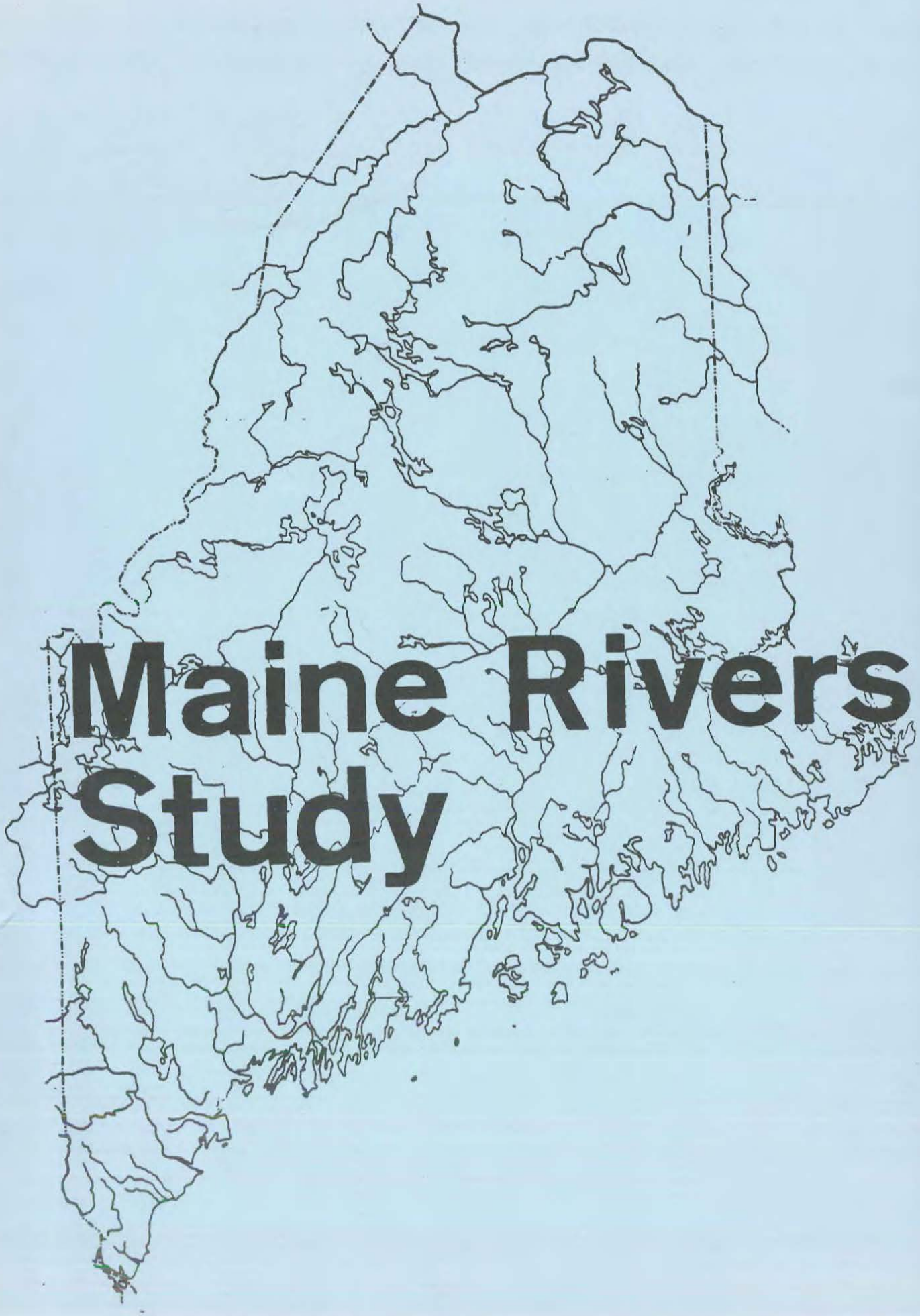


Maine Rivers Study

MAINE RIVERS STUDY

Final Report

State of Maine, Department of
Conservation

U.S. Department of the Interior,
National Park Service
Mid-Atlantic Regional Office

May 1982

TABLE OF CONTENTS

STUDY PARTICIPANTS

Maine State Department of Conservation
- Herbert Hartman, Director, Bureau of Parks and Recreation
- Tom Cieslinski, Project Leader, Bureau of Parks and Recreation
- Nancy Ross, Director of Policy Planning and Program Services

U.S. Department of the Interior, National Park Service, Mid-Atlantic Region
- J. Glenn Eugster, Chief, Division of Natural Resource Planning
- David Lange, Project Leader
- Drew Parkin, Project Leader
- Kelvin J. Nelson, Outdoor Recreation Planner
- Delores C. Sciulli, Study Production
- Carol D. Beall, Study Production

Appalachian Mountain Club
- Jim Thorne, President, Maine Chapter

Atlantic Sea Run Salmon Commission
- Edward T. Baum, Fisheries Biologist
- Kenneth Beland, Fisheries Biologist
- Norman R. Dube, Fisheries Biologist
- Joseph Floyd, Public Member

Friends of the Penobscot River
- Richard Ruhlin

High Adventure B.S.A.
- Wallace H. Jeffery

Maine Audubon Society
- William Plouffe

Maine Department of Environmental Protection, Bureau of Land Quality Control
- Dana Paul Murch, Hydropower Coordinator

Maine Department of Inland Fisheries and Wildlife
- Owen Fenderson, Fisheries Resource Planner
- Steven A. Timpano, Environmental Coordinator

Regional Biologists
- Roger Anclair
- Peter Bourge
- Ronald Brokaw
- Ray DeSandre
- Gary Donovan
- James Hall
- Paul Johnson
- Urban D. Pierce
- Michael Smith

Maine Department of Marine Resources
Louis N. Flagg, Fisheries Biologist
Thomas Squiers, Fisheries Biologist

Maine Land and Water Resources Council
Craig Ten Broeck, Executive Secretary

Maine Office of Energy Resources
Connie Irland
Pam Heidel

Maine Sportsmen Magazine
Harry Vanderweide, Editor

Maine State Planning Office
Alec Giffen, Director, Resource Planning Division
Joseph Chaison, Resource Planner

Critical Areas Program:
Harry Tyler, Program Manager
Susan Gawler, Botanist
Janet McMahon, Naturalist

Natural Resource Council of Maine
Robert Gardiner, Executive Director
Steven Anderson, Chairman, Rivers Committee
William F. Stearns
Clinton Townsend

Penobscot Paddle and Chowder Society
Donald Fletcher
Zip Kellogg
William F. Stearns

Sunrise County Canoe Expeditions
Martin Brown

The Nature Conservancy
Karen Gustason

Trout Unlimited
Wayne Johnson, President, Maine Council
Nick Albans
Richard Benner
David A. Bowie
James J. Cieslak
Jim Datsis
Ron Lott
Richard Mannette
Edward Reif
Tom Sider

Sportsman's Alliance of Maine
Kenneth Bailey, Director

U.S. Fish and Wildlife Service
Curtis Laffin, Biologist
Tom Goettle, Wildlife Biologist

University of Maine at Orono
Land and Water Resources Center, Research and Public Service
Sherman Hasbrouck
School of Forest Resources
Ray B. Owen, Associate Professor of Wildlife Management
Charles Todd, Wildlife Biologist

Whitewater Outfitters Association of Maine
David Babbs
John Conelley
James Ernst
Susie Hockmeyer
John Willard

Acknowledgements

Many thanks go to all the state resource management agency personnel and concerned recreational organizations and users of the rivers of Maine who provided invaluable information, comment, and review for this study. Special thanks go to Tom Cieslinski for his role in coordinating the project.

I. MAJOR FINDINGS

1. The State of Maine is unique in the Northeastern United States in the number and diversity of significant natural and recreational river resources that it possesses.

The Maine Department of Inland Fisheries and Wildlife estimates that there are 31,806 miles of permanently flowing rivers and streams in the state, a figure equivalent to one linear mile of stream for every square mile of land surface. Rivers vary in size from the long and wide Penobscot River which drains 8570 square miles to the short and narrow Rapid River and Grand Lake Stream. Over sixty rivers enter the ocean along the Maine coast and three rivers form the U.S./Canadian international boundary. Among these water resources are a select quantity of rivers which are widely recognized for their outstanding values.

Important river resources include:

a. 17 river gorges, 61 waterfalls, and 38 white water rapids identified as being outstanding geological or hydrological features with statewide significance.

b. More miles of undeveloped free-flowing rivers than any other state in the Northeast United States.

c. River corridor segments which provide habitat for diverse populations of rare and endangered plant species of state and national importance.

d. Coastal rivers which provide significant habitat for northern bald eagle and shortnosed sturgeon, on the Federal Threatened and Endangered Species List.

e. 192 miles of high quality river habitat for an internationally known landlocked salmon fishery and 22,000 miles of primary brook trout habitat known for its excellence throughout New England.

f. The only rivers in the eastern United States containing significant self-sustaining Atlantic salmon runs, and, due to federal and state restoration efforts, the East coast's most heavily fished Atlantic sea run salmon river.

g. Three rivers which together account for over 60% of the state's commercial alewife catch and a number of other coastal rivers which have the potential to become profitable commercial fisheries.

h. The only two stretches of class V white water and the longest single stretch of class II-IV rapids in the entire New England region.

i. The longest and most popular extended back country canoe trips in the Northeast and over 4000 miles of other rivers suitable to boaters of all ability levels.

2. The Maine River Study has identified 4264 miles of rivers and river segments which possess significant natural and recreational resource values.

Maine rivers have been inventoried and analyzed to identify important river areas and to rank these areas according to their overall significance as unique and/or multiple value natural and recreation resources. The final ranking represents a synthesis of objective resource analysis and a consensus of opinion among resource experts and state river conservation interests.

Rivers, river segments and related tributaries identified as possessing significant natural and recreation resource values were placed in one of four significance categories, identified as A, B, C and D. These categories represent a hierarchy of cumulative resource values, and are defined in the following manner:

Rivers and related corridors on the "A" list possess a composite natural and recreational resource value with greater than state significance.

Rivers and related corridors on the "B" list possess a composite natural and recreational resource value with outstanding statewide significance.

Rivers and river-related corridors or specific areas on the "C" list possess a composite natural and recreational resource value with statewide significance.

Rivers and river-related corridors or specific areas on the "D" list possess natural and recreational values with regional significance.

The total mileage of rivers and streams in each of the categories is summarized in the following table:

SIGNIFICANCE CATEGORY	NUMBER OF RIVERS	TOTAL LENGTH OF MAIN SEGMENTS (IN MILES)	% OF THE STATE'S TOTAL RIVER/STREAM RESOURCE	TOTAL LENGTH INCLUDING SIGNIFICANT TRIBUTARIES (IN MILES)	% OF STATE'S TOTAL RIVER/STREAM RESOURCE
A	20	867.0	2.7	1663.5	5.2
B	18	698.0	2.2	1176.0	3.7
C	41	843.5	2.6	1152.5	3.6
D	23	262.0	0.8	272.0	0.9
TOTAL	102	2670.5	8.4	4264.0	13.4

A number of rivers included on the study's B list have been identified as possessing specific resource values of highest importance to Maine river constituents. These rivers are therefore deserving of special efforts to maintain the identified outstanding resource values. These rivers and their corresponding values are as follows:

Inland Fisheries Values:

Crooked River
Grand Lake Stream
Kennebago River

Commercial Anadromous Fisheries Values:

Damariscotta River
St. George River

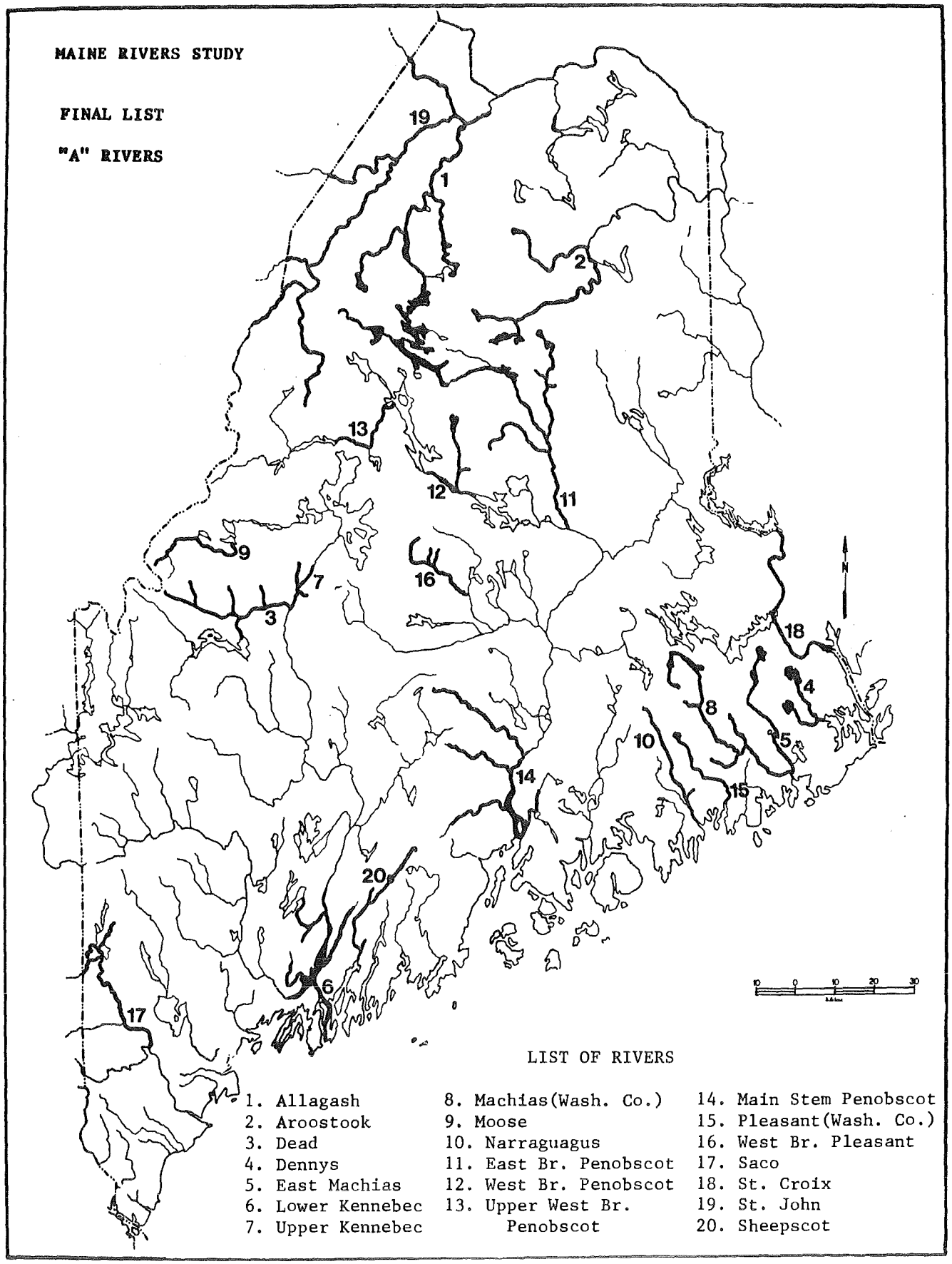
Whitewater Boating Values:

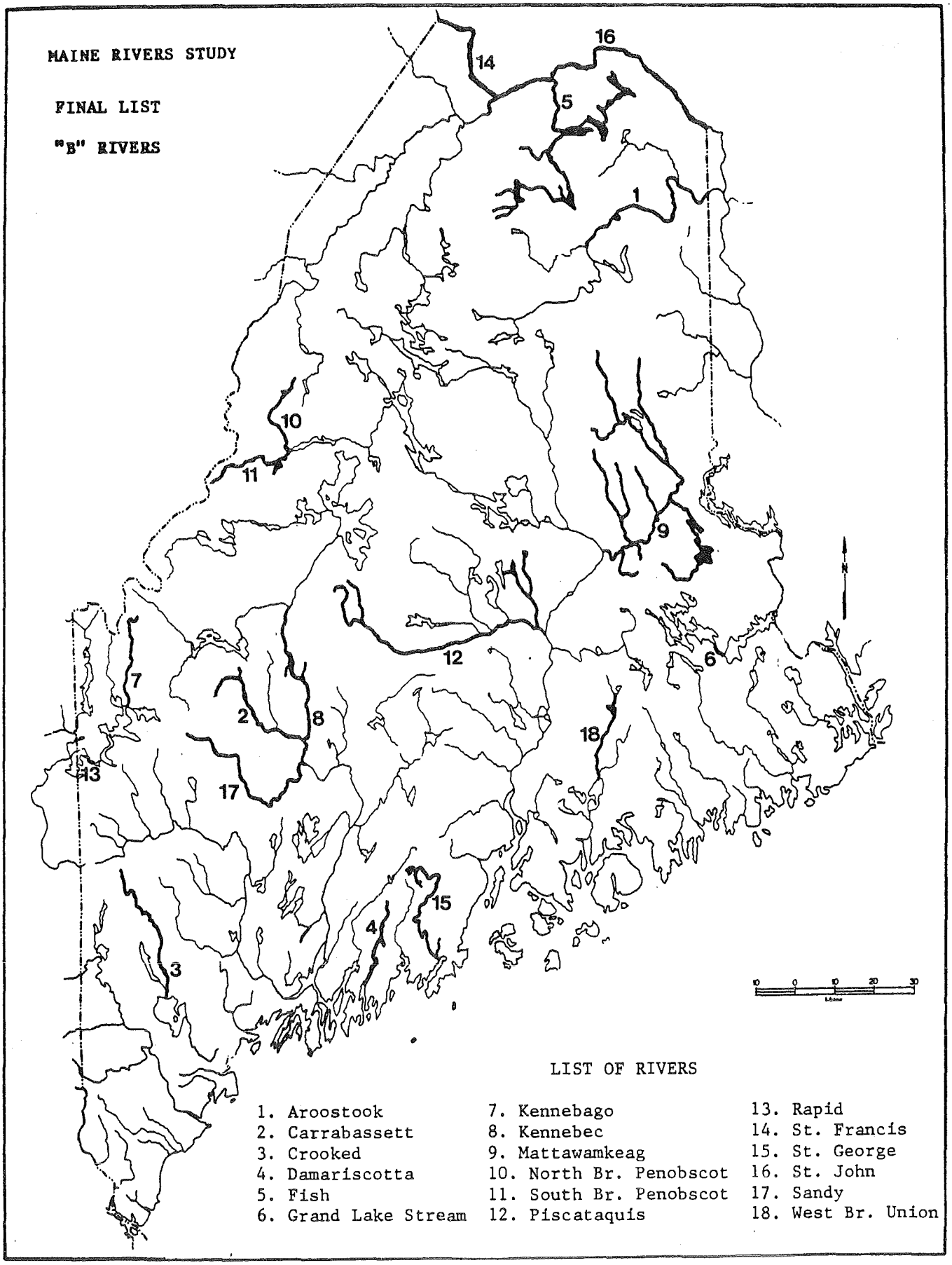
Carrabassett River
Rapid River

Critical Botanic Values:

St. John River
Aroostook River

Maps identifying rivers and river segments included in the study's "A" and "B" significance categories follow.


MAINE RIVERS STUDY
FINAL LIST
"A" RIVERS
19
1
2
13
12
11
9
7
16
3
18
4
8
10
5
14
15
20
6
17
N
10 0 10 20 30
LIST OF RIVERS
1. Allagash
2. Aroostook
3. Dead
4. Dennys
5. East Machias
6. Lower Kennebec
7. Upper Kennebec
8. Machias(Wash. Co.)
9. Moose
10. Narraguagus
11. East Br. Penobscot
12. West Br. Penobscot
13. Upper West Br. Penobscot
14. Main Stem Penobscot
15. Pleasant(Wash. Co.)
16. West Br. Pleasant
17. Saco
18. St. Croix
19. St. John
20. Sheepscot


MAINE RIVERS STUDY
FINAL LIST
"B" RIVERS
16
14
5
1
10
11
9
12
6
7
2
8
18
13
17
15
4
3
LIST OF RIVERS
1. Aroostook
2. Carrabassett
3. Crooked
4. Damariscotta
5. Fish
6. Grand Lake Stream
7. Kennebago
8. Kennebec
9. Mattawamkeag
10. North Br. Penobscot
11. South Br. Penobscot
12. Piscataquis
13. Rapid
14. St. Francis
15. St. George
16. St. John
17. Sandy
18. West Br. Union

3. The potential exists in Maine for the conservation of complete watersheds or river ecosystems, an opportunity unparalleled by few if any states in the Northeast.

A specific river segment does not function independently but instead, both affects and is affected by adjacent land areas, connecting segments, lakes and tributaries. This physical and biological interdependence of rivers and tributaries within a watershed provides the basis for the principle that a systems approach to water resource planning and management is both prudent and necessary. This is particularly so in riverine systems which are in a natural state.

The Maine River Study has identified a number of relatively large watersheds within the state which are of high significance as undeveloped and interdependent hydrologic units. These sub-basins are characterized by a general lack of major artificial river impoundments, minimal river corridor development, a high degree of hydrologic and ecologic interdependence, and a consistency of resource quality among all segments. These include:

a. The upper St. John watershed including the Northwest, Southwest, and Baker branches, and the Little and Big Black Rivers.

b. The East Branch of the Penobscot watershed, including the Seboeis River and Wassataquoik Stream.

c. The Aroostook and Big Machias watershed above Sheridan.

d. The Allagash watershed.

e. The Mattawamkeag watershed.

f. The Fish River watershed, including the Fish Lakes Chain.

g. The Machias River watershed in Washington County.

4. Potential conflicts between hydroelectric development projects and significant natural and recreation rivers exist in the state of Maine.

Estimates of the total hydropower potential in the state (including both undeveloped sites and existing dam sites capable of being retrofitted) vary between 600,000 kilowatts and 1,200,000 kilowatts. Preliminary assessments of feasible hydroelectric sites on the study's A, B, and C rivers by Maine's Office of Energy Resources have identified 72 sites capable of producing 400,000 kilowatts of power.

Of the river segments identified on the Maine River Study's "A" list, Federal Energy Regulatory Commission preliminary permits are pending for 5 sites with a total generation potential of over 125 megawatts. These projects are located on the West Branch of the Penobscot, the Kennebec, the Aroostook, and the East Machias. A 500 kilowatt project is currently being constructed on the Pleasant River in Washington County. Twenty additional potential sites are located on "A" list rivers. "B" list preliminary

permit applications include projects on the St George, Rapid, Kennebago, Mattawamkeag, Piscataquis, and Aroostook rivers with a total generation potential of over 60,000 kilowatts.

The extent of the conflict between significant river resource areas and hydropower development vary according to the specific resource characteristics associated with a particular site. In many instances, resource impact will be minimal or can be mitigated or avoided through proper facility sizing and placement, fishway design, and/or water release scheduling. However, while the impact on river related resources will be minor for many potential projects, a select number of developments could significantly alter a river's character and destroy irreplaceable resources, some with multi-state or national significance.

Corridor land development and resource use may also impact river resource values with adverse effects occurring on water quality, wildlife habitat, user access, and scenic values. Again, conflict can often be minimized through proper planning which recognizes the resource values associated with the particular river area.

5. There is a significant base of citizen and public agency support for the conservation and sound management of the river resources of Maine.

River conservation interests in the state vary widely. Such interests include recreational boating and fishing, commercial boating and fishing, educational and scientific research, wildlife preservation, water quality maintenance, and miscellaneous recreational interests. While these interests vary and sometimes conflict, an underlying consensus exists that rivers in their natural condition constitute a valuable resource to the State of Maine. There also appears to be a consensus among river interests regarding which rivers are most important and warrant conservation action.

In addition, there appears to be a public recognition of the need to balance the goals of hydroelectric development and river conservation, and a desire for the use of hydropower where compatible with the resource values of a river and where impacts of development are avoided or minimized.

6. A variety of alternatives are available within the local, State and federal government and the private sector to conserve and manage Maine's significant natural and recreational rivers.

The natural and recreational resources of Maine's rivers are extremely significant, diverse and complex. These river areas contain a mix of public and private land ownership in the form of existing parks, recreation areas, agricultural lands, historic sites, natural areas, forests and villages. Natural resources in some areas are interwoven with the fabric of existing communities. These "living or working river areas" contribute to the uniqueness, quality, and resource value of the areas from a State and National perspective.

In addition to the importance of the river corridor resources, there appears to be a base of public agency and citizen support for improved management and enhancement of these resources. The State and local jurisdictions as well as private groups and citizens have committed themselves to conserve and enhance river areas throughout Maine. As strong as the support is for improved management of Maine's rivers, so are the feelings of a need for local control and private stewardship. Indications are that proposals for the conservation of Maine's rivers should be initiated and developed at the State and local level.

In this regard, no single level of government or existing system of parks, regulations, recreation areas, programs or preserves can be expected to conserve and manage Maine's rivers. Only through the shared responsibility of the several levels of governments and the private sector, can the significant natural and recreational values of the State's rivers be conserved or enhanced.

A coordinated application of existing government programs, consistent with varying river area goals, could result in significant economic benefits and will support federal, State and local conservation and enhancement efforts.

II. INTRODUCTION

On June 22, 1981, Governor Brennan released the Energy Policy for the State of Maine. The hydropower section of the policy directed that:

> **The Department of Conservation, working with environmental, economic, energy and other appropriate interests, should identify river stretches in the state that provide unique recreational opportunities or natural values and develop a strategy for the protection of these areas for submission to the Governor."**

In response to this directive, and as a continuation of the State's ongoing efforts to conserve Maine's significant rivers, the Department of Conservation initiated the Maine Rivers Study. The U.S. Department of the Interior, National Park Service's Mid-Atlantic Office, as part of their ongoing river conservation technical assistance to the state, has provided staff to conduct this study.

The purpose of the study is two-fold. The first is to define a list of unique natural and recreation rivers identifying and documenting important river related resource values as well as ranking the State's rivers into categories of significance based on composite river resource value. The second purpose of the study is to identify a variety of actions that the State can initiate to manage, conserve, and -- where necessary -- enhance the State's river resources in order to protect those qualities which have been identified as important.

III. STUDY METHOD AND PROCESS

Introduction - Each of Maine's rivers and major streams were assessed during the course of this study to identify the State's unique natural and recreation rivers. The method used to identify and rank Maine's rivers, prepared in cooperation with the River Basin Subcommittee of the State's Land and Water Resource Council, was designed to:

a. Rely on existing quantitative and qualitative research information.

b. Rely on information from recognized river resource experts.

c. Use a "systems" or river-ecosystem approach of analysis which recognizes the relationships and interrelationships of rivers, their tributaries and watersheds.

d. Incorporate public and expert input into the evaluation process.

The study process was intended to not only develop an objective and factual base of information on Maine's rivers but also a consensus among river experts regarding the most important rivers in the state.

The method used is based on the following five step process.

Step 1 Identification and Definition of Unique River Values - The first step in the study identified unique recreation and natural river categories. These categories, selected by the study team and the River Basin Subcommittee, were used to serve as a framework for the collection and analysis of river information. The unique natural river categories selected for analysis included: 1) geologic and hydrologic features (i.e., gorges, waterfalls, etc.); 2) critical and rare species of plants and wildlife (i.e., bald eagle wintering areas, etc.); 3) undeveloped river corridors; and 4) scenic river corridors (i.e., river areas with outstanding views, visual diversity, etc.).

The categories selected for unique recreational river areas included: 1) anadromous fisheries (i.e., salmon runs, etc.); 2) inland fisheries (i.e., trout streams, etc.); 3) whitewater boating (i.e., areas with rapids); 4) canoe touring (i.e., areas for canoe-camping trips, etc.); 5) backcountry excursion boating (i.e., areas for extended wilderness trips); and 6) river-related historic sites with national significance.

Once these categories or "types" of unique rivers and river segments were identified each category was described and defined in detail.

To help determine which rivers or river segments possessed resource values of regional or greater significance, a set of standards were established for each category. These standards served as minimum "threshold" criteria to determine which rivers should be considered for further evaluation.

The specific criteria for each natural and recreation river category and the evaluation method used to identify qualifying river areas is described in Section IV of this report.

Step 2 Identification of Significant River Resource Values - The second step of the study process involved the identification of those rivers and river segments which met the natural and recreation river category criteria. River areas were identified through a review of existing sources of information (i.e., canoe guidebooks, natural area studies, previous river inventories, etc.) and through discussions with various government and private sector river experts. Rivers which met or exceeded the category criteria were identified on the Preliminary Draft List of Rivers Under Evaluation released in November 1981. This list of more than 120 rivers and river segments was distributed to public and private interests for review and comment.

Each of the rivers and river segments on the Preliminary Draft List was researched, by natural and recreation river category, and river values were systematically identified. The Preliminary List and documentation of river values served as a basis for subsequent analysis.

Step 3 River Category Evaluation - The next step of the study process focused on the evaluation and detailed documentation of river values by specific category. With assistance from resource experts all rivers and river segments identified as unique or significant in a given category were further inventoried and analyzed in detail to substantiate river values. The results of this analysis were recorded on lists by river category. These lists of rivers represent a culmination of the river evaluation, documentation and expert review process and are judged to possess resource values of regional, statewide and greater than statewide significance.

Step 4 River Category Synthesis - River information collected, evaluated and documented in earlier steps was combined in an effort to summarize all of the natural and recreation values associated with particular river segments and to connect adjoining river segments which possess similar values.

To help simplify the recording and display of river values a matrix was used. The matrix identified the total number of resource values associated with each river segment and highlighted those areas of statewide or greater than statewide significance. New river segment descriptions were defined using the following general guidelines:

1. Where a river possesses a combination of overlapping natural and recreation values, a composite river segment is identified with the outer boundaries of the overlapping segments determining the boundary of the entire river area.

2. A tributary stream which flows into, and is connected to, a larger river area is included in the larger river segment description if the tributary stream: a) possesses natural or recreation values consistent with those of the main river area; b) significantly enhances the overall value of the larger river segment's resources.

3. A tributary stream with natural or recreation values greater than those of a connecting main river area is listed separately from that area.

4. Larger connecting rivers have been listed as tributaries to a river system in certain unique situations (ie. the Big Machias River in the Aroostook River watershed), where: a) the rivers are free-flowing and within an undeveloped watershed; b) the rivers in the watershed exhibit a high degree of hydrological and ecological interdependence.

Following the combination of rivers and associated tributaries, river segment descriptions and resource values were revised and displayed on a matrix.

Rivers or river segments with related resource values which have been determined to be the state's most significant in a specific resource category were identified on the matrix with an asterisk. These resources possess greater than state or national significance, related to the distribution and rarity of the resource value.

Step 5 Comparative River Evaluation - The combined unique and significant natural and recreational resource values of all river segments were evaluated on a comparative basis to determine their relative importance within the State of Maine. Each of the rivers from the Preliminary Draft List were ranked and placed into one of four categories of river resource significance. These categories, identified as A, B, C and D, represent a range of river values, from areas which are greater than of state significance to those of regional importance.

Rivers and river segments were placed within particular categories based on the number and significance of various river values. The final river ranking scheme recognizes rivers which have a variety of significant values as well as importance due to specific unique resource qualities.

River Ranking Criteria - The criteria used to place rivers within the four categories are as follows:

"A" RIVERS

1. Rivers or river segments possessing six resource values with regional, statewide or greater than statewide significance in a specific resource category.

2. Rivers or river segments possessing two or more resource values which are recognized to be the some of the state's most significant in a given resource category. Included within this category are rivers providing important habitat (defined as self-sustaining viable runs or significant restoration efforts producing fishable populations) for the nationally significant Atlantic sea run salmon.

"B" RIVERS

1. Rivers or river segments possessing four or five resource values with regional, statewide or greater than statewide significance in a specific resource category.

2. Rivers or river segments possessing one resource value which is recognized to be one of the state's most significant in a given resource category.

"C" RIVERS

1. Rivers or river segments possessing one to three resource values with regional, statewide significance or greater than statewide significance in a specific resource category.

"D" RIVERS

1. Rivers or river segments possessing one or more resource values of regional significance.

Using the aforementioned criteria, rivers and river segments were identified in the Draft Final List of Rivers Under Evaluation released in February 1982. This list of rivers was distributed to public and private interests for review and comment, and copies of the list were made available through a statewide news release.

In addition, a series of public meetings in Bangor, Presque Isle, Machias and Lewiston were held to solicit input. Public comments, and additional information where appropriate, were incorporated in final revision of the Draft Final List.

Thus, the Final List of Rivers released in April 1982 reflects the results of a comparative and cooperative river evaluation process which incorporates factual, objective information and the consensus opinion of numerous diverse river interests.

IV. RIVER RESOURCE CATEGORIES

Unique Natural Rivers - Overview

This section of the final report will outline the process of identification, documentation and evaluation of Maine's "unique and natural rivers." The focus here is on these natural resources that make a river important: an absence of development within the land corridor adjacent to the river, the presence of a variety of habitats for the fauna and flora, uncommon and unique features like bedrock formations, rare and threatened plant and animal species, critical ecologic areas, scenic waterfalls and vistas, and National Historic Sites and National Natural Landmarks.

The combination of the wide scope of this study and the limited time allocated did not allow for the collection of new information or field work on a river by river basis. Rather, the emphasis was on the gathering and organizing of existing information from a variety of sources and experts. State and federal resource management agencies were of help in this section of the study, and will be cited in discussion on the appropriate resource.

Much of the river-related resource information was taken from statewide assessments of natural resources by the Maine Critical Areas Program, a part of the State Planning office. The groundwork for this program was laid in 1972 with the Maine Natural Areas Inventory, a report which attempted to identify the most significant natural areas around the state. After this study was issued, it became clear that additional work was needed for the systematic evaluation of the relative values of natural resources of the state, in order to identify which areas were the most unique or significant.

In 1974, the State Legislature passed an act establishing a state Register of Critical Areas, and charged the State Planning Office with initiating a Critical Areas Program designed to identify, document, and conserve statewide critical natural areas through management agreements and donation or acquisition of property. Primary emphasis in the program at this time is on identification and registration of critical areas.

The kinds of critical areas evaluated by the program primarily correspond to the definition of "historic and fragile lands," from U.S. Senate Act 268, 93rd Congress:

> "....lands where uncontrolled or incompatible development could result in irreversible damage to important historic, cultural, scientific, or esthetic values, or natural systems which are of more than local significance, such lands to include shorelands of rivers, lakes and streams, rare or valuable ecosystems and geological formations, significant wildlife habitats, and unique scenic or historic areas...."

Other natural resource experts with important contributions to the study included wildlife resource experts from the University of Maine at Orono, Maine Department of Inland Fisheries and Wildlife, and U.S. Fish and Wildlife Service, who were helpful in the identification and documentation of significant river related wildlife resources. The prior assessment of the state's rivers by the National Park Service for the Nationwide Rivers Inventory was the primary source of information for the evaluation of corridor development and scenic resources of the rivers in Maine.

A. GEOLOGIC/HYDROLOGIC FEATURES

Introduction

The majority of bedrock formations of the State were originally deposited as sediments on the bottom of the ocean during the Lower Paleozoic era (hundreds of millions of years before the present), as well as being formed from molten rock material from deep within the earth. Later in the Paleozoic period during the building of the Appalachian mountains, these sediments were subjected to intense pressures and temperatures causing them to become folded, faulted, and uplifted, accompanied by intense volcanic activity. Today these durable igneous and metamorphic rocks are exposed in the mountainous New England upland section of the state, as well as along parts of Maine's rocky coast. The finest examples of bedrock features -- such as waterfalls, gorges, and fossils--are distributed in these areas of Maine.

Many of the bedrock materials outcropping along the banks of streams and rivers in northern Maine contain traces of organisms and plants called fossils, which once lived in the early marine environments hundreds of millions of years ago. The majority of these river related fossil localities lie within a band of non-to-partially metamorphosed rocks which sweeps across the central part of the state, ending in the northeastern corner of Aroostook County. Most of these fossils are marine vascular plants and invertebrates from the Lower to Middle Paleozoic era.

During the Quaternary glaciation, the state was covered with a mile thick accumulation of snow and ice, a much larger version of the glaciers which survive today in the European Alps and Canadian Rockies.

As the glaciers from the Laurentide Ice Sheet moved southward from eastern Canada they scoured the bedrock formed millions of years earlier, shearing off the tops of many hills, ridges and mountains. Approximately 10,000 years ago this ice began to melt, leaving behind a watery landscape of lakes, ponds, streams, rivers, and wetlands.

A veneer of boulders, sand, gravel, and clay also remained to blanket the landscape, testimony to the tremendous erosive power of the slowly moving glaciers. These deposits of glacial sediments formed many of the state's lakes by damming valleys widened and deepened by the glaciers. The hydraulic action of glacial meltwater initiated the process of erosion on underlying bedrock material, occasionally encountering cliffs or abrupt jumps in the landscape, and forming waterfalls. Normally, these hydraulic

features degenerated into whitewater rapids as the bedrock eroded. For a waterfall to remain in a landscape, one of two conditions must have been present. Either the flow of the stream was insufficient to significantly erode the bedrock, or the rock contained a particular feature (such as cracks or joints) which allowed the waterfall to maintain itself as erosion proceeded. In these situations, the falls would migrate upstream with time, excavating a downstream gorge. Waterfalls also resulted from streams selectively eroding areas of weakness in the bedrock.

Many interesting surficial geologic formations were formed at the margins of the melting glaciers in the central and southern areas of the State; many of these glacial deposits are the finest examples in the northeast region. Surficial formations related to rivers include linear ridges called eskers or horsebacks, intricately braided streams with complexes of river islands, rivers with sinuous meander complexes, glacial outwash plains, glaciofluvial marine deltas, and washboard moraines.

1. Definition

There are river-related physical features in the state whose location and distribution are controlled by the structure and composition of the bedrock, by the surficial geology and by natural geologic processes including weathering and erosion.

Towering waterfalls, steep-walled granite gorges, systems of lakes, ponds, and wetlands, and surficial glacial formations are among these unique physical features. The distribution of these resources are a function of the geologic events occurring hundreds of millions of years ago, as well as resulting from events occurring after the melting of more than one mile of ice which covered Maine until approximately 10,000 years ago.

2. Significance

a. Scientific - Many of the geologic features associated with rivers have unique importance for scientific research. These features (such as glacial eskers, fossils, or gorges) are useful in the research of past geologic processes which affected the distribution and composition of rocks and minerals on the earth, as well as understanding present-day geologic processes changing the world.

Gorges and waterfalls contain large areas of stream washed and exposed bedrock, important in a state where most bedrock areas are obscured by glacial drift making scientific study difficult if not impossible. Waterfalls are also important geologic sites for study because they are not accidental features in a landscape; their location is a function of the bedrock geology and/or glacial history of an area.

The scientific study of the fossils found in the rocks of the state has greatly advanced the understanding of the state's paleogeographic history and the knowledge of the types of ancient forms of life which once lived in what is now Maine. Some of the state's fossil sites are widely known and well-documented localities and have yielded specimens of museum quality; many are the finest found in the world. Still other sites have been discovered only recently and deserve more detailed study.

One river-related geologic locality which is reportedly crucial to the understanding of central Maine geology is Ripogenus Gorge. The Gorge, which contains a wide variety of sedimentary, igneous, and metamorphic rock types; displays significant geologic structures in addition to being an important Silurian fossil locality; was recently recognized by the National Park Service as a potential National Natural Landmark.

b. **Scenic/Recreational** - Because of their scenic and esthetic qualities, waterfalls and gorges are often linked to local and regional tourist economies serving as camping or fishing sites or scenic roadside vistas. Some gorges have large rapids run by commercial whitewater rafting interests which bring dollars into local areas.

c. **Historic** - The rivers of Maine are intimately tied to the State's history, because of their importance as traditional transportation routes. Many gorges and waterfalls presented obstructions to former log running and have legendary significance. Others have since been modified by channel improvements for log running, or obliterated by downstream dams for hydroelectric generation. Occasionally, waterfalls and gorges were the sites for mills or small towns and have associated historic buildings with state and national significance.

d. **Ecologic** - Gorges and waterfalls often contain a great diversity of hydrologic and ecologic environments, and a variety of habitat for flora and fauna. These environments may include flatwater above the hydrologic feature, ledges, rapids, and shooting flow through the gorge or waterfall, with gravel floodplains and rapid water downstream. Ravines, gorges and streamside cliffs are often more shaded, with higher humidity than most environments, and many species of rare plants are known to grow in such areas. Sandy glacial outwash plains are another river-related geologic feature which have a unique association of plants. The droughty infertile soils are often maintained as blueberry barrens, supporting the cultivation of wild blueberries.

3. Standards for Inclusion

Unique and significant geologic and hydrologic features in Maine are studied on a continuing basis by the Critical Areas Program. The physical resources studied to date include bedrock fossil localities, eskers, waterfalls, and gorges. Significant white water rapids in the state have also been identified by this program, and their findings were incorporated into the assessment of recreational boating by the Maine Rivers Study.

Geologic and hydrologic features meeting the significance criteria defined by the Critical Areas Program are recommended for inclusion on the Register of Critical Areas; at this time, 61 waterfalls and 19 gorges have been recommended. Significant eskers and fossils localities have also been added to the Register.

River-related geologic features recognized by the National Park Service in the Nationwide Rivers Inventory as important because of their uniqueness, rarity, or scarcity (ie. one- or two-of-a-kind nature, or having significance for a particular region of the state) were also included in this study. These features included reversible falls, glacial outwash plains, river- linked lake systems, and river meander complexes.

4. Evaluation Method and Criteria

During the assessment of the State's geologic and hydrologic features general criteria were used to identify significant river-related physical features. These criteria were developed in order to identify areas of geologic and hydrologic importance associated with rivers which deserved recognition by this study, but had not been comprehensively studied on a statewide basis. These criteria included the following:

a. Scarcity: a resource with extremely limited distribution in the State, New England region, or United States; distinctly unusual, rare, one- or two of a kind features.

b. Diversity of values: significant physical features occurring in association with other values (i.e., a gorge which is a classic geologic-type locality with habitat for endangered bald eagles and high recreational value).

c. Susceptibility to human activities: features which could be degraded or destroyed by human presence or activities.

d. Ecologic significance: resource sites which contain a variety of habitats and ecological values.

e. Historic value: features that were involved in the settlement, transportation, or early industrial activities of the state. A site was considered significant historically if: a) it had interesting military history; b) it was an important industrial or economic site; c) it was important in 19th century log driving activities.

f. Scenic/Esthetic value: resource features which were important to the local and regional recreational and tourist economies. A feature was considered to have outstanding scenic attributes if: a) it was of large magnitude in some way (length, depth, overall size); b) had good potential or existing vistas; and c) it had a diversity of hydrologic elements including rapids, chutes, flumes or falls.

g. **Scientific attributes:** a site was considered geologically outstanding if any one of the following criteria existed: a) it was a type locality or best exposure of a geologic formation; b) it had an exceptional display of bedrock structures; c) it displayed exceptional hydrologic features.

The fossil sites were considered scientifically significant if meeting one or more of the following criteria:

1) Areas which are the type of locality of a particular fossil (i.e., the area where the first specimens known to science were collected).

2) Areas containing a unique fossil assemblage, index fossils, and/or fossils useful for scientific age determination and correlation work.

3) Areas with important educational value and frequently visited by school groups.

The following rivers were recognized by experts as having outstanding river related geologic resources and highlighted on the Final List of Rivers with an asterisk:

Upper Kennebec River
West Branch Penobscot River
West Branch Pleasant River

5. Information Sources and Expert Review

The following references were used by the study team to identify and document resource values.

Waterfalls in Maine and Their Relevance to the Critical Areas Program of the State Planning Office; Brewer, Thomas, 1978.

Gorges in Maine and Their Relevance to the Critical Areas Program of the State Planning Office; Brewer, Thomas, 1978.

A Preliminary Listing of Noteworthy Natural Features in Maine; Center for Natural Areas, June 1976.

Significant Bedrock Fossil Localities in Maine and Their Relevance to the Critical Areas Program; Forbes, William H., 1977.

Nationwide Rivers Inventory; U.S. Department of the Interior, National Park Service, Mid-Atlantic Regional Office, Philadelphia, PA, 1981.

Dr. Thomas Brewer of Boston College, Boston, Massachusetts, and Janet McMahon and Harry Tyler of the Critical Areas Program within the State Planning Office provided information and expert opinion to the study team.

B. RIVER RELATED CRITICAL/ECOLOGICAL RESOURCES

Introduction

The State of Maine possesses an unusual abundance of water and related land resources, having more miles of river and more lakes per square mile than any other state in New England, as well as the highest percentage of land covered by forest of any state in the United States. Of the 19.8 million acres of land in Maine, 17.4 million acres (or approximately 88% of the state) is in forest, and 1.5 million acres (or 7% of the state) is covered by inland fresh water. This figure does not reflect areas of bogs and wetlands which are perennially wet or flooded for certain seasons of the year.

The topographic relief in Maine has produced a complexity of terrestrial ecosystems, which for the purposes of this discussion can be grouped into basic vegetative types: Alpine tundra, Northern hardwood spruce-fir,

Northeast spruce-fir, transition hardwood-conifer, and transition hardwood. With the exception of Alpine tundra, any of these major vegetative associations may be found along a river corridor, depending on the altitude of the area, as well as other influencing factors such as soil type, steepness and aspect of slopes, and amount of moisture present.

Just below the alpine areas and on the tops of many of the lesser peaks in the White Mountains is the Northeast spruce-fir association, usually consisting of pure fir forest just below timberline, with red spruce increasing at lower elevations. These conifer forests grade into Northern hardwood spruce-fir forests downward, the transition occurring at about 2500 feet in the White Mountains. These forests contain a variety of hardwood and conifer species. Some of the conifers such as red spruce and fir drop out at lower elevations and in the more southern portions of Maine. Transition hardwood-conifer forests, found in extreme southwest Maine and along lower valleys in other parts of the state, have a greater number of southern species like white ash, black birch, black cherry, and increasing concentrations of red oak, white oak and hickory.

Soils throughout the state are largely developed from glacial tills and stratified drift, tending to be podsols (soils with upper horizons depleted of plant essential nutrients) at higher elevations under spruce-fir forests, and brown podsolics at lower elevations. Most of the soils are acid, although limestone areas throughout the state often have unique calciphile (or calcium loving) vegetation, occasionally with associations of rare and endangered plant species.

These are other special types of river-related vegetation in Maine found with certain types and conditions of soils. Areas of coarse sandy glacial outwash along many rivers support pitch pine barrens. In some cases these areas are maintained in a lower successional stage as blueberry barrens by controlled burning and other management practices.

White pine is another species that grows well in glacial outwash areas, where it can reproduce without competition from other species of trees. This tree also grows well on steep-sided riparian areas (along rivers, streams, lakes and ponds) in a variety of soil conditions. The vast majority of the immense pines which once grew along the rivers of Maine have been cut, although a few stands of old growth white pine exist in the state. The most notable example of these is The Hermitage stand along the West Branch of the Pleasant River.

Low, cool, poorly drained sites in Maine often support classic bog ecosystems, with typical acid peats resulting from the accumulation of sphagnum moss. These bogs are important natural areas, supporting many endemic, unique, or peripheral species of plants (especially orchids) which are found only in these unusual biotic systems. A special type of bog forest characterized by Eastern Atlantic or coastal white cedar is found in some parts of mid-coastal and southeastern Maine. Another unique type of bog sometimes within river corridor areas is the raised bog, formed in depressions on drier ridges surrounding bogs. A mound several feet high is formed by the accumulation of sphagnum moss, while water is retained by the sponge-like consistency of the moss.

Of all the various ecosystems associated with rivers, perhaps the most significant are the wetlands, the transition zones between the terrestrial and the aquatic environments. Wetlands have outstanding natural value (for the production of photosynthetic oxygen, as catchments for flood waters, pollution filters, and aquifer recharge areas and for species habitat) as well as significant economic value, supporting the important statewide hunting, fishing, and trapping recreational community. Inland wetlands have primary importance as feeding, nesting and rearing areas for waterfowl. Although generally associated with waterfowl, wetlands provide habitat for many furbearing animals as well. Otter, beaver, muskrat, mink, and others are directly dependent on these areas for their food and shelter. Other species such as deer, woodcock and hare often inhabit areas bordering these wetlands. In addition to the previously mentioned furbearers and game animals, numerous non-game species depend on wetlands to supply some or all of their life requirements. Tidal rivers and salt marshes have plants which are adapted to changes in water level, salinity, temperatures, and nutrients. These coastal rivers and wetlands serve as resting areas for spring and fall migrations of waterfowl, as well as wintering areas for waterfowl and raptors, including the endangered bald eagle.

There are other areas associated with rivers that support unusual assemblages of plants, including certain relict and endemic species. These are highly specialized species, influenced by subtle changes in sunlight, humidity, temperature, and soil moisture, texture and composition. These areas include cliffs, where plants are subjected to fluctuations and extremes of light, temperature, climate, and erosion, as well as ravines and gorges which have shaded, humid conditions preferred by certain species.

BOTANIC CRITICAL/ECOLOGIC RESOURCES

1. Definition

There are over 2,100 species of vascular plants known to occur in the State of Maine. Of these, 318 species are considered scarce or rare. The Critical Areas Program has identified 97 species known to inhabit riverine areas. Significant habitats for vascular plants include cliffs, gorges, river and stream banks, pond and lake margins, bogs, and wetlands.

The causes of the rarity of these plants can be difficult to define at times, although the majority of the rare plants can be identified in one or more of the following categories, according to the Critical Areas Program:

a. Species with scarce habitat within the State (although more common elsewhere).

b. Species at the northern or southern limit of their range.

c. Species with a very restricted natural range (endemics).

d. Species with seriously declining populations.

e. Species which, for a variety of reasons, are rare throughout their entire range.

The definition of rarity can be complex, since it is a function of the actual limited distribution of the plant in its habitat, as well as its perceived value to our society. The Critical Areas Program has defined rarity primarily by its biological distribution. A plant species is considered to be rare if it has been found in ten (or fewer) towns in the state; a species may be found in more than ten towns and still be considered rare if it is at the limit of its range. is declining or vulnerable, or is restricted in distribution throughout its range.

2. Significance

The values of plants to our society and to other animals of the land and waters of this world are infinite. Plants regulate temperature near the earth, maintain the atmospheric balance of carbon dioxide to oxygen, convert solar energy into stored chemical energy needed by animals, have educational and aesthetic value, and supply an endless variety of medical and chemical products for humans. Communities of plants are important for soil development, prevention of erosion, storage of water, and providing food and shelter to many species of animals.

The many varieties of rare and unusual plant species are found in habitats which are unstable and changing, and subject to climatic extremes. The gene pool of these plants is a storehouse for traits necessary for breeding new species, as well as representing unknown potential as a source of new chemicals and drugs to serve mankind.

3. Standards for Inclusion

Using data on the distribution of rare plant species, as well as the previously mentioned rarity criteria, a group of botanists has assigned levels of importance to rare plants in the New England region. The Critical Areas Program has adopted this system for its own work in the state, assigning each listed plant species to one of three levels of importance: National, New England, or State.

National level rare species are of two types: 1) presently listed as a Federal Endangered or Threatened Species, or proposed for review or under review for listing by the Office of Endangered Species of the U.S. Fish and Wildlife Service, or 2) found in few areas outside of New England, although not having official recognition as nationally threatened.

Species considered rare within New England are vascular plants listed through a joint effort by the U.S. Fish and Wildlife Service and New England Botanical Club. Some of these species may be rare throughout New England, but are common in Maine, and are obviously not included on this list.

Species rare at the state level are those species not considered rare through most of their range, but are rare within this state. The majority of species in this level are species reaching their northern limit in Maine.

In addition to identifying rare vascular plants, the Critical Areas Program has also assessed unusual stands of old growth white pine around the state. Significant river-related stands on the Presumpscot River, West Branch Pleasant River, and Vaughan Brook have been included in this study.

4. Evaluation Method and Criteria

The known or suspected locations of critical botanic species along the rivers in Maine were mapped, and segments containing the range of distribution of the plant species were defined using the following criteria:

a. Plant species were considered to be river-related if found within the one-quarter mile land corridor adjacent to either bank of the river.

b. A one-mile buffer zone in both directions of a species locality was included within the segment description, in order to account for possible disjunct populations of rare vascular plant species.

Once all localities of plant species were mapped, the river segments were analyzed to determine their overall significance for critical and rare plants, based on the diversity of species at the various levels of importance (i.e., National, New England, State).

A system of points was assigned to each of the particular levels of significance, as follows.

		Points
a.	Species on the Federal Endangered and Threatened List. *Pedicularis furbishiae* (Furbish lousewort) is the only riverine plant species on the list at the present time.	5
b.	Species under review for inclusion on the Federal Endangered and Threatened List. These species are: *Listera auriculata*, *Oxytropis campestris* var. *johannenis*, *Viola novae-angliae*, *Cardamine longii*	4
c.	Other species with National level significance	3
d.	Species with New England level significance	2
e.	Species with state level significance	1

One half (0.5) points were deleted from the score for each species if a particular plant location of a species was based on historical records of botanists, and the location is only suspected and has not been verified in recent years by Critical Areas Program or other approved botanists. Thus, based on this scoring system, a river segment with a known location of Oxytropis campestris var. johannensis (National level significance), and suspected location of Gentiana amarella (New England level of significance) would be awarded a score of 5.5 points (4 + 1.5 points).

Based on this system of scoring, the following rivers were judged to be clearly outstanding on the basis of critical/rare vascular plant species, and identified with an asterisk on the Final List of Rivers:

St. John River, between Hamlin and Hafford Brook
Aroostook River, between the Canadian border and Pudding Rock

Information was also gathered on ecologic plant areas which have been recognized as having national significance by the Department of the Interior under the National Natural Landmarks Program. The following rivers with related National Natural Landmarks have been highlighted on the Final List of Rivers with an asterisk:

Dennys River - Meddybembs Heath, in the headwaters of Meddybemps Lake

Mattawamkeag River - Thousand Acre (Crystal) Bog, along Fish Stream and East Branch Molunkus Stream

Passadumkeag River - Passadumkeag Marsh, along Cold Stream

West Branch Pleasant River - The Hermitage Old Growth White Pine Stand

5. Information Sources and Expert Review

The following references were used by the study team to identify and document resource values.

Rare Vascular Plants in Maine, Critical Areas Program Report, June, 1981.

A Preliminary Listing of Noteworthy Natural Features in Maine, Maine Critical Areas Program, June 1976.

Mr. Harry Tyler and Ms. Susan Gawler of the Critical Areas Program within the State Planning Office provided information and review to the study team.

ZOOLOGIC CRITICAL/ECOLOGICAL RESOURCES

1. Definition

The reduction and deterioration in habitat of many species of river related wildlife is of major concern to the scientific community in the perpetuation and continued viability of these resources. When a type of habitat or

significant ecologic area having certain necessary and indispensible qualities is destroyed or degraded, certain zoologic species suffer a reduction in abundance and may ultimately be threatened with extinction. For the purposes of this report, the following definition of critical or endangered zoologic species is offered.

a. Endangered - A species whose prospects of survival and reproduction are in immediate jeopardy. Its peril may be the result of a single cause or a variety of causes, including the following:

1. Habitat: loss or change of habitat, high specialization of habitat, and restricted distribution.

2. Reproduction: small size of litters, long period of gestation, slow maturation of young.

3. Behavior Patterns: poor adaptability to changing conditions.

4. Competition and predation.

5. Over exploitation.

6. Disease.

b. Rare or Critical - A species, not presently threatened with extinction, but having such a small population or area of habitat throughout its range that it could face endangered conditions in the future if its environment worsens.

2. Significance

Critical zoological resources are of importance to the environment in the State of Maine by insuring the preservation of natural diversity in an ecosystem. The maintenance of a heterogeneous species pool allows a particular species to more readily adapt to changing environmental conditions. The preservation of critical and endangered species has a cultural significance as well, which comes from a deep-seated psychological and philosophic evaluation of the environment, including a refined reverence for life. This view holds that all plants and animals have value as intrinsic components of the living part of our planet and should not be destroyed through man's intentional or inadvertent activities upon the environment. In this view, species extinction brought about by man's activities is considered a cultural disaster.

3. Evaluation Method and Criteria

Due to the absense of a well developed data base a comprehensive assessment of river related wildlife and ecologic areas was not possible in the time allocated for this study. Where information was available on the statewide distribution and significance of certain species (such as bald eagles), then this data was incorporated into the study. Some wildlife resource experts did contribute information on regionally significant river related ecologic areas, which was noted in the documentation section of this report for the study's "A" and "B" rivers.

a. Federal Endangered Wildlife Species

The State of Maine has the only significant population of bald eagles in the northeast United States. The northern subspecies of bald eagles was officially listed as endangered in the state in February 1978. Coastal areas and river estuaries provide important habitat for the majority of Maine's wintering and breeding populations of eagles. Inland rivers, ponds, and lakes also have seasonal importance to nesting and summering eagles, although the use of these areas undergoes a marked decline during the winter months when ice cover limits their opportunities for foraging.

Wildlife biologists from the University of Maine at Orono have assessed river-related areas in the state for the presence of important habitat for bald eagles.

Important rivers are those with a significant concentration of birds for a particular region of the state, including:

a. Areas with active nesting sites

b. Areas with historic nesting sites

c. Areas which are used by significant concentrations of wintering eagles

Based on these criteria, the following rivers have been rated as outstanding for the presence of very significant concentrations of nesting and/or wintering populations of bald eagles and have been identified with an asterisk on the matrix with the Final List of Rivers:

Lower Kennebec River: including Merrymeeting Bay
Main Stem Penobscot: Bucksport to Old Town
Dennys River: Hinkley Point to headwaters of Meddybemps Lake

b. Critical Zoologic Species with Statewide Significance

The Critical Areas Program is involved in an ongoing process of assessment of critical zoological species in the state. At the present time heron rookeries, horseshoe crabs, and American oysters are the only river-related critical species that it has evaluated on a statewide basis. Significant habitat areas for these species (such as nesting areas and breeding grounds), have been listed on the Maine Register of Critical Areas.

When assessing the significance of a particular zoologic species, the Critical Areas Program uses the following criteria:

1) **Peripherality:** the degree to which a species is at the edge of its typical geographic breeding range.

2) **Endemicity:** the range of distribution to which species is restricted (i.e., found only in Maine out of the entire Northeast, out of the entire U.S., out of North America, out of the entire world).

3) **Relative Scarcity:** the number of sites where a particular species is known to be found.

4) **Probable Status Change:** a measure of a species trend in population and sites of location over a specified period of time.

5) **Relative Specialization of Habitat:** the environmental requirements of a particular species and its degree of specialization to certain habitats; including its vulnerability to loss of habitat.

6) **Scarcity of Habitat:** the relative scarcity of potential or actual suitable habitat of a species.

7) **Susceptability to Disturbance:** the relative degree of tolerance of a species to immoderate human presence.

8) **Relative Knowledge:** the amount of information available on the distribution and scarcity of a particular species.

9) **Relative Use:** the general level of public interest in a species.

10) **Spatial Distribution:** a measure of the pattern of distribution of a species over its geographic range.

11) **Probable Site Persistence:** the relative probability of species presence at a certain location for a majority of years over a given span of time (usually 20-25 years).

12) **Seasonal Mobility:** the conditions of seasonal movements of a species.

13) **Area Size Needs:** the area required by a species for all life needs (breeding sites, feeding grounds, territory) during its breeding season.

c. Critical Ecological Areas

The Maine Department of Inland Fisheries and Wildlife has identified and inventoried eight inland and six coastal types of wetlands located around the state. The Land Use Regulation Commission also has zoned fish and wildlife protection subdistricts for deer wintering yards and wetlands in the unorganized territories. Regional biologists associated with the Department of Inland Fisheries and Wildlife were able to document the more important ecologic areas for many of Maine's rivers. These areas included critical coastal salt marshes important for shorebirds and migratory and wintering waterfowl, significant acreages of inland wetlands and their associated fauna, and large deer wintering areas.

4. Information and Expert Review

The following references were used as sources of information for this study:

A Preliminary Listing of Noteworthy Natural Areas in Maine: Center for Natural Areas; South Gardiner, Maine, 1976.

Register of Critical Areas, Maine Critical Areas Program, Maine State Planning Office.

An Ecological Characterization of Coastal Maine, U.S. Department of the Interior, Fish and Wildlife Service; Newton Corner, Mass., 1980.

Bald Eagle Management Plan, Ray Owen and Charlie Todd, University of Maine at Orono, School of Forest Resources.

Expert opinion and review was provided by Ray Owen and Charlie Todd from the University of Maine at Orono, and by resource biologists from the Maine Department of Inland Fisheries and Wildlife, and the U.S. Fish and Wildlife Service.

C. UNDEVELOPED RIVER AREAS

1. Definition

Any physical alteration of the land surface will influence the natural processes along the river corridor. Construction activities can cause increased soil erosion and runoff to enter a stream; septic tank effluent from seasonal homes along river banks can cause changes in water quality. Development in the river corridor may have a negative or positive impact on the resources of a river depending upon how it alters the essential elements which comprise it.

2. Significance

Undeveloped lands contiguous to the rivers of Maine represent some of the more significant natural resource areas in the State. The interface between the adjacent land and the flowing water of a river is an important area, providing food, cover, and habitat for a variety of fauna and flora. Wetlands associated with rivers have special importance in the hydrologic and biological systems, serving as areas for aquifer recharge, acting as catch basins for flood waters, filtering out pollution, producing oxygen by photosynthesis, and providing species habitat. Forests and ground cover lining the river banks cool the waters by providing shade, and prevent soil erosion. River corridors in their natural state often have high quality scenery for recreational users of the river. It is clear for all these reasons that undeveloped corridor lands warrant the conservation and protection of their special qualities.

3. Standards for Inclusion

Rivers and river segments in Maine which were evaluated for the amount of existing corridor development must have met the following qualifying criteria:

a. The main stem of a segment must be greater than 10 miles in length (tributaries to the main segment could be less than 10 miles in length).

b. The river or river segment must be free from significant hydrologic impoundments, modifications, and diversions.

Once the river evaluations were conducted, a cutoff value of 30 development points per mile was used to define the more significant undeveloped rivers in Maine. An explanation of the development point system of evaluation follows in the next section.

4. Evaluation Method and Criteria

The National Park Service of the Department of the Interior developed a process for evaluating the undeveloped character of a river corridor in its work on the Nationwide Rivers Inventory. The method used for the Inventory was adapted for use in this study. The assessment of land use development in river corridor areas was made using the most recent U.S.G.S. 7.5' or 15' quadrangle maps available. This information was supplemented in some cases with aerial photos and local road maps and atlases.

Each river and river segment was measured on the map and divided into one mile intervals beginning with the downstream segment boundary. The study river corridor (defined as contiguous lands within one quarter mile of each river bank) was also defined on the map.

Using data sheets, all land use development was recorded for each mile interval, and numerical values were assigned to the various land uses. Development having a greater impact on natural values (i.e., bridge crossings, parallel railroads and powerlines, and small towns) were given more points than lower impact development (i.e., footpaths and unpaved roads).

The following is a list of land use features typically found within river corridors and their corresponding development points.

Land Use Development Features	Points
Primitive road ending	1
Footbridge Gaging station	2
Primitive road parallel (trail)	3
Small dock Unpaved road ending (plain)	4
Orchards, farms, dwellings, cemetery	5
Abandoned rail line R-O-W Outfalls	6
Railroad ending Powerline ending Fire tower Outbuildings, schools Unpaved road Light duty bridge (plain)	8
Paved road ending (red) Paved boat ramp Campground Picnic area Unpaved road parallel (plain)	10
Pipeline and powerline crossing	15
Railroad bridge Paved road bridge (red)	18
Railroad parallel Paved road parallel (red)	20
Pipeline parallel Powerline parallel Water storage tank	25

Bulkhead	25
Rip rap	
Small tributary reservoir	
Gravel pits	
Developed recreation area	30
Marina (site check)	
Country club	
Swimming pool	
Radio tower	35
Power substation	
Pumping station	
Paved road bridge (4 lanes)	40
Sewage plant	
Apartment building	
Hospital (site check)	
Village (up to 499 pop) (site check)	
Dam (small)	

After the land use development features for the river segment were identified, the numerical scores for each one mile interval were tabulated. By totalling all interval scores, and dividing through by the number of intervals (river miles), an average mile by mile index of the river's corridor development was calculated.

Outstanding River Segments

Examination of previous National Park Service work for the Nationwide Rivers Inventory has shown that rivers with an average of less than 15 points per mile are equivalent to the least developed rivers in the northeast United States. Outstanding undeveloped rivers in the State with a corridor development index of 15 points or less and a length greater than 25 miles were identified with an asterisk on the matrix accompanying the Final List of Rivers; and are as follows:

Allagash River Aroostook-Machias System
East Machias River
Machias River (Washington County)
East Branch Penobscot-Seboeis River System
Upper West Branch Penobscot River
Pleasant River (Washington County)
St. Croix River
St. Francis River
St. John River (including the Big Black, Little Black, and Baker Branch)

5. Information Sources and Expert Review

The following references were used as sources of information for this study:

Wild and Scenic Rivers System Study-Northeast Region, U.S. Department of the Interior, Heritage Conservation and Recreation Service, Northeast Region, Philadelphia, Pennsylvania.

Wild and Scenic River System Study--Northeast Region, Guidelines for Evaluating Wild, Scenic and Recreational Rivers.

Nationwide Rivers Inventory, Criteria for River Evaluation; U.S. Department of the Interior, Heritage Conservation and Recreation Service, Northeast Regional Office, J. Glenn Eugster, October, 1979.

Nationwide Rivers Inventory - Final List of Rivers, State of Maine, U.S. Department of the Interior, Heritage Conservation and Recreation Service, Northeast Regional Office, January, 1981.

Nationwide Rivers Inventory, Criteria for Establishing River Priorities; U.S. Department of the Interior, Heritage Conservation and Recreation Service, Northeast Regional Office, J. Glenn Eugster, April, 1980.

J. Glenn Eugster from the National Park Service in Philadelphia provided information and expert review for this portion of the study.

D. SCENIC RIVER RESOURCES

1. Definition

Different river areas in Maine possess different types of scenery. Traditionally, scenic river resources have been identified by user preference studies and professional evaluations. To determine user preferences, groups of people are usually shown a series of river area photos, and asked to rate them according to preference or quality. Results are then analyzed to determine which river and landscape corridor elements or mix of elements correlate highly with preferred areas.

In professional evaluations, river areas are analyzed by trained planners according to a set of fixed criteria using either design principles, ecological and cultural criteria, or a quantitative scale.

In both instances the objective is to focus on specific variable river and river corridor characteristics which have been determined to be major influences on perceived scenic or landscape quality.

2. Significance

For many years there has been a growing recognition of the concept that certain landscape elements such as scenery are unique resources worth identifying and protecting. In fact, there are many federal and state laws and regulations which address the growing need for management of visual resources. Until the 1960's the area of public environmental management and policy related to scenic resources developed mostly in the context of outdoor recreation. The focus was predominantly on the management and preservation of specific areas with unique or outstanding scenic

attributes. Concern with scenic values in the context of a larger landscape area or the relationship of scenic values to a wider range of resource issues are a side effect of environmental legislation within the last 15 years. For example, at the federal level, scenic and aesthetic considerations were addressed in the National Environmental Policy Act of 1969, the Coastal Zone Management Act of 1972, and the Wild and Scenic Rivers Act of 1968. The State of Maine followed the approach of these laws when it formulated the Mandatory Shoreland Zoning Act and Site Location of Development Act.

Scenic values and qualities have been recognized for years in the real estate field, which has assigned higher market value based on public demand to certain scenic features, such as properties with mountain views, or locations on river or lake waterfront areas. The Maine tourism industry also recognizes the scenic qualities of the State's river environment in many of its programs.

3. Minimum Standards for Inclusion

Initially rivers, river segments and other landscape areas were identified using recognized sources of scenic or visual information such as the Nationwide Rivers Inventory, various Critical Areas Program reports, canoe guides, travel information and other documents. To be placed on the Preliminary Draft List of Rivers Under Evaluation rivers had to be recognized or documented as being scenic or possessing a high degree of visual quality due to a specific feature, characteristic or element. All sources of information, whether subjective or objective, were treated equally.

4. Evaluation Method and Criteria

The two basic components of the scenic river resource assessment are land form and pattern. The quality of any scenic river experience is dependent on the synthesis of land pattern into the overall land topography.

Land forms are the natural forms of the surface of the earth, the mountains, rolling hills and valleys which form the overall context of a natural landscape. The study of land forms constitutes an important part of a scenic river resource assessment, through the visual impact of dominant landscape forms, as well as affecting the patterns and distribution of other components of scenic river areas.

Land use pattern is the interlocking texture of fabric of the landscape including man and the by-products of his technology and culture. Patterns of land uses are a function of combinations of the parts of the natural and built environment, and their overall composition. The composition of these parts is an important determinant of the visual quality of a landscape. For example, a small New England river hamlet against a steeply forested mountain range, or a sandy floodplain area next to a large rock outcrop are examples of contrasting combinations of texture which create patterns that are visually interesting. The nature of our perceptions depends upon the combination of natural and built pattern within the existing landform. The scenic quality of the river environment will depend on the quality of both the natural pattern and built pattern, and on the extent to which the two patterns are meshed or harmonized with one another.

The perceived scenic quality of a river and its corridor will also be a function of the frequency and diversity of the various natural and man-made components which combine to form a landscape (such as geomorphic and hydrologic features, vegetation, and cultural values), as well as the interrelationships among these components. Scenic resource values can be defined based on general relationships among components of a landscape. These relationships, which become the basic principles upon which assessment of river-related scenic resources is based, include the following:

- As the relief increases, the scenic quality of the river corridor increases.

- As the landscape becomes more rugged, the scenic quality of the river corridor increases.

- As the amount of enclosure by vegetation increases, the scenic quality of the river corridor increases.

- As the diversity of land uses increases, the scenic quality of the river corridor increases.

- As the naturalness of a landscape increases, the scenic quality of the river corridor increases.

- As the amount of tree cover increases, the scenic quality of the river corridor increases.

- As the density of land use edges increases, the scenic quality of the river corridor increases.

- As the diversity of land uses edges increase, the scenic quality of the river corridor increases.

- As the compatibility of land uses increases, the scenic quality of the river corridor increases.

- As the water surface and water edges increase, the scenic quality of the river corridor increases.

- As the size and length of the view increases, the scenic quality of the river corridor increases.

In general, spatial variety and three-dimensional contrast are positive values within a given river corridor's landscape composition. The greater the contrast and variety in spatial landforms and patterns, the higher the perceived scenic value. Spatial variety is judged on the shape of spaces, the degree of enclosure by landform or vegetation, and the diversity of shape, pattern, and enclosure which exist in a landscape.

Once relationships among compatible parts of a landscape have been defined, it is possible to proceed with the analysis by identifying the presence of specific landscape components or combinations of components which have scenic value. The following are river and landscape features and components which were identified in this analysis:

1) Landscape Physiography

This qualitative evaluation of physiographic relief will give an index of three dimensional contrast in a river-related landscape. The topography surrounding a river corridor is classified into one of seven categories of form, representing a continuum of physiography from flatland to mountains. The underlying assumption is the greater the amount of relief in a river corridor, the greater the scenic quality.

2) Landscape Diversity

The amount of spatial variety is another measure of scenic value in a landscape. The scenic value of a river corridor will be enhanced when there is a diversity of hydrologic, geomorphic, and vegetative elements present. A general rule is the greater the diversity of landscape elements (land, water, vegetation) the higher the scenic quality.

a) **Hydrologic features** inventoried included channel shape, the presence of waterfalls, cascades, and whitewater rapids, tributary confluences, ponds and lakes, river islands, and complexity of water edges. The presence of hydrologic features (such as waterfalls and rapids) that have universal public appeal will enhance the scenic qualities of a river corridor. Scenic quality will also increase as the complexity of hydrologic elements increases. The greater the sinuosity of a river channel, the greater the visual carrying capacity of recreational users at the river's surface. In a similar manner, the more irregular or complex a river's shoreline or corridor (from the presence of river island complexes or tributary confluences for example), the higher its visual quality.

b) **Vegetative Features** inventoried on the rivers included the percentage of tree cover, diversity of vegetative types, presence of forest edges, and forest wetland contacts. The underlying assumption was that scenic quality increases with the increased amount of tree cover, density of forest edges, and diversity of vegetation.

c) **Outstanding geomorphic landforms and landscape features** were identified for each of the three physiographic sections in Maine (Seaboard Lowland, New England Upland, and White Mountains) and then inventoried for each of the evaluated rivers. These representative and unique scenic features, by physiographic section, included:

- Seaboard Lowland
  Landforms: undulating topography, worm clam flats, tidal marshes, beaches, and dunes.

- New England Upland
  Landforms: rolling topography, bold dome-like hills, soft round hilltops, steep side slopes and V-shaped gullies.

Drainage: curved dendritic, right-angle tributaries, glacial ponds and swamps, oxbow lakes.

Landscape Features: eskers, kames, moraines, monadnocks, glacial erratics fields.

- White Mountains

Landforms: V-shaped valleys, conical peaks in rows, eroded cliff and bench topography.

Drainage: radial, dendritic, deranged.

Landscape Features: ravines, escarpments, monadnocks, eskers, drumlins, kames, lake deltas, other glacial features.

In addition to inventorying these specific features which are thought to increase a river corridor's scenic quality, other geomorphic elements were identified which by their complexity of form or shape, add to river scenery. These elements of form are defined as relief and enclosure.

- Relative Relief: the scenic quality of the river corridor will increase with greater relative relief. To calculate, elevation points were selected at quarter-mile intervals on a topographic map for a river area, and the lowest elevation point was subtracted from the average high elevation.

- Enclosure: as the amount of enclosure increases, scenic quality increases. Enclosures was measured by calculating the percentage of area enclosed by (lying below) the median of relative relief.

3) **Land Use Diversity and Compatibility**

Land use diversity relates to the number of different land use types, their areas, and the length of their edges. Compatibility of land use is a measure of the visual congruence (the visual fit) of adjacent land uses. Land use includes visually distinctive types of surface cover such as agricultural fields or forest, which may support more than one use.

b. **Evaluation Methodology**

The National Park Service of the Department of the Interior developed this process of scenic assessment outlined in the previous section for its work on the Nationwide Rivers Inventory. Evaluation of scenic river landscapes was conducted for the Inventory using the most recent U.S.G.S. 7.5' or 15' quadrangle maps available, supplemented by field work, videotapes and slides from low-altitude helicopter flights over many of these rivers. Substantial use was made of this existing data base which was modified and expanded where appropriate for the Maine Rivers Study.

For this study's scenic river assessment, each river or river segment was measured on a topographic map and divided into one mile intervals beginning with the downstream segment boundary.

Using data sheets, all significant scenic landscape components were recorded for each mile interval. Greater value was assigned to segments with an outstanding diversity of components, or those riverscapes with a highly compatible combination of vegetative, hydrologic, geomorphic and cultural values.

5. Information Sources and Experts

The following references were used as sources of information for this study:

Nationwide Rivers Inventory - Criteria for River Evaluations; U.S. Department of the Interior, Heritage Conservation and Recreation Service, Northeast Regional Office, Philadelphia, Pa. 1979.

Study of Visual and Cultural Environment for North Atlantic Region; Research Planning and Design Associates, Amherst, Mass. published as Appendix N, North Atlantic Water Resources Study, November 1970.

Guidelines for Identifying and Evaluating Scenic Resources: Hudson River Basin; Water and Related Land Resources Study, Technical Paper 4, October 1978.

A Preliminary Listing of Noteworthy Natural Features in Maine; Center for Natural Areas, South Gardiner, Maine, June 1976.

J. Glenn Eugster from the Mid-Atlantic Regional Office of the National Park Service provided information and review for this section of the study.

E. HISTORICAL RIVER RESOURCES

1. Definition

The rivers of Maine have long served a vital role in the colonization, development, and industrial growth of the state. This part of the Maine Rivers Study focused on the identification of river related historic places and sites which have achieved recognition as National Historic Landmarks or are listed on the National Register of Historic Places. It is realized that many of the rivers of Maine have historical and cultural value other than these recognized on the national level, such as the historic use for logging runs, the presence of archaeological sites, buildings with state or local importance, or settlements which represent unique cultural values. However, a lack of expertise and state agency assistance did not permit a more comprehensive survey by the study team. Thus, this discussion will focus on National Historic Landmark and National Register sites associated with rivers in the state.

2. Significance

River-related national historic landmarks and places in Maine are visible reminders of the events, places, and objects which have affected broad patterns of American history, and reflect the evolution of industry and culture in this state and the U.S. They contain prehistoric and historic

villages of the American Indian and early colonists, fortifications for the protection of access to waterways, sites of industry and resource extraction activities, and bridges with unique architectural styles. All historic areas designated as National Historic Landmarks are of national significance; other properties which are nominated by the State of Maine and placed on the National Register of Historic Landmarks after approval by the Secretary of the Interior are of national, state, or local significance In recent years, building districts which possess a composite quality and evoke a special feeling and association have been added to the National Register. Such districts may contain individual buildings which of themselves may not be outstandingly significant but which, as an assemblage representing a special character of an urban or rural waterfront or port, possess national, state, or local significance.

3. Standards for Inclusion

There are many National Historic Sites which are found along rivers in Maine. However, only those sites which have a direct connection to the river, in terms of industrial, economic, or cultural importance (such as former significant winter ports, or fortifications at the mouths of rivers for the defense of upstream settlements) were noted as significant by this study.

4. Evaluation Method and Criteria

To attain the designation of National Historic Landmark, a property must be studied by National Park Service historians, architects, or archaeologists, usually as a part of a major theme in American history such as Social and Humanitarian Movements or Agriculture. The property should meet three general criteria: 1) significance in a given field; 2) association with individuals and events; and 3) integrity, the latter meaning that original and intangible elements which contribute to national significance must remain intact. Potential landmarks are brought semi-annually before two advisory boards of scholars and national leaders - the Consulting Committee for the National Survey of Historic Sites and Buildings, and the Advisory Board on National Parks, Historic Sites, Buildings, and Monuments. These boards review the presentations of National Park Service professionals. Those properties which meet the approval of the Secretary's Advisory Board are recommended for landmark status. The actual designation is effected when the Secretary of the Interior, acting upon the counsel of his Advisory Board, approves landmark designation. The National Historic Landmarks Program is the only honorary historic preservation program of its kind in the Nation.

Because of their recognized national significance, National Historic Landmarks associated with particular rivers in Maine have been noted on the matrix accompanying the Final List of Rivers with an asterisk, to highlight their outstanding historic value.

A variety of criteria have been defined to guide the state, Federal agencies, and the Secretary of the Interior in evaluating potential entries in Maine for addition to the National Register of Historic Places, and include the following:

The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

a. That are associated with events that have made a significant contribution to the broad patterns of the state's history; or

b. That are associated with the lives of persons significant in the state's past; or

c. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

d. That have yielded, or may be likely to yield, information important in prehistory or history.

Before submission to the National Register, all nominations must be approved by a State review board whose membership includes professionals in the fields of architecture (or architectural history), history, and archeology. If the property meets the National Register criteria, the board recommends it for nomination. The nomination form is then signed by the State Historic Preservation Officer and forwarded to the National Register, which reviews the potential entry and decides whether to accept or reject it.

5. Information Sources and Expert Review

The following references were used by the study team to identify and document resource values:

National Register of Historic Places, U.S. Department of the Interior, Heritage Conservation and Recreation Service, Washington, D.C., 1976.

Annual Listing of Historic Properties; National Register of Historic Places; U.S. Department of the Interior, Heritage Conservation and Recreation Service, Federal Register; Tuesday, February 6, 1979.

_____; Federal Register, Tuesday, March 18, 1980.

_____; Federal Register, Tuesday, February 3, 1981.

The State Historic Preservation Office was requested to participate in the identification, documentation and review of significant historic and cultural rivers but declined.

Unique Recreational Rivers - Overview

Both the economically important tourist industry and the life style of Maine residents rely heavily on the recreational use of the state's natural resources. Rivers are important components of this recreational use, providing diverse recreational experiences to a variety of interests. Recreational activities associated with rivers include camping, picnicking, fishing, boating, hiking, sightseeing, swimming, hunting, skating, and sailing.

While each of these activities is important to varying degrees, the Maine River Study has restricted its recreational analysis to activities which are 1) directly dependent on free-flowing river resources, 2) highly popular throughout the state, and 3) engaged in by large and readily identifiable user groups. The recreational categories chosen for analysis include recreational boating (canoe touring, white water boating, and extended back country boating), inland fishing, and anadromous fishing.

For each recreational category, rivers were evaluated according to resource significance, economic importance, and user priority. This evaluation process recognized that user preference ultimately plays a dominant role in the determination of a river's value as a recreational resource. Input from concerned user groups was therefore sought throughout the process, with a strong attempt made to arrive at a consensus of opinion among users regarding the recreational significance of specific rivers.

This user input, coupled with objective analysis by resource experts, resulted in the category findings detailed in this report. The specific method used for each recreational category follows.

A. ANADROMOUS FISHERIES

a. Definition

Fresh water and tidal rivers which empty into the ocean or salt water estuaries provide vital habitat for anadromous fish. An anadromous fish species is characterized by its migratory nature, spending much of the life cycle in salt water but returning to fresh water to spawn. Catadromous fish species (e.g., the American eel) reverse this pattern by migrating to the ocean to spawn. For the purposes of this study, catadromous fish are considered to be included in the anadromous category.

The Maine River Study has identified important anadromous fishery rivers and isolated those that are of highest value to the state and its residents.

b. Significance

Historically, anadromous fish were of high importance to Maine's commercial fishing industry and were a dependable food source for coastal river inhabitants. While extensive commercial fishing depleted this resource, it was the increase in industrial pollution and the construction of impassable

dams which most seriously depleted anadromous fish populations. The creation of the Atlantic Sea Run Salmon Commission in 1947, as well as the state Department of Marine Resources' strong commitment to anadromous fish restoration beginning in the mid-1960's, provide evidence that Maine recognizes the tremendous ecological and recreational significance as well as the commercial value of the state's anadromous fish.

a. **Ecological Importance** - Many of Maine's coastal rivers are characterized by their exceptional potential to support anadromous fish, both in numbers and species diversity. Of special note are the rivers which provide habitat for the more sensitive species. The shortnosed sturgeon found in a limited number of rivers is listed as an endangered species by the federal government. The American shad and Atlantic sea run salmon have also had their numbers severely reduced and depend on Maine rivers for their survival.

   Maine's six rivers with fishable self-sustaining Atlantic salmon runs are unique, as no other state can claim even one. At least three additional rivers in the state are recognized as having high potential for restoration of historic Atlantic salmon fisheries.

b. **Recreational Importance** - The Atlantic sea run salmon fishery is recognized as a statewide high priority resource of value to Maine's recreational fishing interests as well as to the state's tourist industry. The Penobscot River is the most heavily fished Atlantic salmon river in the country; the value of this one river to the tourist industry is estimated to be a half million dollars per year. The American shad and rainbow smelt also are potentially of high recreational importance. Smelt are currently popular as a winter fishing resource. Overall, more user-days are expended fishing smelt than any other of the state's anadromous fish species.

c. **Commercial Importance** - Salmon, smelt, shad, and alewife were historically of high value to the commercial fishing industry. While the depletion of salmon, shad, and smelt have lessened their commercial importance, the alewife, which is an essential lobster and trawling bait, continues to be an important commercial fishery. According to the Maine Department of Marine Resources, landings of alewife doubled between 1970 and 1977, with total catch value tripling during this time. With successful restoration, shad and smelt could also contribute significantly to Maine's commercial fishery industry.

Restoration efforts by the State Department of Marine Resources and the Salmon Commission, assisted by federal funding, are beginning to produce results. Restoration, coupled with improvements in water quality and proper planning for future impoundments, will ensure that the ecologic, recreation, and commercial potential of Maine's rivers as anadromous fish resources will be realized.

3. Standards for Inclusion

Rivers were included in the Preliminary Draft List of Rivers Under Evaluation if they met the following standards:

a. The river must be a viable anadromous fishery resource. It therefore must either currently support a substantial anadromous fish population or have realistic potential for restoration as evidenced by: a) current restoration efforts, or b) management plans which call for timely restoration.

b. The river must drain a minimum of 25 square miles before discharging into tidal waters. (Thirty of Maine's sixty coastal rivers meet both of these standards.)

4. Evaluation Method and Criteria

The criteria used to evaluate anadromous fishery river significance include:

a. Habitat quality and quantity
b. Presence of threatened, endangered, or sensitive species
c. Species diversity
d. Recreational importance
e. Commercial importance
f. Evidenced restoration efforts
g. Unique characteristics (i.e., self-sustaining Atlantic sea run salmon runs)

Note: The migratory nature of the resource makes specific anadromous fish segment identification difficult. Both the major thoroughfares and the spawning areas are essential to species survival. Therefore, when labeling segments for rivers in the anadromous category, the entire length of the river migration cycle was identified.

Rivers meeting the minimum standards were evaluated with the assistance of the Maine Department of Marine Resources' anadromous fish experts. The Preliminary Draft List was reviewed by private fishing interests and Atlantic Sea Run Salmon Commission staff. Because of the unique value of the Atlantic salmon, all rivers which support self-sustaining salmon runs were given high priority. All of these salmon rivers are, however, of importance to other species and to the state's overall anadromous fish program.

The rivers in Maine which were judged to be of highest significance include the following. Each river is identified by an asterisk in the Final List of Rivers section of this report.

Damariscotta River: high commercial alewife importance
Dennys River: self-sustaining Atlantic salmon run
East Machias River: self-sustaining Atlantic salmon run
Kennebec River: high habitat quality and quantity, species diversity and abundance, presence of endangered species, high recreational importance

Machias River (Washington County): the state's largest self-sustaining Atlantic salmon run, recreational importance
Narraguagus River: self-sustaining Atlantic salmon run
Penobscot River: high recreational importance, high restoration expenditure, habitat quality and quantity
Pleasant River (Washington County): self-sustaining Atlantic salmon run
Sheepscot River: self-sustaining Atlantic salmon run, endangered species
St. George River: high commercial alewife importance

5. Information Sources and Expert Review

Information and expert opinion was provided to the study team by the following agencies and organizations.

Maine Department of Marine Resources (fisheries biologists' input and review, species management plans)

Maine Department of Inland Fisheries and Wildlife (Atlantic Sea Run Salmon Commission staff biologist review, miscellaneous publications)

Trout Unlimited

Maine Sportsmen Magazine

B. RIVER-RELATED INLAND FISHERIES

1. Definition

Inland fish include all fish species which inhabit a fresh water environment throughout their life cycle, in contrast to the migratory anadromous fish which require both fresh and salt water habitats. Included in the general category of inland fisheries are both cold water and warm water species. This analysis is restricted to river fisheries and does not consider lake fisheries. However, rivers which derive their major importance from their support of lake fisheries are given recognition.

While factors such as ecological importance (i.e., critical habitat) are given strong consideration, the focus of the study is the identification of inland fishery rivers and streams which are judged to be of high recreational importance.

2. Significance

The State of Maine has approximately 32,000 miles of flowing water, all of which support sport fisheries. Major cold water species include the native brook trout (the most abundant and certainly one of the most important cold water species), and native landlocked salmon (a highly prized fish found in a limited number of rivers), and the introduced brown trout (an adaptable species capable of providing a sport fishing resource where other cold water species will not thrive). Rivers which provide principal habitat for

cold water species total 23,000 linear miles with an average of 153 legal sized fish per mile. Landlocked salmon are found in 64 rivers covering 635 miles nearly 200 miles of Maine's rivers provide exceptionally high quality habitat for this species.

Major stream-related warm water species include the native white perch and the introduced smallmouth and largemouth bass. All have self-sustaining populations. Warm water species predominate in 6400 miles of Maine's rivers and streams.

Sport fishing for inland species has witnessed a large increase in popularity over the past few years among Maine's residents, and approximately 190,000 resident fishing licenses are sold annually. When non-resident licenses and youths (who are not required to obtain a license) are taken into account, the Department of Inland Fisheries and Wildlife projects that 385,000 people fish Maine waters. Studies using creel census expansion techniques estimate the 460,000 angler-days are spent annually on Maine's rivers and streams, accounting for one-third of the total inland fishing use. Cold water fish harvest in rivers and streams totals 532,000 fish annually, and the Department of Inland Fisheries and Wildlife estimates that there is potential for doubling both the use and take figures. The Department currently stocks 316,000 cold water fish annually in 105 streams totalling 826 linear miles.

Inland fisheries have economic as well as recreational value. Seventy to eighty thousand out-of-staters annually purchase fishing licenses and a number of in-state fishing guides and outfitter businesses depend on Maine inland fisheries. The overall dollar value of inland river and stream fishing has not been established, but it is definitely an important component of Maine's natural resource-related tourist industry.

3. Standards for Inclusion

Preliminary inland fish resource data was obtained with the assistance of the Maine Department of Inland Fisheries and Wildlife. Using a questionnaire accompanied by guidelines for evaluation, fisheries biologists in each of Maine's seven wildlife management regions were asked to identify approximately ten river and/or stream segments which they determined to be of high importance to that region's recreational fisheries program. A total of 81 river segments totalling 1487 miles was identified through this process. These results were reviewed by state level fisheries biologists from the Department of Inland Fisheries and Wildlife fisheries biologists, and four additional segments were added due to their statewide significance. These 85 rivers and river segments comprise the Preliminary Draft List of Rivers Under Evaluation.

The list of rivers developed should not be construed to represent all rivers of significance for inland fisheries in each region. A limitation was placed on the number to be listed per region, and the emphasis was on importance for recreational fisheries. It should be clearly stated that all other rivers, brooks, and streams not on the list have at least some

significance to the overall inland fisheries resources of Maine. Also, recreational demands upon these resources can be expected to change over time, with consequent shifts in significance for recreational fisheries uses and relative importance.

4. Evaluation Method and Criteria

The Department of Inland Fisheries and Wildlife's regional biologists evaluated the rivers which they selected according to the following criteria:

a. **Species Composition** - The existence of fish species of major importance by virtue of being: 1) rare in the region, 2) highly preferred by anglers, or 3) of major ecological importance.

b. **Water Quality** - The extent to which overall water quality is capable of sustaining preferred fish resources.

c. **Aquatic Habitat Quality** - The existence of natural features favorable to fish production and sustenance of preferred fish species (adequate flow, cover, etc.).

d. **Fishing Quality** - An evaluation of recreational fishing results (success rate, size of take, desirability of species taken, etc.).

e. **Quality of Recreational Use** - The ability of a river segment to provide a satisfying recreational fishing experience (scenery, solitude, challenge, variety, etc.).

f. **Existing Recreation Use** - The popularity of a river segment as a recreational fishery resource.

g. **Economic Importance** - The importance of recreational fishing on the river segment to the regional economy (use of local guides, retail sales, etc.).

Using comparative analysis, rivers which were preliminarily judged to be of highest statewide significance were identified. The regional lists were then distributed to Maine fishing interests for review and comment. Each of Maine's local Trout Unlimited chapters evaluated rivers on the Preliminary Draft List according to the criteria of fishing quality, recreational quality, and current use. Again using comparative analysis, rivers were ranked by region and the highest priority rivers were noted. Trout Unlimited's Maine Council combined local chapter findings and produced a comprehensive list of that organization's statewide fishery priorities.

The study's final determination of the state's outstanding inland fishing rivers incorporated the Department of Inland Fisheries and Wildlife's preliminary findings, Trout Unlimited's review and evaluation, and comments from other recognized resource experts and interested individuals who reviewed the study's Preliminary Draft List.

Rivers which were identified as being the state's most significant recreational inland fishery rivers follow. Each is identified with an asterisk in the Final List of Rivers section of this report.

Crooked River
Fish River Lake Thoroughfares
Grand Lake Stream
Kennebago River
Penobscot River, Upper West Branch
Penobscot River, West Branch (Ripogenus Gorge Section)
Penobscot River, East Branch

Other highly significant recreational fisheries include the Moose, Narraguagus, Rapid, Roach, Saco, St. John, and Sheepscot River and the Nahmakanta, Presque Isle, and Wassataquoik Streams.

Trout Unlimited efforts and expenditures on the Little Ossippee River and the Pleasant River (Cumberland County), and the Maine Department of Inland Fisheries and Wildlife's stocking and management efforts on a number of additional rivers throughout the state attest to these rivers significance. Those rivers identified by this study as being of high importance are, however, the result of a consensus of expert and public opinion and are representative of high quality resources of a type not found in this abundance in other states in the eastern United States.

5. Information Sources and Expert Review

Information and expert opinion were provided to the study team by the following agencies and organizations:

Maine Department of Inland Fisheries and Wildlife (state fisheries biologists, regional fisheries biologists, species management plans)

Trout Unlimited (local chapters and Maine Council)

Maine Sportsmen Magazine

Sportsman's Alliance of Maine

Regional and state biologists from the Maine Department of Inland Fisheries and Wildlife performed the preliminary identification and assessment of inland fisheries, and provided comment and review throughout the study. Species management plans were the source of information on habitat and significance of particular species. The Maine Council and local chapters of Trout Unlimited, as well as Maine Sportsmen Magazine and Sportsman's Alliance of Maine provided review and comment on the study.

C. RIVER-RELATED RECREATIONAL BOATING

1. Definition

The present study focuses on river-related recreational boating which is dependent on flowing waters and the use of a "waterway trail." Consequently, river resources were identified which were of importance mainly to

recreational activities using open and closed canoes, kayaks, and inflatable rafts. In order to represent a broad range of recreational boating interests, the general recreational boating category has been subdivided into three more specific categories which identify distinct recreational boating activities and river users. These three categories are as follows:

a. **Canoe Touring** - Rivers and river segments which are navigable in an open canoe by novice to intermediate paddlers and which contain predominantly flat water, quickwater, and Class I rapids.

b. **Whitewater Boating** - Rivers and river segments which are navigable in canoes, kayaks, or rafts by intermediate to expert boaters and which contain a significant number of Class II to Class V rapids.

c. **Backcountry Excursion Rivers** - Rivers located in natural environments which are of adequate length to provide an extended river camping experience. These rivers may contain any combination of white water and/or canoe tour boating.

2. Significance

Maine's natural amenities have long been the source of recreational opportunities for the people of the state as well as the principal generator of tourist industry revenue. While historically the coast has been the focus of tourist recreation attention, the 1970's saw a strong diversification in recreation use patterns with river use in particular increasing at an unparalleled rate. Though comprehensive user statistics do not exist for most state rivers, those that do exist verify this marked increase in river recreation popularity. The Allagash Wilderness Waterway witnessed a 60% increase in use between 1966 and 1980, while use on the St. John has more than doubled since 1975. Use on the Saco River increased 300% between 1971 and 1976, and recent analysis suggests that recreational boater use on the Saco has since increased by 25% annually. The most significant change in boating use has occurred in commercial rafting. In 1976 approximately 600 commercial passengers rafted the Kennebec Gorge and the West Branch's Ripogenus Gorge. In 1981 this figure approached 14,000, a 200-fold increase.

Even without future growth, commercial rafting will annually add approximately $2,000,000 to Maine's tourist industry revenues. River recreation popularity has also made canoe outfitting a viable component of the tourist industry with significant use on the Allagash, St. John, Penobscot, and coastal rivers in eastern Maine.

Maine's recreational river resources are extensive. For example, the Appalachian Mountain Club's canoe guide identifys 4,474 miles of boatable rivers and streams within the state. The Maine Rivers Study has determined that 1,750 of these miles represent significant boating areas of high resource quality and high use priority. 650 of these miles are predominantly associated with white water boating, 500 with flat water canoe touring, and 600 with back country excursion boating.

Included in this 1,750 miles of river are a number of river segments which possess unique features. Maine can boast New England's only two stretches of Class V white water as well as the region's longest stretch of continuous canoeable white water. It can also boast the Northeast's premier back country canoe trips and one of three federally designated wild and scenic rivers.

These river resources, combined with a number of lesser known rivers with significant recreation potential provide the State of Maine with a recreational resource of extremely high value. Though 98% of the state's river corridors are privately owned, the prevalent multiple use concept at work in the state ensures that these resources will remain accessible to boating enthusiasts.

3. Standards for Inclusion

To be included in the Preliminary Draft List of Rivers Under Evaluation, a river had to:

a. Be listed as a prominent river trip in one or more of the recognized river guide books,

b. Be recommended by one of the state's recognized statewide recreational boating interests or organizations, or

c. Show evidence of use by commercial outfitters.

4. Evaluation Method and Criteria

A list of rivers meeting the minimum standards for inclusion in the recreational boating category was distributed to representatives of recreational boating interest groups, commercial outfitters, and other knowledgeable sources. Experts were asked to review the list and to evaluate each river segment's statewide significance in relation to others on the list. They were then asked to group rivers in priority categories from high to low. The following criteria were offered as guidelines in making these determinations.

General criteria with relevance to all the boating categories included:

1. Existing use
2. Access
3. Navigability
4. Length of season and flow regularity
5. Scenery and aesthetic experience
6. Economic importance

Specific criteria for each of the recreational boating categories included:

Canoe Touring - safety, use by organizations

Whitewater Boating - presence of significant rapids

Backcountry Excursion - length of trip, lack of corridor development, availability of camp sites.

Concurrent with this expert review process, study team members assembled available river use statistics, identified commercially significant rivers, and researched each river segment in an attempt to identify unique recreational features. Individual expert evaluations were then combined and a list which represented a consensus of opinion was developed. This list was cross checked with the study team's independent evaluation and the final list of outstanding recreational rivers was produced.

The following rivers were identified as outstanding (the state's most significant) in each category, and identified with an asterisk on the Final List of Rivers:

Backcountry Excursion:

Allagash River
Machias River (Washington County)
East Branch Penobscot River
Upper West Branch Penobscot River
St. Croix River
St. John River

Whitewater Boating:

Carrabasett River
Dead River
East Branch Penobscot River
Upper Kennebec River
Machias River (Washington County)
West Branch Penobscot River
Rapid River
Seboeis River
Wassataquoik River

Canoe Touring:

Moose River
Saco River

Many other canoe touring rivers have importance to regional recreational boaters, including the following rivers:

Royal River
St. George River
Kennebec River
Aroostook River
Upper Androscoggin River

5. Information Sources and Expert Review

Information and expert opinion was provided to the study team by the following agencies and organizations.

Appalachian Mountain Club, Maine Chapter
High Adventure B.S.A.
Maine Audubon Society
Maine Professional Guide's Association
Maine State Planning Office
Natural Resource Council of Maine River Committee
Penobscot Paddle and Chowder Society
White Water Outfitters Association of Maine

The following references were used by the study team to identify and document resource values.

AMC River Guide, Appalachian Mountain Club, Volumes 1 and 2, Boston: AMC, 1980.

New England White Water River Guide, Gabler, Ray, New Canaan, Conn: Tobey Publishing Co., Inc., 1975.

Canoe Trails Directory, Makens, James C., New York: Doubleday and Company, Inc., 1979.

Maine Rivers, Thorndike, Maine: The Thorndike Press.

Maine's Whitewater Rapids, McMahon, Janet, Augusta, Maine: Maine State Planning Office, 1981.

Pole, Paddle, and Portage, Riviere, William A., Boston: Little, Brown and Company, 1969.

Canoeing Maine (#1 and #2), Thomas, Eben, Thorndike, Maine: The Thorndike Press, 1979.

Canoeing Racing: Hot Blood and Wet Paddles, Thomas, Eben, Hallowell, Maine: Hallowell Printing Company, 1974.

The Maine Atlas and Gazetter, Yarmouth, Maine: Delorme Publishing Company, 1981.

V. Final List of Rivers

The following is the list of all rivers and streams in the state of Maine which have been determined through the study process to have significant and/or unique natural and recreational resource values. This list represents the product of the river evaluation, documentation, and expert and public review process and are judged to possess resource values of regional, statewide, and greater than statewide significance.

The list defines for each river the segment of river with one or more resource values. The matrix accompanying the list identifies the total number of resource values associated with each river segment. Resource values which are the state's most outstanding in a particular resource category or greater than statewide significance are highlighted on the matrix with an asterisk.

The following guidelines were used to define the limits to the segment of river containing a significant resource values. The river segment for each specific resource value for a particular river is defined in the appendices following this report. River segments were defined by the following criteria:

1. Segments were described using readily identifiable physical locations.

2. Distinct river segments were identified for each natural and recreation value by determining the length of river required to preserve a given natural value or to support a given recreational activity.

3. Segments were identified such that each exhibits a relatively consistent level of resource quality throughout the segment.

4. A river segment could extend through a natural or man-made lake if the upstream and downstream portions of the river segment were of consistent resource quality and type, and if the lake did not significantly disrupt the river's natural values or recreational use. Rivers which flow through urban or other developed areas were handled in a similar manner.

5. In recognition of the importance of upstream tributaries to the resource value of a river segment, the designation "to headwaters" was used to describe segment boundaries whenever the segment location and resource values justify such a description.

6. Segment boundaries were determined by associated resource values alone and did not take into account jurisdictional boundaries or the location of potential development.

FINAL LIST

"A" RIVERS

Rivers and related corridors on the "A" list possess a composite natural and recreational resource value with greater than state significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Allagash River (including)	St. John River to Telos Lake	Aroostook Piscataquis	102	X	X	X*	X		X		X*	X	
Musquacook Stream	Allagash River to Clear Lake	Aroostook Piscataquis	27			X			X				
Chemquasabamticook Stream	Long Lake to Ross Lake	Aroostook Piscataquis	21			X						X	
Allagash Stream	Chamberlain Lake to headwaters	Piscataquis	23	X		X			X		X		
Aroostook River (including)	Sheridan Dam to Millinocket Stream	Aroostook Penobscot	46		X	X*		X	X			X	
Squa Pan Stream	Aroostook River to Squa Pan Lake	Aroostook	3		X	X							
St. Croix Stream	Aroostook River to Hall Brook	Aroostook	7		X	X							
Millinocket Stream	Aroostook River to Millinocket Lake	Penobscot	5			X						X	
Munsungan Stream	Aroostook River to Munsungan Lake	Penobscot Piscataquis	6			X						X	
Machias River	Aroostook River to headwaters of Big Machias Lake	Aroostook	40			X*		X	X	X			
Dead River (including)	Kennebec River to Flagstaff Lake	Somerset	24	X		X	X		X	X*			X
Enchanted Stream	Dead River to headwaters	Somerset	9	X		X	X						

FINAL LIST

"A" RIVERS

Rivers and related corridors on the "A" list possess a composite natural and recreational resource value with greater than state significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Spencer Stream	Dead River to headwaters	Somerset	18			X	X		X				
Little Spencer Stream	Spencer Stream to Spencer Lake	Somerset	6		X	X							
Kibby Stream	Spencer Stream to Headwaters	Somerset Franklin	9	X		X	X						
Dennys River (including)	Hinkley Point to headwaters of Meddybemps Lake	Washington	26		X*	X	X	X*		X			
Cathance Stream	Dennys River to Lake Cathance	Washington	13		X	X		X					
Fifteenth and Sixteenth Streams	Meddybemps Lake to headwaters	Washington	10		X*	X							
East Machias River	Newcomb Point to Pocomoonshine Lake including Maine River	Washington	40		X	X*		X*	X	X	X		
Kennebec River (including)	Bay Point to Augusta	Sagadahoc Lincoln Kennebec	34	X	X		X*	X*					X*
Back River Creek	Bald Head to Flying Point	Sagadahoc	7		X								
Winnegance Creek	Kennebec River to headwaters	Sagadahoc	4		X								

MAINE RIVERS STUDY

FINAL LIST

"A" RIVERS

Rivers and related corridors on the "A" list possess a composite natural and recreational resource value with greater than state significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Abagadasset River	Merrymeeting Bay to headwaters	Sagadahoc	13			X		X					
Cathance River	Merrymeeting Bay to headwaters of Bradley Pond	Sagadahoc	20		X			X					
Muddy River	Merrymeeting Bay to headwaters	Sagadahoc	4			X		X					
Androscoggin River	Merrymeeting Bay to Brunswick	Sagadahoc Cumberland	5		X			X					
Eastern River	Merrymeeting Bay to headwaters	Lincoln Kennebec	12			X		X					
Cobboseecontee Stream	Kennebec River to Cobboseecontee Lake	Kennebec	14					X	X			X	
Upper Kennebec River (including)	The Forks to Harris Dam	Somerset	12	X*		X	X		X	X*			
Cold Stream	Kennebec River to headwaters	Somerset	12	X		X	X						
Moxie Stream	Kennebec River to headwaters of Moxie Pond	Somerset	12	X	X	X	X						
Machias River (including)	Fort O'Brian Point to Fifth Machias Lake including Fourth and Fifth Lake Streams	Washington	72	X	X	X*	X*	X*	X	X*	X*		
West Branch Machias River	Machias River to headwaters of Lower Sabao Lake	Washington	10			X		X	X				

FINAL LIST

"A" RIVERS

Rivers and related corridors on the "A" list possess a composite natural and recreational resource value with greater than state significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
New Stream and Old Stream	Machias River to headwaters of Old Stream	Washington	19			X		X	X				
Mopang Stream	Machias River to Mopang Lake	Washington	14			X		X	X				
Moose River (including)	Attean Pond to Canadian border	Somerset Franklin	38	X	X	X*			X		X	X*	
Number Five Bog Stream	Moose River to Bog Pond	Somerset	3		X								
Narraguagus River (including)	Fickett Point to Headwaters	Washington	56		X	X		X*	X	X			
Schoodic Brook	Narraguagus River to Schoodic Lake	Washington	5		X	X	X						
East Branch Penobscot River (including)	Medway to Grand Lake Matagamon	Penobscot	42	X	X	X*	X	X	X*	X*	X*		
Wassataquoik Stream	East Branch Penobscot River to headwaters	Penobscot Piscataquis	22	X	X	X	X	X	X	X	X		
Webster Brook	Grand Lake Matagamon to Telos Lake including Webster Lake	Piscataquis	14			X	X			X	X		
Seboeis River	East Branch Penobscot River to headwaters of Grand Lake Seboeis	Penobscot	36	X		X*	X	X	X	X	X		
Sawtelle Brook	Seboeis River to headwaters	Penobscot	15	X		X	X	X					

FINAL LIST

"A" RIVERS

Rivers and related corridors on the "A" list possess a composite natural and recreational resource value with greater than state significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Andromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Shin Brook	Seboeis River to headwaters	Penobscot	12	X		X	X						
West Branch Penobscot River (including)	Ambajejus Lake to Ripogenus Dam	Piscataquis	21	X*	X	X	X*		X*	X*			X
Debsconeag Stream	Debsconeag Deadwater to Eighth Debsconeag Pond	Piscataquis	10		X	X	X						
Abol Stream	West Branch Penobscot River to headwaters	Piscataquis	12			X	X						
Nesowadnehunk Stream	West Branch Penobscot River to Nesowadnehunk Lake	Piscataquis	14	X		X	X		X				
Katahdin Stream	West Branch Penobscot River to headwaters	Piscataquis	8	X		X	X						
Upper West Branch Penobscot River (including)	Chesuncook Lake to Seboomook Lake	Piscataquis Somerset	27	X		X*	X		X		X*	X	X
Lobster Stream	Upper West Branch Penobscot River to Lobster Lake	Piscataquis	2			X	X					X	
Main Stem Penobscot River (including)	Sandy Point to Veazie Dam including the Eastern Channel	Waldo Hancock Penobscot	32		X*			X*					X*
Orland River	East Channel Penobscot River to headwaters of Dead and Narramissic Rivers	Hancock	16					X					

FINAL LIST

"A" RIVERS

Rivers and related corridors on the "A" list possess a composite natural and recreational resource value with greater than state significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Marsh Stream	Penobscot River to headwaters including North and South Branches	Waldo	25		X			X		X			
Souadabscook Stream	Penobscot River to headwaters	Penobscot	12					X		X			
Kenduskeag Stream	Penobscot River to headwaters	Penobscot	30					X		X			
Pleasant River	Seavey Point to headwaters of Pleasant River Lake	Washington	46	X	X	X*		X*	X			X	
West Branch Pleasant River	Main stem to Fourth West Branch Pond	Piscataquis	32	X*	X*	X*	X*	X	X	X			X
Hay Brook	W. Branch Pleasant River to headwaters	Piscataquis	4	X		X	X						
Gulf Hagas Stream	W. Branch Pleasant River to headwaters	Piscataquis	5	X		X	X						
Saco River (including)	East Limington to New Hampshire border	Oxford Cumberland	57	X	X	X	X	X	X			X*	
Old Course Saco River	Saco River to headwaters	Oxford	16	X									X
Kezar River	Old Course Saco River to headwaters	Oxford	16	X									
St. Croix River	Oak Point to Spednik Lake	Washington	59		X	X*	X	X	X	X	X*		

FINAL LIST

"A" RIVERS

Rivers and related corridors on the "A" list possess a composite natural and recreational resource value with greater than state significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
St. John River (including)	Cross Rocks Landing at Allagash/ St. Francis town line to Baker Branch	Aroostook	84	X	X*	X*	X		X	X	X*		
Big Black River	St. John River to Canada	Aroostook	29			X*			X			X	
Little Black River	St. John River to headwaters	Aroostook	27			X*			X			X	
Northwest Branch of St. John River	St. John River to Beaver Pond	Aroostook Somerset	14			X							
Southwest Branch of St. John River	Baker Branch to St. Camille Bridge	Somerset	34			X*							
Baker Branch	St. John River to First St. John Pond	Aroostook	46		X	X*	X		X		X*	X	
Sheepscot River (including)	Wiscasset to headwaters	Lincoln Kennebec Waldo	49	X	X		X*	X*	X	X			X*
Marsh River	Sheepscot River to New Castle	Lincoln	6.5		X								
Dyer River	Sheepscot River to N. New Castle	Lincoln	4		X			X					
West Branch Sheepscot River	Sheepscot River to Branch Pond	Lincoln	16					X					

FINAL LIST

"B" RIVERS

Rivers and related corridors on the "B" list possess a composite natural and recreational resource value with outstanding statewide significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Aroostook River	Canadian border to Sheridan Dam	Aroostook	54		X*		X	X				X	
Pettingill Brook	Aroostook River to headwaters of South Branch	Aroostook	4		X								
Carrabassett River (including)	Kennebec River to headwaters	Somerset	45	X	X				X	X*		X	X
Poplar Stream	Carrabassett River to headwaters	Franklin Somerset	6	X		X							
Crooked River (including)	Sebago Lake to headwaters	Cumberland Oxford	45				X		X*	X			
Albany Brook	Crooked River to headwaters	Oxford	3.5	X									
Damariscotta River	Foster Point to headwaters	Lincoln Knox	35	X	X		X	X*					X
Fish River (including)	Ft. Kent Mills to headwaters of Mud Pond	Aroostook	60	X	X	X	X		X			X	
Red River	St. Froid Lake to headwaters	Aroostook	14	X	X	X	X		X				
Fall Brook	Fish River to headwaters	Aroostook	4		X								
Fish River Lakes Thoroughfares	Long Lake to Eagle Lake	Aroostook	60			X			X*			X	

FINAL LIST

"B" RIVERS

Rivers and related corridors on the "B" list possess a composite natural and recreational resource value with outstanding statewide significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Rocky Brook	Red River to headwaters	Aroostook	9	X		X							
Mosquito Brook	Fish River to headwaters	Aroostook	9	X	X	X							
Smith Brook	Fish River Lake to headwaters	Aroostook	6	X	X	X							
Fox Brook	Fish River to headwaters of North and South Branches	Aroostook	15	X		X							
Grand Lake Stream	Big Lake to West Grand Lake	Washington	4						X*	X			
Kennebago River	Cupsuptic Lake to Big Island Pond	Oxford Franklin	25			X	X		X*				
Kennebec River (including)	Madison to The Forks	Somerset	45	X	X		X		X			X	X
Austin Stream	Kennebec River to headwaters	Somerset	14	X		X							
Houston Brook	Wyman Lake to headwaters	Somerset	5	X	X	X							
Mattawamkeag River (including)	Mattawamkeag to Haynesville	Penobscot Aroostook	46			X		X	X	X			
Mattakeunk Stream	Mattawamkeag River to E. Branch headwaters	Penobscot	15			X		X					
Gott Brook	Mattakeunk Stream to headwaters	Penobscot	4		X								

FINAL LIST

"B" RIVERS

Rivers and related corridors on the "B" list possess a composite natural and recreational resource value with outstanding statewide significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Mattagodus Stream	Mattawamkeag River to headwaters including West Branch	Penobscot	14		X	X							
Molunkus Stream	Mattawamkeag River to E. Branch headwaters	Penobscot Aroostook	36		X	X		X					
Macwahoc Stream	Molunkus Stream to headwaters	Penobscot Aroostook	27			X		X					
Wytopitlock Stream	Mattawamkeag River to headwaters	Aroostook	18			X		X					
Baskehegan Stream	South Bancroft to headwaters	Aroostook Washington	34			X						X	
East Branch Mattawamkeag River	Haynesville to headwaters	Aroostook	32			X		X	X	X			
West Branch Mattawamkeag River	Haynesville to headwaters	Aroostook	40		X	X		X	X	X			
Fish Stream	W. Branch Mattawamkeag River to Patten	Aroostook	17		X	X						X	
North Branch Penobscot River	Seboomook Lake to headwaters	Somerset	25		X	X	X		X	X			
South Branch Penobscot River	Seboomook Lake to headwaters	Somerset	33	X		X			X	X			

FINAL LIST

"B" RIVERS

Rivers and related corridors on the "B" list possess a composite natural and recreational resource value with outstanding statewide significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Andromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Piscataquis River (including)	Howland to West Branch	Piscataquis	62		X		X	X	X	X			X
East Branch Piscataquis River	Main stem to headwaters	Piscataquis	11	X		X	X	X	X				
West Branch Piscataquis River	Main stem to headwaters	Piscataquis	15	X		X	X	X	X				
Seboeis Stream	Piscataquis River to West Branch	Penobscot	8					X		X			
West Branch Seboeis Stream	Seboeis Stream to Endless Lake	Penobscot	5			X				X			
Rapid River	Umbagog Lake to Lower Richardson Lake	Oxford	5			X	X		X	X*			
St. Francis River	St. John River to Estcourt	Aroostook	35	X	X	X*	X		X	X			
Falls Brook	St. Francis River to Falls Pond	Aroostook	8		X	X							
St. George River (including)	Thomaston to headwaters	Knox Waldo	39		X			X*	X			X	X
Dead River	St. George River to Newbert Pond	Knox	5		X*	X							
Oyster River	St. George River to headwaters	Knox	7.5			X		X	X				

FINAL LIST

"B" RIVERS

Rivers and related corridors on the "B" list possess a composite natural and recreational resource value with outstanding statewide significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
St. John River	Canadian border to Cross Rocks Landing at Allagash/St. Francis township line	Aroostook	79		X*		X						X*
Sandy River (including)	Kennebec River to headwaters	Somerset Franklin	66	X	X		X		X	X		X	
Orbeton Stream	Sandy River to headwaters	Franklin	15	X		X	X		X				
Chandler Mill Stream	Sandy River to headwaters	Franklin	4	X			X						
West Branch Union River	Graham Lake to headwaters of Great Pond	Hancock	24	X		X	X		X	X			

FINAL LIST

"C" RIVERS

Rivers and river-related corridors or specific areas on the "C" list possess a composite natural and recreational resource value with statewide significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Androscoggin River (including)	Rumford to New Hampshire Border	Oxford	42		X							X	
Wild River	Androscoggin River to N.H. border	Oxford	5			X			X				
Pleasant River	Androscoggin River to headwaters	Oxford	3						X				
Sunday River	At Sunday River Road	Oxford											X
Bagaduce River	Castine to Walker Pond	Hancock	15	X	X			X					X
Bartlett Stream	North Searsmont to Searsmont Road	Waldo	4		X								
Bear River (including)	Androscoggin River to headwaters	Oxford	16	X			X						
Wight Brook	Bear River to headwaters	Oxford	3	X			X						
Big Wilson Stream (including)	Sebec Lake to Lower Wilson Pond	Piscataquis	19	X		X	X		X				
Little Wilson Stream	Big Wilson Stream to headwaters	Piscataquis	8	X		X	X						
Cascade Stream	Rangeley Lake to headwaters	Franklin	5	X									
Chandler River	Deep Hole Point to headwaters	Washington	15			X		X					

FINAL LIST

"C" RIVERS

Rivers and river-related corridors or specific areas on the "C" list possess a composite natural and recreational resource value with statewide significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Cobb Brook	Bicknell Stream to headwaters	Oxford	1.5	X									
Cupsuptic River	Mooselookmeguntic Lake to headwaters	Oxford	23	X		X			X				
North Branch Dead River (including)	Flagstaff Lake to headwaters of Chain of Ponds	Franklin	31	X		X	X					X	X
Tim Brook	North Branch Dead River to headwaters	Franklin	9	X		X							
South Branch Dead River	Flagstaff Lake to headwaters of Saddleback Lake	Franklin	23			X	X		X	X			
Ducktrap River	Ocean to headwaters	Waldo	8				X	X	X	X			
Ellis River (including)	Androscoggin River to headwaters	Oxford	19									X	X
West Branch Ellis River	Ellis River to headwaters including Frye Brook and Dunn Notch Brook	Oxford	10	X			X						
Kennebec River (including)	Augusta to Madison	Kennebec Somerset	42		X		X		X			X	X
Messalonskee Stream	Kennebec River to Messalonskee Lake	Kennebec	5		X				X				
Seven Mile Stream	Kennebec River to Webber Pond	Kennebec	4		X								

FINAL LIST

"C" RIVERS

Rivers and river-related corridors or specific areas on the "C" list possess a composite natural and recreational resource value with statewide significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Wesserunsett Stream	Kennebec River to Athens	Kennebec	18		X					X			
Carrabassett Stream	Kennebec River to County Line	Kennebec	2		X								
Kennebunk River	Ocean to headwaters	York	13		X			X				X	X
Kingdom Bog Stream	Trues Pond to Kingdom Bog	Waldo	2	X									
Little Androscoggin River	South Paris to headwaters	Oxford	12	X					X			X	
Little Norridgewolk Stream	Chesterville to Norcross Pond	Franklin	3		X								
Little Ossipee River	Saco River to Balch Pond	York	28			X			X	X			
Little River	Ocean to Route 9 including Merriland River and Branch Brook	Oxford	4		X								
Magalloway River (including)	New Hampshire border to headwaters of Second East Branch	Oxford	40		X	X	X		X				
Abbott Brook	Magalloway River to headwaters	Oxford	4	X									
Meduxnekeag River	Canadian border to Meduxnekeag Lake	Aroostook	16		X			X	X				

FINAL LIST

"C" RIVERS

Rivers and river-related corridors or specific areas on the "C" list possess a composite natural and recreational resource value with statewide significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
North Branch Meduxnekeag River	Canadian border to headwaters	Aroostook	22			X							
Moose River (including)	Moosehead Lake to Attean Pond	Somerset Franklin	34						X	X			
Parlin Stream	Long Pond to headwaters including Parlin Pond	Somerset	12	X									
Heald Stream	Moose River to headwaters	Somerset	9	X		X							
Sandy Stream	Moose River to headwaters of East and West Branches	Somerset	15	X		X							
Mousam River	Kennebunk Beach to Estes Lake	York	14	X	X								X
North Fork McLean Brook	Long Lake to headwaters	Aroostook	12		X	X							
Nezinscot River (including)	Androscoggin River to headwaters	Androscoggin Oxford	13.5						X	X			
East Branch Nezinscot River	Buckfield to headwaters	Oxford	18			X	X		X				
West Branch Nezinscot River	Buckfield to headwaters	Oxford	17		X	X			X	X			

FINAL LIST

"C" RIVERS

Rivers and river-related corridors or specific areas on the "C" list possess a composite natural and recreational resource value with statewide significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Ossipee River	Saco River to New Hampshire border	Oxford York	12.5		X				X	X			X
Passadumkeag River (including)	Passadumkeag to headwaters	Penobscot Hancock	41	X		X		X				X	
Cold Stream	Passadumkeag River to Cold Stream Pond	Penobscot	6	X	X*	X		X					
Little Cold Stream	Cold Stream to headwaters	Penobscot	3		X	X							
Penobscot River (including)	Veazie Dam to Medway	Penobscot	56	X	X			X				X	
Stillwater River	Socks Island to Stillwater	Penobscot	8		X							X	
Pushaw Stream	Stillwater River to Pushaw Lake	Penobscot	8		X							X	
Sunkhaze Stream	Penobscot River to headwaters	Penobscot	15						X				
Piscataqua River	Kittery to confluence with Salmon Falls River	York	8		X								X
Pleasant River	Piscataquis River to East Branch headwaters	Piscataquis	34	X		X		X					
Prestile Stream	Canadian border to headwaters	Aroostook	23		X			X	X				

FINAL LIST

"C" RIVERS

Rivers and river-related corridors or specific areas on the "C" list possess a composite natural and recreational resource value with statewide significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Presumpscot River (including)	Martin Point to Sebago Lake Basin	Cumberland	19		X			X					X
Mill Brook	Presumpscot River to Highland Lake	Cumberland	2.5					X					
Piscataqua River	Presumpscot River to headwaters	Cumberland	7					X					
East Branch	Piscataqua River to headwaters	Cumberland	6					X					
Meader Brook	Presumpscot River to headwaters	Cumberland	2					X					
Little River	Presumpscot River to headwaters	Cumberland	16						X				
Pleasant River	Presumpscot River to headwaters	Cumberland	12.5						X				
Quiggle Brook	Waltons Mill to Mt. Pleasant Road	Knox	5		X								
Rattlesnake Brook	Shell Pond to headwaters	Oxford	5	X									
Roach River	Moosehead Lake to Seventh Roach Pond	Piscataquis	26			X			X	X			
Royal River (including)	Browns Point to headwaters of Sabbathday Pond	Cumberland	25					X				X	
East Branch Royal River	Royal River to headwaters	Franklin	7					X					
Collyer River	Royal River to headwaters	Cumberland	4						X				

FINAL LIST

"C" RIVERS

Rivers and river-related corridors or specific areas on the "C" list possess a composite natural and recreational resource value with statewide significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Saco River	Union Falls to Bar Mills	York	4	X	X								
Salmon Brook	High Meadow Road to headwaters	Aroostook	6		X								
Salmon Falls River	Piscataqua River to South Berwick	Oxford	4		X								
Scarborough River (including)	Blue Point to Route 1	Cumberland	2		X								
Dunston River	Scarborough River to headwaters	Cumberland	2		X								
Sebasticook River (including)	Kennebec River to headwaters	Kennebec Waldo Somerset	48		X				X			X	
Twelvemile Brook	Clinton to headwaters	Kennebec	4	X									
Fifteenmile Stream	Sebasticook River to headwaters	Kennebec	12		X								
Pratt Brook	Fifteenmile Stream to headwaters	Kennebec	5		X								
Sucker Brook	Lower Bay to Horseshoe Pond	Oxford	4		X								
Swift River (including)	Androscoggin River to headwaters	Oxford	20	X			X			X			
Mountain Brook and Bearden Stream	Swift River to headwaters	Oxford Franklin	13	X									

FINAL LIST

"C" RIVERS

Rivers and river-related corridors or specific areas on the "C" list possess a composite natural and recreational resource value with statewide significance.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

* River or river segment with related resource values which are some of the state's most significant in a given resource category. These resources may have greater than statewide or national significance.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Union River (including)	Union Bay to Graham Lake	Hancock	6		X	X		X					
East Branch Union River	Graham Lake to headwaters of Rocky Pond	Hancock	18			X							
Middle Branch Union River	East Branch to headwaters of Upper Middle Branch Pond	Hancock	11			X			X				
Vaughan Brook	Cold Stream to headwaters	Kennebec	7		X								
West Chairback Pond Stream	Long Pond to West Chairback Pond	Piscataquis	3	X									
York River (including)	York Harbor to headwaters	York	8		X			X				X	X*
Smelt Brook	York River to headwaters	York	5		X								

FINAL LIST

"D" RIVERS

Rivers and river-related corridors or specific areas on the "D" list possess natural and recreational values with regional significnace.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Androscoggin River	South of Auburn to Leeds	Androscoggin	18		X			X					X
Belgrade Stream	Rt. 27 to Wings Mills	Kennebec	6.5						X				
Bog Brook	Little Androscoggin River to headwaters	Androscoggin Oxford	9						X				
Branch Brook	Ocean to headwaters	York	13			X			X				
Cape Neddick River	Burn Point to headwaters	York	4		X								
Great Works River	Old North Berwick Road to Pond in the River	York	11		X								
Jock Stream/Dilnow Brook	Cobboseeconte Lake to headwaters	Androscoggin Kennebec	10.5						X				
East Outlet Kennebec River	Indian Pond to Moosehead Lake	Piscataquis	4		X								
Little Madawaska River	Acadia to Bog Lake	Aroostook	25	X	X				X				

FINAL LIST

"D" RIVERS

Rivers and river-related corridors or specific areas on the "D" list possess natural and recreational values with regional significnace.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Medomak River	Havener Point to headwaters	Lincoln	18		X			X					
Mill Creek	Ocean to headwaters	Cumberland	7		X								
Mill Stream	Harrasekeet River to Mast Landing	Androscoggin	2		X								
Nehmakanta Stream (includin,)	Pemadumcook Lake to Nehmakanta Lake	Piscataquis	5			X	X		X				
Tumbledown Dick Stream	Nehamakanta Stream to headwaters	Piscataquis	10		X								
Nonesuch River	Scarborough to headwaters	York	12		X								
Northwest River	Sebago Lake to Peabody Pond	Cumberland	8		X				X				
Orange River	Whiting to Rocky Lake	Washington	7					X				X	
Pemaquid River	Pemaquid Beach to headwaters	Lincoln	15					X				X	X
Pennamaquan River	Pembroke to Round Lake	Washington	7					X					
Presque Isle Stream	Grindstone to headwaters	Aroostook	12	X		X			X				

FINAL LIST

"D" RIVERS

Rivers and river-related corridors or specific areas on the "D" list possess natural and recreational values with regional significnace.

X River or river segment with related resource values meeting a minimum standard of significance (which may be regional, statewide, or greater than statewide) in a given resource category.

River Name	Segment Description	County(s)	Length (in miles)	Unique/Significant River Resource Values									
				Geologic-Hydrologic	Critical/Ecologic	Undeveloped	Scenic	Anadromous Fishery	Inland Fishery	Whitewater Boating	Backcountry Excursion	Canoe Touring	Historic
Socatean Stream	Moosehead Lake to headwaters	Somerset	10			X			X				
Tomah Stream	Grand Falls Flowage to headwaters	Washington	32		X	X			X				
Tunk Stream	Joy Bay to Tunk Lake including tributaries	Washington	18					X					
Weskeag River	S. Thomaston to Rockland	Knox	3		X								

VI. Documentation of Significant River Related Natural and Recreational Values

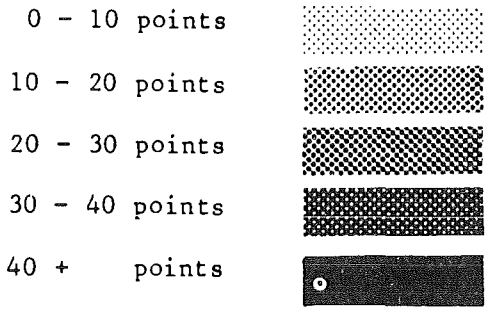
The following documentation for each of the rivers on the "A" and "B" lists describes related resource values identified through this study having a minimum value of at least regional, statewide, or greater than state significance. It defines those features which merit attention by those concerned with the conservation of a particular river. In this way, a river can be assessed both as a whole and in parts, related to the distribution and significance of specific resource values. This documentation of resources should also be viewed as a tool for identifying areas of competing resource use, defining the general degree of conflict as well as suggesting means of conflict avoidance and mitigation.

Key to Documentation Maps

Each of the significant resource values associated with the "A" and "B" rivers has been mapped as a part of the documentation process. Site specific values (such as waterfalls, historic sites, or wildlife management areas) have their locations identified on the map of the river with a symbol representing the resource. Resource values which are linear in nature (such as canoeing, fishing, or areas of river corridor containing habitat for rare botanical species) are identified for the main branch of the river on a bar chart which displays the segment of river where a significant resource value is found.

One of the values defined on the bar chart is undeveloped river corridors. The level of development of a particular river corridor (the 1/4 mile area of land adjacent to either side of the river) was defined using the development point index which was explained earlier in this report in the section on Undeveloped Rivers. A gradient of five textures of dots was used to show levels of development in river corridor areas, the darker the pattern the more developed the river corridor.

The range of average development points per mile and their corresponding pattern is as follows:



The following symbols have been used to identify resource values on the main branch and tributaries of each of the rivers from the "A" and "B" list that were documented:

GEOLOGIC/HYDROLOGIC

Waterfall 

Gorge 

CRITICAL/ECOLOGIC

Botanic 

Nature Study Area 

Wildlife Management Area 

Old Growth White Pine Stand 

Bald Eagle Habitat 

UNDEVELOPED RIVER CORRIDORS 

NATIONAL HISTORIC SITES AND LANDMARKS 

ANADROMOUS FISHERIES 

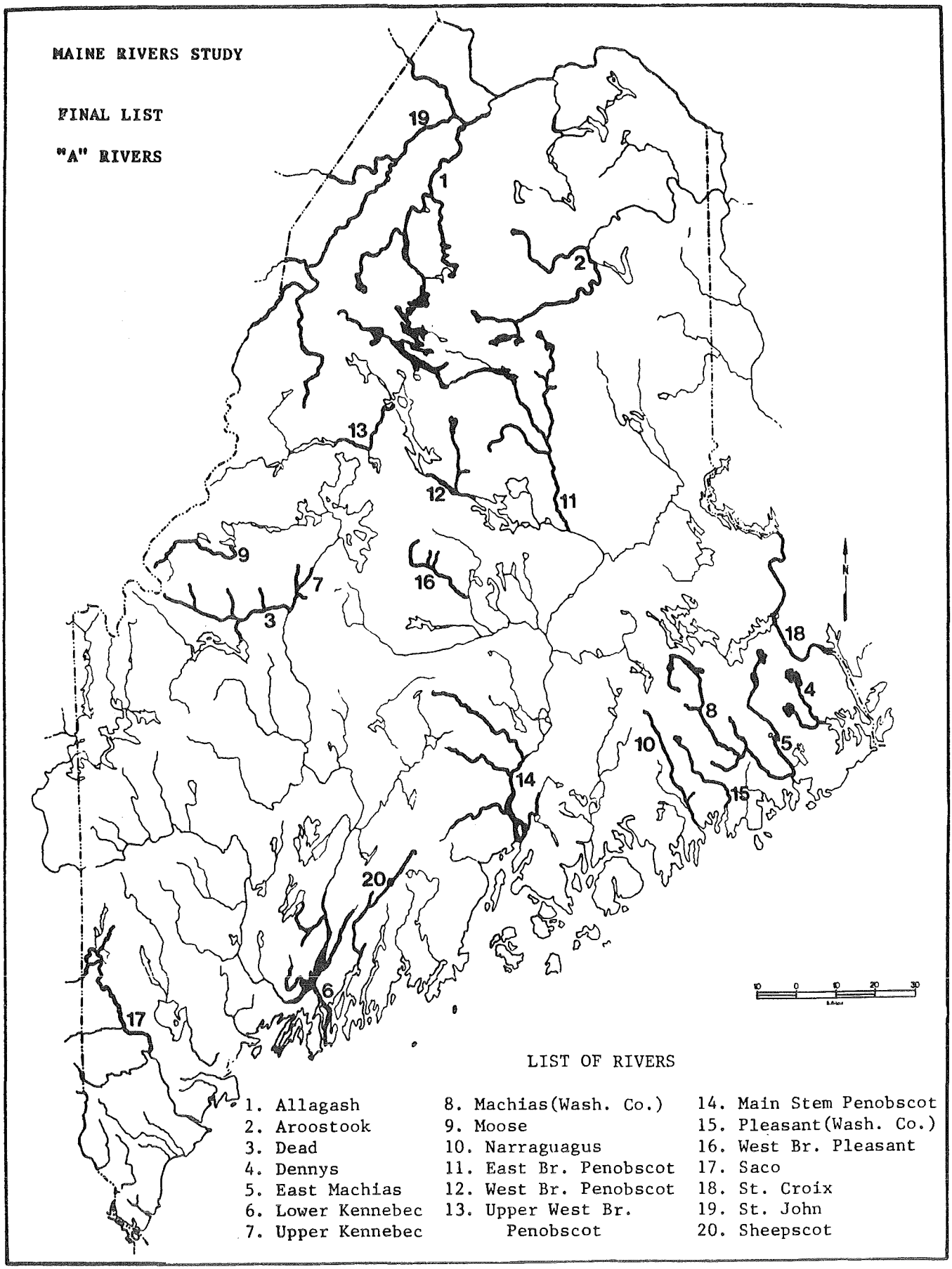
INLAND FISHERIES 

CANOE TOURING RIVERS 

WHITEWATER BOATING 

Whitewater Rapids 

BACKCOUNTRY EXCURSION RIVERS 


MAINE RIVERS STUDY
FINAL LIST
"A" RIVERS
19
1
2
13
12
11
9
7
16
3
18
4
8
10
5
14
15
20
6
17
N
LIST OF RIVERS
1. Allagash
2. Aroostook
3. Dead
4. Dennys
5. East Machias
6. Lower Kennebec
7. Upper Kennebec
8. Machias(Wash. Co.)
9. Moose
10. Narraguagus
11. East Br. Penobscot
12. West Br. Penobscot
13. Upper West Br. Penobscot
14. Main Stem Penobscot
15. Pleasant(Wash. Co.)
16. West Br. Pleasant
17. Saco
18. St. Croix
19. St. John
20. Sheepscot

Allagash River

St. John River to Telos Lake

MAIN BRANCH SIGNIFICANT RIVER RESOURCE VALUES

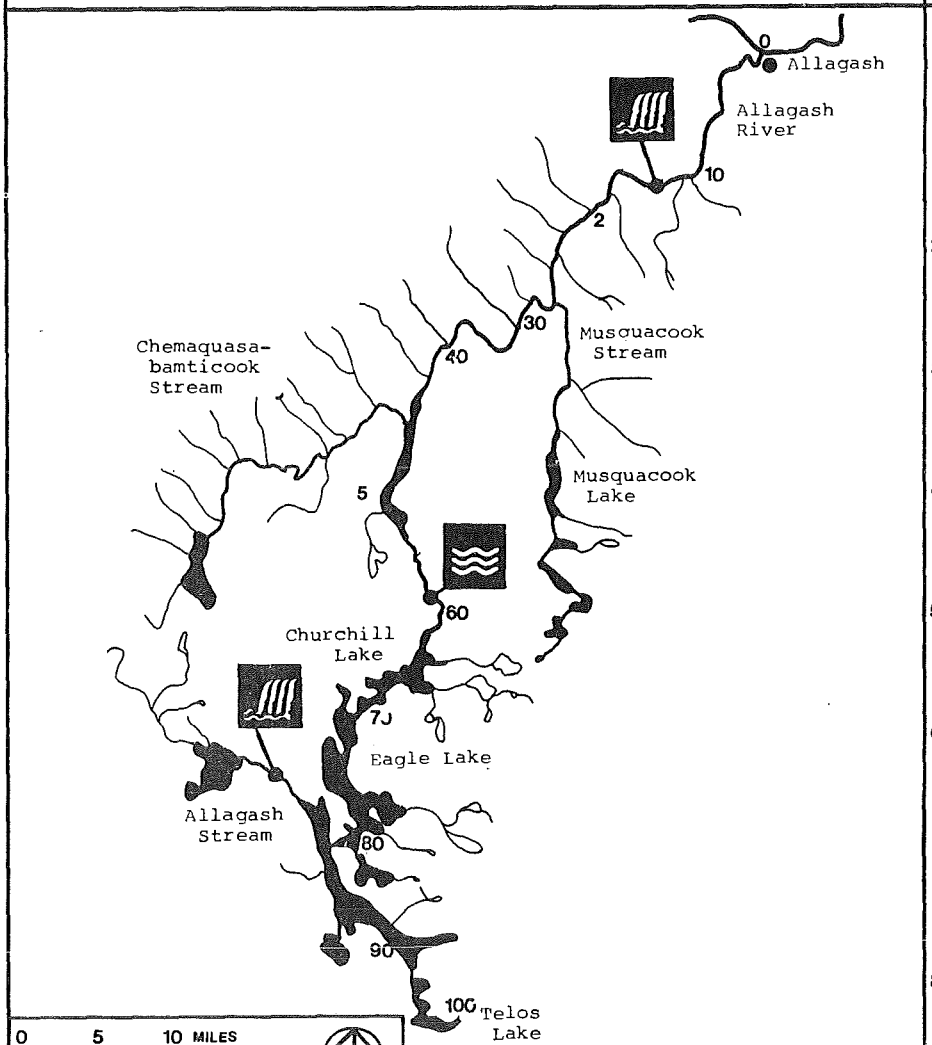
TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES

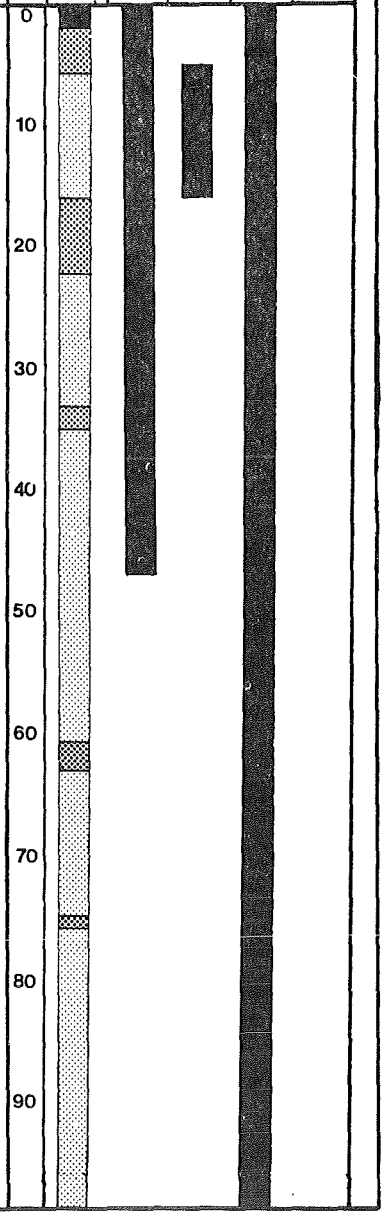
Musquacook Stream

Chemquasabamticook Stream

Allagash Stream

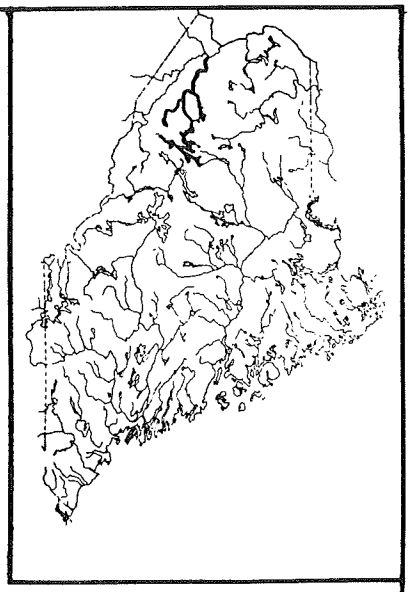
MAIN BRANCH SIGNIFICANT RIVER RESOURCE VALUE BY SEGMENT





MAINE RIVERS STUDY

MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE



MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: Allagash River **Length in miles:** 102

Segment: St. John River to Telos Lake **County:** Aroostook, Piscataquis

Tributaries included: Musquacook Stream: Allagash River to Clear Lake (27)
Chemquasabamticook Stream: Long Lake to Ross Lake (21)
Allagash Stream: Chamberlain Lake to headwaters (23)

River Values

Geologic/Hydrologic: Allagash Falls on the Allagash River, and Little Allagash Falls on Allagash Stream are recognized by the Critical Areas Program as two of the most significant waterfalls in the state.

Critical/Ecologic: The segment from Twin Brook Rapids to Finley Bogan contains habitat for two rare vascular plant species; New England Violet, (Viola novae-angliae), under review for addition to the Federal Endangered Species List, and the Hyssop-leaved Fleabane, (Erigeron hyssopifolis), rare at the New England level of significance.

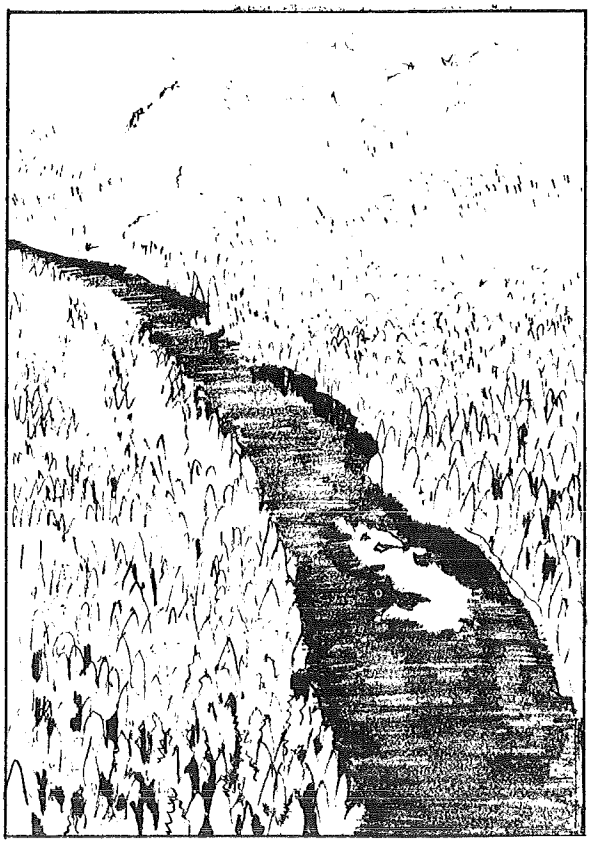
Undeveloped: The entire river segment from the confluence with the St. John River to headwaters has one of the most primitive land corridors in the entire northeast United States.

Scenic: The entire segment has an outstanding diversity of geomorphic, vegetative and hydrologic scenic landscape elements in a wilderness setting.

Inland Fish: The Allagash River from Allagash to Harvey Pond and its Musquacook Stream tributary are recognized as high quality and remote cold water fisheries consisting mostly of native brook trout. Access is by canoe and water quality is high. Lakes, ponds, and tributaries add to the main stem's fishery resource significance. The Allagash is an ideal river for a combined fishing and boating trip.

Boating: The Allagash is a remote back country river recognized nationally for its high quality canoe excursion trips. It is the most heavily traveled back country river in the northeast United States and provides an ideal semi-wilderness trip up to 96 miles in length for novice to intermediate canoeists with flat water to class II rapids. The river is of high importance to commercial canoe outfitters and the tourist industry, and is a high priority to Maine boating interests. Excellent opportunities exists for wildlife viewing and photography. Chase Carry Rapid is recognized by the Maine Critical Areas Program as a significant white water rapid.

Other: The Allagash Wilderness Waterway is the only river in New England in the National Wild and Scenic River System.



Aroostook River

Sheridan Dam to Millinocket Stream

MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES

TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES

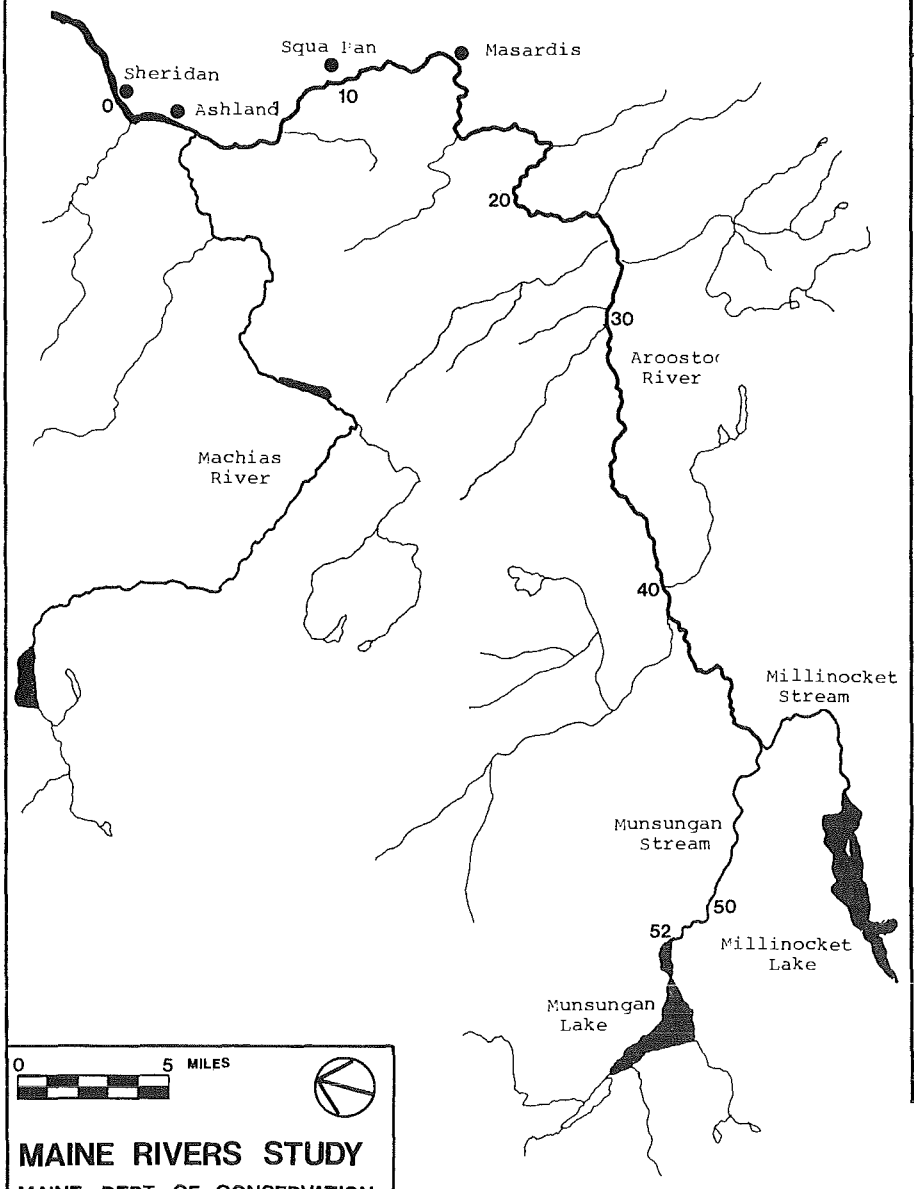
Squa Pan Stream

St. Croix Stream

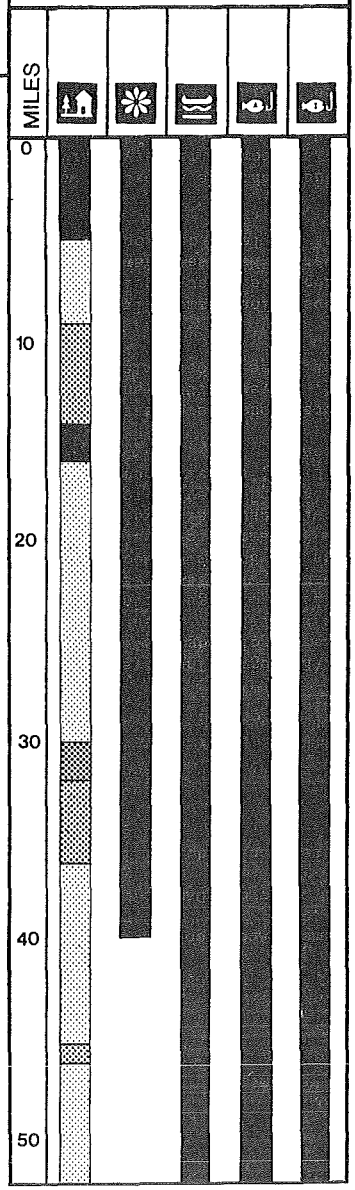
Millinocket Stream

Munsungan Stream

Machias River



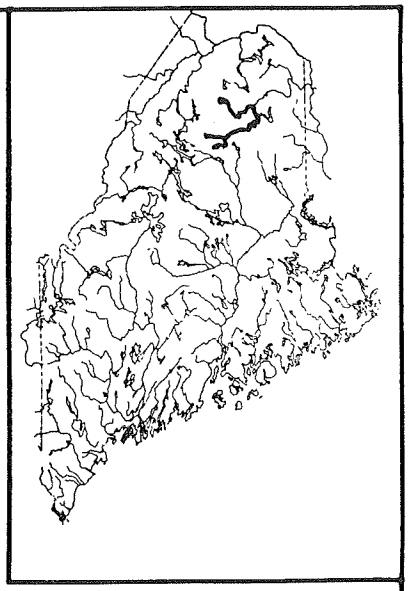
MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES
BY SEGMENT



0 5 MILES

MAINE RIVERS STUDY

MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE



MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: Aroostook River **Length in miles:** 46

Segment: Sheridan Dam to Millinocket Lake **County:** Aroostook, Penobscot

Tributaries included:

Millinocket Stream	Aroostook River to Millinocket Lake (5)
Munsungan Stream	Aroostook River to Munsungan Lake (6)
St. Croix Stream	Aroostook River to Hall Brook (7)
Squa Pan Stream	Aroostook River to Squa Pan Lake (3)
Machias River	Aroostook River to headwaters of Big Machias Lake (40)

River Values

Critical/Ecologic: The river segment from Sheridan to Squa Pan Stream (including Squa Pan Stream) contains known or historic habitat for seven rare vascular plant species with New England level of significance, and historic habitat for one plant species with state level of significance. The segment from Squa Pan Stream to Mooseluk Brook (including St. Croix and Squa Pan Streams) provides habitat for two species of rare plants with national level of significance (including Listera auriculata, under review for addition to the Federal Endangered Species List), and six species rare at New England or state significance.

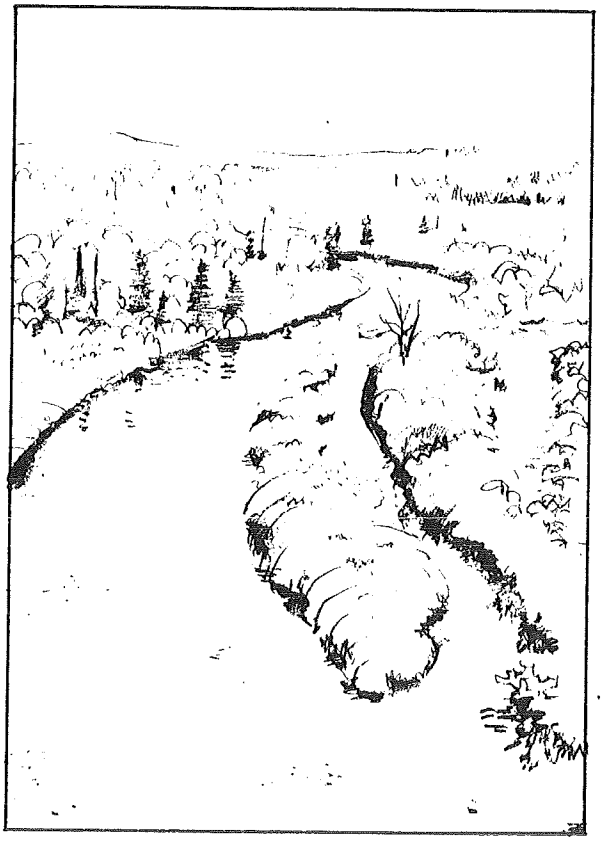
Backwaters along the Aroostook provide habitat for furbearers (muskrat, beaver, otter, and mink) and migratory birds and waterfowl. The Aroostook's wood turtles are unique in northern Maine.

Undeveloped: The segment from Masardis to headwaters ranks in the top five least developed high order rivers in the state. The Aroostook-Machias river system above Sheridan and Masardis is one of the least developed watersheds in the northeast United States.

Anadromous Fish: The Aroostook watershed area was an historic anadromous fishery. Rivers and tributaries (especially the Big Machias) are judged to be excellent sea run salmon habitat. Restoration efforts including stocking and transport have been initiated by the Atlantic Sea Run Commission.

Inland Fish: The Aroostook/Machias river system is recognized as a significant native brook trout fishery of consistent high resource value with tributaries providing extensive spawning habitat. Use is high during the spring fishing season.

Boating: The upper Aroostook containing flat water, quick water, and class I rapids and the Machias with class I-III rapids offer quality semi-wilderness canoe trips passing through a thick forest corridor. Boating use in the river system is moderate. Good possibilities exist for viewing wildlife while boating.



Dead River

Kennebec River to Flagstaff Lake

MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES

TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES

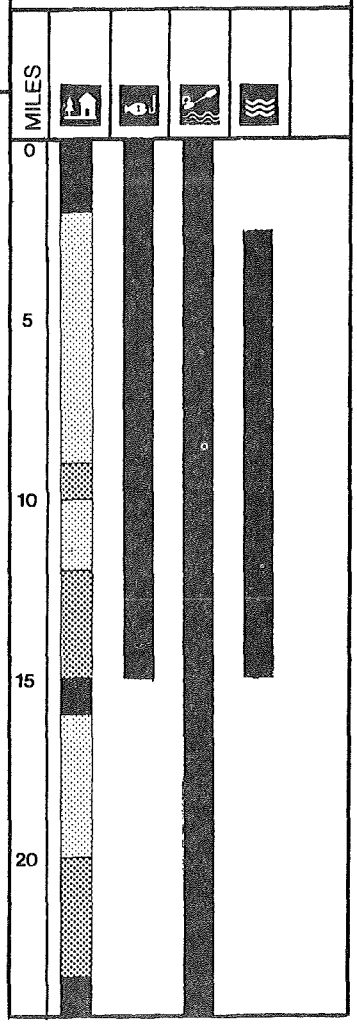
Enchanted Stream

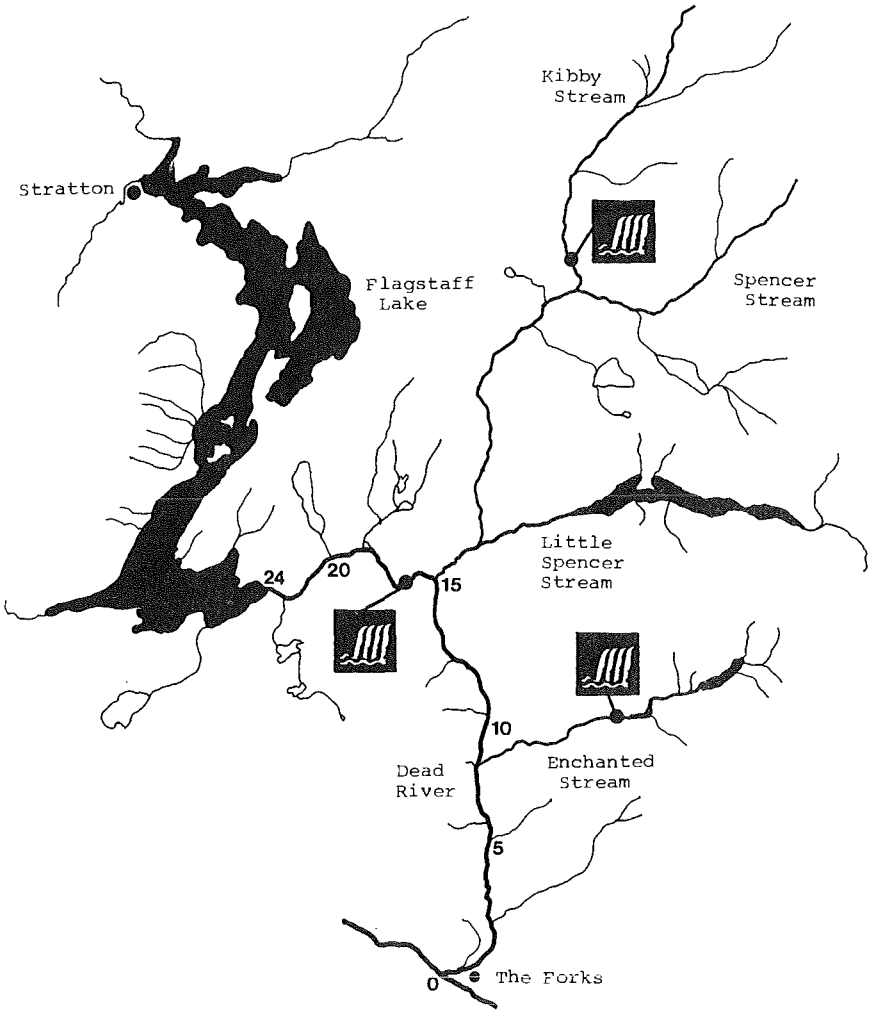
Kibby Stream

Spencer Stream

Little Spencer Stream

MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES
BY SEGMENT

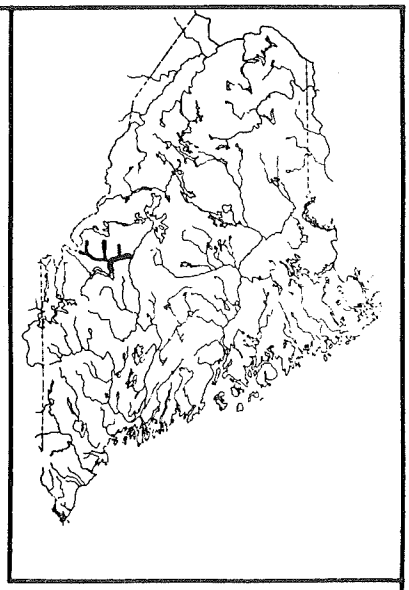




0 5 MILES

MAINE RIVERS STUDY

MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE



MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: Dead River

Length in miles: 24

Segment: Kennebec River to Flagstaff Lake

County: Somerset

Tributaries included:

Enchanted Stream	Dead River to headwaters (9)
Spencer Stream	Dead River to headwaters (18)
Little Spencer Stream	Spencer Stream to Spencer Lake (6)
Kibby Stream	Spencer Stream to headwaters (9)

River Values

Geologic/Hydrologic: Grand Falls on Dead River, Kibby Stream Falls on Kibby Stream, and Enchanted Falls on Enchanted Stream are recognized by the Critical Areas Program as having statewide significance.

Critical/Ecologic: The rare Long-leaved Bluet, (Houstonia longifolia), recognized as significant at the New England level, grows on dry river bank ledges overlooking Little Spencer Stream. Several zoned deer wintering areas are located on the main stem and tributaries. The river corridor provides habitat for a large variety of wildlife species.

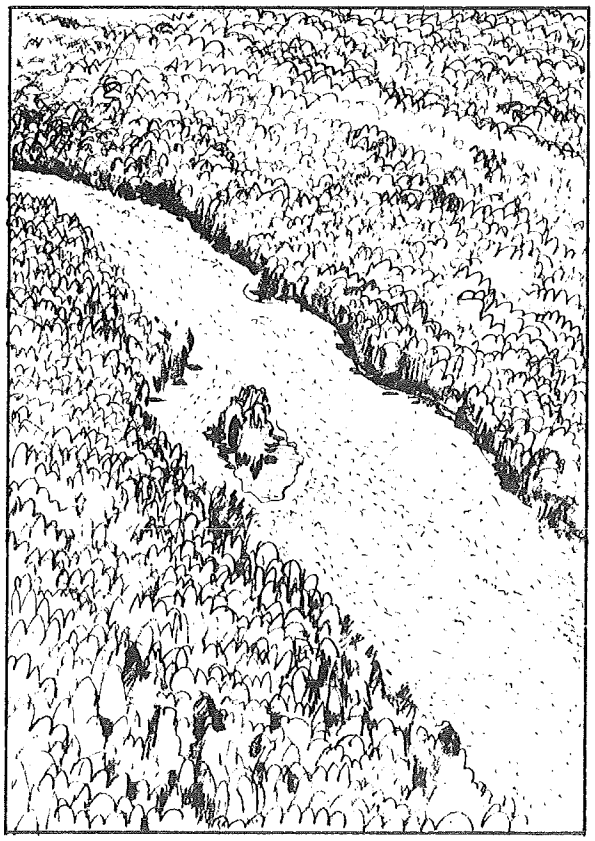
Undeveloped: The Dead River has one of the more sparsely developed river corridors in the state. The lands contiguous to the tributaries and headwaters areas of the other segments are essentially pristine.

Scenic: The area above West Forks has a high diversity of views due to variations in landforms, topography and hydrologic features. The waterfalls have been recognized by the Critical Areas Program as having exceptional scenic qualities.

Inland Fish: The Dead River from the Kennebec to Grand Falls is recognized as a high quality native brook trout and landlocked salmon fishery. The river experiences moderate use and there is adequate automobile access. The quality brook trout fishery on Spencer Stream gives added significance to the Dead River system.

Boating: The segment contains New England's longest stretch of canoeable class II-IV white water, with the 15 miles of near continuous rapids between the Kennebec confluence and Spencer Stream identified by the Maine Critical Areas Program as having statewide significance. The river receives high canoe and kayak use and occasional commercial rafting use and is the scene of an annual canoe championship race. The Dead is generally regarded by Maine boating interests as their highest priority white water canoeing river.

Historic: This segment of the Dead River is a part of the Arnold Trail to Quebec, a one hundred ninety four mile trail recognized for its significance by the National Register of Historic Places. It marks the path of Benedict Arnold's 45-day expedition to attack Quebec City during the Revolutionary War.



Dennys River

Hinkley Point to headwaters of Meddybemps Lake

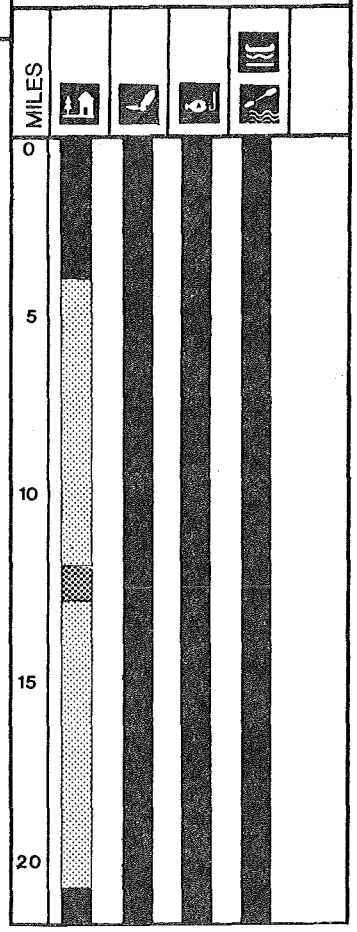
MAIN BRANCH SIGNIFICANT RIVER RESOURCE VALUES

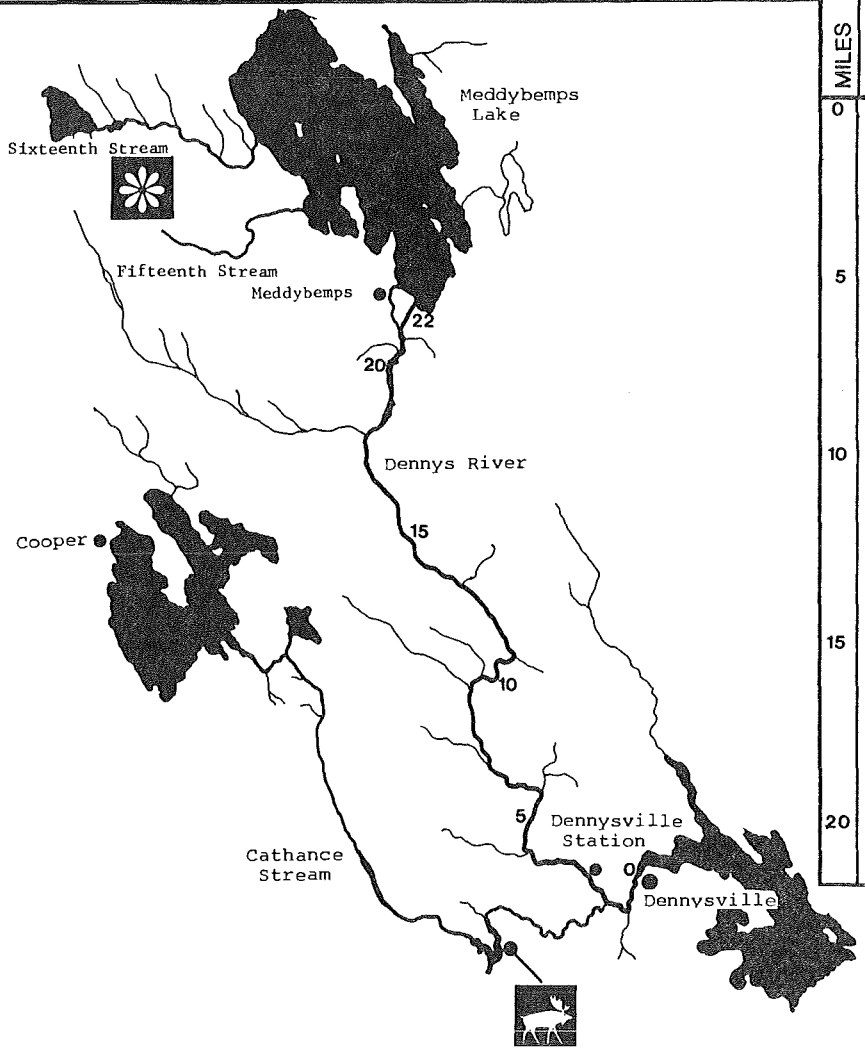
TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES

Cathance Stream

Fifteenth and Sixteenth Streams

MAIN BRANCH SIGNIFICANT RIVER RESOURCE VALUES BY SEGMENT

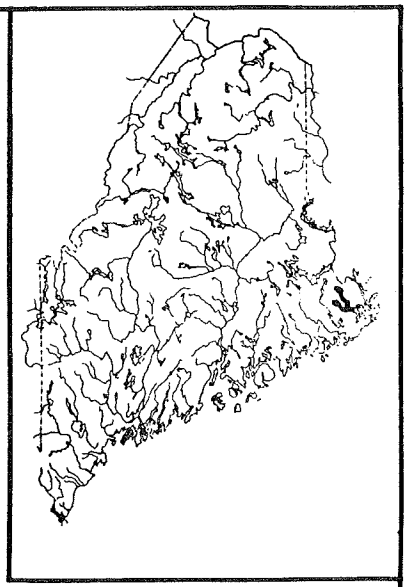




0 4 MILES

MAINE RIVERS STUDY

MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE



MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: Dennys River — Length in miles: 26

Segment: Hinkley Point to headwaters of Meddybemps Lake — County: Washington

Tributaries included:

Cathance Stream	Dennys River to Lake Cathance (13)
Fifteenth and Sixteenth Streams	Meddybemps Lake to headwaters (10)

River Values

Critical/Ecologic: The Dennys River is one of the three most significant areas in the state for nesting and wintering populations of bald eagles. Both the main stem and tributary have very important habitat for bald eagles. This endangered species has nesting sites in the Dennys Bay area, and there is major use of the lower river for feeding by wintering eagles. The Dennys River area is also an important feeding area for nesting eagles from nearby Cobscook Bay.

Cathance Stream has one pair of eagles presently nesting, and is an extremely important feeding area for the largest aggregation of immature eagles known in Maine. The State of Maine's Great Works Wildlife Management Area, with wetland, upland, and riverine habitats for nesting waterfowl is located on Great Works Pond on Cathance Stream.

Meddybemps Heath, a unique coalesced domed peatland located in the headwaters of Meddybemps Lake, is a registered National Natural Landmark.

Two zoned deer wintering areas are located near the Dennys River.

Undeveloped: The segment from Dennysville Station to the headwaters of Meddybemps Lake is among the ten least developed river corridors in the state, and is one of the most undeveloped river areas in the northeast United States.

Scenic: The lower segment of the Dennys River has significant scenic qualities due to a variety of vegetative, geomorphic, hydrologic, and wildlife elements.

Anadromous Fish: The Dennys is one of only six viable self-sustaining Atlantic sea run salmon rivers in the United States and offers a modest run with good fishing quality. An active restoration program exists on both the Dennys River and Cathance Stream. The river also provides habitat for rainbow smelt, American shad, and a commercial alewife fishery.

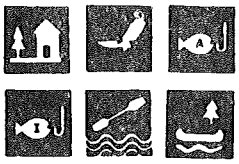
Inland Fish: The Dennys between headtide and Meddybemps Lake is recognized as a significant native brook trout fishery of local and regional importance.

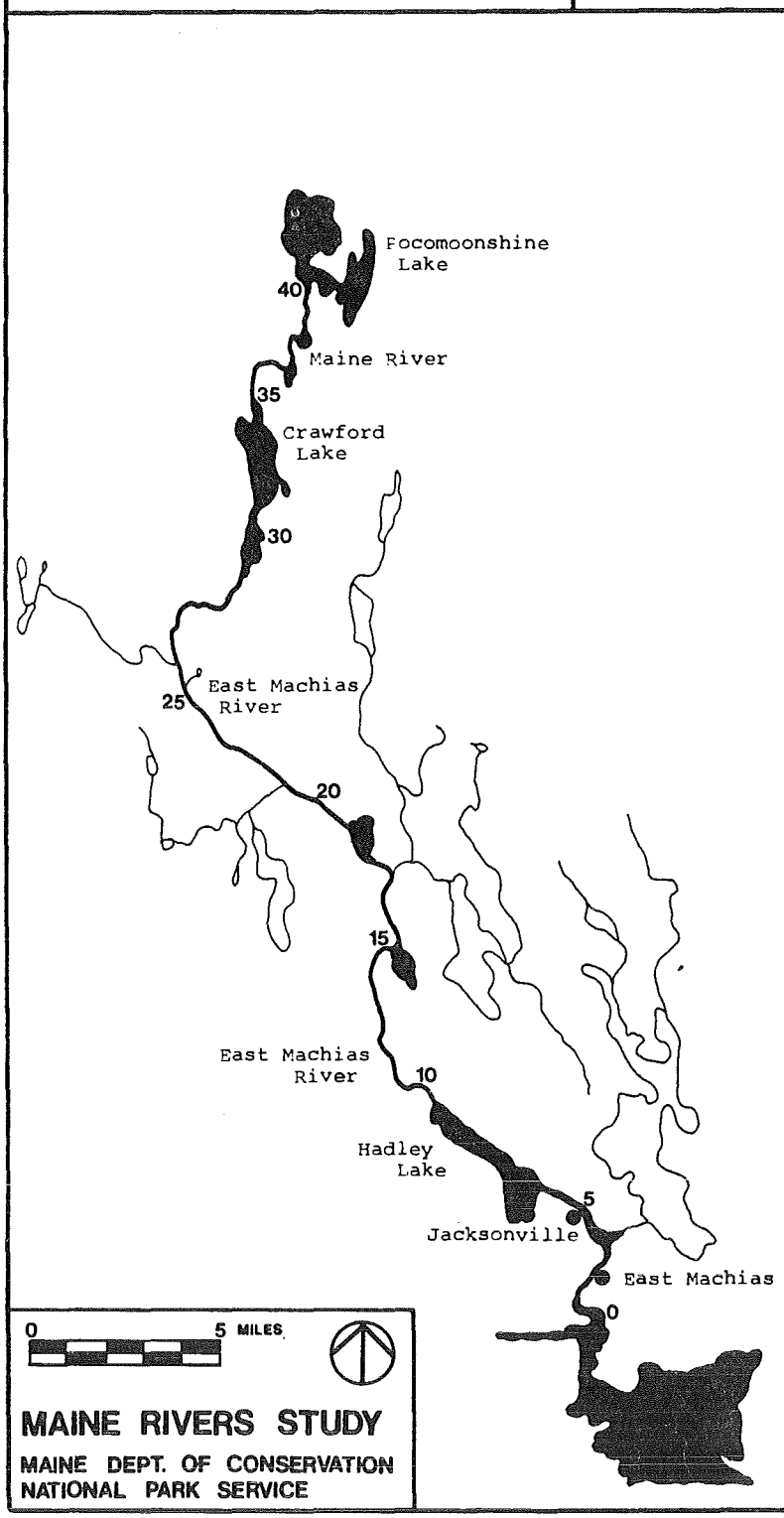
Boating: The Dennys River provides a 17 mile canoe day trip through mixed smoothwater and class I-II rapids in scenic and undeveloped country. Boating use of the river is moderate.

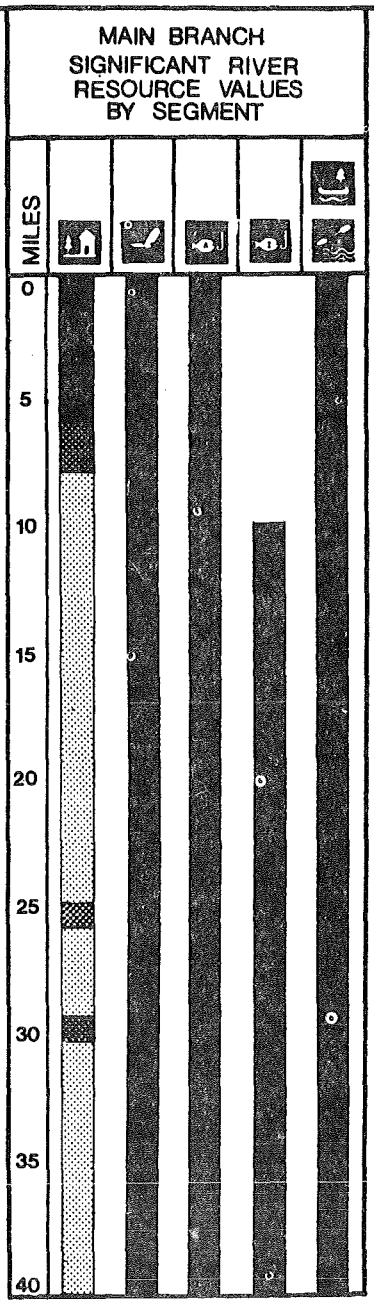
East Machias River

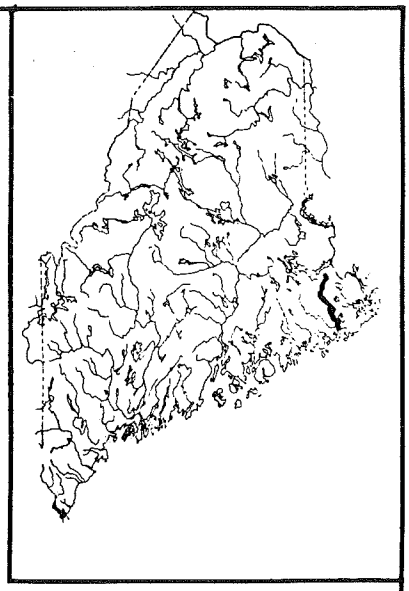
Newcomb Point to Pocomoonshine Lake
including Maine River

MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES









MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: East Machias River **Length in miles:** 40

Segment: Hadley Lake to Pocomoonshine Lake including Maine River **County:** Washington

River Values

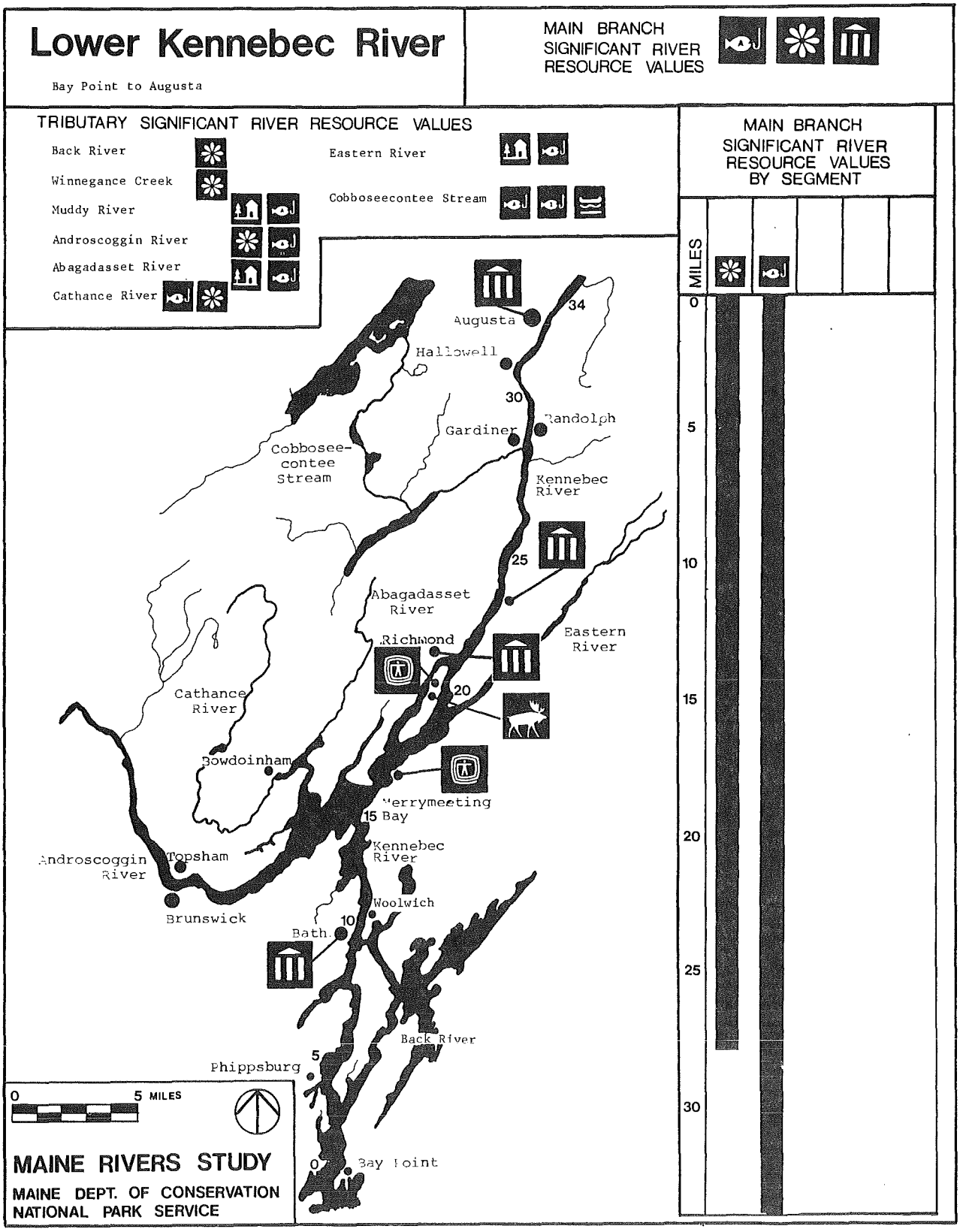
Critical/Ecologic: The area from the East Machias estuary to Pocomoonshine Lake is regarded by wildlife experts as one of the seven most important rivers in the state for bald eagle habitat. The river has three nesting pairs of eagles, and one area which was historically used by eagles for breeding. The lower river segment has regularly use by wintering populations of eagles.

Undeveloped: The segment from Hadley Lake to Pocomoonshine Lake is one of the two most undeveloped river corridors in the entire state of Maine.

Anadromous Fish: The East Machias is significant as one of six self-sustaining Atlantic salmon runs in the United States, and also contains rainbow smelt, alewife, American eel, American shad, and striped bass. The river is recognized as a high priority recreational fishery. Restoration efforts include a fishway project at Gardner Lake.

Inland Fish: The East Machias between Hadley Lake and Route 9 is recognized ss a significant native inland fishery and contains brook trout, smallmouth bass, and white perch. Water and habitat quality are high. The area offers opportunities for a combined fishing and canoeing vacation.

Boating: The East Machias offers a variety of canoe tour possibilities including a 45-mile long four day back country trip. A combination of lakes, flat water, and easy rapids make the river an ideal back country trip for the novice. The river receives moderate use by canoe outfitters and recreational boaters.


Lower Kennebec River
Bay Point to Augusta
MAIN BRANCH SIGNIFICANT RIVER RESOURCE VALUES
TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES
Back River
Winnegance Creek
Muddy River
Androscoggin River
Abagadasset River
Cathance River
Eastern River
Cobboseecontee Stream
MAIN BRANCH SIGNIFICANT RIVER RESOURCE VALUES BY SEGMENT
MILES
0
5
10
15
20
25
30
Augusta
34
Hallowell
30
Gardiner
Randolph
Cobbosee-contee Stream
Kennebec River
25
Abagadasset River
Richmond
Eastern River
Cathance River
20
Bowdoinham
Merrymeeting Bay
15
Androscoggin River
Topsham
Kennebec River
Brunswick
Woolwich
Bath
10
Back River
Phippsburg
5
Bay Point
0
5 MILES
MAINE RIVERS STUDY
MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE

MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: Lower Kennebec River

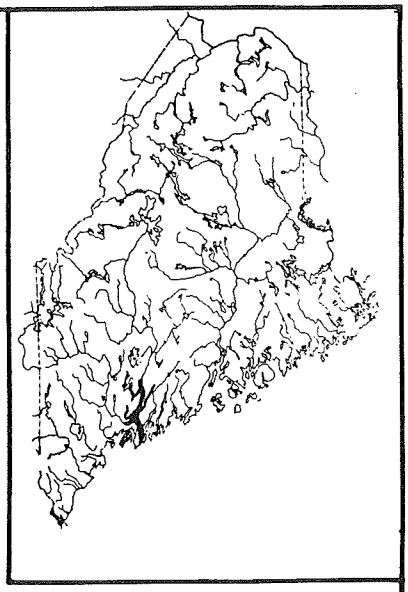
Length in miles: 34

Segment: Bay Point to Augusta

County: Sagadahoc, Lincoln
Kennebec

Tributaries included:

Back River Creek	Kennebec River to Arrowsic (7)
Winnegance Creek	Kennebec River to headwaters (4)
Abagadasset River	Merrymeeting Bay to headwaters (13)
Cathance River	Merrymeeting Bay to headwaters of Bradley Pond (20)
Muddy River	Merrymeeting Bay to headwaters (4)
Androscoggin River	Merrymeeting Bay to Brunswick (5)
Eastern River	Merrymeeting Bay to headwaters (12)
Cobboseecontee Stream	Kennebec River to Cobboseecontee Lake (14)



River Values

Geologic/Hydrologic: The mouth of the Kennebec River is an outstanding example of a section of a nationally unique coastline. The tributary streams and rivers to Merrymeeting Bay are integral parts of the largest freshwater tidal bay on the eastern seaboard north of Chesapeake Bay.

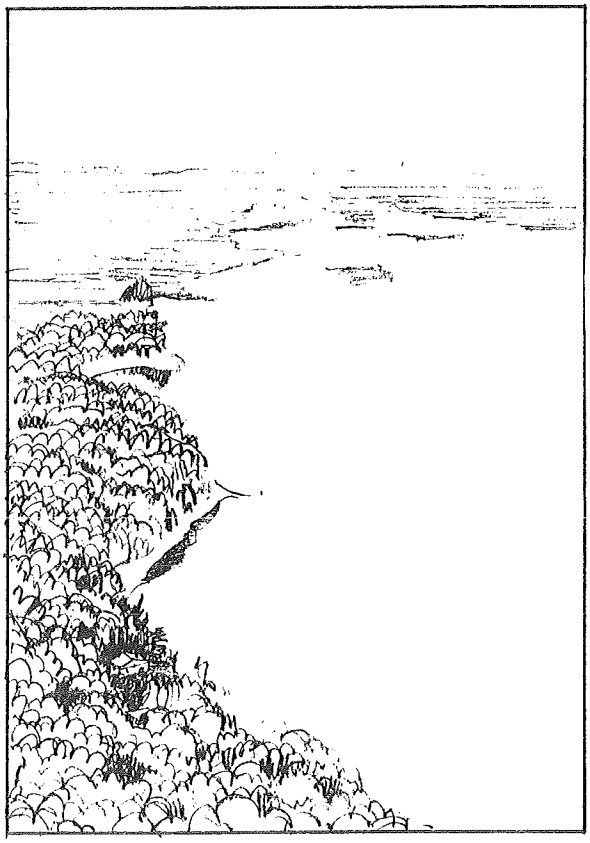
Critical/Ecologic: Regionally significant areas of salt marsh are present along lower tidal rivers and creeks below Bath, as well as along rivers draining into the Bay. An outstanding diversity of rare and threatened plants inhabit many of the tidal marsh and riparian areas along Winnegance Creek, Back River, lower Androscoggin, Cathance, and Kennebec Rivers. The estuarine segments comprise one of the only areas in Maine to support significant occurrences of wild rice.

The area receives exceptionally high waterfowl use, as it has the largest spring concentration of Canada geese in Maine. The bay and related river segments make up the northernmost stopover on the Atlantic flyway in the U.S. The area is a release site for Canada geese, and there is known use by threatened species of osprey, bald eagle, and great blue heron. The lower Kennebec and bay vicinity is one of the three most outstanding areas for nesting and wintering populations of bald eagles in the state. The bay area is also highly valued for hunting and trapping of waterfowl and furbearers. Over one third of all of the state's waterfowlers hunt in the Merrymeeting Bay area.

Scenic: A unique and extremely diverse juxtaposition and combination of land, water, vegetative and cultural elements are found within the river and associated land corridors.

Anadromous Fish: The Kennebec River has the potential for being the state's number one producer of anadromous fish. It presently rates high in species diversity and overall fish abundance as well as recreational and commercial importance. The river provides habitat for all of Maine's anadromous fish species including the endangered short nosed sturgeon. Research suggests that non-stocked Atlantic salmon are spawning in the river and tributaries. The Eastern, Abagadasset, and Cathance Rivers are popular for ice fishing of winter smelt.

Historic: Historic Forts Baldwin and Popham stand at the mouth of the Kennebec River in Popham Beach. In the 19th century tidewater ice from the Kennebec River was known as white gold and was famous throughout the country and shipped as far as the West Indies. Numerous river related National Historic Register sites are present in Bath. Richmond is an old ship building village with more Greek Revival homes than any other town in Maine, as well as a historic district and several buildings on the National Historic Register. Near the end of the segment are the Hallowell Historic District, and Fort Western (a National Historic Landmark) and Kennebec Arsenal in Augusta.



Upper Kennebec River

The Forks to Harris Dam

MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES

TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES

Cold Stream

Moxie Stream

MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES
BY SEGMENT

MILES

0

5

10

Indian Pond

12

10

Kennebec
River

Cold
Stream

5

Moxie Stream

Moxie
Pond

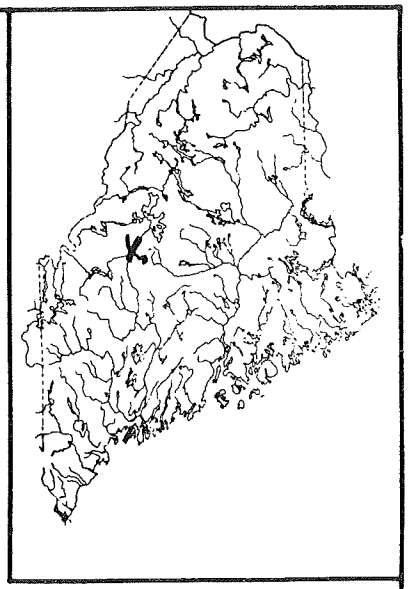
The Forks

0

0 1 2 MILES

MAINE RIVERS STUDY

MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE



MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: Upper Kennebec River **Length in miles:** 12

Segment: The Forks to Harris Dam **County:** Somerset

Tributaries included: Moxie Stream Kennebec River to headwaters of Moxie Pond (12)

Cold Stream Kennebec River to headwaters (12)

River Valuea

Geologic/Hydrologic: The segment contains the unique 11 mile Kennebec River Gorge recognized by the Critical Areas Program as a prime geologic locality displaying the best example of a geomorphically youthful river and associated terrain in the state. Cold Stream Falls and Moxie Falls on the tributaries are significant waterfalls noted by the Critical Areas Program.

Critical/Ecologic: The moist calcareous slate ledges and cliffs along Moxie Stream provide habitat for a variety of rare and threatened vascular plants, including Smooth Woodsia, Woodsia Glabella, with significance at the national level because of scarcity of suitable habitat and at the southern periphery of its range. Three additional rare plants, with importance at the New England level, have existing or historic habitat along this tributary of the Kennebec River.

A zoned deer wintering area is located in the corridor area, and the Kennebec is known to be frequented by bald eagles and osprey.

Undeveloped: The entire river segment is extremely undeveloped and provides an outstanding wilderness experience to recreational users of the river. This river has one of the ten least developed corridors in the state, and is one of the most primitive rivers in the entire northeast United States.

Scenic: The entire segment from The Forks to Harris Dam has a significant variety of geologic, topographic, and hydrologic features which offer an outstanding unique diversity of views.

Anadromous Fish: The segment was an historic anadromous fishing run.

Inland Fish: The entire segment is recognized as a significant native brook trout and land-locked salmon fishery. It offers a quality fishing experience with adequate automobile and trail access. Water and habitat quality are high.

Boating: The gorge contains one of the finest big water rafting and kayaking experiences in the eastern United States due to a continuous series of class IV-V rapids and dependable water flow. It is the most heavily used commercial rafting river in the state with more than 8,000 users in 1981 (a ten-fold use increase in the last five years). The annual tourist dollar value from commercial recreational rafters is over 1 million dollars. The Maine Critical Areas Program has identified the gorge as one of the state's most significant white water stretches, and white water boating interests rate it as one of their highest statewide priorities.

Machias River

Fort O'Brian Point to Fifth Machias Lake including Fourth and Fifth Lake Streams

MAIN BRANCH SIGNIFICANT RIVER RESOURCE VALUES

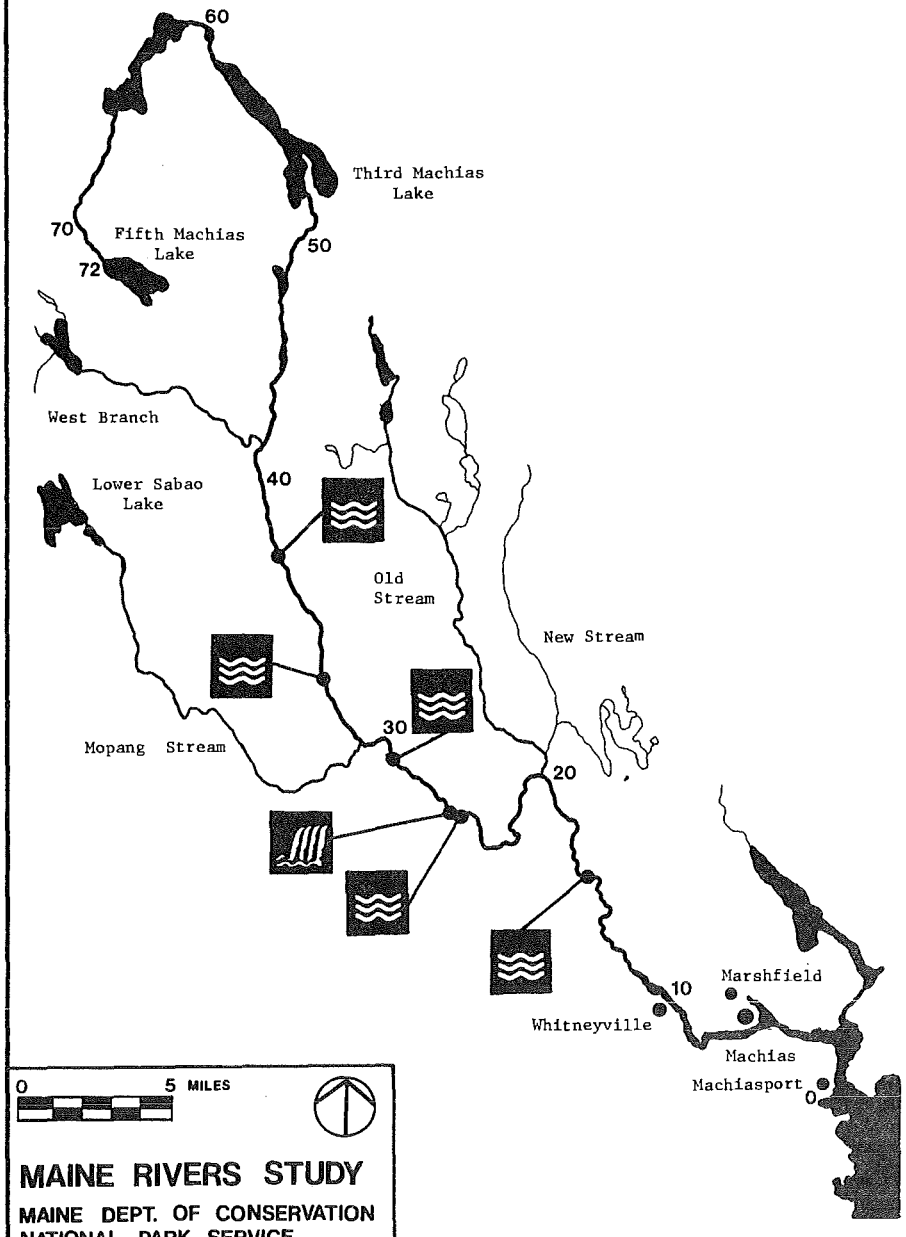
TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES

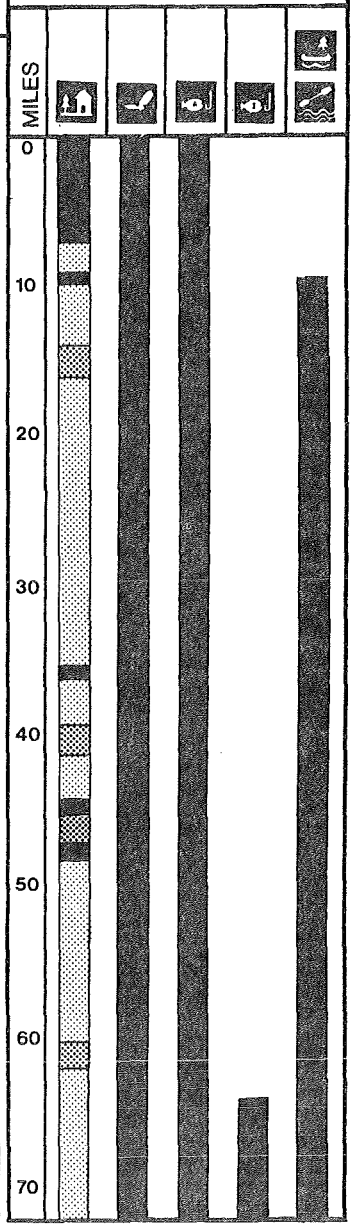
New Stream and Old Stream

Weat Branch Machias River

Mopang Stream

MAIN BRANCH SIGNIFICANT RIVER RESOURCE VALUES BY SEGMENT

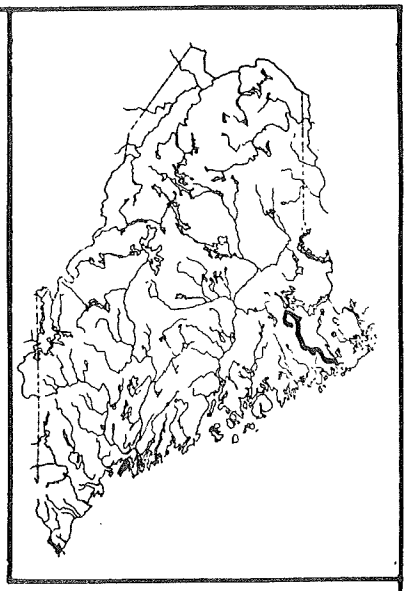




0 5 MILES

MAINE RIVERS STUDY

MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE



MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: Machias River **Length in miles:** 72

Segment: Fort O'Brian Point to Fifth Machias Lake including Fourth and Fifth Lake Streams **County:** Washington

Tributaries included:

West Branch Machias River	Machias River to headwaters of Lower Sabao Lake (10)
New Stream and Old Stream	Machias River to headwaters of Old Stream (19)
Mopang Stream	Machias River to Mopang Lake (14)

River Values

Geologic/Hydrologic: The segment contains an outstanding variety of features (including a gorge, kettle ponds, glacial outwash deposits) identified as important by New England Natural Areas Inventory. Upper Holmes Falls on the Machias River was recognized by the Critical Areas Program as one of the most significant waterfalls in the state because of its scenic, scientific and natural attributes.

Critical/Ecologic: The segment includes an outstanding variety and diversity of ecologic areas including a river bottom swamp, blueberry barrens, large stands of white and Norway pine, and headwaters lakes with active osprey and common tern nests. Three zoned deer wintering areas are located along the river.

The entire river segment from the ocean to headwaters lakes has been identified by wildlife experts as one of the more significant bald eagle nesting and wintering areas in the state. The lower river estuary below Machias receives regular use by populations of wintering eagles.

Undeveloped: The Machias River is one of the longest free flowing wild rivers in the state. The 30 mile segment from Whitneyville Dam to Tug Mountain is not crossed by a single bridge and is almost totally undeveloped.

Scenic: A unique density and diversity of spatial enclosures, topographic features, hydrologic and vegetative elements including waterfalls, rapids and wetlands.

Anadromous Fish: The Machias system contains the largest self-sustaining Atlantic sea run salmon run in the United States. The river's importance for recreational salmon fishing is second only to the Penobscot. The Machias also provides significant habitat for rainbow smelt, alewife, American shad, and striped bass.

Inland Fish: The Machias is a native brook trout fishery with Fifth Machias Lake Stream and the West Branch of the Machias recognized as being of high significance. An excellent opportunity exists for combined canoeing and fishing trips on this river.

Boating: The Machias is Maine's longest free flowing coastal river with miles of canoeable water. It provides a scenic semi-wilderness setting and a diversity of boating experiences including flat water, class II-III rapids and portages. The river contains five of Maine's forty significant rapids as identified by the Maine Critical Areas Program. The area is frequently used by commercial canoe outfitters and guides and is a high priority of Maine boating interests.

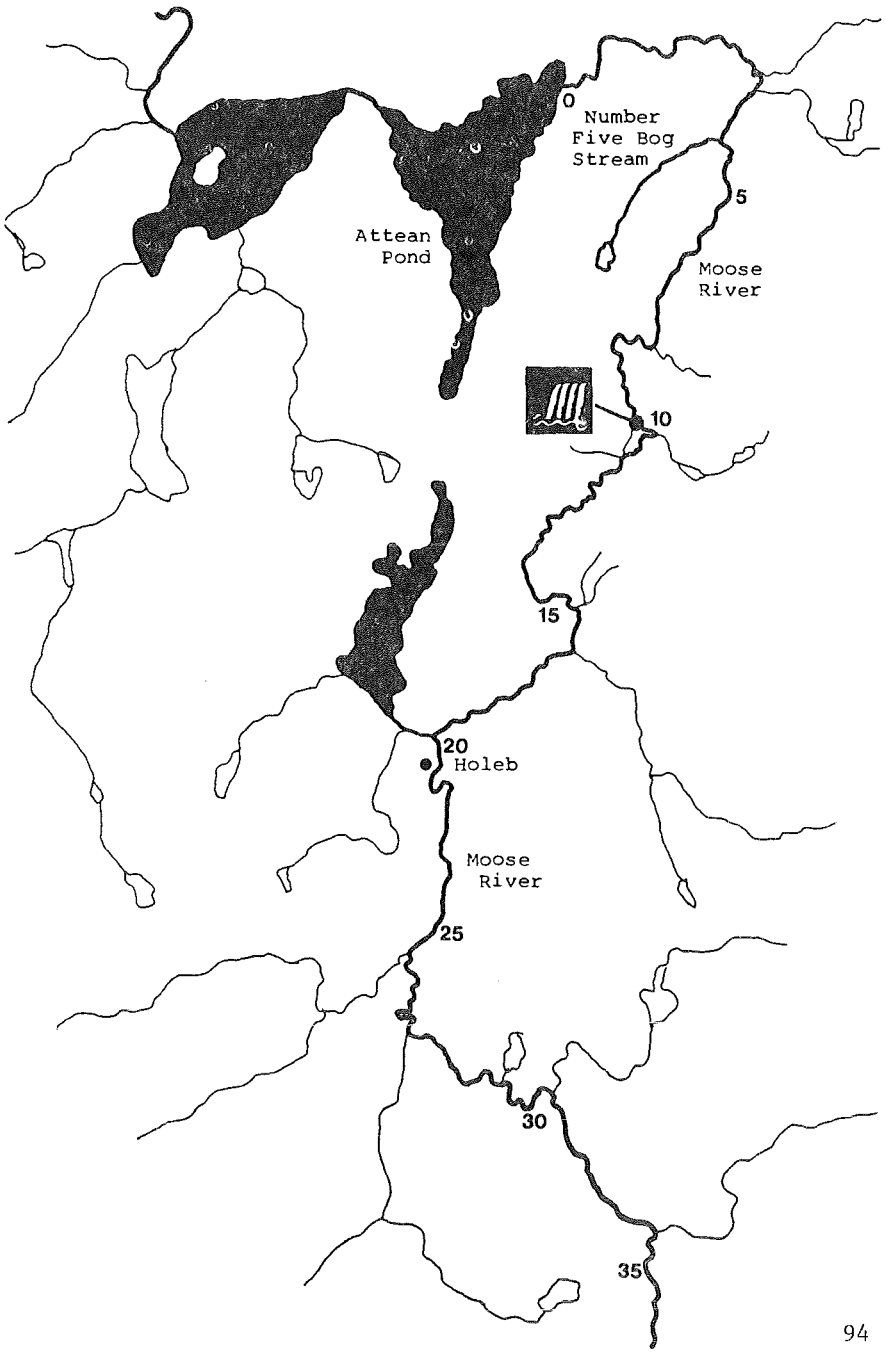
Moose River

Attean Pond to Canadian border

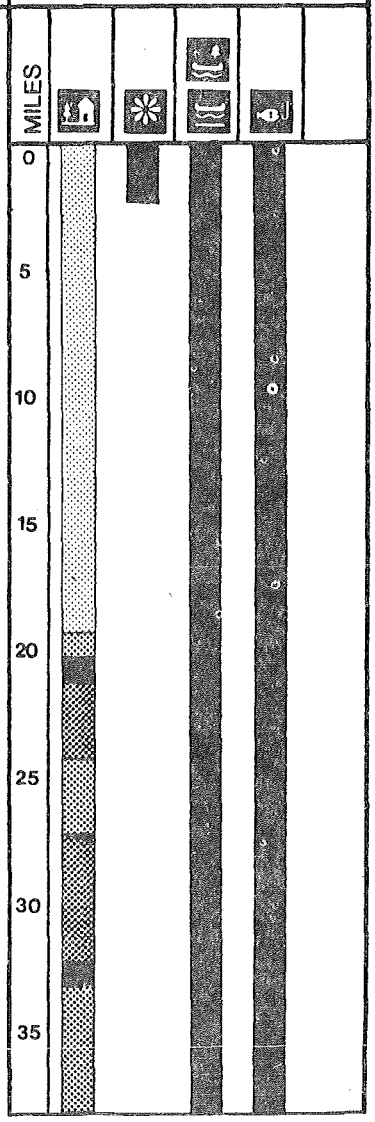
MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES

TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES

Number Five Bog Stream



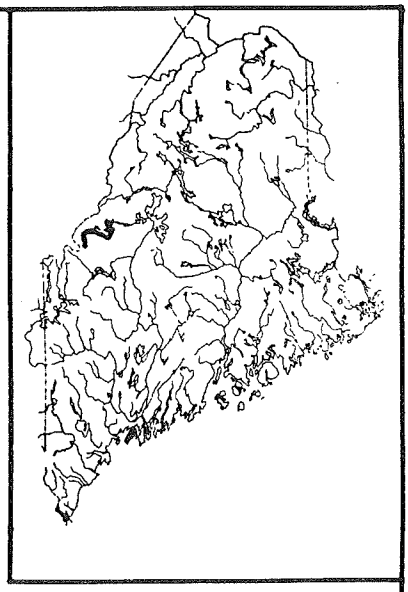
MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES
BY SEGMENT



0 3 MILES

MAINE RIVERS STUDY

MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE



MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: Moose River — **Length in miles:** 38

Segment: Attean Pond to Canadian Border — **County:** Somerset, Franklin

Tributaries included: Number Five Bog Stream — Moose River to Bog Pond (3)

River Values

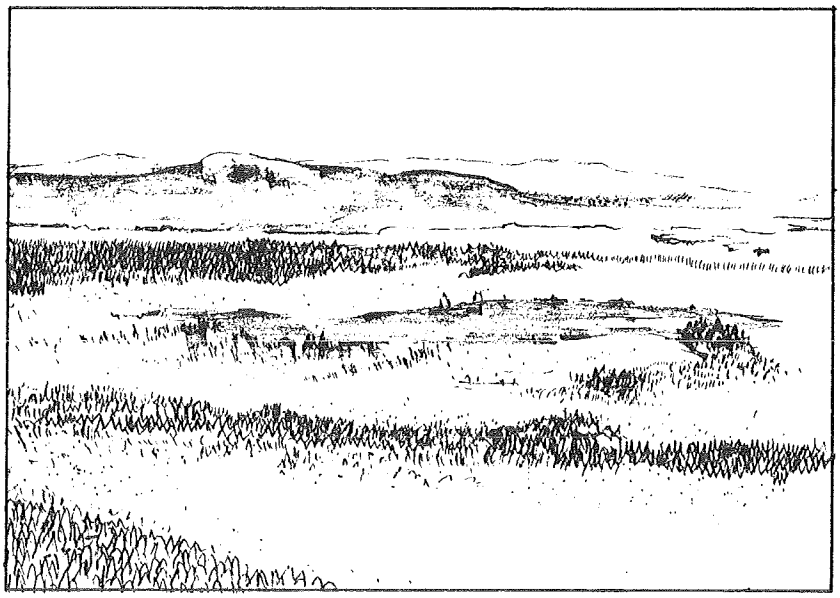
Geologic/Hydrologic: Holeb Falls on the Moose River has been recognized by the Critical Areas Program as an outstanding hydrologic feature because of its scenic and natural attributes. It is described as an exceptionally scenic locality which includes a waterfall developed on jointed granite, as well as turbulent rapids downstream from the falls.

Critical/Ecologic: A regionally significant area of extensive wetlands and alder swamp forests dominates much of the river corridor upstream of Attean Pond. Pond margins and riverside wetlands along the main branch and tributary contain historic habitat for the Pygmy Water Lily (Nymphaea tetragona), and the nationally significant Arethusa (Arethusa bulbosa). Maine is the only New England state where Nymphaea tetragona is found.

Undeveloped: The 20 mile river segment from Attean Pond to Holeb is one of the least developed river corridors in the entire state of Maine and the northeast United States. The segment above Holeb is largely undeveloped, paralleled in areas by railroad tracks.

Inland Fish: The entire Moose River is a quality native brook trout and native and stocked landlocked salmon fishery which also provides vital spawning habitat for important lake fisheries. The river offers a unique opportunity for a combined canoeing and fishing trip. The river experiences high use and is high priority to fishing interests.

Boating: The 34 mile long Bow trip is one of the most popular and heavily used canoe touring trips in the state. The trip is scenic, varied, and undeveloped. It offers a unique opportunity for an extended canoe trip with no vehicle shuttle.



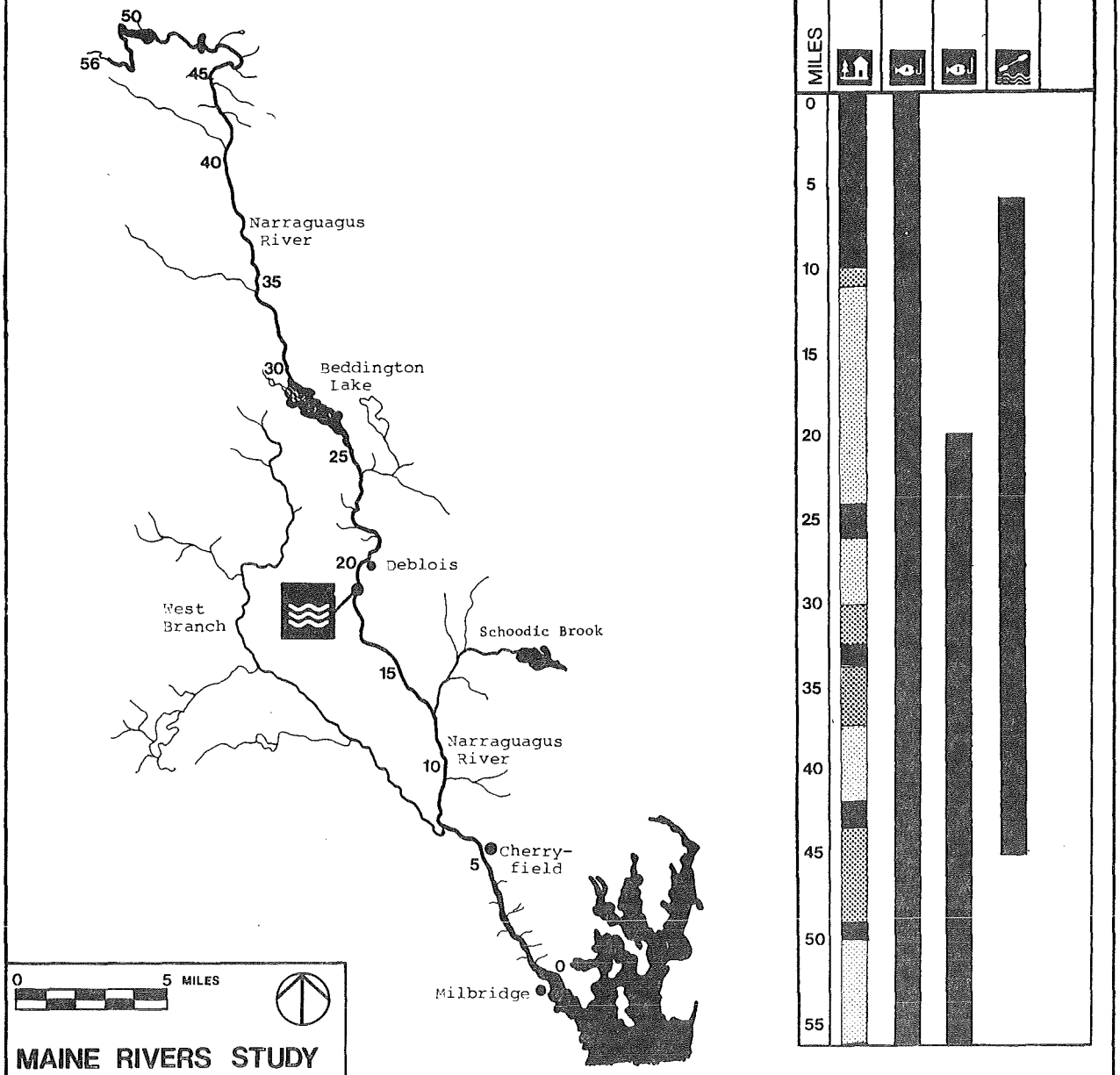
Narraguagus River

Fickett Point to Headwaters

MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES

TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES

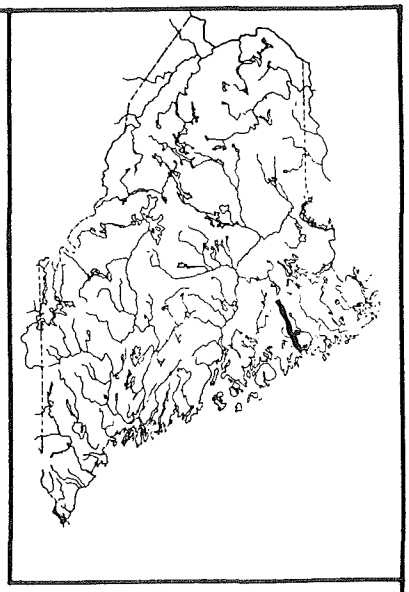
Schoodic Brook



MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES
BY SEGMENT

MAINE RIVERS STUDY

MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE



MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: Narraguagus River **Length in miles:** 56

Segment: Fickett Point to headwaters **County:** Washington

Tributaries included: Schoodic Brook Narraguagus River to Schoodic Lake (5)

River Values

Critical/Ecologic: The blueberry barrens growing on glacial outwash materials within the corridor are significant for this region of the state, and sustain viable and successful wild blueberry cultivation operations.

The lower river segment has significance for seasonal foraging bald eagles which migrate from the Narraguagus Bay area during the late spring alewife run.

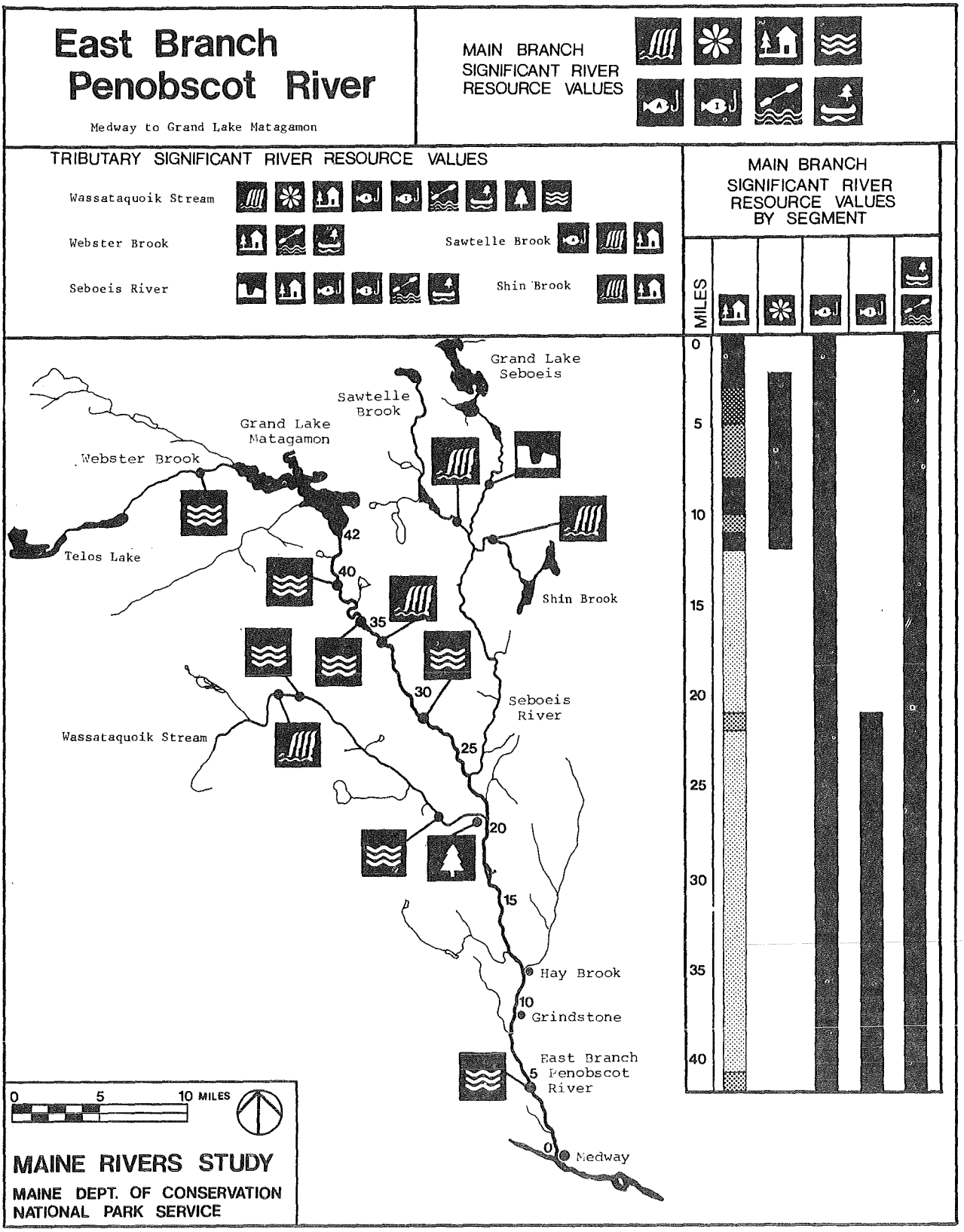
Two zoned deer wintering areas are located along the river.

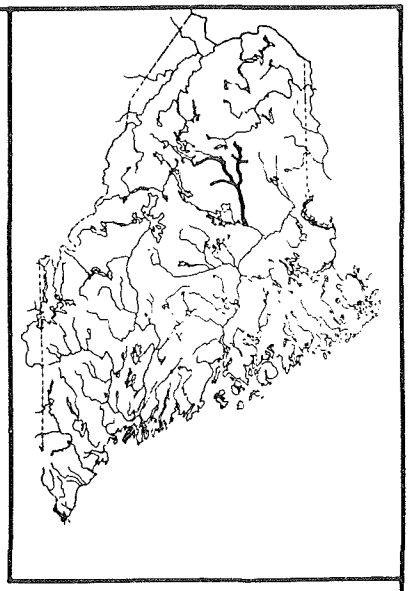
Undeveloped: The 44 mile segment to the headwaters of the East Branch has one of the more sparsely developed land corridors for a coastal river in the state.

Anadromous Fish: The Narraguagus is one of only six U.S. rivers with a self-sustaining and fishable Atlantic salmon population. An active restoration program includes a series of three fishways located near the rivers mouth, at Bog Brook, and on Narragugus Lake in the West Branch watershed. The river also provides habitat for a large variety of other anadromous species.

Inland Fish: The Narraguagus from the Deblois Bridge to Stud Mill Road is recognized as a significant native brook trout fishery. The river is recognized as one of Washington County's highest quality trout fisheries.

Boating: The Narraguagus offers the rare combination of a natural setting and numerous access points. Boating experiences vary from flat and quick water to class III rapids. Deblois Rapid is a 100-foot long class III-V rapid recognized as significant by the Maine Critical Areas Program white water study.


East Branch
Penobscot River
Medway to Grand Lake Matagamon
MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES
TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES
Wassataquoik Stream
Webster Brook
Sawtelle Brook
Seboeis River
Shin Brook
MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES
BY SEGMENT
MILES
0
5
10
15
20
25
30
35
40
Grand Lake
Seboeis
Sawtelle
Brook
Grand Lake
Matagamon
Webster Brook
Telos Lake
42
40
35
30
25
20
15
10
5
0
Shin Brook
Seboeis
River
Wassataquoik Stream
Hay Brook
Grindstone
East Branch
Penobscot
River
Medway
0 5 10 MILES
MAINE RIVERS STUDY
MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE



MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: East Branch Penobscot River **Length in miles:** 42

Segment: Medway to Grand Lake Matagamon **County:** Penobscot

Tributaries included:		
	Wassataquoik Stream	East Branch Penobscot River to headwaters (22)
	Webster Brook	Grand Lake Matagamon to Telos Lake (14)
	Seboeis River	East Branch Penobscot River to headwaters of Grand Lake Seboeis (36)
	Sawtelle Brook	Seboeis River to headwaters (15)
	Shin Brook	Seboeis River to headwaters (12)

River Values

Geologic/Hydrologic: This river system has one of the greatest concentrations of geologic and hydrologic features in the state. Significant waterfalls recognized by the Critical Areas Program include Grand Pitch on the East Branch, Grand Falls on Wassataquoik Stream, and Sawtelle Falls and Shin Falls on Seboeis River tributaries. Important fossils are found at Grand Pitch Waterfall. Outstanding examples of glacial eskers are found along the lower East Branch above Medway. The Upper Seboeis River Gorge, one of the longest gorges in the state, has been listed on the Maine Register of Critical Areas.

Critical/Ecologic: The riparian area along Hay Brook on the East Branch contains historic habitat for the Pale Green Orchid, (Habenaria flava var. herbiola), rare at the New England level. Alluvial areas near waterfalls on the Wassataquoik Stream are the historic habitat for the Auricled Twayblade, (Listera auriculata), currently under review for possible designation as a Federal Endangered Species. A significant stand of old growth white pine grows near the mouth of Wassataquoik Stream.

Undeveloped: The East Branch - Seboeis River system is one of the least developed watersheds in the northeast U.S.

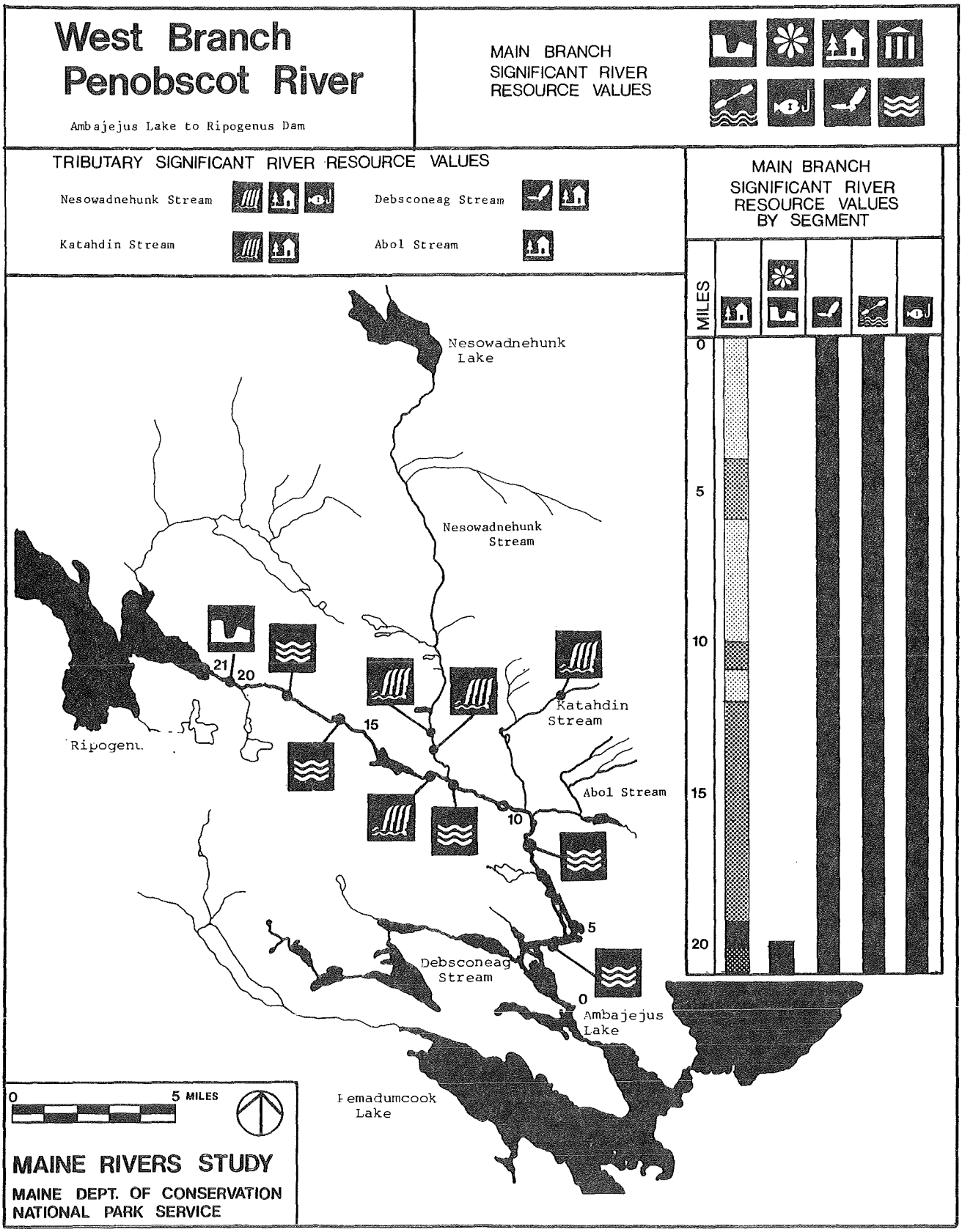
Scenic: The river system contains an outstanding diversity of views resulting from a combination of geologic, hydrologic, and vegetative elements.

Anadromous Fish: This watershed contains the state's farthest inland fishable population of Atlantic salmon. The river's significant fishing and spawning potential is due to downstream restoration efforts, extensive habitat, and the free flowing nature of all segments. 20% of the total Penobscot River salmon production potential is in this drainage. The East Branch system has high priority to salmon fishing interests.

Inland Fish: The East Branch above Wassataquoik Stream, along with the Seboeis River and Wassataquoik Stream are recognized as significant and high quality native brook trout fisheries. The East Branch is also noted for its landlocked salmon and is rated by fishing interests to be one of the state's highest quality fishery resources.

Boating: All river segments have significant combinations of difficult white water and possibilities for extended back country excursions; trips of up to 71 miles are possible. The East Branch, Wassataquoik Stream, and Webster Brook possess six of the 40 rapids of statewide significance identified by the Maine Critical Areas Program, as well as stretches of flat and quick water. Wassataquoik Stream and the upper Seboeis are highly regarded as expert white water runs. All segments have high priority to Maine boating interests.

Other: The East Branch of the Penobscot was authorized by Congress for study under the National Wild and Scenic Rivers Act and determined to be eligible for inclusion in the National System.

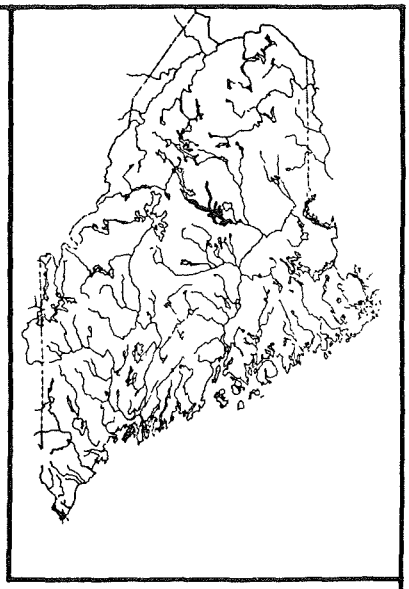

West Branch
Penobscot River
Ambajejus Lake to Ripogenus Dam
MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES
TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES
Nesowadnehunk Stream
Debsconeag Stream
Katahdin Stream
Abol Stream
MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES
BY SEGMENT
MILES
0
5
10
15
20
Nesowadnehunk
Lake
Nesowadnehunk
Stream
Katahdin
Stream
Abol Stream
Ripogenus
Debsconeag
Stream
Ambajejus
Lake
Pemadumcook
Lake
21
20
15
10
5
0
0
5 MILES
MAINE RIVERS STUDY
MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE

MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: West Branch Penobscot River **Length in miles:** 21

Segment: Ambajejus Lake to Ripogenus Dam **County:** Piscataquis

Tributaries included:		
	Debsconeag Stream	Debsconeag Deadwater to Eighth Debsconeag Pond (10)
	Abol Stream	West Branch Penobscot River to headwaters (12)
	Nesowadnehunk Stream	West Branch Penobscot River to Nesowadnehunk Lake (14)
	Katahdin Stream	West Branch Penobscot River to headwaters (8)



River Values

Geologic/Hydrologic: The segment contains the highest variety of geologic, geomorphic, and hydrologic features in the state including the spectacular Ripogenus Gorge, recognized as a potential National Natural Landmark. The gorge is a significant geologic locality in the state, displaying a wide variety of lithologies, a major fault zone, several fault contacts, and a classic assemblage of Silurian marine fossils. Waterfalls on the tributary streams recognized as significant by the Critical Areas Program include Katahdin Falls on Katahdin Stream, Big Niagara Falls and Little Niagara Falls on Nesowadnehunk Stream and Nesowadnehunk Falls on the West Branch.

Critical/Ecologic: The West Branch Penobscot River is regarded as one of the seven most important nesting and wintering areas for bald eagles in the state. This river segment is known to have three nesting pairs of bald eagles. Ripogenus Gorge has historic habitat for the wildflower Purple Clematis (*Clematis verticillaris*), with state level significance.

Undeveloped: The river has a highly natural and undeveloped character and the lower segment is one of the most undeveloped river corridors in the state.

Scenic: The segment includes a narrow exceptionally scenic gorge with nearly vertical walls, and outstanding views to Mt. Katahdin, a rare open mountain region to the north of the river.

Anadromous Fish: This segment historically contained anadromous fish. Restoration is de-emphasized due to potential habitat conflicts with an excellent inland fishery.

Inland Fish: The segment from Ambejejus Lake to Ripogenus Dam is a high quality and popular native brook trout and stocked landlocked salmon fishery. The segment is recognized by fishing interests to be one of the state's highest quality fishery resources.

Boating: The West Branch is a high quality large volume white water stretch which is recognized as one of only two significant class V rapid stretches in New England. The segment contains five of the forty rapids identified by the Maine Critical Areas Program as having statewide significance. All are class IV or V with the Cribworks being one of Maine's most turbulent rapids. The segment is suitable for expert level white water rafting and kayaking, and for guided canoe touring as portage around all rapids is possible. Commercial boating value of the West Branch is second only to the Kennebec (6500 commercial users in 1981 with a dollar value of $1,000,000). Maine white water boating interests rate the West Branch as one of their highest priorities.

Historic: The Ambajejus Boom House on Ambajejus Lake is on the National Register of Historic Places.

Other: The river was authorized by Congress for study under the National Wild and Scenic Rivers Act and determined to be eligible for inclusion in the National System.

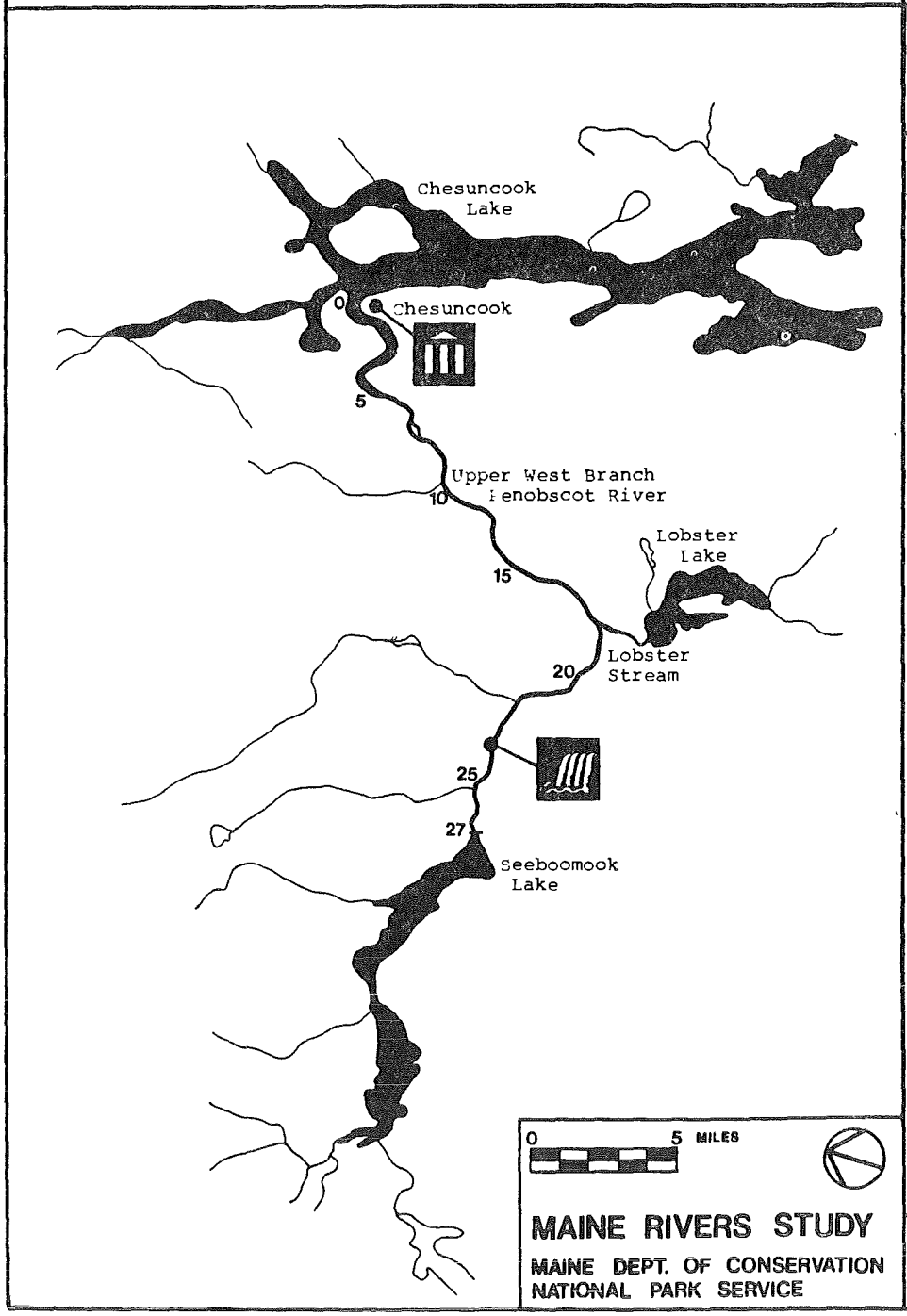
Upper W. Branch Penobscot River

Chesuncook Lake to Seboomook Lake

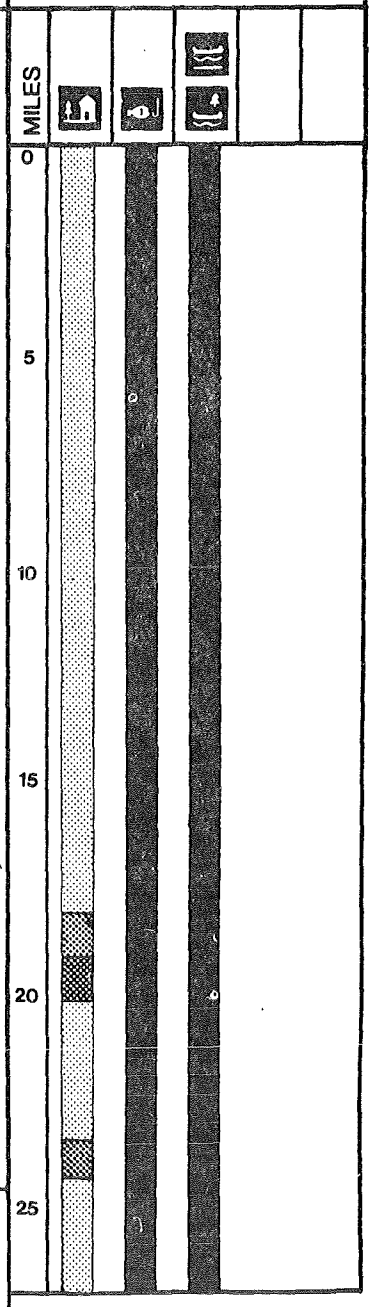
MAIN BRANCH SIGNIFICANT RIVER RESOURCE VALUES

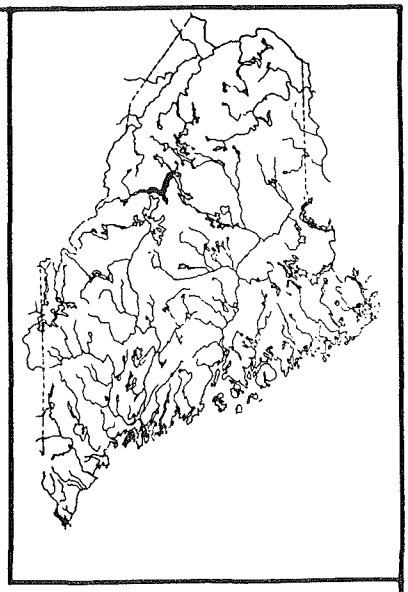
TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES

Lobster Stream



MAIN BRANCH SIGNIFICANT RIVER RESOURCE VALUES BY SEGMENT





MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: Upper West Branch Penobscot River **Length in miles:** 27

Segment: Chesuncook Lake to Seboomook Lake **County:** Piscataquis, Somerset

Tributaries included: Lobster Stream Upper West Branch Penobscot River to Lobster Lake (2)

River Values

Geologic/Hydrologic: Old Roll Dam Waterfall, containing a series of six foot drops along several hundred yards of channel, has been identified by the Critical Areas Program as one of the more important waterfalls in the state. The flow, as high as several thousand cubic feet per second, gives the waterfall highly scenic qualities. This is the former location of one of many log driving dams which were once constructed on this segment of the Penobscot River.

Undeveloped: The segment from Chesuncook Lake to Seboomook Lake ranks as one of the ten least developed rivers in the state, and is one of the northeast's most undeveloped river corridors.

Historic: Chesuncook Village on the northwest shore of Chesuncook Lake is on the National Register of Historic Places. Now primarily used by seasonal fishermen, it once was a thriving village serving the needs of lumbermen during times of heavy logging activity in the 19th century.

Inland Fish: The entire segment is one of the state's highest quality native brook trout and landlocked salmon fishery resources, and is an ideal river for combined boating and fishing trips. The river is high priority to Maine fishing interests.

Boating: The segment offers a combination of lake and smooth water river canoeing of up to 59 miles. The easy navigation through extended semi-wilderness terrain makes the Upper West Branch a unique and valuable recreation resource. Maine boating interests give this segment a high priority rating.

Other: The Upper West Branch was authorized by Congress for study under the National Wild and Scenic Rivers Act. The study determined that the river was eligible for inclusion in the National System.

Main Stem Penobscot River

Sandy Point to Veazie Dam including the Eastern Channel

MAIN BRANCH SIGNIFICANT RIVER RESOURCE VALUES

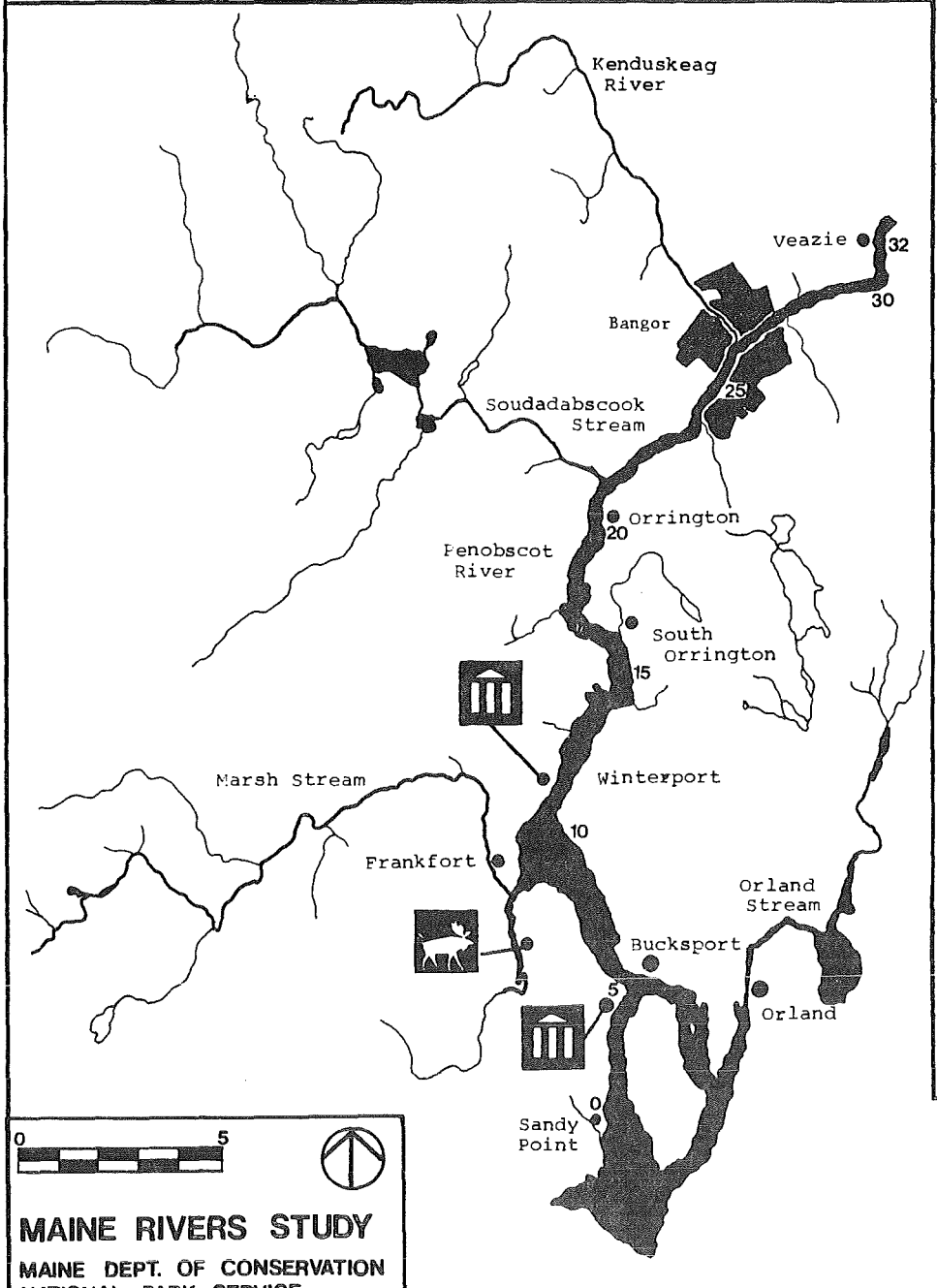
TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES

Orland River

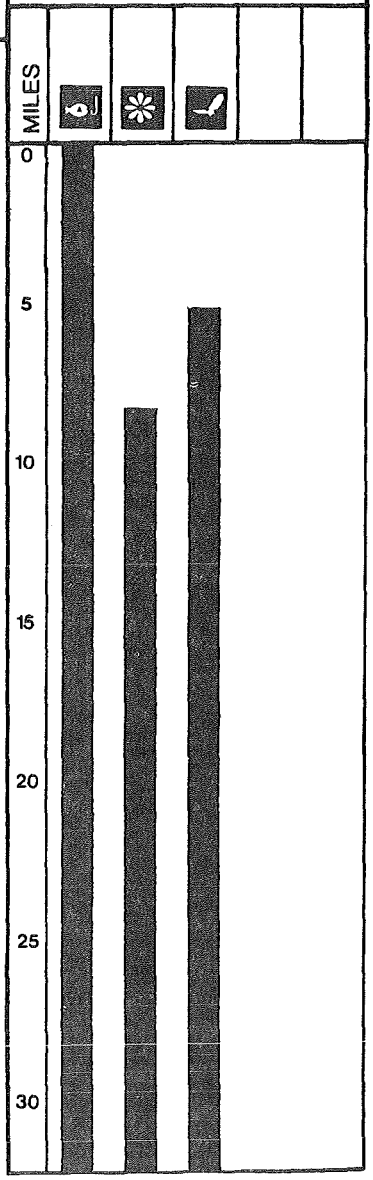
Souadabscook Stream

Marsh Stream

Kenduskeag Stream



MAIN BRANCH SIGNIFICANT RIVER RESOURCE VALUES BY SEGMENT



0 5

MAINE RIVERS STUDY

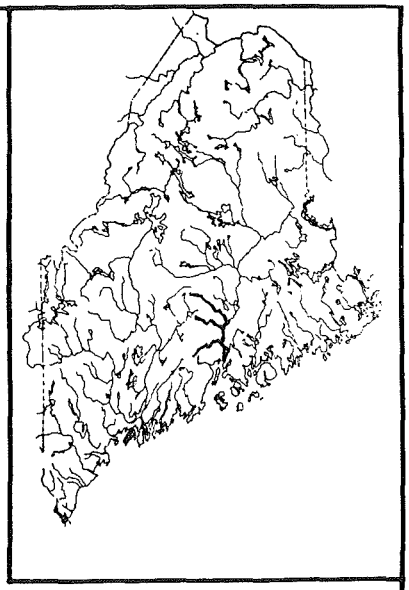
MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE

MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: Main Stem Penobscot River — **Length in miles:** 32

Segment: Sandy Point to Veazie Dam including the Eastern Channel — **County:** Waldo, Hancock Penobscot

Tributaries included:		
	Marsh Stream	Penobscot River to headwaters including North and South Branches (25)
	Souadabscook Stream	Penobscot River to headwaters (12)
	Kenduskeag Stream	Penobscot River to headwaters (30)
	Orland Stream	East Channel Penobscot River to headwaters including Dead and Narramissic Rivers (16)



River Values

Critical/Ecologic: The segment from Bucksport to Veazie Dam is regarded by wildlife experts as one of the three most outstanding areas for wintering bald eagles in the state. A seasonal influx of eagles from frozen inland lakes produces the highest density of wintering eagles in the state in certain years along this segment of the Penobscot.

The river corridor from Bowden Point to Veazie provides known or historic habitat for a variety of rare or threatened plant species including one species with national level significance, two species with New England level significance, and three plant species significant on the state level. Two vascular plant species with New England or state significance have historic habitat on Marsh Stream between the bay and Stream Road.

Tributaries at the mouth of the Penobscot support salt marsh/meadow habitats recognized as regionally significant.

Mendall Marsh Wildlife Management Area, containing tidal wetland habitat for migrating waterfowl, is on South Branch Marsh Stream.

Anadromous Fish: The river has been re-established as an Atlantic Salmon run and is reported to be the nation's largest salmon fishery. The segment is the highest priority salmon fishery in the state as evidenced by high state and federal restoration expenditures for stocking and fishways, as well as having high public interest. The Bangor and Veasey Dam Pools are reportedly the most productive and intensely fished salmon pools in the eastern U.S. The river has high production potential for rainbow smelt and is a popular spring smelt fishery. Anadromous species diversity and abundance is second only to the lower Kennebec. Other anadromous species include Atlantic sturgeon, alewife, American eel, American shad, bluebacked herring, and striped bass. The Orland River, located at the Penobscot's mouth is an important commercial alewife fishery.

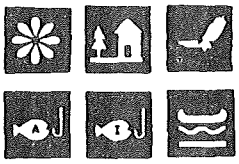
Boating: Tributaries to the Penobscot (including the Marsh, Souadabscook, and Kenduskeag) offer significant white water and flat water canoeing possibilities of high importance to local boaters. The easy access and proximity to population centers of this section of the Penobscot add to its recreational boating significance.

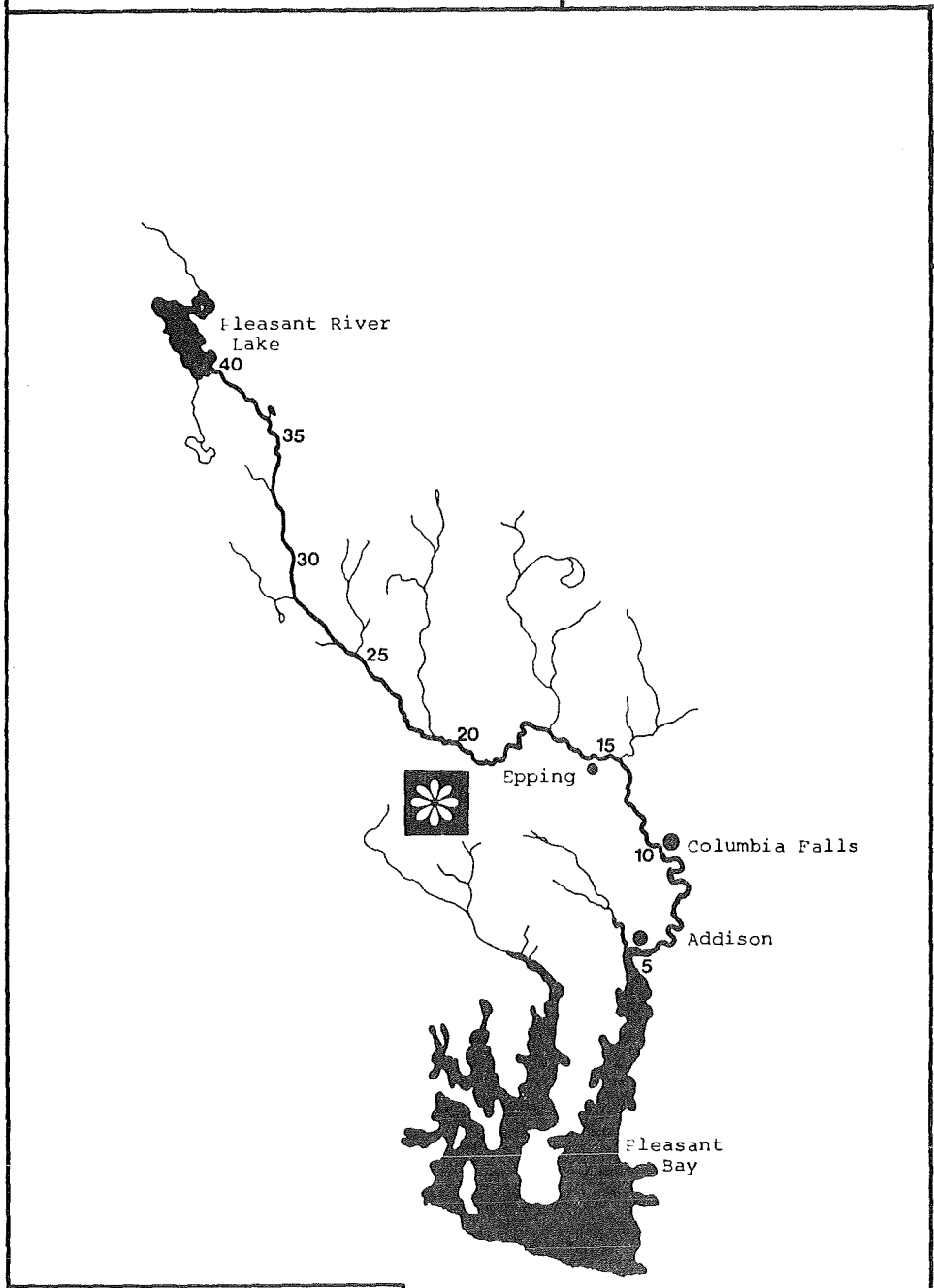
Historic: Fort Knox, a fortification constructed after settlement of the Maine boundary dispute with Great Britain, is a National Historic Landmark located on the west bank of the Penobscot River in the vicinity of Prospect. Winterport Historic District, an area which developed as an ice-free winter port for Bangor during the 19th century, is on the National Register of Historic Places.

Pleasant River

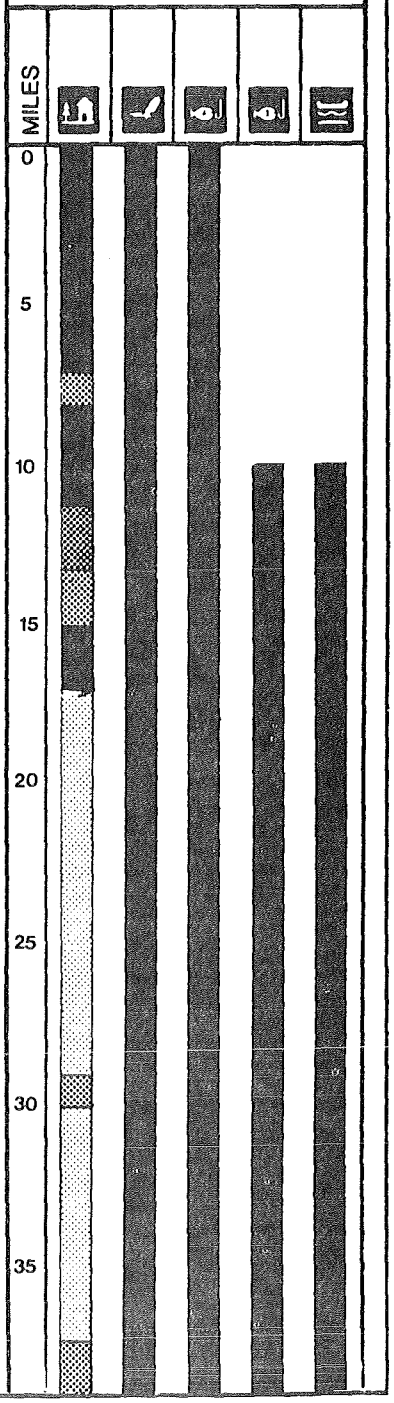
Seavey Point to headwaters of
Pleasant River Lake

MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES



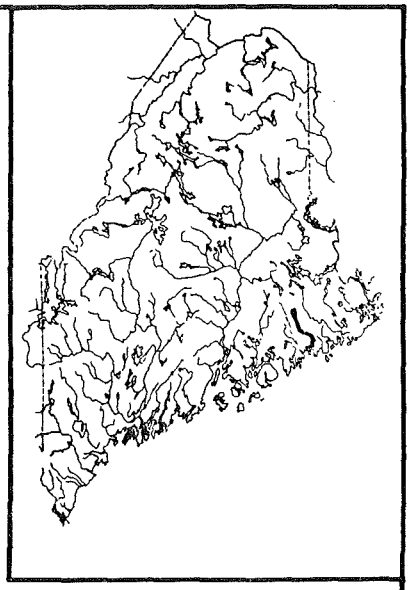


MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES
BY SEGMENT



MAINE RIVERS STUDY

MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE



MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: Pleasant River **Length in miles:** 46

Segment: Seavey Point to headwaters of Pleasant River Lake **County:** Washington

River Values

Geologic/Hydrologic: Pineo Ridge, one of the most outstanding examples in the eastern U.S. of a wash board moraine glacial delta, is located near the middle section of the Pleasant River. The area displays a significant diversity of glacial and geomorphic features including kettle hole ponds, wave cut cliffs, parallel moraine fields, and dry stream beds.

Saco Falls is under review for designation as a significant waterfall by the Critical Areas Program.

Critical/Ecologic: The segment from Seavey Point to Columbia Falls flows through a diverse series of coastal tidal ecosystems, including kelp beds, eelgrass bottoms, salt marshes, broadworm and clam flats, and nesting islands.

The segment from Pleasant Bay upstream to the headwaters has been identified by experts as one of the more important areas of bald eagle habitat in the state. One pair of eagles presently nests in the river corridor, and the area receives regular use by wintering eagles.

The middle section of the river flows through the Great Heath, the largest undisturbed raised bog and peatland in Maine, accessible primarily by canoe. This 6000 acre heath, unparalleled in the northeastern U.S., occurs in a depression formed by a glacial lobe. It has unique subartic type flora including the rare Arethusa (Arethusa bulbosa) with New England level of significance.

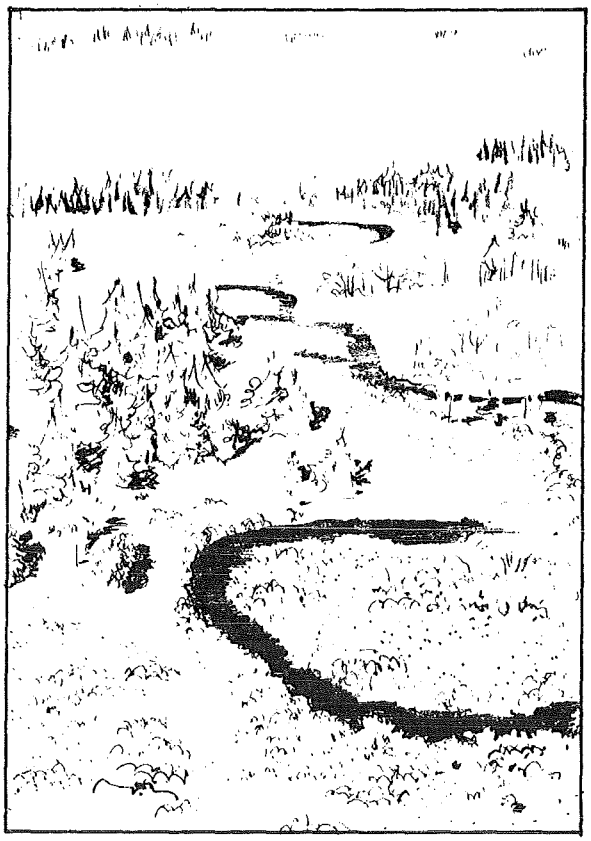
The middle river corridor contains regionally important areas of blueberry barrens.

Undeveloped: The river corridor from Columbia Falls to Pleasant River Lake is almost totally free of human intrusion, and includes an 18 mile segment unparalleled by major highways and crossed only once by a minor bridge.

Anadromous Fish: The Pleasant is significant as one of only six U.S. rivers with a viable self-sustaining Atlantic salmon population. The salmon run is small. Restoration efforts include fishway projects at Saco Falls and Pleasant River Lake. The river also contains sea run brook trout, rainbow smelt, American eel, and American shad. Shad were an historically abundant species in the river.

Inland Fish: The segment from Saco Falls to the Pleasant River Lake is a significant native brook trout fishery with easy access and high habitat and water quality.

Boating: The Pleasant River offers a variety of boat trips of up to 33 miles. The upper segment is forested and scenic with occasional white water, the middle portion is slow flat-water meandering through undeveloped meadows, while the lower river is under tidal influence and passes through a more settled corridor area. Boating use of the river is moderate.



West Branch Pleasant River

Main stem to Fourth West Branch Pond

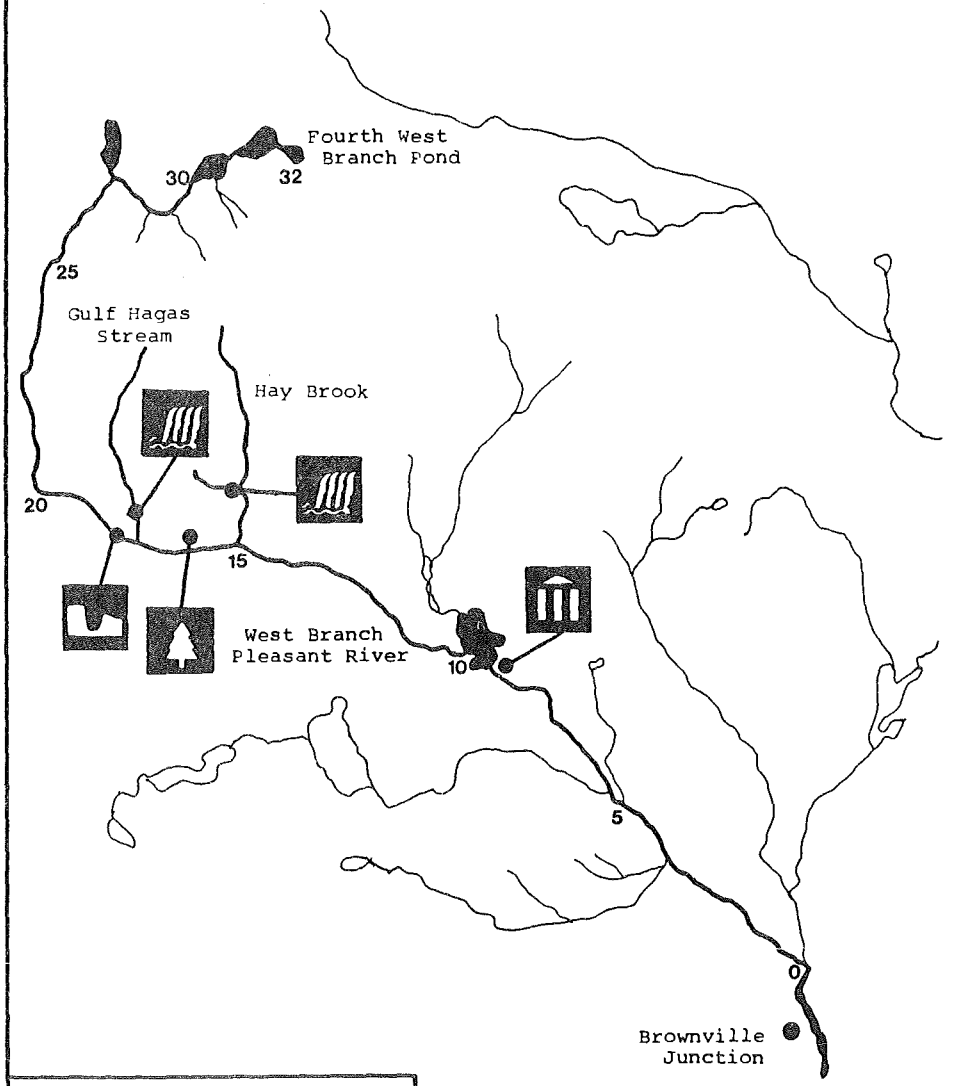
MAIN BRANCH SIGNIFICANT RIVER RESOURCE VALUES

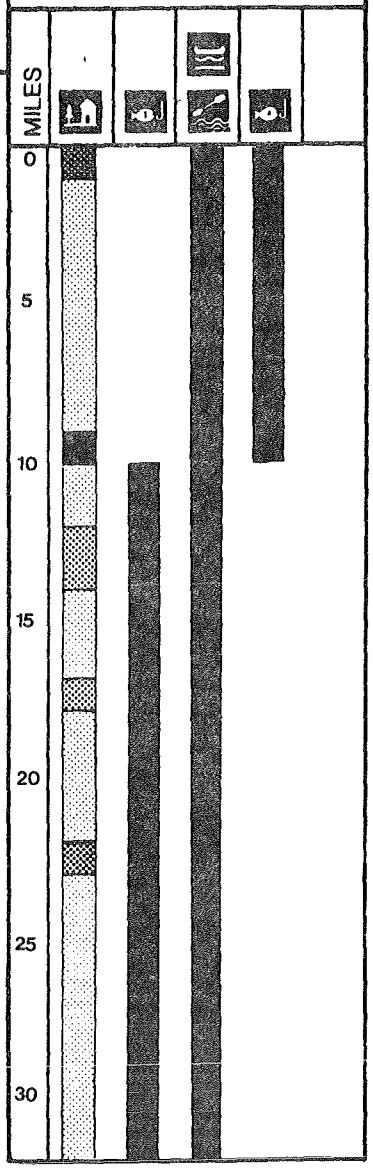
TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES

Hay Brook

Gulf Hagas Stream

MAIN BRANCH SIGNIFICANT RIVER RESOURCE VALUES BY SEGMENT

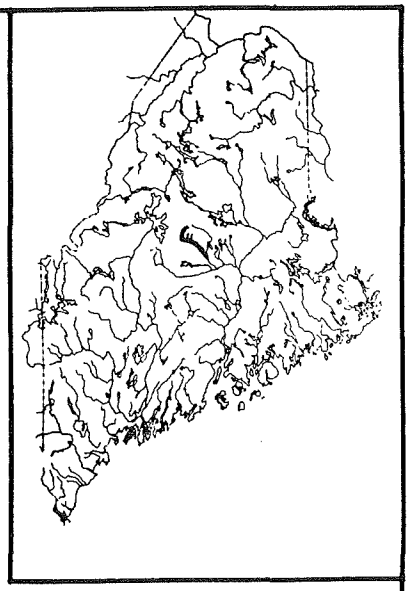




0 5 MILES

MAINE RIVERS STUDY

MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE



MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: West Branch Pleasant River **Length in miles:** 32

Segment: Main stem to Fourth West Branch Pond **County:** Piscataquis

Tributaries included: Hay Brook — West Branch Pleasant River to headwaters (4)
Gulf Hagas Stream — West Branch Pleasant River to headwaters (5)

River Values

Geologic/Hydrologic: Gulf Hagas, a two mile wild river gorge, is a National Natural Landmark and on the Maine Register of Critical Areas. Screw Anger Falls on Gulf Hagas Stream, and Hay Brook Falls on Hay Brook have been recognized by the Critical Areas Program as significant waterfalls.

Critical/Ecologic: Adjacent to river corridor between Pugwash Pond and Gulf Hagas Stream is The Hermitage, one of the last remaining old growth white pine forests in the northeast. It has been designated as a National Natural Landmark and is on the Maine Register of Critical Areas.

Undeveloped: This river is one of the most primitive areas in the state and one of Maine's top ten undeveloped rivers.

Scenic: The river contains an outstanding variety of geologic, hydrologic, and vegetative elements offering a unique diversity of views of an undeveloped river.

Anadromous Fish: Recent evidence of spawning Atlantic sea run salmon exists for the West Branch. The river has high potential as spawning habitat for the Penobscot salmon restoration program.

Inland Fish: The Silver Lake to First West Branch Pond segment is recognized as a quality native brook trout fishery. The segment is a highly popular local fishery with good access by auto and trail.

Boating: Above Silver Lake, the West Branch offers smoothwater canoe touring. Quality white water canoeing predominates on the downstream portion. The river is highly popular with local and Bangor area canoeists.

Historic: Katahdin Iron Works on the West Branch is on the National Register of Historic Places.

Saco River

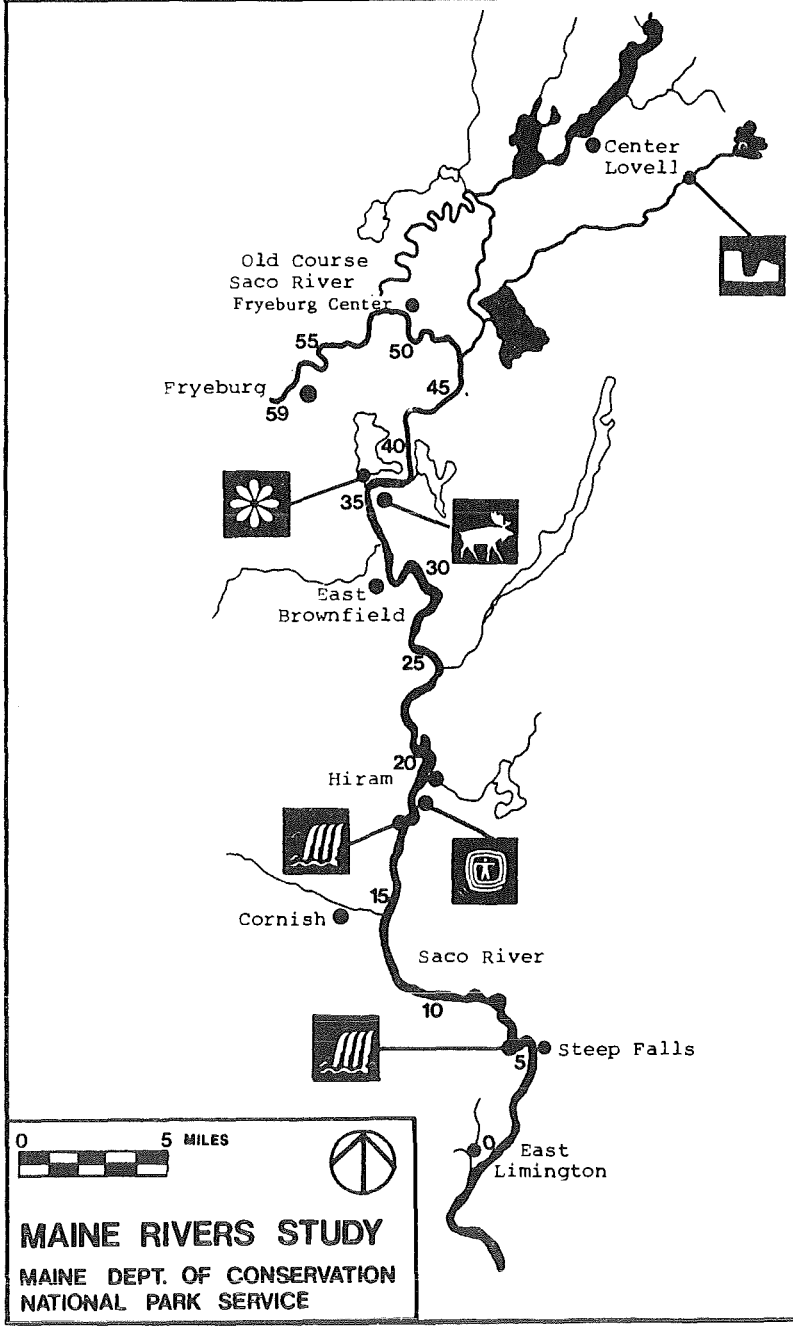
East Limington to New Hampshire border

MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES

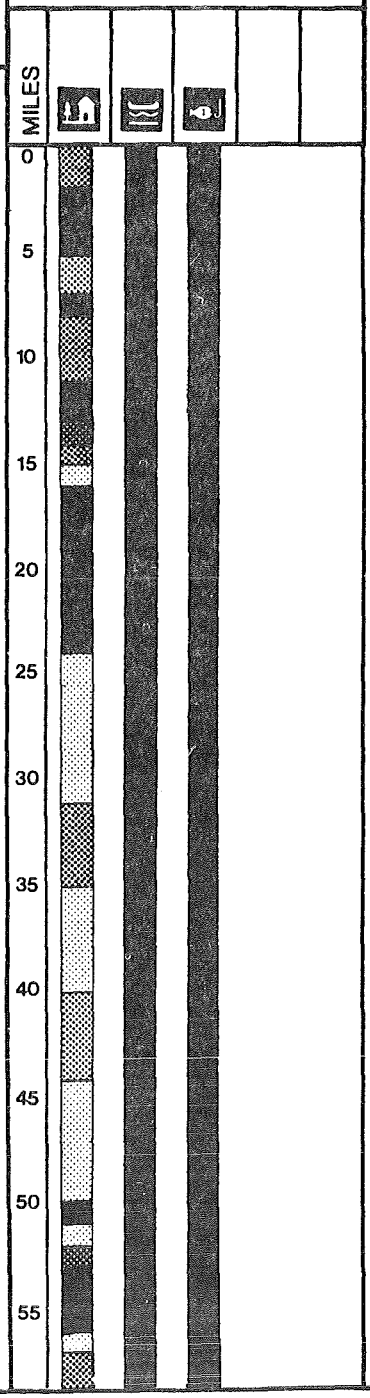
TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES

Old Course Saco River

Kezar River



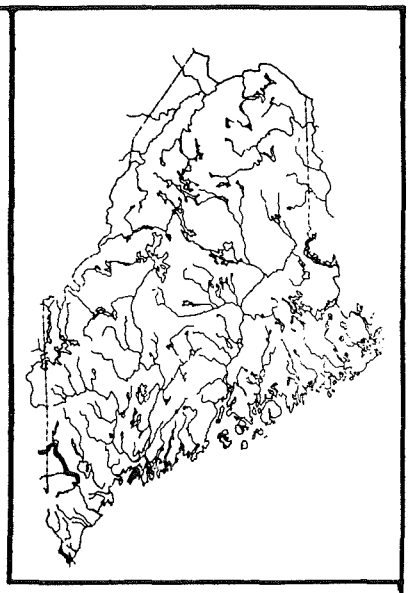
MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES
BY SEGMENT



0 5 MILES

MAINE RIVERS STUDY

MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE



MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: Saco River **Length in miles:** 59

Segment: East Limington to New Hampshire border **County:** Oxford, Cumberland

Tributaries included: Old Course Saco River
Kezar River
Saco River to headwaters (16)
Old Course Saco River to headwaters (16)

River Values

Geologic/Hydrologic: The Saco River, including the Old Course, has some of the most outstanding examples of meandering river channels in the northeast region. Hiram Falls and Steep Falls have been identified by the Critical Areas Program as having statewide importance. Significant features on the Kezar River include a river gorge and glacial eskers which have been identified as significant by the Critical Areas Program.

Critical/Ecologic: The only known locality in Maine of a species of wildflower rare at New England region level of significance, is located at Lovewell Pond adjacent to the river corridor. Hiram Nature Study area and Brownfield Bog Wildlife Management Area are important ecologic areas along this segment of the Saco.

Vast expenses of wetlands and swamp forest significant for this region of the state occur along the river between Fryeburg Center and East Brownfield.

Undeveloped: The area from Hiram to Fryeburg is the most undeveloped high order river corridor in this part of the state, and one of the least developed river areas in the entire state.

Scenic: A unique and diverse juxtaposition of land, water and vegetation elements combine to provide outstanding scenery along the entire undeveloped river area.

Anadromous Fish: The Saco was an historic anadromous fishery.

Inland Fish: The Saco, from Bonney Eagle Dam to the New Hampshire border, is recognized as a significant native and stocked fishery with brown trout, brook trout, rainbow trout, and black bass. The Saco is a popular fishery because of its proximity to population centers, and is a high priority to Maine fishing interests.

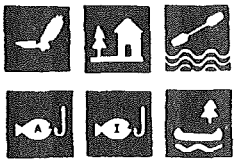
Boating: The Saco is Maine's most heavily used canoe touring river due to its easy navigation, clean water, variety of scenery, and easy access. The river is highly popular for family canoe camping. The Saco is generally regarded as Maine's highest priority smooth water canoe touring river.

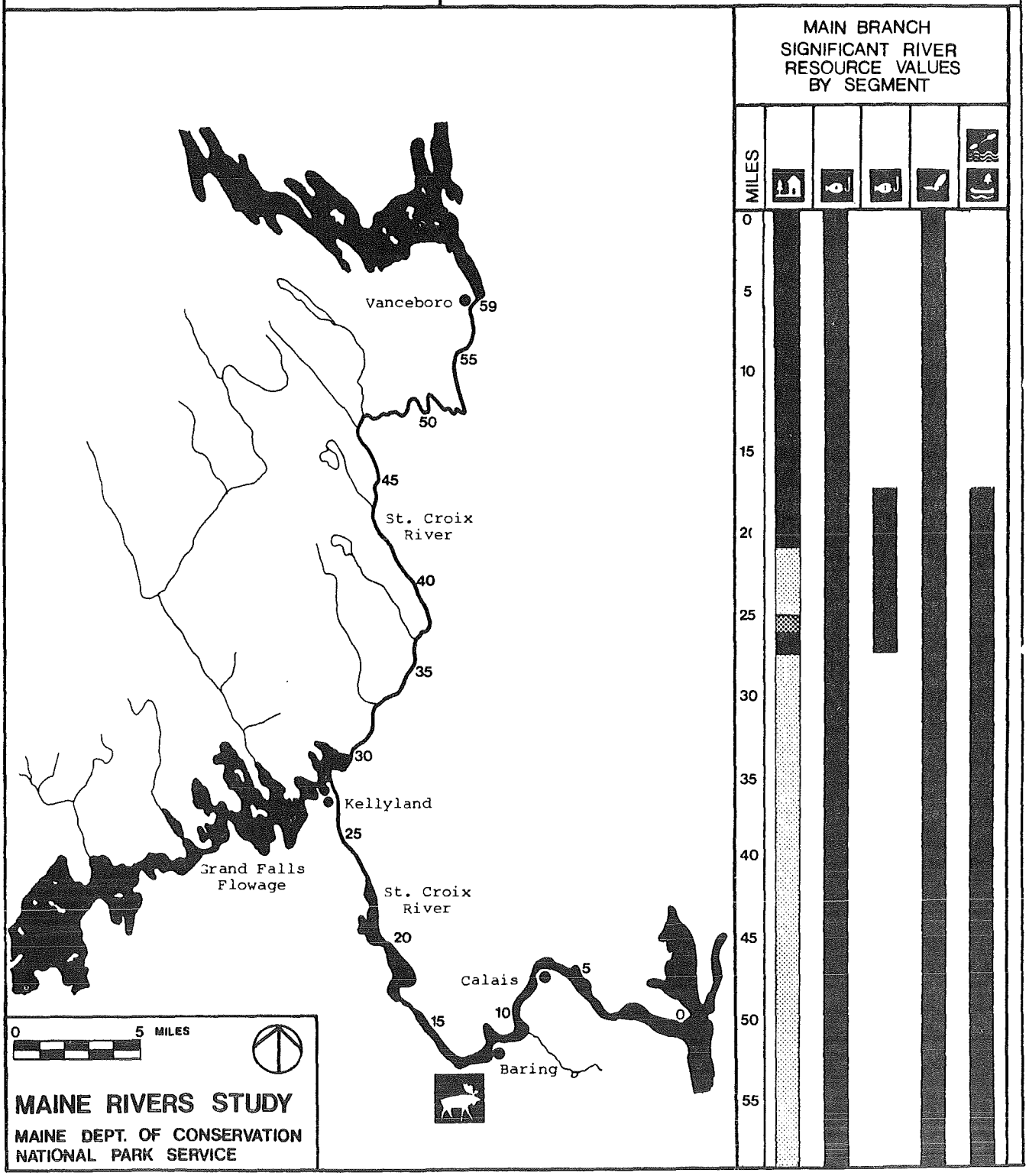
Historic: Hemlock Bridge, spanning the Old Course Saco River near Fryeburg Center, is on the National Register of Historic Places.

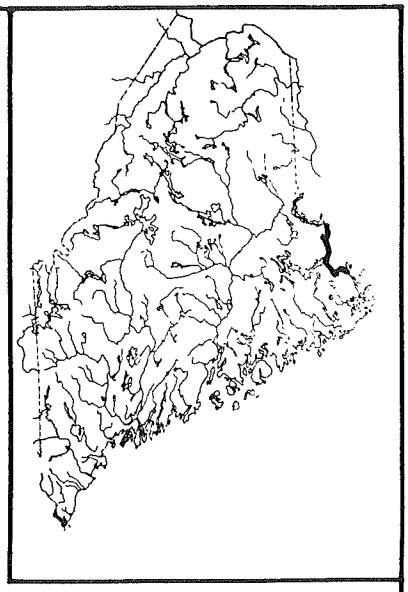
St. Croix River

Oak Point to Spednik Lake

MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES







MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: St. Croix River **Length in miles:** 59

Segment: Oak Point to Spednik Lake **County:** Washington

River Values

Critical/Ecologic: The entire river segment from tidal marshes to upstream lakes is regarded by experts as one of the seven most important bald eagle nesting and wintering rivers in the state. The river is used by three pairs of nesting eagles, as well as use by wintering eagles and transient immature eagles.

The lower St. Croix River corridor upstream of Calais is bordered by the 22,000 acre Moosehorn National Wildlife Refuge, an extensive protection area containing a variety of riverine, wetland, and upland environments for waterfowl and wildlife.

Undeveloped: The segment from Grand Falls Flowage to Vanceboro is one of the ten most undeveloped rivers in Maine, and one of the least developed high order rivers in the northeast United States.

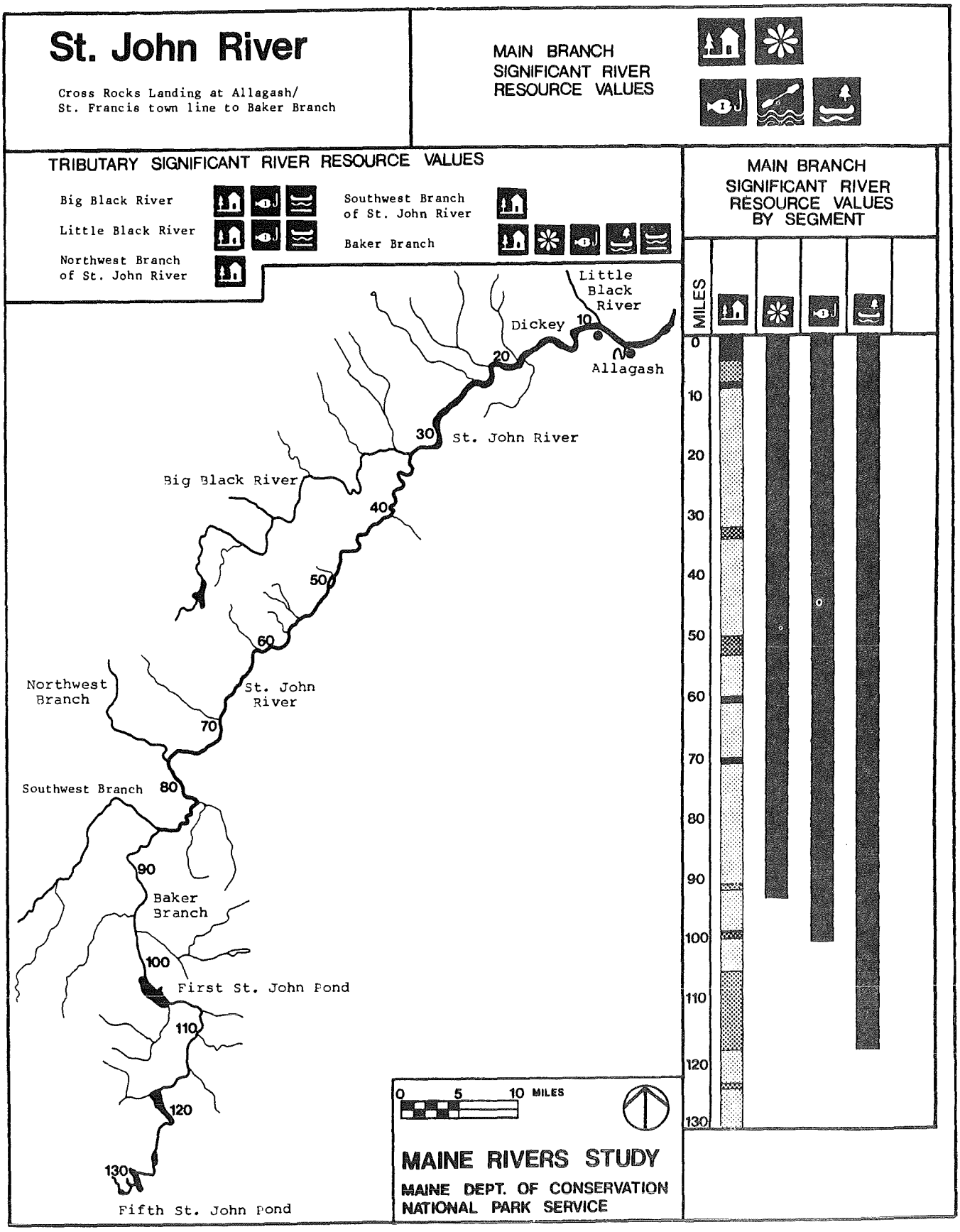
Scenic: A unique and diverse range of views related to a variety of spatial enclosures, topographic diversity and land uses.

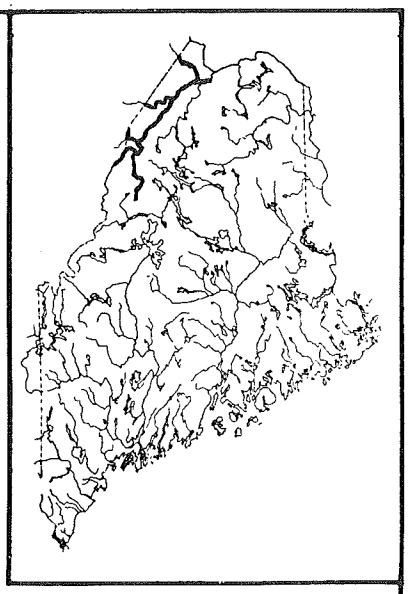
Anadromous Fish: Due to its large drainage area and an extensive lake system, the St. Croix has outstanding potential for increased anadromous fish production including sea run salmon, rainbow smelt, alewife, and American shad. Interest in restoration exists and future international efforts are likely. River clean up efforts have been initiated.

Inland Fish: The segment from Woodland to Kellyland is a popular and ecologically significant native small mouth bass fishery. Access to many areas is restricted to canoes. This segment and the Kellyland to Vanceboro segment is used heavily by fishing guides.

Boating: The St. Croix is significant as a novice to intermediate semi-wilderness excursion river. The 33 mile segment between Vanceboro and Kellyland contains class I-III rapids and is given high priority by Maine recreational boating interests and canoe outfitters and guides. Flow regulation gives the St. Croix a longer use season than most Maine rivers.

Other: The river marks the international boundary between Maine and New Brunswick.


St. John River
Cross Rocks Landing at Allagash/
St. Francis town line to Baker Branch
MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES
TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES
Big Black River
Little Black River
Northwest Branch
of St. John River
Southwest Branch
of St. John River
Baker Branch
MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES
BY SEGMENT
MILES
0
10
20
30
40
50
60
70
80
90
100
110
120
130
Little
Black
River
Dickey
10
Allagash
20
30
St. John River
Big Black River
40
50
60
Northwest
Branch
St. John
River
70
Southwest Branch
80
90
Baker
Branch
100
First St. John Pond
110
120
130
Fifth St. John Pond
0 5 10 MILES
MAINE RIVERS STUDY
MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE



MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: St. John River

Length in miles: 84

Segment: Cross Rocks Landing at Allagash/St. Francis town line to Baker Branch

County: Aroostook, Somerset

Tributaries included:

Big Black River	St. John River to Canada (29)
Little Black River	St. John River to headwaters (27)
Northwest Branch of St. John River	St. John River to Beaver Pond (14)
Southwest Branch of St. John River	Baker Branch to St. Camille Bridge (34)
Baker Branch	St. John River to First St. John Pond (46)

River Values

Geologic/Hydrologic: The segment contains a regionally significant and unique group of river islands in a variety of sizes and shapes in the Seven Islands area.

Critical/Ecologic: The entire river area from Cross Rocks Landing to middle Baker Branch has habitat for a significant variety of rare and threatened plants, including the Furbish Lousewort, (Pedicularis furbishiae) on the Federal Endangered species list, as well as the St. John Oxytrope, (Oxytropis johannensis), and New England Violet, (Viola novae-angliae), which are both under review for addition to the list.

The highest concentration of rare plants is on the 16 mile segment from Cross Rocks Landing to Hafford Brook which contains riverine habitat for seven nationally significant species, nine species with New England level significance, and two plant species important at the state level.

Localities of rare plants are evenly distributed throughout the remainder of the Upper St. John to middle Baker Branch, with the presence of three plants with national significance, nine species important at the New England level, and four species rare at the state level.

The Little Black River is the location of one of the largest deer wintering areas in Maine (4000 zoned acres).

Undeveloped: The St. John River is the largest, least developed, longest free flowing river system in one of the most remote and primitive regions east of the Mississippi River.

Scenic: The Baker Branch and St. John River possesses a unique juxtaposition and diversity of hydrologic, vegetative, and physiographic elements resulting in an outstanding scenic area.

Inland Fish: The entire watershed is a native brook trout and landlocked salmon fishery offering a unique semi-wilderness fishing experience. Access is restricted and use is moderate. The consistent quality of the fishing resource over an extended distance adds to the river's overall significance.

Boating: The St. John is remote, natural, free flowing, and extensive, factors which make this a back country excursion river unequalled in the eastern U.S. The 128-mile trip from 4th St. John Pond to Dickey is the state's longest semi-wilderness river segment, offering both easy canoe touring and white water. Big Rapids and Big Black Rapids (both class III) are recognized as significant white water by the Maine Critical Areas Program. The St. John is consistently rated by Maine boating interests as the state's highest quality canoe excursion river and is of economic importance to commercial guides and outfitters.

Other: The St. John River marks the international border between New Brunswick, Canada and the United States.

Sheepscot River

Wiscasset to headwaters

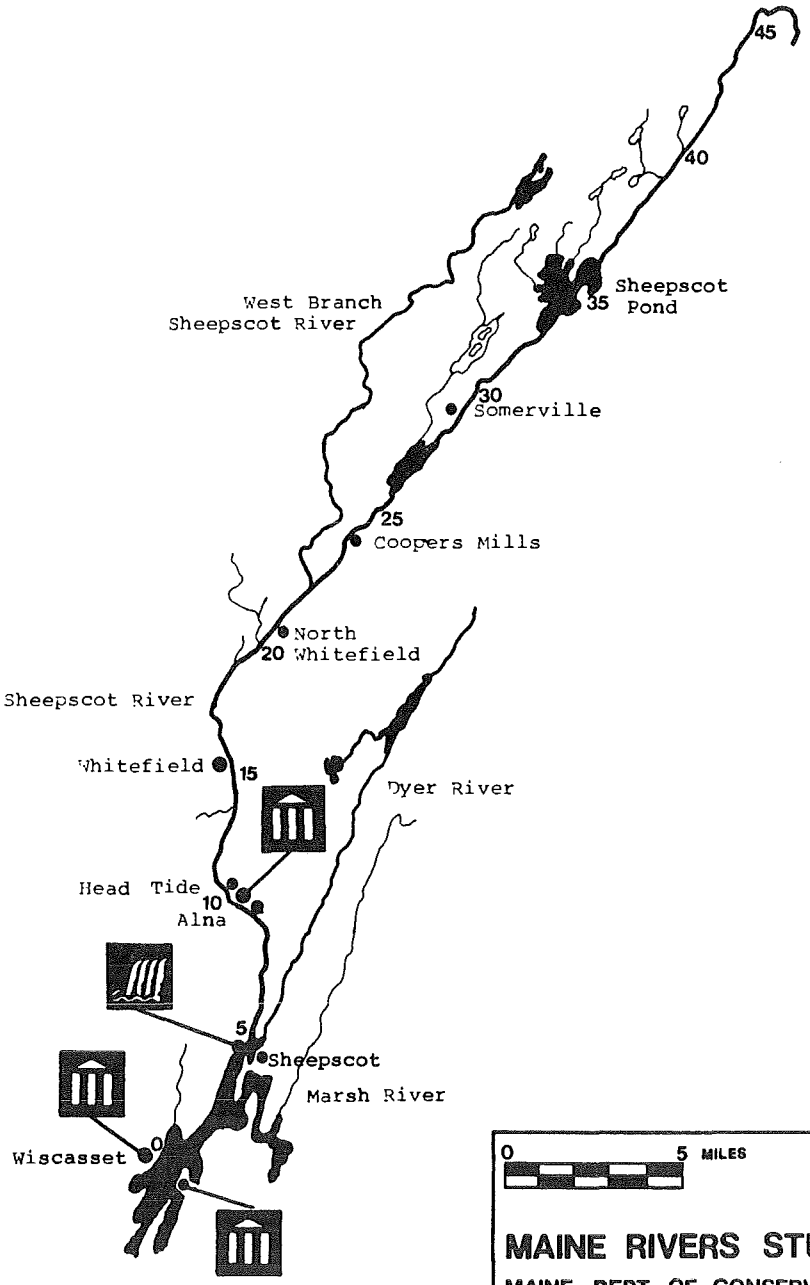
MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES

TRIBUTARY SIGNIFICANT RIVER RESOURCE VALUES

Marsh River

Dyer River

West Branch
Sheepscot River

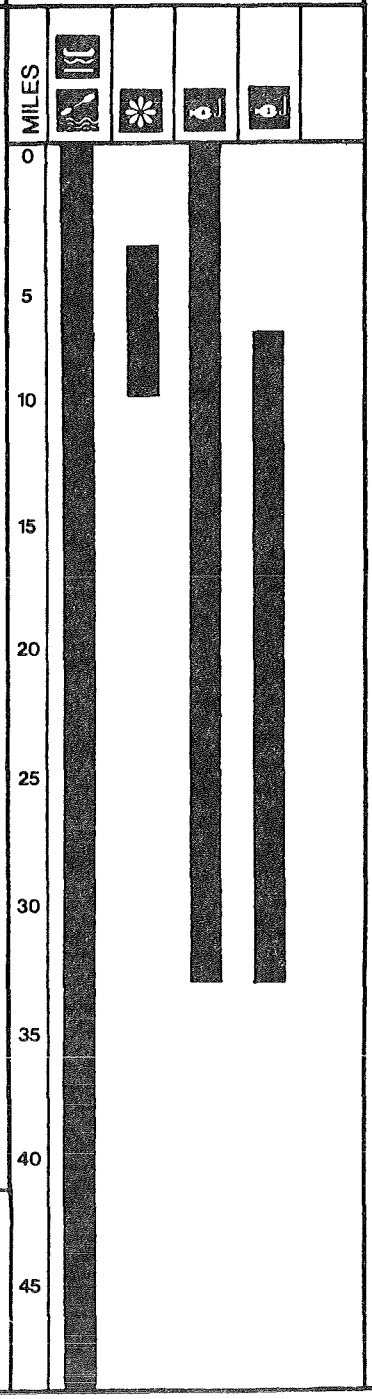


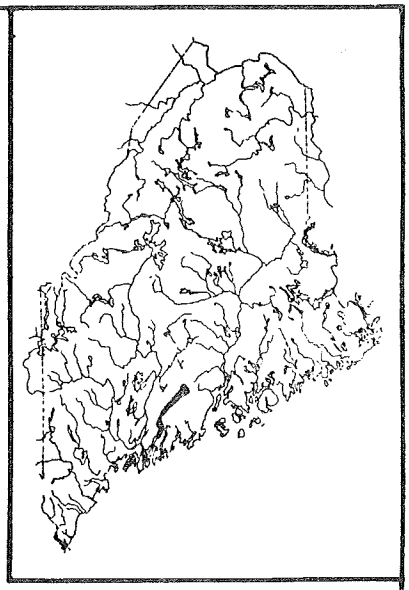
0 5 MILES

MAINE RIVERS STUDY

MAINE DEPT. OF CONSERVATION
NATIONAL PARK SERVICE

MAIN BRANCH
SIGNIFICANT RIVER
RESOURCE VALUES
BY SEGMENT





MAINE RIVERS STUDY
SIGNIFICANT RIVER RELATED NATURAL AND RECREATIONAL VALUES

River name: Sheepscot River — Length in miles: 49

Segment: Wiscasset to headwaters — County: Lincoln, Kennebec, Waldo

Tributaries included:

Marsh River	Sheepscot River to New Castle (6.5)
Dyer River	Sheepscot River to North New Castle (4)
West Branch Sheepscot River	Sheepscot River to Branch Pond (16)

River Values

Geologic/Hydrologic: A unique set of reversible falls occur in the tidal channel below the village of Sheepscot.

Critical/Ecologic: The river contains the northernmost natural oyster population in the United States and the only significant American oyster bed entirely within Maine waters.

The river segment from Lehman Island to north of Alna has historic habitat for five rare and threatened vascular plants with New England and state levels of significance.

The Sheepscot and Dyer Rivers support regionally significant salt marsh/meadow habitats of 329 and 300 acres.

Undeveloped: The segment above Coopers Mills is one of the more undeveloped river corridors in the mid-coastal region of the state.

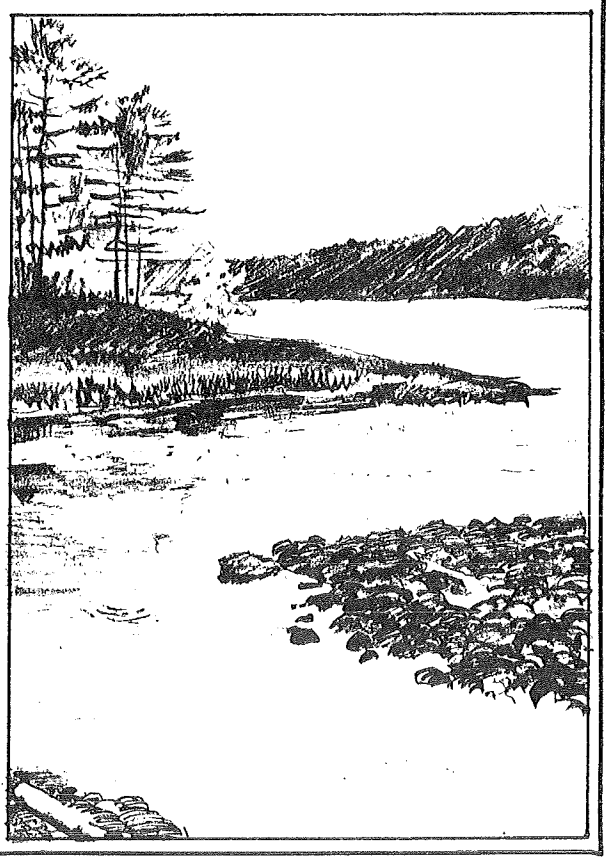
Scenic: An extremely diverse juxtaposition and combination of land, water, vegetative, and cultural elements are within the river and associated land corridors.

Anadromous Fish: The Sheepscot is the southernmost of Maine's six self-sustaining Atlantic sea run salmon rivers. It also provides habitat for the endangered short nosed sturgeon and the commercially important alewife (6% of the state's total) as well as rainbow smelt, American shad, and striped bass. An active restoration program includes a fishway at Cooper's Mills.

Inland Fish: The Headtide to Sheepscot Lake segment is recognized as a high quality brook trout, and land-locked salmon fishery. The river is mostly stocked. Diverse tributaries and ponds provide important spawning habitat. The segment is rated as the highest priority mid-coastal fishery river by Maine fishing interests.

Boating: The Sheepscot offers a variety of pleasant and diverse spring runoff boating trips through rural towns and countryside. Smooth water canoe touring predominates, though the segment also offers a total of two miles of class II-III rapids. Proximity to population centers and good access adds to the river's recreational popularity.

Historic: River-related sites on National Register of Historic Places are present in Edgecomb, Alna, Wiscasset, and Head Tide.



VII. OPTIONS FOR CONSERVATION OF RIVERS

The following river conservation options have been written in response to the assessment of the rivers and related resources identified through this study and described within the preceding sections. This discussion seeks to offer a variety of alternatives whereby the significant rivers of Maine can be conserved and the short term as well as the long term threats to their integrity can be addressed. As alternatives, these options should be construed as potential but realistic techniques and programs which could avoid or mitigate some of the problems now confronting the rivers of Maine.

The options identified are by no means an exhaustive list, but should be used to stimulate thinking about possible strategies for conserving rivers and their adjacent corridors These techniques are designed to be used alone or in combination, although in some cases there may be overlap between them. Some options can be undertaken right now; in some cases programs exist which can address a particular threat or issue. Other options need greater preparation, education, and commitment.

It is important to view the conservation of Maine's rivers as a shared responsiblity. Only through the combined efforts of landowners, private groups, local and State government, and where appropriate, the Federal government, can a comprehensive and meaningful State river conservation effort be continued. At a time of decreased public expenditure for conservation efforts and concern with over-regulation, local landowners and governments, and private conservation groups will be playing an ever increasing role in protecting the natural and recreational resources of the rivers of the State.

OPTION 1. RIVER CONSERVATION-ENERGY DEVELOPMENT COORDINATION

The State, in cooperation with local governments, private conservation and recreation groups, private utility companies and the National Park Service, could initiate a river conservation and energy facility study to coordinate river-related activities and reduce potential conflicts.

Competition for Maine's most significant rivers has dramatically increased over the last decade in part due to increased interest in hydropower facility development. Additional interest, exemplified by this study, has also been shown toward the conservation and recreation use of these valuable waterways. Obviously it is important to consider a number of competing river uses when identifying and selecting river segments for conservation or energy development. Unfortunately this evaluation is frequently done on a case-by-case basis in response to a particular proposal. This type of ad hoc approach to resource decisionmaking usually does very little to coordinate government and private sector actions and reduce the number of river-resource conflicts.

An alternative to more effectively coordinate the energy and conservation activities of the government and the private sector would be for the State to initiate a river conservation and energy facility study. The purpose of such an effort could be to identify potential conflicts between federal and

state river-related natural resource areas and potential energy projects. In addition to assessing the relationship between energy and conservation priorities, the study could focus on conflict resolution, the development of site-specific mitigation strategies and alternative river resource use scenarios.

OPTION 2. FEDERAL ENERGY REGULATORY COMMISSION (FERC) CONSISTENCY

The State could initiate an interagency agreement, between Maine and the Federal Energy Regulatory Commission, which would help to guarantee the integrity of state resource protection laws in relationship to hydropower development.

Many of the unique and significant rivers identified by the Maine Rivers Study are being considered for the development of hydro facilities. The State of Maine's Energy Policy supports the development of hydropower, and numerous proposals for the retrofitting of old dam sites and the construction of new dam sites are now being considered by FERC.

Congress, through the 1978 Federal Public Utility Regulatory Policies Act (PURPA) and the 1980 Energy Security Act, also has attempted to create incentives to encourage the development of hydropower facilities. In addition a provision of the Energy Security Act grants FERC the right to exempt from Federal regulations certain size and type projects. Moreover, the Federal Power Act gives FERC the authority to override state laws in the issue of a license to construct and operate a hydro facility. This "deregulation" at the state and federal level has significantly increased the possibility for environmental damage to river areas and reduces the State's ability to influence certain water resource decisions.

An alternative to address FERC's ability to preempt State authority and policy would be to encourage FERC and the State to negotiate an interagency agreement which would guarantee the integrity of Maine's resource protection laws through recognition of a state comprehensive plan for water resource development and conservation. Section 10(a) of the Federal Power Act requires that a proposed water power project be in accordance with a "comprehensive plan." In addition to provisions for hydropower development, this plan should recognize other "beneficial public uses," including recreation, fish and wildlife protection, and resource conservation. The adoption of a state recognized comprehensive river conservation and development plan would help insure that future FERC licensing decisions will be consistent with state development and conservation priorities.

The Maine Department of Conservation's Maine Rivers Study, the Department of Environmental Protection's water quality improvement plans, and the fisheries management plans currently being developed by the Department of Inland Fisheries and Wildlife and the Department of Marine Resources, coupled with a list of hydropower priorities defined by the Office of Energy Resources could serve as a basis for the comprehensive plan for the state's water resources. As a part of the plan, specific rivers identified in this study as having high resource value could be identified as being off-limits to new hydropower projects.

This type of comprehensive cooperative effort between private and public river interests could help to insure that significant river areas are protected while allowing hydroelectric generating facilities to be reinstated or developed. In addition the effort if oriented toward influencing river decisions in the early planning stages could decrease future conflicts and increase multiple use of river areas.

OPTION 3. STATE AGENCY CONSISTENCY

The Governor could issue a directive to all state agencies to avoid or minimize actions which might have adverse impacts on the rivers and related resources identified by this study.

Development along Maine's significant rivers continues to outpace the State and local governments ability to conserve these areas. Since certain river values have been inadvertently destroyed and degraded by public and private actions, it is important that State agencies proceed carefully and limit any adverse effects of their actions on rivers identified in the Maine Rivers Study.

The directive could require all state agencies, as part of their normal process of planning and environmental review, to consult with an identified state agency or the Land and Water Resources Council prior to making decisions or taking actions which could have an adverse impact on rivers identified as unique or significant by the Maine Rivers Study.

The purpose of this coordination requirement would be to provide an opportunity, early in the planning process, for experts from the coordinating state agency or the Land and Water Resources Council to aid other agencies in meeting program and project objectives while avoiding the inadvertent destruction of unique and outstanding river- related resources. Although the Governor's directive would not prohibit an agency from taking specific actions, each agency could be made responsible for studying, developing and describing all reasonable alternatives before acting, and for avoiding and mitigating adverse effects on rivers identified as significant in this study.

Early consultation would encourage better planning and could help to avoid costly and time consuming river-related resource conflicts. The consultation requirement would also create opportunities for early resolution of problems by policy-level officials.

OPTION 4. FEDERAL COORDINATION USING THE NATIONAL WILD AND SCENIC RIVERS ACT

The Governor could request the Secretary of the Interior to identify rivers and river segments identified by the Maine Rivers Study and the Nationwide Rivers Inventory as Section 5(d) rivers to encourage Federal agency coordination.

The National Wild and Scenic Rivers Act was established in 1968 to insure the conservation of significant free-flowing river areas by Federal, State, and local governments and private interests. The National Park Service, an agency within the Department of the Interior, has inventoried, evaluated

and identified rivers in Maine that meet the criteria for further study and/or potential inclusion into the National Wild and Scenic Rivers System. Specifically the study, entitled the Nationwide Rivers Inventory, identified 38 rivers and river segments comprising over 1,500 miles within Maine. These rivers are eligible for additional recognition under Section 5(d) of the Wild and Scenic Rivers Act (P.L. 90-542 as amended). The provisions of this section require that federal agencies, in all planning for the use and development of water and related land resources, give consideration to potential national wild, scenic and recreational river areas. Furthermore, all river basin and project plan reports submitted to the Congress shall consider and discuss these potential areas.

This recognition, which would require a request from the Governor to the Secretary, could help to insure that federal agency actions would be consistent with state efforts to conserve these important resources.

OPTION 5. FEDERAL CONSISTENCY ON COASTAL RIVERS

The State in consultation with local governments and private citizens, could through the use of the Coastal Zone Management Act insure that future federal agency actions within Maine's coastal area do not have an adverse effect on identified significant river resource values.

An opportunity exists to insure that future agency actions within the coastal area of Maine take care to avoid adverse effects on those significant natural and recreation resource values which have been identified in the Maine Rivers Study.

The Federal Coastal Zone Management Act stipulates that future federal agency activities affecting the coastal zone must be, to the maximum extent practicable, consistent with approved state management programs. This means that no federal license or permit affecting land and water uses within the coastal zone can be issued, and no federal assistance to State and local governments can be provided, unless the permit or grant is in accord with the State's coastal management program. This provision of the Act is intended to give the State and local governments some control over the acts of federal agencies that affect their territory.

A portion of the State's coastal program identifies "Geographic Area of Particular Concern" (GAPC). GAPC's are those areas which are considered to be of particular concern because of their "coastal-related values, characteristics or impacts on them." GAPC's represent coastal locations within Maine that are most in need of specific or immediate management attention in order to implement the Program's various policies.

The State in consultation with local governments and private individuals, could review the Coastal Management Program to insure that the significant natural and recreation river values that have been recognized are incorporated into Maine's plan. Such recognition could help to insure that the federal consistency provisions are effectively implemented.

OPTION 6. DESIGNATION INTO THE NATIONAL RIVERS SYSTEM

The State of Maine, through Congressional legislation or state and local government initiatives, could designate certain rivers into the National Wild and Scenic Rivers System to insure permanent river conservation.

In 1968, the National Wild and Scenic Rivers Act became law, establishing a framework within which examples of the nation's outstanding rivers and streams could be permanently protected in their natural state. The Congress declared that the established policy of building dams, levees and other water projects needed to be complemented by a policy that would preserve other selected rivers in their free-flowing condition. These selected rivers collectively would form the National Wild and Scenic Rivers System.

Several rivers were designated immediately as part of the System. However, the Act also included provisions for adding additional rivers to the System. The provisions of the Act allow for two methods by which rivers may become part of the System. These methods may generally be described as federally-initiated action or state-initiated action.

a. Federally-initiated action - Section 5(a). Under this method, Section 5(a) of the Wild and Scenic Rivers Act is amended by Congress to authorize the Secretary of the Interior and/or the Secretary of Agriculture to study a river as a potential addition to the System. When the study is completed, the appropriate Secretary reports to the President on the suitability or non-suitability of that river for addition to the System and recommends management strategies. The President then reports to the Congress on his recommendations and proposals with respect to the designation of the river as a component of the system. If the recommendations are affirmative and call for Federal administrative responsibility, and the proposals are acceptable to Congress, then Section 3(a) of the Act is amended to officially add the river to the System.

Although many of Maine's free-flowing rivers qualify for the National Rivers System, the Secretary of the Interior has directed the National Park Service to devote financial and human resources to already established areas within the system. Any new expansion of the National Wild and Scenic Rivers System, which requires direct federal involvement and management, would probably not be supported by the Department.

b. State-initiated action - Section 2(a)(ii). Under this method, the initiative for having a river added to the System does not involve Federal action. Most of the background work would be accomplished at the state or local government level, with the river being designated as wild, scenic, or recreational pursuant to an act of the State legislation. The State would then adopt a comprehensive management plan to permanently protect the scenic and recreational qualities of the river and adjoining lands and provide for public use and enjoyment.

At the request of the Governor, the management plan may then be submitted to the Secretary of the Interior with a report on the progress being made to implement the plan, and with a request to add the river to the System. The Secretary would have to determine whether the river meets Federal eligibility criteria, and agree that the management plan would effectively safeguard the river's attributes. After coordinating with other Federal agencies and assessing the environmental impact of the proposed addition, the Secretary can add the river to the National System by publishing notice in the Federal Register.

It is important to note that rivers designated under either of these options would be afforded the provisions of Section 7(a) and (b). Within these sections, the Federal Energy Regulation Commission, previously the Federal Power Commission, is directed not to license the construction of any dam, water conduit, reservoir, powerhouse, transmission line, or other project works under the Federal Power Act, on or directly affecting any river which is designated in Section 2(a)(ii), 3(a) or 5(a) of the Wild and Scenic Rivers Act. Additionally, no other Federal department may assist in the construction of any water resource project that would have a direct and adverse effect on such rivers.

The Allagash River in Aroostook County is an example of a river which has been placed in the National River System using the State-initiated action approach. Management of the river is under the jurisdiction of the state of Maine, with the Federal government having a minimal role.

OPTION 7. STATE RIVER CONSERVATION LEGISLATION

The Maine legislature could enact a law to conserve the State's most significant natural and recreational rivers.

The State legislature could enact a Maine Scenic Rivers Act to provide for the conservation of river areas which possess unique natural and recreation values of present and potential benefit to the citizens of the State. The intent of such a law could be the protection of these values within a State scenic rivers system.

Such a bill could describe the procedures and criteria for protecting and administering the system and for adding new components to it from time to time.

The focus of a scenic rivers program could include provisions for:

a) Cooperative efforts with state agencies, local governments, private organizations and individual property owners who are interested in participation.

b) The regulation, as necessary, of the undesirable and inappropriate use of the floodplain.

c) The direct participation of landowners and citizen interests.

d) Maximum use of existing programs, administrative authorities and funding programs.

e) The fullest possible development of conservation and recreation capabilities within the private sector.

f) The creation of a Scenic Rivers Council comprised of public and private sector representatives, to advise the Governor on the administration of the State Scenic Rivers System.

A State Scenic Rivers program could serve as an effective way to conserve river resource values in response to State and local government and private sector initiatives.

OPTION 8. TAX CREDITS FOR FISH HABITAT IMPROVEMENT

The State could enact legislation providing for personal and corporate income tax credits for a portion of the cost of projects designed to maintain or improve riparian and in-stream fish habitat in Maine rivers recognized by this study.

Many of the rivers and streams identified by this study are significant for their existing and potential fishery values. The residents of Maine are becoming increasingly aware of the rivers of the state as the water quality of the rivers continues to improve, and as higher energy costs encourage people to seek recreational opportunities closer to home. In many portions of the state, there may be increasing economic pressure to develop riparian lands for residential, commercial and industrial uses as a result of property tax assessments of these lands which reflect market values instead of their worth as natural riverine areas.

The state could pass legislation giving some form of tax relief for landowners of riparian areas such as differential assessment, property tax credits or exemptions which could be an effective mechanism to help insure the maintenance and improvement of these areas. The proposed legislation could be modeled after existing state programs for owners of timber areas who agree to maintain these areas in exchange for lower tax rates.

The legislation could declare that it is in the best interest of the state to maintain, conserve, and preserve river corridor lands to assure the protection of the soil, water, fish and wildlife resources of the state for the economic and social well being of the state and its citizens. Furthermore, this legislation could declare that riparian lands maintained in a natural and healthy condition is a legitimate land use that contributes to improved water quality, protection of aquatic and wildlife habitat, control of erosion, and prolonged stream flow.

The Maine Department of Inland Fisheries and Wildlife, the Land Use Regulation Commission, and the Department of Environmental Protection could develop standards and criteria for the designation of land as riparian. One definition of designatd riparian lands might be the beds of streams and their adjacent streamside vegetative communities which are predominately influenced by their association with the stream or river, these designated lands could be defined not to extend more than 250 feet landward of the line of nonaquatic vegetation.

Landowners would apply to their local tax assessors office for designation of their lands as riparian. These applications would be reviewed by the state or local governments to determine whether the lands qualify for such a designation.

This legislation could be a positive means of encouraging the conservation of significant river areas in Maine, and a way of involving local landowners in the river conservation process.

OPTION 9. RIVER CORRIDOR ASSESSMENTS

The State legislature could enact a law establishing temporary river commissions to conduct assessments on the present and potential uses of various major river corridors in Maine to determine the public policy regarding the use of these areas.

Various water pollution control efforts have significantly improved the water quality of a number of rivers which have been identified by this study. The public, through various environmental protection programs has spent vast sums of money to make these areas suitable for fishing, swimming and boating. Despite these efforts, little has been done to assure coordinated corridor development and maximize public access to these waters. Consideration could be given to the establishment of temporary river commissions to carry out river corridor assessments on selected areas to assess the existing and future uses of various river corridors to determine public policy regarding the use of these areas in relation to energy, conservation, housing, recreation, tourism, water quality and quantity, fishery resources and other similar uses.

The commission could be composed of landowners, representatives from local municipalities and cities, regional planning commissions, industry, members of concerned conservation groups and the public at large. The river commission could:

a. Identify significant natural, recreational, cultural and economic values of the river and its adjacent corridor.

b. Determine the existing and potential uses of the river and its corridor.

c. Assess the attitudes of landowners, local officials and river users regarding the existing and future use of the river.

d. Identify future goals and objectives of the private and public sector through discussions with landowners, local officials and river users.

e. Identify and analyze existing and potential land and water use issues.

f. Review existing laws and regulations affecting land use, development, and river conservation.

g. Develop strategies and alternatives to encourage the pursuit of the mutual goals of energy and economic development, river conservation, resource management, and expansion of tourism and recreational opportunities.

h. Identify for the Legislature possible options for future action.

These commissions could be used by State and local officials and landowners as an opportunity to determine the future uses of these river areas within a concerted amount of time.

OPTION 10. USE OF EXISTING STATE PROGRAMS, LAWS, AND REGULATIONS

The State could encourage river conservation through the increased use of existing State programs, laws, and regulations.

A variety of State programs and laws currently exist which influence decisions on the use of Maine's river resources. These programs and laws have the potential to be used more effectively in the future to help to avoid the inadvertent destruction of the river areas identified in this study.

The Land and Water Resources Council could, for instance, direct State agencies to implement their existing programs and laws in such a way as to enhance and conserve the river's values which have been recognized.

This would facilitate the consistent and efficient application of all relevant regulations. Individual agencies would still fulfill their assigned program and legislative responsibilities but would do so following formal consultation and coordination with other affected agencies. This coordination could be implemented through a river conservation and development task force made up to agency personnel responsible for enforcing river related regulations and/or granting development permits. Within this framework one agency could be designated to fulfill the coordination function or an interagency coordination office could be established.

Following review and approval, the Maine River Study findings could provide a focus for the setting of agency and task force conservation priorities. In addition, it could provide guidance for state review of shoreland zoning ordinances. The implementation of this river conservation option would facilitate the streamlining of permit procedures, provide consistency in the application of regulations, and provide a comprehensive approach to problem solving. This mechanism would also promote interagency communication and provide a formal conduit for the dissemination of new information regarding FERC license application changes, shoreline development proposals, etc. The systematic use of existing mechanisms is practical, expedient, and readily implementable within the state's existing legislative and regulatory framework.

Existing state laws and regulations which are now being used to conserve river resources include: the Site Location of Development Act, the Stream Alteration Act, the Mandatory Shorelands Zoning and Subdivision Control Act, the Coastal Wetlands Act, the Solid Waste Management Act, the Department of Environmental Protection's water quality control regulations, and the Register of Critical Areas Act, and the Land Use Regulation Commission's subdistricts. Two important State programs, with the potential to conserve significant river areas are:

10a. CRITICAL AREAS REGISTER

The State could evaluate the results of this study and designate appropriate rivers to the State Register of Critical Areas.

In 1974 the Maine Legislature approved an act establishing a State Register of Critical Areas to encourage the preservation and use of unusual and significant resource areas through land use planning, regulation and protective acquisition or management as appropriate.

A portion of the legislation establishes a Register of Critical Areas. The register is an official inventory of sites and areas of significant natural, scientific, scenic, or historical value. Termed "critical areas," these are sites which possess plant and animal life or geological features worthy of preservation.

The Critical Areas Program, within the State Planning Office, could evaluate the results of this study to determine which areas merit further study and recognition through the Register.

10b. USE OF LAND USE REGULATION COMMISSION SUBDISTRICTS

The State could conserve Maine's most significant rivers through the creation of special land use districts.

Many of Maine's most significant river areas flow through unorganized lands within the jurisdiction of the Maine Land Use Regulation Commission. The Commission using the State's Land Use Regulation Law has developed resource protection subdistricts for certain river areas. The protection subdistricts help to conserve significant river-related resource values while allowing for other appropriate types of land use development.

The Land Use Regulation Commission could assess the suitability and appropriateness of creating protection subdistricts on the rivers identified by this study.

This application of existing authorities not only can help to protect river corridors but also can play an important role in the development of cooperative agreements with landowners with regard to the management of private lands.

OPTION 11. COOPERATING AGREEMENTS

The State could enter into cooperative agreements with major landowners in Maine to conserve significant rivers.

Many of Maine's most significant rivers flow through large tracts of privately owned commercial forest lands. Certain large landowners such as the Great Northern Paper Company, have recognized the value of river conservation and its compatability with commercial forest activities. Great Northern recently entered into an agreement with the State which includes the donation of a conservation easement and the creation of a long-term resource protection plan for nearly 78 miles of the Penobscot River.

This approach to river conservation and public-private land stewardship could be initiated by the State for other river areas which flow through large landholdings.

OPTION 12. STATE RIVER MANAGEMENT PLANNING ON PUBLIC LANDS

State agencies could identify significant rivers located on their lands and take action to conserve these areas.

The State of Maine should set an example of sound river management for local governments and private landowners by taking an aggressive role in conserving significant river resources located on public lands. In this regard, the Governor could direct all State agencies to identify significant rivers flowing through public lands and develop river conservation management plans for these areas.

OPTION 13. INTERNATIONAL COOPERATION

The State could initiate an international cooperative agreement, to conserve and enhance significant boundary river areas, between the United States, Canada and Maine.

A number of significant rivers and river segments, identified by this study, form the international border between Canada and the United States. Such river areas as the St. Croix, the St. John and the St. Francis offer Maine the opportunity to create an international boundary waters recreation-conservation area.

These areas could be managed on a cooperative basis between Parks Canada, the State and the U.S. Department of the Interior.

Cooperative agreements, possibly designated using Parks Canada's "Agreements for Recreation and Conservation" as a model, could be developed to insure the conservation, enhancement and -- where appropriate -- the recreation development of this important river area.

VIII. Uses of the Study

The information gathered about rivers and related resources values in the Maine Rivers Study is comprehensive in nature, and hopefully will serve as a focus for identifying state priorities for the conservation and protection of rivers in Maine. This study should be incorporated into the decisionmaking framework of appropriate State agencies, local governments and private river conservation interests. Possible uses of the study are as follows:

1. Provide a framework for river resource conflict avoidance/mitigation activities.

2. Provide a framework for river conservation/development legislation.

3. Provide a focus for state efforts to effect federal/state/local consistency for river related programs and planning.

4. Identify resource planning priorities for:

   A. State/regional/local river management planning

   B. Federal/state/local technical assistance

   C. Fiscal investment and allocation

   D. Facility development and land acquisition

5. Provide a framework for federal/state environmental impact review studies.

6. Provide a focus for private river conservation efforts.

7. Identify for local municipalities significant river areas where modification and adjustment of shoreland zoning might be necessary.

8. Provide input to and coordinate the application and consistency of a variety of existing state programs and regulations.

   A. Bureau of Parks and Recreation

      a) Input to development and modification of the Statewide Comprehensive Outdoor Recreation Plan

      b) Priority setting for acquisition and development.

      c) Priority setting for Land and Water Conservation Fund studies.

      d) Review of Federal Energy Regulatory Commission hydropower permits.

B. **Department of Environmental Protection**

a) Input into existing programs under the following state laws:

- Protection and Improvement of Waters Act
- Site Location of Development Act
- Solid Waste Management Act
- Shoreland Zoning Act
- Coastal Wetlands Act

b) Evaluation of a variety of permits (discharge, site location, dredge and fill)

c) Adjustments of shoreland zoning where appropriate

d) Identify water quality improvement priorities

C. **Land Use Regulation Commission**

a) Input into existing programs under the following state laws:

- Site Location of Development Act
- Shoreland Zoning Act
- Subdivision Law
- Land Use Regulation Law

b) Evaluation of permits for activities in river corridor areas

c) Adjustment of protection subdistricts in river corridors

- Fish and Wildlife Protection Subdistrict
- Recreation Protection Subdistrict
- Shoreland Protection Subdistrict
- Unusual Area Protection Subdistrict
- Wetland Protection Subdistrict

D. **Department of Inland Fisheries and Wildlife**

a) Review of Federal Energy Regulatory Commission hydropower permits

b) Fisheries management planning priorities

c) Fisheries habitat improvement priorities

d) Fisheries stocking priorities

E. **Soil and Water Conservation Commission**

a) Input to soil conservation planning

F. Land and Water Resources Council

a) Land and water resource planning

b) Input to land and water resource management programs

G. State Planning Office

a) Input to State Clearinghouse reviews (A-95)

b) Input to State Comprehensive planning

c) Input to water resource planning

d) Input to Critical Areas Program

- Priority setting for critical areas studies

e) Input to resource policy programs

f) Review of shoreland zoning

H. Office of Energy Resources

a) Input to Comprehensive Energy Plan

b) Input to renewable energy resource development

- Planning for hydropower development

c) Input to energy facility siting

- Conflict avoidance and mitigation

I. State Development Office

a) Promotion of tourism

J. Department of Marine Resources

a) Input to anadromous fisheries management and development

b) Priorities for fishway construction

c) Review of Federal Energy Regulatory Commission hydropower permits

K. Department of Transportation

a) Input to highway construction planning

- Avoidance and mitigation of conflicts with significant river resources

b) Input to scenic roads programs

Resource Highlights

MAINE RIVERS AND STREAMS

An informational digest prepared and distributed by

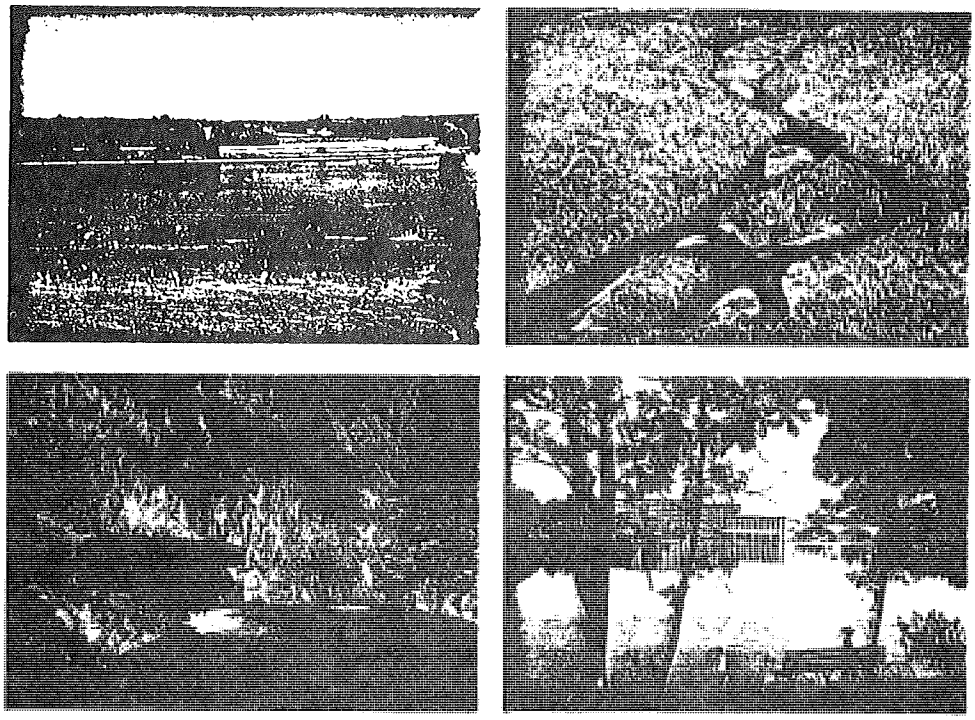
THE LAND AND WATER RESOURCES CENTER
UNIVERSITY OF MAINE AT ORONO

Paul Uttormark, Director

This digest summarizes the extensive work that has been done during the last decade and a half to clean up and protect Maine's rivers and streams. It also represents one section of a projected "Atlas of Maine's Resources" to be carried out in cooperation with the University of Southern Maine.

The digest was prepared by Sherman Hasbrouck with the assistance of Linda Breece.

August 1984



TOP LEFT: ANDROSCOGGIN RIVER
TOP RIGHT: ST. CROIX RIVER
BOTTOM LEFT: SANDY RIVER (COURTESY DEPARTMENT OF INLAND FISHERIES AND WILDLIFE)
BOTTOM RIGHT: FORT HALIFAX PARK ON THE KENNEBEC RIVER, WINSLOW, ME

Their very names evoke images of our nation's historic heritage and the beauty of the American landscape—The Mississippi and Missouri, the Hudson and Delaware, the Shenandoah. . . . In the same way, Maine's rivers are an important part of the feeling that Maine people have for the state they live in.

Only this great attachment we have to our rivers could explain the remarkable turnaround of the last fifteen years. There has not only been the major cleanup of polluted rivers. In the last five years, great efforts have been made to assemble information on Maine's rivers and to establish laws and regulations necessary for their protection.

Our rivers serve a wide range of purposes: hydroelectric power generation, assimilation of treated wastes, recreation and, in some cases, public water supply. The management of the rivers—to minimize conflicts between the different uses and protect natural qualities—is a great challenge, not only for public agencies and private corporations using the rivers, but also for those of us who live on the rivers or use them for recreation.

This digest summarizes the facts and issues concerning the management of Maine's rivers and streams. . . .

FLOOD MANAGEMENT AND OTHER RIVER USES

Although floods can occur at any time of the year, the largest floods generally occur in the spring with heavy rains combining with snowmelt and, occasionally, ice buildups. In the last century, riverfront structures were continually being inundated and bridges spanning the rivers swept away by floods. In this century, major floods occurred in 1917, 1923, 1936, 1953, and 1973.

During the 1923 flood, the lower Penobscot's flow was measured at 153,000 cubic feet per second—the greatest river flow ever recorded in the state. (Normal flow at the point measured was 12,000 cubic feet per second.) The 1936 flood was the most devastating in recent history—causing damages of over $7 million on the Kennebec, Androscoggin, and other rivers. On March 13, the river crested over eight feet above the sidewalk in downtown Hallowell.

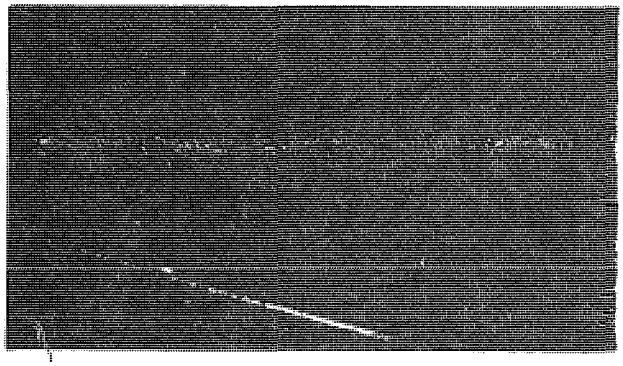
Could these historic floods of the past be repeated? The answer is a qualified yes. The many dams that have been built are a help because they tend to even-out river flows, and water levels at upstream dams can be raised or lowered to prevent or break up ice buildups. However—to take one example—⅓ of the Kennebec's watershed has no dams, and the dams on the other ⅓ have minimal flood-control capability. To a large extent, flooding is a natural phenomenon that we must live with. The utilities and federal and state governments are attempting to improve capabilities for predicting floods and responding to them. However, the best long-term answer to flooding is to avoid building new structures on river floodplains.

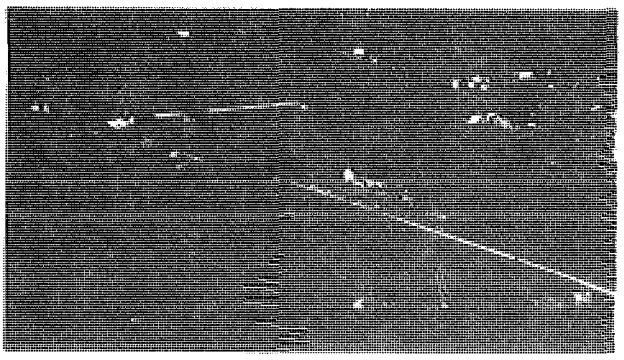
There are two other river uses that have not been touched upon in this report: water supply and navigation. Some small communities utilize local streams for public water supplies, and one river—the Saco—is an important source of water for a number of communities in Southern Maine. Rivers, once so important to the transport of raw materials and manufactured products, have little such use now except for some movement of bulk oil on the lower Penobscot.

THE MAINE RIVERS STUDY

While many people have known intuitively of the significance of particular rivers in Maine, there has been, until recently, a lack of factual data. Much of the information existed, but it was too fragmented to be useful in carrying out river management programs.

This situation was corrected, in 1981 and 1982, by a comprehensive survey of the natural, recreational, and historical values of Maine's rivers and streams. This survey—the Maine Rivers Study—was undertaken as a joint venture between Maine's Bureau of Parks and Recreation and the staff of the northeast regional office of the National Park Service.





TOP: PENOBSCOT RIVER

BOTTOM: SHEEPSCOT RIVER

In the 1960s and 1970s there had been a federal "Wild and Scenic Rivers" program. Certain of the nation's most outstanding rivers would be given a "wild and scenic" designation. These designated rivers would be given certain kinds of protection—at least from developments that involved federal agencies and federal funds. However, in Maine (and other states as well) there was considerable misunderstanding about and opposition to such federal designation.

Largely in response to these federal initiatives, the Maine Legislature gave special protection to one river—the Allagash—in 1966. The Allagash Wilderness Waterway was set up in the form of a river corridor, 500 feet wide on the average, in which development was not permitted and logging was severely restricted. Protection of the Allagash was achieved, but this approach—essentially creating a linear park along a river—was obviously not feasible for the many other rivers and streams that needed some kind of protection.

The Maine Rivers Study marked a new approach in federal efforts toward river protection. The National Park Service helped the state gather information about Maine rivers, but did not go beyond the information-gathering function. Indeed, much of the information gathered in the survey came from state agency people, sportsmen, and literally hundreds of other knowledgeable people in the state. However, the Park Service's staff performed a most valuable service in providing a system for organizing the information and interpreting it.

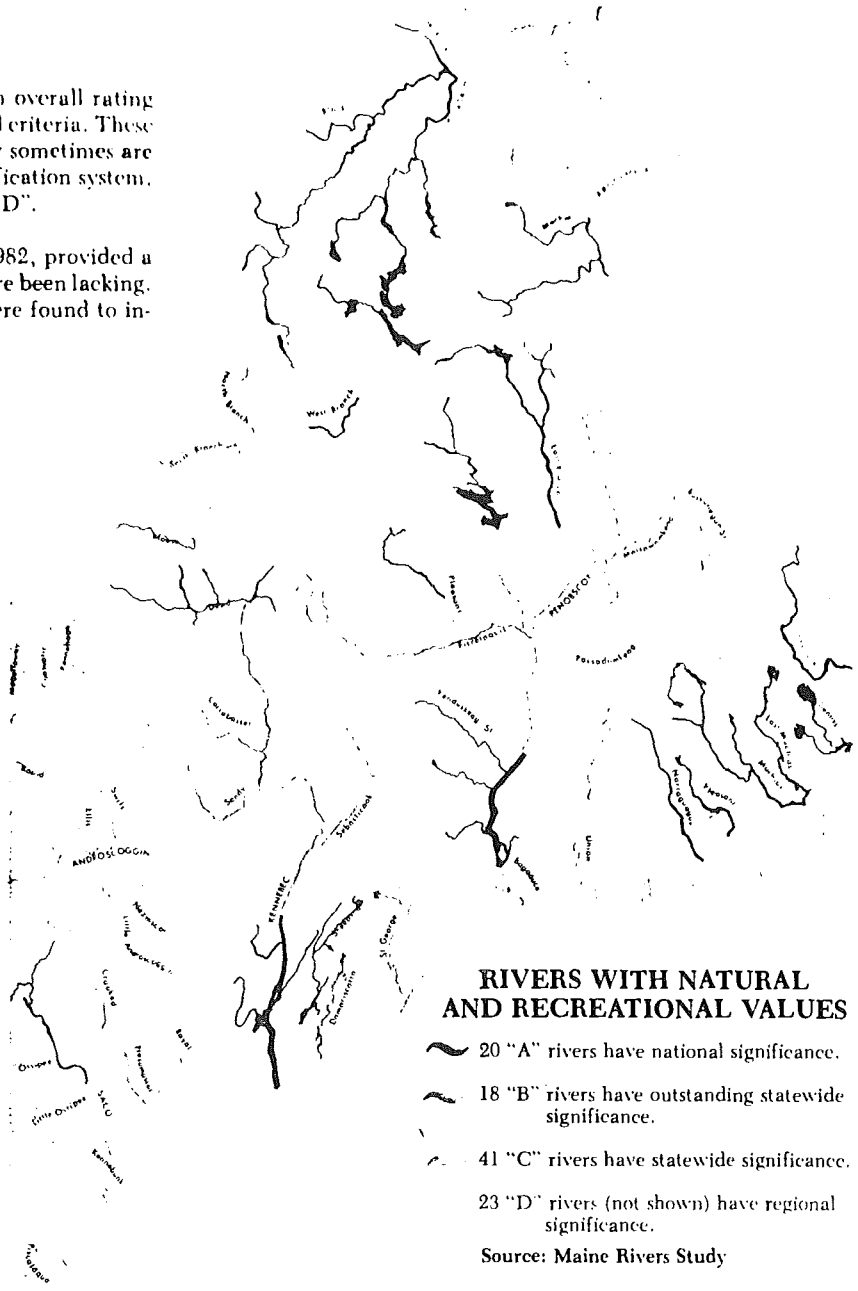
The results of this survey are contained in a report called "The Maine Rivers Study". The report identified a number of key attributes and then evaluated various river segments in terms of those attributes:

- natural features (ecologic, geologic, hydrologic, vegetative, and terrain);
- scenic character;
- fisheries (inland and anadromous);
- recreation (white-water boating; back-country excursion, canoe-touring); and
- historic significance.

The study gave various rivers and streams an overall rating ("A", "B", "C", or "D") based on the combined criteria. These ratings should not be confused (although they sometimes are confused) with the state's water quality classification system, which also ranks rivers as "A", "B", "C", or "D".

The Maine Rivers study, published in May, 1982, provided a perspective to Maine's rivers that had heretofore been lacking. The state's rivers, according to the report, were found to include the following features:

- 17 gorges, 61 waterfalls, and 38 white-water rapids;
- more miles of undeveloped free-flowing rivers than exist in any other state in the Northeast;
- river corridor segments with rare and endangered plant and animal species including the northern bald eagle and short-nosed sturgeon;
- 192 miles of river habitat for an internationally known landlocked salmon fishery and 22,000 miles of primary brook trout habitat;
- the only rivers in the eastern United States (six) with self-sustaining Atlantic salmon runs;
- coastal rivers with alewife and other existing or potential commercial fisheries;
- the only two stretches of Class V whitewater and the longest single stretch of Class II-IV rapids in new England; and
- the longest and most popular extended back country canoe trips in the Northeast and over 4000 miles of other rivers suitable to boaters of all ability levels.



RIVERS WITH NATURAL AND RECREATIONAL VALUES

20 "A" rivers have national significance.

18 "B" rivers have outstanding statewide significance.

41 "C" rivers have statewide significance.

23 "D" rivers (not shown) have regional significance.

Source: Maine Rivers Study

While the Maine Rivers Study included recreational and historical factors, it is the natural qualities that make Maine rivers particularly distinctive. There are eight major watersheds in the state. Most of the land in these watersheds is forested, and many miles of their rivers and streams are undammed and undeveloped. There are countless places where one can cast a fly, take a dip, see a beaver lodge or moose, listen to a riffle or waterfall, or simply enjoy the sight of moving water.

That so many miles of Maine's rivers are undeveloped is largely due to the ownership of their shorelines by the forest product companies. That other stretches have had their natural qualities restored is due to the major investments in sewage systems by these companies as well as public investments in community sewage systems. That there is now strong public support for protecting natural qualities is at least partly due to the attention focused on rivers by the Natural Resources Council of Maine in the last decade.

What are the principal threats to these natural values? The major impacts of the past have come from 1) pollution and 2) construction of hundreds of dams. Because of new pollution controls and protection policies put into place by state government, it does not seem likely that pollution and new dams will cause extensive losses of river natural qualities—in the near future, at least. Aside from the residual pollution problems summarized on page 4, the threats of the future may come from the very expanded recreation activities and shoreline development that will be attracted to rivers as a result of the clean-up programs.

Public policies governing Maine's rivers must be based on the assumption that the state's rivers will continue to have a wide range of uses. These uses—and the protection of natural values of rivers—will sometimes conflict, as they have for the last century and a half. Many of these conflicts must be dealt with by local governments in the course of exercising their zoning and subdivision review responsibilities. It the State's role to be stewards of the rivers as a whole—and to bring about a coordinated system of management in which the conflicts are equitably resolved.

Maine has made considerable progress toward achieving such a system of multi-purpose management of its rivers. Indeed, in the last four years the Maine state government has carried out an unprecedented series of actions having to do with the development and protection of the state's rivers. The scope of these efforts has unique in the state's history and perhaps in that of the nation:

In 1981: the Land and Water Resources Council recommended a set of policies for hydropower development. In the same year, the Governor issued a series of directives having to do with rivers:

- legislation was to be drafted to streamline hydropower project review and to improve procedures covering neglected and abandoned dams;
- fishery management plans were to be prepared, including plans for fishways at dams; and
- the Department of Conservation was to identify rivers with unique values and develop a strategy for protecting those rivers.

In 1982:

- the Maine Rivers Study was published;
- an Executive Order was issued identifying 1100 miles of rivers that should be free of additional hydropower development;
- the Office of Energy Resources transmitted a hydropower plan to FERC (the Federal Energy Regulatory Commission); and
- the State Planning Office sent a Rivers Report to the Governor with recommendations for river-protection legislation.

In 1983:

- the Legislature enacted four rivers bills, including the Maine Rivers Act;
- the Governor issued an Executive Order directing state agencies to target funds for revival of deteriorating water fronts; and
- LURC (Maine's Land Use Regulation Commission) started zoning certain rivers in western Maine for special protection (e.g., prohibition of new dams and seasonal homes).

In 1984:

- LURC continued its special zoning of rivers in northern and eastern Maine;
- plans and guidelines were established by state agencies covering the new shoreland zoning and subdivision standards, hydropower permit procedures, and river corridor commissions;
- the Departments of Marine Resources and Inland Fisheries and Wildlife completed a state-wide plan for improving fisheries on Maine rivers and began making specific plans for ten rivers;
- Maine's DEP assumed responsibility for dams. A computerized registry of 570 dams in the state was established, and the DEP began setting lake water levels to protect public safety and reduce flooding damage.
- Maine's Bureau of Parks and Recreation began assessing public access and campsite needs on 26 rivers and the potential for conservation easements like that donated by the Great Northern Paper Company on the West Branch of the Penobscot; and
- state agencies began targeting community development block grants and coastal zone management funds for waterfront revitalization.

NOTE: Management of Maine's rivers is complicated by the fact that river systems overlap state and national boundaries. Also, there is an unresolved issue concerning decision-making authority over hydropower applications. Currently, the federal government (through FERC) may override a state's wishes in granting hydropower licenses.

RIVERS AFFECTED BY NEW RESTRICTIONS IN MAINE RIVERS ACT AND LURC ZONING

River System	Dams	Stream Alterations	Shoreland Zoning	Sub-divisions	Special LURC Zoning
ST JOHN					
Main Stem	•	•		•	•
Allagash	•				•
Fish	•	•	•	•	
Aroostook	•	•	•	•	•
PENOBSCOT					
Main Stem	•	•		•	•
West Branch	•				•
East Branch	•	•	•	•	•
Mattawamkeag	•	•	•	•	
Piscataquis		•		•	
Pleasant	•	•	•	•	•
KENNEBEC					
Main Stem	•	•		•	•
Moose	•				•
Dead	•				•
Carrabasset		•		•	
Sandy		•		•	

River System	Dams	Stream Alterations	Shoreland Zoning	Sub-divisions	Special LURC Zoning
ANDROSCOGGIN					
Kennebago		•		•	
Rapid	•	•	•	•	
SACO					
Main Stem	•	•		•	
COASTAL					
St. Croix		•		•	
Dennys	•	•	•	•	•
East Machias	•	•	•	•	•
Machias	•	•	•	•	•
Pleasant	•	•	•	•	•
Narraguagus	•	•	•	•	•
Union		•	•	•	
St. George		•		•	
Damariscotta				•	
Sheepscot	•	•		•	
Crooked		•		•	

RECENTLY ENACTED LEGISLATION AFFECTING MAINE'S RIVERS

Maine Rivers Act

- New dams are prohibited on 18 river segments, totaling 1100 miles, and special review will be required of new dam proposals on the St. Croix River, an international boundary.
- The state's shoreland zoning law is amended to give additional protection to approximately 150 miles of certain rivers. Guidelines are to be prepared that will provide more protective frontage, setback, and screening requirements. Within the 250-foot shoreland zone, new structures are to be set back at least 125 feet from the river. Gravel pits and new roads are prohibited in the zone unless no reasonable alternatives exist. Public utilities may not be installed for any new structure in these areas without written authorization from municipal officials.

  The new shoreland guidelines are to be used by communities and the Land Use Regulation Commission in carrying out their shoreland zoning responsibilities. (They are currently 41 towns and cities that are in the process of amending their shoreland zoning ordinances to conform to the new guidelines.)
- The stream alteration law is amended to require more care in crossings of approximately 720 miles of certain rivers and streams.
- Procedures for river corridor commissions, similar to the Saco River Corridor Commission, are simplified. The power of such commissions is enlarged to include exercise of zoning authority and issuance of permits. State funds may be used to support such commissions.
- Lots in new subdivisions along 700 miles of certain river segments are to have a combined shore frontage and setback from the shore of at least 500 feet.
- Private non-profit corporations may hold conservation easements on river shorelines even though they do not own adjoining land, if the Department of Conservation deems such easements necessary for the protection of the state's outstanding river resources.
- Materials used in constructing fish-passage facilities are exempt from sales and use taxes.

Maine Waterway Development and Conservation Act

- This act simplifies procedures for reviewing and issuing permits for hydropower projects (replacing a system that required as many as seven permits from four separate agencies).

Acts Concerning Fishways in Inland and Coastal Waters

- With these acts, the State's fishery agencies (e.g., Inland Fisheries and Wildlife and Marine Resources) may require fish passage facilities in dams where such facilities are needed to restore and maintain important commercial and sport fisheries.

Act Concerning Inspection, Registration, and Abandonment of Dams

- This act replaced three existing laws governing inspection, maintenance, and operation of dams that are not used for generating power. It also transferred administration of the legislation from the Department of Agriculture to the Department of Environmental Protection.

SELECTED REFERENCES

Maine Department of Environmental Protection. MAINE WATER QUALITY STATUS. 1982.

Maine Office of Energy Resources. COMPREHENSIVE HYDROPOWER PLAN. October 1982.

New England River Basins Commission. WATER, WATTS, AND WILDS: HYDROPOWER AND COMPETING USES IN NEW ENGLAND. August 1981.

State of Maine, Department of Conservation and National Park Service, U.S. Department of the Interior. MAINE RIVERS STUDY. May 1982.

Copies of this report and 11 × 17 enlargements of the maps are available from the Land and Water Resources Center, 11 Coburn Hall, University of Maine at Orono, Orono, Maine 04469. Please send 50¢ each for maps and $1.00 each for the report (50¢ each for 10 copies or more).

The research on which this report is based was financed in part by the United States Department of the Interior as authorized by the Water Research and Development Act of 1978 (P.L. 95-467). Contents of this publication do not necessarily reflect the views and policies of the United States Department of the Interior, nor does mention of trade names or commercial products constitute their endorsement by the United States Government.

University of Maine at Orono
Land and Water Resources Center
11 Coburn Hall
Orono, Maine 04469

EXECUTIVE ORDER

OFFICE OF
THE GOVERNOR

July 6, 1982

MAINE RIVERS POLICY

WHEREAS, the waters of Maine are held in trust by the State for the benefit of the people, and their use is a proper subject for the exercise of stewardship by the State; and

WHEREAS, the Department of Conservation was directed by the State Energy Policy of June 1981 to identify river stretches that provide unique recreational opportunities or natural values, and to submit to the Governor a strategy for the protection of those river stretches, and has accordingly submitted such a report based on the "Maine Rivers Study" conducted under its auspices; and

WHEREAS, it is necesary to protect certain river stretches identified by the Department of Conservation from unwise development, and to preserve them for the future; and

WHEREAS, it is also necesary to ensure the wise use of all the river resources identified in the "Maine Rivers Study" by means of improved environmental regulation;

NOW, THEREFORE, I, JOSEPH E. BRENNAN, Governor of the State of Maine order that the following river stretches be designated as meriting special protection:

Allagash; Gerald Brook to Telos Lake
Aroostook: Sheridan Dam to Millinocket Lake
Dead: Kennebec River to Flagstaff Lake
Dennys: Hinkley Point to headwaters of Meddybemps Lake
East Machias: Hadley Lake to Pocomoonshine Lake, including Maine River
Kennebec: Bay Point to Edwards Dam, Augusta; The Forks to Harris Dam
Narraguagus: Fickett Point to headwaters
Machais: Fort O'Brian Point to Fifth Machias Lake, including Fourth and Fifth Lake Streams
Moose: Attean Pond to Canadian Border
Penobscot: Main Stem from Sandy Point to Veazie Dam, including Eastern Channel; East Branch from Medway to Grand Lake Matagamon; West Branch from Ambajejus Lake to western boundary of T-3, R-10; and from Chesuncook Lake to Seboomook Lake
Pleasant: Seavey Point to Pleasant River Lake
West Branch Pleasant: Main Stem to Fourth West Branch Pond
Saco: East Limington to New Hampshire border
St. Croix: Oak Point to Spednik Lake
St. John: One mile above the foot of Big Rapids to Baker Branch
Sheepscot: Wiscasset to headwaters

IT IS FURTHER ORDERED, that to protect these stretches of rivers, it shall be the policy of the State that no new dams shall be constructed on these stretches and that additional development or redevelopment of dams existing on these stretches as of the date of this Order shall be designed and executed in a manner that either enhances the significant resource values of these river stretches, or does not diminish them; and

IT IS FURTHER ORDERED, that actions of Executive Departments and Agencies shall be consistent with the policy stated in this Order; and

IT IS FURTHER ORDERED, that independent regulatory, quasi-judicial, and judicial agencies shall receive a copy of this Order and are urged to take action consistent with it; and

IT IS FURTHER ORDERED, that the State Planning Office, in consultation with the Cabinet Committee on Hydropower Policy, shall survey and assess the adequacy of existing legal, regulatory and administrative mechanisms to provide for the use in the best interests of the people, of those river stretches identified as having outstanding significance in the "Maine Rivers Study", particularly along the so-called B, C, and D rivers. The office shall submit a report together with appropriate recommendations to the Governor not later than December 1, 1982; and

IT IS FURTHER ORDERED, that the Office of Energy Resources shall prepare an analysis of the need for electricity generated by hydropower to meet demand as projected in the Comprehensive Energy Resources Plan for 1990 and 2000, and shall submit such analysis to the Governor no later than September 1, 1982; and

IT IS FURTHER ORDERED, that the Office of Energy Resources shall prepare a comprehensive plan as envisaged in Section 10 (a) of the Federal Power Act, to be submitted for use by the Federal Energy Regulatory Commission (FERC), such plan to include: this Executive Order and the Maine Rivers Study, the hydropower analysis provided for above, the essential elements of the statewide fisheries plan, and when appropriate, information on action taken pursuant to recommendations to strengthen legal, regulatory and administrative mechanisms relating to use of river resources and their protection, and that this plan be submitted initially to FERC not later than October 1, 1982.

IT IS FURTHER ORDERED, that this Executive Order and the Maine Rivers Study shall be transmitted to the Federal Energy Regulatory Commission forthwith, and that the Commission and its staff, when reviewing hydropower projects in Maine, shall be informed that this is State policy for use of the river stretches designated in this Executive Order.

JOSEPH E. BRENNAN
Governor

APPROVED
JUN 17 '83
BY GOVERNOR

CHAPTER
458
PUBLIC LAW

STATE OF MAINE

IN THE YEAR OF OUR LORD
NINETEEN HUNDRED AND EIGHTY-THREE

S.P. 598 - L.D. 1721

AN ACT to Promote the Wise Use and Management of Maine's Outstanding River Resources.

Be it enacted by the People of the State of Maine as follows:

Sec. 1. 12 MRSA c. 200 is enacted to read:

CHAPTER 200

MAINE'S RIVERS

§401. Maine's rivers

The Legislature finds:

1. Rivers and streams a natural resource. That the State's nearly 32,000 miles of rivers and streams comprise one of its most important natural resources, historically vital to the state's commerce and industry and to the quality of life enjoyed by Maine people;

2. Increase in value of rivers and streams. That the value of its rivers and streams has increased in recent years due to the improvement in the quality of their waters, the restoration of their fisheries, the growth in demand for hydropower and the expanding interest in river recreation activities, leading at times to conflict among these uses;

3. Use of rivers and streams. That its rivers

and streams afford the state's people with major opportunities for the enjoyment of nature's beauty, unique recreational activities and solace from an industrialized society, as well as for economic expansion through the development of hydropower, the revitalization of waterfronts and ports and the attraction of both tourists and desirable new industries; and

4. Policy. That the best interests of the state's people are served by a policy which recognizes the importance that their rivers and streams have for meeting portions of several public needs, provides guidance for striking a balance among the various uses which affords the public maximum benefit and seeks harmony rather than conflict among these uses.

§402. Declaration of policy

In its role as trustee of the public waters, the Legislature declares that the well-being of the citizens of this State depends on striking a carefully considered and well-reasoned balance among the competing uses of the state's rivers and streams. Further, the Legislature declares that such a balance shall:

1. Restoration of water. Restore waters to a condition clean enough to allow fishing and swimming in all our rivers and streams;

2. Revitalization of waterfronts. Revitalize waterfronts and ports;

3. Maintenance of scenic beauty. Maintain, even in areas where development occurs, the scenic beauty and character of our rivers;

4. Interests of riparian owners. Recognize and respect the rightful interests of riparian owners;

5. Increase hydroelectric power. Increase the hydroelectric power available to replace foreign oil in the State;

6. Hydropower development. Streamline proce-

dures to facilitate hydropower development under reasoned environmental, technical and public safety constraints;

7. Fisheries. Restore anadromous fisheries and improve the productivity of inland fisheries;

8. Recreation. Expand the opportunities for outdoor recreation; and

9. Outstanding river stretches. Protect the special resource values of the flowing waters and shorelands of the State's most outstanding river stretches, as identified by the Department of Conservation's 1982 Maine Rivers Study and as specifically delineated in this chapter.

Further, the Legislature finds that with careful planning our foreseeable needs for all of these uses may be reasonably integrated harmoniously with one another on the state's 32,000 miles of rivers and streams.

§403. Special protection for outstanding rivers

The Legislature declares that certain rivers, because of their unparalleled natural and recreational values, provide irreplaceable social and economic benefits to the people in their existing state. It is the Legislature's intent that no new dams be constructed on these river and stream segments without the specific authorization of the Legislature, and that additional development or redevelopment of dams existing on these segments, as of the date of the enactment of this section, shall be designed and executed in a manner that either enhances or does not diminish the significant resource values of these river segments identified by the 1982 Maine Rivers Study. No license or permit under Title 38, sections 630 to 636 may be issued for construction of new dams on the river and stream segments subject to this special protection without the specific authorization of the Legislature, or for additional development or redevelopment of existing dams on the river and stream segments subject to this special protection where the additional development or redevelopment diminishes the significant resource values of these

river and stream segments.

Further, the Legislature finds that projects inconsistent with this policy on new dams and redevelopment of existing dams will alter the physical and chemical characteristics and designated uses of the waters of these river and stream segments. It finds that these impacts are unacceptable and constitute violations of the state's water quality standards. The Legislature directs that no project which fails to meet the requirements of this section may be certified under the United States Clean Water Act, Section 401.

For purposes of this section, outstanding river and stream segments meriting special protection shall include:

1. Allagash River. The Allagash River from Gerald Brook in Allagash up to but not including the Churchill Dam in T.10, R.12, W.E.L.S., including its tributaries the Musquacook Stream from the Allagash River to the outlet of Third Musquacook Lake in T. 11, R. 11, W.E.L.S.; Allagash Stream from its inlet to Chamberlain Lake to the outlet of Allagash Pond in T.9, R.15, W.E.L.S.; and Chemquasabamticook Stream from its inlet into Long Lake to the outlet of Chemquasabamticook Lake, excluding Round Pond in T.13, R.12, W.E.L.S., Harvey Pond, Long Lake, Umsaskis Lake, Musquacook Lakes (1-2), Little Round Pond in T.8, R.13, W.E.L.S., Allagash Lake and Clayton Lake;

2. Aroostook River. The Aroostook River from and including the Sheridan Dam in Ashland to Millinocket Stream, including its tributaries Millinocket Stream from the Aroostook River to the outlet of Millinocket Lake; Munsungan Stream from the Aroostook River to the outlet of Little Munsungan Lake; St. Croix Stream from the Aroostook River to Hall Brook in T.9, R.5, W.E.L.S.; and the Big Machias River from the Aroostook River to the outlet of Big Machias Lake, excluding Round Pond in T.7, R.9, W.E.L.S.;

3. Dead River. The Dead River from the Kennebec River to the upstream limit of Big Eddy;

4. Dennys River. The Dennys River from Hinckley Point in Dennysville to the outlet of Meddybemps Lake;

5. East Machias River. The East Machias River, including the Maine River, from the Route 191 bridge in East Machias to the outlet of Pocomoonshine Lake, excluding Hadley Lake, Second Lake, Round Lake, Crawford Lake, Lower Mud Lake and Upper Mud Lake;

6. Fish River. The Fish River from its inlet into St. Froid Lake in T.14, R. 7, W.E.L.S. to the outlet of Mud Pond in T.13, R. 8, W.E.L.S., excluding Portage Lake, Round Pond and Fish River Lake.

7. Kennebec River. The Kennebec River from Bay Point in Georgetown to the Father Curran Bridge in Augusta and from the confluence of the Dead River with the Kennebec River up to, but not including, the Harris Dam in Indian Stream Township;

8. Machias River. The Machias River, including Fourth and Fifth Lake Streams, from Fort O'Brien in Machias to the outlet of Fifth Machias Lake, including its tributaries the West Branch Machias River from the Machias River to the outlet of Lower Sabao Lake; Old Stream from the Machias River to the outlet of First Lake; and Mopang Stream from the Machias River to the outlet of Mopang Second Lake, excluding Machias Lakes (1-4), Lower Pond and Mopang First Lake;

9. Mattawamkeag River. The Mattawamkeag River from the Penobscot River to the Mattawamkeag and Kingman Township townline.

10. Moose River. The Moose River from its inlet into Attean Pond to its confluence with Number One Brook in Beattie Township;

11. Narraguagus River. The Narraguagus River from the Route 1 bridge in Cherryfield to the outlet of Eagle Lake, excluding Beddington Lake and Deer Lake;

12. Penobscot River. The Penobscot River,

including the Eastern Channel, from Sandy Point in Stockton Springs up to, but not including, the Veazie Dam, including its tributaries the West Branch of the Penobscot from its inlet into Ambajejus Lake to the western Boundary of T.3, R.10, and from its inlet into Chesuncook Lake up to, but not including, the dam at Seboomook Lake; the East Branch Penobscot River from the Penobscot River up to, but not including, the dam at the outlet of Grand Lake Matagamon; the Wassataquoik Stream from the East Branch of the Penobscot River to Annis Brook in T.4, R.9, W.E.L.S.; the Webster Brook from its inlet into Grand Lake Matagamon up to, but not including, Telos Dam in T.6, R.11, W.E.L.S.; the Seboeis River from the East Branch of the Penobscot River to the outlet of Snowshoe Lake; and the Sawtelle Brook from the Seboeis River up to, but not including, the dam at the outlet of Sawtelle Deadwater, excluding Passamagamet Lake, Webster Lake and White Horse Lake; Snowshoe Lake;

13. Pleasant River. The Pleasant River from Seavey Point in Addison to the outlet of Pleasant River Lake;

14. Rapid River. The Rapid River from the Magalloway Plantation and Upton townline to the outlet of Pond in the River;

15. Saco River. The Saco River from the Little Ossipee River to the New Hampshire border;

16. St. John River. The St. John River from one mile above the foot of Big Rapids in Allagash to the Baker Branch, including its tributaries the Big Black River from the St. John River to the Canadian border; the Northwest Branch from the St. John River to the outlet of Beaver Pond in T.12, R.17, W.E.L.S.; the Southwest Branch from the Baker Branch to 5 miles downstream of the Canadian border; and the Baker Branch from the St. John River to 1.5 miles below Baker Lake;

17. Sheepscot River. The Sheepscot River from the Route 1 bridge in Wiscasset to Halldale Road in Montville, excluding Long Pond and Sheepscot Pond, including its tributaries the West Branch of the

Sheepscot from its confluence with the Sheepscot River in Whitefield to the outlet of Branch Pond in China; and

18. West Branch Pleasant River. The West Branch Pleasant River from the East Branch to the outlet of Fourth West Branch Pond in Shawtown Township, excluding Silver Lake and West Branch Ponds (1-3).

§404. Maine Guarantee Authority

The Maine Guarantee Authority may not finance any energy generating system project under Title 10, chapter 110, if that project is located in whole or in part on any river listed in section 403.

§405. St. Croix River

1. Special consideration. In consideration of the special status of the St. Croix River as an international boundary governed in part by the International Joint Commission and the Province of New Brunswick, the Legislature establishes the following provisions.

2. Commercial, industrial or residential development. Except as provided in this subsection, no person may undertake any further commercial, industrial or residential development in the area within 250 feet of the St. Croix River from the Grand Falls flowage to the north end of Wingdam Island. The following activities shall be exempt from these provisions:

A. Development of hydroelectric or other dams, plants and related facilities or improvements subject to the conditions described in subsection 3;

B. A bridge at Vanceboro;

C. A haul road from Grand Falls;

D. Activities and developments related to timber harvesting, mining or extraction of sand and gravel; and

E. Any recreational management activity conducted or approved by the State.

3. New hydroelectric dams. No person may develop new hydroelectric dams on the St. Croix River from Grand Falls to the north end of Wingdam Island without first:

A. Having performed a feasibility study by a qualified consultant approved by the Governor to examine the alternative potentials for hydropower development downstream from Grand Falls and make the findings available to the State for review;

B. Having consulted with the office of the Governor or other agency of the State, designated by him, regarding the feasibility of this downstream development; and

C. Having determined that there exists no economically feasible site downstream from Grand Falls.

In the event that the State disagrees with any of the assumptions, findings or conclusions of the economic feasibility study, the comments of the State shall be considered and responded to by the consultant. These comments and the responses of the consultant shall be noted in the final report of the economic feasibility study.

4. Review. This section shall be reviewed every 5 years, and shall be repealed on January 1, 1988, unless reenacted by the Legislature for an additional 5-year period. In the event that the St. Croix River is included in any legislative Act or regulation which directly or indirectly has as its effect the essential prohibition of construction of new dams or development or redevelopment of existing dams on the St. Croix River, this section shall be repealed on the effective date of that Act or regulation.

§406. Report

The State Planning Office shall provide a report no later than December 1, 1986, to the Legislature detailing the status of policy accomplishments pur-

suant to this chapter.

Sec. 2. 12 MRSA §4811, as amended by PL 1973, c. 564, §1, is further amended by adding after the first paragraph a new paragraph to read:

It is further declared that, in accordance with section 402, certain river and stream segments, as identified in the Department of Conservation's 1982 Maine Rivers Study and as specifically delineated in section 4811-B, are significant river segments and deserve special shoreland zoning controls designed to protect their natural and recreation features.

Sec. 3. 12 MRSA §4811-A, as enacted by PL 1973, c. 564, §2, is repealed and the following enacted in its place:

§4811-A. Definitions

As used in this chapter, unless the context indicates otherwise, the following terms have the following meanings.

1. Pond. "Pond" means any inland body of water which has a surface area in excess of 10 acres, except where the body of water is man-made and in addition is completely surrounded by land held by a single owner, and except those privately owned ponds which are held primarily as waterfowl and fish breeding areas or for hunting and fishing.

2. Principal structure. "Principal structure" means a building other than one which is used for purposes wholly incidental or accessory to the use of another building on the same premises.

3. River. "River" means a free flowing body of water from that point at which it provides drainage for a watershed of 25 square miles to its mouth.

4. Screening. "Screening" means a buffer strip of vegatation retained between the permitted use and the normal high water mark of a protected river segment. Within this buffer strip, no clear cutting is permitted, except that openings not greater than 30 feet in width for every 100 feet of shoreline may

be created. Selective cutting of no more than 40% of the trees 4 inches or more in diameter measured at 4 1/2 feet above ground level is allowed in any 10-year period, provided that a well-distributed stand of trees remains.

Sec. 4. 12 MRSA §4811-B is enacted to read:

§4811-B. Significant river segments identified

For purposes of this chapter, significant river segments include the following:

1. Aroostook River. The Aroostook River from St. Croix Stream in Masardis to the Masardis and T.10, R.6, W.E.L.S. townline, excluding segments in T.9, R.5, W.E.L.S.; including its tributary the Big Machias River from the Aroostook River in Ashland to the Ashland and Garfield Plantation townlines;

2. Dennys River. The Dennys River from the railroad bridge in Dennysville Station to the dam at Meddybemps Lake, excluding the western shore in Edmunds Township and No. 14 Plantation;

3. East Machias River. The East Machias River from 1/4 of a mile above the Route 1 bridge in East Machias to the East Machias and T.18, E.D., B.P.P. townline, and from the T.19, E.D., B.P.P. and Wesley townline to the outlet of Crawford Lake in Crawford, excluding Hadley Lake;

4. Fish River. The Fish River from the bridge in Fort Kent Mills to the Fort Kent and Wallagrass Plantation townline, and from the Portage Lake and T.14, R.6, townline to the Portage Lake and T.13, R.7, W.E.L.S. townline, excluding Portgage Lake;

5. Machias River. The Machias River from the Whitneyville and Machias townline to the Northfield T.19, M.D., B.P.P. townline;

6. Mattawamkeag River. The Mattawamkeag River from the outlet of Mattakeunk Stream in Winn to the Mattawamkeag and Kingman Township townline, and from the Reed Plantation and Bancroft townline to the East Branch, including its tributaries the West Branch

from the Mattawamkeag River to the Haynesville T.3, R.3, W.E.L.S. townline and from its inlet into Upper Mattawamkeag Lake to the Route 2 bridge; the East Branch from the Mattawamkeag River to the Haynesville and Forkstown Township townline and from the T.4, R 3, W.E.L.S. and Oakfield townline to Red Bridge in Oakfield; the Fish Stream from the Route 95 bridge in Island Falls to the Crystal-Patten townline; and the Baskehegan Stream from its inlet into Crooked Brook Flowage in Danforth to the Danforth and Brookton Township townline;

7. Narraguagus River. The Narraguagus River from the ice dam above the railroad bridge in Cherryfield to the Beddington and Devereaux Township townline, excluding Beddington Lake;

8. East Branch of Penobscot. The East Branch of the Penobscot from the Route 157 bridge in Medway to the East Millinocket and Grindstone Township townline;

9. Pleasant River. The Pleasant River from the railroad bridge in Columbia Falls to the Columbia and T.18, M.D., B.P.P. townline, and from the T.24, M.D., B.P.P. and Beddington townline to the outlet of Pleasant River Lake;

10. Rapid River. The Rapid River from the Magalloway Plantation and Upton townline to the outlet of Pond in the River;

11. West Branch Pleasant River. The West Branch Pleasant River from the East Branch to the Brownville and Williamsburg Township townline; and

12. West Branch of Union River. The West Branch of the Union River from the Route 9 bridge in Amherst to the outlet of Great Pond in the Town of Great Pond.

Sec. 5. 12 MRSA §§4815, 4816 and 4817 are enacted to read:

§4815. Enforcement

Any person who orders or conducts any activity in

violation of a municipal ordinance adopted under this chapter shall be subject to a civil forfeiture of not less than $100 nor more than $1,000 for each offense.

The Attorney General, the district attorney or the municipal officers may enforce ordinances adopted under this chapter. The court may award municipalities reasonable attorney fees for actions under this section, and ordinances may provide that civil forfeitures shall inure to the municipality.

No public utility, water district, sanitary district or any utility company of any kind may install services to any new structure located in a shoreland area, as defined by section 4811, unless written authorization attesting to the validity and currency of all local permits required under this chapter has been issued by the appropriate municipal officials.

§4816. Guidelines for shoreland zoning along significant river segments

In addition to the guidelines adopted under section 4812, the following guidelines for the protection of the shorelands shall apply along significant river segments identified in section 4811-B. These guidelines are intended to maintain the special values of these particular river segments by protecting their scenic beauty and undeveloped character.

1. New principal structures. New principal structures, except for structures related to hydropower facilities, shall be set back a minimum of 125 feet from the normal high-water mark of the river. These structures shall be screened from the river by existing vegetation.

2. New roads. Developers of new permanent roads, except for those providing access to a structure or facility allowed in the 250-foot zone, shall demonstrate that no reasonable alternative route outside of the zone exists. When roads must be located within the zone, they shall be set back as far as practicable from the normal high-water mark and screened from the river by existing vegetation.

3. New gravel pits. Developers of new gravel

pits shall demonstrate that no reasonable mining site outside of the zone exists. When gravel pits must be located within the zone, they shall be set back as far as practicable from the normal high-water mark and no less than 75 feet and screened from the river by existing vegetation.

§4817. Municipal ordinance review and certification

Each municipality with shorelands along significant river segments, as identified in section 4811-B, shall review the adequacy of the zoning on these shorelands to protect the special values cited for these river segments by the Department of Conservation's 1982 Maine Rivers Study and for consistency with the guidelines established under section 4816. Prior to December 15, 1984, each such municipality shall certify to the State Planning Office either that its existing zoning for these areas is at least as restrictive as the guidelines established under section 4816, or that it has amended its zoning for this purpose. This certification shall be accompanied by the ordinances and zoning maps covering these areas. Failure to accomplish the purposes of this subsection shall result in adoption of suitable ordinances for these municipalities, as provided for in section 4813.

Sec. 6. 12 MRSA §7776-A is enacted to read:

§7776-A. Special protection for outstanding river segments

In accordance with section 402, outstanding river segments shall include:

1. Aroostook River. The Aroostook River from the Canadian border to the Masardis and T.10, R.6, W.E.L.S. townline, excluding the segment in T.9, R.5, W.E.L.S., including its tributaries the Big Machias River from the Aroostook River to the Ashland and Garfield Plantation townline and the St. Croix Stream from the Aroostook River in Masardis to the Masardis and T.9, R.5, W.E.L.S. townline;

2. Carrabassett River. The Carrabassett River from the Kennebec River to the Carrabassett Valley

and Mt. Abram Township townline;

3. Crooked River. The Crooked River from its inlet into Sebago Lake in Casco to the Waterford and Albany Township townlines;

4. Dennys River. The Dennys River from the railroad bridge in Dennysville Station to the outlet of Meddybemps Lake, excluding the western shore in Edmunds Township and No. 14 Plantation;

5. East Machias River. The East Machias River, including the Maine River, from the old powerhouse in East Machias to the East Machias and T.18, E.D., B.P.P. townline, from the T.19, E.D., B.P.P. and Wesley townline to the outlet of Crawford Lake, and from the No. 21 Plantation and Alexander townline to the outlet of Pocomoonshine Lake, excluding Hadley Lake, Lower Mud Pond and Upper Mud Pond;

6. Fish River. The Fish River from the bridge in Fort Kent Mills to the Fort Kent and Wallagrass Plantation townline, from the T.16, R.6, W.E.L.S. and Eagle Lake townline to the Eagle Lake and Winterville Plantation townline, and from the T.14, R.6, W.E.L.S. and Portage Lake townline to the Portage Lake and T.13, R.7, W.E.L.S. townline, excluding Portage Lake;

7. Kennebago River. The Kennebago River from its inlet into Cupsuptic Lake to the Rangeley and Lower Cupsuptic Township townline;

8. Kennebec River. The Kennebec River from the Route 148 bridge in Madison to the Caratunk and The Forks Plantation townline, excluding the western shore in Concord Township, Pleasant Ridge Plantation and Carrying Place Township, and excluding Wyman Lake;

9. Machias River. The Machias River from the Route 1 bridge to the Northfield and T.19, M.D., B.P.P. townline, including its tributaries the Old Stream from the Machias River to the northern most crossing of the Wesley and T.31, M.D., B.P.P. townline, excluding the segments in T.25, M.D., B.P.P. and T.31, M.D., B.P.P.;

10. Mattawamkeag River. The Mattawamkeag River from the Penobscot River to the Mattawamkeag and Kingman Township townline, and from the Reed Plantation and Bancroft townline to the East Branch, including its tributaries the West Branch from the Mattawamkeag River to the Haynesville and T.3, R.3, W.E.L.S. townline and from its inlet into Upper Mattawamkeag Lake in Island Falls to the Hersey and Moro Plantation townline; the East Branch from the Mattawamkeag River to the Haynesville and Forkstown Township townline and from the T.4, R.3, W.E.L.S. and Oakfield townline to the Smyrna and Dudley Township townline; the Fish Stream for the West Branch of the Mattawamkeag River to the Crystal and Patten townline; the Molunkus Stream from the Silver Ridge Township and Benedicta townline to the East Branch Molunkus Stream; the Macwahoc Stream from the Silver Ridge Township and Sherman townline to the outlet of Macwahoc Lake; and the Baskehegan Stream from the Mattawamkeag River to the Danforth and Brookton Township townline, and from the Brookton Township and Topsfield townline to the Topsfield and Kossuth Township townline, excluding Baskehegan Lake and Crooked Brook Flowage;

11. Narraguagus River. The Narraguagus River from the ice dam above the railroad bridge in Cherryfield to the Beddington and Devereaux Township townline, excluding Beddington Lake;

12. Penobscot River. The Penobscot River from the Bangor Dam in Bangor to the Veazie Dam and its tributary the East Branch of the Penobscot from the Penobscot River to the East Millinocket and Grindstone Township townline;

13. Piscataquis River. The Piscataquis River from the Penobscot River to the Monson and Blanchard Plantation townline, including its tributaries the East and West Branches of the Piscataquis River from the Blanchard Plantation and Shirley townline to the Shirley and Little Squaw Township townline; the Seboeis Stream from its confluence with the Piscataquis River in Howland to the Howland and Mattamiscontis Township townline and from the Mattamiscontis and Maxfield townline to the Maxfield and Seboeis Plantation townline, excluding Shirley

Pond and West Shirley Bog;

14. Pleasant River. The Pleasant River from the dam in Columbia Falls (formerly the Hathaway Dam) to the Columbia and T.18, M.D., B.P.P. townline, and from the T.24, M.D., B.P.P. and Beddington townline to the outlet of Pleasant River Lake in Beddington;

15. Rapid River. The Rapid River from the Magalloway Plantation and Upton townline to the outlet of Pond in the River;

16. Saco River. The Saco River from the Little Ossipee River to the New Hampshire border;

17. St. Croix River. The St. Croix River from the cotton mill dam in Milltown to the Calais and Baring Plantation townline, from the Baring Plantation and Baileyville townline to the Baileyville and Fowler Township townline, and from the Lambert Lake Township and Vanceboro townline to the outlet of Spednik Lake, excluding Woodland Lake and Grand Falls Flowage;

18. St. George River. The St. George River from the Route 90 bridge in Warren to the outlet of Lake St. George in Liberty, excluding White Oak Pond, Seven Tree Pond, Round Pond, Sennebec Pond, Trues Pond, Stevens Pond and Little Pond;

19. St. John River. The St. John River from the Hamlin Plantation and Van Buren townline to the Fort Kent and St. John Plantation townline, and from the St. John Plantation and St. Francis townline to the Allagash and St. Francis townline;

20. Sandy River. The Sandy River from the Kennebec River to the Madrid and Township E townline;

21. Sheepscot River. The Sheepscot River from the Head Tide dam in Alna to the Halldale Road in Montville, excluding Long Pond and Sheepscot Pond, including its tributary the West Branch of the Sheepscot from its confluence with the Sheepscot River in Whitefield to the outlet of Branch Pond in China;

22. West Branch Pleasant River. The West Branch Pleasant River from the East Branch to the Brownville and Williamsburg Township townline; and

23. West Branch Union River. The West Branch Union River from the Route 181 bridge in Mariaville to the outlet of Great Pond in the Town of Great Pond.

Sec. 7. 12 MRSA §7777, sub-§1, as enacted by PL 1979, c. 420, §1, is amended to read:

1. Eligibility. In order to obtain a permit, an applicant shall demonstrate to the satisfaction of the commissioner that the proposed activity will not:

A. Unreasonably interfere with existing recreational and navigational uses;

B. Cause unreasonable soil erosion;

C. Unreasonably interfere with the natural flow of any waters;

D. Unreasonably harm any wildlife habitat; and

E. Lower the quality of any waters.

If the proposed activity is a crossing of an outstanding river segment, as identified in section 7776-A, the applicant shall demonstrate that no reasonable alternative exists which would have less adverse effect upon the natural and recreation features of the river segment.

Sec. 8. 12 MRSA §7780, sub-§1, as enacted by PL 1979, c. 420, §1, is amended to read:

1. Public works and private crossing and dam projects. Notwithstanding section 7776, that section shall not apply to river, stream or brook crossings in connection with public works projects which alter not more than a total of 300 feet in any mile of shore nor to private crossing or dam projects which alter not more than a total of 100 feet in any mile of shore. Alterations to both shores of the river, stream or brook shall be combined in arriving at a

total shore footage. This exception shall not apply to any project on outstanding river segments, as identified in section 7776-A.

Sec. 9. 30 MRSA c. 203-A is enacted to read:

CHAPTER 203-A

RIVER CORRIDOR COMMISSIONS

§1961. River corridor commissions encouraged

1. Findings. The Legislature finds:

A. That the effectiveness of local governments in implementing their responsibilities under shoreland zoning can be enhanced by coordination and cooperation among municipalities;

B. That river corridor commissions have proven their effectiveness as one mechanism to bring about such coordination and cooperation;

C. That additional river corridor commissions are not likely to be formed without state encouragement and incentives; and

D. That such cooperation serves state interests as stated in Title 12, section 402 and chapter 424.

2. Purpose. It is the policy of the State to encourage the formation of river corridor commissions. The purpose of this law is to:

A. Clarify procedures for forming river corridor commissions;

B. Delegate authority to the Commissioner of Conservation to approve acceptable proposals to form the river corridor commissions;

C. Grant additional powers to those river corridor commissions beyond those provided for in chapter 203; and

D. Provide a portion of the funding for the

operation of the river corridor commissions.

§1962. Definitions

As used in this chapter, unless the context indicates otherwise, the following terms have the following meanings.

1. Commission. "Commission" means a river corridor commission granted approval by the commissioner under section 1963.

2. Commissioner. "Commissioner" means the Commissioner of Conservation.

3. Department. "Department" means the Department of Conservation.

§1963. Approval of river corridor commissions

The commissioner may grant commission status and all the privileges and powers enjoyed by the commissions, as specified in this chapter, when he finds that:

1. Occupation of shoreland by 2 or more municipalities. Two or more municipalities, which collectively occupy enough of the shoreland on a river segment to be effective in managing the shorelands of the river, have entered into an agreement, pursuant to the requirements of chapter 203, which satisfies the requirements of section 1964;

2. Comprehensive plan. The same municipalities have prepared a comprehensive plan which satisfies the requirements of section 1965;

3. Ordinance. The same municipalities have prepared an ordinance to implement the comprehensive plan which satisfies the requirements of section 1966; and

4. Other commissions. No other commission exists on the same river, or the distance between the proposed and existing commissions makes the formation of one larger commission impractical.

§1964. Interlocal agreement

In addition to the requirements of section 1953, the interlocal agreement shall be consistent with regulations adopted by the commissioner under the Maine Administrative Procedure Act, Title 5, chapter 375. These regulations may include, but are not limited to:

1. Minimum duration. The minimum duration of the agreement;

2. Members; appointment. How members may be appointed;

3. Municipal responsibilities for financing. What the towns' responsibilities for financing the commission are; and

4. Withdrawal. How and under what circumstances towns may withdraw from the commission.

§1965. Comprehensive plan

The comprehensive plan shall be consistent with rules adopted by the commissioner under the Maine Administrative Procedure Act, Title 5, chapter 375. These rules may include, but are not limited to:

1. Resources; problems. What resources or problems the plan must address;

2. Information; analyses. Information and analyses the plan must contain; and

3. Specificity; clarity. The degree of specificity and clarity sought in the plan.

§1966. Ordinance

The ordinance to implement the plan shall be at least as restrictive as the state's guidelines for municipal shoreland zoning ordinances and shall supersede existing shoreland zoning ordinances. The ordinance shall contain adequate procedures for processing permit requests and for considering appeals of a decision made by the commission.

§1967. Powers of a river corridor commission

Notwithstanding the provisions of section 1953, subsection 6, an approved commission may exercise the following powers:

1. Amendment to comprehensive plan. To amend the comprehensive plan, after notice and hearing on the proposed amendment in accordance with the Maine Administrative Procedure Act, Title 5, chapter 375;

2. Adoption of rules, regulations or ordinances. To adopt and amend rules, regulations or ordinances covering an area up to 500 feet from the normal high-water mark necessary to implement the comprehensive plan, after notice and hearing on the proposed amendment or adoption, in accordance with the Maine Administrative Procedure Act, Title 5, chapter 375;

3. Issuance of permits. To issue permits, subject to reasonable conditions for activities requiring permits, or to deny permits pursuant to ordinances and regulations adopted by the commission;

4. Fees. To assess fees for permit or variance applications, or for any publications of the commission;

5. Suit. To sue and be sued; and

6. Enforcement. To enforce the rules, ordinances or regulations of the commission by instituting any lawful action, injunction or other proceeding to prevent, restrain, correct or abate any violation of its rules, regulations or ordinances, and to impose fines as permitted under Title 12, chapter 424.

§1968. Commission budget; financing; staff

The commission shall prepare and submit to the commissioner a biennial budget sufficient to cover its operating and other expenses. Provided the commission continues to satisfy the requirements of section 1963, the commissioner shall request funds to match the funds raised by the commission. In no event may the state contribution exceed $25,000 for

any one commission in any year. The commission may accept contributions of any type from any source to assist it in carrying out its assigned tasks, and make such agreements with respect to the administration of such funds, not inconsistent with the purpose of this law, as are required as conditions precedent to receiving such funds, federal or otherwise. Staff of the commission shall not be considered employees of the State.

§1969. Appeals to Superior Court

Except where otherwise specified by law, any party or person aggrieved by any order or decision of the commission may, within 30 days after notice of the filing of that order or decision, appeal to the Superior Court by filing a notice of appeal stating the grounds for appeal. The appeals shall be taken pursuant to Title 5, section 11001.

Sec. 10. 30 MRSA §4956, sub-§1, as repealed and replaced by PL 1975, c. 475, §1, is amended by adding at the end a new paragraph to read:

A "densely developed area" is defined as any commercial, industrial or compact residential area of 10 or more acres with an existing density of at least one principal structure per 2 acres. A principal structure is defined as any building other than one which is used for purposes wholly incidental or accessory to the use of another building on the same premises.

Sec. 11. 30 MRSA §4956, sub-§1-A is enacted to read:

1-A. Special protection for the shorelands of outstanding river segments. In accordance with Title 12, section 402, outstanding river segments shall include:

A. The Aroostook River from the Canadian border to the Masardis and T.10, R.6, W.E.L.S. townline, excluding the segment in T.9, R.5, W.E.L.S.;

B. The Carrabassett River from the Kennebec River to the Carrabassett Valley and Mt. Abram

Township townline;

C. The Crooked River from its inlet into Sebago Lake to the Waterford and Albany Township townline;

D. The Damariscotta River from the Route 1 bridge in Damariscotta to the dam at Damariscotta Mills;

E. The Dennys River from the Route 1 bridge to the outlet of Meddybemps Lake, excluding the western shore in Edmunds Township and No. 14 Plantation;

F. The East Machias River, including the Maine River, from 1/4 of a mile above the Route 1 bridge to the East Machias and T.18, E.D., B.P.P. townline, from the T.19, E.D., B.P.P. and Wesley townline to the outlet of Crawford Lake, and from the No. 21 Plantation and Alexander townline to the outlet of Pocomoonshine Lake, excluding Hadley Lake, Lower Mud Pond and Upper Mud Pond;

G. The Fish River from the bridge at Fort Kent Mills to the Fort Kent and Wallagrass Plantation townline, from the T.16, R.6, W.E.L.S. and Eagle Lake townline to the Eagle Lake and Winterville Plantation townline, and from the T.14, R.6, W.E.L.S. and Portage Lake townline to the Portage Lake and T.13, R.7, W.E.L.S. townline, excluding Portage Lake;

H. The Kennebago River from its inlet into Cupsuptic Lake to the Rangeley and Lower Cupsuptic Township townline;

I. The Kennebec River from Thorns Head Narrows in North Bath to the Edwards Dam in Augusta, excluding Perkins Township, and from the Route 148 bridge in Madison to the Caratunk and The Forks Plantation townline, excluding the western shore in Concord Township, Pleasant Ridge Plantation and Carrying Place Township and excluding Wyman Lake;

J. The Machias River from the Route 1 bridge to

the Northfield and T.19, M.D., B.P.P. townline;

K. The Mattawamkeag River from the Penobscot River to the Mattawamkeag and Kingman Township townline, and from the Reed Plantation and Bancroft townline to the East Branch in Haynesville;

L. The Narraguagus River from the ice dam above the railroad bridge in Cherryfield to the Beddington and Devereaux Township townlines, excluding Beddington Lake;

M. The Penobscot River, including the Eastern Channel, from Sandy Point in Stockton Springs to the Veazie Dam and its tributary the East Branch of the Penobscot from the Penobscot River to the East Millinocket and Grindstone Township townline;

N. The Piscataquis River from the Penobscot River to the Monson and Blanchard Plantation townline;

O. The Pleasant River from the bridge in Addison to the Columbia and T.18, M.D., B.P.P. townline, and from the T.24, M.D., B.P.P. and Beddington townline to the outlet of Pleasant River Lake;

P. The Rapid River from the Magalloway Plantation and Upton townline to the outlet of Pond in the River;

Q. The Saco River from the Little Ossipee River to the New Hampshire border;

R. The St. Croix River from the Route 1 bridge in Calais to the Calais and Baring Plantation townline, from the Baring Plantation and Baileyville townline to the Baileyville and Fowler Township townline, and from the Lambert Lake Township and Vanceboro townline to the outlet of Spednik Lake, excluding Woodland Lake and Grand Falls Flowage;

S. The St. George River from the Route 1 bridge in Thomaston to the outlet of Lake St. George in

Liberty, excluding White Oak Pond, Seven Tree Pond, Round Pond, Sennebec Pond, Trues Pond, Stevens Pond and Little Pond;

T. The St. John River from the Van Buren and Hamlin Plantation townline to the Fort Kent and St. John Plantation townline, and from the St. John Plantation and St. Francis townline to the Allagash and St. Francis townline;

U. The Sandy River from the Kennebec River to the Madrid and Township E townline;

V. The Sheepscot River from the railroad bridge in Wiscasset to the Halldale Road in Montville, excluding Long Pond and Sheepscot Pond, including its tributary the West Branch of the Sheepscot from its confluence with the Sheepscot River in Whitefield to the outlet of Branch Pond in China;

W. The West Branch Pleasant River from the East Branch in Brownville to the Brownville and Williamsburg Township townline; and

X. The West Branch Union River from the Route 181 bridge in Mariaville to the outlet of Great Pond in the Town of Great Pond.

Sec. 12. 30 MRSA §4956, sub-§3, ¶L, as repealed and replaced by PL 1971, c. 454, is amended to read:

L. Whenever situated, in whole or in part, within 250 feet of any pond, lake, river or tidal waters, will not adversely affect the quality of ~~such~~ that body of water or unreasonably affect the shoreline of ~~such~~ that body of water.

Furthermore, when lots in a subdivision have frontage on an outstanding river segment, as defined in subsection 1-A, the proposed subdivision plan shall require principal structures to have a combined lot shore frontage and setback from the normal high-water mark of 500 feet. To avoid circumventing the intent of this provision, whenever a proposed subdivision adjoins a shoreland strip narrower than 250 feet which is not lotted, the proposed subdivision shall be reviewed as if

lot lines extended to the shore. These frontage and set-back provisions shall not apply either within areas zoned as general development or its equivalent under shoreland zoning, Title 12, section 4813, or within areas designated by ordinance as densely developed. The determination of which areas are densely developed shall be based on a finding that, as of the effective date of this Act, existing development meets the requirements of subsection 1.

Sec. 13. 33 MRSA §668, first ¶, as enacted by PL 1969, c. 566, §2, is amended to read:

No conservation restriction as defined in section 667 held by any governmental body or held on a river shoreline by a private nonprofit corporation of this State, whose purposes include conservation of land or water areas or of a particular ~~such~~ area, ~~shall~~ may be unenforceable on account of lack of privity of estate or contract or lack of benefit to particular land or on account of the benefit being assignable or being assigned to any other governmental body or, a private nonprofit corporation of this State with like purposes. All such restrictions shall be duly recorded and indexed in the registry of deeds for the county where the land lies so as to affect its title, in the manner of other conveyances of interests in land, and shall describe the land subject to ~~said~~ the restrictions by adequate legal description or by reference to a recorded plan showing its boundaries.

Sec. 14. 38 MRSA §621, as enacted by PL 1979, c. 465, is repealed.

Sec. 15. 38 MRSA §622, as amended by PL 1981, c. 470, Pt. A, §168, is repealed.

Sec. 16. 38 MRSA §§623-625, as enacted by PL 1979, c. 465, are repealed.

Sec. 17. 38 MRSA §626, as amended by PL 1981, c. 470, Pt. A, §169, is repealed.

Sec. 18. 38 MRSA c. 5, sub-c. 1, Art. 1, sub-art. 1-B is enacted to read:

Subarticle 1-B. Permits for hydropower projects

§630. Short title

This subarticle may be cited and referred to in proceedings and agreements as the "Maine Waterway Development and Conservation Act."

§631. Purposes

1. Findings. The Legislature finds and declares that the surface waters of the State constitute a valuable indigenous and renewable energy resource; and that hydropower development utilizing these waters is unique in its benefits and impacts to the natural environment, and makes a significant contribution to the general welfare of the citizens of the State for the following reasons.

A. Hydropower is the state's only economically feasible, large-scale energy resource which does not rely on combustion of a fuel, thereby avoiding air pollution, solid waste disposal problems and hazards to human health from emissions, wastes and by-products. Hydropower can be developed at many sites with minimal environmental impacts, especially at sites with existing dams or where current type turbines can be used.

B. Like all energy generating facilities, hydropower projects can have adverse effects; in contrast with other energy sources, they may also have positive environmental effects. For example, hydropower dams can control floods and augment downstream flow to improve fish and wildlife habitats, water quality and recreational opportunities.

C. Hydropower is presently the state's most significant indigenous resource that can be used to free our citizens from their extreme dependence on foreign oil for peaking power.

2. Policy and purpose. The Legislature declares that hydropower justifies singular treatment. The Legislature further declares that it is the policy of the State to support and encourage the development of

hydropower projects by simplifying and clarifying requirements for permits, while assuring reasonable protection of natural resources and the public interest in use of waters of the State. It is the purpose of this subarticle to require a single application and permit for the construction of all hydropower projects and for the reconstruction or structural alteration of certain projects, including water storage projects. The permit application process shall be administered by the Department of Environmental Protection, except that, for hydropower projects within the jurisdiction of the Maine Land Use Regulation Commission, the commission shall administer the permit application process under this subarticle.

§632. Definitions

As used in this subarticle, unless the context indicates otherwise, the following terms have the following meanings.

1. Board. "Board" means the Board of Environmental Protection, except that, for any hydropower project within the jurisdiction of the Maine Land Use Regulation Commission, "board" means the Maine Land Use Regulation Commission.

2. Department. "Department" means the Department of Environmental Protection.

3. Hydropower project. "Hydropower project" means any development which utilizes the flow of water as a source of electrical or mechanical power or which regulates the flow of water for the purpose of generating electrical or mechanical power. A hydropower project development includes all powerhouses, dams, water conduits, transmission lines, water impoundments, roads and other appurtenant works and structures that are part of the development.

§633. Prohibition

1. Permit required. No person may initiate construction or reconstruction of a hydropower project, or structurally alter a hydropower project in ways which change water levels or flows above or below the

dam, without first obtaining a permit from the board.

2. Exceptions. This subarticle shall not apply to activities for which, prior to the effective date of this Act, a permit or permits have been issued pursuant to any of the following laws: Land use regulation laws, Title 12, sections 681 to 689; stream alteration laws, Title 12, sections 7776 to 7780; great ponds laws, sections 391 to 394; alteration of coastal wetlands laws, sections 471 to 478; site location of development laws, sections 481 to 490; and small hydroelectric generating facilities laws, sections 621 to 626.

3. Exemptions. Normal maintenance and repair of an existing and operating hydropower project shall be exempt from this subarticle, provided that:

A. The activity does not involve any dredging or filling below the normal high-water line of any great pond, coastal wetland, river, stream or brook; and

B. The activity does not involve any dredging or filling on the land adjacent to any great pond, coastal wetland, river, stream or brook such that any dredged spoil, fill or structure may fall or be washed into those waters.

§634. Permit requirements

1. Coordinated permit review. Permits required under the following laws shall not be required by any state agency for projects reviewed or exempted from review under this subarticle: Land use regulation laws, Title 12, sections 681 to 689; stream alteration laws, Title 12, sections 7776 to 7780; great ponds laws, sections 391 to 394; alteration of coastal wetlands laws, sections 471 to 478; and site location of development laws, sections 481 to 490. Notwithstanding section 654, the board may attach reasonable conditions consistent with this Act concerning the operation of hydropower projects. The board shall give written notice to the Commissioner of Inland Fisheries and Wildlife and the Commissioner of Marine Resources of the intent of any applicant for a permit to construct a dam.

Issuance of a water quality certificate required under the United States Water Pollution Control Act, Section 401, shall be coordinated for the applicant under this subarticle by the Department of Environmental Protection. The issuance of a water quality certificate shall be mandatory in every case where the board approves an application under this subarticle. The coordination function of the department with respect to water quality certification shall not include any proceedings or substantive criteria in addition to those otherwise required by this subarticle.

2. Application. An application for a permit required by section 633 shall be made on forms provided by the board and shall be filed with the board. Public notice of the filing shall be made as required by the board.

3. Application review. Within 10 working days of receiving a completed application, the Commissioner of Environmental Protection or the Director of the Maine Land Use Regulation Commission, as appropriate, shall notify the applicant of the official date on which the application was accepted.

The commissioner or the director, as appropriate, shall circulate the application among the Department of Environmental Protection, Department of Conservation, Department of Inland Fisheries and Wildlife, Department of Marine Resources, Department of Transportation, Maine Historic Preservation Commission, Office of Energy Resources, Public Utilities Commission and the municipal officials of the municipality in which the project is located. The Office of Energy Resources and the Public Utilities Commission shall submit written comments on section 636, subsection 7, paragraph F. For projects within the jurisdiction of the Maine Land Use Regulation Commission, the director may request and obtain technical assistance and recommendations from the staff of the department. The department shall respond to the requests in a timely manner. The department's recommendations shall be considered by the commission in acting upon a project application.

§635. Board decision

The board shall, within 30 days of receipt of a completed application, either:

1. Approval. Approve the proposed project upon such terms and conditions as are appropriate and reasonable to protect and preserve the environment and the public's health, safety and general welfare, including the public interest in replacing oil with hydroelectric energy. These terms and conditions may include, but are not limited to:

A. Establishment of a water level range for the body of water impounded by a hydropower project;

B. Establishment of instantaneous minimum flows for the body of water affected by a hydropower project; and

C. Provision for the construction and maintenance of fish passage facilities;

In those cases where the proposed project involves maintenance, reconstruction or structural alteration at an existing hydropower project and where the proposed project will not alter historic water levels or flows after its completion, the board may impose temporary terms and conditions of approval relating to paragraph A or paragraph B but shall not impose permanent terms and conditions that alter historic water levels or flows;

2. Disapproval. Disapprove the proposed project, setting forth in writing the reasons for the disapproval; or

3. Hearing. Schedule a hearing on the proposed project. Any hearing held under this subsection shall follow the notice requirements and procedures for an adjudicatory hearing under Title 5, chapter 375, subchapter IV. Within 45 days after the board adjourns any hearing held under this subsection, it shall make findings of facts and issue an order approving or disapproving the proposed project, as provided in subsections 1 and 2.

§636. Approval criteria

The board shall approve a project when it finds that the applicant has demonstrated that the following criteria have been met.

1. Financial capability. The applicant has the financial capability and technical ability to undertake the project. In the event that the applicant is unable to demonstrate financial capability, the board may grant the permit contingent upon the applicant's demonstration of financial capability prior to commencement of the activities permitted.

2. Safety. The applicant has made adequate provisions for protection of public safety.

3. Public benefits. The project will result in significant economic benefits to the public, including, but not limited to, creation of employment opportunities for workers of the State.

4. Traffic movement. The applicant has made adequate provisions for traffic movement of all types out of or into the development area.

5. Maine Land Use Regulation Commission. Within the jurisdiction of the Maine Land Use Regulation Commission, the project is consistent with zoning adopted by the commission.

6. Environmental mitigation. The applicant has made reasonable provisions to realize the environmental benefits of the project, if any, and to mitigate its adverse environmental impacts.

7. Environmental and energy considerations. The advantages of the project are greater than the direct and cumulative adverse impacts over the life of the project based upon the following considerations:

A. Whether the project will result in significant benefit or harm to soil stability, water quality, coastal and inland wetlands or the natural environment of any surface waters and their shorelands;

B. Whether the project will result in significant benefit or harm to fish and wildlife

resources. In making its determination, the board shall consider other existing uses of the watershed and fisheries management plans adopted by the Department of Inland Fisheries and Wildlife, the Department of Marine Resources and the Atlantic Sea Run Salmon Commission;

C. Whether the project will result in significant benefit or harm to historic and archeological resources;

D. Whether the project will result in significant benefit or harm to the public rights of access to and use of the surface waters of the State for navigation, fishing, fowling, recreation and other lawful public uses;

E. Whether the project will result in significant flood control benefits or flood hazards; and

F. Whether the project will result in significant hydroelectric energy benefits, including the increase in generating capacity and annual energy output resulting from the project, and the amount of nonrenewable fuels it would replace.

The board shall make a written finding of fact with respect to the nature and magnitude of the impact of the project on each of the considerations under this subsection, and a written explanation of their use of these findings in reaching their decision.

Sec. 19. Commission on Local Land Use Violations. Swift effective enforcement against suspected violations of land use laws and ordinances is essential to the intended purpose of these statutes, but it is commonly asserted that the court system is not being used effectively, especially by small towns, to resolve these cases. There is created a Commission on Local Land Use Violations, known in this section as the "commission."

The commission shall be composed of 11 members as follows: Two members appointed by the President of the Senate, one to be a member of the Joint Standing Committee on Energy and Natural Resources and one to be a Senator knowledgeable about land use issues; 2

members appointed by the Speaker of the House of Representatives, one to be a member of the Joint Standing Committee on Judiciary and one to be a Representative knowledgeable about land use issues; and 7 members appointed by the Governor, one to be a local elected official, one to be an appointed local official, one to be a representative of the court system, one to be a representative of the Maine Association of Planners, one to be a representative of the Maine Bar Association, one to represent real estate interests, and one to be a representative of the general public, knowledgeable about land use issues. The commission shall hold an organizational meeting within 30 days after the adjournment of the Legislature at the call of the Chairman of the Legislative Council. At this meeting, the commission shall elect a chairman and a vice-chairman from within the membership.

The commission shall review the use of the state's court system to resolve suspected violations of local ordinances under the mandatory shoreland zoning laws, Title 12, chapter 424; the subdivision laws Title 30, section 4956; the state plumbing laws, Title 22, section 42; and other land use laws enforced by municipalities. This review shall examine the extent to which such local ordinances are or are not being adequately enforced, especially by small towns, where court action appears to provide the only existing appropriate recourse. The commission shall determine the causes for any problems uncovered and document examples to support its findings. The commission shall evaluate alternatives to the existing court procedures, including the establishment of a statewide system of land use hearing examiners. The commission shall make recommendations to secure just, swift, inexpensive and effective resolution of suspected land use violation cases, especially by small towns, without creating unreasonable burdens for the state's courts system.

The commission shall report its findings, together with any suggested legislation, to the Second Regular Session of the 111th Legislature on or before January 13, 1984.

The State Planning Office and the Division of

Health Engineering in the Department of Human Services shall provide staff support to the commission and administer its functions.

All executive departments are directed to give prompt assistance to the commission.

The commission may accept funds from any agency of the United States.

Appendix - Bibliography

Appalachian Mountain Club. AMC River Guide, Volume I, Northeastern New England. Boston: Appalachian Mountain Club, 1980.

-----. AMC River Guide, Volume 2, Northeastern New England. Boston: Appalachian Mountain Club, 1976.

Center for Natural Areas. A Preliminary Listing of Noteworthy Natural Features in Maine. South Gardiner, Maine, 1976.

Gabler, Ray. New England White Water River Guide. New Canaan, Conn.: Tobey Publishing Co., Inc., 1975.

Jordan, Richard M., Atlantic Salmon Fishing in Maine. Maine Fish and Wildlife, Summer, 1977.

Maine Department of Conservation, Bureau of Parks and Recreation. Maine Comprehensive Outdoor Recreation Plan. 1977.

Maine Department of Inland Fisheries and Wildlife. Planning for Maine's Inland Fish and Wildlife. Augusta, Maine: MDIFW, 1981.

Maine Department of Inland Fisheries and Wildlife, Atlantic Sea Run Salmon Commission. The Atlantic Sea Run Salmon of Maine.

-----. The Aroostook River (E. Baum), 1981.

Maine Department of Marine Resources. The Alewife Fishery of Maine. (L. Flagg), 1977.

-----. American Shad Management Plan. (L. Flagg, T. Squiers, and L. Austin).

-----. Development of Anadromous Fish Resources. (L. Flagg), 1981.

-----. Smelt Management Plan. (L. Flagg, T. Squiers, and L. Austin).

-----. Striped Bass Management Plan. (L. Flagg, T. Squiers, and L. Austin).

Maine Rivers. Thorndike, Maine: The Thorndike Press.

Maine State Planning Office, Critical Areas Program. Significant Bedrock Fossil Localities in Maine and Their Relevance to the Critical Areas. (W. Forbes), 1977.

-----. Waterfalls in Maine and Their Relevance to the Critical Areas Program of the State Planning Office. (T. Brewer), 1978.

-----. Gorges in Maine and Their Relevance to the Critical Areas Program of the State Office. (T. Brewer), 1978.

-----. Rare Vascular Plants of Maine. (S. Gawler), 1981.

-----. Significant Whitewater Rapids in Maine. (J. McMahon), 1981.

Makens, James C. Canoe Trails Directory. New York: Doubleday and Company, Inc., 1979.

New England River Basins Commission. Water, Watts, and Wilds, Hydropower and Competing Uses in New England. Final Report of the NERBC Hydropower Expansion Study. Boston, Mass.; 1981.

New York State Department of Environmental Conservation, Hudson River Basin Study Group. Guidelines for Identifying and Evaluating Scenic Resources. Hudson River Basin, Level B, Water and Related Land Resources Study, Technical Paper #4. Prepared by SUNY College of Environmental Science and Forestry, School of Landscape Architecture, 1978.

North Atlantic Water Resources Study Coordinating Committee. Study of Visual and Cultural Environment for North Atlantic Region, North Atlantic Water Resources Study, Appendix N. Prepared by Research Planning and Design Associates. Amherst, Mass.; November, 1970.

Northern Maine Regional Planning Commission. Restoration of Native Atlantic Salmon to the Aroostook River Basin. Caribou, Maine; February, 1978.

Riviere, William A., Pole, Paddle and Portage. Boston: Little, Brown and Company, 1969.

The Maine Atlas and Gazetteer. Yarmouth, Maine: Delorme Publishing Company, 1981.

Thomas, Eben. Canoe Racing: Hot Blood and Wet Paddles. Hallowell, Maine: Hallowell Printing Company, 1974.

-----. Canoeing Maine #1. Thorndike, Maine: The Thorndike Press, 1979.

-----. Canoeing Maine #2. Thorndike, Maine: The Thorndike Press, 1979.

United States Department of the Interior, Fish and Wildlife Service. An Ecological Characterization of Coastal Maine. Newton Corner, Massachusetts; 1980.

United States Department of the Interior, Heritage Conservation and Recreation Service, Northeast Regional Office, Philadelphia, PA. Wild and Scenic Rivers System Study-Northeast Region.

-----. Wild and Scenic River System Study-Northeast Region, Guidelines for Evaluating Wild, Scenic and Recreational Rivers.

-----. Nationwide Rivers Inventory, Criteria for River Evaluations. (J. Glenn Eugster), October, 1979.

-----. Nationwide Rivers Inventory, Criteria for Establishing River Priorities. (J. Glenn Eugster), April, 1980.

-----. Nationwide Rivers Inventory - Final List of Rivers, State of Maine. January, 1981.

United States Department of the Interior, Heritage Conservation and Recreation Service. National Register of Historic Places. Washington, D.C., 1976.

-----. Annual Listing of Historic Properties; National Register of Historic Places. Federal Register, Tuesday, February 6, 1979.

-----. Annual Listing of Historic Properties; National Register of Historic Places. Federal Register, Tuesday, March 18, 1980.

-----. Annual Listing of Historic Properties; National Register of Historic Places. Federal Register, Tuesday, February 3, 1981.

United States Department of the Interior, National Park Service, Northeast Regional Office. Maine Rivers Study; Preliminary Draft List of Rivers Under Evaluation; Philadelphia, PA; November, 1981.

-----. Maine Rivers Study; Draft List of Rivers Ranked by Composite River Value. Philadelphia, PA; December, 1981.

-----. Maine Rivers Study; Draft List of Rivers Under Evaluation. Philadelphia, PA; February, 1982.

University of Maine at Orono, School of Forest Resources. Bald Eagle Management Plan. (R. Owen and C. Todd).