ownership - Nationally, between 1973 and 1976 the number of recreational boats increased by 33 percent. A survey of Maine resident outdoor recreation, conducted for the Bureau of Parks and Recreation in 1977, found the results presented in Table 5.

Table 5
MAINE RESIDENT BOAT OWNERSHIP: 1977

Number of Vessels Owned	Coastal Area Respondents	Statewide Respondents
Sailboats	-percent-	
0	94.7	95.2
1	4.7	4.3
2	0.3	0.2
3	0.3	0.2
4	-	0.1
Motorboats		
0	79.4	78.9
1	17.5	18.3
2	2.6	2.3
3	0.5	0.3
4	0.2	0.2

Clearly, if the figures are representative, a relatively small percentage of people in Maine own their own boats. This, of course, does not take into account the large number of out of state residents who boat in Maine in their own vessels.

4.32 Boating Registrations - Coastal boating activity can also be approximated from boat registrations (Table 6) and user surveys. According to the Maine Department of Inland Fisheries and Wildlife, the number of boat registrations statewide increased more than two and one-half fold between 1970 & 1976. The drop in registrations between 1976 and 1977 suggested in Table 6 is a statistical alteration resulting from a "cleaning up" of inappropriate registrations. There was probably no actual decline in total valid registrations.

During 1977, the number of boat registrations statewide was in excess of 110,000 (Table 7). About 31,300 of these boats are used principally on federal waterways (navigable coastal and river areas). Ninety-three percent of the boats were powered with outboard motors and seven percent with inboard engines. Of course, the figures do not include engineless boats and those boats used by out of state

Table 6
MAINE WATERCRAFT REGISTRATION: 1970-1977

Year	Waters Principally Used			Total
	Federal	Internal	Both	
1970	9,953	22,875	11,421	44,249
1971	9,780	22,663	14,329	46,329
1972	9,629	20,972	17,553	48,154
1973	9,423	20,482	20,617	50,522
1974	12,674	52,835	31,309	96,818
1975	29,762	76,188	-	105,950
1976	33,198	85,183	-	118,381
1977	31,284	79,496	-	110,790

boaters who come to Maine during the summer to cruise the island-studded coast.

Estimates of coastal boating activity by both Maine residents and out of staters were calculated in a 1972-73 study of Tourism in Maine. The study indicated that residents spent 594,000 tourist days each year boating on the ocean. Nonresidents spent 254,000 tourist days. Total tourist days spent saltwater boating added to 848,300 annually.

Table 7
MAINE WATERCRAFT REGISTRATION BY TYPE OF BOAT: 1977

Type of Boat	No.	Percent of Total
Open	87,480	79.0
Cabin	5,244	4.7
Sail	3,000	2.7
Canoe	8,498	7.7
House Boat	66	*
Other	6,502	5.9
Total	110,790	100.0

*Less than 0.1%

4.33 Boating Facilities - Another indicator of coastal recreational boating activity are those privately and publicly owned facilities, such as yacht clubs and marinas, which are available for public use. Data on these facilities were compiled in an inventory conducted during 1977 by the Maine Department of Transportation in cooperation with the Bureau of Parks and Recreation. Inventory summaries are presented in Tables 8 and 9.

A separate study of Maine marinas, conducted in 1973-74 by the University of Maine, found that 50 percent of those marinas surveyed (of which 64% were coastal) "indicated that they did turn away customers due to limitations in storage capacity." This suggests that

PUBLIC FACILITIES - PRIVATELY OWNED - SUMMARY TABLE 8

Port	No. of Yacht Clubs	No. of Berths	Service Facilities	No. of Marinas	No. of Berths	Food & Fuel	Repair Services	Boat Storage No. Inside	Boat Storage No. Outside
Kittery				3	80		2	10	85
Eliot				1	87	1	1		50
York Harbor-Cape Neddick	1	15		2	40	2	1	10	200
Wells				1		1	1	50	40
Kennebunk-Kennebunkport	2	62		3	200	1	2	3	200
Biddeford-Saco	2	8							
Scarborough	1								
Cape Elizabeth									
South Portland	1	6		2	20	2	1		52
Portland									
Falmouth	1	4		1	10	1	1	20	100
Cumberland									
Yarmouth				2	125	2	1	36	150
Freeport				2	246	2	2	50	100
Brunswick-Harpswell	1	15		7	327	6	5	15	255
Bath				2	51	1	1	50	20
Richmond									
Augusta-Gardiner	1								
Wiscasset	1	12							
Boothbay-Boothbay Harbor	2	69		3	205	3	1		100
Damariscotta-Newcastle				1			1		28
Thomaston				2	50	1	2	10	160
Owls Head									
Rockland				2	29	2	1	12	120
Vinalhaven									10
Rockport	1	6		1	16	1	1		
Camden	1	10	1	2		2			10
Lincolnville									
Islesboro	1	6							
Belfast				1	57	1	1	20	100
Searsport									
Bucksport				1	3	1	1		100
Winterport									
Bangor-Brewer-Orrington									
Castine	1	12							
Stonington									
Ellsworth									10
Bar Harbor	1	10		1	10	1			
Mt. Desert	2	18		5	73	2	3	62	148
Southwest Harbor				1	30	1	1	35	50
Tremont (Bass Harbor)				1	40	1	1	6	100
Swans Island									
Machias-Machiasport									
Jonesport-Beals									
Lubec									
Eastport				1	4	1			
Totals	21	268	1	48	1,703	36	31	389	2,188

PUBLIC FACILITIES-PUBLICLY OWNED - SUMMARY TABLE 9

PORT	PUBLIC LANDINGS			PUBLIC LAUNCHING FACILITIES						TOTAL HARBOR MOORINGS
	No. of Docks	No. of Berths	No. of Floats	Town Owned	No. of Floats	Parking Available	State Owned	No. of Floats	Parking Available	
Kittery	3	18	11	1	0	1	0			215
Eliot	0			0			1	3	1	0
York Harbor-Cape Neddick	2	4	3	0			0			237
Wells	2	24	9	2	0	2	0			112
Kennebunk-Kennebunkport	1	3	0	0			0			165
Biddeford-Saco	1	4	2	2	0	2	1	9	1	45
Scarborough	2	7	5	2	0	2	0			60
Cape Elizabeth	0			0			0			100
South Portland	0			0			0			315*
Portland	5	42	7	0			0			315*
Falmouth	1	8	4	0			0			73
Cumberland	3	10	3	0			0			16
Yarmouth	6	20	8	1	0	1	0			62
Freeport	1	8	4	1	2	1	0			387
Brunswick-Harpswell	4	17	5	6	0	3	0			390
Bath	1	10	0	1	0	1	1	9	1	0
Richmond	2	9	13	1	11	1	0			6
Augusta-Gardiner	2	8	12		0		2	9	2	12
Wiscasset	3	11	5	3	0	2				61
Boothbay-Boothbay Harbor	5	20	13	3	0	0				485
Damariscotta-Newcastle	0			1	18	1				24
Thomaston	1	8	4	1	0	1				40
Owls Head	1	4	2	1	0	1				40
Rockland	3	20	8	1	0	1				120
Vinalhaven	4	23	5	4	6	2				115
North Haven	3	21	6	1	0	1				137
Rockport	2	20	9	1	8	1				90
Camden	2	9	2	1	0	1				300
Lincolnville	2	6	3	0						40
Islesboro	3	21	4	1	0	1				200
Belfast	1	10	0	1	0	1				60
Searsport	1	10	0	1	0	1				30
Bucksport	1	8	1	0						6
Winterport	0			0						12
Bangor-Brewer-Orrington	1	3	1	2	0	2				6
Castine	2	4	1	0						24
Stonington	1	6	0	0						200
Ellsworth	1	6	7	1	0	1				10
Bar Harbor	2	11	4	1	0	1				100
Mount Desert	4	77	53	2	0	2				221
Southwest Harbor	3	28	10	1	0	1				75
Tremont (Bass Harbor)	1	3	1	0						150
Swans Island	3	7	1	1	0	1				300
Jonesport-Beals	1	20	13	0			1	13	1	240
Machias-Machiasport	1	6	7	1	2	1				52
Lubec	1	10	10	0			1	15		0
Eastport	1	30	2	0						15
Totals	90	594	258	46	47	37	7	58	6	5,348

* Total Moorings in Portland Harbor

by the early 1970's, boating had grown so popular in Maine that the private sector could not expand facilities rapidly enough to meet demand. The situation may be worse today.

During 1974-75 the need for public facilities for boats in Maine, inland and coastal, was studied by the Bureau of Parks and Recreation. The Public Facilities for Boats Plan prepared by the Bureau, reported the following deficiencies by coastal planning district:

Cumberland - now

Southern Maine - by 1980

Mid-Coast - by 1980

Eastern Maine - by 1990

The study also found that approximately 30 percent of resident and 38 percent of nonresident boating use was on coastal waters.

4.34 Island Ferries - For many people, island visitation is limited to those islands accessible by public transportation. During the peak visitation summer season, at least 17 Maine coastal islands have regularly scheduled ferry service. These tend to be large, developed islands with substantial summer populations - reminders of the prosperity of an earlier era of resort activity on the coast which began in the 19th century.

In the mid and late 1800's, coastal steamer service was a favorite of tourists. The Eastern Steamship Company brought passengers from New York and Boston to Portland and Bangor. Passengers transferred at Portland to smaller steamers serving the Casco Bay Islands, Boothbay Harbor and Pemaquid. Passengers offloaded from the Boston-Bangor steamer at Rockland were transported to Vinalhaven, Islesboro, Deer Isle and other Penobscot Bay islands as well as Castine, Ellsworth, Mt. Desert, Machias and Machiasport.

Travel to coastal resorts was also by rail. In fact, for a while, Maine Central Railroad operated a car floater which transported sleeper trains from Ellsworth to Mount Desert Island.

As shown in Table 10, today the State Ferry Service operates five island routes. All vessels and facilities in the State Ferry Service are publicly owned. The docking facilities of the private Casco Bay Lines are also publicly owned by the City of Portland and the State of Maine. All other coastal ferries in Maine are private operations.

4.4 Real Estate Values

In addition to organized and unorganized use, real estate values can be taken to be an indicator of demand for islands, particularly for second home use.

Table 10

PUBLIC BOAT FACILITIES SERVICING MAINE COASTAL ISLANDS

ROUTE	No. of Vessels	SEASON	Vehicles	Passengers	CONTACT
Bass Harbor - Long Island- Swans Island	1	Year round	X	X	Maine State Ferry Service P.O. Box 645 Rockland, Maine 04841
Boothbay Harbor - Monhegan	1	June-Sept.		X	Goodtime Excursions Capt. Bob Fish P.O. Box 131 Boothbay Harbor, ME 04538
Boothbay Harbor - Squirrel Island	1	Year round		X	Goodtime Excursions Capt. Bob Fish P.O. Box 131 Boothbay Harbor, ME 04538
Lincolnville Beach - Islesboro	1	Year round	X	X	Maine State Ferry Service P.O. Box 645 Rockland, Maine 04841
Northeast Harbor - Cranberry Isles- Southwest Harbor	3	Year round		X	Beal & Bunker Great Cranberry Isle, Maine 04675
Port Clyde - Monhegan	1	May-October		X	Monhegan-Thomaston Boat Line Port Clyde, Maine 04855
Portland-Baily, Peaks, Cliff, Chebeague, Long, Great Diamond, Little Diamond Islands	5	Year round	X	X	Casco Bay Lines Custom House Wharf Portland, ME 04111
Rockland - North Haven- Vinalhaven	3	Year round		X	Maine State Ferry Service P.O. Box 645 Rockland, Maine 04841
Rockland - Matinicus	1	Year round		X	Capt. Norris Young Camden Terrace Rockland, ME 04841
Stonington - Isle au Haut	1	Year round		X	Capt. H. Aldrich Isle au Haut Maine 04645
Yarmouth - Chebeague Island	1	Year round		X	Chebeague Transportation Company Water Taxi Chebeague Island Portland, ME 04111

According to a Governor's Task Force report on Energy, Heavy Industry and the Maine Coast, in 1972 second homes comprised approximately twenty percent of all coastal homes. It has been estimated that in many of the larger island communities, in the Penobscot Bay region, dwellings for seasonal use comprise up to 89% of the housing stock. One study found that an average of about 56% of the housing is used by seasonal residents.

During the early 1970's property values on all types of coastal land skyrocketed. Islands which for decades had been regarded as all but worthless suddenly had five figure price tags. Real estate value on the islands seem to be in a transitional period. While there is still a good market for smaller; less expensive island properties, listings over $150-200,000 do not change hands with the rapidity common during the peak of the Maine coastal property landsales explosion. The variation in prices for raw island land illustrates the instability of the market. Advertised per acre costs range from about $1,000 to $10,000.

Certainly the psychic appeal of island real estate has not diminished as reflected by the hype of a recent brochure of Downeast listings: "OCEAN ISLANDS (Imagine owning your own ocean island!)"

4.5 Problems

4.51 Now - There are numerous problems associated with use of public and private islands by both individuals and groups. Table 11 lists some of the most common problems. In general, organized users tend to be more careful of social and environmental impacts than many individual visitors. In fact, some organized programs have been requested to use islands by private owners as they provide a responsible presence against uninvited visitors.

4.52 Future - As both organized and informal island use grows, new and intensified problems can be expected. The development of heavy industry on the coast, such as the siting of onshore facilities to service offshore oil drilling, may also portend new conflicts for recreational boating and island use in coastal Maine.

4.6 Future Island Use

Prediction is always a risky venture. Trying to second guess the future of island use in Maine is a particularly difficult undertaking. A few years ago projections of anticipated boating activity in coastal Maine were glowing multiple-fold increases based on expectations of expanded income, population, leisure time and interest. Today with energy and financial budgets much more uncertain and population growth down, uncertainty has set in.

4.61 Predicting Demand - A National Estuary Study, released by the U.S. Fish & Wildlife Service in 1970, suggested the difficulties and

Table 11
ISLAND USE PROBLEMS

PROBLEM	SITUATION	SOLUTION
Trespassing	People who on the mainland would not cross anothers lawn often regard all islands as public property.	Post property, especially to limit fires; educate.
Vandalism	Particularly hard to monitor due to difficulty of island accessibility.	Post property; educate; off-season caretaker.
Litter	Common reminder of tres-passers.	Educate, enforce existing law.
Fire hazard	One of the most fearsome threats to island properties.	Educate for prevention; improve programs & equipment; post.
Marine water pollution	Both domestic and industrial.	Prosecute violators, enforce overboard discharge and oil conveyance laws.
Fresh water pollution	Aggrevated by shallow coastal soils.	Enforce plumbing code.
Land pollution	Aggrevated by shallow coastal soils.	Enforce land use regulations.
Inconsiderate attitude	More common with more use.	Educate.
Visual pollution	More common with more coastal use and development.	Establish coastal setback, cluster development, grant conservation easements.
Crowding	Increased substantially in recent years.	Establish more island parks; promote inland and off-season use.
Lack of boating facilities	Especially limiting to Maine residents.	Increase public boat access sites, private marinas.
High cost of private boating	Limits opportunities for lower income non-boaters.	Expand public ferry transportation.
Drug smuggling	Big business in Maine now.	Enforce drug trafficing laws.
Property Taxes	Forcing sale of many islands; new owners often block existing public use.	Implement Tree Growth and Open Space Laws; enact law for island tax relief.
Liability	Suits are becoming more numerous and more expensive.	Post property; carry insurance.
Estate Taxes	Forcing sale of many islands; new owners often block existing public use.	Conservation easements, etc.
Public/Private Information	Lack of communication causes mutual misunderstandings.	Island owners association, management manual, clearing house.
Seabird Nesting	A small number of private islands are vital nesting sites.	Minimize disturbance May - mid-July.
Sheep	Can drastically alter land cover, ecology & scenic qualities.	Study type of island & number sheep appropriate.

problems of forecasting economic demand for outdoor recreation in general and boating in particular. According to the study

> Outdoor recreation demand must be measured in terms of the degree and manner in which the physical, biological, cultural and climatic resources of the Estuarine Zone are exploited. Thus, the optimal measures are based upon demand functions for facilities, both public and private, site access, and proximity, both geographically and in terms of travel time, prices consumers are willing to pay and available leisure time. These measures are typically confounded by the fact that a very large set of alternatives are available (the supply of recreational opportunities is elastic) to the outdoor recreation consumer.) This means that the gross indicators used to forecast recreation pattern... can only tell us that there is bound to be some increases in outdoor recreation demand, but cannot provide measures of what specific activities will be preferred most, where the relative pressures on the resource base will fall, and so on.

There are several reasons why it is difficult to predict the future demand for coastal recreation:

-- Boating has only recently become a popular recreational activity. It is fair to say that as little as thirty years ago it was primarily considered a sport for the rich.

-- The two most significant forms of technological change in boating have been the outboard motor and fiberglass construction. These developments and associated design changes have altered the nature of the boating experience, have lessened the dependence on commercial service establishments with a waterfront location, and have greatly increased waterborne traffic.

-- Much of the data describing boating is of poor quality. In many states, for instance, boating registration data have been consistently high - by as much as 100 percent.

-- If demands on an activity are projected on the usual measures of population growth, income, and access, the figures can reach ridiculously large proportions, even in the relatively near future. What is disregarded in such projections are some obvious proportional declines which are likely to occur.

-- Typical demand forecasts do not take into account the differences between provision of recreation facilities and services by the private sector, as opposed to the public sector. The private sector will respond to actual demands in dollar, or market terms. Public investments, however, are often made with little attention to market prices. This is parti-

cularly true for sport fishing and boating where the public often provides hatcheries and public piers at artificially low costs to the user. This situation, in effect, may create an "artificial demand" with the attendant environmental pressures, and heavy use of coastal and other resources.

-- Even the relationships between income and recreation, commonly assumed in trend forecasting, are being called into question. A 1974 study of Rhode Island boat owners reported that personal preferences, health, social factors, and better highways are more important indications of boating growth than is rising income.

Given these considerations, the usual hazards of projection are magnified when assessing the probably future growth and economic importance of outdoor recreation activities associated with coastal resources.

4.62 Statewide Comprehensive Outdoor Recreation Plan - The 1977 Maine Statewide Comprehensive Outdoor Recreation Plan does not evaluate the demand for island recreation in and of itself. It does acknowledge that "Maine's coastal islands are unique to the entire eastern coast of the United States in that few other states have islands with such geological and biological diversity." The Maine SCORP also recommends that continued emphasis be placed on identifying and protecting Maine's important coastal islands, but does not establish the priority for this activity in relation to other statewide recreational activities.

4.63 Preferences - Despite the difficulties in measuring demand for coastal island use in Maine, it is possible to get an idea of citizen preferences. No survey has addressed the issue of island use per se. However, in recent years there have been a number of studies which have dealt with the question of coastal recreation in general.

A 1973 survey undertaken for the State Planning Office, An Appraisal by the People, reported that 55 percent of respondents statewide listed State acquisition of coastal beach and scenic areas as a 1st, 2nd or 3rd priority.

In a 1975 survey, Citizen Evaluation of Public Policy in the Coastal Zone, 73 percent of the respondents supported increased State spending for coastal beaches and picnic areas. Sixty-six wanted more public expenditures for campsites; 53 percent for marinas and boat ramps. Fifty-three percent supported increasing the amount of publicly accessible coastal shoreland.

According to a report on Recreation in Maine, based on panel surveys held around the state in 1976, coastal recreation priorities include saltwater access, public beaches and wildland preservation. Fifty-six percent of the participants agreed that the State should attempt to provide access to all waters of the state for pleasure boating.

Finally, a 1977 survey of Maine Resident Outdoor Recreation Partici-

pation and Preferences found that 41 percent of the coastal respondents engaged in ocean swimming, 13 percent in sailing, 31 percent in motorboating, 16 percent in ocean fishing, and 25 percent in camping. Percentage of respondents statewide favoring increased State spending for coastal recreation facilities suggests preference priorities:

Nature Areas	76.7%
Swim Areas	74.9
Picnic Areas	72.6
Camping Areas	71.8
Hiking Trails	71.6
Boat Ramps	57.1
Marinas	46.6

4.64 Evaluation - Despite the uncertainty of ascertaining demand a and the rather equivocal conclusions of existing preference surveys, coastal boating and island activity does seem to continue to grow. Uninhabited islands in Casco Bay frequently support two or three camping parties each night. On a warm summer day, it would be difficult to find an island in Penobscot Bay - private or public - which was not being used by local day sailors or yachting enthusiasts on an extended cruise. The Outward Bound soloists often find themselves anything but alone. The litter left by some island users has to be cleaned up by educational groups using the islands with owner permission, lest they be blamed. Because they have been chased off a few times, windjammer captains find themselves containing their small island stops to those held by public and private conservation agencies.

Fifteen years ago it was a simple matter to find an island on which to camp overnight while on a summer cruise of the coast, Today it is not nearly as simple. In the past fifteen years or so many uninhabited islands have been built upon, some have been tagged as off limits by property owners and the general level of boating activity has increased markedly. The result is that increasingly it is difficult to have a remote island experience along the Maine coast. More and more use is being channelled to the small stock of islands in public or private conservation ownership. Whether this means that additional islands should be acquired for public use is problematical.

5.0 CONSERVATION ACTIVITIES

The island has a beauty of its own-
something which is like the winds and
sun, complete and all in all and very
final.

--Robert P. Tristram Coffin,
"The Island"

5.0 CONSERVATION ACTIVITIES

5.1 Federal

5.11 Ownership - The first federal island properties were used for military defense and for the location of navigational light stations. It was not until the establishment of Acadia National Park (originally Sieur de Monts National Monument) in 1916 that Maine islands were nationally designated for resource protection and recreational use. With the initiation of a system of national wildlife refuges a number of government surplus islands with sutiable bird nesting habitat were designated refuges.

In 1954, the National Park Service was directed to identify remaining undeveloped areas on the eastern and southern coasts with valuable recreational qualities as well as areas desirable as sanctuaries for unique or rare plant and animal communities. The report issued by the Park Service in 1955, Seashore Recreation Survey of the Atlantic and Gulf Coasts, identified three island locations in Maine: the Roque Island group in Washington County, Richmond Island in Cape Elizabeth, and Fort Scammel on House Island in Casco Bay. None of the areas have been brought into the public domain, though Richmond Island has been designated a private wildlife sanctuary by the Maine Department of Inland Fisheries and Wildlife.

Today, in Maine, there are at least 65* island properties held by three different federal agencies, excluding military holdings. These are listed in Table 12.

The 1976 Draft Master Plan for Acadia National Park listed 12 islands in the Mt. Desert Island archipelago which the National Park Service proposed to add to the Park. These islands are: Schoodic, Rolling, Bar, Egg, Baker, Green (2), Drum, Ship, Trumpet, Marshall and Ringtown Islands. In 1977, Park Service officials agreed to drop the proposed acquisition of Marshall Island from the plan due primarily to the adverse impact visitors could have on the island's herring fishery.

The U.S. Fish and Wildlife Service, too, has been working toward the acquisition of additional islands. The Service, in 1978, is negotiating for the possible purchase of several substantial island properties in Washington County.

In the future, additional Coast Guard and military properties may be tagged as surplus. Some of these would be appropriate for recreation/conservation use.

* The ownership of Machias Seal Island is contested; it is claimed by both the United States and Canada.

Table 12

FEDERAL COASTAL ISLAND PROPERTIES IN MAINE

Agency	Island	Municipality	Size Acres	(Hectares)
National Park Service	Bar	Mt. Desert	6	(2.4)
	Mt. Desert	Bar Harbor, Mt. Desert, Southwest Hbr., Tremont	29,310	(11,724)
	Isle Au Haut	Isle Au Haut	2,870	(1,148)
	Sheep Porcupine	Bar Harbor	15	(6)
	Bald Porcupine	Bar Harbor	40	(16)
	Bar	Bar Harbor	29	(11.6)
	Little Moose	Winter Harbor	45	(18)
	Pond	Winter Harbor	7	(2.8)
	Baker	Cranberry Isles	84	(33.6)
	Little Cranberry	Cranberry Isles	1	(0.4)
	Heron	Swans Island	30	(12)
	Thompson Island	Bar Harbor	55	(22)
	St. Croix	Calais	14	(5.6)
US Fish & Wildlife Service	Seal		65	(26)
	Pond	Phippsburg	10	(4)
	Franklin	Rockland	12	(4.8)
	Petit Manan	Steuben	9	(3.6)
	Birch	Edmunds	9	(3.6)
Coast Guard	Saddleback Ledge	Vinalhaven	1	(0.4)
	Matinicus Rock	Matinicus	8	(3.2)
	Seguin	Georgetown	20	(8)
	Islesboro	Islesboro	0.1	(0.04)
	Goose Rocks	No. Haven	0.1	(0.04)
	Two Bush	Muscle Ridge	2	(0.8)
	Vinalhaven (2)	Vinalhaven	17	(6.8)
	Great Duck	Long Island Plt.	10	(4)
	Swans	Swans Island	1	(0.4)
	Eagle	Deer Isle	6	(2.4)
	Isle Au Haut	Isle Au Haut	0.1	(0.04)
	Ram	Isle Au Haut	4	(1.6)
	Stonington	Stonington	3	(1.2)
	Baker	Cranberry Isles	0.1	(0.04)
	Mt. Desert Rock		10	(4)
	Bear	Northeast Harbor	2	(0.8)
	Egg Rock	Gouldsboro	3	(1.2)
	Burnt	Boothbay Harbor	5	(2)
	Manana	Monhegan	0.1	(0.04)
	Monhegan	Monhegan	0.1	(0.04)
	Southport	Southport	7	(2.8)
	Arrowsic (2)	Arrowsic	9	(3.6)
	Little Mark	Harpswell	0.1	(0.04)
	Nash	Addison	4	(1.6)
	Avery Rock	Machiasport	0.8	(0.3)
	Libby	Machiasport	45	(18)
	Little River	Cutler	15	(6)
	Lubec	Lubec	9	(3.6)
	Dog	Eastport	0.8	(0.3)
	Crow	Portland	2.2	(0.9)
	Halfway Rock	Portland	1.5	(0.6)
	Ram Is.Ledge	Portland	5	(2)
	Cape Neddick Nubble	York	6	(2.4)
	Boon	York	3	(1.2)
	Wood	Biddeford	8	(3.2)
	Goat	Kennebunkport	3.5	(1.4)
	Stage	Biddeford	0.1	(0.04)
	Mt. Desert (2)	Southwest Harbor	10.2	(4.1)
	Whitehead	St. George	11.1	(4.4)
	Mistake	Jonesport	4	(1.6)
	Green	Brooklin	0.1	(0.04)
	Mt. Desert	Bass Harbor	2	(0.8)
	Whaleback	Kittery	0.5	(0.2)
	Lubec Channel	Lubec	9	(3.6)
	Machias Seal		25	(10)

5.12 Easements - Conservation easements totaling over 3,745 acres (1,498 hectares) have been granted to Acadia National Park.

5.13 Landmarks and Historic Places - One coastal island has been designated a National Natural Landmark, Monhegan Island. St. Croix Island is a National Monument. The Daniel Coit Guilman House in Northeast Harbor on Mt. Desert Island is a National Historic Landmark. A number of Maine island sites are on the National Register of Historic Places (Table 13).

Table 13
MAINE COASTAL ISLAND SITES
ON THE NATIONAL REGISTER OF HISTORIC PLACES: 1978

Site	Municipality
Bailey Island Cobwork Bridge	Harpswell
Burnt Island Light	Boothbay Harbor
Curtis Island Light	Camden
Damariscove Island Archeological Site	Boothbay
Eagle Island	Harpswell
5th Maine Regiment Building (Peaks I.)	Portland
Fort George	Portland
Libby Island Light	Machiasport
Olmstead Summer Home	Deer Isle
"Redwood"	Bar Harbor
Seguin Light	Georgetown
Squire Haskell House	Deer Isle
Stone Schoolhouse	Georgetown
Turner Farm Archeological Site	North Haven
Vinalhaven Galamander	Vinalhaven

Additionally, four island areas on the National Register have been designated Historic Districts: Isle of Shoals in Kittery, Somerville in Bar Harbor, Cushing Island in Portland, and Portsmouth Naval Shipyard in Kittery.

Four other areas have been nominated to the National Register of Historic Places: Clarke and Lake Company Archeological Site in Arrowsic, Richmond Island in Cape Elizabeth, "Highseas" in Bar Harbor, and Duck Harbor Prehistoric District in Isle au Haut.

5.14 Islands Inventory and Trust - Late in 1966 the federal Bureau of Outdoor Recreation (now the Heritage Conservation and Recreation Service), initiated an inventory of American islands, 10 acres and larger in size. The purpose of the two year study was "to determine which islands remain in a natural or near natural state, which have been developed, and which are already protected by public ownership." Primary attention was given to islands with outstanding recreation and conservation potential.

Out of the inventory grew the notion of a national system of island trusts. In 1970, the islands of Maine's Casco Bay were proposed for

the first unit of the system. The establishment of coastal island trusts was also recommended for Sheepscot Bay, Muscongus Bay, Penobscot Bay and the Downeast region. None of these trusts ever materialized. The suggestion did, however, spur interest in protection of many coastal islands by other means.

During 1977 the Bureau of Outdoor Recreation undertook an update of the island inventory originally presented in the report Islands of America. The purpose of the update was to document land use changes and to develop trend information for the ten year period 1968-1978. The new inventory is to be incorporated into the 1978 Nationwide Outdoor Recreation Plan.

5.15 Legislation - Subsequent to the publication of the report Islands of America, Senator Henry Jackson, in 1973, introduced a National Islands Conservation and Recreation Act. The bill proposed

> . . . a national policy to protect and manage islands of the Nation which possess unique environmental, recreation, historical, and cultural values; to authorize a study by the Secretary of the Interior of our Nation's islands including recommendations of islands to be added to the national park, wildlife refuge, and forest systems; to encourage and establish of State islands conservation and recreation programs; to add to the land and water conservation fund and authorize the provision of a portion of the additional funds to State and local governments for the acquisition of islands and the purchase or lease of Federal surplus island property; and for other purposes.

While the bill did not pass, many provisions were picked up in the 1976 amendments to the Coastal Zone Management Act. Section 315(2) of the CZMA reads, in part, that "the Secretary may in accordance with this section and in accordance with such rules and regulations as the Secretary may promulgate, make grants to any coastal state for the purpose of. . . acquiring land... for the preservation of islands." Grants covering up to 50 percent of project costs were authorized, though funding has not been appropriated for the section.

5.16 Other Studies - Besides the work of the Bureau of Outdoor Recreation and the National Park Service on island studies at least three other federal agencies are involved in island studies in Maine.

In 1977 the U.S. Forest Service proposed a study of offshore islands to determine the impact of recreation on fragile island ecosystems. By defining major vegetation types, relating them to ecological conditions and by documenting existing recreation sites, management recommendations for dispersed recreational use can be deduced. During the summer of 1977, island sampling sites were located. It is anticipated that in 1978 actual sampling will begin.

The U.S. Fish and Wildlife Service initiated in 1977 an ecological characterization of the coastal region of Maine. The objective of the study is to "obtain and synthesize available environmental data which identify and describe important resources, ecological processes and their relationships within the study area and provide an analysis of their functional relationship." Coastal islands are being treated as an important part of the characterization. The first products of the project are due fall 1978.

Under the marine sanctuaries program of the Office of Ocean Management several sites nominated for sanctuary designation across the country are being considered as potential sanctuaries. One of these, the Isle of Shoals, is on the Maine-New Hampshire border. If designated a marine sanctuary, the site would be eligible for management and enforcement funding through the National Oceanic and Atmospheric Administration. Other sites in Maine such as the historic wreck, the DEFENCE in Penobscot Bay, should be considered as well.

5.2 State

5.21 Ownership - State island ownership for conservation dates to 1923 when the Sugarloaf Islands in Phippsburg were conveyed from the Department of the Army as surplus federal property. In 1925, one and a half acres (o.6 hectares) of Fort Island in Boothbay were transferred to the State.

The Bureau of Parks and Recreation has been involved in coastal island ownership since its inception in 1935, (then called the State Park Commission), when it gained jurisdiction over North and South Sugarloaf Islands. The islands are critical nesting habitat and will remain undeveloped. The State's property on Fort Island also came under Bureau of Parks and Recreation jurisdiction in 1935. Fort Edgecomb, on Davis Island in the Sheepscot River, was first operated as a state memorial by the Bureau of Parks and Recreation in 1945.

In 1959, the Bureau of Parks and Recreation acquired by gift Warren Island, near Islesboro. Warren Island has subsequently been developed with funds from the Land and Water Conservation Fund Act of 1965 and is currently operated as a state park with limited picnicking and camping facilities. Eagle Island, the site of Admiral Peary's retreat in Casco Bay, was given to the Bureau of Parks and Recreation in 1967 and opened to the public in 1970. This was followed by the purchase through a bond issue of several other island properties in Casco Bay: Andrews Beach on Long Island, a fine swimming beach, and Jewell and Little Chebeague Islands, two of the most outstanding uninhabited islands in Casco Bay. Jewell and Little Chebeague Islands have good prospects for day use and possibly camping. These islands, as well as the others in Casco Bay, need more study to determine exactly what should be done to make them available for appropriate public use.

Carvers Island, a fifteen acre (6 hectares) island south of Vinalhaven, and the balance of Fort Island were acquired in 1972. Fort Island is used by the Appalachian Mountain Club for canoe

camping. The Bureau acquired Bangs Island, an important eider duck nesting island in Casco Bay, in 1974. All of the Bureau of Parks and Recreation's coastal island properties are listed in Table 14.

Table 14
COASTAL ISLAND PROPERTIES
OF THE MAINE BUREAU OF PARKS AND RECREATION

Island	Municipality	Size Acres	(Hectares)
Bangs	Cumberland	55	(22)
Carvers	Vinalhaven	15	(6)
Davis (Fort Edgecomb)	Edgecomb	3	(12)
Eagle	Harpswell	17	(6.5)
Fort (Fort Webber)	Boothbay	37	(14.8)
Googins (Wolf Neck)	Freeport	1	(0.4)
Jewell	Portland, Cumberland	191	(76.4)
Little Chebeague	Portland, Cumberland	86	(34.4)
Long (Andrews Beach)	Portland	16	(6.4)
No. Sugarloaf	Phippsburg	1	(0.4)
Outer Head (Reid)	Georgetown	1	(0.4)
So. Sugarloaf	Phippsburg	2	(0.8)
Swans	Swans Island	3	(1.2)
Warren	Islesboro	70	(28)

During the past twelve years or so, the Department of Inland Fisheries and Wildlife has acquired a number of coastal islands which are important colonial bird nesting sites. These are listed in Table 15.

In 1974, Maine voters approved in referendum, a $4,000,000 bond issue for the acquisition of wildlife areas. The Department's "Operation Plan for Fish and Wildlife Habitat Acquisition" suggested that up to $400,000 of the bond be allocated for the acquisition of seabird islands. However, to date only $34,000 has been expended for island purchases. The final recommendations of a study of priority nesting sites completed in 1978 by researchers at the University of Maine and the Department of Inland Fisheries and Wildlife are expected to guide future acquisitions by the Department.

5.22 Island Wildlife Sanctuaries - In addition to those islands owned in fee by the Department of Inland Fisheries and Wildlife, several island wildlife sanctuaries have been designated (Table 16). In each of these territories, "no person shall, at any time, trap, hunt, pursue, shoot at or kill any wild animal or any game or other wild birds, except as the commissioner may otherwise direct pursuant to his authority."

Table 15

MAINE DEPARTMENT OF INLAND FISHERIES & WILDLIFE COASTAL NESTING ISLANDS

Island	Location	County	Approx. Size Acres	(Hectares)
Barred Island	(44° 16'N, 68° 50'W)	Hancock	5.0	(2.0)
Buck Island	(44° 19'N, 68° 47'W)	Hancock	0.5	(0.2)
Eastern Duck Rocks	(43° 47'N, 69° 18'W)	Lincoln	2.0	(0.8)
Garden Island	(44° 01'N, 69° 06'W)	Knox	1.0	(0.4)
Goose Island (Partial interest)	(44° 11'N, 68° 57'W)	Knox	5.0	(2.0)
Grass Ledge	(44° 13'N, 68° 51'W)	Hancock	1.0	(0.4)
Great Spoon Island	(44° 02'N, 68° 34'W)	Knox	64.0	(25.6)
Green Island	(44° 22'N, 67° 52'W)	Washington	11.0	(4.4)
Green Ledge	(44° 06'N, 68° 34'W)	Knox	4.0	(1.6)
Inner Green Island	(43° 40'N, 70° 06'W)	Cumberland	3.0	(1.2)
Little Burnt Island	(43° 52'N, 69° 18'W)	Knox	8.0	(3.2)
Little Eaton Island (a/k/a Button Island)	(44° 16'N, 68° 44'W)	Hancock	2.0	(0.8)
Little Green Island	(44° 04'N, 68° 55'W)	Knox	2.0	(0.8)
Old Hump Ledge	(43° 53'N, 69° 21'W)	Knox	2.0	(0.8)
Outer Green Island	(43° 39'N, 70° 07'W)	Cumberland	5.0	(2.0)
Phoebe Island	(44° 09'N, 68° 35'W)	Hancock	2.0	(0.8)
Ram Island (5/6 interest)	(43° 38'N, 70° 12'W)	Cumberland	9.0	(3.6)
Robinson's Rock	(44° 09'N, 68° 59'W)	Knox	2.0	(0.8)
Shark Island	(43° 51'N, 69° 21'W)	Knox	2.0	(0.8)
Sloop Island Ledge	(44° 12'N, 68° 49'W)	Hancock	1.0	(0.4)
Sparrow Island	(44° 07'N, 68° 42'W)	Knox	3.0	(1.2)
Spirit Ledge	(44° 05'N, 68° 31'W)	Hancock	1.0	(0.4)
Spoon Ledge	(44° 12'N, 68° 50'W)	Knox	1.0	(0.4)
The Cow Pen	(44° 04'N, 68° 35'W)	Knox	3.0	(1.2)
Thrumcap Island	(44° 19'N, 68° 46'W)	Hancock	1.0	(0.4)
Vaill Island	(43° 41'N, 70° 09'W)	Cumberland	5.0	(2.0)
West Brown Cow	(43° 41'N, 70° 04'W)	Cumberland	1.0	(0.4)
Ballast	(44° 33'N, 67° 33'W)	Washington	5.1	(2.0)

Table 16
DESIGNATED COASTAL ISLAND WILDLIFE SANCTUARIES

Sanctuary	Municipality
Hog Island	Bremen
Monroe Island	Muscle Ridge
Richmond's Island	Cape Elizabeth
Carver's Pond	Vinalhaven

5.23 Easements - The Bureau of Parks and Recreation and the Department of Inland Fisheries and Wildlife together hold conservation easements on more than seventeen coastal islands totaling about 1,273 acres (509 hectares). Tables 17 and 18 list each easement by town.

Table 17
COASTAL ISLAND CONSERVATION EASEMENTS
HEALD BY THE MAINE BUREAU OF PARKS AND RECREATION

Island	Municipality	Approx. Size Acres	(Hectares)
"The Brothers"	Falmouth	6	(2.4)
Mount Desert (Northeast Creek)	Bar Harbor	13	(5.2)
Foster	Harrington	400	(160.0)
Seavey	St. George	25	(10.0)
Sheep	Owls Head	9	(3.6)
Thrumcap	Islesboro	1	(0.4)
Timber	Biddeford	24	(9.6)
Whaleboat	Harpswell	100	(40.0)

Table 18
COASTAL ISLAND CONSERVATION EASEMENTS
HEALD BY THE MAINE DEPARTMENT OF INLAND FISHERIES AND WILDLIFE

Island	Municipality	Approx. Size Acres	(Hectares)
Barter	Boothbay	3	(1.2)
Clark	St. George	35	(14.0)
Great Gotts (2)	Tremont	21	(8.4)
Islesboro (Gull Point)	Islesboro	18.5	(7.4)
Monroe	Muscle Ridge	225	(90.0)
Oak	Woolwich	65	(26.0)
Oar	Bremen	27	(10.8)
Trafton	Harrington	100	(40.0)
Westport	Westport	200	(80.0)

5.24 Coastal Island Registry - In 1973, the Legislature established the Coastal Island Registry to ascertain the ownership of the approximately 3,050 islands along the Maine coast and to preserve for public

use those islands owned by the State. The Registry was established as a result of problems encountered by the State Planning Office during work on the Penobscot Bay Master Plan in 1972. In doing research for the plan, the State Planning Office discovered that the ownership of well over 200 islands in the Penobscot Bay area was questionable. Titles to many of the islands were unknown, islands were being taxed which had never been conveyed, other islands for which there were titles did not appear on the tax rolls, and there were attempts being made to create false titles to state owned islands.

These problems dated back hundreds of years to the days when conflicting grants were made of islands and other coastal areas to early colonizers. Lost titles, abandonment of islands, the death of owners who left no heirs, and the lack of accurate charts to locate islands compounded these early conflicts. In 1913, a lawyer, Melvin Simmons, was hired to clarify the State's ownership of coastal islands. Although it contributed much to the history of island titles, the Simmons' report did little to actually clarify the State's title to its islands.

In 1972, the State Planning Office initiated L.D. 1608, the bill which established the Coastal Island Registry. When this bill passed the Legislature it provided a mechanism whereby the state could ascertain title to its islands without costly and time consuming title searches for every island. Among other things, L.D. 1608 required that each island title holder register that ownership with the State by December 31, 1974, after which a substantial late fee would be charged. It also provided that the title of any unregistered island not claimed in ten years, privately owned or not, would automatically go to the State.

The Coastal Island Registry was first administered by the Forestry Department in 1973. The Registry stayed with the Forestry Department for approximately one year, when it was transferred to the newly created Bureau of Public Lands. While the Coastal Island Registry was with the Forestry Department, the State Planning Office drew up a series of maps of the coast which identified each island by a discrete number as required by the Legislature.

When the Bureau of Public Lands gained jurisdiction over the Coastal Island Registry, it began a title search pilot project. This project uncovered inconsistencies and other problems in the Registry legislation which made it difficult to implement. In September, 1974, the Bureau of Public Lands began a revision of the old Coastal Island Registry law, which passed the Legislature in the Spring of 1975. This law made substantial changes in the old law: (1) it clarified which islands should be registered and the definition of island ownership; (2) it provided that the State would hold as trustee unclaimed islands, rather than claiming full title to them; (3) clarified the identification and location process; (4) it extended the deadline for registration one year to December 31, 1975; and (5) it lowered the late registration fee.

In November of 1974, the Bureau of Public Lands held the Rockport Coastal Island Workshop, bringing together people from all over

New England to share information on coastal islands. (See "Summary of Proceedings, Maine Coastal Islands Workshop, Rockport, Maine, November 12, 1974", Bureau of Public Lands. February, 1975.) In this workshop several advisory committees of experts were formed, focussing on various areas involving coastal islands: archaeology, seals, birds, and energy.

In the summer and fall of 1975, the Bureau of Public Lands hired six CETA workers to do a brief inventory of each unregistered coastal island. These workers were supplied with boats and visted most of the approximately 1,300 unregistered islands along the coast. These inventories are now kept in the Bureau of Public Lands' Coastal Island Registry files.

During July and August of 1975, summer interns with the Bureau of Public Lands made tapes of the oral history of the islands. The tapes concentrate on the period 1900 to 1925; some were used in a slide show developed by the interns. The full tapes are now in the University of Maine at Orono folk archives.

After the inventories were completed in 1975, miscellaneous work was done on the files, including the compilation of category lists and the correction of maps. However, the Coastal Island Registry remained relatively inactive during 1976 and the first part of 1977. In 1977, both the Bureau of Parks and Recreation and the Department of Inland Fisheries and Wildlife were involved in compiling lists of islands for possible transfer to these agencies. The Bureau of Public Lands has also been organizing its Coastal Island Registry files in preparation for more active management. The next steps to be taken are (1) a program of title searches of registered islands and (2) the preparation of a management plan for the islands under the jurisdiction of the Bureau. Both of these tasks are now underway.

5.25 Land Use Regulation Commission - Two hundred fifty-four coastal islands and ledges fall under the jurisdiction of the Land Use Regulation Commission which is in the process of zoning each of the islands (Table 19). In late 1975, thirty-six islands were studied by LURC to establish a data base for land use decisions. Much of the information gathered on those islands studied has been made available in a single document, A Preliminary Study of the Coastal Islands in the Land Use Regulation Commission's Jurisdiction. A good deal of additional information is available in the Commission's staff files. LURC personnel expect to gather similar information on the balance of the islands in the Commission's jurisdiction in the future.

5.26 Critical Areas - The 106th Maine Legislature, in 1974, set up a Registry of Critical Areas (natural features "of unusual natural, scenic, scientific, or historical significance"), to be coordinated by the State Planning Office. An eleven member Critical Areas Advisory Board was created to advise and assist in the establishment of the Register and in the conservation of critical areas throughout the state. So far all or portions of more than sixty coastal islands have been registered as official critical areas. It is expected that additional island areas will be added to the Registry as they are studied.

Table 19

MAINE COASTAL ISLANDS
UNDER THE JURISDICTION OF THE LAND USE REGULATION COMMISSION
BY MAP SHEET GROUP

Perkins Twp. (Sagadahoc Co.)

Swan Island (010)
Little Swan Island (012)
Maxwell Island (015)

Muscongus Bay Group (Lincoln Co.)

Louds Island (Muscongus) (Loudsville) (185,184,182)
Bar Island (197)
Hungry Island (083,084,216,217)
Haddock Island (200)
Indian Island (183)
Thief Island (186)
Marsh Island (190)
Ross Island (198)
Wreck Island Ledge (191,192)
Wreck Island (194)
Jones Garden (187,188)
Western Egg Rock (201)
Killick Stone (189)
Thrumcap Island (193)
Polins Ledges (195,196)
Webber Ory Ledge (199)

Monhegan Plt. (Lincoln Co.)

Monhegan Island (317)
Manana Island (323)
Smutty Nose (314,315)
Duck Rocks (310,311,312)
Eastern Duck Rock (313)
Inner Duck Rock (316)
no names (318,319,320,321,322)

Metinic & Green Islands (Knox Co.)

Metinic Island (584,599,600,601,602)
Metinic Green Island (585,591,592,593,)
The Nubble (586,587)
Hog Island (588,589,590)
Little Green Island #2 (654)
Large Green Island (Green Island) (655)
Herring Ledge (656)
Southern Triangles (657,658)
Wheeler Big Rock (583)

Matinicus Plt. (Knox Co.)

Matinicus (903,909,916)
Two Bush Island (901)
Two Bush Ledge (902)
No Man's Land (900)
Wheaton Island (905,906,914,915)
Tenpound (902)
Little Island (907)
Cato Ledge (921)
East Black Ledge (913)
West Black Ledge (911)
Black Rocks (937)
Tuckanuck Ledge (910)
The Barrel (908)
Zephyr Ledges (899)
no names (912)

Matinicus Rock, Seal Island, Wooden Ball Island, Ragged Island

Ragged Island (930,927,942)
Pudding Island (924)
Shag Ledge (925)
The Hogshead (922)
Green Ledge (929)
Camp Cove Ledge (928)
High Ledge (933)
Brig Ledge (934)
Seal Island (923)
Matinicus Rock (940,941)
Wooden Ball (917,918,919)
Harbor Ledges (926)
Malcolm Ledge (938)

Muscle Ridge Group--Northhalf (Knox Co.)

Fisherman's Island (402)
Marblehead Island (403)
Crescent Island (411)
Otter Island (410)
Oak Island (421)
Little Green Island (418)
Gooseberry-Nub Island (417)
Little Pond (outer Pond) (Woodsey) (423)
Great Pond (inner Pond) (430)
Camp Island (426)
Spectacle Island (419)
High Island (422)
Dix Island (427)
Birch Island (428)
Andrews (including the neck) (432)
Poverty Nub (441)
Nettle Island (622)
Clam Ledges (437,438,439)
no names (381,424,425,429,431,433,435,436,440,442,444,445)

Muscle Ridge Group--South half (Knox Co.)

Hewett Island (623,627,628)
Flag Island (632)
Little Hurricane (626)
Bar Island (633)
Graffan Island (Grafton) (634)
Mink Island (646)
Pleasant Island (647)
Crow Island (651)
Two Bush Island (653)
Little Two Bush Island (652)
Yellow Ledge (629)
no names (621,630,631,641,643,644,645,649)

Saddle Island, Lasells Island, Little Bermuda, Lime Island, Moose, Goose, Mark, Robinson Rock, East Goose Rocks (Knox Co.)

Saddle Island (338)
Lasells Island (331)
Little Bermuda (077)
Lime Island (078)
Moose (330)
Goose (336,337)
Mark (339)
Robinson Rock (341)
East Goose Rocks (335)
Egg Rock (333)
no names (332,334,340)

Penobscot Bay Group Sheet 1 (Hancock Co.)

Western Island (675)
Pond (676,677,678)
Hog (679, 680)
Spectacle (673,688)
Pumpkin (701, 702)
Birch Island (703)
Scott (706,707,709)
Sheep (710,711,712)
Bar (724,731)
Eaton (713,714)
Pickering (682,715,721,722)
Two Bush (681)
no names (716,717,718)

Penobscot Bay Group Sheet 2 (Hancock Co.)

Bradbury (771)
Crow (810)
Hardhead (782)
Eagle (793,797,798)
Inner Porcupine (799)
Outer Porcupine (800,801)
Bald (803)
Fling (794)
Sloop Island (795)
Sloop Island Ledge (796)
Butter Island (Dirigo) (776)
Barred Island (774,775,777,778,779,780,781,783)
Grass Ledge (802)

Penobscot Bay Group Sheet 3 (Hancock Co.)

Great Spruce Head (773,784,786)
Bear Island (791)
Scrag (788)
Grass Ledge (789)
Compass (790)
Little Spruce Head (772,787)
Horse Head (770)
Beach (687)
Barred Island (683,684)
Colthead (685)
Resolution (686)
Channel Rock (792)
no names (785)

Marshall Island, Little Marshall, Mt. Desert Rock (Hancock Co.)

Marshall Island (981)
Little Marshall (Ringtown) (470)

Long Island Plt. Sheet 1 (Hancock Co.)

Crow Island (448)
Dry Money Ledge (449)
Harbor Island (450)
Long Island (451)
Mount Desert Rock (560)

Long Island Plt. Sheet 2 (Hancock Co.)

Placentia (438)
Black (437,441)
Little Black (443)
Green (446)
Drum (444)
Little Duck (439)
Great Duck (440)
Pond (347)
Lamb (346)
Inner Dawes Ledge (442)
no name (445)

5.27 Island Trusts - In 1971, following the publication of the report Islands of America by the federal Bureau of Outdoor Recreation, the Maine Legislature enacted enabling legislation (12 MRSA 641-646) to provide for the establishment of coastal island trusts. The purpose as stated in the original act was

> to provide a means whereby state and local officials, when appropriate, may take action to protect and manage coastal islands or groups of coastal islands of the State of Maine in such a manner as will best serve the needs of all citizens for controlled commercial development and sanctuaries of recreation, relaxation and self-renewal and in a manner consistent with the maintenance and improvement of the coastal island environment.

Initially the bill was written to set up a Casco Bay Islands Trust. The trust would have established a Casco Bay Island Trust Commission, composed largely of island residents, with the power of legal condemnation. However, the bill was substantially altered when Portland city officials objected to (1) the Trust having the power of eminent domain, (2) further fragmentation of the city's zoning authority, and (3) representation on the Commission by island size rather than population.

Late in 1971 a group of islanders, organized as Citizens Who Care, began pushing for an amendment to the island trust law to specify the Casco Bay islands in the bill and to permit the use of eminent domain. By the time the Natural Resources Committee of the Legislature held a public hearing in January 1972, it was clear that the islanders had failed.

A state representative from Portland introduced a bill to establish a Portland Island Trust Commission. The bill was poorly written and received almost no support from island residents. Several of the thirteen islands named in the bill were not even within the municipal boundaries of Portland, yet the act would have given the city jurisdiction over land use even on the islands in other towns. Though the proposal was changed to include only those islands in Portland, it failed enactment for it circumvented the original intention of the islands trust concept - namely, to govern land use on all of the islands in the bay holistically.

The notion of a Casco Bay Islands Trust is still a viable concept. With the occurance of several large oil spills in the bay, with the increase of island real estate values, with proposed expanded development of oil facilities on Long Island and in Portland Harbor, with a more sensitive political and social climate - in short, with several major changes since the early 1970's, the time may be right for the establishment of an island trust in Casco Bay as the first component of a national system of island trusts.

5.28 Seals - Seals are discussed separately here because currently no state or federal agency is taking active management responsibility for the two species found in Maine coastal waters.

At the federal level, the National Marine Fisheries Service and the Fish and Wildlife Service have mandates to manage both gray and harbor seals. However, little has been done toward management of whelping and haulout sites. Both species are protected under the MarineMammal Protection Act of 1972, which requires a permit from the Secretary of Commerce for the taking, importation, or holding of seals.

Preliminary surveys have identified a minimum of 202 coastal islands and ledges used by seals in Maine, 98 of them unregistered. A comprehensive census of seal habitats should be undertaken and protective management plans formulated and enacted.

It is possible that the Maine Departments of Marine Resources and Inland Fisheries and Wildlife could take on active seal management if their interests in noncommercial and nongame species broaden. Already the Department of Marine Resources has satutory authority to enforce restrictions on the hunting of seals in Casco Bay and selected areas in York and Hancock Counties, though this has been superceeded by the Marine Mammal Protection Act.

5.3 Local

Several coastal communities in Maine are located wholly or largely on islands. Vinalhaven, North Haven, Isle au Haut, Islesboro, Cranberry Isles, Swans Island, Monhegan and Matinicus are communities accessible by air or water only. Westport, Southport, Deer Isle, Stonington, Georgetown, Arrowsic, Bar Harbor, Tremont, Southwest Harbor, Mount Desert, and Beals are island towns accessible by road. Of course, a number of islands also support viable seasonal communities: Peaks Island in Portland, Chebeague Island in Cumberland, Squirrel Island in Southport, and Isle of Springs in Boothbay Harbor, for example.

Other than those communities located in whole or in part on major coastal islands there are a few municipally owned or managed island parcels with significant recreation potential. These are listed in Table 20.

Table 20
MUNICIPAL ISLAND SITES WITH RECREATION POTENTIAL

Site	Municipality	Size Acres (Hectares)
Chebeague Island Beach	Cumberland	10 (4)
Cousins Island Preserve	Yarmouth	20 (8)
Curtis Island	Camden	6 (2.4)
Elm Island	Harpswell	10 (4)
Fort Gorges (Hog Island Ld.)	Portland	1 (0.4)
Knickerkane Island	Boothbay	1 (0.4)
Peaks Island Reservation	Portland	67 (26.8)
Perkins Island	Georgetown	9 (3.6)
Ram & Wood Islands	Kittery	3.3 (13.2)

Additionally, the Bureau of Public Lands has proposed to lease to 48 municipalities and other lesser government subdivisions, such as local conservation commissions, upwards of 154 small coastal islands for recreational use. Rent free leases would run for 25 years. As 95 percent of the islands proposed for lease are one acre (0.4 hectare) or less in extent, it remains to be seen how many of the islands will actually be leased for management by local bodies. Another ninty-one unregistered islands have been proposed for lease to municipal governments for commercial marine resource uses such as lobster trap storage, agriculture sites, and clamming and worming activities.

5.4 Private

Along with federal, state, and local efforts to protect Maine's coastal island resources, a number of private groups have worked to further island conservation.

5.41 Ownership - Several private, not-for-profit organizations have become involved in island ownership in recent years. Most prominent among these are The Nature Conservancy, the National Audubon Society, and the Maine Audubon Society. Table 21 lists those island properties held by private conservation organizations--a total of 3,150 acres (1,280 hectares).

Recently a Wild Sea Island Fund has been established by special gifts to the Maine Coast Heritage Trust. The purpose of the fund is to help land holding conservation agencies purchase important wild islands threatened by undesirable development.

One private organization which was formed to provide ongoing island protection is the Monhegan Associates. This group of private individuals, most of them landowners on Monhegan, oversees the conservation and use of that portion of the island which remains undeveloped. Started by a summer resident of Monhegan, Thomas Edison, grandson of the inventor, the Associates now oversee nearly 80 percent of the island which will be kept permanently undeveloped.

Table 21

MAINE COASTAL ISLAND PROPERTIES OWNED BY PRIVATE CONSERVATION ORGANIZATIONS

Organization	Island	Municipality	Size Acres	(Hectares)
The Nature Conservancy	Barred	Deer Isle	3	(1.2)
	Basket	Cumberland	11	(4.4)
	Big Garden	Vinalhaven	10	(4)
	Big White	Vinalhaven	10	(4)
	Mt. Desert (Blagden)	Bar Harbor	110	(44)
	Bradbury	Deer Isle	46	(18.4)
	Deer Isle (Crockett Cove)	Stonington	100	(40)
	Damariscove	Boothbay Harbor	209	(83.6)
	Doughty	Harpswell	2	(0.8)
	Dram	Sorrento	6	(2.4)
	Georgetown (Eustis)	Georgetown	43	(17.2)
	Flint	Harrington	134	(53.6)
	Heron (3)	Phippsburg	5	(2)
	Mt. Desert (Ketterlinus)	Tremont	20	(8)
	Lane	Vinalhaven	79	(31.6)
	Long Porcupine	Gouldsboro	125	(50)
	Mark	No. Haven	30	(12)
	Redin's	Cape Porpoise	6	(2.4)
	Cushing (Ritchey)	Portland	60	(24)
	Round	Stonington	36	(14.4)
	Sheep	Little Deer Isle	5	(2)
	Smith	Vinalhaven	12	(4.8)
	Stave	Gouldsboro	132	(52.8)
	Stone	Machiasport	60	(24)
	Turtle	Winter Harbor	140	(56)
	Vaughn	Kennebunkport	48	(19.2)
	Wreck	Stonington	70	(28)
Appalachian Mountain Club	Beal	Georgetown	64	(25.6)
	Echo Lake	Mt. Desert	13	(5.2)
	Georgetown (Knubble Bay)	Georgetown	1.3	(0.5)
Maine Audubon Society	Wood	Biddeford	27	(10.8)
	Stage	Biddeford	10	(4)
	Cow	Topsham	40	(16)
	Mt. Desert	Bar Harbor	78	(31.2)
	Georgetown (Newman)	Georgetown	175	(70)
National Audubon Society	Harbor	Friendship	8	(3.2)
	Hog	Bremen	345	(138)
	Western Egg Rock	Bristol	7	(2.8)
	Little Duck	Long Island Plt.	59	(23.6)
	Little Hardwood	Jonesport	5	(2)
	Ross	Bristol	11	(4.4)
	Inner & Outer Man	Jonesport	10	(4)
	Ten Pound	Matinicus Is. Plt.	28	(11.2)
	Stratton & Bluff	Saco	30	(12)
Friends of Nature	McGlathery & Little McGlathery	Stonington	105	(42)
Monhegan Associates	Monhegan	Monhegan	100	(40)
Pine Tree Cons. Society	Southport	Southport	470	(188)
Cushing Island Association	Cushing	Portland	50	(20)

5.42 Easements - One private organization which does not hold land itself but which helps obtain conservation easements from private landowners is the Maine Coast Heritage Trust. By the beginning of 1978, the Trust had helped secure easements on about 9,000 acres (3,600 hectares) of coastal property. The recipients of these easements include local, state and federal agencies as well as private conservation organizations. The Nature Conservancy alone holds easements on more than 1,000 acres (400 hectares) of island property in Maine.

5.43 Leases - Currently one State owned island in Muscongus Bay is formally by a private organization for wildlife restoration. Other groups have license to use publicly owned islands as well. As mentioned in section 4.11, the Appalachian Mountain Club conducts group recreational programs on Swan Island (Maine Department of Inland Fisheries and Wildlife) and Fort Island (Maine Bureau of Parks and Recreation). The Maine 4-H Century III Challenge Program uses the Bureau of Parks and Recreation's Jewell Island. The College of the Atlantic staffs a whale watching station on the Coast Guard's Mt. Desert Rock.

More islands may be leased to private, nonprofit groups in the future. The Bureau of Public Lands has proposed in its Draft Management Plan for the Unregistered Coastal Islands that a number of islands be leased to the Maine Audubon Society, the National Audubon Society, the Hurricane Island Outward Bound School, the Appalachian Club and the Nature Conservancy.

5.44 Natural Areas - The Critical Areas Program grew out of a Natural Areas Inventory which was conducted by the private, nonprofit Natural Resources Council of Maine in 1971-73. The purpose of the Inventory was (1) to identify, classify and describe sites and areas whose natural state was suggested to be of unusual interest, and (2) to develop a program for natural area protection which would be more comprehensive in scope and more coordinated than had been undertaken previously. Dozens of coastal island natural features were listed in the original Natural Areas Inventory. Recently the State Planning Office has completely updated the Inventory.

5.45 Education and Research Programs - A considerable number of organizations and schools use the coastal islands in Maine for environmental education and scientific research. The Swans Island Marine Station gathers data on the flora, fauna, and marine habitats of islands in the Blue Hill Bay region. The Shoals Island Marine Laboratory conducts college level courses on Appledore Island in the Isles of Shoals. The Academy of Natural Sciences sponsors courses in island ecology for high school students on Hardwood Island.

Since 1936 the National Audubon Society has operated the Audubon Camp of Maine on Hog Island in Upper Muscongus Bay as an adult education center. Two sessions are held annually in the summer. The Maine Audubon Society conducts about 25 field trips annually to the coastal islands. Over 600 people participate in these boat trips to the islands each year.

A new participant in the effort of coastal conservation and development is the Coastal Resources Center. The CRC encourages environmentally conscious economic development in Hancock and Washington Counties by awarding small grants to individuals or organizations to carry out project proposals. In 1976, for instance, the CRC awarded a grant for a study of the proposed inclusion of Marshall Island into Acadia National Park. In the future, the Coastal Resources Center may become involved in other island issues.

Other programs using the islands for research and education as well as for recreation are listed in Table 2.

5.46 Ad Hoc Groups - There have been a number of ad hoc private groups formed to respond to particular threats to coastal islands over the past ten years or so. The formation of Citizens Who Care in 1969, to oppose the development of an oil terminal by King Resources in Casco Bay, is one example. Another group is the Coastal Resources Action Committee which intervened in the administrative proceedings of the Board of Environmental Protection on an application by Maine Clean Fuels to build an oil refinery on Sears Island in Penobscot Bay. Safe Power for Maine, a group opposed to nuclear power worked to block the siting of a plant on Sears Island.

5.47 Management Objectives - The conservation activities of public and private conservation agencies at all levels circumscube what recreational use is allowed on particular islands. Table 22 summarizes the management objectives for those agencies and organizations with island holdings in Maine.

Table 22

MANAGEMENT OBJECTIVES FOR AND RECREATIONAL USE OF
MAINE COASTAL ISLANDS IN PUBLIC AND PRIVATE CONSERVATION OWNERSHIP

	Agency	Primary Management Objectives	RECREATION ALLOWED	
			Camping	Day Use
FEDERAL	Fish and Wildlife Service	Wildlife habitat protection; research	No	Except during nesting season, but not encouraged. Pond Island closed March 1 - July 31. Franklin Island closed April 1 - July 31. Petit Manan Island closed November 16 - April 14. Seal Island closed year round.
	National Park Service	Resource protection; aesthetic preservation; outdoor recreation	By permit on Isle au Haut (18 persons); by fee on Mt. Desert Island (104 walkin sites, 432 tent/trailer sites)	Hiking, swimming, bicycling, riding, touring, etc. on Mt. Desert Island. Primitive, nondegretory uses on other islands.
	Coast Guard	Navigation safety	No	At a few light stations.
STATE	Bureau of Parks and Recreation	Outdoor recreation; resource protection	By fee on Warren Island (±25 persons); by permit on Jewell Island and Fort Island	Supervised: Warren Island (±20 persons), Eagle Island, (±20 persons), and Davis Island. Unsupervised: Fort Island, Jewell Island, Little Chebeague Island and Long Island.
	Department of Inland Fisheries & Wildlife	Wildlife habitat protection; research	No	Except during nesting period (May 1 - July 15), primitive recreation uses, e.g. fishing, hunting, wildlife studies, photography, picnicking, wild crop harvesting and trapping providing no damage is done to nesting habitat.
	Bureau of Public Lands	Clarify titles; transfer those under jurisdiction appropriate for nesting, recreation, etc. pursuant to a management plan (in preparation); hold otner islands in public interest	A management plan for those islands presently or expected to come under the Bureau's jurisdiction is being prepared; it suggests specific islands appropriate for recreation and available for transfer to federal, state, local or private bodies; policies will be consistent with general statutes governing lands under the Bureau's jurisdiction and specifically with Coastal Island Registry law.	
LOCAL	Towns	Outdoor recreation; resource protection	By permit on North Haven Island and Perkins Island	Passive and interactive activities but no supervised facilities.
PRIVATE	Nature conservancy	Resource protection; environmental education	By organized groups by permit on a limited basis.	Nondegratory, passive activities, e.g. hiking, nature photography.
	National Audubon Society	Wildlife habitat protection; research; environmental education	No	Bluff, Stratton, and Hog Islands open for nature photography by permit.
	Maine Audubon Society	Open space and wildlife habitat protection; environmental education	No	Passive recreational use except in critical nesting habitats during the nesting season; no motor vehicles.
	Friends of Nature	Resource protection	Not encouraged; no facilities	Passive recreational use on McGlathery and Little McGlathery Islands.
	Monhegan Associates	Resource protection	No	Passive activities; e.g. nature study, on Monhegan Island.
	Appalachian Mt.Club	Outdoor recreation	By fee on Beal Island (20 persons), Mt. Desert Island (85 persons) for members and guests; also sponsors trips to State owned Fort (12 persons) and Swan (30 persons) Islands.	Members and guests on Beal and Mt. Desert Islands.

6.0 ISLAND ACQUISITIONS BY MAINE BUREAU OF PARKS AND RECREATION

Give me an Island above all things in the world.

--Robert Louis Stevenson

6.0 ISLAND ACQUISITION BY THE BUREAU OF PARKS AND RECREATION

A good deal has been accomplished in recent years toward the protection of islands along the Maine coast for resource conservation and to a limited extent for recreation. Nonetheless, mounting pressures for island use by a broad cross-section of the public suggest that it is desirable to add others to the stock of islands formally available for recreational use--both onsite and visual use.

To achieve this objective an evaluation was begun of islands suitable for conveyance to the Bureau of Parks and Recreation for recreational management. As the Bureau of Public Lands was in the process of determining which islands under its jurisdiction would be suitable for transfer to other agencies for recreational and habitat management, it was logical to look first to this source of islands. The Bureau of Public Lands holds islands in trust for the people of Maine and has the authority to transfer islands to other state agencies which can manage them in the public interest. Both islands suitable for onsite use as well as islands which are important scenic resources from state park properties were studied.

Roughly three-fifths of the coastal islands in Maine are claimed in private ownership. A review of these islands also was started to identify islands worthy of protection. A mix of islands acquired from private and public ownership, together with island properties already held by the Bureau of Parks and Recreation, could be molded into a coastal park system which would serve the needs of recreationists for decades.

6.1 Acquisition Considerations

Island acquisition and park planning is no simplistic matter. There are a number of considerations which remain as unknowns. It is impossible, for example, to predict whether the existence of publicly owned islands in an area will cause an increase or decrease in visitation to nearby private islands. On the one hand, publicly owned islands give the public islands on which they will not be trespassing. On the other hand, publicly owned islands may attract yet more visitors to an area. In any case, the effects of use on nearby private islands should be a consideration in evaluating proposals for public acquisition of islands.

Cost efficiency in island acquisition and operation is also an important consideration. A major problem of the Bureau of Parks and Recreation in acquiring and developing islands for recreational use are the costs of purchase and management as measured against other priorities at more accessible and heavily used park facilities. The Bureau needs a clear mandate from the Governor and/or the Legislature to help it establish priorities.

Other agencies tend to have more clearly defined objectives in island conservation and use (Table 22). The Fish & Wildlife Service is

refining its objectives and will continue to acquire islands with significant wildlife habitat. The National Park Service is restudying its proposed island acquisitions and will continue to accept conservation easements.

At the state level, the Department of Inland Fisheries and Wildlife has an established program of island protection for nesting habitat. The Bureau of Public Lands continues to carry out its mandate of management of unregistered islands and the clarification of titles to registered islands.

Among the private conservation organizations, the Nature Conservancy is narrowing its focus to the preservation of islands of outstanding natural diversity. The Audubon Societies continue to emphasize protection of islands for open space and wildlife habitat as well as environmental education.

While both public and private conservation agencies will continue to pursue their particular interests in island use and protection, it is important to emphasize that continued private ownership of the majority of those islands outside the public domain is in the public interest.

6.2 Unregistered Recreational Islands

As part of the effort to assess the potential recreation resources on coastal islands, an indepth screening and study of unregistered islands on file in the Coastal Island Registry was undertaken. This process began with the review of island resource lists, compiled from the Coastal Island Registry by staff of the Bureau of Public Lands, cross-checking these lists against the files and the Registry master list. The initial criterion used for selecting islands was a minimum size of five acres (2.0 hectares) for each island. It was felt that it would be difficult to justify the selection of islands smaller than this for onsite public recreational use. The uses considered for the islands included walking or hiking, picnicking, and camping. The environmental impact of encouraging these types of public use on islands under five acres (2.0 hectares) may be too great for such small islands to sustain.

The "first cut" resulted in a list of twenty islands (out of about 1300 unregistered islands in the Coastal Island Registry files) greater than five acres (2.0 hectares) in size. Islands were deleted from and added to this list as information became available on ownership, bird nesting, etc. Using information on such aspects as access, size, forest cover, and soil suitability, an attempt was made to prioritize the islands according to potential for recreational use. This led to the realization that more data were needed on the islands before any decision making could take place. Thus the focus of the study changed to information gathering.

Seven of the islands were eliminated after consultation with members of the seabird inventory project at the University of Maine at Orono, due to their importance as seabird nesting habitat areas.

However, five islands were added to the list as a result of these consultations, bringing the total to fifteen. Resumes to provide data for making decisions regarding the future development of coastal islands for low intensive recreational use were prepared for each of these islands.* In compiling the resumes, several sources were used: Coastal Island Registry survey forms, filled out through onsite inspection of the unregistered islands, State Planning Office Coastal Inventory resource maps, NOAA coastal charts, and U.S.G.S. topographic maps. Each island was briefly inspected from the air and one island was landed on by boat.

Subsequent to this work, the Bureau of Public Lands commissioned the preparation of a management plan for all unregistered islands under its jurisdiction. The proposed Management Plan for the Unregistered Coastal Islands in Maine lists 11 islands deemed to be of regional significance and suitable for recreational day use. Eight unregistered islands are listed as suitable for overnight camping use (Table 23). The Bureau of Parks & Recreation will be given a right of first refusal on these islands. That is, the islands will be reserved by Public Lands for the Bureau of Parks and Recreation, pending the actual assumption of custody by the Bureau of Parks and Recreation. In the interim, any of these islands could be leased by the Bureau of Public Lands to a State agency, municipality or other entity which desires to lease them for purposes consistent with the management plan, provided that such leases may be terminated without penalty on reasonable notice whenever the Bureau of Parks and Recreation desires to assume custody of any such island.

6.3 Islands Adjacent to Park Properties

Often very small islands and ledges can contribute much to the scenic beauty of an area of coastline. In order to provide information on islands which may be important in maintaining the scenic integrity of coastal state parks, a study of islands adjacent to state parks was conducted. All unregistered islands within a one mile (1.6 km) radius in sight of developed coastal state parks were located on Coastal Island Registry maps. Registry survey forms for each island were examined to determine if these islands were significant scenic resources. More than three dozen islands were selected, some of which would more logically be transferred to other management agencies, such as bird nesting islands to the Department of Inland Fisheries and Wildlife.

Since this work was completed, the Bureau of Public Lands has prepared a management plan for all unregistered islands under its jurisdiction. Forty-three islands (mostly bare ledges) adjacent to existing coastal park holdings have been proposed for transfer to the Bureau of Parks and Recreation (Table 24).

*These are available as open file information in the Bureau of Parks & Recreation, Division of Planning & Research.

Table 23

UNREGISTERED COASTAL ISLANDS PROPOSED FOR TRANSFER FROM THE BUREAU OF PUBLIC LANDS TO THE BUREAU OF PARKS & RECREATION

Coastal Island Number & Map #	Municipality	Location	Size	Resource Category	Significant Features
CUMBERLAND COUNTY					
Map 5C					
477	Cumberland	Jewell I.	1	1	adj.
478	Cumberland	Jewell I.	1	1	adj.
481 Indian Rk.	Portland	Jewell I.	1	3	adj.
482	Portland	Jewell I.	1	1	adj.
483	Portland	Jewell I.	1	1	adj.
484	Portland	Jewell I.	1	1	adj.
487	Cumberland	Jewell I.	1	1	adj.
488	Cumberland	Jewell I.	1	1	adj.
489	Cumberland	Jewell I.	1	1	adj.
490	Cumberland	Jewell I.	1	1	adj.
491	Cumberland	Jewell I.	1	1	adj.
492	Portland	Jewell I.	1	1	adj.
493	Portland	Jewell I.	1	1	adj.
494	Portland	Jewell I.	1	1	adj.
495	Portland	Jewell I.	1	1	adj.
496	Portland	Jewell I.	1	1	adj.
497	Portland	Jewell I.	1	1	adj.
498	Portland	Jewell I.	1	1	adj.
KNOX COUNTY					
Map 8B					
390	Owl's Head	Owl's Head	1	3	adj.
391	Owl's Head	" "	1	1	adj.
WASHINGTON COUNTY					
Map 24B					
169	Edmunds	Whiting Bay	1	4	adj.(Cobscook)
176	Edmunds	" "	1	4	adj.(Cobscook)
177	Edmunds	" "	2(2)	4	adj./barred
178 Bar I.	Trescott	" "	2(1)	4	adj./camp
179	Edmunds	" "	2(1)	4	adj.
180	Trescott	" "	2(1)	4	adj.
181	Edmunds	" "	1	4	adj.
182	Edmunds	" "	1	4	adj.
197	Edmunds	Cobscook	1	4	trails/adj.
Map 24C					
258	Trescott	Eastern Hd.	1	3	sea stack/adj.
Map 24F					
321	Trescott	Eastern Head	2(1)	1	adj.
322	Trescott	" "	2(1)	1	adj.
323	Trescott	" "	2(1)	1	adj.
324 E.Hd.Lds.	Trescott	" "	1	1	adj.
325 Lt.Moose	Trescott	" "	2(1)	4	adj.
326	Trescott	" "	1	1	adj.
331 L.Moose Ld.	Trescott	" "	1	1	adj.
Map 46G					
373 Sail Rock	Lubec	Quoddy Head	1	1	adj./nav.aid/ most eastern U.S. point
374	Lubec	" "	1	1	adj.
375	Lubec	" "	1	1	adj.
376	Lubec	" "	1	1	adj.
377	Lubec	" "	1	1	adj.
378	Lubec	" "	1	1	adj.

KEY

SIZE

1 = 0 to 0.5 acres (0 to 0.2 hectares)
2 = 0.5 to 3 acres (0.2 to 1.2 hectares)

RESOURCE CATEGORY

1 = bare ledge
3 = islands with soils and grass/shrub vegetation
4 = islands with soils and forest vegetation

SIGNIFICANT FEATURES

adj. - within ¼ mile of an existing holding of the Bureau of Parks & Recreation
barred - connected to the mainland at low water for foot access
camp - overnight camping potential
trail - existing trails on the island

Table 24

UNREGISTERED COASTAL ISLANDS TO REMAIN IN THE JURISDICTION OF THE BUREAU OF PUBLIC LANDS SUBJECT TO FIRST REFUSAL TRANSFER REQUEST BY THE BUREAU OF PARKS AND RECREATION

Coastal Island Number & Map #	Municipality	Location	Size	Resource Category	Significant Features
KNOX COUNTY					
Map 7A					
090	Vinalhaven	Seal Bay	2(1)	3	day/access
091 Hay I.	Vinalhaven	Seal Bay	3(9)	4	access/camp
092	Vinalhaven	Seal Bay	1	3	day
185	Vinalhaven	Seal Bay	2(1)	3	day/access
Map 7B					
203 Harbor	Isle au Haut	Merchant Row	3(11)	4	beach/access/camp
211 Ram	Isle au Haut	"	2(4)	4	day
Map 8D					
552	Saint George	Muscle Ridge	3(5)	4	anch./day/access
553	Saint George	"	3(7)	4	anch./day/access
567 Spectacle I.	Saint George	"	3(4)	4	anch./day/access
HANCOCK COUNTY					
Map 20D					
689 E. Ram I.	Castine		2(2)	4	day/access
Map 20G					
795 Sloop	State	North Penobscot Bay	3(7)	4	beach/access camp/bird
Map 20H					
810 Crow	Deer Isle	North Penobscot Bay	3(7)	4	anch./camp
897 Steve	Stonington	Merchant's Row	2(2)	4	day
Map 20J					
966 Ram	Stonington	Merchant's Row	3(4)	4	anch./camp
977 No Man's	Stonington	Merchant's Row	3(5)	4	day
WASHINGTON COUNTY					
Map 24C					
219 Gooseberry	Lubec	Straight Bay	3(5)	4	beach/camp
222	Trescott	"	3(5)	4	beach/camp/barred
224	Trescott	"	2(3)	4	beach/camp
Map 23B					
666 Green	Jonesport	Eastern Bay	3(5)	4	day

KEY

SIZE

2 = 0.5 to 3 acres (0.2 to 1.2 hectares)
3 = greater than 3 acres (1.2 hectares)

RESOURCE CATEGORY

3 = islands with soils and grass/shrub vegetation
4 = islands with soils and forest vegetation

SIGNIFICANT FEATURES

access - foot access from the shore to the interior is not difficult
anch. - safe anchorage
barred - connected to the mainland at low water for foot access
beach - sand or gravel beach for landing
bird - nesting population of birds
camp - overnight camping potential. Generall islands over 3 acres, or in some cases, islands that have traditionally been used for camping
day - day use. Islands under 3 acres, or islands with difficult access or poor protection where overnight camping is not advisable

6.4 Islands in Private Ownership

During the past three and one-half centuries, since the first land grants by European sovereigns, nearly every Maine island of practical utility has been claimed by one owner or another. As a result, the largest and best endowed islands in Maine today are in private ownership.

Toward a systematic assessment of those private islands which would be suitable for recreational use, a list of all coastal islands over fifty acres (twenty hectares) was compiled. From this list fifty-five islands which have no significant development were identified. A few of these, such as Libby, Schoodic, Browney and Outter Heron Islands, support heavy sea and wading bird or raptor nesting. All undeveloped coastal islands in Maine are important resources. Large undeveloped islands are often especially important wildlife or potential recreation sites and should be studied in detail for possible public or private conservation protection (see Table 25).

Among the most important criteria for assessing the suitability of an island for recreational use are:

1. Size - large enough to sustain a reasonable amount of use, small enough to retain the island feeling.

2. Natural Features - beaches, headlands, mature forests, hills, marshes, etc; generally the greater the diversity the more desirable, excepting threats to very fragile areas.

3. Accessibility - refers both to available mainland island transportation and to shoreline characteristics (e.g., spot for beaching a boat).

4. Protected Anchorage - essential to adequate mooring of boats.

5. Protected Camping Sites - weather hazards can be a serious safety problem.

6. Drinking Water - potable local supply is desirable but visitors can be required to supply their own.

7. Sewerage - onsite in-ground disposal is handy, often less costly but alternatives are available.

8. Remoteness - a consideration both for the visitor experience (the fewer visual, audible, olfactory intrusions, the better) and management.

9. Land Cover - diversity is desirable, some wooded, some open areas.

10. Water Quality - high quality water surrounding an island is essential for contact activities and health safety.

Table 25

MAINE COASTAL ISLANDS LARGER THAN 50 ACRES (20 HECTARES)
WITH NO SUBSTANTIAL PERMANENT STRUCTURES
NOT IN PUBLIC OR PRIVATE CONSERVATION OWNERSHIP

(West to East)

Coastal Island Registry Number	Island	Municipality	Approximate Size Acres	(Hectares)
81-112	Trott	Kennebunkport	70	(28)
55-288	Whaleboat	Harpswell	124	(50)
73-019	Driscoll	Brunswick	70	(28)
73-062	Lines	Bath	164	(66)
73-144	Malaga	Phippsburg	79	(32)
79-168	Lee	Phippsburg	105	(42)
73-114	Oak	Woolwich	69	(28)
65-409	Indiantown	Boothbay Harbor	61	(24)
65-279	Outer Heron	Boothbay Harbor	67	(27)
65-175	Cow	Bremen	84	(34)
65-083	Hungry	Bremen	141	(56)
63-811	Thompson	St. George	110	(44)
63-807	Barter	St. George	49	(20)
63-791	Caldwell	St. George	100	(40)
63-393	Sheep	Unorganized	67	(27)
77-073,074	Job(inc.Middle)	Islesboro	233	(93)
77-011	Sears	Searsport	860	(344)
59-776	Butter	Unorganized	287	(115)
63-093	Penobscot(Long)	Vinalhaven	284	(114)
63-032	Calderwood	North Haven	67	(27)
63-036	Babbidge	North Haven	90	(36)
63-132	Narrows	Vinalhaven	60	(24)
63-183	Otter	Vinalhaven	51	(20)
59-771	Bradbury	Unorganized	159	(64)
59-877	Green	Stonington	47	(19)
59-866	Camp	Stonington	68	(27)
59-974	Spruce	Stonington	77	(31)
59-923	Campbell	Deer Isle	87	(35)
59-953	Sheep	Stonington	53	(21)
59-929	Hog	Brooklin	90	(36)
63-264	Fog	Isle au Haut	56	(22)
59-352	Black	Swan's Island	177	(71)
59-162	Thomas	Bar Harbor	68	(27)
59-183	Preble	Sorrento	84	(34)
59-062	Schoodic	Winter Harbor	67	(27)
79-787	Pinkham	Milbridge	92	(37)
79-789	Foster	Harrington	335	(134)
79-753	Norton	Addison	74	(30)
79-419	Doyle	Jonesport	100	(40)
79-402	Norton	Beals	138	(55)
79-693	Browney	Beals	46	(18)
79-520	Pig	Beals	56	(22)
79-660	Steel Harbor	Jonesport	422	(169)
79-569	Mark	Jonesport	46	(18)
79-481	Little Spruce	Jonesport	87	(35)
79-480	Great Spruce	Jonesport	609	(244)
79-569	Lakeman	Jonesport	77	(31)
79-460	Pond Cove	Roque Bluffs	79	(32)
79-567	Marsh	Jonesport	60	(24)
79-570	Halifax	Jonesport	64	(26)
79-359	Libby	Machiasport	84	(34)
79-291	Bar	Machiasport	56	(22)
79-065	Hallowell	Edmunds Twp.	61	(24)
79-081	Wilber Neck	Pembroke	66	(26)
79-061	Falls	Trescott Twp.	130	(52)

11. History - archeological and historical sites can add to the attractiveness of an island.

6.5 Islands of Historic Significance

The islands along the coast of Maine have played an important part in every era of development in the Northeast. Prior to European settlement, natives used the islands on a seasonal basis as part of their regular migrations. Some prehistoric island shell middens, burial grounds and other sites have been located, particularly in Knox-Hancock County and Casco Bay regions. The more important of these sites should be protected for the archeological stories they have to tell.

A number of islands stand out due to their associations with historic persons or ways of life over the last four centuries. A few of these already receive some measure of protection. Much of Monhegan, for example, an early colonial fishing station and later one of the first summer artist colonies in Maine, is now protected by an association of the islanders themselves. Damariscove, an important 17th century fishing settlement, is held by the Nature Conservancy. Eagle Island, the summer retreat of the Peary family in Casco Bay since 1914, is managed by the Bureau of Parks and Recreation.

Although a good deal is known about the historic and prehistoric significance of sites on the mainland, no comprehensive survey has been undertaken for all of the coastal islands. A limited survey of prehistoric sites on the islands in the Harpswell region has been undertaken during the summer of 1978 by researchers at the University of Southern Maine. According to the Maine Historic Preservation Commission, surveying the islands is of the highest importance. It is expected that a thorough inventory will be initiated beginning in Casco Bay in 1979.

Many historic islands remain unspoiled only due to the wisdom of their current owners. As pressures mount and ways change, they may become imminently threatened. At least some of these should be managed to preserve our common human heritage. Additionally there are many islands which are of some significance because of their military associations. The more important of these in private ownership should be studied for protective action.

6.6 Coastal Island Park System

In many respects the Maine coast would be the ideal location for an island state park system. Island parks have been established or are being set up in a number of other states including California, New York, Rhode Island, Ohio, and Massachusetts.

Although the State already operates Warren Island as a state park in Penobscot Bay, most attention on a park system has focused on Casco Bay. More than a decade ago, in 1965, the Portland area Regional Planning Commission suggested that a Casco Bay Marine

Park be established to tie together all types of recreation facilities which could be offered in the Bay. A 1967 Regional Plan for Recreation and Open Space prepared for the Greater Portland Regional Planning Commission mentioned that such a marine park would be a unique project and could include "boat facilities on the mainland, anchorages and landings on the islands, facilities for picnicking, hiking and camping on the islands, all operated under a single management."

In 1970, the federal Bureau of Outdoor Recreation released its report, Islands of America. In that report the Bureau proposed that a Casco Bay Islands Trust be established as the initial component of a nationwide system of Island Trusts. The Casco Bay islands were selected because they "are located on the fringe of the heavily populated northeast megalopolis...Their recreational potential is highly significant. Some...are already threathened by undesirable industrial development and by pollution." As envisioned in the report, the Trust would have included all 324 islands in the Bay. However, only a fraction of the total 17,000 acres (6,800 hectares) would be acquired in fee. The balance would be protected by zoning and other land use controls and by scenic easements.

Largely as a result of political considerations a Casco Bay Islands Trust was never established, though attempts were made in 1971-72. Since Islands of America was issued in 1970 one step has been taken toward the establishment of a Casco Bay park system. The Bureau of Parks and Recreation acquired several key island properties in the bay. The Bureau now holds all of Jewell, Little Chebeague, Bangs, Googins and Eagle Islands as well as Andrews Beach on Long Island. Conservation easements have been granted on The Brothers and half of Whaleboat Island.

Islands managed in Casco Bay by the Bureau of Parks and Recreation, the Department of Inland Fisheries and Wildlife, the Bureau of Public Lands, the City of Portland and the Nature Conservancy combined are an impressive aggregate resource. Inasmuch as many of the resources of Casco Bay are of more than local interest and so long as the bay is a major recreation attraction for people of the entire eastern seaboard, then the conservation of the bay has impact and significance far beyond the fringes of local concern. Still, any proposal to establish a management framework for the bay should have the support of the residents.

The island park system closest geographically and in some respects most similar to Casco Bay is the Boston Harbor Islands State Park. Created by an act of the Massachusetts Legislature in 1970, the Boston Harbor Islands State Park is in transformation from a collection of 30 long abused and neglected islands to a network of "one of the most delightful parks in America" and "an excellent example of close-to-home recreation." This transformation is a slow, expensive process, but already it is paying off. More than 100,000 persons visited the islands in 1977. Day use was up 51

percent and camping 124 percent over the previous year. Recently Massachusetts received the Outdoor Recreation Achievement Award and a check for $307,500 from the U.S. Department of the Interior to help finance the Boston Harbor Islands State Park.

A Casco Bay islands park could have much the same effect on the waterfront of Portland Harbor as the harbor islands park has had in Boston--a boost to waterfront redevelopment. Shoreside parks in Lowell and Charleston have had similar results. A Casco Bay islands park would be an urban marine park reserve with a sense of remoteness not found in island parks in other states. For the waters of Casco Bay are still clean and the islands of the bay still unspoiled.

But Casco Bay is only the most obvious location for an island trust incorporating a park system. Other coastal sites would also be suitable; Penobscot Bay, for instance.

These island park clusters could form the nucleus of a coastwide park system. Many islands which are returned to the trust of the State through the Coastal Island Registry may be incorporated into a Maine Coastal Park System. To be sure, an island park system would not be inexpensive. Management capabilities would have to be improved and funds increased markedly before the idea could successfully become reality. But such a park network could be developed in phases to allow an evolution of facilities. It behooves us to protect more islands in the public interest now, lest the opportunity slip away. At the same time, a clear public mandate could inspire more aggressive State action in island recreation. What is not clear is to what extent development induces use.

Any coastal islands park planning effort should acknowledge that:

- the coastal islands in Maine are one of the state's greatest assets and most important natural resources;
- the experience of visiting the islands could be made accessible to all, regardless of income;
- the islands can serve a diversity of recreational interests;
- recreational use must recognize and respect natural capacities and facilities;
- primary emphasis of recreational use should be on water and island oriented activities;
- property rights and privacy of island residents should be protected; and
- the environmental education and historic interpretation potential of the islands should be developed.

6.7 Conservation Easements

Complementing an expanded program of public island acquisition, the Bureau of Parks and Recreation could reevaluate its policy on the acceptance of conservation easements on island properties. Current policy is weighted against the acceptance of easements which do not provide the public access to the land encumbered with the easement. But it is important to recognize that the coastal islands are an integral part of the entire Maine seascape.

The waters, the peninsulas, the islands of the coast are a composite recreational resource. The experience of a visitor to a publicly owned island is enhanced by what one sees from the island as well as the views traveling to and from an island. At the same time, the water is itself a kind of public playground.

Under its mandate "to preserve the natural character and features" of natural areas the Bureau of Parks and Recreation could help insure the beauty of the coastal region by accepting conservation easements restricting island shore development. Islands near coastal park properties should receive particular attention.

...there ought to be ways in which more people can fully savor an island like North Haven without having to own a piece of it or without feeling the urge to develop it. And that should be a priority for the consideration of both islanders and visitors.

--Richard Saltonsall, Jr.
Maine Pilgrimage

7.0 RECOMMENDATIONS

Maine's coastal islands are a resource of obvious ecological and recreational significance. There are times, of course, when these different values are at odds. Visitation of islands with seabird colonies can frighten nesting females from their nests and expose eggs or newly hatched young to predation. Disturbances can result in extensive losses in a matter of minutes. Likewise some species, such as bald eagles, will breed only in undisturbed isolation.

On the other hand, island recreation and conservation can frequently go hand in hand. Only about one hundred islands are considered to be of critical importance for nesting. Undeveloped islands (even those supporting bird colonies which may be used in the nonnesting season) can provide both remote recreation experiences and critical habitat. Once heavily developed, islands may lose their appeal for both types of uses.

Based on the information collected for this paper and the report The Maine Coast: Recreation and Open Space, it is recommended that the following State actions pertaining to the protection and use of the islands of the Maine coast be considered.

7.1 Program Recommendations

1. It is recommended that the Bureau of Parks and Recreation should coordinate a long range management plan for the conservation of islands for recreational use and resource protection. The plan would be undertaken in conjunction with other public and private conservation island management agencies including the National Park Service, the U.S. Fish and Wildlife Service, the Coast Guard, the Maine Department of Inland Fisheries and Wildlife, the Nature Conservancy, the National Audubon Society, and the Maine Audubon Society. The plan could explore:

   a. the establishment of a Maine Coastal Island Reserve System comprised of those islands managed by the various agencies;

   b. agreements with private island owners for the recreational management of islands by the Bureau of Parks and Recreation (e.g., The Nature Conservancy's Damariscove Island);

   c. agreements with private island owners for the permanent protection of islands of outstanding historic significance (e.g., Richmond, Butter, and Ragged Islands);

   d. acquisition of significant federal surplus island properties as they become available.

2. It is recommended that the Bureau of Parks and Recreation work with the Greater Portland Council of Governments, the Mid Coast Regional Planning Commission, the municipal governments, Citizens Who Care and others toward the establishment of a Casco Bay Island Trust.

3. It is recommended that the Bureau of Parks and Recreation encourage and work with municipalities interested in developing islands for recreational use (e.g., Fort Gorges and Peaks Island Reservation in Portland) including those unregistered islands proposed by the Bureau of Public Lands for lease to municipalities.

4. It is recommended that the Bureau of Parks and Recreation accpet management responsibility for those unregistered islands proposed for transfer from the Bureau of Public Lands.

5. It is recommended that the Bureau of Parks and Recreation, in cooperation with the Bureau of Public Lands, conduct further inventory studies on the 19 islands tentatively identified as having day use or camping potential to gather additional information concerning at least:

   a. anchorage, protection, landing, and access facts;

   b. ecological vulnerability, including:
      (1) soil depth, type, distribution, and susceptibility to compaction;
      (2) degree of fire hazard and fire permit system;
      (3) use problems associated with resident wildlife species;
      (4) unique vegetation;

   c. development potential, i.e., none; fire pit; tent platform; outhouse; campsite access.

6. It is recommended that the Bureau of Parks and Recreation cooperate with the U.S. Forest Service Backcountry Research Program in the "Survey of Offshore Island Ecosystems with the Potential for Recreational Use" to establish permanent research plots and to determine specific carrying capacities for day use and overnight camping islands.

7. It is recommended that the Bureau of Parks and Recreation study the effect of islands acqusition and development for recreational use to determine to what extent use pressures on adjacent private islands are eased or exacerbated.

8. It is recommended that the Bureau of Parks and Recreation re-evaluate its policy on accepting conservation easements on islands. Easements could be accepted even when no public physical access is provided (e.g., on islands #77-051 and -052 adjacent to Warren Island State Park) to protect their scenic attractiveness.

9. It is recommended that the Maine Critical Areas Program coordinate studies of (1) island fauna and flora which may have evolved apart and differently from mainland species: (2) the transfer of seed

stock from island to island; (3) natural features which may be unique to coastal islands in Maine and which would qualify for registration as critical areas; (4) outstanding island scenic areas.

10. It is recommended that the Maine Bureau of Property Taxation undertake tax studies to clarify the role of property taxes in island development and conservation.

11. It is recommended that the Maine Department of Inland Fisheries and Wildlife supply written information concerning the use of public and private islands to all individuals registering boats.

12. It is recommended that the Maine Department of Marine Resources and/or Inland Fisheries and Wildlife conduct a comprehensive census of seal whelping and haulout sites in Maine in cooperation with and funded by the National Marine Fisheries Service.

7.2 Site Recommendations

13. It is recommended that the Cape Porpoise Islands in York County be protected by such organizations as The Nature Conservancy and the Kennebunkport Conservation Trust.

14. It is recommended that the undeveloped islands at Biddeford Pool be protected by such organizations as the Maine Audubon Society.

15. It is recommended that the Bureau of Parks and Recreation explore, with the owners of Richmond Island, conservation alternatives which would protect the scenic recreational and historic resources of the island.

16. It is recommended that minimal facilities (e.g., toilets, snow fences) be developed by the Bureau of Parks and Recreation to protect and enhance the use of Andrews Beach by the public.

17. It is recommended that the Bureau of Parks and Recreation formally transfer Bangs and Carver's Islands to the Department of Inland Fisheries and Wildlife for administration as wildlife management areas.

18. It is recommended that as part of a Casco Bay Islands Trust project the Bureau of Parks and Recreation develop a Casco Bay Islands State Park. A first step in this process would be the formulation of a park master plan. As part of the park:

    a. Jewell Island could be developed as a day use and overnight recreation area;
    b. Little Chebeague Island could be developed as a day use area;
    c. Eagle Island could be maintained as a state memorial;
    d. Ragged, Flag, White, Turnip and Jacquish Islands could be acquired orconserved by other means to protect their scenic and potential recreational and historic values;
    e. public ferry transportation could be provided to the islands on a seasonal basis.

19. It is recommended that, perhaps in conjunction with the establishment of a Casco Bay Islands Trust, the following island sites be protected from adverse development: Cow, Goose and Little Goose Islands, Deer Point on Great Chebeague Island, the eastern marshy area and southern tip of Cliff Island, the interior forest and swamp area of Little Diamond Island, and the forested northeastern section of Great Diamond Island.

20. It is recommended that the Bureau of Parks and Recreation consider fee or easement acquisition of the Fox Islands off Popham Beach State Park if public use becomes restricted.

21. It is recommended that the Bureau of Parks and Recreation work with the owners of Wood Island near Popham Beach State Park to protect the scenic and other resources of the island.

22. It is recommended that the Bureau of Parks and Recreation consider formally leasing Fort Island to the Appalachian Mountain Club for canoe camping use until funds are available to develop the island for general public recreation and historic interpretation.

23. It is recommended that the Bureau of Parks and Recreation continue to operate Warren Island as a day use and overnight state park. Development of additional camping shelters and initiation of public transportation to the island should be considered.

24. It is recommended that the National Park Service study the acquisition and development of Long Island in Blue Hill Bay for resource protection and recreational use.

25. It is recommended that if land use changes threaten any of the Roque Island group of islands, the Bureau of Parks and Recreation work, alone or in cooperation with other agencies, to protect the use and resources of the islands.

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Here one had the feeling of apartness, of aloneness, of being in a small, self-contained, finite world, at once insulated and bounded by the sea. This was the island feeling, a sense of wonder that I was to experience every time I visited a Maine island.

--Carl W. Buchheister,
Introduction to Summer
Island by Eliot Porter

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APPENDIX EXHIBITS

APPENDIX B-I

Island Features listed in the
Maine Natural Areas Inventory: 1971-72

wn	Name of feature	Description of feature	Number
YORK CO.			
Biddeford	Wood Island:	colony of endangered seabirds	M0398
	Libbyshears:	habitat of laughing gulls	M0553
	State Island:	seal gathering island	M0607
Kennebunk	Bumpkin Island:	much sealife, extensive mudflats	M2012
Kennebunk-port	Vaughan Island:	seal habitat	M1976
Kittery	Appledore Island:	colony of endangered seabirds	M0009
	Isles of Shoals:	migratory bird stop	M0175
	Gerrish Island:	explosion breccia-latest igneous activity in New England	M1980
Old Orchard Beach	Stratton Island:	colony of endangered seabirds	M0351
York	York Harbor Rock:	partial translation of the Illead	M1200
CUMBERLAND CO.			
pe Elizabeth	Richmond Island:	one of earliest settlements 1620	?
Cumberland	West Brown Cow Island :	cliffs	M0388
	Great Chebeague Island Scenic Vista :	scenic vista	M0496
	Southeastern Shore of Great Chebeague Island :	good sand beaches	M0497
	Southern Shore of Great Chebeague Island :	good sand beaches	M0498
	Bangs Island :	nesting spot for eider ducks & sand beach	M0568
	Cliff Island :	high cliffs	M0656
	Sturdivant Island Beach :	fine sand beach	M0809
	Basket Island :	many seals around island	M0510
	Sand Island Beach :	sand beach	M0946
	Ministerial Island :	sand beach & eider ducks	M0947
	Hope Island :	submerged pond	M0953
	Stave Island Cliffs :	high cliffs and seals	M0954
	Stave Island :	lava dike	M0957

Town	Name of feature	Description of feature	Number
CUMBERLAND CO.			
Falmouth	Vaill Island Marsh	small salt marsh	M0874
	Mackworth Island	large corn grinding stone	M0933
	The Brothers	seal colony	M0934
Freeport	Lanes Island	Indian shell heaps and burial grounds	M0855
Harpswell	Doughty's Cove (Sebascodegan Island)	outstanding salt water/freshwater marsh complex	M0638
	The Staircase (Bailey's Island)	unusual geologic formation	M0644
	Cundy's Harbor (Sebascodegan Island)	tide water mill and rock dam	M0654
	Cundy's Harbor (Sebascodegan Island)	typical New England fishing village	M0892
	Long Reach Marsh (Sebascodegan Island)	saltmarsh	M0898
	Eagle Island	historic site	M0124
	Scenic Vista on Orrs Island	scenic vista	M0285
	Whaleboat Island	scenic island with nesting bird colonies	M0444
	Lookout Tower on Bailey's Island	scenic vista	M0472
	Lookout Tower on Bailey's Island	scenic vista	M0473
	Bailey Island Bridge	only cob-work bridge in world	M0540
	Barnes Island	exposed fold and natural rock outcrops	M0635
	Upper Goose Island	great blue herons' nesting area	M0640
	The Staircase (Bailey's Island)	unusual geological formation	M0644
	Yarmouth Island	major anticline runs through island	M0805?
	Bailey Island Marine Algae	marine brown algae unique on Maine Coast	M084-1

Town	Name of feature	Description of feature	Number
CUMBERLAND CO.			
Harpswell	Bailey Island Thunderhole	thunderhole at south end of island	M0856
	East Brown Cow Island	nesting gulls and terns	M0891
	Elm Island	nesting gulls	M0894
	Grassy Ledge	seals	M0907
	Little Whaleboat Island	kelp beds	M0908
	Upper Flag Island	two sand beaches and salt marsh	M0918
	Upper Flag Island Rosaragusa (sic)	two stands of rosaragusa	M0919
	Little Mark Island Monument	refuge for shipwrecked sailors	M0920
	Haskell Island Shell Heap	Indian Kitchen Middens	M0921
Portland	Junk of Pork	good cliffs	M0188
	Salt Marsh on Cliff Island	salt marsh & cobble beach	M0475
	Old Stand of Trees on Little Diamond Island	350-400 year old stand of hickory and maple	M0477
	Long Island Lookout Tower	scenic vista	M0478
	Little Chebeague Island	large, undeveloped island	M0499
	Outer Green Island	important eider duck nesting island	M0527
	Sand Beach on Long Island	sand beach	M0551
	Beach Cove (Long Island)	sand beaches	M0552
	Cushing Island Lookout Tower	scenic vista	M0554
	Great Diamond Island	80 ft. cliffs	M0564
	Whitehead (Cushing Island)	80 ft. cliffs	M0564
	Jewell Island	island with cobble beach, good harbor, scenic viewpoint	M0673
	Long Island Rhododendron Stand	unusually large example of infrequent flora	M0680
	Long Island Andrew's Nubble to Wreck Cove	glacial gouging and scars on island plus Indian shellheaps	M0811

Town	Name of feature	Description of feature	Number
CUMBERLAND CO.			
Portland	Cushing Island 2/3 of West Shore	scenic island	M0812
	Great Diamond Island Beach	cove with broken colored glass beach	M0842
	Peaks Island Property	rocky coast, well wooded	M0863
	Fort Gorges (Hog Island)	195 Short range gun mounts from 1858	M0884
	Fort McKinley (Great Diamond Island)	Civil War fort 1858	M0885
	Little Diamond Island Sand Beaches 2	two sand beaches	M0925
	Cushings Island Beach	200 yd. sand beach	M0927
	Ram Island	good birding island-eiders, herring gulls	M0928
	Little Diamond Island	cliffs	M0932
	Peaks Island Cobble Beach	cobble beach	M0936?
	Long Island Coastal Spruce	fine stand coastal spruce	M0940
	Long Island Freshwater Pond	refuge for ducks	M0941
	Inner Green Island	sand and gravel beach	M0944
	Long Island Spring	granite spring	M0950
	Long Island Glacial Deposit	large granite boulder	M0951
	Cliff Island	glacial polishing & basalt intrusions	M0955
Yarmouth	Cousins Island	wooded island	M0802?
	Moshiers Island	Indian shell heaps	M0815
SAGADAHOC CO.			
Bath	Williams Island Cliffs	unique cliff area	M1803
	The Sugar Loaves	nesting area for common and artic terns	M0679
Georgetown	Seguin Island	scenic island marking entrance to Kennebec River	M0446?
	Birch Island	active osprey nest (eagle?)	M0562

Town	Name of feature	Description of feature	Number
SAGADAHOC CO.			
Georgetown	5 Islands	Warner Eustis Conservation Land	M1768
	Newman Property	wildlife sanctuary	M115_?
	Back River	scenic cliffs	M1790
	Quarries in Georgetown	pegmatite quarries	M0137
	Georgetown Pitcher Plant Bog	sphagnum bog with pitcher plants	M0282
	Swett Marshes	good salt marsh	M0357
	Reid State Park	excellent combination of sand beach, woods, marshes and rocks	M0670
	Sagadahoc Bay Shoreline	longest beach line between high and low water	M1160
	Georgetown Schoolhouse	historic stone schoolhouse	M1805
Arrowsic	Lower Kennebec River	steep bluffs, undeveloped coast	M1786?
LINCOLN CO.			
Boothbay	Damariscove Island	bird nesting island	M0449
	Sawyer Island	unique glacial covical pothole	M1114?
	Isle of Springs	many small springs	M1122
	Outer Heron Island	heron rookery	M1370?
	Fort Island	bridgable island with historic fort	M1612
Boothbay Harbor	White Island	gull and cormorant rookery	M1168
Bremen	Cow Island	spruce forest untouched, beach, marsh	M0471
	Todd Wildlife Sanctuary (Hog Island)	large protected, undeveloped area	M0549
	Crotch Island Ledges	nesting area for terns	M0672
	Cow Island Ledge	seals near island	M1581
	Bremen Long Island Ledge	terns and seals	M1582
	Hog Island	shell heap	M1608
Bristol	Western Egg Rock	good bird nesting island	M0389
	Wreck Island	great blue heron rookery	M0446?
	Haddock Island	resting heron gulls and petrels	M1115
	Louds Island	extensive red spruce and sand beach and dunes	M1116
	Webber Dry Ledge	seals	M1117

Town	Name of feature	Description of feature	Numbe:
LINCOLN CO.			
Bristol	Killick Stone	nesting terns	M15.
	Marsh Island	young white spruce on island	M1579
	Ross Island	nesting gulls, eiders and a few terns	M1580
	Seal Rock	good place for seals	M1592
	Jones Garden	gulls and eiders	M1586
Monhegan Plt.	Monhegan Island	exceptionally high coastal cliffs	M0401
	" "	wrecked ship in southeast corner	M ?
South Bristol	Thread of Life Ledges	ledges with historicl significance	M0631
Southport	Squirrel Island Cliff	40-foot cliff exposed to open sea	M1564
	Hendricks Head	good beach and view	M1112
	Dogfish Head	good beach and scenic vista	M1113
	Sheepscot Bay	whales frequently enter the bay	M1551
	The Cuckolds Lighthouse	unusual lighthouse	M1552
Westport	Fowle Point	steep cliffs and good demonstration of glacial erosion	M1109
	Squam Creek	saltmarsh	M111?
	Thomas Point	tidal mill	M15?
Edgecomb	Fort Edgecomb	State Park, boating, and picnic facilities	M1586
KNOX CO.			
Friendship	Franklin Island	osprey and great blackcrow nests	M0447
	Harbor Island	island in Muscongus Bay, sphagnum bog, historic house	M0464
	Black Island	impressive red spruce growth	M0550
	Garrison Island	Indian burying grounds and whalers' graves	M1103
	Otter Island	prime spruce forest, former heron colony	M1515
	Cranberry Island	uninhabited island, especially scenic	M1516
	Allen Island Beach	cobble beach	M1537
	Clarks Island	causeway island	M1538.
Cushing	Gay Island	island in natural state	M1517

Town	Name of feature	Description of feature	Number
KNOX CO.			
Isle au Haut	Eastern Head (IAH) Natural Area	spruce-fir-birch community	M0122
	Great Spoon Island	important bird nesting island	M0156
	Little Spoon Island	important bird nesting island	M0203
	Duck Harbor (IAH) Mt.	scenic vista	M0586
	Sparrow Island	important bird island	M0594
	Southern Mark Island	large double-crested cormorant rookery	M0595
	Moores Harbor Marsh (IAH)	freshwater-saltwater marsh complex	M0600
	Head Harbor Sand Beach & Cliffs (IAH)	undeveloped coastline including marsh, cliffs, and a sand beach	M0601
	Merchant Island	osprey nests, sand beach, salt	M0652
	Isle au Haut Thorofare Osprey Nest	osprey nest	M0654
	Western Head (IAU)	one of the best thunderholes in the state	M0677
	Seal Trap Island	cliffs driven up by the sea	M1090
	Ram Island	eider rookery and seals	M1091
	Notch Mts (IAH)	beach marks and Indian fossils	M1092
	Yock Island	thick grass covered grazing island	M1486?
	Middle 1/3 of IAH	unusual geological formations	M1487
	Boon Beach (IAH)	large boulder beach	M1508
	Head Island Reversing Falls	thunderhole and reversing falls	M1509
Matinicus	Matinicus Rock	colonies of endangered seabirds	M0225
	No Man's Land	nesting island for endangered seabirds	M0252
	Seal Island	colony of endangered seabirds	M0321
	Ten Pound Island	colony of endangered seabirds	M0362
	Wooden Ball Island	colony of endangered seabirds	M0399
	Metinic Green Island	habitat important to eider ducks	M0467
	Crockett Cove	good salt marsh, clam flats	M0620
	Matinicus Isle	unusual island complex, great diversity of birds	M1491

Town	Name of feature	Description of feature	Name
KNOX CO.			
Matinicus	Matinicus Beach:	sand beach	M1541
	Crichaven :	wooded with indented rocky shore-cliffs	M1545
North Haven	Ames Knob Outcrop on North Haven :	outcrop of mid-Siberian Age unconformity	M0445
	Robinson Rock :	area which has sharks frequently present	M0517
	Pulpit Rock Osprey Nest :	osprey nest	M0829
	Mark Island :	osprey nest	M1085
	Stimpson's Island :	band of abundant fossils	M1097
Owls Head	Andrew's Island Beach :	round boulder beach	M0006
	Ash Island Ledge :	osprey nests 2	M1102
South Thomaston	Pleasant Island South Tip :	heron rookery-osprey nest	M1089
	Little Green Island :	Herring gulls, great black-backed gulls and others	M1091
	Two Bush Reef :	many seals	M1101
	Tommy Island :	eider duck island	M1520
	Hewetts Island :	cobble beach	M1533
	Dix Island :	many old granite quarries on island	M1534
	Muscle Ridge Island :	good scenic islands, bird islands	M1544
St. George	The Brothers :	colony of endangered seabirds	M0062
	Allen Island :	sea cliff, crowberry, interesting botanical area	M0420
	Eastern Egg Rock :	colony of less common seabird species	M0448
	Metinic Island :	nesting area of less common seabirds, rare plants	M0698
	Burnt Island :	botanically diverse island	M1086?
	Old Hump Ledge :	inter-tidal algal zonation, many birds	M1096?
	Mosquito Island:	scenic island with open meadows and woods	M1492
	Clam Ridges :	75-100 seals live there	M1501
	Little Egg Rock:	cormorant island	M1522
	Shark Island :	cormorant island	M1523
	McGee Island :	common bird island	M1524
	Bar Island :	white spruce, meadow, tambolo at low tide	M1525

Town	Name of feature	Description of feature	Number
KNOX CO.			
St. George	Benner Island	bird island	M1526
	Thompson Island	spruce forest, bird island	M1527
	Shag Ledges	nesting shags and seals	M1548
Vinalhaven	Brimstone Island	colony of endangered seabirds	M0061
	The Basin (V)	wild tidal pond rich in biotic diversity	M0667
	Fox Rocks	spherulictic rhyolite lavas	M1095
	Winter Harbor	land-locked cliffs	M1488
	Lane Ledge	old Indian camp and colonial burial ground	M1489
	Bartons Island	Indian shell heaps	M1495
	Crockets River	Dinosaur footprint in rock	M1497
	The Vinalhaven Gilamander	historic registry boat	M1507
	Big Green Island	herring, great black-backed gulls nest	M1513
HANCOCK CO.			
Bar Harbor	Mt. Desert Island	Seacoast island, many significant geologic and hydrologic natural areas	M0407
	Bald Porcupine Island	high scenic cliffs	M1051
	Wild Gardens of Acadia (MDI)	200 species of wild plants	M1053
	The Ovens (MDI)	sea caves	M1060
	1848 Farm (MDI)	good example of farmstead type	M1375
	The Heath	inland marsh area on MDI	M1376
	Jones Marsh	salt marsh on MDI	M1378
	Fresh Meadow (MDI)	large salt marsh & meadow complex on MDI	M1379
	Half Moon Pond (MDI)	small, deep kettle pond	M1380
	The Bowl (MDI)	kettle pond	M1388
	Newport Cove (MDI)	natural sand beach	M1389
	Thunder Hole (MDI)		M1390
	Great Head (MDI)	coastal cliffs	M1392
	Great Meadows (MDI)	outstanding area for rhodora	M1395
Blue Hill	Deer Isle Quarry	marble quarry	M1345?

Town	Name of feature	Description of feature	Number
	HANCOCK CO.		
Brooklin	Smuttgnose Island	important bird nesting island	M0339
	Hog Island Rock	single large boulder	M1327
Brooksville	Thrumcap Island	colony of endangered seabirds	M0386
	Harbor Island	osprey nest	M0663
Castine	Holbrook Island	extremely scenic farmstead	M1476
Cranberry Isles	Baker Island	most outstanding boulder beach on coast	M0457
	Sutton Island	osprey nest	M0628
	The Heath	large bog	M1337
Deer Isle	Great Spruce Head Island	superb island	M0435
	Sunset	picturesque, scenic vista	M0437
	Tory Pond	pond surrounded by virgin timber	M0452
	Dunham Pt.	old silver mine	M0533
	Haskells Mill Pond	large mill pond and marsh, flounder in pond	M0535
	Pond Island	unusual salt marsh, snad dunes	M0587
	Holt Mill Pond	unspoiled marsh complex	M0588
	Bradbury Island	scenic, high elevation island with cliffs	M0591
	Hardhead Island	coastal cliffs and seabird nesting area	M0596
	Deer Isle Sand Bar Beach	sand bar beach, important bird feeding area	M0602
	Horsehead Island	eagles' nest, breeding place for seabirds	M0641
	Sheep Island	osprey nest	M0664
	Stinson Neck	scenic shore marine granite ledges	M0674
	The Mill Pond	salt marsh	M1029
	Fish Creek Saltmarsh	salt marsh	M1030
	Seal Ledge	50 seals	M1034
	McGlathery Island	fine sand beach	M1036?
	Captain Kidd's Cave	sea cave	M1040
	Little Deer Island	volcanic crater and old lava bed	M1041
	Crag Island	eider duck rookery	M104_
	Sloop Island Ledge	osprey nest	M105_
	Compass Island	dated fresh pillow lavas	M106?
	Great Spruce Island Shell Heap	shell heap on cove	M1267
	Little Deer Isle	obsidian moulding	M1283

Town	Name of feature	Description of feature	Number
HANCOCK CO.			
eer Isle	Little Deer Isle:	cliffs	M1302
	Little Deer Isle Cliffs :	cliffs	M1303
	Beech Hill :	scenic vista	M1305
	Little Deer Isle Cliffs :	man-made cliffs	M1306
	Swan Cove :	salt marsh	M1307
	Pressy Cove Sand Bar :	mud flat	M1308
	Horshoe Cove :	gravel beach	M1309
	Oak Pt. Salt Marsh :	salt marsh	M1310
	Oak Pt. Beach :	beach	M1311
	White Island Beach :	fine sand beach	M1312
	White Island Beach :	fine sand beach	M1313
	Deep Hole Salt-marsh :	saltmarsh surrounded by mixed fields and woods	M1314
	Crockett Cove :	sand beach and cliffs	M1315
	Bookmaster Neck :	saltmarsh	M1316
	Oceanville Beach:	sand beach and scenic vista from point	M1317
	Cat Cove :	sand beach and saltmarsh	M1318
	Standpipe Hill :	scenic vista and flora unusual to area	M1319
	Crotch Island Beach :	sand beach in small cove	M1320
	Georges Head Island :	sand beach	M1324
	Potato Island :	sand beach	M1325
	Steve Island :	cliffs	M1326
	Clam Cove :	clam flats	M1338
	Barred Island Beach :	sand beach	M1340
	Pressy Cove :	clam flats	M1343
	Deer Isle Factory :	old pants factory	M1344
	Northwest Har-bor :	clam flats	M1345
	Green Island :	nesting gulls and eider ducks	M1347
	St. Helena :	quarry	M1379
	Great Spruce Head Quarry :	quarry site	M1361
	Butter Island Beach :	extensive half moon beach	M1362
	Eagle Island Cliffs :	scenic cliffs	M1363
	Eagle Island Saltmarsh :	saltmarsh	M1364
	Eagle Island Beach :	beach with scenic vista from beach	M1365

Town	Name of feature	Description of feature	Number
HANCOCK CO.			
Deer Isle	Fiddle Head	sand beach	M1366
	Deer Island Rock	osprey nest	M1367
	Barred Island	eider duck nesting area and sand beach	M1422
	The Haulover	native campsite	M1427
Ellsworth	Wasp Island	prehistoric habitation site	M0414
Franklin	Burying Island Heron Rookery	great blue heron rookery	M0627
	Burying Island	prehistoric campsite, burial site, midden, artifacts	M1397
Gouldsboro	Calf Island Eagles' Nest	eagles' nest	M0064
	Stave Island	eagles' nest	M0348
	The Hop	cliffs, long Poccupine Island	M1368?
	Sheep Island	sea tumbled stones with granitized colorations	M1415
Long Island Plt.	Placentia Island Eagle Nest	eagles' nest	M0283
	Little Duck Island	pelagic bird sanctuary	M0671
	Lunt Harbor	blooming of several acres of pagonia	M1278?
	Frenchboro	classic seacoast town	M1331
	Long Island Cobble Beach	cobble beach	M1332
	Long Island Head	good series of cliffs and beaches	M1333
Mount Desert	Jordan Pond	oligotrophic pond	M0187
	Canada and Beech Cliffs	high scenic cliffs	M1013
	Bernard Mt.	relict stand of Bear Oak	M1047
	Aunt Betty Pd.	duck migration stop	M1048
	South Bubble	unusual rock formation	M1049
	Somes Harbor	reversing falls	M1050
	Lurvey Spring	natural spring	M1057
	Sicur de Monts	natural spring	M1058
	Little Round Pd.	small freshwater pond on island	M1265?
	Blugden Preserve	conifers and hardwoods on rocky island	M1269
	Gilman Summer Home	natural historic landmark	M1274
	Acadia Nat. Pk.	basaltic dikes surrounding park	M1275
	Mt. Desert Carriage Roads	carriage road and foot trails	M1289
	Big Rocks	large boulder field	M1334?
	Somesville Marsh	salt marsh at the head of Somes Harbor	M1361

Town	Name of feature	Description of feature	Number
HANCOCK CO.			
unt Desert	Somes Sound	very deep bay	M1362
	Man of War Falls	waterfall with historic significance	M1382
	St. Sauveur Mt. Cliffs	coastal cliffs on Somes Sound	M1383
	Otter Cliffs	coastal cliffs	M1291
	The Cleft	caves on Day Mt., Mt. Desert Island	M1410
	Bar Island	eagles' nest	M0021
Sorrento	Ingalls Island Eagles' Nest	eagle and osprey nests in same tree	M0489
	Preble Island Osprey Nests	three osprey nests	M0624
	Dram Island	forested island in Frenchman's Bay	M1270
Stonington	Scraggy Island	great blue heron rookery	M0459
	Crotch Island	granite quarries	M0590
	Mark Island	osprey nest	M0653
	Buckle Island	nesting terns	M1005
	Wreck Island	sand beach	M1006
	Camp Island	natural growth spruce and open fields	M1024
	Burnt Hill	scenic vista	M0539
	Stonington Sand Beach	granite sand beach, salt marsh, interesting rock formations	M0585
	Burntland Pond Bog	Bog with rare orchids	M0543
	Ames Pond	good bird feeding area	M0594
	The Punchbowl	sand beach	M1026
	Crocketts Cove Sand Beach	fine pink sand beach	M1031
	Stinson Pt.	osprey nest	M1032
	Georges Pond	freshwater pond isolated in evergreen woods	M1033
	Stonington	large boulder area	M1039
	Croten Island	numerous quarries	M1262?
	Russ Island	scenic island	M1321
	Humpkins Island Ledges	many seals	M1322
	Farrell Island Beach	sand beach	M1323
	Pound Island	unusual shoreline geologically	M1339
	Inner Harbor Woods	large stand of old-growth pine	M1341
	Crockett Cove Woods	unusual habitat for beechwoods on island	M1342
	Lilly Pond	scenic pond	M1346
	Buckmaster Neck	Quarry of geological interest	M1428

Town	Name of feature	Description of feature	Number
HANCOCK CO.			
Swans Island	John Island	important bird nesting island	M0163
	Hackamack Head	unique lighthouse	M0482
	Joyce Beach	excellent sand beach	M0598
	Baker Island	osprey nest	M1017
	Swans Island Thunderhole	thunderhole	M1037
	Great Duck Island	petsel breeding spot	M1054
	Round Island	forested area with rocky cliffs	M1271
	Great Gott Island Beach	gravel seawall beach	M1290
	Toothachers Beach	beach used by many townspeople	M1291
	Mackerel Cove Saltmarsh	saltmarsh	M1292
	Swans Island Beach	sand beach	M1293
	Swans Island Quarry	old quarry site	M1294
	Otter Ponds Beach	round rock beach	M1295
	Marshall Island Sand Cove Beach	sand beach in secluded cove	M1296
	Popplestone Cove Beach	sand beach	M1297
	Opechee Island Channel	duck concentration	M1326?
	West Sister Island	cobblestone beach	M1329
	Big Heath	large bog	M1330
Tremont	Blue Hill Bay	cormorant colony	M1035
	Kitchen Midden Shell Heap	prehistoric kitchen midden	M1374
Southwest Harbor	Western Mt.	virgin stand of spruce/fir near summit	M1384
	Bass Harbor Marsh	salt marsh	M1385
Winter Harbor	Schoodic Island	eagles' nest	M0330
	Jordan Island	slightly developed island with cliffs and sand beach	M0625
	Ironbound Island Cliffs	100 ft. coastal cliffs	M0626
	Turtle Island	rocky shore, natural cove, mature fir and spruce	M1272
	Ironbound Island Spruce	stand of old growth spruce	M1387

Town	Name of feature	Description of feature	Number
KENNEBEC CO.			
rdiner	Nehumkeag Island	eagles' nest	M1484
WALDO CO.			
Islesboro	Flat Island	eider duck rookery	M0515
	Lime Island	precambian block, white and gray marble	M0532
	Turtle Head Cove	most beautiful deep, small cove-let in Penobscot Bay	M1098
	Warren Island State Park	unique forest, possibly virgin	M1178
	Fillbrick's Cove Beach	beautiful cove sand beach	M1183
	Pendleton Pt.	black and white rock beach	M1183
	Goose Island	eider duck island	M1519
	Islesboro Sand Beach	river-fed beach	M1873
	Sears Island Beach	shingle beach	M1874
	Minot Island	osprey nest on cove	M1875
	Spruce Island Channel	oldest rocks dated in Maine	M1884
	Thrumcap Island	nesting terns	M1885
	700 Acre Island	much bog area with red and white spruce	M1894
	West Penobscot Bay Kelp Beds	kelp beds	M0547
WASHINGTON CO.			
Addison	Flat Island	island important for seabirds	M0514
	Nash Island	important nesting island	M0699
	Plummer Island	unique island that has been washed in two	M1919
	The Sands	migratory bird stop	M1918
Beals	Jack Pine on Great Wass Island	stand of jack pine	M0453?
	Great Wass Thunderhole	best thunderhole in Maine	M0678
	Cummings Head	migratory bird stop	M ?
	Egg Rock	seabird rookery	M1917
Calais	St. Croix Island	first French settlement in New World	M0430?

Town	Name of feature	Description of feature	Number
WASHINGTON CO.			
Cutler	Machias Seal Island	seabird nesting	M0220
	Old Man I	colony of endangered seabirds	M0263?
	Birch Island	eagles' nest, habitat of endangered species	M0562?
	Cross Island	large spruce-fir forest	M1697?
	Grand Manan Channel Shoreline	one of last large coastal stretches without development	M1902
Eastport	Old Sow	tidal whirlpool (near Dog Island)	M0458
Harrington	Dyer Island Eagles' Nest	eagles' nest	M0116
	Ship Stern I	eagles' nest	M0325'
Jonesport	Mark Island Eagles' Nest	eagles' nest	M0219
	Roque Island Beach	excellent sand beach	M0434
	The Brothers	very scenic islands	M0465?
	Head Harbor Island	exceptionally large, undeveloped island	M0694
	Pulpit Rock	nesting area for cormorants, eiders and gulls	M0695
	Head Harbor Island	migratory bird stop	M1899
	Green Island	eider ducks, cormorants	M1910
	Moose Island	winter duck habitat	M1913
	Money Island	crushed stone beach, seal habitat in harbor	M1914
	Freeman Rock	eider duck rookery	M1915
	Beals Harbor (Head Harbor Island)	sand beach	M1969
Lubec	Dudley Island	scenic cliffs	M1926
	Treats Island	site of Revolutionary War fort, Indian site	M1939
Machiasport	Scabby Island	migratory bird stop	M0537
	Starboard Island	lava flow	M0690
	Foster Island	arctic tern nesting area	M0697
Milbridge	Jordan's Delight	outstanding coastal island with rock bridge and cobble beaches	M0186
	Pinkham's Island Eagles' Nest	eagles' nest	M0260
	Crow Island	sand beach	M1971

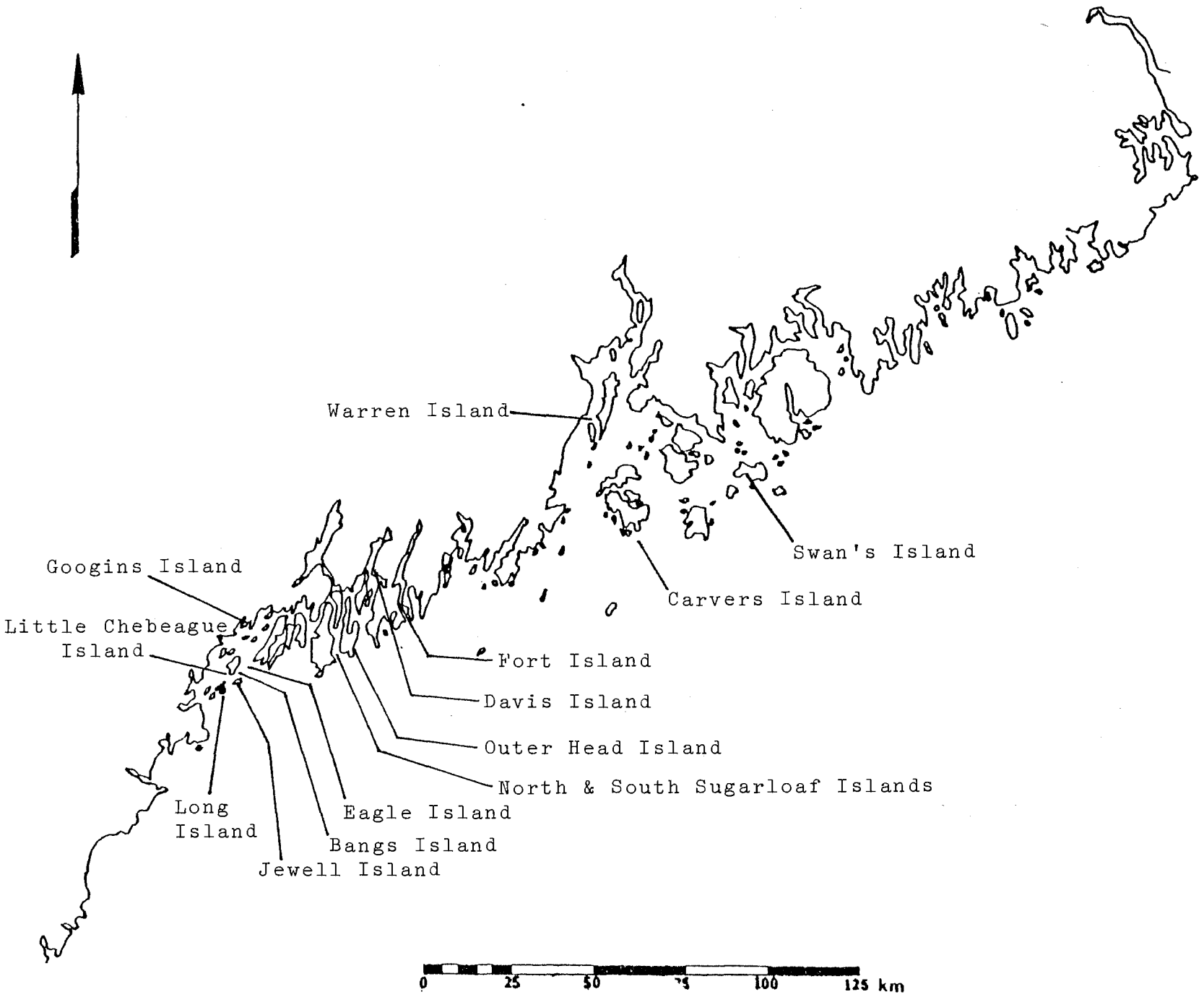
Town	Name of feature	Description of feature	Number
WASHINGTON CO.			
oque Bluffs	Little Ram Island	: eagles' nest	M0201
Steuben	Petit Manan Island	: colony of endangered seabirds	M0275
	Green Island	: bird nesting island	M0546
Robbinston	Little Dowhet Island	: early French settlement	M1966
Trescott	Falls Island	: migratory bird island	M1975

APPENDIX B-II

BUREAU OF PARKS AND RECREATION ISLANDS

The Bureau of Parks and Recreation holds fourteen coastal island properties, five of which are entire islands larger than one acre (0.4 hectare) suitable for substantial on-site recreational use. Of these, only Eagle Island and Warren Island offer supervised use. To aid the determination of what will be done with the islands owned by the Bureau, resumes summarizing the resources of each property follow.

MAINE BUREAU OF PARKS & RECREATION COASTAL ISLAND PROPERTIES



ANDREWS BEACH (LONG ISLAND)

Location:

County: Cumberland
Latitude and longitude: 43° 41'N, 70° 09' W
Distance from the mainland: 3.1 nautical miles (5.7 km) from Waites Ledge, Falmouth; 3.8 nautical miles from Fish Point, Portland Harbor[23].

Coastal Island Registry Number:

55-332

Boat Access:

Long Island is served by privately-run ferry service from Portland. There are also docks and moorings available at the island. Andrews Beach itself lies in a cove on the southeast side of Long Island, sheltered on the north by Andrews Nubble, and on the south by Vaill Island. Landing by small raft is easily accomplished on the beach itself and the sheltered cove makes a safe mooring place[13].

Shoreline Characteristics:

Andrews Beach is a fine, gently sloping, white sand beach. It is approximately 1500 feet (450 meters) long, extending southwest from Andrews Nubble. It is one of the best sand beaches on the islands in Casco Bay[1,13].

Soils:

The soils on the Andrews Beach property are classified as Dune Lands. These are deep, excessively drained soils composed of loose, drifting sand. It is likely that the area of beach adjacent to the water would be considered Coastal Beach. Here the sands are well to poorly drained, and subject to annual flooding[9,10,18].

Soil Suitability:

Due to their unstable, quick-draining nature, Dune Land soils are rated very poor for location of privies. They are also rated very poor for developing any type of structure[21].

Geology:

The bedrock of Long Island is predominately felsic metavolcanics and tuffaceous metasandstone, with subordinate amphibolite and gneisses[3].

Relief:

The total area of the Andrews Beach property is 16 acres (6.4 hectares). Its maximum elevation is close to forty feet (12.0 meters). The land slopes very gradually from its

edge towards the interior of the island to the shore[24].

Land Cover:

The interior edges of the property are bordered by mixed forest. Between this and the beach is a band of scrub. There is little or no vegetation on the beach itself[11,13].

Water Classification:

The waters off of Andrews Beach are classified SB1, the second highest classification of the Department of Environmental Protection. They are suitable for water contact recreation, fishing, shellfish harvesting, and fish and wildlife habitat[12].

Fauna:

Mammals - no information is available.

Birds - there are no significant seabird-nesting sites on Andrews Beach. The waters off shore here contain no tidal flats important to waterfowl. Nearby Vaill Island is a bird nesting area[8].

Marine:

Striped bass are found all around Long Island. There are clam flats just off of Andrews Beach and the ledges offshore are lobster habitat[8].

Natural Areas:

Andrews Beach is listed in the Natural Areas Inventory (#M0551) as being significant for its "singing" sands which emit a musical noise when the wind is right. It is a part of the area from Andrews Nubble to Wreck Cove (#M0811) which is noted for its scars resulting from the glacial activity. There also are Indian shell heaps along this part of the shore. There are no registered Critical Areas on or near Andrews Beach.

Scenic Value:

Although it is an excellent swimming beach, it does not have unusual scenic qualities.

Land Use:

Prehistoric - the presence of shell middens indicates that this area was once used by Indian tribes who frequented the area.

Historic - Long Island has a history of occupation dating from the 1600s. It has been continuously inhabited since the early 1700s; first as a farming and fishing community, and then as a community of summer and year-round residents.

Many clambakes and swimming parties were probably held on the sands of Andrews Beach[17].

Present - the beach is now operated as a State Park day-use area for swimming and picnicking.

Ownership:

Andrews Beach is owned by the State, and is under the jurisdiction of the Bureau of Parks and Recreation.

Development Restrictions:

The beach is in the R3 District of the city of Portland. Development of camping and tenting areas is conditional upon approval of the city Zoning Board of Appeals. Small picnic areas without development of a large parking lot are permitted in this district. Large scale picnic areas would require a permit.

BANGS ISLAND

Location:

County: Cumberland
Latitude and longitude: 42° 43' 30" N, 70° 05' 30" W
Distance from the mainland: 4.2 nautical miles (7.8 km) from Prince Point, town of Yarmouth; 7.3 nautical miles (13.5 km) from Fish Point, Portland Harbor[23].

Coastal Island Registry Number:

55-412

Boat Access:

There are two small gravel beaches on the west side of the island, to the south of a cove formed by the narrowing of the island towards its middle. There is a larger gravel beach on the east side in a cove formed by this same narrowing. All of these are surrounded by ledge, and landings could be difficult. Another small gravel beach lies on the southeast side of the island, which may have deeper, less rocky water adjacent to it. The ledgy shore prevents easy access at other points. Water depths vary between five and fifty-three feet (1.5 and 15.9 meters) around the island[1,13,23].

Shoreline Characteristics:

In addition to the gravel beaches, there is an area of coarse-grained flat on the west side where the island narrows, forming two coves on either side. There is a small boulder ramp at the south end of the island and one at the north. There are also several very small gravel beaches on the northwest and north shore of the island. The remainder, and by far the majority, of the shoreline is ledge[1].

Soils:

The primary soils association found on Bangs Island is Hollis-Paxton, rocky phase. These soils are shallow, well-drained, very rocky and stony with numerous rock outcrops [9,10,18].

Soil Suitability:

Due to their shallow to bedrock nature and presence of rock outcrops, these Hollis-Paxton soils are rated fair to poor for wilderness tent sites and privies. The presence of slopes exceeding 8% on Bangs Island lower these ratings to very poor for these areas[18,21].

Geology:

The island bedrock is predominantly felsic metavolcanics and tuffaceous sandstone with subordinate amphibolite and gueisses[3].

Relief:

Bangs Island is a long, narrow island, rising to its maximum elevation of 66 feet (19.8 meters) at its south end. There are smaller rises at the middle and north end of the island. Slopes on the east side are fairly steep, more gradual on the west and relatively gentle in the north. Total area of the island is 55 acres (22.0 hectares)[24].

Land Cover:

The island is mostly covered with scrub and grassy areas broken up by occasional rock outcroppings[13].

Water Classification:

The waters around Bangs Island are classified SA, the highest classification of the Department of Environmental Protection. This indicates the water is suitable for water contact recreation, fishing, shellfish harvesting, and fish and wildlife habitat[12].

Fresh Water Availability:

Available information shows several gravel beaches, shallow soils, steep to moderate slopes, and a surface area of 55 acres (22.0 hectares). An estimate based on this information would indicate it is possible that sufficient water could be obtained from a dug well to provide for picnicking and camping (5 to 50 people per day).

Fauna:

Mammals: no information is available.
Birds: Bangs Island is the most important eider duck nesting island in Casco Bay. According to the Maine Cooperative Wildlife Research Unit seabird inventory project, 400 pairs of eider nested on Bangs Island this year. There are also small numbers of great black-backed and herring gulls which nest here[7].

Marine:

The waters surrounding the island are lobster habitat. There are also mussel beds on the west side of the island[8].

Natural Areas:

Bangs Island is listed in the Natural Areas Inventory (#M0568) as being an undeveloped island which has good sand beaches and a nesting eider duck colony. The NAI also notes a small salt marsh present on the island. There are no registered Critical Areas on or near the island.

Scenic Value:

Seen from the water, Bangs Island has a low, barren aspect. The island has a good view of nearby Great Chebeague Island and there are a number of small and medium-sized islands surrounding Bangs. The island could be considered to have good scenic qualities from the island and average scenic qualities from the water.

Land Use:

Prehistoric:

Historic: Uninhabited in 1820.

Present: There is no present human use of Bangs Island. The island is held as a bird sanctuary by the Bureau of Parks and Recreation.

Ownership:

Bangs Island is owned by the State, and is under the jurisdiction of the Bureau of Parks and Recreation.

Development Restrictions:

The island is in the Resource Protection District of the town of Cumberland. This district is similar to the Resource Protection District defined in the State of Maine Guidelines for Municipal Shoreland Zoning Ordinances.

CARVERS ISLAND

Location:

County: Knox
Latitude and longitude: 44° 01' 30" N, 68° 18' W
Distance from the mainland: 2.9 nautical miles (5.4 km) from Carvers Harbor, Vinalhaven; 11.4 nautical miles (21.1 km) from Owl's Head Light[23].

Coastal Island Registry Number:

63-166

Boat Access:

Due to the ledgy nature of the shore and shallow water depths, access to the island would be difficult[1,23].

Shoreline Characteristics:

The entire shoreline of the island is ledge[1].

Soils:

The soils on Carvers Island are in the Hollis-Charlton, rocky phase association. These are shallow, very well-drained soils with numerous rock-outcrops[9,10,18].

Soil Suitability:

On slopes less than 8%, these soils are rated fair for wilderness tent sites and poor for privies[21].

Geology:

No information is available.

Relief:

The total area of Carvers Island is 15 acres (6.0 hectares). It is a low, rounded island with little variation in topography. The maximum elevation is thirty feet (9 meters).

Land Cover:

Carvers Island has little vegetative cover; most of the island surface is exposed bedrock[11].

Water Classification:

The Atlantic waters which surround the island are classified SA 1, the highest classification of the Department of Environmental Protection. This indicates they are suitable for water contact recreation, fishing, shellfish harvesting, and fish and wildlife habitat[12].

Fresh Water Availability:

Available information shows shallow soils with numerous rock-outcrops, little variation in topography, and an area of 15 acres (6.0 hectares). An estimate based on these factors would indicate it is possible that sufficient fresh water could be obtained from a dug well to provide for low-intensive picnicking and camping uses (five to fifty people per day).

Fauna:

Mammals: No information is available.

Birds: Carvers Island provides nesting habitat for large numbers of seabirds. According to a 1977 survey done by workers on Maine Cooperative Wildlife Research Unit seabird inventory project, fifty pairs of great black-backed gulls, twenty pairs of black guillemots, 160 pairs of American eider, thirty pairs of cormmorants, and 500 pairs of herring gulls nested on the island[7].

Marine:

Scallop beds and lobster habitat are all around the island[8].

Natural Areas:

There are no areas listed in the Natural Areas Inventory on or near Carvers Island. There are also no registered Critical Areas on or near the island.

Scenic Value:

Since it is a low, rounded island amongst several other high islands, the scenic quality of the island itself is not significant. The island has a clear view of Vinalhaven less than one mile (1.9 km) away and the high Brumstone and Hay Islands to the south.

Land Use:

Prehistoric:

Historic:

Present: There is no human use of Carvers Island at present.

Ownership:

The island is owned by the State and is held as a wildlife sanctuary by the Bureau of Parks and Recreation.

Development Restrictions:

Carvers Island is in the Resource Protection District of the town of Vinalhaven. Recreation uses such as camping and picnicking would be allowed in this district.

EAGLE ISLAND

Location:

County: Cumberland
Latitude and longitude: 43° 43' N, 70° 03' W
Distance from the mainland: 1.6 nautical miles (3.0 km) from Basin Point on Harpswell Neck, 2.6 nautical miles (4.8 km) from Mackerel Cove harbor on Bailey Island[23].

Coastal Island Registry Number:

55-439

Boat Access:

There is a dock maintained by the Bureau of Parks and Recreation on the northeast shore of Eagle Island. This is the only safe access to Eagle Island. Water depths on this side of the island are 16 feet (4.8 meters) very near to shore[13,23].

Shoreline Characteristics:

There are several very small gravel beaches at various points along the shore of the land. There is a long boulder ramp on the southwest shore and three smaller boulder ramps on the north shore. The remainder of the shoreline is ledge[1,13].

Soils:

The soils on Eagle Island are in the Hollis-Paxton, rocky phase association. These are shallow, well-drained, strongly acidic soils with numerous rock-outcrops[9,10,18].

Soil Suitability:

These Hollis-Paxton soils are rated fair to poor for wilderness tent sites, poor for intensive camping and picnicking, and fair to poor for privies. The shallow nature of the soil, rock outcrops, and steep slopes would be the major limiting factors for these uses[18,21].

Geology:

The surface material on the island is glacial till, mostly to a depth of twenty inches, but in places deeper. This is underlaid by schistose bedrock[18,20].

Relief:

Total area of Eagle Island is 17 acres (6.8 hectares). The island rises steeply on almost all sides to a height of over sixty feet near the north end of the island[23].

Land Cover:

Mixed forest covers most of the island with hardwoods predominating. The southern tip of the island is covered by shrubs and grasses and the northern end, adjacent to the dock, is kept in maintained lawn. There are also a number of human-introduced plant species and several native species not found on other Casco Bay islands[11,13].

Water Classification:

The waters surrounding Eagle Island are classified SA, the highest classification of the Department of Environmental Protection. They are suitable for water contact recreation, fishing, shellfish harvesting, and fish and wildlife habitat[12].

Fresh Water Availability:

There is one dug well on Eagle Island; however, the water is not sufficiently pure for drinking due to high bacteria content. The caretaker brings drinking water onto the island for his use.

Fauna:

Mammals: no information is available.

Birds: According to seabird inventory figures for 1977 compiled by the Maine Cooperative Wildlife Research Unit, Eagle Island is a nesting site for ten pairs of herring gulls, 175 pairs of great black-backed gulls, 225 pairs of eiders, and twenty pairs of black-crowned night herons. The island is considered a significant bird-nesting island due to the presence of the black-crowned night heron colony. These birds are at the northern limit of their breeding range in Maine and only a few islands support nesting colonies.

Marine:

The ledges in the deeper water off of Eagle Island are lobster habitat[7].

Natural Areas:

Eagle Island is listed in the Natural Areas inventory (#M0285) as being an historic site. It is the site of Admiral Peary's home, which is on the National Register of Historic Places. There are no registered Critical Areas on or near the island.

Scenic Value:

The island has an unobstructed view of many of the Casco Bay islands; to the southeast the island looks out over the open ocean. The mainland, Sand's End and Harpswell Neck are also part of the scene surrounding Eagle Island.

This juxtaposition of the nearby islands and the expanses of the Atlantic give the island a very high scenic quality. With its rocky bluffs and crown of bright green foliage, it is also very attractive from the water. The simple, yet majestic lines of Peary's house on the island's northern point make it a unique resource among the Casco Bay islands. Situated in an area heavily used by boaters, it provides a fine opportunity for exploration of its human and natural history.

Land Use:

Prehistoric: There are no known major archeological sites on Eagle Island.

Historic: In the early twentieth century, Admiral Robert Peary built a fine seasonal home on Eagle Island. The house was used for many years by Peary and his family during the summer months as a respite from their life in Washington. The house and the island were given to the State and opened to the public in 1970. The house remains much as it was when the Pearys were there, with furnishings and artifacts collected by Peary.

Present: Eagle Island is presently managed as a State Memorial. There are trails, chemical toilets, and the house is maintained as a museum.

Ownership:

Eagle Island is owned by the State, under the management of the Bureau of Parks and Recreation.

Development Restrictions:

Eagle Island is in the Resource Protection District of the town of Harpswell. Uses permitted in this district are similar to those permitted in the Resource Protection District defined in the State of Maine Guidelines for Municipal Shoreland Zoning Ordinances.

FORT ISLAND

Location:

County: Lincoln
Latitude and longitude: 43° 53' 30" N, 69° 35' W
Distance from the mainland: 200 feet (60 meters) from shore in the Damariscotta River near village of Back Narrows, town of Boothbay[24].

Coastal Island Registry Number:

65-121

Boat Access:

Water depths are 18 feet (5.4 meters) around most of the island, becoming shallower at the southern end. There are two small low energy beaches (protected beaches of varying sediment size) at the northwest corner and south end of the island[1,24].

Shoreline Characteristics:

Most of the eastern side of the island is ledge, broken by mud flats surrounded by a crescent-shaped cove on the lower east side. There are ledge outcrops on the south and a small area of ledge on the west. Also, there is a small area of mud flats south of the beach at the northwest corner[1].

Soils:

The soils on Fort Island are all within the Hollis-Charlton, rocky phase association. These are very well-drained, shallow, rocky soils[9,10,18].

Soil Suitability:

On slopes less than 8%, these soils are rated fair for wilderness tent sites and poor for privies[21].

Geology:

The bedrock underlying the island is probably metamorphosed slate, siltstone or minor sandstone[3].

Relief:

Fort Island rises abruptly on the west, north, and east sides to a large, relatively flat area on top. On the south, it slopes more gradually to a low hummock at the south end of the island. Maximum elevation, found at the north end, is approximately 100 feet (30 meters). The island's total area is 37 acres (14.8 hectares)[24].

Land Cover:

Most of the vegetation on the island is softwood forest. There is a small open field area on the southeastern slope of the island[11].

Water Classification:

The tidal waters of the Damariscotta River which surround Fort Island are classified SB1, or suitable for water contact recreation, fishing, shellfish harvesting, and fish and wildlife habitat[12].

Fresh Water Availability:

Available data shows shallow soils, steep to gradual slopes, and a surface area of 37 acres (14.8 hectares). An estimate based on these factors would indicate it is possible that sufficient fresh water could be obtained from a dug well to provide for low-intensive picnicking and camping uses (5 to 50 people per day).

Fauna:

Mammals: No information is available.

Birds: There are no significant seabird nesting sites[7] or tidal flats important for waterfowl on or near Fort Island. However, there may be some nesting activity here[8].

Marine:

The waters adjacent to the island have been identified as a potential aquaculture site and as lobster habitat[8].

Natural Areas:

Fort Island is listed in the Natural Areas Inventory (#M1612) as a bridgable island with historic fort. There are no registered Critical Areas on or near the island.

Scenic Value:

A very high, forested island, Fort Island commands a wide view of the Damariscotta River.

Land Use:

Prehistoric:

Historic: Major fortifications, known as Fort Webber, were constructed on the island during the War of 1812[4].

Present: The old fort has now fallen into disrepair and is much overgrown. The island is presently used during the summer for canoe-camping by the Appalachian Mountain Club.

Ownership:

The island is owned by the State, and is under the jurisdiction of the Bureau of Parks and Recreation.

Development Restrictions:

Fort Island is in the Limited Development District of the town of Boothbay. Parks and other recreational facilities with minimal structural development are permitted in this district.

JEWELL ISLAND

Location:

County: Cumberland
Latitude and longitude: 43° 41' N, 70° 06' W
Distance from the mainland: 4.1 nautical miles (7.6 km) from Basin Point on Harpswell Neck[23].

Coastal Island Registry Number:

55-480

Boat Access:

There is a narrow cove on the northeast side of Jewell Island which is sheltered on the northwest by Little Jewell Island. This forms a good natural harbor which can accommodate a number of large boats. Water depths are eight to ten feet (2.4 to 3.0 meters) in this cove. The northeast shore of the island is gravel beach and is easily landed on by small craft[13,23].

Shoreline Characteristics:

On the east side of the island is a small fine sand beach fronting on a shallow cove almost entirely enclosed by ledges, known as the Punchbowl. This is an unusual formation; this type of sheltered, shallow pool is not found on any of the other Casco Bay Islands. At the south end of the island are several very small gravel beaches. These gravel beaches are backed by high steep bluffs which extend down the eastern shore south of the Punchbowl. With the exception of the Punchbowl, the entire shoreline rises steeply, reaching heights of over forty feet (12.0 meters) in some places. Most of this shoreline ends in ledge, with a boulder ramp on either side of the small point on the east side [1,13].

Soils:

Most of the soils on Jewell Island are in the Hollis-Paxton, rocky phase association. There is a small area of Rockland-Hollis, rocky phase soils on the northern tip of the island. These soils are both rocky, shallow to bedrock, strongly acidic, well-drained soils[9,10,18].

Soil Suitability:

Where slopes are less than eight per cent these Hollis-Paxton soils are rated fair to poor for wilderness tent sites and privies. The Rockland-Hollis soils have a very poor rating for these uses. Steepness of slope, shallow depth of soil, and surface rockiness would be the main difficulties in placing tent sites or privies[18,21].

Geology:

The bedrock of Jewell Island is phyllite and schist, in large part sulfidic, with minor micaceous quartzite. It is part of the Jewell and Scarboro formations of the Casco Bay Group[3].

Relief:

The total area of Jewell Island is 186 acres (74.4 hectares). The major heights of land consist of two parallel ridges running the length of the island. The maximum elevation is 104 feet (31.2 meters). There are numerous small depressions on the central and southern parts of the island, some of which contain standing water. There are also one or two small, intermittent streams on the island[13,24].

Land Cover:

The predominant vegetation type on the island is mixed forest, predominantly hardwoods. There is a fairly pure stand of spruce/fir forest on the eastern ridge of the island. At the south end, the beeches, oak, birch, and maple open out into an area of thick shrubs and grassy meadows which reach down to the shore. The northern tip and eastern shore are also covered with low shrubs[11,13].

Water Classification:

The waters of Casco Bay surrounding Jewell Island are classified SA, indicating they are suitable for water contact recreation, fishing, shellfish harvesting, and fish and wildlife habitat[12].

Fresh Water Availability:

One well was drilled on Jewell Island by the U.S. Army during its period of ownership by the Federal government. This well extended into bedrock and yielded water of poor quality, high in iron. The soils on Jewell are shallow; the topography varies from fairly steep slopes to flat areas and water-filled depressions; there is a sizable sand beach and several small gravel beaches on the shoreline; the total surface area of the island is 186 acres (74.4 hectares); intermittent streams are present. From this information, an estimate would indicate it is likely that sufficient water could be obtained from a dug well to provide for picnicking and camping uses (5 to 50 people per day).

Fauna:

Mammals: no recorded information is available. However, it is likely that several species of small mammals, such as meadow vales and bats inhabit the island[13].

Birds: there is no significant seabird nesting sites observed on Jewell Island. The mixed forest probably provides excellent habitat for many species of terrestrial birds[13].

Marine:

Lobster are found on the ledges surrounding the island and clams are found in the cove on the north side[8].

Natural Areas:

Jewell Island is listed in the Natural Areas Inventory (#M0673) as having a cobble beach, good harbor, and a scenic viewpoint. There are no registered Critical Areas on or near the island.

Scenic Value:

Jewell Island is one of the most scenic islands in Casco Bay. From the water, its high sides and thickly forested crown make it a major attraction to the many boaters who frequent this area. It is a high island, over 100 feet in elevation, and many of the Casco Bay islands can be seen from its heights. Jewell Island lies on the outer edge of the Casco Bay islands; fine views of the open ocean and the distant bays and inlets of the mainland to the northeast and southwest can be seen from its shores. Its unusual sand beach, sheltered harbor, and undeveloped state make it especially scenic[13].

Land Use:

Prehistoric:

Historic: As early as 1632 Jewell Island was used as a fishing station by European ships. During the French and Indian Wars Jewell Island was a refuge for settlers who fled from the mainland and built a small garrison on the island. This settlement was later destroyed. In 1810 a small fishhouse was built on the island and later in the 1800s it was the site of a large year-round residence built by a Captain Chase. The Chase house burned in 1914 and a new house was built upon its foundations by the McKeen family, who then owned the island. The island was farmed by the McKeens in the late 1800s. During World War II the Federal government obtained half the island and built several observation tower gun emplacements, bunkers, barracks, and other structures.

Present: Jewell Island is now used primarily by boaters in Casco Bay and by yachters cruising the coast. There is a network of trails established crossing and running the length of the island which enable hikers to reach the interior and southern portions of the island. The low bluffs on the northwestern shore along the cove are used for camping. There are a number of leased sites here with crude fire-rings constructed. The remains of the gun emplacements, barracks, and other military structures are still found on the southern end of the island. The tumbledown remnants of the McKeen residence and two guesthouses also remain.

Ownership:

All of Jewell Island is presently owned by the State and is under the jurisdiction of the Bureau of Parks and Recreation.

Development Restrictions:

The northern end of Jewell Island is in the Resource Protection District of the Town of Cumberland. Uses permitted here are similar to those permitted in the Resource Protection District defined in the State of Maine Guidelines for Municipal Shoreland Zoning Ordinances. The remaining shoreline is in the R-1 zone of the city of Portland. Small prime areas with no substantial development such as parking lots are permitted. Large scale prime areas are permitted conditional upon approval of the city Zoning Board of Appeals. Camping and tenting areas are not permitted.

LITTLE CHEBEAGUE ISLAND

Location:

County: Cumberland
Latitude and longitude: 43° 43' N, 70° 09' W
Distance from the mainland: 2.5 nautical miles (4.6 km) from Falmouth Foreside, 4.9 nautical miles (9.1 km) from Fish Point, Portland Harbor[23].

Coastal Island Registry Number:

55-324

Boat Access:

Little Chebeague Island is easily accessible by small craft on the east side of the island. There is a long, gently-sloping sand beach on this side and water depths remain fairly deep, 26 feet (7.8 meters), until close in to shore. Boat access at these points along the island shore is difficult due to shallow water, shoals, and ledges. There are no sheltered harbors on Little Chebeague[13,23].

Shoreline Characteristics:

The east side of the island is almost entirely sand beach, which extends along approximately one half mile (.8 km) of the shoreline. This beach is perhaps the longest sand beach found on any of the Casco Bay islands. Coarse-grained flats are found at the southern tip and along the southwest shore of the island. The western point is surrounded by rocky ledge which gives way to mixed sand and gravel beach which extends the entire length of the north shore. There are wide, coarse-grained flats which form a bar connecting the island to Great Chebeague Island to the northeast[1,13].

Soils:

The major soil associations found on Little Chebeague Island are Hollis-Paxton, Hinckley-Sudbury, and Deerfield-Walpole. Hollis-Paxton soils are very well drained, shallow, non-rocky to very rocky soils. Hinckley-Sudbury soils are somewhat excessively drained, deep, loose, sandy, gravelly soils with no rockiness or stoniness. Deerfield-Walpole soils are deep, moderately well to somewhat poorly drained, sandy, non-rocky and non-stony soils. These associations make up three areas nearly equal in size. The southern third is Deerfield-Walpole, the northeast third is Hinckley-Sudbury, and the northwest third is Hollis-Paxton.

Soil Suitability:

Hollis-Paxton soils are rated fair for wilderness tent sites and poor to good for privies. These ratings are for slopes less than 3%, which comprise most of the slopes on Little Chebeague. Hinckley-Sudbury soils are rated good for

wilderness tent sites and good to poor for privies. Deerfield-Walpole soils are rated fair to very poor for wilderness tent sites and poor to very poor for privies. The major limitation which characterize the Deerfield-Walpole soils is poor drainage and high water table. The opposite is true of the Hinckley-Sudbury soils where excessive drainage may be a problem[21].

Geology:

The bedrock of the island is phyllite and schist in large part sulfidic, with minor micaceous quartzite. It is part of the Jewell and Scarboro Formations of the Casco Bay Group[3].

Relief:

Total area of Little Chebeague Island is 86 acres (34.4 hectares). The island is low and wide, with gentle changes in topography. The maximum elevation is 52 feet (15.6 meters)[13,24].

Land Cover:

The north shore and interior of the island is covered with old-growth beech, oak, aspen, and white birch. To the west and the east are large fields of shrubs and grasses; those on the west are mostly grassy field, while thick shrubs cover much of the eastern part of the island. To the south there is more hardwood forest. Around some of the old foundations are elms, horse chestnut and locust trees. There are a number of introduced species on Little Chebeague[13].

Water Classification:

The waters surrounding the island are classified SA, the highest classification of the Department of Environmental Protection. These waters are suitable for water contact recreation, fishing, shellfish harvesting, and fish and wildlife habitat[12].

Fresh Water Availability:

Available information shows deep, sandy soils on much of the island, gentle slopes, a large sand beach, and a surface area of 86 acres (34.4 hectares). An estimate based on these data would indicate it is very likely that sufficient water could be obtained from a dug well to provide for low intensive picnicking and camping uses (five to fifty people per day).

Fauna:

Mammals - no direct information is available but it is likely that many species of small mammals are present, including moles, mice, shrews, hares, and bats[13].

Birds - The island has no significant seabird nesting sites on or around it and the waters around it are not important waterfowl habitat. Many species of terrestrial birds

probably inhibit the varied habitats on Little Chebeague[13].

Marine:

The flats on the northwest and southern shores provide good habitat for clams. The waters off shore are lobster habitat[8,13].

Natural Areas:

Little Chebeague Island is listed in the Natural Areas Inventory (#M0499) as being a large, uninhabited island with excellent sand beaches. It is also noted for its safe anchorage and varied habitats. There are no Critical Areas on or near the island.

Scenic Value:

With its gently rolling landscape and alternately wooded and open cover, the island presents a very pleasing aspect from all approaches. It has good views of Long Island to the south and Great Chebeague Island to the north, both relatively high islands of substantial size. Little Chebeague's long sand beach and undeveloped state make it stand out amongst the Casco Bay Islands[13].

Land Use:

Prehistoric: There is a large shell midden on the east side of the island, indicating prehistoric habitation by Indians.

Historic: Little Chebeague was inhabited, probably by fishermen and their families until World War II when the Navy took it over as a recreation center and evacuated the inhabitants. A caretaker and his family lived on the island for a while after World War II. The island has now been uninhabited for several years[16].

Present: The island is now used,but not heavily, by boaters primarily for clamming, swimming, and picnicking. The remains of structures built by the military during World War II are still present and add to the island's attractiveness for exploration.

Ownership:

Little Chebeague Island is owned in its entirety by the State, and is under the jurisdiction of the Bureau of Parks and Recreation.

Development Restrictions:

The northern end of Little Chebeague Island lies in the town of Cumberland. The shoreland is in the Resource Protection District of this town; uses permitted in this district would be similar to those permitted in the Resource Protection District as defined in the State of Maine Guidelines for Municipal Shoreland Zoning Ordinances. The remaining shoreline is zoned R-1 by the city of Portland. Small, non-commercial picnic areas are permitted, while the development of larger areas requiring parking lots would be conditional upon approval of the city Zoning Board of Appeals. Camping and tenting sites are not permitted. Construction of playgrounds and other outdoor play areas would be conditional on approval of the Board of Appeals.

OUTER HEAD ISLAND

Location:

County: Sagadahoc
Latitude and longitude: 42° 47' N, 69° 43' W
Distance from the mainland: 200 yards (180 meters) from Griffith Head, on the east side of Georgetown Island[23].

Coastal Island Registry Number:

73-262

Boat Access:

Water depths on the east and south sides of the island vary from ten to nineteen feet (3 to 5.7 meters) and on the west are tidal flats exposed at low tide. Access by boat could be difficult due to the ledgy shoreline and shallow water[1,23].

Shoreline Characteristics:

The entire shoreline of the island is rock ledge. On the west side tidal flats connect the island to the mainland at Griffith Head[1].

Soils:

The major soils association found on Outer Head Island is the Rockland-Hollis association. These are very shallow, excessively drained, stony soils of which over 50% is rock outcrop[10,19].

Soil Suitability:

These soils are rated very poor for wilderness tent sites and privies[23].

Geology:

No information is available.

Relief:

The total area of Outer Head Island is one acre (0.4 hectare). The island rises fairly steeply to over thirty feet (nine meters) at its highest point at its southwest corner[24].

Land Cover:

There are scattered patches of grasses and shrubs on the island; however, most of the surface is bare rock.

Water Classification:

The waters of Sheepscot Bay which surround the island are classified SB1, or suitable for water contact recreation, fishing, shellfish harvesting, and fish and wildlife habitat[12].

Fresh Water Availability:

Due to its small size and lack of soil, it is unlikely that a dug well would supply sufficient fresh water for low-intensive picnicking or camping uses (5 to 50 people per day).

Fauna:

Mammals: No information is available.

Birds: There is no significant seabird nesting in Outer Head Island; the tidal flats adjacent to the island are not important for waterfowl.

Marine:

The waters to the east of the island are lobster habitat[8].

Natural Areas:

Outer Head Island is immediately adjacent to Reid State Park, listed (#M0670) as being an area which combines sand beach, rocky coast, salt marshes, and coniferous woods. There are no registered Critical Areas on or near the island.

Scenic Value:

The island presents a rounded, barren aspect from shore. The view from the island extends across Sheepscot Bay to Southport Island. The view of the island is not significant; the view from the island may be considered attractive.

Land Use:

Prehistoric:

Historic:

Present: At present Outer Head Island is a part of Reid State Park. Visitors from the Park often cross on foot the bar connecting it to the island to explore it. There is no development on the island.

Ownership:

The island is owned by the State and is managed by the Bureau of Parks and Recreation.

Development Restrictions:

Outer Head Island is in the Limited Residential-Recreation District of the town of Georgetown. Recreational uses such as camping and picnicking are permitted in this district.

WARREN ISLAND

Location:

County: Waldo
Latitude and longitude: 44° 16' 30" N, 68° 57' W
Distance from the mainland: 500 yards (450 meters) from the Lincolnville-Islesboro ferry terminal on Islesboro; 2.5 nautical miles (4.6 km) from Lincolnville harbor[23].

Coastal Island Registry Number:

77-050

Boat Access:

There are a dock and several moorings maintained by the Bureau of Parks and Recreation on the east side of Warren Island. Water depths are eight to eleven feet (2.4 to 3.3 meters) adjacent to the dock and approach is easy by small craft. There is a sand beach at the south end of the island and gravel beaches on the west and east sides of the island. Most of these beaches are easily reached at high tide, but are surrounded by exposed mud flats at law tide[14,23].

Shoreline Characteristics:

On the east side of the island are three, gently sloping gravel beaches. At the southeast corner are mudflats, covered with salt marsh cord grass which extend around to the sand beach at the south end. This sand beach is backed by a small dune area. There are three or four gravel beaches on the west side, also. Most of the northern shore of the island is ledge. Sizable mud flats extend off of the southwest and southeast shore. At low tide these connect Warren Island with nearly Seven Hundred Acre Island and Spruce Island[1,14]

Soils:

The soils on Warren Island are in the Hollis-Paxton, rocky phase association indicating shallow, very well-drained, rocky soils[9,10,18]

Soil Suitability:

These soils are rated fair for wilderness tent sites and poor for privies[21]

Geology:

Most of the surficial material on Warren Island is probably glacial till. There may be deposits of marine clays at the southern end of the island[22]. There is no information available on the bedrock geology.

Relief:

The island rises fairly rapidly on the east and west sides to a maximum elevation of 61 feet (18.3 meters) at its center. The slopes are much gentler from north to south. The island's total area is seventy acres (28 hectares)[12]

Land Cover:

Most of the island is covered with spruce/fir forest. On the northern end are stands of old birch and beech. At the very center of the island is an open, grassy area and there is another small grassy area at the south end[14].

Water Classification:

The waters which surround Warren Island are classified SA, the highest classification of the Department of Environmental Protection. This indicates the waters are suitable for water contact recreation (the swimming is excellent), fishing, shellfish harvesting and fishing, and fish and wildlife habitat[12].

Fresh Water Availability:

There is one dug well near the dock which supplies sufficient water for the uses the island gets at present. However, the bacteria count in this water is high and the Bureau of Parks and Recreation is investigating the drilling of a new well elsewhere on the island.

Fauna:

Mammals: Red squirrel and deer are present on the island and probably many other mammalian species as well[14].

Birds: There is an active osprey nest at the south end of the island. Two young were fledged from the nest this (1977) summer. There are also many species of terrestrial birds on the island[14]. The flats off the southern end are considered important for waterfowl[8].

Marine:

Clams are found in these tidal flats and the waters off the island's north end are lobster habitat[8].

Natural Areas:

Warren Island is listed in the Natural Areas Inventory (#M1178) as having a unique forest, possibly virgin. The channel along nearby Spruce Island is listed (#M1884) as being the site of the oldest rocks dated in Maine. Seven Hundred Acre Island, immediately to the south, is noted (#M1894) for having a large bog area with red and white spruce. There are no registered

Critical Areas on or near the island.

Scenic Value:

From the water, Warren Island looks much like a part of the Islesboro shores. With its thickly wooded banks, it has a pleasing aspect. The view from the west shore of the island encompasses much of the upper part of Penobscot Bay, with the Camden Hills looming behind[21].

Land Use:

Prehistoric:

Historic:

Present: The island is now used by small boaters and often by the crews and passengers of the "windjammers" which sail Penobscot Bay. These visitors come to picnic and camp on the island. The Bureau of Parks and Recreation has provided two Adirondak shelters, a number of picnic tables and fire rings, pit toilets, and a trail system around the island[21].

Ownership:

The island is owned by the State, and is managed by the Bureau of Parks and Recreation.

Development Restrictions:

Warren Island is in the Shoreland Protection District of the town of Islesboro. Camping, picnicking and accompanying recreational structures less than 4000 square feet (372 square meters) in size are permitted in this district.

DAVIS ISLAND (FORT EDGECOMB)

Location:

County: Lincoln
Latitude and longitude: 44° 00' N, 69° 39' W
Distance from the mainland: Davis Island is connected to the mainland by a narrow land bridge at North Edgecomb, in the town of Edgecomb. The town center of Wiscasset lies directly across the Sheepscot River, one half mile (.8 km) away, and a bridge carries U.S. Route 1 from the town over Davis Island to the east side of the river[24].

Coastal Island Registry Number:

65-332

The three acres (1.2 hectares) held by the Bureau of Parks and Recreation lie at the south end of Davis Island, overlooking the Back River and the Sheepscot River. The fort was built in 1808-1809 and is composed of three earthen terraces, one faced with brick and stone, barracks and storage rooms, bakehouse, magazine, and is surmounted by a two-story log blockhouse. With the exception of the blockhouse, all of the buildings have long since fallen down and been covered over with vegetation. The earthworks and magazine are still visible. The most prominent structure is the log blockhouse. It is octagonal in shape and stands high above the terraced earthworks below. It is a unique example of early nineteenth centry military architecture and preserves well the building methods of the times. The southern end of Davis Island is partly wooded with hardwoods and there is a fine view of the forested shore of the Sheepscot from the fort[4].

GOOGINS ISLAND

Location:

County: Cumberland
Latitude and longitude: 43° 49' N, 70° 05' W
Distance from the mainland: approximately 50 yards (45 meters) from the east side of Wolf Neck[23,24].

Coastal Island Registry Number:

Googins Island is one acre (0.4 hectares) in size and is covered by softwoods, primarily white pine and spruces. The long and narrow island is entirely surrounded by rock ledge. It lies very close to the shore of Wolf Neck State Park[13].

The island is dominated by a number of tall white pines which stand out in contrast to the small size of the island. In the upper branches of one of these trees is an active osprey nest[13].

The island is easily seen from the trails along the shoreline of the park and the majestic trees and osprey nest make it a valuable scenic resource[13].

NORTH AND SOUTH SUGARLOAF ISLANDS

Location:

County: Sagadahoc
Latitude and longitude: 43° 45' N, 69° 46' W
Distance from the mainland: 1700 feet (510 meters) from Popham Beach State Park[23].

Coastal Island Registry Number:

73-213 (North Sugarloaf Island), 73-280 (South Sugarloaf Island)

North Sugarloaf Island is a small, almost barren island in the lower Kennebec River. There is little vegetation, other than a few grasses and shrubs, covering the one acre (0.4 hectare) surface of the island. The shoreline is entirely ledge; fairly deep waters surround it. The island has a rounded shape seen from the water, rising to a height of approximately thirty feet (9 meters)[1,24].

North Sugarloaf is a highly significant bird nesting island. One of the largest tern rookeries in the state is found here. During the summer of 1977, members of the Maine Cooperative Wildlife Research Unit seabird inventory project counted 350 pairs of common terns, 350 pairs of arctic terns and 35 pairs of roseate terns nesting on the island. There is only one other site in Maine where the roseate tern nests and this bird may soon be placed on the U.S.D.I. Endangered Species list.

North Sugarload Island was registered as a Critical Area by the Maine State Planning Office Critical Areas Program in September, 1975 because of its significance as a tern rookery[7].

South Sugarloaf Island lies 1000 feet (300 meters) to the southeast of North Sugarloaf. It is similar in cover, topography, and shoreline to North Sugarloaf. Its area is two acres (0.8 hectares) and its approximate height is thirty feet (9 meters)[24].

The Sugarloaf Islands are about one quarter mile (.4 km) south of Fort Popham State Memorial, the site of one of the earliest European settlements in the U.S. Since that early settlement, this land has been occupied by several historical forts. Because of their strategic importance, North and South Sugarloaf were purchased by the Federal government in 1857, in preparation for building Fort Popham. Their proximity to the State Beach and Memorial makes them a significant part of the surrounding landscape[4].

SWAN'S ISLAND

Location:

County: Hancock
Latitude and longitude: 44° 08' N, 68° 27' W
Distance from the mainland: located on Hockamock Head, 1000 yards (900 meters) across Burntcoat Harbor from the village of Mintwin[23,24].

The Bureau of Parks and Recreation holds two and one-half acres of land on this southwestern arm of Swan's Island. The land was acquired as part of a potential boat-launching site; however, without acquisition of additional land at this site, development as a boat-launching facility will not take place.

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APPENDIX C

MAINE'S COASTAL SAND BEACHES:

RECREATION AND CONSERVATION

by

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June 1978

Disclaimer

The opinions, conclusions, or recommendations expressed in this report are those of the author and do not necessarily reflect the views of the Bureau of Parks and Recreation, Maine Department of Conservation.

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CONTENTS

1.0 INTRODUCTION

There is a quiet secluded beach wedged in between, and hence protected by, two jutting stretches of land. Like other small beaches scattered here and there along the coast of Maine, its beauty is one of contrasts, and its significance lies in the analogy of life that these contrasts suggest.

--Faith Johnson,
"A Beach of Life,"
Maine Life, January, 1977

1.0 INTRODUCTION

In September 1976, the Maine Bureau of Parks and Recreation in cooperation with the State Planning Office, initiated a study to identify sites of outstanding significance in Maine's coastal area. Sites were sought which would be suitable for one or more forms of outdoor recreation and which could be considered worthy of protection because of the importance of their natural features.

Early in the project it became clear that due to their many unique characteristics, Maine's coastal beaches would be best treated apart from other sites.

This document is a working paper summarizing efforts undertaken during 1977-78 to outline beach recreation and conservation considerations from a state level perspective. It is background information for a larger report, The Maine Coast: Recreation and Open Space, prepared for the Department of Conservation and the Committee on Coastal Development and Conservation.

No analysis of outdoor recreation and conservation opportunities in Maine would be adequate without a special discussion of seaside beaches, because beaches are such an important recreational feature and open space resource, particularly in southern coastal Maine. Every year millions of residents and out of staters use the beaches for all types of recreational activities.

On January 9 and February 6-7, 1978 two storms of record struck with full force the coastal beaches of southwestern Maine. The storms caused property damages in Maine estimated at more than $47 million. They were both a personal tragedy for many individuals and a societal debit where public beach resources were degraded. But inasmuch as they heightened public awareness, the storms may have, in some sense, been beneficial. Certainly they taught a lucid lesson for the future: be careful about building at the edge of the sea and about what uses are made of coastal beaches.

There are clear, objective scientific reasons why coastal erosion occurs, will continue from natural causes, and will be aggravated by human intervention. Marine geologists know very well, for example, that seawalls, in some locations, can accelerate shoreline erosion and ultimately debase those beach areas which are a public resource. At the same time, inappropriate building continues on coastal wetlands, including beach areas, in Maine. That much of this development will suffer expensive (personal and public) property loss from future flooding and erosion is entirely predictable. It is also avoidable.

As the importance, particularly the recreational importance, of our coastal beaches continues to grow, it behooves us to learn to

treat these fragile resources with the long term management respect they command. In the end any loss will be borne by all of us, while benefits retained can accrue to us collectively as a society.

A clear State policy, rooted in protecting the public's safety, welfare and long term recreation and conservation interests, regarding the prevention and restitution of shoreland property losses, needs to be formulated. This implies public acquisition of some sites, relocation of some houses and businesses, restriction of shoreline development with strict setbacks, and serious review of incremental and cumulative impacts of coastal land use and growth.

If we are to continue to enjoy coastal beaches, steps must be taken to insure their protection for recreational use and resource conservation. This report presents information which should be helpful in defining the issues at hand and in suggesting solutions to those problems.

Briefly stated the objectives of the report are:

- to compile and present in an understandable format information on the recreation/conservation activities relating to Maine's coastal beaches;

- to make this information available to public and private agencies and individuals concerned with the use and protection of coastal beaches; and

- to suggest proposals, based on information gathered, for the management of coastal beaches for conservation and recreational use.

2.0 THE NATURAL RESOURCE

Every grain of sand on a New England beach has a long and eventful history. Before it was sand, it was rock--splintered by the chisels of the frost, crushed under advancing glaciers and carried forward with the ice in its slow advance, then ground and polished in the mill of the surf....Now in this particular moment of its history, it belongs to the sea's edge--swept up and down the beaches with the tides or drifted alongshore with the currents, continuously sifted and sorted, packed down, washed out, or set adrift again, as always and endlessly the waves work over the sands.

--Rachel Carson,
The Edge of the Sea, 1955

2.0 THE NATURAL RESOURCE

2.1 Beach Defined

Beaches may be defined in a variety of ways depending on one's objectives. The Maine courts have had a difficult time defining the beach and the shore in legal terms. The study Maine Law Affecting Marine Resources included the following definitions from cases of shore:[1]

> What is the sea shore must first be defined. The sea shore must be understood to be the margin of the sea in its usual and ordinary state. Thus, when the tide is out, the low water mark is the margin of the sea, and when the sea is full, the margin is high water mark. The sea shore is therefore all ground between high water mark and low water mark (Storer v. Freeman, 6 Mass 435, p. 439; Laysesk v. Bangor Bank, 8 Me. 85 pg. 90 (1831).
>
> By beach, it is to be understood the shore or strand; and it has been decided, that the seashore is the space between high and low water mark (Coltis v. Hussey, 15 Me, 237, 241 (1839).
>
> The word beach, must be deemed to designate land washed by the sea and its waves; and to be synonymous with shore (Littlefield v. Littlefield, 28 Me. 180, 181 (1848).
>
> The "shore" is the ground between ordinary high and low water mark, the flats, and a well defined monument (Montgomery v. Reed, 69 Me. 510, 514 (1879); Morrison v. Bank, 88 Me. 155, 160, 33 A. 782 (1895).
>
> The word [shore] strictly means that space which is alternately covered and exposed by the flow and ebb of the tide, the flats between ordinary high and low water mark (Morrison, supra).

The term intertidal zone also refers to the area between high and low water, the area over which the ordinary tides flow daily.

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[1]Harriet P. Henry, et. al, Maine Law Affecting Marine Resources, (Prepared under the joint sponsorship of the School of Law of the University of Maine and the National Science Foundation, 1969-70).

Maine beaches can roughly be characterized as sand, gravel, cobble or a mixture of these depending on sediment size. For the purposes of this discussion, the sand beach shall be defined as the zone of unconsolidated material (particles approximately 0.0625 mm to 2mm in size) that extends from the maximum low water line landward to include those supratidal formations which have a substrate of sand and associated floral communities as well as salt marshes. This definition incorporates a holistic ecosystem approach. It encompasses not merely the beach face but the entire beach system, including the intertidal zone, the frontal dune ridge, the back dune area and the transitional salt marsh-estuary area. It is important, particularly in managing sand beaches, to treat the total beach ecological system as an integral unit.

2.2 Beach Geology

Nelson & Fink have organized a four group classification scheme for Maine's coastal beaches according to response forms and geomorphic features. This scheme categorizes beach response forms by (1) major wave or (2) wind depositional forms, (3) minor wave depositional-erosional forms and (4) sedimentary structures. Generally speaking, in southern Maine, the most extensive and most important recreational beaches are large fringing beaches such as Old Orchard, Crescent and Fortunes Rocks Beaches. Along many of these beaches the entire dune field, from the frontal dune ridge through the aeolian flat, has been developed resulting in a interruption of the natural beach dynamics. A few large beaches do remain in a relatively natural state. Scarborough Beach, for instance, is a closed barrier beach with low relief parabolic dunes and healthy stands of wormwood, beach heather and pitch pine.

East of Georgetown are a large number of small pocket beaches. Pemaquid Beach, for example, is a mid-bay pocket beach with an unbroken strandline fronting a salt marsh. Many beaches along this part of the coast are located on offshore islands. Sand Cove Beach on Marshall Island is a pocket beach with a storm berm barrier protecting a fresh water marsh.

Nelson & Fink report that there are four principal sediment sources of sand supplying Maine's coastal beaches: (1) the erosion of distant glacial drift deposits located along rivers, (2) the reworking of local glacial deposits by wave erosion, (3) the erosion of nearby headland bedrock, and (4) the transport of degraded skeletons and shells from adjacent shallow marine waters.

From its source sand is transported to and deposited at the limit of wave action on the beach. There it is acted on by a variety of natural physical forces. A dynamic, action-reaction equilibrium is established as the beach material and physical forces interact. Once an equilibrium is established it is normally only a matter of time before the effect of an unbalancing force (e.g., a coastal storm) is compensated for by a feedback response. In this manner, a give and take process-response mechanism is established.

As part of the process-response equilibrium,beaches exhibit seasonal changes largely due to varying amounts of wave action. During winter months they tend to be erosional with a steepened beach face. In the spring, summer and fall they are usually, in net, accretional, forming berms on the upper face and ridges on the lower. At all times beaches normally have a steeper slope and so are better drained than intertidal flats.

2.3 Beach Botanical Features

The zones of a beach ecosystem of botanical importance occur principally landward from the frontal dune ridge where there is a clear line of vegetation growth. On the beachface itself the diversity of lifeforms is limited by the continual shifting of the sand grains and the flooding-dessication cycle of the tides. In fact, these forces allow virtually no microalgae development.

The flora of the frontal dune ridge includes dune grasses of the highest salt, sun and temperature tolerance. To survive in this harsh environment these plants must also thrive (1) in soils lacking humus, (2) in an unstable substrate subject to extreme sand movement, and (3) in a substrate with a widely varying supply of moisture.

In a complex, undisturbed beach system, there is a clear zonation of plant community types from the frontal dune ridge to the salt marsh. Nelson & Fink have described these communities for Maine beach-dune systems through the forest community. The foredune is divided into the saltworts and sea rockets of the seasonal berm and the beach grass, beach peas and dusty millers of the perennial berm. American beachgrass is the dominant plant type of the next zone which stretches from the frontal dune ridge to the zone of heath or shrub growth.

The third zone, the dry dune slack community, is characterized by beach heather and other plants which grow where salt spray and sand burial rates are lower than for more seaward communities. An abundance of lichens in the backdune area of certain beaches is said to be peculiar to Maine and is the result of the high incidence of coastal fog.

The fourth zone is the shrub community, dominated by bayberry, Virginian rose, meadow sweet, raspberry, gooseberry and poison ivy.

The dune forest community is the most inland dry dune floral association. Pitch pines are usually dominant where salt spray stress is greatest. Other woody species include red maple, Northern red oak, white birch, serviceberry and quaking aspen. In low, moist backdune areas the dominant vegetational types are alder, poplar, winterberry and serviceberry.

In the most complex beach systems the dunes are backed by some type of wetland - a salt marsh, estuary, brackish pond or tidal bay.

Where a saline wetland is present, this zone is usually broken down into the transitional marsh, the high marsh, the low marsh and the water or flats. In the transitional zone are found salt marsh asters and sedges. High marsh plants are subject to inundation only during fortnightlyspring tides and other periods of high tidal action. The dominant plant is Spartina patens. In the low marsh Spartina alterniflora predominates. The low marsh is subject to inundation during all tides.

Where there is an estuary embayment there is an invaluable biological resource, for estuaries are one of the most nutrient rich, high productivity environments on earth. The beach, the dunes and the seaward salt marsh all help to protect the estuary or backdune wetland. Each should be treated not disparately but as part of the whole system.

Maine beaches are the northern coastal range of a number of plant species. It is unfortunate from an ecological point of view that most of the major dune fields in Maine have been heavily developed or altered by foot traffic erosion and dike construction. Development on many beaches has precluded the detailed study of range distribution of a number of species. Those dune fields which remain undisturbed are important for the preservation of natural diversity, for they can provide opportunities for scientific research and education of future generations about the natural heritage. Of course, they are important too for the protection of the beach as a recreational resource, and of the coastal wetlands as habitat for a variety of marine organisms as well as a natural vessel of flood water storage.

2.4 Common and Special Characteristics

Despite their differences, it is generally agreed that virtually all of the beaches of the Maine coast have several things in common:

- they are recent geological formations, in evolution over the last 6000-7000 years during which time sea level has been slowly rising relative to the land;

- they are dynamic boundaries changing position to establish an equilibrium between interacting materials and forces;

- they are subject to some of the highest tides in the world and generally exhibit expansive intertidal zones;

- most are now sediment starved which implies either a diminishing supply of sand from offshore deposits or such a rapid landward retreat that the current supply rate is inadequate;

- they are changing (mostly eroding) at various rates in response to an accelerated rise in sealevel; and

- they are collectively one of the state's most important recreational and economic resources.

In addition, some geologists believe that the beaches of the Maine coast are set apart from beaches elsewhere because:

- most erosion and accretion on Maine's small beaches result from movements of sand primarily in an onshore-offshore direction rather than from alongshore transport;[1] and

- Maine's parabolic dunes may be of national significance because they are formed by northwest offshore winds rather than by onshore winds and are only infrequently obliterated by washovers during major storms.[2]

2.5 Beach Extent

In assessing the recreational potential of coastal beaches, it is most useful to look at the size of the beachface and berm, that is, generally the foreshore and the backshore or the area between low tide and the line of vegetation. This area, unlike the dunes and salt marsh, is one part of the beach system most tolerant to onsite use. But the beachface and berm are changeable and not susceptible to precise definition by fixed measurement, though a range of beach area can be estimated on the basis of seasonal profiles. A single dimensional measure, lineal extent, is often used as an approximation of available beachfront area.

Of the approximately 3,500 miles (5630 km) of mainland and island tidal shoreland in Maine, only a little over 70 linear miles are sand beaches. Roughly 40% of this beach length is accounted for by the beaches south of Casco Bay. Nonetheless, in terms of recreational importance the southern coastal sand beaches are far more significant, for they accommodate the great bulk of recreational use and as a group are the most intensively used beaches in Maine.

2.6 Threats to the Resource

Maine's coastal beaches, taken as a whole, are a scarce resource of statewide significance, one which should be protected from degradation to maximize its utility. There are a number of impending threats to the resource, both natural and human induced.

2.61 Development - Already many of the beaches have been drastically altered by development. Seaside homes, walls, piers, groins and jetties all have an effect on the ability of the beach-dune systems to adjust to seasonal as well as long term changes. Development can be particularly troublesome where it inhibits the natural washover

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[1] Bruce W. Nelson and L. Kenneth Fink, Geological and Botanical Features of Sand Beach Systems in Maine (draft report prepared for the Maine Critical Areas Program, 1978), p. 12

[2] Ibid, p. 54.

process. Over time, washover allows the landward migration of the barrier beach system - a process necessary for survival of the beach under stress from an accelerating rise in sea level.

There is abundant evidence from other East coast systems that washover is the dominant process by which beaches respond to storms and rising sea level. At least one marine geologist feels that washover processes are rapidly overtaking wind processes as the dominant forces in the dynamics of many coastal beaches in Maine. As this occurs, undeveloped beaches can be expected to migrate landward; developed beaches will become more severely erosional. Though we have a better understanding of beach dynamics than in the past and despite recent legislation to control shoreland development, structures continue to be built along beaches in Wells, Scarborough and in many other coastal towns.

2.62 Recreational Use - Recreational use of beach areas may have an adverse effect on ecosystem integrity too. The beachface is the zone most tolerant to usual beach uses, including swimming, sun bathing and fishing. The dune areas backing up the beach are much less tolerant. The frontal dune ridge, for instance, is highly susceptible to abuse. Many marine geologists and land managers say it should not be used for any sort of development except boardwalks, or preferably elevated crosswalks. From the viewpoint of optimum, long term conservation of the resource, the frontal dune ridge should never be artificially breached.

It has been suggested that there are three primary considerations which delimit specific criteria by which the recreational carrying capacity of Maine's coastal beaches can individually be determined.[1]

1. The direct impact of parking lots and accompanying user facilities on the vegetated portions of a beach ecosystem (viz., the dunes).

2. The impact of pedestrian traffic on the vegetated areas between the beach and inlying parking lots and user facilities.

3. The social and managerial limits of the beachface and berm areas which are the more use tolerant recreational portions of a beach system.

Certainly the impact of parking lots and walkways can be minimized through sensitive design, construction, management and an understanding of beach systems. Determining the carrying capacity range of a beach may be more difficult. In any case, costs must be reconciled against benefits, both tangible and intangible.

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[1]L. K. Fink, "Considerations for Determining Carrying Capacity of Maine's Coastal Beaches for Recreational Use," (unpublished), March 1977.

2.63 Vehicular Use - Maine, unlike some areas, has not had a serious problem with beach misuse by offroad vehicles, all terrain vehicles, snowmobiles, airmobiles, trailbikes, dune buggies, etc. The threat of these is always present, however, at least on private beach properties.

2.64 Erosion - Erosion of sand on Maine's coastal beaches results from both natural and artificial causes. Some degree of erosion is as much a part of the natural dynamics of beach systems as is accretion.[1] Nevertheless, the most significant threat to Maine's coastal beaches today is that of human induced erosion. The 1971 National Shoreline Study estimated that at the time there were "about 20 miles of shorefront experiencing critical erosion...mainly in the recreational beach areas of southern Maine where serious offshore losses experienced during frequent storms have lowered and reduced the beach width to below protective and recreational use requirements."[2] The study principally addressed erosion exacerbated by beachfront development.

In 1977, the Maine Bureau of Geology undertook an inventory of Maine shoreline erosion. It was found that "most natural sand beaches in Maine exhibit erosion to some degree or another."[3] Annual recession rates at sites where repetitive observations are available range from a fraction of a foot to more than 85 feet (26 meters). Some of this erosion is natural, the response to stresses such as an accelerated rise in sea level. However the loss of sand offshore and to back beach estuaries has been enhanced by dredging, river damming and other projects. Coastal engineering works, in particular the construction of seawalls, is one of the most serious causes of induced erosion on Maine's coastal sand beaches.

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[1] A change occurs in the location of real property lines where water boundaries shift gradually by erosion, accretion, or reliction. "When the line between land and water is changed due to the gradual deposit of soil (accretion) or by the imperceptible recession of the water (reliction), the owner becomes entitled to the new land. Conversely, if land bordering on water is gradually and imperceptibly worn away by the natural elements (erosion), or the water gradually encroaches, the owner looses such land. However, sudden or perceptible changes (avulsion) have no effect on the location of such boundary lines." Paul G. Creteau, Principles of Real Estate Law (Portland, Maine: Castle Publishing Company, 1977), p. 212 n 30.

[2] US Army Corps of Engineers, National Shoreline Study, (Washington, D.C.: GPO, 1971).

[3] Barry S. Timson and Donald Kale. Maine Shoreline Erosion Inventory (unpublished, prepared for the Maine State Planning Office, 1977) p. 50.

The consequence of building on the frontal dune ridge or back dunes is often the destruction of personal property and the degradation of a recreational resource important to the public at large. When beaches are no longer capable of providing natural protection from erosion to the backshore and, in fact, are under natural stresses to erode further, they often become covered with gravel or exposed to their rocky substratum terraces. The result is a diminution of recreational appeal. The effects of historic and recent winter storms indicate the folly and economic catastrophe of beachfront development. There are ways, including nonstructural methods, of mitigating erosion. Those techniques which have demonstrated the most success at the lowest cost with the least long term, adverse impacts on the surrounding physical environment should be encouraged.

That shoreline erosion has become a problem of far reaching national proportions was recognized in the National Shoreline Study:

> Probably the most significant and important with respect to erosion is the loss of beach recreation area, a valuable natural resource. Counts of users of good beaches less than one-half mile long show hundreds of thousands of visitors each year. Considering all the beaches of the United States, there are many hundred million beach visits each year...Obviously, beach losses affect a considerable percentage of our population. The population expansion and increased leisure time cause rapidly increasing demands for beach areas. Because the quantity of beaches is limited, continued loss of beach areas will increase in importance and economic value.[1]

2.65 Private Ownership - The fact that Maine beaches are taken to be privately owned to low water is becoming a source of trouble for beach protection programs. As an example, in the town of Wells a struggle has been ensuing for some time over the pumping of sand onto nearby eroded beaches when the town harbor is dredged. Some beach front property owners are struggling to have the sand deposited on their depleted beaches. Others are fighting the action. The result has been local indecision and delay of projects which could nourish badly eroded beaches. Were the intertidal area publicly owned, such problems might be avoided.

2.66 Property Taxes - Soaring coastal property values in recent years have acted as a disincentive to beach conservation. As beaches have been subdivided and sold to those willing to pay prices heretofore associated with property in more urbanized states, tax assessments have increased tremendously. These effects could be the basis of tax reform proposals to encourage, rather than discourage, beach conservation.

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[1] US Army Corps of Engineers, National Shoreline Study (Washington, D.C.: GPO, 1971), p. 13.

3.0 OWNERSHIP AND USE

"People who live on a beach should be able to live on the beach and to build a sea wall."

--Camp Ellis resident, news item
Maine Times, June 16, 1978

3.0 OWNERSHIP AND USE

3.1 Ownership

Coastal ownership patterns vary from state to state. In many states beaches, at least from mean high tide seaward, are considered part of the public domain. In Maine, except in a very few cases, private ownership extends to low tide or 100 rods (503 meters) from high tide whichever is less.[1] However, many beaches in this state, while technically privately owned, have for years been used as public common lands. In several instances coastal communities have budgeted funds for beach maintenance (e.g., Scarborough, Wells, York, Saco). In some towns officials have authorized projects, such as beach cleaning, which threaten the very resource they sought to enhance (e.g., Old Orchard Beach, Kennebunk, Scarborough). In one or two towns recent research has suggested that beaches heretofore thought to be private may actually be publicly owned (e.g., Kittery).

Hence, there are no definitive figures on beach ownership for the entire Maine coast. The Army Corps of Engineers in its National Shoreline Study, issued in 1971, estimated that only one-half of one percent of the Maine coast was in public recreational use though 3.2% was in local, state or federal public ownership[2] (not all of which is available for public use). A report on Coastal Conservation Priorities prepared for the State Planning Office in 1973 estimated *total* coastal federal ownership to be 1.2%, state ownership 1.3%, and local ownership 0.5% of the shoreline of the Maine coast[3].

For the purposes of this discussion coastal linear sand *beach* ownership in Maine is estimated in Table 1.

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[1]To quote the 1814 Edition of Ancient Charters and Laws of the Colony and Province of Massachusetts Bay, p. 148 (better known as the Colony Ordinance of 1641-47): "Sec. 3. It is declared, that in all creeks, coves, and other places about and upon salt water, where the sea ebbs and flows, the proprietor, or the land adjoining, shall have propriety to the low water mark, where the sea doth not ebb above a hundred rods, and not more wheresoever it ebbs further."

[2]U.S. Army Corps of Engineers, National Shoreline Study, North Atlantic Region (Washington, D.C.: G,PO, 1971), p. 103.

[3]Reed and D'Andrea, Coastal Conservation Priorities Plan (South Gardiner, Maine, 1973) p. I-6.

Table 1

ESTIMATES OF COASTAL LINEAR SAND BEACH OWNERSHIP IN MAINE

Jurisdiction	Miles	(Km)	% of Coast	% of Beach
Federal Beaches	0.2	(0.3)	*	0.3
State Beaches	6.3	(10.1)	0.2	8.5
Local Beaches	9.2	(14.9)	0.3	12.5
Private Beaches	58.2	(93.7)	1.7	78.6
TOTAL**	73.9	(119.2)	2.1	100.0

*Less than 0.01%
**Columns are not necessarily additive due to rounding

Federal coastal beach ownership in Maine, unlike many states, is minimal. Only one beach of any significance, Sand Beach in Acadia National Park, is under federal jurisdiction. Other than this, there are some beach associated wetlands held by the Fish and Wildlife Service. Most of these - such as the Webhannet marsh, part of the Wells Beach ecosystem or the Goosfare Brook marsh, part of the Saco Bay Beach system - are located in southern Maine.

At the State level the Department of Inland Fisheries and Wildlife owns portions of beach related marshes and tidal wetlands. However, only the Bureau of Parks and Recreation holds beachface areas associated with the traditional beach recreation activities. The Bureau's beach parcels are listed in Table 2.

A number of sand beaches in Maine, such as Ogunquit and Old Orchard Beaches, are clearly in municipal ownership. Nevertheless, many beaches popularly thought to be locally owned are actually in private ownership.

In short, roughly four-fifths of the beaches on the Maine coast are outside the public domain. Regardless of the statistics, ownership does not tell the entire story. Some private beaches along the Maine coast are used as if they were public and some publicly owned beaches remain unavailable because they are inaccessible or undeveloped.

To add to this complex situation the public has certain rights along specific parts of the beach irrespective of ownership (except

Table 2

COASTAL BEACH PROPERTIES UNDER THE JURISDICTION OF THE MAINE BUREAU OF PARKS & RECREATION

BEACH	DEVELOPED	UNDEVELOPED	MUNICIPALITY	APPROXIMATE BEACH FRONTAGE FEET	(METER)
Andrews		X	Portland	930	(280)
Birch Point		X	Owls Head	600	(180)
Crescent, Kettle Cove	X		Cape Elizabeth	5,450	(1,635)
Eastern Head		X	Trescott	500	(150)
Ferry		X	Saco	490	(149)
Lamoine	X		Lamoine	940	(282)
Laudholm		X	Wells	1,800	(540)
Little Chebeague		X	Portland, Cumberland	3,250	(970)
Popham	X		Phippsburg	6,750	(2,025)
Reid	X		Georgetown	6,000	(1.800)
Roque Bluffs	X		Roque Bluffs	2,400	(730)
Scarborough	X		Scarborough	67	(20)
TOTAL				29,177	(8,760)

perhaps on federal military lands). Anyone can, for example, moor or rest a boat on tidal flats, sail over the flats, cross the flats to go to or from one's boat, take on or discharge passengers or cargo, fish, dig clams and worms, and hunt for wildfowl below the high water mark.

These rights are stated in the Colony Ordinance of 1641 as amended in 1647, which it is generally assumed forms the basis for public shore rights in Maine. The Colony Ordinance was enacted in Massachusetts and Maine was previously a territory of that Commonwealth. Notably absent from the list of permitted uses of the intertidal area is mention of recreational activities. Judicial interpretation of the application of the Colony Ordinance in Maine suggests that recreational bathing, walking and so on may be permitted shore uses, although the point has never been clearly tested. In any case, it is certain that the right of trespass across private lands to the seashore as applied to Great Ponds is not in force. The inability to get to the intertidal zone across private property from inland points makes public recreational rights for most people a moot advantage.[1]

Under our existing body of law it is likely that if public opportunities for beach recreation are to be extended to new areas, property rights affording access to the beach will have to be acquired. Improvement of facilities servicing existing beaches could also help satisfy demand.

Amendments to the federal Coastal Zone Management Act passed in 1976 specifically authorize "the Secretary of Commerce to make 50% grants to any coastal State to acquire lands to provide access to public beaches and other public coastal areas of environmental, recreational, historical, aesthetic, ecological, or cultural value and to preserve islands." For those states which have met the federal requirements, it is expected that funds will be made available for improving access to and protecting public beach areas.

3.2 Recreational Use and Preferences

Though in the past Maine's beaches have been used as sources of sand and sites of commerce, recreation is now the most important use. They have been the location of swimming, sunbathing, and other recreational activities for decades. During the 19th century

[1] It does not appear either that a public easement to the public submerged lands or to public shorefrontage would be implied by necessity. Where land borders on the ocean no right of way by necessity for the beneficial use of the land exists across the remaining land of a grantor, although access by water may not be as convenient as access by land. On the other hand, "where such access by water is rendered virtually impassable due to a perilous surf or other reason a way of necessity will usually be implied." (P.G. Creteau, Principles of Real Estate Law, Portland, Maine: Castle Publishing Company, 1977, p. 139).

many of the summer colonies in the state grew up around the beaches, particularly of southern Maine. In this century, the mobility of the automobile has made the coast more easily reached by even larger numbers.

In the 1977 Maine Comprehensive Outdoor Recreation Plan swimming needs were calculated on a district basis. While the peak day demand capacity analysis did not address coastal beach use alone, it did give an idea of regional facility needs. The calculations revealed current deficiencies in the Cumerland and Mid-Coast Districts. As the report pointed out, swimming is one of the hardest activities to analyze because of the difficulty (1) in accounting for the demand satisfied at personal pools and beaches, (2) in measuring the capacity of existing beach areas, and (3) in assessing the volume of use at coastal beaches from nonresidents.

In the spring of 1977, a leisure time use and preference telephone survey was conducted for the Bureau of Parks and Recreation. The survey showed that 32% of the respondents statewide participate in ocean swimming, each spending an average of 13.5 days at the beach each summer. Not surprisingly, both the proportion and number of participation days were higher for coastal respondents than those who live inland. Participation in ocean beaching was also higher for city dwellers than for nonurbanites. One-quarter of the respondents said they do their beaching at state parks - a larger proportion than at any other specified location. There is also a clear relationship between beach use and length of residence in Maine: the longer respondents had lived in Maine the less likely they were to participate in ocean swimming. Correspondingly, a larger percentage of younger respondents said they participate than older, though the average number of days per person was not very different. Finally, when asked if the State should or should not spend more money on developing swimming areas on the coast, three-quarters of those interviewed supported additional expenditures.

This last question of preference spending is supported by earlier surveys. A 1973 opinion survey found that coastal beaches and scenic areas were the top priority when respondents across the state were asked what type of recreation facilities should be developed "if the State had additional funds." In the York and Cumberland Districts coastal beaches were favored by 61-70% of the respondents.[1] Similarly, in a 1975 survey of coastal residents, over 70% of those questioned supported more State spending for public coastal beaches.[2]

[1]Northeast Markets, Inc., Maine, An Appraisal by the People (prepared for the Maine State Planning Office, 1973), p.30.

[2]Social Science Research Institute, Citizen Evaluation of Public Policy in the Coastal Zone (prepared for the Maine State Planning Office, 1975), p.95.

There are a myriad of obstacles restricting public use of many of our coastal beaches. Cold seawater temperature and dangerous currents scare away some. Crowds and offensive social behavior deter others. In some locations a lack of physical access precludes use. Even at beaches with access ways inadequate parking facilities may limit use. Inadequate backlands for the development of ancillary facilities is one of the most important obstacles; this coupled with public reluctance to walk any distance or use shuttle transportation. A few State owned beaches for which development lands and funds are available sit unimproved and inaccessible for want of ongoing operations money.

3.3 Use Impacts

Maine's salt water beaches every year draw millions of recreationists to the coast, both residents and nonresidents. People are attracted in particular to the large southern beaches during the summer. This beach related tourism offers both positive and negative economic, social and environmental impacts.

In 1972-73 a study was undertaken to assess these impacts as well as those of other tourism activities. The study report, Tourism in Maine: Analysis and Recommendations, issued in May 1974, quantified the impacts of salt water beaching in Maine. The economic impact summary sheet for this activity is presented on page 23.

While it was found that saltwater beaching is among the most expensive of tourist activities for local and state governments (at least in southern Maine) the relative importance of coastal beaching to the total state tourist economy is obvious. The cash flow economic spinoffs from nonresident beachgoers ranked a notable second behind skiing.[1]

At the same time, the social and environmental impacts of saltwater beaching were judged to be average among tourist activities. Congestion and effect on shoreline use were the greatest impacts. Fuel consumption, property damage/danger and pollution were the least serious impacts. It should be pointed out that the study dealt only with the short lived impacts of tourism (defined as "the activity of journeying into, within or through the State for purposes of recreation, pleasure, culture or business"). The long term social and environmental consequences, for example, of building homes and accommodations for transients on the beach were not evaluated. What the study did clearly do is demonstrate the disproportionate significance of coastal beach recreation and related tourism in Maine to the towns and the state as a whole.

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[1] A.D. Little, Inc. et al. Tourism in Maine (prepared for the Maine Vacation Travel Analysis Committee, 1974), IV B.

IMPACT SUMMARY FOR SALT-WATER BEACHING [1]

		Overall	Non-Resident	Resident
Number of Tourist Days:	Fall	197,316	70,458	126,850
	Winter	11,434	11,434	-----
	Spring	75,456	26,509	48,947
	Summer	1,173,183	571,606	601,577
	TOTAL	1,457,389	680,007	777,382
AVERAGE Expenditure Per Day:		$9.34	$17.46	$2.32
SALES Per 1,000 Tourist Days:		$16,583	$31,151	$3,840
SALES Per Total Tourist Days:		$24,168,010	$21,182,627	$2,985,383
INCOME Per 1,000 Tourist Days:		$3,766	$7,145	$809
INCOME Per Total Tourist Days:		$5,487,849	$4,858,410	$629,439
EMPLOYMENT Per 1,000 Tourist Days:		9.37	17.88	1.93
EMPLOYMENT Per Total Tourist Days:		13,660	12,157	1,503
TAX REVENUE Per 1,000 Tourist Days:		$863	$1,586	$230
TAX REVENUE Per Total Tourist Days:		$1,257,587	$1,078,711	$178,876
STATE EXPENDITURES Per 1,000 Tourist Days:			$340	$230
CASH FLOW Ratio (Revenue/Exp.):			4.64	1.02

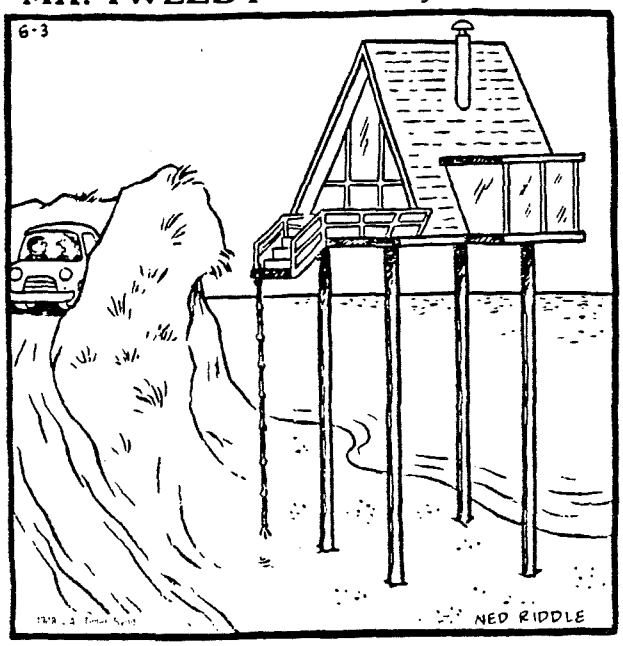
COMMENTS

Salt-Water Beaching ranks sixth among all activities in terms of total tourist days. The majority of Salt-Water Beachers come to Maine in the Summer--a full 80% of all Salt-Water Beaching tourist days in 1972/1973. The total was divided about equally between Residents and Non-Residents. As is true with most tourist activities, the Non-Resident spends considerably more per day ($17.46 vs. $2.32) and, consequently, has a more significant impact. Non-Resident expenditure is clustered into hotels, motels, and tourist courts; restaurants and food stores, and miscellaneous retail purchases. Because the Non-Resident Salt-Water Beacher spends so much more, he generates much more in terms of State tax revenue than the Resident. However, the Non-Resident spends more time on the highway and, therefore, costs more in terms of State expenditures. Nevertheless, the cash-flow ratio is much higher for the Non-Resident than for the Resident (4.6 vs. 1.0).

In terms of seasonal impact, the Non-Resident who comes in the Spring spends the most per day and the Non-Resident in the Fall spends the least among Non-Residents.

[1] All figures in 1972 dollars, except employment which is expressed in man-months.

MR. TWEEDY **by Ned Riddle**



"I HOPE YOUR MUSCLES ARE TONED UP. THIS PAST WINTER DID SOME RATHER FREAKY THINGS TO OUR BEACH CABIN."

4.0 CONSERVATION ACTIVITIES

4.1 Federal

4.11 Studies - Numerous federal studies over the last quarter century have reiterated the importance of coastal beaches to the social and economic well being of Americans nationwide. In 1954 the National Park Service was directed to identify remaining places on the eastern and southern coasts of the United States with valuable recreational qualities as well as areas desirable as sanctuaries for unique or rare plant and animal communities. The report issued by the Park Service in 1955, Seashore Recreation Survey of the Atlantic and Gulf Coasts, identified two high priority beach areas in Maine: the Popham-Seawall Beach region in Phippsburg and the Crescent-Ram Island Farm Beach region in Cape Elizabeth. Portions of both regions have since been placed under public or private conservation management for recreation use and resource protection.

The 1962 report of the Outdoor Recreation Resources Review Commission listed no particular Maine beaches for protection. However, the ORRRC report Shoreline Recreation Resources of the United States tagged beaches as "by far the most popular kind of shoreline in present patterns of outdoor recreation activities." The report pointed out that the important shore areas were those which are both accessible (especially those near metropolitan areas serving as day use beaches) and available (notably public beaches with adequate parking).

Four other major reports issued between 1968 and 1971 also identified beaches, particularly beach areas near urban centers, as one of the most significant shoreline recreation resources in the country.

> From Sea to Shining Sea, A Report on the American Environment - Our Natural Heritage. President's Council on Recreation and Natural Beauty, 1968.
>
> Our Nation and the Sea. Commission on Marine Science, Engineering and Resources, 1969.
>
> The National Shoreline Study. U.S. Army Corps of Engineers, 1971.
>
> "Papers on National Land Use Policy Issues." U.S. Senate Committee on Interior and Insular Affairs, 1971.

Aside from the 1954 Park Service study mentioned above, several federal studies have dealt specifically with coastal beaches in Maine. The Army Corps of Engineers, for instance, has issued study reports on beach erosion control on three York County beaches:

Saco (1957), Short Sands (1970) and Long Sands (1971) in York. More recently the Fish and Wildlife Service (USDI) has sponsored a study detailing an Ecological Characterization of Coastal Maine (1978) including information on sand, gravel and cobble beach fauna. Additionally, the Time & Tide Resource Conservation and Development Area in midcoastal Maine, a project of the Soil Conservation Service (USDA), has assisted in dune stabilization projects at public beaches and helped fund one study of oceanic processes.

Between 1937 and 1975, ten national seashores were established across the country. At one point portions of and the Maine coast in its entirety were proposed for inclusion in the National Seashore Program. However, with the enactment of the 1972 Coastal Zone Management Act, the emphasis on beach protection has shifted to the state and local levels.

4.12 Coast Zone Management - In 1976, Congress passed several amendments to the Coastal Zone Management Act. One of these dealt specifically with beach access and protection. The intent of the amendment was clearly stated in the discussion in the House report:

> "Access to public beaches and other attractions in public ownership in the coasts has come to be identified as one of the critical problems facing local and state governments..,The Committee position is that action is needed now to help provide the needed access, especially in urban areas, and that to wait will only mean additional expense to the taxpayers. The key again is that the purchase of such access...be tied to a comprehensive plan. That is the intent of this new requirement under 305 program development - that all such purchases fit into an overall program for each state."[1]

With the passage of the CZMA amendments Congress did not sanction the acquisition of new public beaches. Rather it made it a requirement that state coastal programs provide for an assessment of the adequacy of access to existing public shorelands. At the same time, funds were authorized (up to $2 5 million annually for fiscal years 1977-1980) for the acquisition of "lands to provide for access to public beaches and other public coastal areas of environmental, recreational, historic, esthetic, ecological, or cultural value, and for the preservation of islands." To date, nevertheless, no money has been appropriated for the program.

One requirement of the shorefront access amendment is that states define the term "beach". As suggested by the discussion in

[1] U.S. Congress, House of Representatives, Report No. 94-878 (94th Congress, 2nd session, March 4, 1976).

section 2.1, in Maine defining beach, at least in a legal sense, is no simple task. For the purposes of meeting the requirements of the federal statute it may be necessary to define beach in a different manner than that suggested here.

The CZMA amendments also require the identification of existing public beach areas requiring further access and/or protection as a part of the State's coastal management program. This work is in progress. By September 30, 1978 the State must have an approved planning process for assessing public access needs to, or protection of, beaches and other valuable coastal areas in order to receive funds for program implementation and management.

4.13 Policy - Although still somewhat confused, in recent years a national policy on beach dynamics has been emerging. The National Park Service, for instance, has officially announced that it will no longer attempt to prevent beach erosion on its shorelands.

At the same time, the U.S. Army Corps of Engineers in the past a proponent of structural means to mitigate shore changes, is moving away from beach structures. The Corps now favors nonstructural methods for preventing the erosion of sand beaches such as planning, zoning and dune grass planting, where practical. Two years ago the Corps issued a report on the feasibility of building a stone revetment at Camp Ellis in Saco. According to the report the revetment would not be cost effective. In years past the Corps would have welcomed the opportunity to construct a structure at Camp Ellis.

There are indications that the Soil Conservation Service, too, may be moving away from beach structures, though it has steadfastly refused to remove a dike on Ogunquit Beach built to replace a damaged natural dune. Many citizens feel the dike was improperly constructed and has caused more damage than benefit.

Additionally, the 1976 amendments to the Coastal Zone Management Act require that to receive CZM funds states must develop a planning process to assess the effects of shoreline erosion. This process is to include an articulation of appropriate state management policies, be they structural, nonstructural or a policy of noncontrol.

There are a number of other federal laws which also allow for the implementation of alternative management solutions, including:

- The 1936 Flood Control Act which provides for use of nonstructural solutions;

- Section 3 of the Rivers & Harbors Act of 1968 which provides for assistance in evacuating or relocating properties from high hazard areas in lieu of structural flood reduction solutions;

- The Land & Water Conservation Fund Act of 1965 which allows for open space acquisition in flood plains for recreational purposes;

- Section 1362 of the National Flood Insurance Act of 1968 which would, if funded, provide assistance to state and local governments for acquiring severely damaged properties in high flood hazard areas;

- Section 73 of the Water Resources Development Act which requires federal agencies to consider nonstructural as well as structural alternatives in flood protection; and

- The supplemental block grants to states to implement nonstructural flood protection programs.

Nevertheless, the federal government continues to subsidize private beachfront development through the Federal Flood Insurance Program, low interest Small Business Administration loans and federal disaster assistance grants. These programs are intended to mitigate the impact of coastal beach losses and storm damages. But at the same time they work at crosspurposes with efforts to move away from coastal flood plain development and so undermine the development of a consistent national policy of peaceful coexistence with shoreline dynamics.

The President's 1977 Executive Orders on flood plain management and wetlands protection suggested an eight step process to guide federal flood plain activities. Agencies were requested to present their plans for compliance with the orders by May 24, 1978.

4.2 State

4.21 Studies - The first known comprehensive study of Maine's coastal beaches for recreation was undertaken in 1934 by the State Planning Board. Since that time a number of studies related to beach recreational use and conservation in Maine have been conducted by or for state level agencies. Tables 3 and 4 summarize these by source.

Additionally, there are several ongoing studies concerned with the sand beaches of the Maine coast. One report on "Shoreline Changes at Popham Beach" is being prepared by Bruce Nelson of the University of Maine's Dept. of Oceanography. A separate atlas of Maine 's major coastal beaches is being completed by Dr. L. Kenneth Fink and Bruce Nelson of the Ira C. Darling Center. The atlas will include management recommendations for all of the beach systems studied.

On March 9, 1978, in the aftermath of a pair of devastating coastal storms, Governor James Longley directed the Committee on Coastal Development and Conservation (CCDC) to address the issue of coastal flood plain management in Maine. The Committee is to prepare by January 1, 1979 a policy report for mitigating coastal flood damages

Table 3

STATE LEVEL STUDIES PERTAINING TO RECREATIONAL USE OF MAINE COASTAL BEACHES

AGENCY	TITLE	YEAR	COMMENT
Maine State Planning Board	"Field Survey of Beaches Kittery to Portland"	1934	First comprehensive survey.
	"Proposed Major Park System in Maine"	1935	In Maine State Planning Board Report; mentions Popham, Old Orchard, Roque Bluffs & Higgins Beaches.
Maine State Legislature	"Report of the Committee on Natural Beauty & Historic Spots"	1933	Recommended the establishment of state parks with salt water frontage.
	"Report of the Recess Committee on Feasibility of Acquiring Property for the Establishment of Public Bathing Beaches..."	1939	Popham, Crescent Beaches proposed as parks.
Maine Development Commission	Postwar Planning for the State of Maine	1944	Popham & Crescent Beach State Park proposals reiterated.
Maine State Park Commission	Preliminary Report of the Maine Park and Recreation Area Study	1940	Popham & Crescent Beach parks proposed.
	Preliminary Report on State Park and Related Recreational Planning	1952	Suggested potential state park sites included Kennebunk Beach region.
	A Recreation Plan for Maine	1956	Proposed beach parks included Crescent Surf, Crescent, Popham Beaches and Roque Island.
Maine State Park & Recreation Commission	Outdoor Recreation in Maine	1965	Prepared by University of Maine.

Maine Bureau of Parks and Recreation	Statewide Comprehensive Outdoor Recreation Plan	1972, 1977	Analyzed supply & demand use of swim facilities.
	"Summary Data Concerning Use at Reid State Park...During August 1970"	1974	Unpublished paper on park user characteristics.
	"Southern Maine Coastal Beach Research-Initial Report"	1975	Unpublished memo documenting beaching facilities.
	"Visitor use Survey: Day Use State Parks and Coastal Municipal Beaches from Portland to Kittery"	1975	Paper on beach and park user characteristics.
	"Coastal Beach Analysis-Kittery to Portland"	1975	Unpublished paper on beaching supply & demand.
	"Recreation in Maine, Utilization and Need"	1976	Use and preference panel survey by Social Science Research Institute.
	"Maine Resident Outdoor Recreation Participation & Preferences"	1977	Use and preference survey by Northeast Markets, Inc.
Maine State Planning Office	Maine, An Appraisal by the People	1973	Preference survey by Northeast Markets, Inc. with questions on beach acquisition.
	Citizen Evaluation of Public Policy in the Coastal Zone	1975	Survey by Social Science Research Institute with questions on beach use and shore acquisition.
Vacation Travel Analysis Committee	Tourism in Maine: Analysis & Recommendations	1974	Included data on economic, social & environmental impacts of beach use.

Table 4

STATE LEVEL STUDIES PERTAINING TO CONSERVATION OF MAINE COASTAL BEACHES

AGENCY	TITLE	YEAR	COMMENT
Maine Geological Survey/Bureau of Geology	"Erosion Studies of Wells and Popham Beaches"	1970	In Marine Erosion Studies on the Sand Beaches of Maine, Progress Report, by B. S. Timson.
	"Observations on the Origin & Development of the Wells Beach Area, Maine"	1970	In Shorter Contributions to Maine Geology, MGS Bull 23, pp. 58-68, by A. M. Hussey.
	"Studies of Processes Controlling Beach Morphology Systems of the Wells Area, Maine"	1971	Open file report by B. S. Timson.
	"Historical Changes of the Webhannet River Inlet, Wells, Maine"	1976	Unpublished report by B. S. Timson and D. Kale.
	A Handbook of Coastal Marine Geologic Environments of the Maine Coast	1977	Draft report by B. S. Timson with 112 maps.
Maine Department of Conservation	Beach Vegetation & Oceanic Processes Study of Popham State Park Beach, Reid State Park Beach, and Small Point Beach	1977	Prepared cooperatively with Time & Tide RC&D by P. Trudeau, et al.
Maine State Planning Office	Maine Shoreline Erosion Inventory	1977	Draft report by the Maine Bureau of Geology.
	Geological & Botanical Features of Sand Beach Systems in Maine	1978	Draft report for the State Critical Areas Program.

with appropriate recommendations for executive, legislative, local and federal cooperation. The State Land and Water Resources Council will conduct the study and transmit the study report to the CCDC.

Three principal research tasks for the study have been outlined: (1) to identify those beaches in severe danger or of critical importance to coastal ecology and to categorize them for policy purposes, (2) to inventory existing legislation related to coastal flooding and determine the legal limits of suggested policy approaches, (3) to investigate the short and long term impacts of alternative policy approaches on the state/local economy.

4.22 Natural and Critical Areas - Over 100 coastal beach features were listed in the 1972 Maine Natural Areas Inventory.[1] The Critical Areas Program of the State Planning Office is currently taking this information one step further by studying Maine's coastal sand beaches for possible registration as State designated Critical Areas. A recently completed report identified thirty beach systems which met specific geological and biological significance criteria as critical areas.[2] Already a number of beach localities have been registered as critical bird nesting habitat for least terns and piping plovers.

Many of these Natural Areas and Critical Areas are vulnerable beach features which are not tolerant to substantial human use and so would best be kept in a protected state.

4.23 Statutes - At least three State agencies have authority to acquire land or regulate activities related to beach recreational use and/or protection. The Bureau of Parks and Recreation is authorized to acquire land "to preserve the natural character and features of such area."[3] As discussed in section 3.1 the Bureau owns a number of significant beaches. These properties are managed for recreational use as well as for the long term conservation of the shorefront resource.

The State Planning Office, as part of the Maine Critical Areas Program, registers highly unusual natural features or outstanding examples of common features.[4] As discussed above several beach sites have been registered or are being studied for potential registration.

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[1] Natural Resources Council of Maine, Maine Natural Areas Inventory, (Augusta, 1972).

[2] Bruce W. Nelson and L. Kenneth Fink, Geological and Botanical Features of Sand Beach Systems in Maine, report prepared for the Maine Critical Areas Program, 1978).

[3] 12 M.R.S.A. § 601-602.

[4] 5 M.R.S.A. § 3310-3314.

The Department of Environmental Protection, under the Oil Discharge Prevention and Pollution Control Law, regulates the loading and transportation of petroleum products along the coast. As part of the program oil spill prevention and clean up is financed by a fee on oil brought into Maine ports. The Legislature, in the findings section of the act, declared it to be the intent of the State to maintain "The coastal waters, estuaries, tidal flats, beaches and public lands adjoining the seacoast, in as close to a pristine condition as possible."[1]

4.24 Policy - As at the federal level, a state policy on shoreland changes appears to be evolving. The State, through the Department of Environmental Protection, still allows some shoreland construction. However, a noteable step was taken when the Board of Environmental Protection recently adopted a policy opposing the construction of new seawalls (see 5.25). That the Governor has directed the Committee on Coastal Development & Conservation to make recommendations on mitigating coastal flood damages also illustrates that the State is beginning to come to grips with the problems of beach development and property loss.

In addition, the State is in the process of finalizing its policy statement on flood hazard mitigation as required by the Federal Diaster Assistance Administration.

4.3 Local

4.31 Studies - There appear to have been few beach recreation or conservation studies undertaken in the past at the local level. Beach morphology has been monitored at Ogunquit Beach the past several years and some work has been done at Pemaquid Beach. However, no comprehensive listing of municipally initiated studies is available.

Currently at least one local beach study is underway in Maine. The city of Kittery, funded by a $7,000 Coastal Zone Management grant, is preparing an environmentally sound management plan for Sea Point Beach and Fort Foster Park. Other projects have been proposed including a multicommunity beach erosion reconnaissance study of the beaches in Saco Bay. Projects such as this are expected to be eligible for funding under the 306 phase of the State's Coastal Program.

4.32 Maintenance - While there have been few studies, many coastal towns have undertaken extensive beach clean-up projects both on public and private beachfronts. The towns of Scarborough, Kennebunk and Old Orchard, for instance, have for years carried out clean up programs, at public expense, intended to improve the resource for recreational use. Ironically while these activities may have enhanced the beaches for recreational use, they may have threatened the conservation of the resource by interfering with the natural dynamics of the beach ecosystem.

1 38 M.R.S.A. § 541.

4.33 Policy - By and large, the policy of coastal communities toward beach loss has been to support the building of structures to prevent or mitigate property loss. The justification has been predominantly economic: towns have not wanted to incur property tax losses and the expense of rebuilding public facilities such as shore roads.

This is changing as citizens come to recognize the ultimately futility of shoreline structures. In Camp Ellis voters in June 1978 defeated a bond issue to finance the construction of a revetment proposed for the Saco beaches. Despite the support of city officials the measure lost by a margin of more than four to one. Some Saco beachfront owners have used dune grass planting as an alternative erosion mitigation measure.

While some Popham Beach landowners have fought for the privilege of building seawalls in front of their own properties, others have resigned themselves to loosing their shoreland and in many cases their homes.

At Ogunquit, too, citizens have acted for the conservation of the beach. They have banded together as the Special Committee to Restore the Ogunquit Dunes (SCROD) and other groups to try to force the federal government to remove the dike built on the beach several years ago.

4.4 Private

4.41 Studies - The private sector has been involved in various beach studies over the years, usually in conjunction with publicly funded projects. A partial list follows:

P.E. Raymond and H.C. Stetson, "A Calcareous Beach on the Coast of Maine," Journal of Sed. Petrology, 2, 1932, pp. 51-62.

S.C. Farrell, "Coastal Processes, Historical Changes, and the Post-Pleistocene Geologic Record of Saco Bay, Maine," unpublished Ph.D. dissertation, Coastal Research Center, University of Massachusetts, 1972.

D.C. Koons, "Geomorphology and Land Use Decisions in Maine," Geol. Soc. Amer. Spec. Paper, No. 174, 1976.

M. Hunter, Maine Ecosystems, South Gardiner, Maine: Center for Natural Areas, unpublished, 1976.

4.42 Easements - The private sector has also been involved in beach conservation through the granting of conservation easements. The most important easement to date covers the entire Seawall Beach system between the Sprague and Morse Rivers in Phippsburg.

4.43 Policy - A number of private conservation organizations have urged the establishment of a comprehensive State policy toward the

conservation of sand beaches in Maine. The Natural Resources Council of Maine in March 1978 issued a resolution urging a State policy dealing with seawalls and other developments as well as public education. The Maine Audubon Society took a public stand in April 1978 against the construction or reconstruction of seawalls.

5.0 EVALUATION

Maine's sand beaches form one of the state's most valuable coastal resources since they represent most of the public access, intensive recreational use, open space, and salt marsh boundry portions of the coastline..... Maine's specific and regional beach problems can be attributed to development of a natural resource without an understanding of fundamental beach ecosystem dynamics.

--Bruce W. Nelson and
L. Kenneth Fink,
Geological and Botanical Features of Sand Beach Systems in Maine,
1978

5.0 EVALUATION

5.1 Beaches of State Level Significance

Due to their size, sand texture, history of use (or nonuse), or geographical location certain beaches may be considered to be of state level recreational significance. The majority of these are located southwest of Casco Bay due to the concentration of glacial outwash sediments in that region. On the other hand, there are many beaches, most of them small or not readily accessible and located east of Casco Bay which traditionally have been primarily of local recreational interest. Listed in Table 5 and shown in Figure 1 are those beaches which are regarded as of primary interest. A comprehensive list of coastal sand beaches follows this discussion.

5.2 Proposed Actions

In order to protect and restore Maine's coastal beaches a wide ranging program of land use regulation, federal-state-local cooperation and geologic research may be necessary. The sooner a systematic effort can be initiated to protect both the public and private safety and welfare, the better the chance for success. There are several specific actions which might be undertaken as part of an ecologically sound program to conserve the beach resources in Maine.

5.21 Moritorium - The State might impose an immediate moritorium on all major construction in dunes and beach associated wetlands while some or all of the following actions are implemented. As an interior measure a moritorium could prevent further alteration of beach ecosystems and the investment of money in high risk locations where it is likely that building will be permanently restricted in the near future.

5.22 Amend Laws - As they stand, both the Coastal Wetlands Alteration Act and the Mandatory Shoreland Zoning Law offer some regulation of land use activities in beach ecosystems. However, neither can adequately protect fragile dune areas from development. If permits are to be granted for backbeach development, careful review for long term economic and geologic impacts should be included. The Coastal Wetlands Act could be amended to bring all wetland areas including those subject to periods of maximum storm activity into the permitting process. The beefing up of local shoreland zoning ordinances could also go a long way toward improving beach conservation. Through one or more of these laws all filling of salt, fresh and intertidal marshes in the coastal area could be prohibited.

5.23 Enforcement - At the same time, the enforcement of existing controls over seaside development could be improved by increased technical and financial assistance from the State. Many towns have demonstrated that they are not sincere about enforcing local

Table 5

MAINE COASTAL RECREATIONAL BEACHES OF STATE LEVEL SIGNIFICANCE
(West to East)

	BEACH	MUNICIPALITY	OWNERSHIP	OPEN TO PUBLIC
1	Long Sands	York	Municipal	Yes
2	Short Sands	York	Municipal	Yes
3	Ogunquit	Ogunquit	Municipal	Yes
4	Moody	Wells	Private	Yes
5	Wells	Wells	Private	Yes
6	Drakes Island	Wells	Private	Yes
7	Laudholm	Wells	State/Private	Yes
8	Crescent Surf	Kennebunk	Private	No
9	Parsons	Kennebunk	Private	Limited
10	Goochs	Kennebunk	Municipal	Yes
11	Goose Rocks	Kennebunkport	Private	Limited
12	Fortune Rocks	Biddeford	Private/Mun.	Limited
13	Hills	Biddeford	Private	No
14	Saco Beaches	Saco	Private/State	Limited
15	Old Orchard	Old Orchard Beach	Municipal	Yes
16	Pine Point	Scarborough	Private	Yes
17	Ferry	Scarborough	Municipal	Yes
18	Western	Scarborough	Private	Limited
19	Scarborough	Scarborough	Private/State	Limited
20	Higgins	Scarborough	Private	Yes
21	Crescent	Cape Elizabeth	State	Yes
22	Willard	So. Portland	Municipal	Yes
23	Andrews	Portland	State	Yes (Limited)
24	Little Chebeaque	Portland	State	Yes (Limited)
25	Seawall	Phippsburg	Private	Limited
26	Popham-Hunnewell	Phippsburg	Private/State	Yes
27	Reid	Georgetown	State	Yes
28	Pemaquid	Bristol	Municipal	Yes
29	Lincolnville	Lincolnville	Private/Mun.	Yes
30	Pond Island	-	Private	Yes (Limited
31	Sand	Bar Harbor	Federal	Yes
32	Sandy River	Jonesport	Private	Limited
33	Roque Island	Jonesport	Private	Yes (Limited)
34	Roque Bluffs	Roque Bluffs	State	Yes

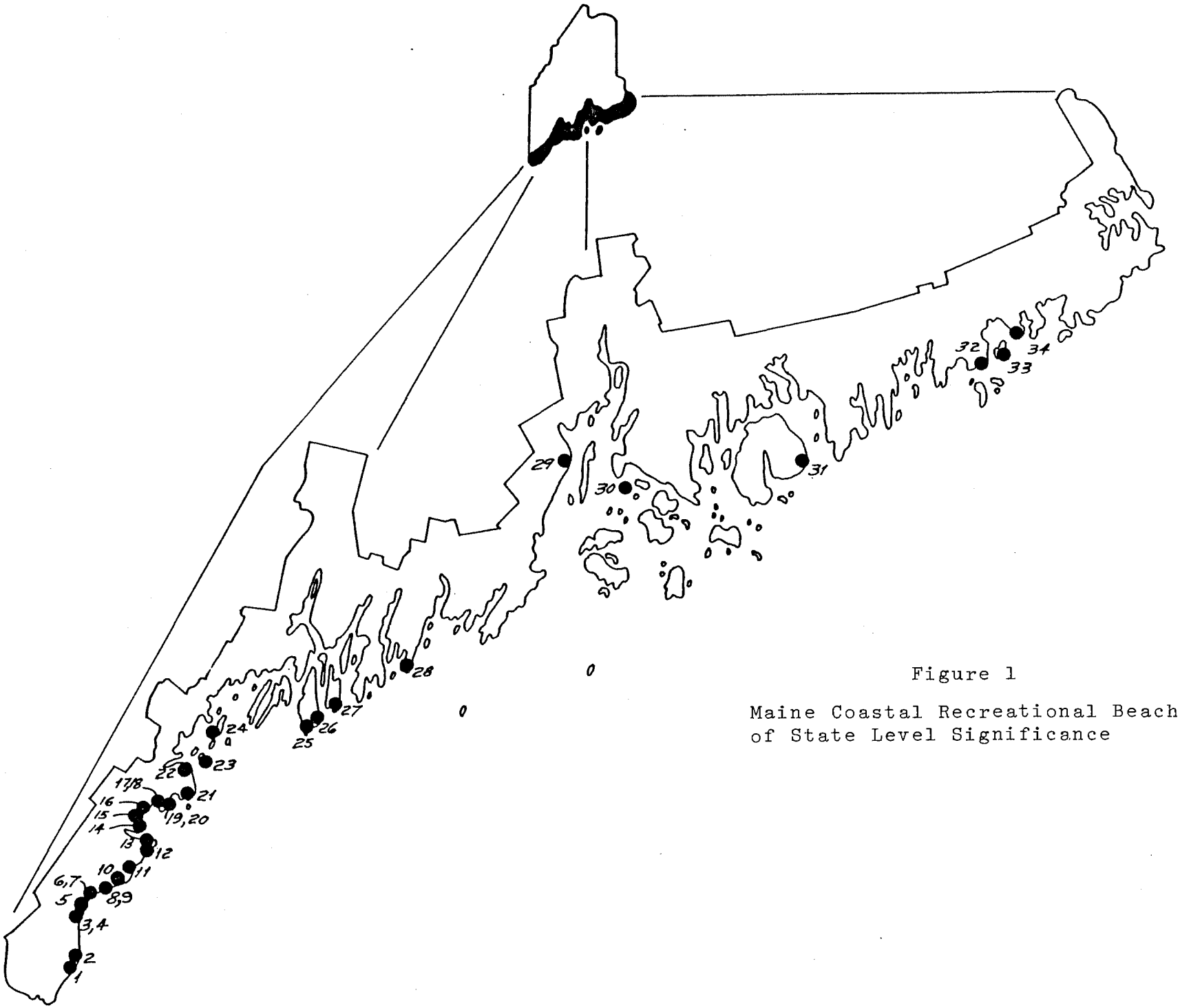

Figure 1

Maine Coastal Recreational Beaches
of State Level Significance

shoreland zoning ordinances. Others simply cannot handle the task. As a result, building continues on the beaches. Development, particularly in those few beach areas which in recent years have been accreting, should be prohibited and a strict setback could be established for all new seaside structures, including public beach facilities.

5.24 Program Review - A comprehensive review of local, state and federal laws and regulations dealing with shoreline erosion and coastal floodplain management in Maine could be undertaken. A web of laws and regulations has evolved in recent years dealing with coastal erosion and flooding. At least four state agencies and five federal agencies have a direct interest in these issues. Additionally, a number of private sector industry and conservation organizations are affected by the laws concerning flooding and erosion on the coast. All of these interrelationships should be spelled out. Such a review should include an evaluation of the objectives (to see where they are at crosspurposes), the administration, the enforcement of existing laws and recommendations to streamline the bureaucratic process of mitigating shoreline losses. The work suggested here would help satisfy federal requirements of the Coastal Zone Management Act Amendments of 1976.

5.25 Seawalls - Time and again geologists have stated and experience has shown that the development and construction of seawalls on beach environments results in accelerated erosion of the beach and degradation of the beach as a recreational resource as well as the destruction of structures built on the beach. Under certain conditions where existing investments warrant structural methods (e.g., breakwaters, seawalls and revetments) may be the only effective means of shoreline protection. Nonetheless, nonstructural methods, such as the use of vegetation as a sediment trap, are preferred over structural methods. They are normally less costly and more harmonious with natural beach processes than structural methods. Most important, nonstructural measures are designed to prevent people from occupying floodplains, to mitigate existing problems of floodplain occupation and to maintain the beneficial values of floodplains.

That seawalls are a significant intrusion on beach systems was recognized by the Board of Environmental Protection when in May 1978, it approved a policy that hereafter it will normally be unable to make the necessary favorable findings of fact set forth in the Alterations of Coastal Wetlands Law, when an application is made for new seawalls on sand beaches. By emphasizing the burden of proof on applicants the Board has clearly acknowledged that the construction of seawalls causes "significant modification to normal patterns of water movement and the erosion and accretion of sand." When they acquired property on the beach, private owners simultaneously assumed the risk which goes with coastal land ownership.

The Board of Environmental Protection could go one step further and require that seawall reconstruction permit applications be reviewed on a case by case basis. Reconstruction of storm damaged seawalls would be permitted only when substantial evidence can be presented that the seawall will not significantly interfere with the

natural processes of the beach system and the long term heath of the beach.

5.26 Acquisition and Relocation - In some areas it is possible, at least for the short term, to mitigate property loses due to coastal erosion. However, development simply should not be allowed on some sites. Two actions could help in such cases: (1) the Legislature could establish a fund to finance State or municipal acquisition of those beach areas prone to chronic and acute erosion; and (2) rather than being encouraged by government incentive programs to build or rebuild in flood hazard areas, people could be financially encouraged to build/rebuild, instead, away from the ocean's reach.

It has been demonstrated that many aspects of the National Flood Insurance Program are oriented toward the problems of riverine flooding and are not well suited to coastal flooding. In fact, financing acts as a strong counterforce to flood plain management efforts, and so to the professed goals of the National Flood Insurance Program. Projected flood insurance claim payouts for the February 1978 storm which struck southern coastal Maine are projected to reach $8-10,000 per claim.[1] Many shore residents have indicated that the willingness to rebuild stems in large part from the availability of federal insurance.

Besides flood insurance there are a number of federal programs which act as disincentives to relocation out of coastal flood hazard areas, including Small Business Administration disaster loans, federal repair grants and storm repair grants for elderly homeowners. The administration of these programs could be changed to allow relocation or reconstruction aid only once for each property. Structures not yet built would be eligible for no aid if damaged by future storms or shore erosion.

Until the State has an equitable policy allowing some monetary consideration for landowners who are not allowed to build/rebuild where destruction is a certainty, the public will continue to bear the dual costs of governmental insurance and loan subsidies and the degradation of an irreplaceable resource of public significance. Acquisition of highly erosional beach areas and adjacent upland buffer zones could in many cases serve to provide areas for public recreation and coastal public access where facilities to service these uses could be provided.

5.27 Open Beaches Act and Public Rights of Way - In addition to expanding publicly owned beach property, the Legislature could pass an act to expand the rights of the public in the intertidal zone of the shore. The extension of private ownership of most coastal beaches in Maine to low tide is beginning to cause some

[1] New England River Basins Commission, "Coastal Flooding: A New England Perspective on The Great Blizzard of 1978," Regional Report, 6, No. 1 (June 1978), p.2.

real problems in beach use and management. The clarification of the public's right of lateral access for recreation on the beach at least below high tide could eliminate future questions as to permitted coastal public uses. It could also (1) streamline efforts to restore those beaches which experience severe degradation, (2) bring shoreland ownership more into line with the real estate statutes of most other states, (3) help legitimize local beach maintenance expenditures, and (4) clarify eligibility for federal beach protection funds and allow the expanded use of federal Coastal Zone Management monies for public access improvement.

Several states and territories have enacted open shoreline legislation, including Texas, Oregon, the Virgin Islands. In Maine, in 1974, a legislative committee studying public access to lakes and other bodies of water recommended to the Legislative Council that the possibility of adopting a law defining and expanding the public right of access to ocean beaches between high tide and low tide receive further study.

To improve beach access, an open beaches act could be combined with a program of identifying, acquiring, marking and developing public rights of way to the beachface.

5.28 Critical Area Registration - As has been shown here, beach systems are important for a variety of reasons, including the fact that they act as a natural barrier between the ocean and the upland. Maine's undisturbed coastal beaches support many species of unusual flora and fauna. The State could formally recognize the value of our remaining undeveloped beach systems. Inclusion on the State's Registry of Critical Areas would be acknowledgement of the significance of these beaches.

Beach experts at the University of Maine are studying the major undeveloped sand beach systems to suggest geological management recommendations for each beach. When this work is completed, it should be carefully evaluated for implementation.

5.29 Education Program - One of the most prevalent causes of shore losses in Maine has been public ignorance of fundamental natural processes. To heighten public awareness of the geological, botanical, recreational and economic values of Maine's coastal sand beaches an educational program should be mounted. The Maine Audubon Society has announced its intention to organize such an effort. The Natural Resources Council has said it will participate in a public education program. These organizations should receive the support and assistance of the University of Maine, the Department of Environmental Protection, the Department of Conservation and other interested parties. Any educational program should educate the public of the consequences of building on coastal beaches. In particular, methods for limiting the impact of seawalls on beach geology should be stressed.

5.30 Offroad Vehicles - Unlike many states the use of offroad vehicles on coastal beaches in Maine has been minimal. However,

where vehicular traffic has occurred in East coast beach systems, other than on the beachface itself, the results have been devastating. The threat of these machines on dunes and wetlands looms except on those publicly owned beaches where they are expressly prohibited.

5.31 Research - While many of the problems faced with respect to beach use, flooding, erosion, and conservation are clear enough, solutions are not always as obvious. Lack of information should not preclude many immediate actions which can be taken to preserve future options. Still, there are a number of studies which could be undertaken to provide data for better management of each of Maine's coastal beaches.

Geologic research could be stepped up to provide more data on the formation and dynamics of Maine's coastal beach ststems. A monitoring program could be developed to ascertain the vitality of each beach, to quantify those forces causing erosion and to identify potential detrimental impacts resulting from human activity on the beach. The short and long term geologic effects of existing jetties, seawalls and dredging projects on the sand beaches of the Maine coast could also be studied.

Data collection could be stepped up on base flood elevations, in particular the identification of 100 year flood levels. A number of state and federal programs are based on this information, yet only limited data are available to towns to determine flood levels and designations are often arbitrary. Maine shoreland zoning regulations require that the "first floor elevation or openings of all buildings and structures shall be elevated at least two feet above the elevation of the 100 year flood, flood of record, or in the absence of these, the flood as defined by soil types identified as recent flood plain soils."[1] Similarly, the National Flood Insurance Program requires that towns "reasonably utilize any base flood elevation data available from Federal, State, or other source, until such data has been provided by the Federal Insurance Administration, as criteria for requiring that all new construction and substantial improvements meet the following standards: (1) that residential structures have the lowest floor (including basement) elevated one foot above the base flood level, and (2) that non-residential structures have the lowest floor (including basement) elevated or floodproofed one foot above the base flood level."[2]

[1] State of Maine Guidelines for Municipal Shoreland Zoning Ordinances (adopted by the Board of Environmental Protection & the Land Use Regulation Commission, December 15, 1973), Sec. 11, M2.

[2] Office of Civil Emergency Preparedness, Model Ordinance Relating to Flood Hazard Areas (drafted pursuant to National Flood Insurance Act of 1968 (P.L. 90-448 as amended), April 1978).

Other research might focus on (1) recreational carrying capacity based on the amount of use that can take place without significant deterioration of the site or the experience of the visitor, (2) designation of beach associated estuaries as National Estuarine Sanctuaries as among other things, one means of helping to protect beaches, and (3) precise legal ownership of each beach.

Houses were lifted and shifted, piers were floated away, and ground floors of waterfront homes were ankle-deep in water that weathered the February, 1972 tide respectively unshifted, unfloated, and uncovered. Parts of roads were under water that had never been in that perspective before.

--News item, York County Coast Star, January 11, 1978

6.0 SOUTHERN BEACHES

Because of the importance of the beaches on the southwest coast these will be treated here apart from beaches on the rest of the coast.

6.1 Ownership and Access

Many of the beaches in southern Maine are in public ownership. Others, though privately owned, have long been open to public recreational use. Four coastal beach parcels held by the Bureau of Parks and Recreation (Laudholm, Ferry, Scarborough, Crescent) offer approximately 7,807 feet (2,342m) of sandy shoreline - roughly 5% of the total beach frontage south of Casco Bay.

Some beaches, though municipally owned, are in effect largely unavailable for general recreational use because of the lack of adequate convenient access and nearby parking facilities. Local regulations, notably restrictive parking ordinances, further limit beach use by the general public in some towns. Parking at municipal beaches in Kennebunk, for instance, is limited to those permanent and seasonal residents of Kennebunk, Kennebunkport, and Arundel with parking permits. In Wells and Ogunquit, parking is banned on all town roads adjacent to the local public beaches. In Kittery, residents are admitted to the beaches at Fort Foster for a nominal seasonal fee while nonresidents are charged daily.

There are no recreationally significant federal sand beach areas in the region Kittery to Casco Bay, though there are several beach associated wetlands under federal jurisdiction.

6.2 Visitation

The need for increased beach opportunities in southern coastal Maine is a difficult measure to document. The 1977 Maine Comprehensive Outdoor Recreation Plan indicated that while there were no calculated needs for swimming resources in the Southern Planning District, there were some minor needs in the Cumberland District. From the statistical methods utilized in SCORP it was found that a single beach in southern Maine, Old Orchard, was being used close to maximum resource capacity based on a standard of two feet of beach shoreline per person. One study conducted during the summer of 1975 suggested that out of staters accounted for an average of two-thirds of the visitors to coastal municipal beaches. The percentage of out of staters generally declined the further north of Kittery the beach was located.

A different measure - visitation at coastal beach state parks - suggested that pressures for beach use may be growing even faster than might otherwise be suspected. For example, over the past decade the number of annual visits has increased about 50% at Crescent Beach. At Scarborough Beach, visitation rose from approximately 30,000 in 1972 to over 73,000 in 1976. Recent studies of coastal state parks have estimated nonresident use of the parks in York and Cumberland Counties (Table 6).

Table 6

NONRESIDENT VISITATION OF SELECTED DAY USE STATE PARKS

State Park	% Nonresident Parties 1975	1977
Scarborough Beach	24	19
Crescent Beach	17	33
Two Lights	26	49
Wolf Neck	22	49

Source: Maine Bureau of Parks and Recreation, 1977 Visitor Use Survey: Day Use State Parks and 1975 Visitor Use Survey, Day Use State Parks and Coastal Municipal Beaches.

Both the proportion and number of out of state state park visitors appear to have been on the increase in recent years.

In brief, there generally appears to have been an increase in coastal beach use, particularly in southern Maine, in recent years. More and more out of staters are flocking to the beaches[1] (though nonresident use of nonbeach day use state parks appears to be increasing even more rapidly). This coupled with increased beach visitation by young in-migrants points to growing pressures for expanding beaching opportunities. Recent public opinion surveys suggest that the State should be involved helping to meet these needs.

6.3 Facilities

Early in 1975, a survey of all major coastal beaches from Kittery to Portland was completed by the Bureau of Parks and Recreation. Information was collected on beach length, available day use parking capacities, existing public access and sanitary facilities.

[1] Nonresident use of coastal state park beaches has generally been increasing in recent years. As suggested in Table 2, Scarborough Beach may be the exception. However, it should be noted that Scarborough Beach is a relatively new park known predominantly to local residents. Also, of all beach parks sampled in 1977, Scarborough had by far the lowest sample population.

Most of this is presented in summary form as an appendix exhibit. Generally, parking capacities and access from nearby public roads were judged to be adequate while sanitary facilities were deemed insufficient and unappealing. Although there undoubtedly is some outdated and inaccurate information in the survey, it is the most complete available.

6.4 Evaluation

In southern Maine where beach use has traditionally been heaviest there are several possible courses of action for making the beaches more readily available for general public recreation. The State could, for example, pursue acquisition of those beaches still outside the public domain. The only beaches which are not heavily developed and are likely to offer significant potential for public recreation are Crescent Surf, Parson's and Scarborough Beaches.

While public use is not encouraged at Crescent Surf, the public is allowed to use Parson's Beach in Kennebunk. Parking here is the factor limiting use. Parking accommodations could be improved though it is unlikely the present owners would tolerate use above current levels. Since acquisition of Crescent Surf and Parson's Beaches would likely be very expensive and since the beaches are immediately north of Laudholm which will be developed to allow swimming, it may be best to let them remain in private ownership. The Bureau of Parks and Recreation or the town might pursue an easement on Parson's Beach guaranteeing public use at a specified level. In addition, though a small section of the wetland area bordering Back Creek behind Parson's Beach has already been marked for inclusion within the Rachael Carson National Wildlife Refuge, to protect the whole beach-wetland ecosystem the entire vulnerable Back Creek marsh area should be included within the Refuge if the area becomes threatened.

Scarborough Beach is both a significant natural and an interesting historic site as well as an important recreational resource. The beach itself is one of the largest, little developed beach-dune systems remaining in southern Maine. It is popular with those seeking an uncrowded beaching experience, particularly in the nonpeak hours and season. That is not to say the Bureau's property at Scarborough Beach is not often used to capacity. Between 1972 and 1976, yearly public use of the park increased nearly two and one-half fold to more than 73,000 visits. On sunny summer days, the 300 car parking lot commonly fills very quickly and people spill over the boundaries of the Bureau's 67 feet of beach frontage.

Nearby the Bureau's property is the site of a 17th century fortification built by one Captain Joshua Scottow of Boston in 1681 following the First Indian War of 1675. The fort provided a haven for settlers in times of peril during the Indian Wars of the 1600-1700's, though on at least one occasion it was captured by the Indians. During the First and Second Indian Wars, few towns in New England suffered as many deaths as Scarborough.

Nine-tenths of the settlers killed lived at the colony established at Black Point on Scarborough Beach. Perhaps that is the derivation of the name of Massacre Pond.

Today most of the beach is held in a single collective ownership. The Bureau of Parks and Recreation has made offers to purchase additional beach land but has been unsuccessful. Nevertheless, Scarborough Beach is of such significance that it ought to be the explicit intention of the State to acquire more land for expanded public use, including the establishment of an interpretive trail network in the pond-dune area backing up the beach. If more property is acquired at the beach, the Bureau (1) could remove the existing road and parking lot near the beach itself, limiting all parking to lots by the road, (2) should protect the plant associations in the dunes which are uncommon in Maine (e.g. earth star puffball, wormwood, beach heather, pitch pine) and (3) maintain existing facilities for low intensity public beaching use. High intensity beaching can be accommodated at nearby Crescent Beach State Park.

The Bureau of Parks and Recreation could also work with each of the towns to improve facilities such as restrooms and change houses at all of the principal beaches in southern Maine. The large popular tourist beaches are a resource of state level significance. The State would be justified in making grants to communities for beach maintenance and long-term protection. To solve the traffic dilemma, expanded public (e.g. minibus) and bicycle transportation should be explored as an alternative to additional nearbeach parking lots. Wells, York, Kennebunk, and Old Orchard have been trying for years to cope with traffic congestion. All improvements expanding public use should be consistent with natural carrying capacities limiting the amount of use which can take place without significant deterioration of the site or the experience of the visitor. In fact, a spectrum of carrying capacities could be established for the major recreational beaches open to the public with some available for high and some for low intensity use.

Additionally, the Bureau of Parks and Recreation could develop Laudholm Beach as part of a day use state park. The beach could serve as a low intensity use area in a region of crowded, high intensity use beaches. Mitigation of erosion may be necessary as the beach has recently been eroding at an accelerated rate, aggravated apparently by the jetties at Wells Harbor.[1]

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[1] "Several property owners in the vicinity of the jetties have benefited with the addition of land (sand accretion) to their deeded holdings of 1962. Unfortunately, their gain is at the expense of increased degredation of the recreational beach and erosion of property owned by the State on the northern tip of Drake's Island." Barry S. Timson and Donald Kale, Maine Shoreline Erosion Inventory (draft report prepared for the Maine State Planning Office, 1977), p. 77.

The mile-long beach is always a special joy for children and dogs and for beachcombers of all ages; and there's some shelter from the biting northerlies if you hug the dunes. As if the scenery itself were not enough, there's usually some activity at sea to reward the rugged who climb the headland--a fishing vessel wallowing in the seas off Sequin, inward bound for the Kennebec, a lobsterman hauling in Sheepscot Bay, a tanker hard down on the horizon.

--News item, "Winter Beach",
Brunswick Times Record,
February 7, 1977

7.0 NORTHERN BEACHES

7.1 Ownership

Northeast of Cape Elizabeth, several of the major sand beaches are already in public ownership. The Bureau of Parks and Recreation holds seven beaches with a total of approximately 25,330 feet (7,720 m) of sandy shore frontage. This is about ten percent of the total beach shoreline. In addition to several small, locally important beaches, Pemaquid Beach is municipally owned. Sand Beach in Bar Harbor is managed as part of Acadia National Park.

Unlike southern Maine, there are a number of fine sandy beaches located on some of the offshore islands along this stretch of the coast. Long and Little Chebeague Islands in Casco Bay, Pleasant and Marshall Islands in Jericho Bay, and Roque Island in Englishman Bay all have particularly good beaches.

7.2 Visitation

According to the 1977 Maine Comprehensive Outdoor Recreation Plan there are only modest needs for beaching areas along this part of the coast. In the Mid-coast District, there are presently some calculated needs. In the Eastern District there are only minor calculated deficiencies beginning around 1990.

The two major beach state parks, Popham and Reid, have shown heavy use in recent years. Reid is the most heavily used day use park in the state. Two hundred thousand beachgoers visit Reid each year. At Popham visitation trippled between 1968 and 1976. More than 110,000 day trippers now visit Popham annually. Results of a 1977 survey indicate nonresident parties to Reid comprise 38% of the total. Nonresident parties to Popham Beach State Park make up 49% of the total.

7.3 Facilities

No information has been compiled on beach facilities Downeast, but there is little to compile. Parking lots, change houses and lifeguards are provided at Popham, Reid and Roque Bluffs State Parks. In addition, refreshments are available at Reid.

Parking is accommodated at a couple of other beaches but there are few, if any, other formal facilities provided.

7.4 Evaluation

The problems of the Downeast beaches are much different from those in southern Maine. The local beaches in this region tend to be short, narrow pocket beaches. These serve as recreation areas (usually more for sunning than swimming due to the cold water temperatures) for local permanent and seasonal residents. Unlike

the southern beaches, most of these small beaches are little used by transient tourists and suffer few congestion problems.

Already several of the large beaches of recreational importance east of Casco Bay are in public ownership. Of these, the beaches of Popham Beach and Reid State Parks were the subject of a recently completed botanical-geological study. Ten specific management recommendations have been proposed by Philip Trudeau, et al in the report Beach Vegetation and Oceanic Processes Study of Popham State Park Beach, Reid State Park Beach, and Small Point Beach. These management suggestions deal with fences, picnic areas, planting and fertilizing, boardwalks, foredunes, park accessibility, beach erosion, beach nurishment, park enlargement, education, and other problems. Similar management studies could be undertaken for other beach parks owned by the Bureau including Ferry Beach, Scarborough Beach, Roque Bluffs, Laudholm, Little Chebeague, Andrews Beach and Birch Point Beach.

There are only a few large privately owned beaches east of Casco Bay which offer potential for significant public recreation: the beaches on Hermit Island and Cape Small in Phippsburg, the sections of beach on the Popham peninsula not in State ownership, Sandy River Beach in Jonesport, and the beaches on Roque Island off Jonesboro. Another, Seawall Beach (aka Morse, St. John, Small Point, Long Beach) in Phippsburg, is now protected by a conservation easement granted to The Nature Conservancy. It is available for scientific and educational use and low intensity recreation use.

The beaches on Hermit Island and Cape Small are for the most part not very large. However, acquired in conjunction with adjacent upland areas and tied into the nearby Popham Beach area, they could be a major recreational resource.

Although only a portion of Popham Beach in Phippsburg is owned by the State, as park use has grown more and more visitors spill out onto the private beach area. This same private property has been the section of the beach most seriously subject to beach erosion in recent years. Because of the natural and historical importance of the entire Popham peninsula it would be appropriate for the State to begin action for the protection of the entire beach by eventual acquisition or other means.

Already Sandy River Beach on Chandler Bay in Jonesport is used as a local beaching area. Several homes back a portion of the beach. The most urgent need is for offroad parking space to keep people from driving onto the sand dunes.

The beaches on Roque Island have been, at once, long recognized for their unique natural beauty and yet little known save by local residents and cruising enthusiasts. Under continuous ownership by one family for the past century, they have traditionally been open to all. These beaches appear to be both well managed and available under present ownership.

8.0 SUMMARY OF RECOMMENDATIONS

Gov. James B. Longley...called on tourists Monday "to treat...our beaches as they would their own living rooms," in his holiday message.

--News item
Bangor Daily News,
July 4, 1978

8.0 SUMMARY OF RECOMMENDATIONS

Coastal sand beaches in Maine are, for all practical purposes, a natural resource in finite, fixed and hence scarce supply. They are also irregularly distributed, some communities having expansive stretches of sandy beach while others have none. Equally unevenly distributed are the users of the resource: seasonal and permanent local residents, day trippers from inland cities and towns, tourists from out of state. Clearly the importance and problems associated with many beaches transcend local boundaries; so too must the responsibility to deal with them.

Many actions can be taken by municipalities to protect the economic interest and beach resources of a community. However, often the latter is sacrificed to the former. Where towns are willing to work within the long term constraints of protecting the beaches State-local cooperation is most practical. However, this brief discussion cannot deal with the specifics of each local situation. It can only suggest broad actions for protecting the longer public interest.

Based on the information gathered for this paper and the report The Maine Coast: Recreation and Open Space, it is recommended that the following State and local actions be considered.

8.1 Program Recommendations

Recommendation	Suggested Agent
1. Impose a moritorium on major construction on all coastal sand beach systems, including dunes, beach associated wetlands and accretionary beach areas as an interim measure during which some or all of the following are implemented. (Work directly related to the management of public beach systems such as walks, traffic control fencing, etc. could be allowed after permit review by the Department of Environmental Protection).	Legislature
2. Amend the Coastal Wetlands Act to bring beach dunes and associated wetlands not covered by shoreland zoning into the permitting process administered by the Department of Environmental Protection.	Legislature
3. Review, and amend where necessary, local shoreland zoning ordinances to prohibit or regulate development on nontolerant beach system areas.	SPO, DEP, LURC, Towns

	Recommendation	Suggested Agent
4.	Increase State technical and financial assistance to improve the enforcement of existing local land use regulations (shoreland zoning ordinances, plumbing codes, building codes, etc.) over seaside development.	DEP, DHS, LURC, etc.
5.	Undertake a comprehensive review of local, State and federal statutes dealing with shoreline erosion and coastal flood plain management.	SPO, AG
6.	Establish a uniform minimum shoreline setback for all new structures, except those whose function depends directly on seaside location.	Legislature
7.	Review all seawall reconstruction projects on a case by case basis and restrict reconstruction where it can be reasonably demonstrated that a wall will significantly interfere with the natural processes of the particular beach system.	BEP
8.	Authorize acquisition of designated beach areas prone to chronic and acute erosion and establish a fund to finance such State or municipal acquisition.	Legislature
9.	Provide reconstruction aid for storm damages one time to private property owners located in coastal flood hazard areas.	Federal
10.	Clarify public recreational rights in coastal intertidal areas by enactment of open beaches type legislation.	Legislature
11.	Identify, and where appropriate, open and mark existing public rights of way to the shore.	Towns
12.	Acquire, mark, and develop additional public rights of way to the beach face where carrying capacities will not be exceeded	BPR, Towns
13.	Register as critical areas and prohibit all development on unique or especially valuable natural beach areas or wildlife habitats.	SPO, Legislature
14.	Protect the remaining major undeveloped coastal beach systems by implementing the management recommendations of the coastal beach atlas being prepared by researchers at the University of Maine.	BPR, Towns, Private landowners

Recommendation	Suggested Agent
15. Organize an education program to improve public awareness of the value and the processes of coastal beach systems and the effects of building on the beach.	SPO, MAS, NRC, BPR, DEP
16. Prohibit offroad vehicular use of all beach areas.	Legislature
17. Expand public service radio reports of swimming conditions (tides, temperatures), traffic and crowds at State park beaches.	BPR
18. Study the geologic effects of existing jetties, seawalls, and dredging projects on coastal sand beaches to assess the benefits of each structure in relation to the damaging effects and make detailed recommendations.	BOG, ACE
19. Step up data collection on base flood levels.	Federal
20. Determine beach recreational carrying capacities for each coastal State managed beach.	BPR
21. Study beach associated estuaries for possible designation as National Estuarine Sanctuaries.	SPO
22. Research precise legal ownership of all coastal sand beaches.	Towns
23. Provide financial and technical assistance to municipalities with beaches of state level recreational significance to improve restrooms, change houses, and ecologically sound beach maintenance.	BPR
24. Encourage public and bicycle transportation for the heavily used southern coastal beaches as an alternative to the construction of additional nearbeach parking areas.	BPR
25. Provide a readily available and well advertised source of beach grass to beach property owners and technical assistance in planting and maintaining the grass as a natural method of dune stabilization where appropriate.	SCS

8.2 Site Recommendations

26. Pursue an easement or agreement on Parson's Beach guaranteeing public use at a specified level.	BPR or Town

	Recommendation	Suggested Agent
27.	Continue management of Crescent Beach State Park and Reid State Park principally as beaching-picnicking State park facilities.	BPR
28.	Develop Laudholm Beach and Little Chebeague Island as multiple attraction State Parks.	BPR
29.	Develop minimal facilities (e.g. toilets, snow fences) to protect Andrews Beach from recreational abuse.	BPR
30.	Develop Birch Point Beach to be operated by a local or regional agency as a regional park.	BPR
31.	Implement the recommendations of Philip Trudeau's study of the Popham Beach and Reid State Park systems where practical.	BPR
32.	Undertake management studies, similar to that done for Popham Beach and Reid State Parks, for major coastal beaches held by the Bureau of Parks and Recreation.	BPR
33.	Acquire additional beachfront and backdune land at Scarborough Beach.	BPR
34.	Consider acquisition by the Bureau of Parks and Recreation of property at East Cundy Point including the beaches at the site.	BPR
35.	Study conservation and recreation of the Cape Small-Hermit Island beaches.	BPR
36.	Establish a Popham Trust to protect the natural, cultural and historic resources of the entire Popham peninsula, including all of the sand beaches between the Morse and Kennebec Rivers.	BPR, Town
37.	Assure long term protection of the beaches at Ram Island Farm in Cape Elizabeth and Roque Island in Jonesboro.	BPR, Owners, SPO
38.	Construct parking areas to keep traffic off the backbeach at Sandy River Beach.	DOT

KEY

ACE = Army Corps of Engineers
AG = Office of Attorney General
BEP = Board of Environmental Protection
BOG = Bureau of Geology
BPR = Bureau of Parks & Recreation
DEP = Dept. of Environmental Protection
DHS = Dept. of Human Services
DOT = Dept. of Transportation
LURC = Land Use Regulation Commission
MAS = Maine Audubon Society
NRC = Natural Resources Council
SCS = Soil Conservation Service
SPO = State Planning Office

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9.0 REFERENCES

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APPENDIX EXHIBITS

APPENDIX C-I

SAND BEACHES OF MAINE

(in alphabetical order of topographic map name)

Beach Location/Name	Length	Topographic Map Name	Town
Beach along northernmost tip of Bailey Island between N tip and causeway entrance	204 m	Bailey Island	Harpswell
Westward facing beach on northern peninsula of Bailey Island	192 m	Bailey Island	Harpswell
NE beach directly opposite offshore ledges	96 m	Bailey Island	Harpswell
Bean Island southern-side beach	670 m	Bar Harbor NW 1/4	Sorrento
N facing beach on peninsula sandwiched between Bunhers & Birch Hbrs. on Schoodic	380 m	Bar Harbor NE 1/4	Gouldsboro
Beach on arrowhead-shaped tip of land between town of Birch Harbor and Prospect Pt.	360 m	Bar Harbor NE 1/4	Gouldsboro
Beach at head (landward) of Sand Cove	160 m	Bar Harbor NE 1/4	Gouldsboro
Beach facing SW onto Sand Cove	170 m	Bar Harbor NE 1/4	Gouldsboro
Beach facing SE onto Sand Cove	170 m	Bar Harbor NE 1/4	Gouldsboro
Beach surrounding SE tip of Hog Island	340 m	Bar Harbor NE 1/4	Gouldsboro
Thomas Bay beach (of significant size)	290 m	Bath NE 1/4	Brunswick
Fortunes Rocks Beach	2950 m	Biddeford Pool NE 1/4	Biddeford
Fortunes Rocks Beach	790 m	Biddeford NW 1/4	Biddeford
Horseshoe Cove Beach SW-facing	290 m	Biddeford NW 1/4	Biddeford
Horseshoe Cove Beach NE-facing	480 m	Biddeford NW 1/4	Biddeford
New Barn Cove Beach	340 m	Biddeford NW 1/4	Biddeford
Goose Rocks Beach	3600 m	Biddeford NW 1/4	Kennebunkport
Ferry Beach	4500 m	Biddeford NW 1/4	Saco

Beach Location/Name	Length	Topographic Map Name	Town
Beginning of Old Orchard Beach - Camp Ellis	410 m	Biddeford	Old Orchard Beach
Hills Beach	530 m	Biddeford	Old Orchard Beach
Trafton Island Beaches facing NW, just south of northernmost peninsula, eastern	120 m	Boise Bubert	Harrington
Trafton Island Beaches facing NW, just south of northernmost peninsula, western	160 m	Boise Bubert	Harrington
NE side of Dyer Island, head of Watts Cove	180 m	Boise Bubert	Harrington
Reid 1/2 mile beach	650 m	Boothbay Harbor	Georgetown
Reid mile beach	1160 m	Boothbay Harbor	Georgetown
Beach midway down E side of Capitol Island	260 m	Boothbay Harbor	Southport
Beach on northern tip of Squirrel Island	190 m	Boothbay Harbor	Southport
Pemaquid Restoration Beach	528 m	Bristol	Bristol
Sandy Pt. beach, Stockton Springs	1370 m	Bucksport SE 1/4	Stockton Springs
Beach on W side of Beauchamp Pt.	220 m	Camden	Rockport
Eastside beach of Deadman Pt.	530 m	Camden	Rockport
Northernmost beach at mouth of Camden Harbor, slightly SW of Curtin Island	240 m	Camden	Camden
Beach on SW side of Camden Harbor	310 m	Camden	Camden
Beach at head of Camden Harbor, between Eaton Point and Northwest Point	430 m	Camden	Camden
Broad Cove Beach	190 m	Cape Elizabeth	Cape Elizabeth
V-shaped beach, following a Point jutting into Richmond Island Harbor	790 m	Cape Elizabeth	Cape Elizabeth

Beach Location/Name	Length	Topographic Map Name	Town
]scent Beach	1560 m	Cape Elizabeth	Cape Elizabeth
Marshall Cove Beach	110 m	Cape Elizabeth	Cape Elizabeth
John Cove Beach	100 m	Cape Elizabeth	Cape Elizabeth
Beach on NW part of Wilson Point	820 m	Castine NE	Castine
Morse Cove western side beach	310 m	Castine NE	Castine
Beach on NW of Cape Jellison	790 m	Castine NE	Stockton Springs
Beach on NE side of Cape Jellison *	770 m	Castine NE	Stockton Springs
Beach on SW bend of Cape Rosier	130 m	Castine SE	Brooksville
Northwestern most tip of Pond Island	140 m	Castine SE	Deer Isle
Beach most westerly of the two between the Cross Island mainland and Northwest Head	160 m	Cross Island	Cutler
More eastern of the 2 beaches between upper Northwest Head and Cross Island's main body	360 m	Cross Island	Cutler
Westernmost of the two beaches separated by Grassy Pt. (Cross I.)	700 m	Cross Island	Cutler
Easternmost of the two beaches separated by Grassy Pt. (Cross I.)	580 m	Cross Island	Cutler
Beach on the western side of Northeast Harbor's mouth (Cross I.)	170 m	Cross Island	Cutler
Northernmost sandy beach of Cross I. peninsula containing Coast Guard Station	140 m	Cross Island	Cutler
NE-facing beach on Cross Island Coast Guard peninsula	360 m	Cross Island	Cutler
Westerly beach at head of Machias Bay (before Rte. 191 crosses estuaries)	220 m	Cutler	Cutler
Philbrook Cove Beach	700 m	Castine	Islesboro

Beach Location/Name	Length	Topographic Map Name	Town
Machias Bay head, eastern beach	620 m	Cutler	Cutler
Largest sandy beach midway up southern side of Little River	120 m	Cutler	Cutler
Beach on southern tip of peninsula framing northern side of Southeast Harbor	340 m	Deer Isle NW 1/4	Deer Isle
Beach north of Duck Harbor, Isle Au Haut	160 m	Deer Isle SW 1/4	Isle Au Haut
Beach on NW of Isle Au Haut, facing west to Flake Island	130 m	Deer Isle SW 1/4	Isle Au Haut
SE point of Merchant Island, V-shaped beach	530 m	Deer Isle SW 1/4	Isle Au Haut
Beach on southern half of Merchant Island, facing NE	340 m	Deer Isle SW 1/4	Isle Au Haut
Miller Pt. beaches, South	310 m	Devils Head	Calais
Miller Pt. beaches, North	170 m	Devils Head	Calais
Circumferential beach on Green Island	460 m	Drisko Island	Addison
SE-facing beach on eastern peninsula of Littlejohn Island	310 m	Freeport	Yarmouth
Peter Cove Beach	240 m	Freeport	Harpswell
Stover Point Beach	360 m	Freeport	Harpswell
Sizable beach on Southwest quadrant of Cranberry Island	620 m	Friendship	Friendship
Beach S of hook on western side of Cranberry Island	170 m	Friendship	Friendship
Beach just N of southeast point of Friendship Island	140 m	Friendship	Friendship
Beach at head of Southern Cove of Morse Island	160 m	Friendship	Friendship
NE directed beach on northern end of Morse Island	310 m	Friendship	Friendship
Southern tip of Hungry Island beach	310 m	Friendship	Friendship
A series of 4 beaches along Deep Cove between Hooper & Howard Points	910 m	Friendship	St. George

Beach Location/Name	Length	Topographic Map Name	Town
Martin Point, eastside beach	220 m	Friendship	Friendship
Beach at head of cove between Sproul Point and Fickett Point	460 m	Harrington	Milbridge
Eastward-facing beach at northern end of Pleasant Island	220 m	Hewett Island	Matinicus Island Plantation
One of two almost connective beaches; more eastern, toward Bar Island	140 m	Hewett Island	Matinicus Island Plantation
One of two connecting beaches; more westerly toward Graffam Island	180 m	Hewett Island	Matinicus Island Plantation
Beach at head of Hewett Islands mid-section cove	110 m	Hewett Island	Matinicus Island Plantation
Beach along SE point at Hewett Island	100 m	Hewett Island	Matinicus Island Plantation
Eastern beach of spit joining north & south parts of Pleasant Island	120 m	Hewett Island	Matinicus Island Plantation
Popplestone Beach	500 m	Jonesport	Jonesport
Sandy River Beach	790 m	Jonesport	Jonesport
Roque Island's Shorey Cove (NW directed) beach	1130 m	Jonesport	Jonesport
Roque Island Harbor beach	2060 m	Jonesport	Jonesport
Series of 3 beaches at the head of Roque Island's Pratt Cove	770 m	Jonesport	Jonesport
Squire Point surrounding beaches	2350 m	Jonesport	Jonesport
Series of beaches on eastern side of Great Head, Roque Island	940 m	Jonesport	Jonesport
Western side of Nepp Point beach	170 m	Jonesport	Roque Bluffs
Cleaves Cove beach	30 m	Kennebunkport SW 1/4	Kennebunkport
Kennebunk Beach, west of Oak's Neck	820 m	Kennebunkport SW 1/4	Kennebunkport
Goochs Beach	1300 m	Kennebunkport SW 1/4	Kennebunkport
Carrying Place Cove beach	620 m	Lubec	Lubec
*Crescent Beach	625 m	Kittery	Kittery
*Seapoint Beach	550 m	Kittery	Kittery

Beach Location/Name	Length	Topographic Map Name	Town
Series of 3 beaches on northern side of causeway to West Quoddy Head	720 m	Lubec	Lubec
Beach stretching from West Quoddy Head northward to Woodward Point	1630 m	Lubec	Lubec
NW beach at head of Holmes Bay	410 m	Machias Bay	Whiting
Halls Cove beach	220 m	Matinicus	Matinicus Isle
Southeastern Hadley Cove beach	360 m	Mt. Desert NE 1/4	Bar Harbor
Series of beaches between Salisbury Cove and Sand Point (Mt. Desert)	1080 m	Mt. Desert NE 1/4	Bar Harbor
Lamoine Beach	2740 m	Mt. Desert NE 1/4	Lamoine
Accreted-spit-beach up in northern Raccoon Cove	410 m	Mt. Desert NE 1/4	Lamoine
Greening Island SW quad. beach	340 m	Mt. Desert SE 1/4	Lamoine
Old Orchard Beach (a continuation)	1850 m	Old Orchard Beach SW 1/4	Old Orchar Beach
Two beaches (series) at Sebasticodegan Island mouth of cove, NE of East Cundy Point	290 m	Orrs Island	Harpswell
Pemaquid Beach	430 m	Pemaquid Point	Bristol
Fish Point beach	100 m	Pemaquid Point	Bristol
Beach NW around the point from Hunnewell, at mouth of Atkins Bay	310 m	Phippsburg	Phippsburg
Kennebec River shore Popham Beach upper 1/2	430 m	Phippsburg	Phippsburg
Popham Village beach (N-facing)	360 m	Phippsburg	Georgetown
Southern tip of Indian Point beach	100 m	Phippsburg	Georgetown
Eastern side of Indian Point beach	240 m	Phippsburg	Georgetown
Beach on NE side of land neck connecting Indian Point peninsula to Georgetown Island	170 m	Phippsburg	Georgetown
Series of 4 beaches framing Sagadahoc Bay's western arm	790 m	Phippsburg	Georgetc

Beach Location/Name	Length	Topographic Map Name	Town
ach at head of Sagadahoc Bay efore branching into estuaries)	140 m	Phippsburg	Georgetown
Ship Cove beach	140 m	Portland East	Cape Elizabeth
South Maiden Cove beach	100 m	Portland East	Cape Elizabeth
Willard Beach, Sononton Cove	650 m	Portland East	South Portland
Southernmost beach of 2 following the eastern Promenade, extends to Fish Point	360 m	Portland East	Portland
Northerly beach along Eastern Promenade	580 m	Portland East	Portland
Series of beaches curving aroung SW end of Long Island	1220 m	Portland East	Portland
Andrews Beach	620 m	Portland East	Portland
Beach following SE corner of Little Chebeague Island	910 m	Portland East	Portland
Head of Chandler Cove beach	290 m	Portland East	Cumberland
Western side of Great Chebeague Island ach (series of beaches)	1990 m	Portland East	Cumberland
Northern Sturdivant Island beach	430 m	Portland East	Cumberland
Continuation of Old Orchard Beach, including surfside, Grand Beach, Pine Point	4970 m	Prouts Neck	Old Orchard Beach - Scarborough
Western Beach & Back Shore	1700 m	Prouts Neck	Scarborough
Scarboro Beach	2060 m	Prouts Neck	Scarborough
Higgins Beach	910 m	Prouts Neck	Scarborough
Series of beaches on the eastern (lower) shore of the Spurwink River	700 m	Prouts Neck	Cape Elizabeth
Series of 3 beaches (1 to continue) along south-eastern most point of Cape Elizabeth	770 m	Prouts Neck	Cape Elizabeth
Beach (sandy) closest to Loring Cove, but between Loring and Frost Cove	500 m	Robbinston	Perry
Loring Cove beach	460 m	Robbinston	Perry

Beach Location/Name	Length	Topographic Map Name	Town
Gin Cove beach (2)	530 m	Robbinston	Perry
Beach north of Lewis Cove's mouth	170 m	Robbinston	Perry
Lucia Beach	220 m	Rockland	Owls Head
East of Lucia Beach beach	310 m	Rockland	Owls Head
Beach south of Crockett Point	460 m	Rockland	Matinicus Island Plantation
Beach NW of Ginn Pt., head of cove	500 m	Rockland	Matinicus Island Plantation
Crescent Beach	1100 m	Rockland	Owls Head
Holiday Beach (2-part)	650 m	Rockland	Owls Head
Owls Head Harbor/Bay beaches	740 m	Rockland	Owls Head
Beaches between Shag rock & Coast Guard Light	380 m	Rockland	Owls Head
E-directed beach at foot of Ingraham Hill, S-arm of Rockland Harbor	310 m	Rockland	Owls Head
N westside of Shoppee Point beach	580 m	Roque Bluffs SW 1/4	Roque Bluff
Great Cove SE side beach	720 m	Roque Bluffs SW 1/4	Roque Bluffs
Roque Bluffs beach	910 m	Roque Bluffs SW 1/4	Roque Bluffs
Mack Cove beach	260 m	Roque Bluffs SW 1/4	Roque Bluffs
Johnson Cove beach	430 m	Roque Bluffs SW 1/4	Roque Bluffs
Grays Beach	240 m	Roque Bluffs SW 1/4	Roque Bluffs
Small beach N of Grays Beach	170 m	Roque Bluffs SW 1/4	Roque Bluffs
Starboard Cove beach	890 m	Roque Bluffs SW 1/4	Machiasport
Sand Beach, Tohman Cove	340 m	Small Point	Phippsburg
SW Hermit Island beaches (2)	290 m	Small Point	Phippsburg
Head Beach	360 m	Small Point	Phippsburg
Head Cove beach	100 m	Small Point	Phippsburg
Bald Head Cove beaches (2)	340 m	Small Point	Phippsburg

Beach Location/Name	Length	Topographic Map Name	Town
eal Cove's upper NE corner beach	100 m	Small Point	Phippsburg
Southernmost of the 2 beaches on Cape Small's eastern side	260 m	Small Point	Phippsburg
Northerly of the 2 beached on Cape Small's eastern side	650 m	Small Point	Phippsburg
Small Point beach (Seawall)	2450 m	Small Point	Phippsburg
Popham Beach (State Park and Hunnewell incl.)	4030 m	Small Point	Phippsburg
Beach between Coleman Cove and Johnson Cove area, Great Chebeague Island	790 m	South Harpswell	Cumberland
North Waldo Point beach, Great Chebeague Island	500 m	South Harpswell	Cumberland
Upper quadrant of Placentia Island, eastern side beach	410 m	Swans Island NE 1/4	Long Island
NE tip of Placentia Island	360 m	Swans Island NE 1/4	Long Island
Beach on western side of peninsula containing Hockamock Head	170 m	Swans Island NW 1/4	Swans Island
Head of Toothacher Cove beach	30 m	Swans Island NW 1/4	Swans Island
Series of Toothacher Cove beaches	310 m	Swans Island NW 1/4	Swans Island
Beach in cove NW of Irish Point	260 m	Swans Island NW 1/4	Swans Island
Lalrey's Island, NE tip beach	190 m	Vinalhaven SW 1/4	Vinalhaven
Western Robert's Harbor beach	120 m	Vinalhaven SE 1/4	Vinalhaven
SE-directed beach (towards Green Island) NE of Arey Cove - 2	190 m	Vinalhaven SE 1/4	Vinalhaven
Beach on southernmost of 700 Acre Island	1130 m	Vinalhaven NW 1/4	Isleboro
Ogunquit & Moody Beaches	4370 m	Wells	Wells
Crescent Surf	1010 m	Wells	Wells
Crescent Surf, Parson Beach	1220 m	Wells	Wells
Drakes Island & Laudholm Beach	940 m	Wells	Wells

Beach Location/Name	Length	Topographic Map Name	Town
Beach along Baiky's Mistake	960 m	West Lubec	Lubec
Whiting Bay, southwestern shore beach	460 m	Whiting	Trescott
Wildwood Park beach	820 m	Yarmouth	Yarmouth
Lane's Island, Yarmouth	530 m	Yarmouth	Yarmouth
Long Beach & 2 smaller northern beaches	2180 m	York Beach	York
Short Sands beach	410 m	York Beach	York
N Wadleighs Head beach	530 m	York Beach	York
Beach to east of York Harbor, between harbor and E Point	430 m	York Harbor	York
Cow Beach	240 m	York Harbor	York

Source: Bruce W. Nelson and L. Kenneth Fink Jr., Geological and Botanical Features of Sand Beach Systems in Maine, prepared for the Maine Critical Areas Program, 1978.

APPENDIX C-II

SOUTHERN MAINE COASTAL BEACH FACILITIES

TOWN -Beach/Area/Lot	Feet of Beach	Park. Capacity		Toilets-Risers		Life-guard	Public Access
		Public	Private	Public	Private		
PORTLAND	None						
SO. PORTLAND		30		6			
-Willard Beach	1600 ± (3acres)	30		6		2	Municipal property
CAPE ELIZABETH	5,000	964		22			
-Crescent Beach	5,000	964		22		Yes	State Park
SCARBOROUGH	18,300	358	620	6	0		
-Pine Point	7,000	60	400	0	0		Several public roads abut beach
-Town Landing	200	20	0	2			Municipal property
-Ferry Beach	600	110		2		Yes	" "
-Western Beach	3,000		0		0	No	Private property-Prouts Neck Golf Club
-Higgins Beach	2,500	18	220	0	0		Municipal property each end of beach
-Jordan Beach	5,000	150		2		Yes	State Park (66' shoreline)
OLD ORCHARD BEACH	16,300	2,805	957	32	16		Numerous public roads abut beach
-Milliken St.		250					
-Ocean Park		20					
-First St.		35					

TOWN -Beach/Area/Lot	Feet of Beach	Park. Capacity		Toilets-Risers		Life-guard	Public Access
		Public	Private	Public	Private		
-Public Streets		2,500					
-W.Grand Ave.			189		12		On beach (Metropolitan Co.)
-Union Ave.			40				300 yds. from beach
-West side RR			260				Private land-unattended (20'± strip)
-Frost & OO Sts.			38				
-First & Staples Sts.			37				
-Milliken St.			75				200 yds. from mid beach
-Milliken St.			50				
-E. Grand Ave.			80				
-Cortland St.			25				
-W. Grand Ave.			58				
-W. Grand Ave.			105		4		On beach (Pourvalis)
SACO	12,200	2,055	0	0	0	0	
-Saco R. Landing	100	20					Municipal property
-Ferry/Ellis Area		1,600					Numerous public roads abut beach
-Ferry Beach	(480)						State park-undeveloped
-Bay View		85					Municipal property-200 yds. from beach. Bay View Rd. abuts beach.
-Kinney Sh es		350					Side Street parking-Access via 2 public R/W's.

TOWN -Beach/Area/Lot	Feet of Beach	Park. Capacity		Toilets-Risers		Life-guard	Public Access
		Public	Private	Public	Private		
BIDDEFORD	16,000	127	0	0	0		
-Hills Beach	5,000	26					Seabreeze Ave.-west end of beach
" "		7					Municipal prop.-mid beach
" "		22					Side St. - east end of beach
-Fortunes Rocks B	11,000	10					Public R/W-Biddeford Pool end of beach
" " "		50				2	Side St. - mid beach
" " "		12					Road parking-west end of beach
KENNEBUNKPORT	10,600	497	0	0	0		Beach parking restricted to residents
-Colony Beach	600	97					Public road abuts beach
-Goose Rocks B	10,000	400				0	Three legally secure public R/W paths
KENNEBUNK	12,000	428	0	0	0		
-Parsons Beach	2,000	155				0	Public road. Average parking: 65 cars
-Crescent Surf	5,000						Private property - no access
-Lords Point	500	70					Backed by public road & parking
-Oaks Neck	1,500	95					" " " " " "
-Goochs Beach	3,000	108					" " " " " "

TOWN -Beach/Area/Lot	Feet of Beach	Park. Capacity		Toilets-Risers		Life-guard	Public Access
		Public	Private	Public	Private		
WELLS	23,200	704	150	16	0		Ordinance restricts parking on roads.
-Drakes Is.Beach	4,500	125		4			200 yds. from beach
" " "		10		0			On beach, end of Drakes Is. Road
" " "		100		0			At the jetty
-Laudholm Beach	2,500						State park-undeveloped
-Wells Beach	9,700	255		6			Jetty lot abuts beach on Webhannet R.
Mile Road Lot		119		6			Road and parking lot abut beach
Mile Road		60		0			Municipal prop. 200 yds. from beach
Church lot			75		0		Near Mile Rd., 100 yds from beach
Crescent Beach		35		0			Near lower end of Wells Beach
-Moody Beach	6,500	0	75	0	0		Ogunquit lot used, from Wells. Bourne Ave., 600' from beach.
OGUNQUIT	7,000	859	5	22	0	14	
-Main Beach Lot		400		10			At beach
" " Add.		142					300 yds. from beach
" " Supp.		16	5				In town, varous, 1800-2000' from beach.
-Footbridge Beach		131		5			On mainland, 200 yds. from beach.
-Moody Beach		170		7			From Wells-backside of dune

TOWN -Beach/Area/Lot	Feet of Beach	Park. Capacity		Toilets-Risers		Life-guard	Public Access
		Public	Private	Public	Private		
YORK	8,600	987	0	X	0		
-York Harbor B.	300	27		0			End of public road
-Lobster Cove	500	75		0		1	Direct from road
-Long Sands B.	6,700	530		X			" " "
-Short Sands B.	1,100	355		X			From parking lot
KITTERY	2,800	355	0	X	0		
-Seapoint Beach	1,300	130		X			Public road access
-Crescent Beach							1500'± of coarse, rather stony beach, prone to seaweed, little used, adjacent to Seapoi
-Fort Foster	1,500	225		X			At mouth of Piscataqua River
TOTALS	132,000	10,169	1,732	104	16		

APPENDIX D

CAMPING

THE PROVISION OF CAMPING FACILITIES ON THE MAINE COAST BY THE BUREAU OF PARKS & RECREATION

Camping in Maine is not only a popular activity, it is an important industry. The Department of Human Services reports that in 1977, there were 305 licensed tent and trailer parks in Maine having an estimated 20,448 sites. These privately operated campgrounds ranged in size from three to 500 sites. However, many campgrounds in popular regions such as Old Orchard Beach crowd more camping units into their parks than they are legally permitted. In other regions of the state, many campgrounds never fill to capacity--even though they may be attractive areas with reasonable rates. It is often these operations which experience the highest turnover rate in ownership.

To start a successful campground in Maine today takes more than enthusiasm and a desire to please. It requires a great deal of capital, a better than average location, a good sense of marketing and no small amount of managerial ability.

Still, in many areas of Maine there seems to be a growing demand for campsites of many types. On numerous lakes and at some coastal locations, residents and out of staters alike rent tent or trailer sites for the entire season and use the site as an inexpensive second home. Others prefer to travel, often in large, selfcontained vehicles, stopping no longer than a night or two at any one spot. Some families still prefer to travel to destination parks where they can stay for a one or two week vacation. Finally, a growing number strike out for the more wild areas transporting all of their camping gear in canoes, four wheel drive vehicles, airplanes, or on their backs.

All of these types of camping together make up the activity, the experience, the industry we call camping. But assessing the demand, the preference, and the expectations of campers is no easy task. Over the past five years, a number of studies related to these issues have been published. Looking at each of these may reveal a common thread.

In a survey conducted by Northeast Markets for the State Planning Office in 1973, people throughout Maine were asked to rank which types of recreation areas they would like to see State money spent on. Thirty-nine percent of the respondents statewide said they would like to see funds spent on campsite areas. The percentage wanting more expenditures for campsites was somewhat higher in Aroostook County (53%) and somewhat lower in Cumberland County (28%). All other areas in Maine were very close to the state average. While this represents a substantial favorable response, it should be noted that campsite areas ranked fifth in a list of seven choices.

A different perspective is presented in the results of a study on tourism in Maine prepared for the Maine Vacation Travel

Analysis Committee in 1974. With a focus on existing resident and nonresident tourist activities, the report states that "camping as an activity accounts for only 5% of the total tourist days, while campgrounds as a lodging account for almost 12% of the same tourist days, which implies that many of those who stay in campgrounds consider it only a lodging and not an activity." Nevertheless, "campgrounds are a highly significant lodging facility in both the spring and summer season but, due to the extreme seasonality, their impact is diluted when annualized." Furthermore, "tourists who stay in campgrounds show the lowest expenditure of the commercial lodging facilities."

According to the report more than 80 percent of all campers in Maine are nonresidents. And of all nonresident activities, camping has the greatest negative social/environmental impact and the lowest level of economic benefits. The authors of the study conclude that "these data indicate that a policy to promote camping as an activity would not be justified." Not only that, but "the high level of camping volume, most of which is concentrated in summer, suggests that this activity may be a source of problems attributable to tourism generally."

In 1975, the Social Science Research Institute of the University of Maine undertook a survey of coastal residents for the State Planning Office concentrating on citizen evaluation of public policy. The results of the survey showed that 34% of the coastal residents interviewed participated in camping. Sixty-five percent of the respondents supported increased State spending for more coastal area campsites.

Panel surveys conducted around the state in 1976 by the Social Science Research Institute revealed some interesting results. Campgrounds, for instance, were listed as a statewide priority by all panel groups. Support for increased funding from the Bureau of Parks and Recreation for the development of camping areas varied considerabl by region; however, 34 percent of the participants from all areas said they favored increasing funding. Interestingly, support for camping area development declined as respondents income increased. Moreover, belief that camping areas should be developed solely by private enterprise steadily declined as respondents age rose. All of those interviewed who were under 35 years old felt that private entrepreneurs should not have a corner on the camping market. Overall, more than 60 percent of the people interviewed said that the development of campgrounds should not be left exclusively to private entrepreneurs.

In most of Maine, between private and public tent and trailer areas, there are enough campsites to accommodate peak demands throughout the season. According to the 1977 Maine Comprehensive Outdoor Recreation Plan, there are no calculated camping deficiencies anywhere in Maine except in the Penobscot and Northern Maine Planning Districts. Of course, the methodology utilized

in these calculations does not include considerations of the quality of the camping experience. Nevertheless, with the private sector providing over eighty-eight percent of the existing campsites in Maine, it seems that private operators are capable of satisfying the pressures for nonprimitive camping areas in the state.

Those campsites not provided by private entrepreneurs in Maine (±12%) are supplied for the most part in state parks and federal parks and forests. Currently there are four developed coastal state parks in the state park system which offer camping facilities: Camden Hills, Warren Island, Lamoine and Cobscook Bay. In addition, there are three near-coastal camping state parks: Sebago Lake, Bradbury Mountain and Lake St. George. Combined these parks have a design capacity of 2,676 campers, about 10 percent of the statewide capacity. Of these seven parks, the only ones which appear to be consistently used very close to design capacity are Camden Hills and Sebago Lake.

Based on an analysis of 1976 data, public camping use of state parks is seen to be dominated by out of staters (Figures 1 and 2). On the average, nonresidents comprised 77 percent of the campers at the four coastal state parks. Nonresidents accounted for 65 percent of inland park camping use. Parties camping at coastal parks also had a shorter average length of stay (1.8 days) than parties at inland parks (2.9 days). The coast seems to be a greater attraction to transient out of state campers than inland Maine.

The most recent data available on camping use and preferences in Maine are the results of a survey conducted by Northeast Markets for the Bureau of Parks and Recreation in early 1977. Thirty-one percent of those interviewed indicated that they participated in summer camping. However, only 18.7 percent of those who said they camped indicated that they used state parks. Over 61 percent of those questioned said the State should increase spending for camping areas along the coast; 24 percent said the State should not spend more.

A few observations can be made from comparisons of these studies and surveys. First, there appears to be substantial support for State spending on campsites, coastal and statewide. Many people, particularly young people, apparently feel that the provision of camping areas should not be left exclusively to private individuals. However, as one alternative out of many for the allocation of public funds for recreation, camping does not have top priority.

Most campers in Maine are not residents and most campgrounds are private operations. Up to one-third of the people of Maine participate in camping. Maine campers seem to use inland camping areas more than coastal ones, at least at state parks. The more affluent residents tend to show less support for public development of campgrounds. Of course, for many part of the attraction of camping is that it is a relatively low cost vacation alternative. By the same token, this is precisely what makes it a

poor per person economic investment to the state as a whole.

What then are the prospects for camping in Maine?

The great number of variables involved make it difficult to judge whether the pressures for campsites in Maine will continue to rise in the short and long term. The effects of fuel cost jumps, growing population, changing leisure time and preferences and average disposal incomes all stand as question marks in the face of recreation planning. One recent long term study of annual family camping participation revealed that more than 50 percent of the campers were either camping less or had dropped out of the camping market. Distinct style changes were also discernable (1) toward a more primitive type of camping experience or (2) toward seasonlong rentals and advance reservations at commercial campgrounds.

A number of considerations, many of them outlined above, suggest a framework for the provision of state park camping facilities. In Maine, most campgrounds are located along the coast in the southwestern part of the state and in the lakes region around Sebago. With the exceptions of Sebago Lake and Bradbury Mountain State Parks all of these are private campgrounds catering primarily to out of state tourists.

There are a number of camping areas in the midcoast area and a cluster around Mt. Desert Island. In other regions of the state, campgrounds are mostly scattered with some clusters around the larger communities and along the fringe of the north woods.

Many of the private campgrounds offer electrical hookups, dump stations and other services for tourists in recreational vehicles. The Bureau of Parks and Recreation would do well to leave the provision of facilities for campers using so-called elaborate recreation vehicles to the competitive private sector throughout the state. Those who can realize a profit from such operations should not be burdened with additional competition by public agencies. Uncertainty about the regional, national and global energy situation; moreover, makes it inappropriate for the Bureau to become involved in the promotion of energy intensive recreational activities.

The Bureau, on the other hand, can provide campsites along the coast as well as inland for those who, alternatively, want to participate in a non-elaborate type of camping experience. In particular, the Bureau should try to meet the needs of Maine residents first and foremost. This might be accomplished by the use of differential fees, a resident preferred reservation system, etc.

The need for primitive campsites may be most pressing in the southern and midcoastal parts of the state where land use changes are occurring most rapidly, population growth is the greatest and suitable resources are disappearing the fastest.

There does not appear to be a need in the coastal area east of Mt. Desert Island for additional transient and destination campgrounds. There may be some need for primitive campsites. These might be provided on the coast at Eastern Head and Roque Bluffs, and inland at Pleasant River Lake, Rocky Lake and in the Tunk Mountain area.

Figure 1
COASTAL/NON-COASTAL CAMPING VISITATION AT MAINE STATE PARKS: 1976

		Coastal				Non-Coastal	State
		Camden Hills	Cobscook Bay	Lamoine	Average		
#Parties Sampled (#Persons)		1,151 (3,016)	557 (1,466)	381 (1,108)	2,086 (5,590)	3,048 (10,196)	5,137 (15,786)
Ave. Party Size		2.6	2.6	2.9	2.7	3.3	3.1
Ave. Length of Stay		1.9	1.7	1.8	1.8	2.9	2.5
% Origin	New England	48	56	61	53	69	61
	Maine	17	28	37	23	35	30
	Mid-Atlantic	25	16	17	21	15	18
	Other U.S.	22	14	12	18	9	12
	Canada	6	14	11	8	8	7
Equipment	Tents	53	49	50	53	53	53
	Trailers	8	10	16	10	11	11
	Tent Trailers	6	15	8	8	12	10
	Campers	11	11	7	10	9	9
	Vans	9	5	4	8	5	6
	Motor Homes	4	6	2	3	2	3
Distance Traveled by Maine Parties: % (Miles)		8 (0-40) 68 (41-100) 23 (101-250)	21 (0-30) 3 (31-90) 30 (91-150) 37 (151-300)	10 (0-20) 50 (21-50) 42 (51-140) 8 (141-210)			
% Boat or Canoe		*	*	1	1	7	5
% Bicycle		*	*	1	*	*	*
% With Pets		16	14	15	15	13	14
% Reregistration		26	22	24	24	33	30

*Less than one percent

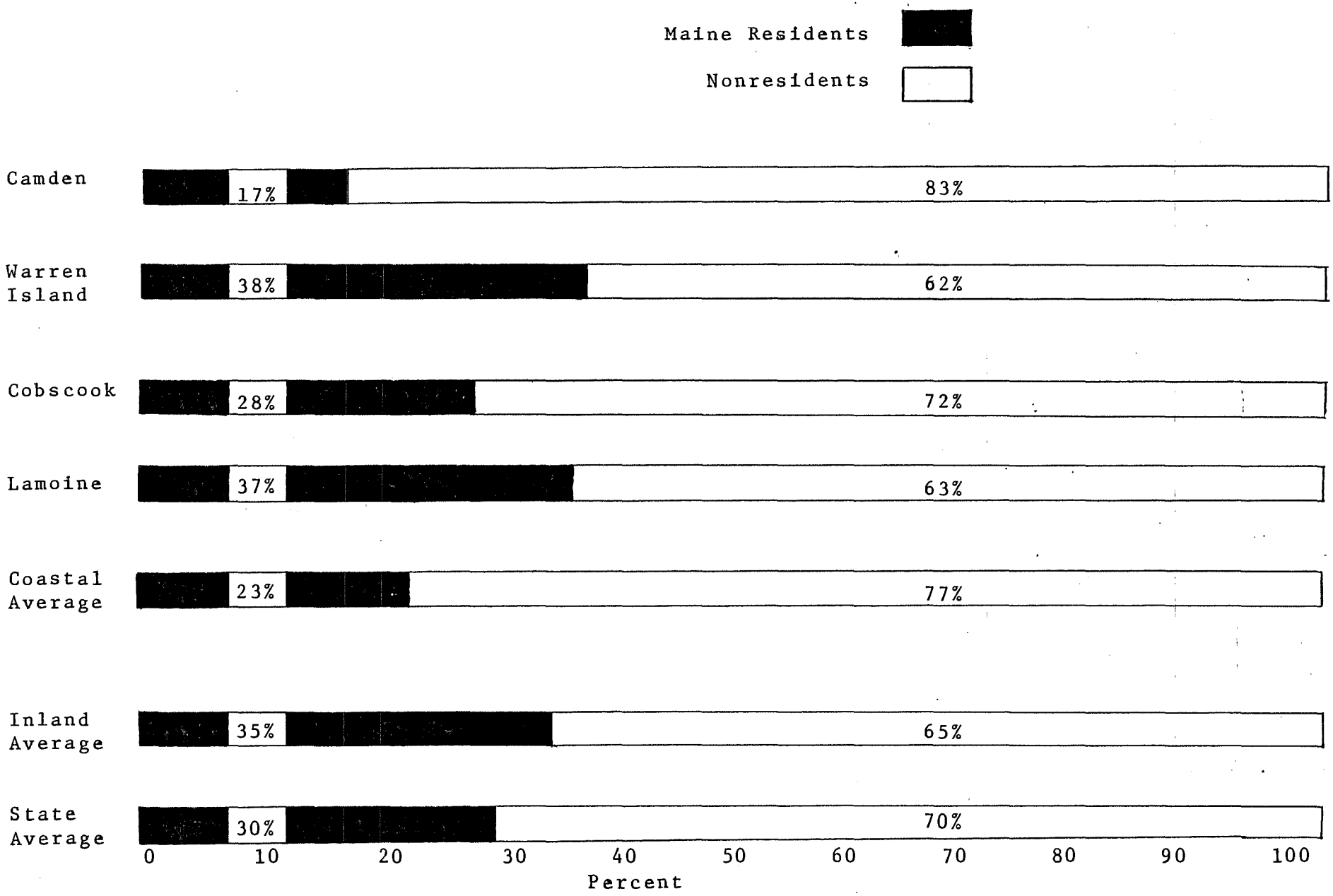
APPENDIX E

MAINE BUREAU OF PARKS AND RECREATION
COASTAL AREA PROPERTIES

1978

Figure 2

RESIDENT/NON-RESIDENT STATE PARK PUBLIC CAMPING USE



Data derived from a 1976 analysis of all registered parties.

STA PAI
(Sup ised)

AREA	MCD	COUNTY	ACRES	FEET SHORELINE FRONTAGE			
				Salt		Fresh	
				Ocean	River	Lake	River
1. Camden Hills	Camden, Lincolnville	Knox, Waldo	5476.7	1,750			10,560
2. Cobscook Bay	Edmonds Twp.	Washington	868.00	27,200			
3. Crescent Beach (incl.Kettle Cove)	Cape Elizabeth	Cumberland	243.85	7,838			
4. Fort Point	Stockton Springs	Waldo	149.50	6,300			
5. Holbrook Island Sanctuary	Brooksville	Hancock	1230.25	12,730		2,400	
6. Lamoine	Lamoine	Hancock	55.00	2,520			
7. Moose Point	Searsport	Waldo	146.64	3,100			
8. Peacock Beach	Richmond	Sagadahoc	100.00			650	
9. Popham Beach	Phippsburg	Sagadahoc	554.68	6,750	5,630	3,400(Tidal)	
10. Quoddy Head	Lubec	Washington	531.9	19,660			
11. Reid	Georgetown	Sagadahoc	770.02	10,360	5,000		
12. Roque Bluffs	Roque Bluffs	Washington	273.56	7,200		5,170	
13. Scarborough Beach	Scarborough	Cumberland	5.3	67		375	
14. Two Lights	Cape Elizabeth	Cumberland	41.09	2,000			
15. Warren Island	Islesboro	Waldo	70.40	7,900			
16. Wolf Neck	Freeport	Cumberland	243.8	10,300			

STATE PARKS
(Undeveloped & Unsupervised)

	AREA	MCD	COUNTY	ACRES	FEET SHORELINE FRONTAGE Salt Ocean	Salt River	Fresh Lake	Fresh River
1.	Bangs Island	Cumberland	Cumberland	54.17	10,200			
2.	Branch Lake	Ellsworth	Hancock	1272.0			13,885	
3.	Clark Cove	Harpswell	Cumberland	20.4	1,600			
4.	Eastern Head	Trescott	Washington	263.0	15,900			
5.	Ferry Beach	Saco	York	109.78	490			
6.	Gleasons Point	Perry	Washington	100.00	4,500	2,000		
7.	Good's Point	Steuben	Washington	0.25				
8.	Jewell Island (with Little Jewell Is.)	Portland Cumberland	Cumberland	191.0	16,650			
9.	Laudholm	Wells	York	198.50	1,800			
10.	Little Chebeague Is.	Portland Cumberland	Cumberland	81	10,020			
11.	Long Island	Portland	Cumberland	16.45	930			
12.	Mt. Waldo	Frankfort	Waldo	124.00				
13.	Birch Point	Owls Head	Knox	56.25	1,345			
14.	Owls Head Light	Owls Head	Knox	12.90	2,235			
15.	Pickering Cove	Deer Isle	Hancock	94	4,450			
16.	Tyler Pond	Augusta-Manchester	Kennebec	126.68				
17.	Carvers Island	Vinalhaven	Knox	15.0	3,000			

UNDEVELOPED LEASED PARKS

	AREA	MCD	COUNTY	ACRES	FEET SHORELINE FRONTAGE		
					Salt Ocean	River	LEASED TO
1.	Lamoine Beach	Lamoine	Hancock	12.80	940		Town
2.	Lobster Cove	Boothbay Harbor	Lincoln	9.84	1,880		Town
3.	Merrymeeting Bay	Bowdoinham	Sagadahoc	435.00		5,776	IFW
4.	Scarborough River	Scarborough	Cumberland	55.00		1,900	Town*

*Only a portion of this parcel is leased to the town, it is expected that the balance will be leased to the Department of Inland Fisheries & Wildlife.

STATE MEMORIALS
(Supervised)

AREA	MCD	COUNTY	ACRES	FEET SHORELINE FRONTAGE			
				Salt		Fresh	
				Ocean	River	Lake	River
1. Colonial Pemaquid	Bristol	Lincoln	17.71	1,644			
2. Eagle Island	Harpswell	Cumberland	17.0	4,100			
3. Fort Edgecomb	No. Edgecomb	Lincoln	3.1	720			
4. Fort George	Castine	Hancock	2.75				
5. Fort House	Bristol	Lincoln	1.25				
6. Fort Knox	Prospect	Waldo	124.50		3,400		
7. Fort McClary	Kittery	York	27.54		2,300		
8. Fort O'Brien	Machiasport	Washington	2.00	357			
9. Fort Popham	Phippsburg	Sagadahoc	4.39		2,425		
10. Fort Pownal	Stockton Springs	Waldo	5.00				
11. Fort William Henry	Bristol	Lincoln	1.7	299.5			
12. John Paul Jones	Kittery	York	1.75				
13. Mere Point	Brunswick	Cumberland	0.23				
14. Montpelier	Thomaston	Knox	4.25				
15. Storer Garrison	Wells	York	0.316				
16. Vaughan Woods	So. Berwick	York	165.40				4,100

STATE MONUMENTS
(Unsupervised)

	AREA	MCD	COUNTY	ACRES	FEET SHORELINE FRONTAGE Salt Ocean	Salt River	Fresh Lake	Fresh River
1.	Battery Gosselin	Castine	Hancock	0.25				
2.	Fort Baldwin	Phippsburg	Sagadahoc	45.13		385		
3.	Fort St. George	St. George	Knox	2.6		1130		
4.	Fort Webber (Fort Island)	(East) Boothbay	Lincoln	37.6		5350		
5.	North & South Sugarloaf Islands	Phippsburg	Sagadahoc	3.0	2020			
6.	Shell Heaps	Damariscotta	Lincoln	4.50				174

BOATING FACILITIES
(Developed, State Operated & Maintained)

	AREA	MCD	COUNTY	ACRES	FEET SHORELINE FRONTAGE			
					Salt		Fresh	
					Ocean	River	Lake	River
1.	Highland Lake	Falmouth	Cumberland	4.0				
2.	Jonesport Marina	Jonesport	Washington	1.75	546			
3.	Kennebec River	Hallowell	Kennebec	1.50		383		
4.	Long Pond	Somesville	Hancock	2.66			511	
5.	Lubec Town Lndg.	Lubec	Washington	1.66	280			
6.	Meetinghouse Eddy	Biddeford	York	10.00		1170		
7.	Narraguagus River	Milbridge	Washington	5.00		1050		
8.	Nonesuch River	Scarborough	Cumberland	1.85				
9.	Penobscot River	Orrington	Penobscot	2.54		1320		
10.	Pemaquid River	Bristol	Lincoln	6.00				
11.	Frenchman Bay	Lamoine	Hancock					
12.	St.Croix River	Robbinston	Washington	7.50				
13.	Toddy Pond	Orland	Hancock	2.42			493	
14.	Verona Island	Verona Island	Hancock	2.00		635		
15.	Westport Island	Westport	Lincoln	10				
16.	Cobscook Bay	Edmunds Twp	Washington					

BOATING FACILITIES
(State Owned, Undeveloped & Unsupervised)

AREA	MCD	COUNTY	ACRES	FEET SHORELINE FRONTAGE			
				Salt		Fresh	
				Ocean	River	Lake	River
1. Boat Park	Swans Island	Hancock	2.50				
2. Buttermilk Cove	Brunswick	Cumberland	1.15				
3. Duck Trap	Lincolnville	Waldo	7.20	274.6			
4. Pemaquid River	Bristol	Lincoln	6.00		215		
5. Pleasant Pond	Gardiner	Kennebec	6.50			250	

BOATING FACILITIES
(Developed, Locally Operated & Maintained)

	Area	MCD	County	Parking Spaces
1.	Bar Harbor Town Landing	Bar Harbor	Hancock	10
2.	Cathance River	Bowdoinham	Sagadahoc	5
3.	Damariscotta Town Landing	Damariscotta	Lincoln	10
4.	Kennebec River	Augusta	Kennebec	18
5.	Murray Hill	Boothbay	Lincoln	
6.	New Meadows	Brunswick	Cumberland	25
7.	Port Clyde	St. George	Knox	6
8.	Richmond Park Lndg.	Richmond	Sagadahoc	20
9.	Searsport Town Lndg.	Searsport	Waldo	16
10.	Swans Island	Swans Island	Hancock	
11.	Vinalhaven	Vinalhaven	Hancock	
12.	Tenants Harbor	St. George	Knox	10
13.	Bath Boat Facility	Bath	Sagadahoc	
14.	Union River	Ellsworth	Hancock	
15.	Frenchman Bay	Lamoine	Hancock	
16.	Stockton Harbor	Stockton Springs	Waldo	
17.	Casco Bay	Portland	Cumberland	
18.	Middle Bay	Brunswick	Cumberland	
19.	Piscataqua River	Eliot	York	
20.	Rockport Harbor	Rockport	Knox	
21.	Kennebec River	Gardiner	Kennebec	

CONSERVATION EASEMENTS

	AREA	MCD	COUNTY	APPROX. ACRES
1.	"The Brothers"	Falmouth	Cumberland	6
2.	Lake Megunticook	Camden	Knox	25
3.	Northeast Creek	Bar Harbor	Hancock	13
4.	Foster Island	Harrington	Washington	400
5.	Pine Point	Scarborough	Cumberland	?
6.	Round Pond	Bristol	Lincoln	5
7.	Seavey Island	St. George	Knox	25
8.	Sheep Island	Owls Head	Knox	8.8
9.	Skillings River	Hancock	Hancock	65
10.	Thrumcap Island	Islesboro	Waldo	1
11.	Timber Island	Biddeford	York	24
12.	Whaleboat Island	Harpswell	Cumberland	100
13.	Wolf Neck	Freeport	Cumberland	200

APPENDIX F

NATURAL FEATURE GLOSSARY

NATURAL FEATURE GLOSSARY

Sand Beaches	- Intertidal and immediate subtidal and supratidal accumulations of unconsolidated material of average particle diameter 0.0625mm - 2mm.
Sand Dunes	- Supratidal ridges or mounds of loose, wind blown sand adjacent to sand beaches.
Cobble Beaches	- Intertidal and immediate subtidal and supratidal accumulations of unconsolidated material of average particle diameter 2mm - 256mm.
Rocky Headlands	- High promontory formations extending into the sea which are affected by the stress of a marine environment, particularly salt spray.
Hills	- Surficial protrusions of moderately high elevation and relief. Maine coastal hills typically are rounded monadnocks.
Lakes & Ponds	- Standing bodies of fresh water; ponds tend to be shallower than lakes.
Rivers & Streams	- Bodies of water flowing down a slope along a definite path, rivers are normally larger and flow more slowly than streams.
Forests	- Upland areas dominated by trees that form a canopy which is at least 50 percent closed and four meters high. In coniferous forests softwoods comprise over 66 percent of the main crown canopy. In deciduous forests hardwoods comprise over 66 percent of the main crown canopy. In mixed forests neither coniferous nor deciduous trees make up over 66 percent of the main crown canopy.
Grasslands	- Upland areas dominated by herbacous plants which, in Maine, typically are artificially maintained open fields that are undergoing succession to forests.
Bogs & Heaths	- Wetlands characterized by a sphagnum moss mat which is generally covered by ericaceous shrubs. Bogs occur in association with lakes and ponds; heaths occur in upland areas.
Freshwater Marshes	- Wetlands in which the dominant vegetation is emergent, nonwoody plants.
Estuaries	- Semi-enclosed bodies of water where rivers run into the ocean and within which sea water is measurably diluted by freshwater.

Salt Marshes	- Sediment beds of emergent grasses which are alternately inundated and drained with the rise and fall of saline tides.
Sub-Alpine Habitats	- Terrestrial areas characterized by grass-sedge-heath communities and bedrock thinly covered with mosses and lichens. Normally found on exposed hill or mountain summits. Some islands and headlands support ecosystems, subjected particularly to wind stress and salt spray, which superficially resemble exposed summits.
Intertidal Flats	- Intertidal accumulations of silt and clay particles which have an average diameter of less than 0.0625mm.

APPENDIX G

MAINE RESIDENT OUTDOOR RECREATION PARTICIPATION AND PREFERENCE SURVEY

A Look at the Coast

1977

MAINE RESIDENT OUTDOOR RECREATION PARTICIPATION AND PREFERENCE SURVEY

A Look At The Coast

INTRODUCTION

During March and April of 1977, a telephone survey was undertaken for the Bureau of Parks and Recreation by Normark Research of Yarmouth, Maine. In order to determine if significant differences existed between the responses of those interviewees living in the state's coastal area and the rest of the State, a great many of the coastal responses were segregated. A brief interpretation of this data follows.

RECREATIONAL ACTIVITIES

Tables 1 and 2 provide a comparison between the recreational activities of survey respondents from across the state with those who live in the coastal area. For the most part, there is little difference between the proportions who participated in the selected activities. Not surprisingly, about one-third again as many coastal respondents as statewide said they participated in ocean swimming and fishing. However, camping was somewhat less popular with coastal than statewide respondents.

The columns indicating activity locations show that only about 13% of the coastal respondents sailed at their own camps while over 23% of respondents statewide used their camps for sailing. Also, significantly (more than 50% difference) fewer coastal people said they participated in sailing, canoeing, bicycling, back packing-hiking, and water sports in commercial facilities than statewide. Significantly more people statewide than coastal used state parks for winter camping (probably Baxter State Park), ocean fishing, and horseback riding. Almost twice as many coastal respondents used state parks for cross-country skiing as statewide respondents. A significantly larger percentage of respondents statewide than coastal said they went out of state for ocean fishing and swimming, sailing, canoeing, bicycling, and horseback riding. Out of state areas were used more heavily by coastal respondents than interviewees statewide for cross-country skiing and backpacking-hiking.

Table 3 presents the average number of days survey respondents indicated they participated in selected activities. Only the category of ocean swimming shows a significant gap between coastal and noncoastal respondents: 17.5 days for coastal, 8.3 days for noncoastal.

RECREATION EQUIPMENT

Summaries of recreation equipment owned by respondents are presented in Tables 4 and 5. There were no significant differences

in the number of campers, bicycles, sailboats or motorboats owned by respondents coastal or statewide. Most Maine people interviewed did not own campers, sailboats or motorboats. As might be expected, only bikes were common with families frequently possessing several.

RECREATION FACILITIES

Table 6 lists the top ten recreational facilities survey respondents said they would like to see the State spend money on (if it is going to spend any). Among first preferences, coastal respondents listed outdoor tennis courts and swimming pools, recreation areas for children and state parks as favored facilities. Noncoastal respondents preferred tennis courts, swimming pools and state parks too, as well as camping areas.

With regard to State spending for recreational facilities along the coast (Table 7), more than 50% of the noncoastal respondents said the State should spend more for all types of facilities listed. A majority of coastal interviewees said the State should spend more for all types of facilities except marinas. Bike trails, both onroad and offroad, were the facility receiving the most support.

PUBLIC BEACH RIGHTS

In addition to the recreation habit and preference questions discussed above, a number of questions were included in the survey on respondent attitudes on coastal public lands and rights. Table 8 suggests that on the issue of increasing public beach rights, there is little consensus. Both coastal and noncoastal respondents slightly favored not increasing public coastal beach rights. The difference, however, is small enough to be statistically insignificant. Interestingly, respondents who were life long Maine residents favored increasing public beach rights while nonnatives did not, with the exception of noncoastal respondents who had lived in Maine less than five years. Coastal area nonnatives as a group most heavily opposed increasing public beach rights. Perhaps many of these are transplanted out of staters who have acquired their own property on the coast and who feel threatened by an expansion of the public's recreational rights along the seashore.

PUBLIC SHORELAND

Table 9 illustrates the attitudes of respondents toward the adequacy of existing public coastal shoreland in Maine. In every case, most interviewees said that the amount of land available to the public along the coast was adequate. Only 42.6% of those surveyed in the coastal area said that public coastal land was less than adequate. This can be compared with a 1975 survey conducted for the State Planning Office which found that 53% of

the coastal area respondents favored increasing publicly accessible coastline in Maine.* In the same State Planning survey, only 34% of the respondents said the amount of public land on the coast was adequate compared to 52% in the 1977 survey--if statistically valid, a significant shift.

Finally, of those who felt that the amount of public land along the Maine coast was inadequate and that more should be purchased, a majority statewide favored the State 2 to 1 over the federal government and 3 to 1 over the local government as the jurisdiction to acquire the additional seashore property (Table 10). As might be expected, where local purchase was preferred, noncoastal nonnatives tended to favor local acquisition less than coastal respondents. In every case, coastal respondents overwhelmingly favored State acquisition over federal or local.

CONCLUSION

It is a fairly simple matter to describe the past through random sampling. It is, however, quite another matter to predict the future. There is no truly scientific way to predict what will be; a view of the future inevitably is as personal as life itself, though we can ask preferences and extrapolate trends. Moreover,

> Outdoor recreationists cannot be grouped and discussed as a single entity. Practically everyone belongs to a special interest subgroup such as wilderness advocates, bicyclists, motorized pleasure boaters, golfers, active sport enthusiasts, nature interpreters or observers, and so on. These subgroups are identifiable through the variety of subscription publications available today directed at these special interests.
>
> Compounding the recreation planning problems are the continuous changes in preferences by the recreationists themselves whether due to increased income, increased or decreased leisure time, health interests, education, the recreation preferences of neighbors and relatives, age, the availability of energy for automobile travel, and the continuous array of new products produced by industry. Over a period of five years or less, major interest shifts may occur due to a variety of reasons. Witness the increasing popularity of mopeds, the snowmobile phenomena of the late 1960's and early 1970's, the recent interest in cross-country skiing and in jogging for physical fitness.[1]

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* Citizen Evaluation of Public Policy in the Coastal Zone (prepared for the State Planning Office by the Social Science Research Institute, University of Maine at Orono, 1975), p. 85.

1 Bureau of Parks and Recreation, "Maine Resident Outdoor Recreation Participation and Preferences," Technical Report #1 (May 1978).

This survey has shown that, in the recent past, more coastal residents in Maine participated in ocean swimming, sailing and fishing than inland residents and that they are split on the questions of increasing public beach rights and public shoreland. But what of the future? Due to survey lag time service agencies increasingly are finding that their current plans are belated responses to recreation needs identified years ago.

At least four factors have been tagged as important variables in determining the future of outdoor recreation in Maine:

1. changes in the age composition of state population;
2. continuing in-migration;
3. continuing energy problems; and
4. increased leisure time.[1]

In brief, the short term future of recreation in coastal Maine is subject to a great many question marks, though it is likely to be a good deal like the short term past. The short term future of recreation in coastal Maine is also likely to be little different than what happens statewide, or even nationwide.

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[1] Ibid.

TABLE 1

LOCATION OF RECREATIONAL ACTIVITIES OF RESPONDENTS - STATEWIDE
(Percentage Distribution of Respondents)

Activity	% Who Participate	Location of Activity						
		Back Yard %	Camp %	Commercial Facility %	State Park %	Out-of-State %	Combination %	Other %
Winter Activities:								
Cross-Country Skiing	9.4	14.3	2.9	16.4	5.0	.7	12.9	47.9
Camping	4.2	1.6	34.9	6.3	6.3	11.1	4.8	34.9
1st Other Activity: Bowling	15.7	----	----	82.2	----	2.2	----	15.6
Summer Activities:								
Swimming-Lake	58.7	1.7	30.7	12.4	14.4	2.6	7.3	30.9
Swimming-Ocean	32.3	.8	4.8	18.7	26.6	4.0	4.8	40.3
Picnicing	68.3	11.2	11.6	8.0	22.7	3.1	20.7	22.6
Sailing	10.5	1.3	23.4	7.1	2.6	8.4	3.2	53.9
Canoeing	20.7	1.3	25.6	7.5	4.2	3.6	6.5	51.3
Motorboating	34.2	.8	35.8	10.4	4.7	2.6	3.5	42.2
Fishing-Ocean	11.9	2.3	5.1	12.6	5.1	2.3	3.4	69.1
Bicycling	40.7	12.0	1.5	7.9	.3	1.2	4.8	72.3
Backpack Hiking	10.5	1.9	7.7	5.1	18.6	14.7	9.0	42.9
Camping	30.9	.7	18.0	10.7	18.7	8.3	12.8	30.9
Nature Walking	39.5	13.4	9.6	7.4	11.1	4.5	13.4	40.7
Horseback Riding	8.1	17.5	----	31.7	1.7	.8	1.7	46.7
1st Other Activity: Water Sports	14.8	----	28.1	12.5	----	6.3	6.3	46.9

TABLE 2

LOCATION OF RECREATIONAL ACTIVITIES OF COASTAL AREA RESPONDENTS
(Percentage Distribution of Respondents)

Activity	% Who Participate	Location of Activity						
		Back Yard %	Camp %	Commercial Facility %	State Park %	Out-of-State %	Combination %	Other %
Winter Activities:								
Cross-Country Skiing	8.2	14.8	1.9	13.0	9.3	1.9	16.7	42.6
Camping	3.5	----	43.5	8.7	----	13.0	8.7	26.1
1st Other Activity: Bowling	3.5	----	----	91.3	----	----	----	8.7
Summer Activities:								
Swimming-Lake	54.3	1.1	31.4	11.8	16.0	3.4	9.0	27.5
Swimming-Ocean	41.2	1.5	6.0	16.0	23.9	2.2	5.2	45.1
Picnicing	68.0	11.6	11.1	7.5	24.1	2.7	22.3	20.7
Sailing	12.9	1.2	13.3	3.6	3.6	4.8	4.8	68.7
Canoeing	19.6	1.6	30.2	4.7	4.7	2.3	5.4	51.2
Motorboating	31.4	1.0	30.6	7.8	5.3	2.4	2.4	50.5
Fishing-Ocean	16.0	3.8	5.7	12.4	1.9	1.0	3.8	71.4
Bicycling	39.5	12.8	2.3	3.1	.4	.8	4.3	76.0
Backpack Hiking	9.3	1.7	3.3	1.7	20.0	25.0	13.3	35.0
Camping	25.2	1.8	20.7	10.4	17.7	9.1	14.6	25.6
Nature Walking	38.3	14.7	8.3	5.2	11.9	5.6	14.7	39.7
Horseback Riding	8.0	20.8	----	34.0	----	----	1.9	43.4
1st Other Activity: Water Sports	2.4	----	18.8	6.3	----	12.5	6.3	56.3

TABLE 3

MEAN NUMBER OF PARTICIPATION DAYS FOR SELECTED RECREATION ACTIVITIES

Activity	State $\bar{X}$	Coastal $\bar{X}$	Non-Coastal $\bar{X}$
Winter Activities:			
Cross-Country Skiing	11.0	10.0	11.6
Camping	8.6	9.8	7.9
Summer Activities:			
Swimming-Lake	25.1	23.2	26.4
Swimming-Ocean	13.5	17.5	8.3
Picnicing	13.7	13.4	14.0
Sailing	11.9	12.2	11.7
Canoeing	10.9	9.1	12.1
Motorboating	16.9	17.5	16.5
Fishing-Ocean	10.9	12.4	8.6
Bicycling	33.2	30.0	35.5
Backpack Hiking	7.3	6.9	7.6
Camping	14.7	14.0	15.2
Nature Walking	18.9	18.2	19.4
Horseback Riding	15.7	13.8	17.1

TABLE 4

RECREATION EQUIPMENT OWNED BY RESPONDENTS - STATEWIDE

(Percentage Distribution of Respondents)

Number of Vehicles	Campers	Bicycles	Sailboats	Motorboats
0	89.3	40.9	95.2	78.9
1	10.3	18.1	4.3	18.3
2	.3	19.5	.2	2.3
3	----	9.6	.2	.3
4 or more	.1	11.9	.1	.2

TABLE 5

RECREATION EQUIPMENT OWNED BY COASTAL AREA RESPONDENTS

(Percentage Distribution of Respondents)

Number of Vehicles	Campers	Bicycles	Sailboats	Motorboats
0	90.7	41.9	94.7	79.4
1	9.0	17.8	4.7	17.5
2	.3	18.1	.3	2.6
3	----	10.6	.3	.5
4 or more	----	11.7	----	.2

TABLE 6

TOP TEN RECREATION FACILITIES RESPONDENTS WOULD LIKE TO SEE STATE SPEND MONEY ON

(Percentage Distribution of Respondents)

Type of Facility	State			Coastal			Non-Coastal		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
Outdoor Tennis Courts	18.2	19.4	15.0	20.2	16.8	12.3	16.6	21.3	17.5
Outdoor Swimming Pools	12.8	12.9	8.3	12.5	9.8	12.3	13.1	15.2	4.8
Playing Fields/Courts	9.4	14.5	22.5	9.4	12.5	15.8	9.3	16.0	28.6
Swimming Areas	8.5	14.0	11.7	7.5	17.9	7.0	9.3	11.1	15.9
Recreation Areas for Children	11.5	6.5	5.8	14.1	7.6	5.3	9.3	5.7	6.3
Camping Areas	9.9	8.9	5.8	8.3	7.6	7.0	11.2	9.8	4.8
State Parks	10.8	4.2	6.7	11.4	2.7	5.3	10.3	5.3	7.9
Parks (General)	9.0	6.3	7.5	8.9	7.6	6.7	9.1	5.3	1.6
Bike Trails-Off Roads	4.6	8.6	10.0	4.2	12.5	5.8	4.9	5.7	7.9
Children's Playgrounds	5.4	4.7	6.7	3.6	4.9	8.8	7.0	4.5	4.8

TABLE 7

ATTITUDES TOWARD STATE SPENDING FOR RECREATION FACILITIES ALONG THE COAST
(Percentage Distribution of Respondents)

Opinion	Coastal Recreation Facilities											
	Camp. Areas %	Swim. Areas %	Picnic Areas %	Scenic Turn-Offs %	Boat Ramps %	Historic Areas %	Nature Areas %	Marinas %	Hiking Trails %	X-Country Ski Trails %	Bike Trails On Roads %	Bike Trails Off Roads %
Coastal:												
Should Spend More	68.8	74.0	68.9	59.3	55.0	69.5	74.4	41.5	68.6	64.8	81.5	81.6
Should Not Spend More	31.2	26.0	31.1	40.7	45.0	30.5	25.6	58.5	31.4	35.2	18.5	18.4
Non-Coastal:												
Should Spend More	74.2	75.5	75.6	65.8	58.9	73.0	78.6	51.0	73.9	64.3	78.9	83.1
Should Not Spend More	25.8	24.5	24.4	34.2	41.1	27.0	21.4	49.0	26.1	35.7	21.1	16.9
State:												
Should Spend More	71.8	74.9	72.6	62.9	57.1	71.4	76.7	46.6	71.6	64.5	80.1	82.5
Should Not Spend More	28.2	25.1	27.4	37.1	42.9	28.6	23.3	53.4	28.4	35.5	19.9	17.5

TABLE 8

ATTITUDES OF RESPONDENTS TOWARD INCREASING PUBLIC COASTAL BEACH RIGHTS BY LENGTH OF RESIDENCE IN MAINE
(Percentage Distribution of Respondents)

Opinion	Coastal					Non-Coastal					State				
	Less Than 5 Years %	5-10 Years %	10 or More Years %	Life %	Total %	Less Than 5 Years %	5-10 Years %	10 or More Years %	Life %	Total %	Less Than 5 Years %	5-10 Years %	10 or More Years %	Life %	Total %
Favor	37.9	35.3	37.4	50.1	45.6	54.0	38.5	41.5	52.1	49.9	44.8	37.0	39.4	51.2	47.9
Oppose	62.1	64.7	62.6	49.9	54.4	46.0	61.5	58.5	47.9	50.1	55.2	63.0	60.6	48.8	52.1

TABLE 9

ATTITUDE OF RESPONDENTS TOWARD ADEQUACY OF EXISTING PUBLIC COASTAL SHORELAND BY LENGTH OF RESIDENCE IN MAINE

(Percentage Distribution of Respondents)

Opinion	Coastal					Non-Coastal					State				
	Less than 5 Years %	5-10 Years %	10 or More Years %	Life %	Total %	Less Than 5 Years %	5-10 Years %	10 or More Years %	Life %	Total %	Less Than 5 Years %	5-10 Years %	10 or More Years %	Life %	Total %
Less Than Adequate	35.0	39.5	38.9	45.2	42.6	38.9	40.0	47.0	44.3	44.2	36.5	39.7	42.8	44.7	43.4
Adequate	56.7	55.3	56.5	49.7	52.1	55.6	54.3	49.0	53.9	53.3	56.3	54.8	52.9	52.0	52.7
More Than Adequate	8.3	5.3	4.6	5.1	5.3	5.6	5.7	4.0	1.8	2.6	7.3	5.5	4.3	3.2	3.9

TABLE 10

PREFERENCES FOR GOVERNMENTAL AGENCY TO PURCHASE ADDITIONAL COASTAL SHORELAND BY LENGTH OF RESIDENCE IN MAINE
(Percentage Distribution of Respondents)

Government Agency	Coastal					Non-Coastal					State				
	Less Than 5 Years %	5-10 Years %	10 or More Years %	Life %	Total %	Less Than 5 Years %	5-10 Years %	10 or More Years %	Life %	Total %	Less Than 5 Years %	5-10 Years %	10 or More Years %	Life %	Total %
Federal	33.3	----	18.5	27.0	25.1	25.0	21.4	26.5	24.2	24.4	29.6	14.3	23.0	25.5	24.7
State	40.0	71.4	51.9	51.6	51.5	58.3	71.4	67.6	58.4	60.8	48.1	71.4	60.7	55.4	56.6
Local	26.7	28.6	29.6	21.3	23.4	16.7	7.1	5.9	17.4	14.8	22.2	14.3	16.4	19.2	18.7