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## The Presumpscot River Watch Guide to the Presumpscot River, Its History, Ecology, and Recreational Uses

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The Presumpscot River Watch

**GUIDE** *to the*  
**PRESUMPSCOT**  
**RIVER**

**Its History,  
Ecology, and  
Recreational Uses**



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**MACDONALD, BUTLER AND RICARDI**

*Introduction by Senate Majority Leader George J. Mitchell*

The Presumpscot River Watch

# GUIDE TO THE PRESUMPCOT RIVER

Its History, Ecology, and Recreational Uses

Amy MacDonald, Editor

Brian Butler

Chris Ricardi

Presumpscot River Watch

Portland, Maine

1994



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for their contributions to making  
this project possible

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## PREFACE

IN SETTING OUT TO put together this guide, Presumpscot River Watch was definitely torn: on the one hand, no such guide existed. Aside from its value in producing power and flushing away wastes, the Presumpscot has been an overlooked resource—ignored by the outdoor guides to Maine, because for many years it was so polluted that prolonged exposure to it was, if anything, to be avoided. Only the locals seem to know about this river. And like anyone who discovers a small gem (and one in the heart of a metropolitan area), our first impulse was to share it.

Our second impulse, however, was to keep quiet. After all, why risk ruining the very things that make the river special? Wouldn't more users mean more harassment of wildlife? More trash? More pollution? (If you have any doubts about the impact of individuals on a river, check out the Martin's Point Bridge area after a day of heavy bluefishing!) And our goal at Presumpscot River Watch is not necessarily achieved by turning the Presumpscot into another Saco River.

What it boiled down to was this: sooner or later people would discover this river. After all, it is right under the noses (sometimes too literally) of about 65,000 people. Why not, then, compile a guide that would encourage responsible use of this resource? In the long run, by introducing newcomers to it, we will increase the number of people who will fight hard to preserve it.

That, then, is our hope and trust: that those who use this guide and this river, whether to fish, swim, hike, birdwatch, or boat, will feel ownership in the Presumpscot—after all, Maine's rivers belong exclusively to Maine's people. We are fortunate that this is especially true of the Presumpscot; other river watch groups become deeply frustrated because no matter how hard local residents work cleaning up *their* stretch of the river, they are powerless to stop pollution that enters a river far upstream—oftentimes it even comes from another state. But the Presumpscot is a short river—under twenty-five miles from end to end—and it lies entirely within Cumberland County. This quirk gives us a remarkable opportunity: we are totally in control of how polluted or clean our river is.

So we hope you will enjoy and take pride in a river once celebrated in

verse as "the fairest river in Maine." And join us in our efforts to restore it to a state where not only humans may once again enjoy it to its fullest, but also the wildlife that was here long before we were, and that also has a right to the river.

This book would never have seen the light of day without the help of many, many people, all of whom volunteered their services, chief among them Chris Ricardi and Brian Butler, who managed to write parts of this book while working more-than-full-time as environmental scientists. Special thanks to William Hancock of the Maine Audubon Society for writing the bird sections, to Claire Doheny for preparing the index, to John O'Brien for the many hours he put into designing the book, to Don Gallant at G & G Laser for type output, to Glenn Parkinson for writing up Gorham Trails, to Ford Reiche for permission to reprint his wonderful map, and to Bart Furey for creating the invaluable modern-day map. Vaun Born, the Westbrook, Falmouth, and Gorham Historical Societies, Helen Knight, Betty Barto, Scott Andrews, Barry Mower, Sonny Pierce, Lou Flagg, Phil Spiller, and Roger Long also made contributions. For financial support, thanks to the Davis Conservation Foundation, Gorham Savings Bank, Portland Trails, and the Sebago Chapter of Trout Unlimited.

Amy MacDonald  
Editor

## INTRODUCTION

THE PRESUMPSCOT HAS a proud heritage. It has provided a livelihood for all those in its watershed, from the days when the Abenaki fished and planted beside it, to the days when the King's masts were first floated down it, to the heyday of the many mills that lined its banks. Early colonists were the first to record the beauty and bounty of the river, describing it as a "foot deep in fish."

Three hundred years later, the Presumpscot was a "foot deep in foam." So polluted was the lower stretch of the river that no fish survived in it, and no one wanted to live anywhere near its reeking banks. It survived various building booms with its banks largely undeveloped, even though they pass through a major urban area. And so they remain today, giving us a second chance to save the river.

The Clean Water Act of 1972 did much to remedy the worst excesses of pollution in the Presumpscot. The days when it looked like a "root beer float" and its fumes peeled paint from houses are gone forever.

But government alone cannot solve a problem as complex as protecting the environment. It is up to us as individuals to become stewards of our own land and resources. There are many means to do this, by changing our own behavior in small but vital ways (not pouring motor oil into storm drains that go into rivers and seas, for example), learning about the natural resources we have in our backyard, and working together to protect these resources.

That is where citizen action groups like Presumpscot River Watch come in. A small band of dedicated volunteers can make a difference in something as critical as a river system. Ordinary people, members of the community, regularly take the pulse of the river, to make sure it stays healthy, and they become a voice to ensure that environmental standards are met.

This is good stewardship.

In producing this guide, Presumpscot River Watch has pulled together for the first time a huge variety of information. This in itself is an enormous contribution to the future of the river. In encouraging us to use and appreciate the river, they invite us to share their concern for its welfare and work together to make this river a place where the interests of people and the natural world overlap.

It's not often we're given a second chance with something as fragile as a river. Let's keep working on it. After all, the Presumpscot has worked hard in the service of mankind for hundreds of years. It's time we returned that favor.

George J. Mitchell,  
U. S. SENATE MAJORITY LEADER

The Presumpscot River Watch

## GUIDE TO THE PRESUMPCOT RIVER

Its History, Ecology, and Recreational Uses

## CHAPTER ONE

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# HISTORY

**F**OR CENTURIES the Presumpscot River wound its way to the sea, undisturbed by man except for the occasional Abenaki tribe that grew corn on its banks, harvested some of its abundant fish and shellfish, and used it as part of the "Old Sebago Trail" for travel from Sebago, where they summered, to Casco Bay, where they wintered.

In 1623 the first European arrived. From that time on, life was never the same for either the Indian river dwellers, or for the river.

English sea captain Christopher Leavitt was the first white man to explore the river. He got as far as Presumpscot Falls (Lower Falls) in Falmouth, which he described as "much bigger than the fall at London bridge." Here he was greeted with great hospitality by the Aucocisco chief Squitregusset, who with fifty Indians lived and farmed by the creek that now bears his name. The chief gave him food and a beaver skin. Leavitt responded with the dubious favor of a drink of aqua vitae. (Squitregusset liked it so much that some years later, in Falmouth's first land sale, he sold all his land on



the east side of the Presumpscot to Francis Neale Small at the bargain price of one gallon of liquor a year.) "...[A]nd so in great love we parted," Leavitt records. Had Squitregusset known what Leavitt's arrival boded for his future, he would not have been so welcoming.

The Presumpscot River has one of the richest histories in Cumberland County. From the Indian days, when it provided food and transport, to the early settlers, who used it to float logs and power sawmills, to today when it supplies electricity to the S. D. Warren paper mill and other customers, it has been a source of livelihood—and contention.

The Presumpscot has also been the site of many firsts in Maine, some notable, others regrettable: the first dam, mill, paper company, hydroelectric dam, and probably the first battle over a fishway. It was also the site of many firsts in the nation: the first American grain shipment overseas, the first vegetable cannery, and the first recorded sale of alcohol to a Native American (Squitregusset). At one point in this century it was also the most regulated river in the United States.

It is also a last: site of the last covered bridge in Cumberland County.

#### "Foot Deep in Fish"

CAPTAIN LEAVITT ATTEMPTED TO NAME the river after himself, but it never caught on. The current name evolved from Leavitt, to Casco, to Presumpscot and included at least twenty-one different spellings (Pesumkeak, Presumsca, Presumpskeag, Pesumsca, Persumcot, Pesumscattowit, Passumschaa, Pesumkit, Pesumscutt, etc.). Probably the correct spelling is "Pesumpscot," as that was how the Indian tribe of that name spelled it in 1739. It is said to mean "falls-at-standing-rock," which would describe the lower falls, or "many-rough-places-river," or "many-falls-river."

The Presumpscot was a real horn of plenty. Leavitt remarked on the abundance of fish in the river. The Abenaki tribes, among them the Aucocisco ("place of slimy mud") and the Rockameccocks, used these fish for food and for "fishing [fertilizing] the corn" they grew in planting grounds on the river banks by both Presumpscot Falls and Cumberland Mills. A book written in 1650 mentions that "at certain times, the entire surface of the river, for a foot deep, was all fish." (Fobes) Indeed, the name Ammoncongion, which the falls were called near Cumberland Mills where

the Indians had a 200-acre corn field, is said to mean "the high fish place." Salmon, shad, and alewives migrated upriver past Presumpscot Falls to spawn in fresh water. Other bounty of the estuary included smelts, eels, flounders, pogies, sturgeon, striped bass, herring, and a large variety of shellfish.

Various tribes from around Maine would congregate at Presumpscot Falls each spring to catch the migrating fish. Eventually they were ousted by settlers looking for a cash "crop." Smelts and alewives were the favorite and among the most abundant; they were first caught with nets, and then by weirs made of brush or lumber with a net at their center that funneled the fish in huge quantities during the ebbing tide. The "Smelt King" Samuel Knight (of Smelt Hill) who fished in the late 1800's, is said to have caught over a million and a half smelts in his lifetime, including single hauls of 400 pounds of smelts and 600 pounds of eels at a time. In 1864, a single dipnetter caught 20,000 alewives here. (DeRoche)

The river also sheltered an abundance of waterfowl. The estuary area now (appropriately!) bounded on one side by the Maine Audubon Society was a rich feeding ground for both fish and fowl and a favorite staging area for migratory birds. Ducks "by the thousands" used to congregate at the mouth of the river. A 17th-century account notes that Casco Bay "hath a river in it...which doth afford fish in abundance, fowl also in great measure. So full of fowl is it, that strangers may be supplied with a variety of fowl in an hour or two after their arrival." One of the most famous fowlers of his day, Benjamin Atwell, lived on Martin's Point in 1638 "no doubt because of the fish and wild fowl in that river." Later a certain A. J. Whitney allegedly made a living by shooting them "by the barrel load" and selling them to Boston restaurants. (Fobes)

#### Masts and Lumber

CAPTAIN LEAVITT ALSO NOTED THE enormous white pines growing along the river. In fact the Presumpscot ran right through Maine's white pine belt. Having totally deforested Britain by the 17th century, the British were forced to roam the seas desperately seeking trees tall enough to make into masts for their vast armada. And the King was prepared to pay handsomely—up to £100—for such a tree. In fact, Maine's forests were one of the chief reasons the British were interested in the colonies.

Trees two or more feet in diameter a foot from the ground were marked with the King's "broad arrow," and the penalty for cutting them was stiff—£100. The smaller trees were floated downriver, the larger ones carried overland to "mast landings" and floated to tidewater. One, Royal Mast Landing, was located just below Mallison Falls. They were then loaded into special 600-ton ships, fifty at a time, bound for England.

George Munjoy, of Munjoy Hill fame, shipped so many fine masts to England that in 1666 he was granted the land on the north bank of the Presumpscot that S. D. Warren now occupies from Saccarappa Falls to below Cumberland Falls.

#### First Settlers and Indian Wars

THE FIRST WHITE PERSON to settle on the Presumpscot was Arthur Mackworth. In 1632 he built a house at the mouth of the river, on the east side of what is now Mackworth Point. Opposite his house is a small island (Mackworth Island) where King Cogawesco's tribe used to winter, after traveling down the river from Sebago Lake.

For the next forty-three years the settlement on the river grew slowly, until the Indians felt forced away from the coast. In 1631 Squitregusset murdered an early settler, Walter Bagnall, who was infamous for foul dealings with the Indians. Governor Winthrop of Massachusetts sent men to bring back the chief's scalp. Unable to find Squitregusset, the men resorted to killing the only Indian chief they *could* find, Chief Black Will, in an act of folly that would be remembered in 1675, when King Philip's war broke out. In that war, the rage of the Indians spread to Falmouth, where the Thomas Wakely family, who lived on the west side of Presumpscot Falls, was massacred.

The Presumpscot was practically the only thoroughfare available to early settlers: "It was a highway, the boat was the means of communication." (Fobes) The river was in fact a key to the settlement of Windham, Gorham, and Westbrook during this early part of the 18th century, with settlers generally building first at the river and then moving outwards. And always they were attracted first by the water power of the falls.

In 1734, sixty-three lots were created on the Presumpscot in Windham (New Marblehead), ten rods wide, running from the river back a half mile. The first settler reached Gorham in 1736. The following year Joseph Conant

reached Westbrook, bringing all his worldly goods and family in a canoe up the river; he built a mill and later a house near Saccarappa Falls.

#### First Dam Spells Trouble

ONCE AGAIN THE WHITE SETTLERS demonstrated their disregard for the needs and rights of the Indians, and brought trouble on themselves. In 1735, the first dam (powering a sawmill and grist mill) was built on the Presumpscot at Presumpscot Falls in Falmouth by Colonel Thomas Westbrook and Samuel Waldo. Waldo and Westbrook promised the Indians they would provide a sluiceway for migrating fish, but never built it.

Three years later, in 1738, Ebenezer Hawkes attempted construction of a dam and sawmill at Mallison Falls in Windham. But a small band of Rockamecock Indians living on the river, led by the redoubtable Chief Polin, halted construction by harassing them with "menaces and warlike demonstrations." Polin claimed to own the land on both sides of the river and argued that a dam would prevent spawning fish from migrating upriver. The dam in Falmouth had already drastically reduced fish stocks, and that autumn the chief formally requested a fishway at Presumpscot Falls. Falmouth was unmoved. The town voted at the town meeting that "the great dam across the Pesumpscott River has not as yet been any damage to the Town and that the Town don't desire the sluice ways in said Dam for the passage of fish...."

Polin was enraged by this rebuff, so next summer he walked all the way to Boston to talk with Governor Shirley. He was polite but firm, telling the governor that "what we are most aggrieved at is that the River Pesumscot is damed up so that ye passage of ye Fish which is our food is obstructed and that Col. Westbrook did promise about two years ago that he would leave open a place in ye Dam and ye fish should have a free passage up ye said River into ye Pond in proper season, but he has not performed and that we are thereby deprived of our proper food."

He also complained that "the English are encroaching on our lands," and he asked the governor to put a stop to settlements in Windham. He explained that "improvements caused the Hunting to be very difficult" and were impeding their "trade on the Pesumscot River." "It is also desired," Polin ended his letter rather plaintively, "that you would take care

and give orders that the people of Pesumpscot River treat the Indians kindly that come hither."

The governor sympathized and ordered that the dam be opened for fish. In a letter to Col. Westbrook, Chief Polin notes the governor's order, pointing out that the "deed of President Danforth to the Town of Falmouth does make an express saving of the Rivers." That same year (1739) the residents of Westbrook noticed a decline in the runs of anadromous fish (river-spawning sea fish) and insisted that John Wait build a fishway at Saccarappa Falls. Falmouth approved the building of sluices; and in 1741 the General Court decided that all dams had to provide such fishways. Failure to do so carried stiff penalties: owners of the Great Falls (North Gorham) Dam were "fined the sum of six pounds a day for every day the 'way' was closed to fish." As late as 1867 there was complete passage for all anadromous fish to Sebago.

The Saccarappa Falls fishway is described thus in an historical account: "it consisted of a series of steps filled with rocks and surrounded by a wooden framework....the fish would zig-zag up in short dashes from one step to the other until they reached the top of the falls and could continue their long trip to Sebago Lake." (DeRoche)

But Gov. Shirley hedged about the land titles, necessitating a second trip to Boston by Chief Polin. This time he was adamant: either the white men vacate the entire length of the Presumpscot, or he would drive them away. Windham historian Samuel Dole says Polin "came away mortified and enraged; and he swore never to make peace with the hated white man until his demands were met. But with true Indian stoicism he waited for a favorable opportunity to strike what he intended would be a fatal blow." Polin burned all the mills at Saccarappa and Presumpscot Falls in 1744. In 1756 he led a war party down the river to Windham but was killed in a skirmish with farmers. Polin's men paddled up to the foot of Sebago Lake, where they buried their beloved chief in a sitting position under a beech tree. Another Indian killed in the fight is said to be buried in a well defined grave on the banks of a brook near the Westbrook line.

The death of Chief Polin marked the end of the Indian resistance to the white man's presence on the Presumpscot River.

### Light Industry: Ships, Bricks, Iron

ONCE THE SETTLERS HAD squelched Indian claims to the river, they proceeded to fight among themselves over the mills. Starting with the first mill owners, Waldo and Westbrook, owners regularly took each other to court. And when they weren't fighting each other or the Indians, they had to cope with natural disasters that seemed determined to keep the river mill-free.

The next 200 years saw the serious development of the industries of the Presumpscot: from ice harvesting to canneries, tanneries, brickyards, shipyards, iron foundries, arsenals, and, of course, mills.

Until the advent of the steamer, shipbuilding provided the major source of revenue and employment in the Portland area. The mouth of the Presumpscot, with its deep coves, access to both timber, labor, and the ocean, not to mention mills producing sailcloth, was a beehive of shipbuilding in the 18th and 19th centuries. Up to sixteen shipyards ringed the mouth of the Presumpscot during this time. They specialized in coasters and full-rigged trading brigs. The first ship was built in 1734, the last in 1852. (An interesting footnote: a vessel built on the Presumpscot was the first in the nation to carry a shipment of grain to Europe.)

Among its other resources, the Presumpscot was rich in marine clay perfect for brickmaking. Several buildings in the estuary area still standing were made from this clay in the 18th and 19th centuries. The first brickyard was run by the Waite family and was located at Waites Landing below Presumpscot Falls. In the 1820's, the Merrill family built a brickyard on Sandy Point, near Squitregusset Creek—with its particularly fine clay—that shipped bricks to New York and also made the bricks for the Smelt Hill Power Station. And the Joseph Walker family ran a brickyard at Prides Bridge in Westbrook for many years.

The mouth of the river was also home to the Presumpscot Iron Co., located on the west bank. It made wrought iron products and heavy train parts for shipment to South America; along with the Merrill brickyard, it dredged the center of the estuary to a depth of seventeen feet to make room for ships loading cargo.

And an arsenal was built at Martin's Point in the 19th century as a trans-shipment point for Gambo Mills gunpowder.

**Early Mills: Disputes, Disasters, Pollution**

THE MODERN HISTORY OF the Presumpscot is really a history of mills—mills that produced electricity, gunpowder, lumber, paper, pulp, flour, woolen and cotton textiles, sailcloth, and even silk.

With up to seventeen dams along its brief course, the Presumpscot was in the 1930's and 1940's dubbed the "best controlled" river in the United States. It drops 270 feet from Sebago to tidewater, discharging about 39,000 cubic feet of water a minute; 236 feet of drop are or were utilized by mills. These mills provided vital jobs for many area residents. They also produced some of the earliest disputes, disasters, and pollution.

The prime mill locations were Presumpscot Falls, with a twenty-two-foot drop, in Falmouth; Cumberland Mills and Saccarappa in Westbrook (at one point Samuel Waldo owned all three); and Mallison Falls at South Windham. But mills have also been built at every possible location on the river. At one point it was said there were nineteen sawmills in Westbrook; and an 1840 pamphlet lists fifteen mills in Windham.

At this time logs were floated in huge rafts from the mouth of Songo River across Sebago and downriver—over dams—to the sawmills. From 1835 to 1845 "the whole surface of the river was often completely bridged for miles." (Jones) The debris from this activity, added to the sawmills in Westbrook, produced the first problems with water pollution, as the bark and sawdust choked the river. The river was now so polluted that S. D. Warren had to build a two-mile aqueduct from Cumberland Mills to the closest spring to get process water for its mills and then later a settling basin for river water.

However, some people profited from the pollution. Joseph Walker built a boom to catch the wood waste at Prides Bridge, which he then used to fire his brickyard kiln. This so incensed his neighbors downstream that they repeatedly cut his boom to get access to the waste wood.

Virtually every mill was eventually visited by the great scourges of mill life: flood, fire, and even explosions, lightning, and hurricanes.

The major mills on the river were located at:

**Presumpscot (Lower) Falls.** The first mill in Maine was the Casco Mill, a grist mill built here in 1646 by John Phillips. A dam was present at least as early as 1731 (not counting the beaver dam it replaced!). The first paper mill in Maine (and a sawmill and grist mill) were built on the Presumpscot

at Presumpscot Falls in Falmouth in 1735 on land owned by Thomas Westbrook and Samuel Waldo. Disputes over ownership of this water power lasted a hundred years and three generations, with Waldo, Westbrook, and four others constantly suing each other.

This was also the site of Maine's first hydroelectric dam, the Smelt Hill Power Station, owned by S. D. Warren and built in 1889 by Stone and Webster (the same firm that tried and failed to build a de-inking plant at Gambo in 1992). The region's first high-tension wires took electricity to S. D. Warren Paper Co., Dana Warp Mills, and the towns of Westbrook and Gorham. A riverboat shuttled workers back and forth to Cumberland Mills. However, one natural disaster after another overtook the power station until a fateful day in 1945 when a bolt of lightning delivered the final blow, knocking a whole wall of the building into the river. (At the same instant, the power station manager for fifty years, Harry McCann, died of a heart attack in another part of Falmouth.)

**Cumberland Mills (Ammoncongin).** On this site, formerly Indian fishing grounds and corn fields, was the early village of Westbrook, then known as Congin, which in 1843 consisted of nine houses and a store on one side of the river, and five houses on the west side. Then the great flood of 1843 "as if in mockery of man's insignificance...swept every trace of [temporary bridges and roads] away and ran its course, untrammelled, to the sea." (Dole)

Undaunted, settlers built the Congin Paper Mill here two years later; it was sold to Samuel Dennis Warren and Otis Daniell, who founded the S. D. Warren Co. in 1854. Within nine years they had quintupled the old Congin mill's paper production, producing seven tons per day. (Today S. D. Warren averages 650 tons a day.)

Just after the Civil War, paper mills, including S. D. Warren, started using chemicals to bleach pulp. The 1867 report of the Department of Inland Fisheries and Game notes Cumberland Mills was putting chloride of lime and oil of vitriol into the river. In the 1880's paper companies developed a process using sulfite and added new chemicals to make coated and colored paper. Many of these chemicals were dumped straight into the Presumpscot River for over a hundred years.

[An historical footnote: the very first experiment in preserving food in tin cans was conducted at Cumberland Mills by Nathan Winslow, who canned some corn in a shed there in 1892, launching a new industry.]

**Saccarappa.** Saccarappa means “falling toward the rising sun.” In 1666 George Munjoy bought “Nunateconett and Warabitta,” described as the “Ammoncongion River great falls, the uppermost being Saccarappa and so down to the planting ground (Cumberland Mills).” (Fobes) In 1729 the foundation was laid at Saccarappa and power rights granted to Benjamin Ingersoll, John Bailey, and Benjamin Larrabee. It was the start of the lumber business—boards were floated downstream or carried by horse—and the source of the poem:

*Old horse, old horse  
What brought you here?  
From Saccarap to Portland Pier  
I've carted boards this many a year.*

The first textile mill in Westbrook was built at Saccarappa Falls in the early 1830's for the production of sailcloth by the Westbrook Manufacturing Co. It was never reopened after the 1896 flood, and was bought by Woodbury Kidder Dana in 1901, for the Dana Warp Mills, which had itself survived both flood and fire at a different Saccarappa location. By 1912 they were producing forty tons per week of dyed cotton warp, and eighty tons by 1951. The Haskell Silk Company was also located on the river here from 1881-1933.

A hydroelectric station was constructed at Saccarappa in 1889 to power the S. D. Warren mills.

**Mallison Falls (Horse Beef, South Windham).** Ebenezer Hawkes eventually built his sawmill in 1740 with blockhouses at either end to keep the “menacing” Indians at bay. It was called Horse Beef because during construction the workers found a pair of horse hooves at the bottom of a barrel of beef they had eaten. This mill operated until the big flood of 1843. It was sold in 1866 and renamed Mallison after its new owners.

**Little Falls (Keddy).** Sometime before 1756, Maj. William Knight built a sawmill here at the site of what later became the Androscoggin Pulp Co. The store called Patsy's was built in 1838 as a tavern, and served river traffic with two daily stage coaches.

**Gambo (Newhall).** Jonathan Loveitt bought an existing sawmill here in 1769. But Gambo is best known for its gunpowder mills, which were one of the largest producers of high-quality gunpowder during the Civil War. Known as the Gambo Powder Mills (or Oriental Powder Company),



PHOTO BY A. MACDONALD

*The “round mill” of the Gambo Powder Mills.*

the mill was first built in 1824 (some say 1818) on the Gorham side of the river, and additional buildings were later added on the Windham side. This mill became the fourth largest powder mill in the country, and ran until 1905. Despite safety precautions like wearing shoes with wooden instead of iron nails to avoid causing sparks, it periodically blew up, with great loss of life, in explosions that could be felt as far away as Portland.

**North Gorham Dam (Great Falls).** There was lumbering here on the Windham side early on. The first man to occupy the falls was Zebulon Trickey in the late 1700's. By 1842 there were saw and grist mills, and Walter Corey's chair factory, which produced 20,000 chairs. They all burned in 1872. Cumberland County Power and Light later bought the water power on both sides.

The Pleasant River tributary is also the site of several mills: Upriver at **Jackson Falls** a sawmill and gristmill were built in the 1700's by John A. Knight. **Anderson Falls** is named after Maj. Edward Anderson, who built a large sawmill there in 1781. In 1814 the dam collapsed and the “sudden eruption of this great body of water carried away one sawmill, one grist mill, and four bridges on Pleasant River, and the bridge at Gambo and Mallison Falls on the Presumpscot.” (Smith) A similar catastrophe struck a badly designed and ill-fated mill dam erected at the Narrows at the outlet of Little Sebago in 1861 by Oliver and Joseph Pope, who were deaf to

warnings of imminent disaster. Rains caused the pond to overflow and the dam to collapse. The resultant flood swept away not only the Pope saw, woolen, and grist mills at Pope Falls but every bridge from the mouth of Ditch Brook to Mallison Falls, destroying or damaging other mills on the way. Loveitt Falls was the site of a sawmill and a tremendous "hurricane" in 1767, and eight years later of an extensive forest fire (set by a hunter trying to smoke out a bear) that burned along the old path of blowdowns from the hurricane.

#### Canals: The C. & O. ...

THE PRESUMPSCOT WAS the site of two major innovative commercial canal ventures, one a failure, the other a fiasco.

In the 19th century, the Cumberland and Oxford Canal was dug to make waters navigable from the head of Long Lake to the Fore River. Finished in 1830, the canal was twenty miles long and had twenty-eight locks. It ran from Sebago Lake Basin, parallel to the river until it reached Westbrook, then continued south until it reached Fore River. Designed to bring wood to Portland (which needed some 20,000 cords a year!) the canal resulted in the stripping of Sebago Lake and vicinity of its valuable hardwood and pine. It was made obsolete by the railroad and in 1872 was closed without ever turning a profit.

#### ...and F. O. J. Smith's

F. O. J. SMITH IS KNOWN as "Maine's greatest failure." The Portland entrepreneur formed the Presumpscot Land and Water Power Co. in 1861 based on an unbelievably grandiose scheme to turn the Presumpscot into a major East Coast freshwater sea port. He proposed to do this by building a canal along the western edge of the estuary from Middle Road to Martin's Point, where it would connect with a 100-acre man-made pond, freshwater docks, and the sea. The river would be completely redirected into this canal, using a 900-foot-long dam to raise the river level twenty-two feet to the top of Presumpscot Falls. Thus ocean-going vessels would be able to dock around Veranda Street and sail upriver over the Falls all the way to Cumberland Mills. Smith envisioned gigantic docks and dozens of factories at the end of this canal, not to mention a major naval base around Martin's Point.



PHOTO COURTESY WESTBROOK HISTORICAL SOCIETY.

*The "Great Cumberland Mills Mud Slide" of 1868.*

He spent five years and a fortune on this scheme, succeeding only in digging a canal, 130 feet wide and ten feet deep, from Mile Pond to Martin's Point. Then he went broke.

#### Natural Disasters: Floods and Mud

THE PRESUMPSCOT RIVER HAS been prone to flooding over the years, washing away bridges and mills with predictable regularity. Major floods occurred in 1843 and 1896.

Regular mud slides are also thought to have changed the river's course several times over its history and prehistory. Historical confusion over which river was the "Casco" may have occurred because of a mud slide that temporarily caused the Presumpscot to flow into the Fore River. There were later slides in 1831 and 1851. But the strangest and most dramatic was the so-called "Great Cumberland Mills Mud Slide" of November 1868.

Heavy rains precipitated the slide about a third of a mile below Cumberland Mills in Westbrook, where the river curved sharply, and the embankment was steep and shelving. The morning of November 22, the mill watchman reported that the mill was inexplicably under a foot of water. Going downstream to investigate, townspeople were greeted by a strange sight: acres of trees appeared to have vanished. Twisted stumps and "billows of clay" filled the old river bed. An eyewitness reported: "...25 or 30 acres of... land has sunk and slid into the river, completely stopping

the water for 8 or 9 hours, filling the bed of the river for half a mile and turning the course of the current from its original channel." The 200-foot-long subsidence moved the river bed 300 feet and dammed the river to a depth of fifteen feet. It shut down all fifteen of the mills on the river for several weeks, until a channel could be cut. (Fobes)

#### Riverton, Riverboats, and Recreation

POLLUTION PROBLEMS, though evident, did not become serious enough to keep people from enjoying the river until the middle of this century. During the 1890's a sixty-foot steamboat, *Sokokis*, plied the river three times a day, making the eleven-mile round-trip from Saccarappa Falls to Mallison Falls carrying up to 125 pleasure seekers. She lasted eight years, until the mid 1890's, when she was made obsolete by the trolley.

In 1895 Riverton Park was constructed by the Portland Railroad Company near the current Rte. 302 Bridge. For the next quarter century it served as southern Maine's most popular "amusement park." Reached by trolley, the park offered a large Victorian casino and an outdoor theater (on the banks of the river) seating 2,000 people. An electric launch and rental boats provided rides on the Presumpscot, described as one of the "most scenic rivers in the state."

And a poem printed on the Presumpscot Steamboat Company's time tables around the turn of the century called the Presumpscot the "fairest river in Maine." The company ran the steamers *Louise* and *Santa Maria*, which carried up to 200 passengers each day between Cumberland Mills, Riverton, and Presumpscot Falls, starting in 1900.

In the 1920's, a steamer called the *Saccarappa* ferried employees between the Smelt Hill Power Station at Presumpscot Falls and Cumberland Mills.

#### Historical Sites Today

MANY SIGNS OF its past life remain along the Presumpscot:

Beginning below the Head Dam above the Eel Weir Canal, the remains of the Upper Guard Lock of the Cumberland and Oxford Canal are still visible. The granite structure of one gate is intact, in excellent shape. Iron hinge strap holes are visible: details are identical to those of many 18th- and 19th-century locks still used in England. A mile-long



*A playbill from Riverton Park, 1897.*

COURTESY FALMOUTH HISTORICAL SOCIETY.

segment of the canal remains intact and is used as an impoundment for the Eel Weir Dam hydropower station. Three tenths of a mile below this dam are significant remains of Middle Jam Lock, including a now-dry stonework channel, along the western shore of North Gorham Pond.

Babb's Bridge on Hurricane Road in Windham, built in 1740 and burned by vandals in 1973, was the oldest of ten surviving covered bridges in Maine. It was rebuilt in 1976. Just below this bridge are the remains of Kemp Lock and Warren Lock. Between Little Falls and Gambo Falls an excellent stretch of the C. & O. canal towpath remains.

At Gambo, the foundation of the "round mill," a large stone circle on the Gorham side, around which the mill wheels circled to grind the powder, is the most striking remnant of the gunpowder days. Several mill foundations, spaced 500 feet apart to keep all the mills from blowing up if one should go, are also visible here, as are parts of the C. & O. Canal and towpath (under water).

Other sections of towpath can be seen above Mallison Falls, from Mallison south to near the Little River, and south of the Little River to Conant Street in Westbrook. In addition, the remains of the aqueduct across the Little River still exist.

All that remained of Riverton Park were two of the stone gates, which were dismantled several weeks before this guide was printed.

In Falmouth, many relics of the industrial era remain, especially of the

docks and shipyards in the estuary. Remains of a 19th-century combing mill are visible above Presumpscot Falls fishway. The Presumpscot Iron Company's foundations and dock pilings may still be seen on the west shore of the estuary, along with what appears to be slag from its foundry. Just upstream, four sections of F. O. J. Smith's doomed canal still exist between Mile Pond and Martin's Point (the lower half has been filled in). And a mysterious 120-foot channel and dock carved from solid rock in the west bank just downstream of the Falls continues to intrigue historians: it may have been a depot or shipyard.

Other oddities include the graves of the Thomas Wakely family (slaughtered by Indians in 1675) in an old cemetery on the eastern banks of the river near Presumpscot Falls; and the wooden pilings by the Martin's Point Bridge, so-called "dolphins" erected to break up ice floes.

A more contemporary spot of "historical" interest is the helicopter pad at the Maine Audubon Society: the river stench was so bad in the estuary during the 1970's that helicopters used to regularly spread lime over the river mouth in an effort to neutralize the fumes.

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## CHAPTER TWO

# ALONG THE RIVER

THE PRESUMPCOT RIVER IS THE largest fresh-water input to Casco Bay. It extends twenty-five miles between Sebago Lake and the bay, passing through the towns of Windham, Gorham, Westbrook, Portland, and Falmouth, draining 648 square miles of Maine. Two thirds of its flow comes from the Sebago Lake watershed. The balance comes from its tributaries: the Pleasant, Little, and Piscataqua rivers; and Baker, Nason, Mill, Inkhorn, Otter, and Colley Wright brooks.

At times the river is a boulder-strewn rapid, at other times a calm ripple in forested ravines, or placid pond water. It discharges 39,000 cubic feet per minute and falls 270 feet during its journey and, as with many rivers today, its path is blocked by a number of impoundments. Ten dams account for most of the elevation drop. Seven are used to generate electrical power—80,000 megawatt hours, or \$5,000,000 worth, of electricity a year.



## HABITATS AND WILDLIFE

BUT THIS RIVER IS MORE THAN a mass of falling water. It is filled with life. Within the valley of the Presumpscot are many ecosystems characteristic of New England river regions. Invertebrates and insects hide in its gravel and sediments. A variety of fish lurk in its cold riffles or warmer ponds. Birds and animals thrive in the river's various habitats, which range from hardwood and coniferous forest, to wetlands, to overgrown farmland, and a saltmarsh. The river provides shelter, food, and a place to rear young for the variety of distinct biological communities that exist within its flood plains and within the river itself. Though its waters become increasingly hostile to living creatures as it wends its way to the ocean, many hardier species survive and even thrive, especially in the nutrient-rich estuary.

On any given day you might see a kingbird swoop over the river to snatch a hatching caddis fly; a ruffed grouse sneaking along the banking to feed on the red berries of the barberry bushes and winter bush that compete for space and light; a green-winged teal paddling into a maze of arrowhead, rushes, and cattails to find a secluded spot to build a nest; red fox, skunk, or raccoon looking for a careless duckling; deer and moose feeding; beaver or otter swimming; and a host of other wildlife, especially in the estuary, where the tides push and pull at the river, transforming it every six hours from a churning bay into mud flats, seemingly barren, but actually teeming with life above and below the mud.

Hardwood and coniferous forests grow on the dry bankings above the river. Interspersed within the maple, beach, oak, and birches are dense stands of hemlock and white pine that block out the sunlight and prevent the takeover by the hardwoods. Some of the stands of coniferous trees along the river have been identified as deer yards. Deer from surrounding forests move into these areas during harsh winters for shelter from the deep snow and cold winds.

Each spring the forest floor comes alive with a multitude of flowers, ferns, and mosses. Canada mayflower, star flower, Solomon's seal, bunch berry, winterberry, and lady slippers bloom along the riverbanks. Sensitive ferns reach out to the wet areas flooded by the spring runoff, and interrupted and cinnamon ferns push their fronds out of the drier soils further up the river banks. Sphagnum moss covers the rocks, tree roots, and forest

litter in the low-lying areas, and princess pine and a variety of other club mosses spread their arms along the forest floor.

For nearly two centuries people cleared the fertile flood plains and established farms beside the Presumpscot. In some places working farms still exist. Other farms have been slowly abandoned, giving way to successional species and eventually returning to forest. This old farmland provides prime habitat for wildlife. Songbirds thrive in the shrubs and saplings along the field edge. Grouse, woodcock, partridge and even wild turkey find refuge in the poplars and thickets that take over old fields.

In the wetland areas of the river sedges, cattails, and rushes rise out of the shallow waters; grasses sway in the gentle currents. These areas attract waterfowl, raccoons, songbirds, reptiles, and amphibians, and an assortment of other animals that live in river habitats.

Along the river ten impoundments have created small lakes and ponds. In each case a section of the river was sacrificed, and the basic ecology of the river has been changed. Lakes now cover riverbanks. Bass swim where deer once browsed. Fish species, insects, birds, and aquatic organisms have all been affected by the shift to a lake habitat. And some, like the Atlantic salmon who were unable to bypass the dams, have become history.

The Presumpscot takes many forms along its twenty-five-mile path:

### The Upper River

THE CRYSTAL-CLEAR HEADWATERS OF the Presumpscot are host to aquatic species that can tolerate only the purest of environments. Here trout and landlocked salmon swim, and kingfishers race along the river's edge. The Presumpscot begins as the outlet of the Sebago Lake Basin. The Head Dam here divides the river into two parallel channels. Symbolically enough, one is wild, the other a manmade canal. They join at the base of Eel Weir Dam. The river is ten to twenty feet wide and consists of a succession of pools, riffles, and rapids until it flattens out and becomes the 128-acre North Gorham Pond, the first of two major ponds found downstream from Eel Weir Dam. A little over a quarter mile wide at its widest point, this pond has several islands, a rocky bottom and scattered houses on both shores. Wildlife is common: waterfowl, deer, and the occasional moose that comes to the river for food and drink.

Below the North Gorham Dam, the river widens into a pool with sev-

eral small islands and marshy shores. This pool becomes a brief river before emptying into Dundee Pond, the largest river impoundment. It is 173 acres: just over a mile long and about a quarter of a mile wide. The shores are mostly unspoiled and undeveloped.

#### The Middle River

THERE ARE TWO CHANNELS below Dundee Dam, the western one a narrow canal cut through the rock, probably converted from C. & O. Canal days to serve the power turbines. The bedrock outcrops in the area of the old river bed contain all sorts of minerals, such as blue-colored kyanite, rod-shaped staurolite, golden or black micas, and feldspar.

These channels empty into a wide, shallow pool that is the beginning of one of the most beautiful stretches of the river. The next mile is devoid of human habitation. Here the river takes on the character of small channels and densely vegetated islands with wide marshy areas. Wood-duck boxes can be seen nailed to old trees, as well as a few old oil drums and tires in the river. The islands provide great habitat for ducks and a few herons.

Downstream are four dams that create small ponds: the Gambo, Little Falls, and Mallison Falls dams in South Windham, and Saccarappa in Westbrook. In many areas the river flattens out, and water flow slows down. The rocky or sandy bottom of the upper section gives way to emergent vegetation, which floats in mats upon the surface.

In this section, the quality of Presumpscot water slowly deteriorates as the result of erosion, leachate from fertilized fields and dairy farms, municipal wastewater, storm water runoff, industrial pollution, and general runoff from "non-point" sources like parking lots.

#### The Lower River

Below Saccarappa Falls in Westbrook, the water quality continues to deteriorate, and it sometimes even fails to meet the minimum state water quality standards, as oxygen in the water drops below levels that can sustain aquatic life, with resultant fish kills. The causes are both manmade and natural.

At Cumberland Mills (by S. D. Warren) the river flows through the Presumpscot Formation—a gray-to-brown glacial clay. The clay soil causes the river to remain cloudy and is also responsible for the changes in veg-

etation along the river's banks. (Upriver the Presumpscot has principally a rocky or sandy bottom.) Added to the manmade pollution up- and downstream, it creates a murky river.

The mudflats in the estuary are home to clams and mussels, horseshoe and green crabs, snails and bloodworms, grass shrimp, and legions of microscopic organisms. Herons and egrets stalk these mudflats, searching for the mimmichog minnows and sand eels that use the estuary as a nursery. Osprey dive into the bay and rise, clutching a fish in their talons. Shorebirds prance along the water's edge, and diving ducks swim beneath the surface. Migratory fish move into the river each summer, followed by bigger fish, followed by even bigger fish. Some are spawning, and some are eating the spawners. Bluefish savagely chop at mackerel, and gulls and terns swoop down over the froth looking for leftovers.

By the time it reaches the estuary the river water has suffered many degradations. Though the currents carry far less pollution than before, the river below Westbrook still bears the scars of the past. It is empty of much of the life it once supported, its sediments undoubtedly still heavily polluted. And its shellfish beds are closed to harvesters—as they have been since 1946. The estuary is a clouded reminder of the fragility of the ecology of our land and waters.

#### FISH

HISTORICALLY THE PRESUMPSCOT WAS host to healthy runs of anadromous fish (river-spawning sea fish), including Atlantic salmon, shad, and alewives. However, the ten dams that now exist on the river have inundated most of the gravel shoals and riffles that once provided spawning and nursery areas for sea-run salmon. Between 1867 and 1880 the river was stocked with many thousands of Atlantic salmon fry, but because none of the dams had fish passage facilities, they failed to return. By the turn of the century the enormous runs of ocean fish were over. No runs were reported after 1900.

With the exception of several species, the fish that live in the river today differ greatly from those that were historically present. Non-indigenous fish now exist throughout the watershed; in fact, except for landlocked salmon and brook trout, nearly all the freshwater fish are introduced species. In some areas the fish that are present are a product of

fisheries management practices designed to establish sport fisheries.

As recently as 1967 no brook trout could be spotted in the Presumpscot River, and the Maine Department of Inland Fisheries and Wildlife (MDIFW) concluded that conditions "precluded coldwater fishery management in the main Presumpscot." But today you may find both cold- and warmwater fish here.

The fish species vary as much as the river habitat does: from fast flowing rapids and gin clear water, to cloudy streams, placid ponds, and impoundments; from pebble bottoms to clay bottoms to tidal bay.

**Sebago Lake Basin to Dundee Pond:** The stretch below Sebago Lake Basin is host to healthy populations of brook trout and landlocked salmon. It is ideal coldwater fish habitat. The fish populations in North Gorham and Dundee Ponds are also primarily brook trout and salmon. The MDIFW has been releasing these species for years during their annual stocking program. The sandy and rocky bottoms of these lakes are also ideal for small-mouth bass. The bass were introduced from their native homelands in the southern United States.

**Dundee Pond to Saccarappa:** Below the dam at Dundee Pond, the basic character of the river, and the fish species that exist in the river, begin to change. This part of the river contains a mixture of cold- and warmwater species.

The primary coldwater species are brook trout and brown trout. There are also a few salmon that drop down through the Dundee Dam. The brook trout and brown trout are stocked by the MDIFW in the impoundment above Gambo Dam and in the tailwater releases below Gambo, Little Falls, and Mallison Falls dams. In these areas, trout survive and grow year round.

Brown and brook trout move freely between the Presumpscot and the tributary rivers. In the spring when the water is cold trout cruise down into the main branch of the Presumpscot and can be found throughout the river. As the waters begin to warm the browns move into spring holes on the Presumpscot, or back into the tributaries, where water temperatures are cooler and more to their liking. Above Gambo Dam the Pleasant River is the major brown trout tributary. The Little River below Mallison Dam is another excellent brown trout tributary. This tributary is fed by groundwater springs that provide coldwater tempera-



*Landlocked Salmon*

PHOTO C. RICARDI

tures for the fish even throughout the dog days of summer.

Warmwater fish also thrive in the section of the Presumpscot between Dundee Dam and Westbrook. Both small-mouth and large-mouth bass live in the river. Most bass prefer to stay in the weed beds and protective cover along the bankings that are found in the ponded areas above the dams. White perch and chain pickerel are also residents of the river. This section of the river may also contain golden shiners and black-nose dace hiding among the weeds.

**Westbrook to Smelt Hill:** Below the town of Westbrook, low oxygen levels in the water have essentially destroyed historic fish populations on the once-thriving lower river. However, some populations of fish still exist. And alewives, a species that once returned to the river in enormous spawning migrations, are showing signs of a comeback.

Alewives are typically born in freshwater lakes, migrate to the ocean through outlet streams, and return, much like sea-run salmon, to their place of birth to spawn as adults. In 1990, a fish passage facility was installed on the Smelt Hill Dam to allow fish to travel above the dam, along with a downstream bypass to divert fish moving downstream away from the turbines. With the construction of these fishways, anadromous fish now have access to the eight miles of river above the dam.

In the late 1980's a fish ladder was installed on the Highland Lake outlet dam. (The outlet stream, Mill Brook, empties into the Presumpscot above Smelt Hill Dam in the town of Westbrook.) In 1987, the Maine Department of Marine Resources began stocking alewives into Highland Lake. In 1991, the first significant returns of adult alewives were observed—right on schedule. If the alewives continue to build in numbers, the river has the potential to produce approximately 350,000 of the ten- to twelve-inch adults each spawning run.

**The Estuary:** Below the Smelt Hill Dam the river supports nearly every saltwater species that frequents Maine coastal waters. Some species call Casco Bay home throughout the year, while others are migrants that live in the bay on a seasonal basis. The bay is a feeding and spawning area for many of these species.

There are a number of small anadromous fish in the river. Blue-back herring, rainbow smelt, and Atlantic silversides are found in the river during spring spawning migrations. Mimmichog minnows and killifish can be found throughout the year.

With an abundance of small fish in the estuary, the river attracts an assortment of predatory fish into its waters. In late spring, mackerel enter the bay to feed and spawn. The mackerel are joined by striped bass and menhaden later in the spring during their annual migration from the south Atlantic to Maine waters.

Striped bass became scarce on the East Coast during the late 1970's and early 1980's because of overfishing and pollution of prime spawning grounds (like the Presumpscot). However, thanks to protective measures, they have recently made a strong comeback.

During the summer months, schools of bluefish take over the Presumpscot where it enters the bay, searching for menhaden and bait fish. When they are around, the bass move out of town. It is possible to see the blues at work in the areas around the Interstate 295 bridge and Martin's Point Bridge in Falmouth. The water will be boiling with small fish trying desperately to escape and the dark dorsal fins and tails of the pursuing bluefish as they slice through the water. A school of feeding bluefish is one of the most exciting scenes in the fish-eat-fish world of the inshore coastal waters of Maine.

Less visible are two species of fish that can be found hugging the muddy

bottom of the Presumpscot. The smooth flounder and black-back flounder (sometimes called winter flounder) both live within the estuary. The smooth flounder is a small fish, rarely exceeding six inches long. It can be found in the river throughout the year. The black-back flounder grows much larger and thrives in the cold waters along the Maine coast. It can be found in the Presumpscot from the onset of cold weather in the fall through late spring. Black-backs move into the open ocean during the summer in search of colder waters.

Along with fin fish, a variety of shellfish live in the river. Green crabs and horseshoe crabs creep along in the shallows of the estuary backwaters, scavenging the river bottom. Small shrimp and moon snails love the mud flats. Soft-shell clams hide in the sandy shoals that form in the tidal flows, and huge beds of mussels grow in the shallows at the mouth of the river. These mollusks continually filter the sand and water for plankton and microscopic organisms on which they feed.

## BIRDS

THE PRESUMPCOT RIVER AND ITS TRIBUTARIES provide river habitat for resident and migratory birds characteristic of southern and central Maine woodlands. And large concentrations of shorebirds and waterfowl representative of Maine's southwest coast can be found in the estuary formed where the river flows into Casco Bay.

For much of its course the Presumpscot flows through a mixed forest dominated by red oak, red maple, sugar maple, poplar, and white pine. Here, wood thrush, veery, scarlet tanager, red-eyed vireo, ovenbird, and black-and-white warbler are among the typical nesting species. In the alder and shrubby vegetation growing along the riverbank, northern waterthrush, yellowthroat, chestnut-sided warbler, and song sparrow are common. Northern oriole, kingbird, American redstart, and Nashville warbler also often favor the wooded river edges, while yellow-shafted flicker, great-crested flycatcher, tree swallow, wood duck, and hooded merganser find good nesting habitat in the old stubs of American elms that once graced the river's course.

The fields and pastures along the Presumpscot are only remnants of what was once a predominantly open, agricultural landscape. Where these remain, bobolink, eastern meadowlark, American kestrel, and common

snipe are likely to be found. And where the margin between cleared land and river's edge is marked by alder, American woodcock and alder fly-catcher may be seen.

The water itself, of course, attracts many birds to the river. American black duck, mallard, wood duck, and hooded merganser are all common nesting waterfowl along the river. Wading birds such as the great blue heron, snowy egrets, American bittern, yellow legs, and a variety of sandpipers and plovers can be observed.

The river is important to many birds as a migratory staging area, especially waterfowl awaiting ice-out on the nearby lakes in the spring. At that time bufflehead, common goldeneye, red-breasted merganser, and Canada goose can be found among the larger rafts of black ducks and mallards.

Where the nutrient-rich river water mixes with sea water in the Presumpscot's estuary, many birds find a ready supply of food. During the late spring and early fall, mixed flocks of shorebirds, often numbering in the thousands, forage over the mudflats exposed by the receding tide. In the summer months double-crested cormorant and osprey are likely to be found diving for fish. It is during the winter, however, that the estuary is richest in bird life: common merganser, red-breasted merganser, bufflehead, common goldeneye, an occasional Barrow's goldeneye, Canada goose, and horned and red-necked grebe can all be found here. Throughout the year gulls are much in evidence. Herring, great-black backed, and ring-billed are the most common gulls, but Iceland, Bonaparte's, laughing, black-headed, and glaucous are regularly spotted.

## CHAPTER THREE

## RECREATION

THE PRESUMPCOT OFFERS some great opportunities for hiking, fishing, swimming, birdwatching, and boating. All who use the river are urged to keep it clean. *Please carry out all your trash.* Admiring the wildlife is fine, but be sure not to get too close, especially during the breeding season when disturbances can cause animals, especially birds, to abandon nests or young.

Please also respect private property. Information in this book does not imply landowner permission. Access information for all the areas described below is included in the this chapter's "Boating" section. Please also note that while the water of the Presumpscot is considered by the State of Maine to be suitable for all forms of recreation, including swimming, the water in the tributaries and lower river is, at times, too polluted for "contact recreation." This is especially true following heavy rains.

## BOATING

THE PRESUMPCOT RIVER AFFORDS the best opportunity for river canoeing in the Greater Portland area. It is for the most part a gentle, slow moving river with rapids (only a few) that even beginning canoeists can navigate safely, if they proceed with common sense. There are just under twenty-five canoeable miles from the Sebago Lake Basin to Casco Bay with a total fall of approximately 270 feet or an overall average of 10.8 feet per mile. The Presumpscot is relatively tame by most Maine standards, because of the dams controlling the flow and elevation. Many original fall areas were dammed or flooded. Areas of short rapids and fast water do exist: between Eel Weir Dam and the confluence of the river and the Eel Weir Canal; immediately downstream of the North Gorham Dam; below Gambo (Newhall) Dam; and below Mallison Falls (South Windham) Dam.

Its most dangerous obstacles are actually manmade: the ten dams between Sebago Lake Basin and Casco Bay, requiring both caution (in the approach), stamina (in the portages), and ingenuity (in finding access). They are: Head Dam at Sebago Lake Basin, Eel Weir Power Station, North Gorham Station, Dundee Dam, Newhall (Gambo) Dam, Little Falls Dam, Mallison Falls (South Windham Dam), Saccarappa Dam, Cumberland Mills Dam at S. D. Warren, and Presumpscot Falls (Smelt Hill Dam) near the outlet to Casco Bay.

While this guide refers mainly to canoeing, it is equally applicable to kayaks, rowboats, and similar crafts.

### Access

OUR RECOMMENDATIONS FOR portage and access are based on discussions with S. D. Warren, which controls nine of the ten dams on the river and the entire flood plain. On other parts of the river, property abutting the river is often privately owned and should be respected as such. Aside from the S. D. Warren land, information in this book does not imply landowner permission.

The twenty-five miles of river include ten portages totaling about two miles. This section of the guide is divided up by portages, written from dam to dam; but additional put-in and put-out places are highlighted in bold (and also on the map) for those who might want to canoe only part of



Canoeing

a section. Also note that though the river changes direction radically, for the purposes of consistency we treat it as flowing north to south, and describe its banks accordingly.

Problems of portage and access make motorboats and sailboats largely impractical. The river is also often too narrow, rocky, or stump-filled for such craft. And motorboats pose a threat to wildlife, especially during breeding season. However, when practical, opportunities for other kinds of boats are noted.

We have not so far met anyone who has canoed the whole length of the river in one day. (A Portland newspaper carried an amazed half-page story about the exploits of two college students who in 1969 were hardy enough to canoe the whole river, fumes and all; they are reported to have thrown up afterwards.) Our best guess is that it *can* be done—by energetic canoeists. We hope to meet some in the future—and to do it ourselves.

### Safety

THE MOST IMPORTANT PIECE of information that this section needs to impress upon a potential river traveler is safety. S. D. Warren has voiced its concern that many people using the river do not realize how dangerous it can be. People have died while canoeing and swimming on the Presumpscot, primarily because they did not heed warning signs at the many dams, or because they dove off unsafe ledges or bridges.

As of 1993, the only dam equipped with a warning horn, to alert people downstream that an emergency release of water was to occur, is Eel Weir Dam.

Boaters are strongly urged to:

- follow all safe boating practices, such as wearing flotation vests;
- heed all of the large-print warning signs in the vicinity of the dams; and
- beware of sudden discharges of water into the river, whether from dam spillways or from water pipes.

*N. B. The information in this section, though current as of this writing, may change with time, future dam licensing, or other reasons beyond the control of the authors.*

### The Upper Section:

#### Sebago Lake Basin to Dundee Dam

MANY PEOPLE WILL FIND this the best section to canoe. It takes about three hours, contains water that ranges from flat to occasionally fast moving and rocky, and is always exceptionally clear.

**Sebago Lake Basin (Whites Bridge to Head Dam); 1.2 m.; portage 200'.** **Water:** flat. The adventurous explorer (who loves flat water) will find the most physically challenging way to begin canoeing the upper part of the Presumpscot is to put the canoe in at Whites Bridge Road where it separates Sebago Lake from the Sebago Lake Basin. (If you need to leave a car there, be forewarned—there is no public parking. Most of the area is posted or fenced as private right up to the edge of the road.)

From this location, canoe east to Head Dam. Portage out on the east (left) side.

**Head Dam to Eel Weir Dam; 1.2 m.; portage 200'. Water: fast and rocky.**

Put back into the river (*not* the canal) below the dam, and continue canoeing in the river to the Route 35 bridge. *Eel Weir canal, from Head Dam to Eel Weir Dam, should not be used for boating or swimming.* It's too dangerous. In recent years, two canoeists have drowned in the canal, and a swimmer drowned trying to swim through the canal inlet gates at Head Dam.

The old river bed parallels the canal from Head Dam to Route 35. It is narrow, swift, and rocky during low water (late summer to early fall). If the water is low, portage along the river (use the graveled Head Dam access road if possible, located on the spit of land between the river and the canal), and put back in below the Route 35 bridge.

Canoeists who want to begin at the Route 35 Bridge can park at the public parking area on the east side of Route 35 and either portage back up the gravel access road to Head Dam (a distance of 0.2 miles), or just put in at the base of the Route 35 Bridge. Canoeing upriver from this point can be strenuous, particularly in the spring when water levels are highest. (Remember to put into the river, not the canal.)

Canoeing downriver from this point is probably the best experience available on the river; this section is reminiscent of the time before the river was constrained and flooded by dams.

Once you can see the Eel Weir dam up ahead, quickly move to the left (east) bank and look for a place to take out. This is very important! The place to put out is a large stand of old white pine directly across the river from the Eel Weir canal emergency outlet. Immediately downriver is a waterfall where the river tumbles down about six feet of ledge before plunging into North Gorham Pond. The distance from the Route 35 bridge to this first portage is 1.0 mile.

**North Gorham Pond (Eel Weir Falls to North Gorham Dam); 1.2 m.; portage 400'.** **Water:** flat. Put the canoe back in below the falls. The Eel Weir power station is across the falls. Ahead are several islands that can be explored. This section is open water, clear and almost blue. Canoe past the islands, following the right (western) shoreline to the right side of North Gorham Dam. Put out at the far right side of the concrete wall. The portage from North Gorham Pond down to the river below the dam is simple—carry the canoe downhill along the road and put in on the right bank.

**Dundee Pond (North Gorham Dam to Dundee Dam); 1.7 m.; portage 0.35 m. Water: swift and flat.** Put back in immediately below the dam. There is no private vehicle access to Dundee Dam, so boaters will have to return to North Gorham Dam or continue to Gambo Dam (or possibly up Pleasant River to River Road Bridge).

Along this stretch are several old cottages. Dundee Park is on the left. Immediately downriver of Dundee Park, the river opens into Dundee Pond, which ends at Dundee Dam. Little water is discharged over the actual dam face except in times of high water. The river is almost entirely discharged through the power station. The old river channel across from the canal remains, for the most part, dry.

Cross the pond to the right side of the dam ahead, to begin portaging at the far western terminus of the dam's 750-foot-long concrete retaining wall. (Note the size of the dam. At fifty feet tall, it is impressive—the largest one on the river.) Look for the signs indicating the beginning of the portage. The portage distance is daunting, but the trip is all downhill on graveled roads and a smooth, wide trail. Along the trail, are sections of ledge and remains of the Cumberland and Oxford Canal.

#### The Middle Section:

##### Dundee Dam to Mallison Falls

THIS PART OF THE RIVER is pleasant, though there are more signs of human habitation. The river is narrow, and the current is strong enough to make paddling upstream laborious.

**Dundee Dam to Gambo (Newhall) Dam; 3.0 miles; portage 300'.** **Water: flat.** Put back into the river at the base of the canal section below the dam. The water flows at varying speeds with a few riffles, but for most of the year this section is flat water. The river now becomes a series of small channels with densely vegetated islands. The river narrows into a valley with thick old pine growths and steeply rising banks, quickening its pace as it enters a backwards S-turn before passing beneath Babb's Bridge on Hurricane Road. The picturesque covered bridge, a replica of the original one burned by vandals twenty years ago, is stunning during the fall when the leaves are turning. You can put in or out here, but there is no place to park a car at this bridge, and Windham police trying to discourage vandalism frequent this area looking

for those violating the "no parking" signs.

Downstream of the bridge the river slows, and the bottom shows remains of the Cumberland and Oxford Canal. Underwater stumps of flooded trees begin to appear, and the river opens up into a wide area with an island immediately ahead. The water passing on the right (west) side of the island is shallow and contains numerous stumps that create quite an obstacle course. The river is generally much deeper and stump-free on the left (east) side of the island.

Immediately past the island, the Pleasant River enters the Presumpscot on the left (east). River Road Bridge in Windham, located up the Pleasant about three quarters of a mile from its confluence with the Presumpscot, is another good put-in (or -out) spot. At this bridge is a graveled unmarked parking area frequented by many people who canoe and fish this stretch of the river. Access is from the right bank immediately below the bridge. The Pleasant River between the bridge and the confluence with the Presumpscot is deep and meanders through cattail marshes, prime habitat for ducks and heron.

Past the Pleasant River, the Presumpscot remains wide, weedy, and sometimes stumpy. The river narrows somewhat where a large steel and wood Maine Central railroad trestle crosses the river. The railroad tracks generally parallel the Presumpscot from this trestle all the way to Westbrook. Beyond the railroad is an island called Charcoal Island, which was used by the Gambo Powder Mills.

Downriver of the railroad trestle, move to the right bank, heading toward the Gambo Road Bridge and Gambo (Newhall) Dam. The banks of the river along Gambo Road are very steep and covered with trees. Do not canoe past the bridge, but put out on the right side of the river.

Immediately downriver of the bridge is Gambo Dam. In the woods on the right (west) side of the river are several circular stone foundations. These foundations are all that remain of old gunpowder mills. (See Chapter One.) Scout the paths among the gunpowder mill foundations to find a good portage down to the river below the dam. Gorham Trails publishes a Canoeing Guide to this section of the river. (See Appendix.)

**Gambo (Newhall) to Rte. 202 Bridge (Little Falls); 1.6 m.; and portage to Mallison Falls 0.9 m. Water: flat; rocky and swift below the dam.** Put in below Gambo Road Bridge on right (west) side. The bridge can be



reached by car via Route 237 in Gorham (look for the "trucks entering" signs). The bridge was damaged in a hurricane-induced flood a few years back and is uncrossable; there is good parking here, however. If you approach from the River Road in Windham, it is virtually impossible to get a canoe into the water on that side.

Some of the river is diverted from above the dam to the power station downriver and ahead on the left. The river here enters a deep, steep-sided valley and travels swiftly east towards South Windham. The stretch between Little Falls and Mallison Falls is canoeable, but there is no access because of private property restrictions.

At the Rte. 202 Bridge put out on the left bank, adjacent to the South Windham Fire Company. It is immediately upriver of the Little Falls Dam and a great place to leave a car for either exiting the river or shuttling canoes back to the river below Mallison Falls.

The portage from Little Falls to Mallison Falls can also be walked. Travel south from the Route 202 Bridge to Route 237 and turn left. Turn left from Route 237 onto Mallison Road. At the base of the hill near the river, turn right onto Canal Street. Travel down this road, which parallels sections of canal, to the South Windham Dam (Mallison Falls) power station. There is a small, unposted parking area here inside the gate and a gentle slope down to the river below the power station.

Boaters wishing to go upstream to Little Falls may put in above Mallison Falls; there is, however, no put-out (or -in) spot at Little Falls.

#### The Lower Section:

##### Mallison Falls to the Estuary

THE LONGEST UNDAMMED STRETCHES of river are in its lower reaches. Though murky and sometimes odoriferous, this final leg of the trip offers some of the most interesting wildlife and historic spots.

**Mallison Falls to Saccarappa Dam; 4.6 m.; portage 0.3 m. Water: flat.** Put in at South Windham Dam power station on Canal Street. Directly across the river from the dam is the Rich Tool and Die Mill Building and South Windham Correctional Facility. Please be advised that the sewage treatment plant at the correctional facility does not discharge to the river constantly, but does so in bursts. Boaters should keep away from any pipes discharging into the river or they may get swamped!

The river flows evenly in a deep-cut channel most of its distance to Saccarappa Dam in Westbrook. Look for a stone arched railway bridge where the railroad crosses Colley Wright Brook on your left. This part of the river is accessible by power boat from a boat ramp on Lincoln Street in Westbrook. The boat ramp is a private business located on the left (east) bank immediately upriver of the mills at Saccarappa Dam. This is also a good location to leave a car (for a small fee). If you plan to continue downstream, cross to the right (west bank) and look for an earthen, unmarked put out near the Saccarappa power station safety cable.

This put out is on Mill Lane of Westbrook. From here you could portage down Main Street to Riverbank Park, in order to put back in below Saccarappa Falls. The portage from Mill Lane continues left onto Main Street, and left onto Bridge Street. Turn right into the parking area behind the shops.

**Saccarappa Dam to Cumberland Mills (S. D. Warren); 1.0 m.; portage 0.45 m. Water: flat.** Put into the river from the parking lot behind the shops on Bridge Street. From Saccarappa Dam, the Presumpscot turns sharply to the northeast, a near 90-degree change from its southeast course so far. Put out on the right at the parking lot immediately upriver of the River Road Bridge. This is a great place to stop. At this put out are numerous rectangular concrete pilings—the remains of the old Westbrook pool (people actually swam in the river here year round).

Now get organized for the most hazardous portage on the river in order to get around S. D. Warren. This portage was originally described in an old AMC guide, and it remains today the only way to go. From the River Road Bridge, portage across the road and past the Westbrook Fire Station. Watch out for fast moving traffic! Move on north along Warren Avenue and through Gate 9. Walk downhill along the right side of the road to the river below.

**Cumberland Mills (S. D. Warren) to Smelt Hill Dam (Presumpscot Falls); 6.5 m.; portage 400'. Water: swift and flat.** Put into the river on the right (west) bank, downstream of S. D. Warren's bridge (do not cross the bridge).

The river flows steady, deep, and murky from here down to the Route 302 (Riverton) Bridge, which could be used as a put out or put in. The distance from S. D. Warren to Route 302 is about 2.0 miles. There is no

marked public parking area at the bridge.

Downstream of the Route 302 Bridge, immediately on the right, is the remains of Riverton Park (see Chapter One), now just a patch of woodland. The river then flows past Riverside Golf Course and under Lambert Street, Auburn Street, and the Maine Turnpike. At this point, the river bends back 90 degrees to flow southeast on its final leg to Casco Bay. The river runs under the Maine Turnpike again, entering a steep-sided gorge upriver of Smelt Hill Dam in Falmouth. Move over to the right bank and put out to do this last portage. The path around the dam is marked by signs. The distance from the Route 302 bridge to Smelt Hill Dam is approximately 4.5 miles.

**The Estuary: Smelt Hill Dam to Rte. 9 (0.9 m.) or Martin's Point Bridge (Rte. 1) 2.9 m.** Water: flat with strong tidal current. Put in below Smelt Hill Dam, where the river becomes tidal saltwater and is encased again in bedrock, with tall pines growing down to the water's edge. Pass beneath the arching Allen Avenue Road Bridge high above. You may put out here (with a steep climb) or at the next bridge, which is Route 9 (Middle Road), though there is no official parking here. The next bridge is Interstate 295, and beyond that is the estuary. If the tide is going out, use caution: the current past the 295 Bridge is very swift and you may not be able to move back upriver easily until the tide changes. During the summer, striped bass and bluefish will come up this part of the river.

To canoe further, continue to the Martin's Point (Route 1) Bridge, which gives onto the open water of Casco Bay. This estuary is a fascinating area to explore with remnants of its rich history (see Chapter One) and the biological wonders of the saltmarsh (see Chapter Two).

Power boats and sailboats may use this part of the river, which is accessible from Casco Bay.

#### The Tributaries

THE PRESUMPCOT HAS three major tributaries—the Pleasant River in Windham, the Little River in Gorham, and Piscataqua River in Falmouth:

The Pleasant River is a fun, challenging canoe trip, especially during spring runoff. However, it does contain a series of obstacles and is probably (during high water at least) best suited for advanced canoeists. The entire river is apt to have downed trees across it, and boaters must be pre-

pared to deal with them. Between Route 302 Bridge and Windham Center Road Bridge are 300 yards of rapids and at least two cattle fences strung across the stream; you can get under these fence but need to be prepared for them. Above and below Pope Road Bridge are a series of rapids, and about a quarter mile below in quick succession are two falls that require portages. (Some brave souls—or foolish ones—actually go over the first set of falls during spring runoff.) Access is from Route 302 (good parking), Windham Center Road, Pope Road, or River Road Bridge. A commercial boat launch and rental is planned for this part of the river.

The Little River, which enters the Presumpscot from the Gorham side downriver of Mallison Falls is also a popular spot for canoe trips. Contact the Gorham Land Trust (see Appendix) for information on this river. The best place to put in on the Little River is at a public parking area on Route 202. The Little River flows northeast to join the Presumpscot, passing beneath Route 237 on its way.

The Piscataqua River in Falmouth is a nice short canoe trip (about a mile) down to the Presumpscot. The East Branch is canoeable from 100 yards above Falmouth Road Bridge, has little sign of human habitation, and lots of wildlife (e.g., beaver). However, the land around the bridge is marked "no trespassing."

#### FISHING

THE PRESUMPCOT RIVER OFFERS some of the best opportunities for cold-water fishing (river trout and landlocked salmon in rivers) in southern Maine. The upper section is stocked annually by the Maine Department of Inland Fisheries and Wildlife (MDIFW). Good fishing for small-mouth and large-mouth bass can also be found in areas where the river slows and widens and in impoundments that form behind dams. Fly fishing, spin casting, trolling, and even, in a few spots, ice fishing are all possible on the Presumpscot.

Information on fish habitat is available in Chapter Two. The advisability of eating Presumpscot fish is discussed at the end of this section and in the chapter on water quality.

**Eel Weir Canal River Bed.** Some of the best fishing habitat on the river can be found below Sebago Lake Basin down to North Gorham Pond. This great resource was recently restored when the Eel Weir Hydroelec-

tric Dam was relicensed by the Federal Energy Regulatory Commission. The river channel below Sebago Lake Basin had been essentially dry: water was diverted from the Head Dam through the Eel Weir Canal to drive hydroelectric generators. But when the Eel Weir Project was up for relicensing in the late 1980's, the MDIFW reported that this part of the river had an excellent potential to support coldwater fish. The Sebago chapter of Trout Unlimited lobbied at the state and federal levels for a return of flow to the river. As a result, in 1992 when the license was reissued, it required that a minimum flow of water run through the old river channel throughout the year, thus creating a new river that would be able to support fish year round. The MDIFW immediately began stocking brook trout in the river, and landlocked salmon were trapped on Sebago Lake and released into the new section of river. The few wild fish that remained moved into the main river. By July of 1992 the sport fishermen had their river back.

The section from the Head Dam down to the falls adjacent to the Eel Weir Dam has been designated fly fishing only, to reduce the mortality of fish that are released after they are caught. Fishing for salmon is catch-and-release only. The daily limit on brook trout is one fish. The MDIFW hopes that fish populations will continue to grow and that big salmon and trout will soon be available.

The fishing action is already impressive. Salmon average about three pounds, and the river is filled with brook trout that range from eight to fourteen inches. Although Maine's open-water fishing season ends at the end of September, this fly fishing area on the Presumpscot is open throughout October. The popularity of the extended fishing season was obvious from Day One: on every October weekend of 1992, fishermen were lined up on the river catching (and releasing) trout and salmon.

From Rte. 35 it is possible to fish upstream to the Head Dam, or to walk downstream. The river upstream is ideal fly fishing water. The river sports plenty of current, which feeds a mixture of shallow riffles and deeper runs. Below the bridge the river consists of rocky rapids and small pools for the first several hundred yards. There are three or four good runs to fish. Below the runs a large pond has formed. For the next mile the river is a series of ponds and falls. Some of the ponds get very deep. These ponds will become excellent brook trout havens as the stocked fish spread out and

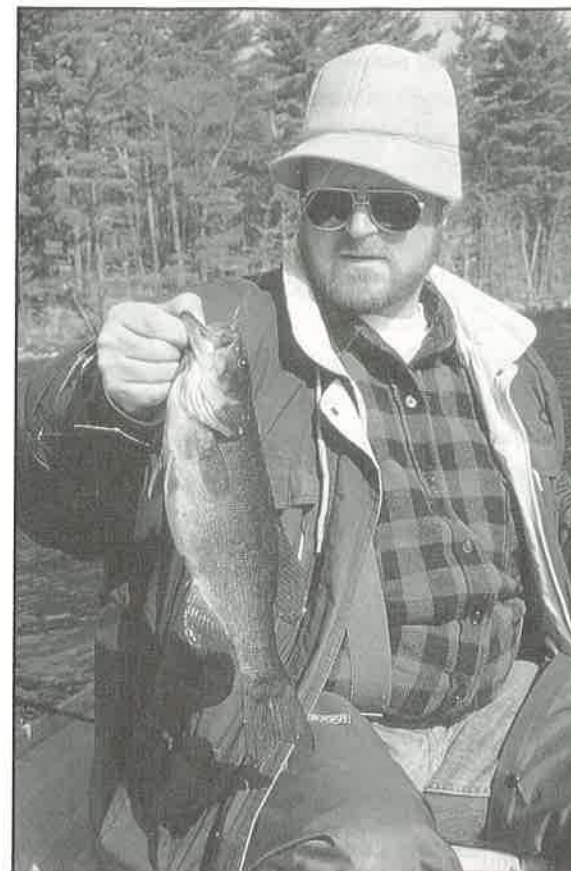


PHOTO C. RICARDI

*Small-mouth bass.*

natural reproduction adds wild fish to the river. The potential for evening hatches in May and June is excellent, and there are many hideaways worth exploring.

**North Gorham Pond to Dundee Dam.** The next three miles of the river consist mainly of North Gorham and Dundee Ponds, but there is a short stretch of moving water just below the North Gorham Pond Dam. The two ponds are stocked with landlocked salmon and provide the opportunity for boat fishing. Brook trout fishing on North Gorham Pond should improve in the future as trout populations grow and fish work their way down from the fly fishing area. Bass reproduce naturally here, as these shallow lakes provide good habitat for warmwater fish.

Below North Gorham Pond Dam is a favorite early- and late-season fly fishing spot because of the deep, swift, clear water released from the pond above. Otter Brook comes in here and is navigable for about a tenth of a mile, has lots of wildlife, and looks as though it might provide good fishing.

The MDIFW plans to install fish passage facilities at the first two dams on the river so that fish can pass downstream from Sebago all the way to Dundee Pond. This move could create a great fishery, right in Portland's back yard.

**Dundee Dam to Smelt Hill Dam.** Below Dundee Pond both coldwater and warmwater species can be caught. Brook trout and brown trout are stocked throughout the river as far downstream as the Saccarappa Dam in Westbrook. Trout also move in and out of the Presumpscot from the Pleasant River, Little River, Inkhorn Brook, Black Brook, and Colley Wright Brook. The Pleasant River, upstream from its confluence with the Presumpscot, is managed for catch-and-release sport fishing, and it is illegal to remove fish from the river. Some of these tributaries contribute wild fish to the river. The best time to fish for trout is when the season opens in April to early June when warming water temperatures send the trout looking for cooler pockets in which to spend the summer.

Small-mouth and large-mouth bass, chain pickerel, and white perch are also found throughout this part of the Presumpscot. These species are most active in the summer months when water temperatures reach the seventy-degree range, and weed beds and lily pads begin to form. Bass also like to lurk along the river bankings where fallen trees provide cover. They can be found in the slow moving sections above Gambo Dam and in the pond above Saccarappa Dam.

Below the Gambo Falls, Little Falls, and Mallison Falls dams are short stretches of rapids that hold brown trout during the spring and bass throughout the year. Trout are stocked, and some fish hold over through the year, showing up again in the main body of the river when the water cools in the fall. In the section below Mallison Falls, trout move freely in and out of the Little River, which empties into the Presumpscot about a mile below the dam. Colley Wright Brook, Inkhorn Brook, and Little River offer trout cool springs in which to hide during the summer when the Presumpscot waters begin to heat up. During the summer, the browns

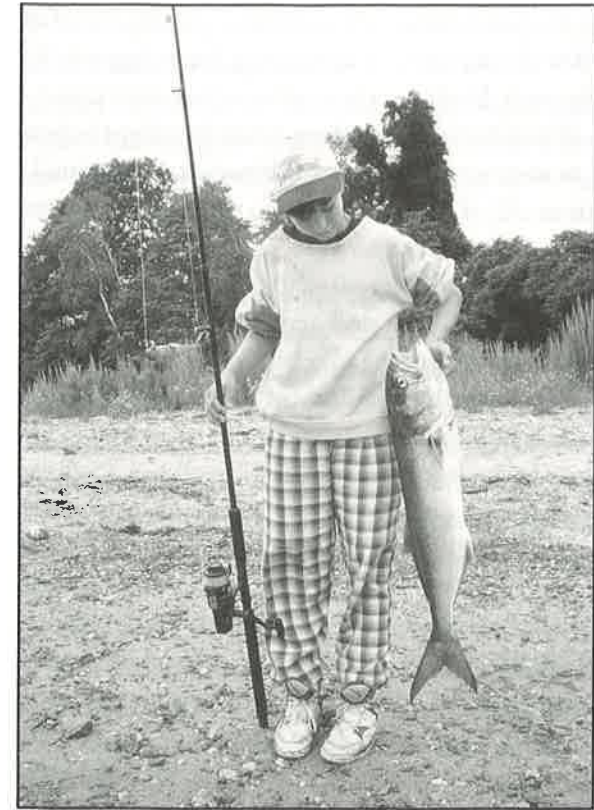


PHOTO C. RICARDI

*Bluefish caught at Martin's Point in Falmouth*

are practically impossible to catch. Casting the main river for bass is a better way to find action.

Below Saccarappa Falls, down to Smelt Hill Dam, the water quality degrades, and although warm-water fish can be found here, pollution has essentially destroyed what was once one of the most populous parts of the river for freshwater fish. (The Abenaki called Cumberland Mills the "high fish place.")

**The Estuary (Saltwater Fishing).** Those fishermen who are in the right place at the right time will find excellent fishing for mackerel, menhaden, striped bass, bluefish, and flounder. Martin's Point (Rte. 1) Bridge spans the Presumpscot as it enters the broad expanse of Casco Bay, and it is also the most popular place for shore fishermen. There are several good places to fish from shore, and many people fish off the bridge itself. Wear hip

boots or waders when fishing the shoreline here because of mud and seaweed. Another fishing spot just upstream is the bridge over Rte. 9/Middle Road in Falmouth. During periods of hot action don't expect a wilderness experience. When the fish are in, there can be shoulder-to-shoulder crowds.

The key to success with saltwater fishing is to plan around the seasonal fish migrations. All of the fish move into the river at predictable times of the year.

The first fish to bend the rods of Presumpscot saltwater fishermen is the Atlantic mackerel. These sleek travelers head to the Maine coast each spring in large schools, moving into bays and coastal rivers in late May to early June. They enter the Presumpscot riding the high tide in pursuit of bait fish, such as herring and alewives, and can be taken in large numbers.

Striped bass begin to arrive soon after the mackerel. Until recently, populations of stripers had dropped to very low numbers, especially for larger fish. However, thanks to the Clean Water Act of 1972, a ban on commercial fishing, and regulations governing sport fishing (a thirty-six-inch minimum size), bass have made a comeback. By the early 1990's, large numbers of smaller stripers, called "schoolies," and increasing numbers of larger fish were back in the Presumpscot. Schoolies show up first, entering the river in May. They range from fifteen to twenty-five inches and weigh from one to five pounds. By the end of May and early June larger fish have arrived from wintering grounds to the south. Some of the bigger bull stripers push the forty- to fifty-pound mark. These fish are the prize of the Maine surfcaster, and they reign over the river until the more aggressive bluefish arrive.

The best time to catch schoolies is in late May to early June when they first arrive, and in September when they again move freely in the river in large numbers. The fish usually travel in schools ranging from just a few individuals to over a thousand fish. This is primarily catch-and-release fishing, as few schoolies reach the minimum size limit. The best time to catch bigger stripers is in late June.

Fishermen get another shot at big fish again in July when bluefish enter the Presumpscot. Blues, the wolves of the sea, travel in packs, corner their prey, and attack viciously in unison. They are constantly moving in and out of the Presumpscot during July and August. Bluefishing is either very hot, or very cold. It is possible to catch ten-to-fifteen-pound fish one right

after another—or to catch nothing at all. And predicting when the blues will be in the river is almost impossible.

Another estuary fish, the winter flounder, is best caught from late fall to April. These tasty fish can grow to several pounds. Cold-weather fishing is the one time of year when fishermen have the river all to themselves.

#### To Eat or Not To Eat?

TESTS BY THE MDEP over the past decade on fish from Saccarappa to Smelt Hill Dam showed them to be contaminated with dioxins and furans—byproducts of the bleaching process used in paper production. These are toxic, persistent chemicals that move up the food chain and concentrate in predatory fish species. This finding prompted the MDIFW to issue advisories in the late eighties against eating fish caught below Saccarappa Dam. The species of fish that were tested include suckers, bass, pickerel, and white perch taken from sections of the river that are not popular fisheries. The MDIFW lifted the warning on eating fish from this part of the river in 1992. But the shellfish flats have been closed because of pollution since 1946. And in 1994, lobsters in the estuary were found to have dangerously high levels of dioxin in their tomalley, and MDEP findings about hazardous levels of mercury in Maine's lake fish cast doubt on the advisability of eating fish from Maine rivers. In general, when it comes to eating fish from the Presumpscot, use moderation and common sense.

#### HIKING, SWIMMING, PICNICKING

OPPORTUNITIES ABOUND FOR day hiking, picnicking, and, in some areas, swimming along the Presumpscot. Some of these areas are designated as town parks, but others are simply private land open to public use.

**North Windham/North Gorham.** A beautiful piece of property, excellent for hiking, exists along the river from Head Dam down to North Gorham Pond. A path along the west side of the river leads up to the Sebago Lake Basin Dam. Other paths follow the river downstream to Eel Weir Dam. The river here is fast flowing with currents and rapids.

Below the dam the river becomes a big pond and appears to stop flowing. However, it is possible to continue downriver and find many more areas where the river turns to a series of rapids and ponds. This is a good

area for those who don't mind a little bushwhacking and want to get away from the crowds and observe wildlife. The west shore of the river is forested and undeveloped for about a mile.

At the south end of North Gorham Pond, along White Rock Road, a small park provides opportunities for launching canoes, picnicking, and swimming. Prior to 1991 this area was posted "residents only," but under an agreement with the Federal Energy Regulation Commission during the licensing of the dam, this area became the **North Gorham Pond Hydroelectric and Recreation Area**, and it is now open to public use. The area is small and there are only a few picnic tables. It is managed on a first-come basis, and it is a carry in/carry out plan for all trash. The water is clear and cool here throughout the summer.

Just below North Gorham Dam on the Windham side is a well groomed park owned by the town of Windham. The water here is crystal clear, making for good canoeing, fishing, and swimming. **Dundee Park** has ten picnic tables, restrooms, a playground, basketball courts, a dock, parking area, and sandy beach. Overnight camp sites are also available; campers, as well as parties of more than twenty, need to make reservations beforehand (tel. 892-1905). The park is open to the public from Memorial Day to Labor Day; admission is \$2 per adult and \$.50 per child.

If you have time, and no water is being discharged over the face of Dundee Dam, an interesting diversion is to cross the river to the other side of the canal, and walk up the old river bed. The bedrock outcrops in this area contain all sorts of minerals such as blue-colored kyanite, rod-shaped staurolite, golden or black micas, and feldspar.

**Gorham/South Windham.** Along the river in Gorham, at the Gambo Road Bridge, are the **Gambo Gunpowder Mills Trails**, maintained by Gorham Land Trust. This site, donated by Shaw Brothers Construction (and just a few hundred yards away from the proposed—and defeated—paper de-inking plant at Gambo) is where much of the gunpowder used in the Civil War was manufactured. (See Chapter One.) A series of granite foundations is all that is left of the separate mills, along with the last circular grinding wheel. The path closest to the river used to be a wooden boardwalk, which mill workers used for transporting materials between the mills. The island just upriver of the dam is **Charcoal Island**, which was used by the gunpowder mills. On the right, under several feet

of water, are the remnants of a canal, which served as the raceway that carried water to power each mill. This path intersected the old Cumberland and Oxford Canal and returns to Gambo Road on the towpath used by horses pulling barges on the canal. Many birds, from turkey to partridge, are visible here.

**Gorham Trails**, which is dedicated to establishing a trail network linking the river and various open spaces, publishes a "Walking/Skiing Guide to Gambo Gunpowder Mills," as well as a similar guide to the Cumberland and Oxford Canal (see Appendix).

**Westbrook.** Perhaps some of the nicest city parks along the river are found in Westbrook. In the late 1970's the planning board identified the Presumpscot River corridor as a prime location for the kind of open space and outdoor recreation areas that the town's Comprehensive Plan said were needed to provide a relief from the built-up parts of the city. The city policy is to retain the water course in a natural manner where it is presently undeveloped and to provide access for the public. Nearly all the land along the river north of the S. D. Warren mill is identified as a resource protection zone. These areas provide some of the highest quality open space available to the town.

The city has established and developed a mile-long biking and walking trail along the river that runs from Bridge Street to the S. D. Warren parking lot. There is a small parking area, reached from Main Street, at the beginning of the trail. The trail then runs through three connected town parks, which contain town-owned sports fields and playgrounds, as well as picnic areas. The **Cornelia Warren Complex** contains a public swimming pool, basketball courts, and a softball field. **Riverbank Park**, about halfway along the trail, can be reached from Main Street. This park contains a playground and open grassy areas with tables and a gazebo ideal for picnicking. **Saccarappa Park** contains paved, landscaped areas along the river overlooking Saccarappa Falls. It can be reached from Main Street or Bridge Street.

**Portland/Falmouth.** The area's grandest riverside recreation spot, **Riverton Park**, no longer exists. (See Chapter One.) All that remained of this large turn-of-the century amusement park, reached by trolley from Portland and located near the Rte. 302 (Riverton) Bridge, was two stone gates, which were dismantled just before this guide went to press. How-

ever, this land is now publicly owned, and renewed efforts are being made to open up this part of the river to public use.

The lower section of the Presumpscot, from Westbrook down to the estuary in Falmouth, is a slow moving river with high bankings, poor water quality, and little opportunity for uses such as swimming and fishing. However, this section of the river contains some of the largest areas of undeveloped riparian land. During the 1980's, when the greater Portland area was experiencing rapid growth, the city planners developed the Shoreway Access Plan designed to link the city's parks, marshes, rivers, and shore through thirty miles of trails. The undeveloped woodlands along the Presumpscot were identified as a corridor for a major hiking trail that would follow the river from Westbrook down to the Smelt Hill Dam.

The major force working to make this trail a reality is **Portland Trails**. Incorporated in 1991, this non-profit group was formed as a land trust to implement the Shoreway Access Plan. In 1990 they received a grant from the National Park Service Rivers and Trails Program, and they set up a full-time office in Portland. Portland Trails has had success creating recreational trails in many areas of the city.

The Presumpscot River Trail will be a large undertaking; at present it is still in the early planning stages. Before the trail can become a reality it will be necessary to obtain voluntary permission, and funds, to secure public access through private land, build trails and bridges, complete the permitting processes, and develop a long-term stewardship plan.

On the other side of the river, Falmouth, like Westbrook and Portland, also has plans for a series of riverfront trails. The town's Open Space Plan has an explicit provision for a trail system and access to the Presumpscot. Falmouth's view of the river includes a beautiful stand of old-growth white pine.

Zoning restrictions in Falmouth, Portland, and Westbrook should protect these large tracts of undeveloped land from being built on in the future.

Perhaps one of the best areas for hiking and nature observation is a sixty-acre wildlife sanctuary in Falmouth. Gilsland Farm is owned and managed by the **Maine Audubon Society** at a stunning location overlooking the whole estuary. Here, two-and-a-half miles of hiking trails wind along 2,500 feet of river frontage, through upland forests, and over wet-

land meadows above the saltmarshes. There are benches in scenic overlook spots, two observation blinds, and a purpose-built platform that are all perfect for nature watching and picnicking.

Many of the upland trees and forest plants that are characteristic of southern Maine, such as white pine, aspen, birch, maple, beach, black cherry, ash, and sumac trees, can be observed along the trail. In the wetland meadows Queen Anne's lace, ragweed, horsetails, and a variety of wildflowers can be found. A lucky hiker might be fortunate enough to see wildlife such as raccoons, red fox, skunk, red and gray squirrels, and white-tailed deer.

The trails along the marshes and mudflats are also excellent for observing upland birds and coastal shorebirds. (See Chapter Two on "Birds")."

The trail head is at the Audubon headquarters building at the end of their dirt driveway off Rte 1; maps are available in the gift store there. Open dawn to dusk. No dogs or off-road vehicles. Carry out your trash.

#### BIRDWATCHING

WITH A CONCERTED EFFORT a persevering birdwatcher could expect to see about 180 species along the Presumpscot, many of them characteristic of the southern and central Maine woodlands and southwest coast.

The estuary, once a staging area for many thousands of migrating waterfowl, still has an abundance of shorebirds and waterfowl. Further upstream, canoeists have reported seeing "thousands" of ducks (i.e., where Colley Wright Brook meets the river). Other birding hot spots on the river include: just south of North Gorham Dam where Otter Brook joins the river; and the mile of river below Dundee Dam.

For a detailed description of the birds of the river and where to find them, see the "Birds" section of Chapter Two.



## CHAPTER FOUR

# WATER QUALITY

**C**OMPLAINTS ABOUT Presumpscot River water quality date as far back as 1845 when saw mills filled the river with waste wood. "It is interesting and ironic," says a 1967 Maine Department of Inland Fisheries and Game (MDIFG) report, "that as early as 1845... pollution from sawdust and bark was so heavy that the river could not be used as process water in the paper industry!" And an 1867 report from the same group noted that, "One paper mill in Cumberland Mills is using 1400-1500 pounds of chloride of lime and 25-30 gallons of oil of vitriol *each week*... (which) is turned into the river."

### YESTERDAY: "A FOOT DEEP IN FOAM"

FOR YEARS THE RIVER WAS treated as if it were a twenty-five-mile-long toilet. By 1953 the main stem received the untreated wastes of 11,000 residents, as well as the untreated industrial wastes from a cotton mill, pulp mill, paper mill, and cannery. By 1965, the MDIFG report concludes, the



lower river was dead: "S. D. Warren was discharging pollution amounting to 52,800 pounds *per day* into the Presumpscot. The City of Westbrook is *daily* contributing another 1,700 pounds of B. O. D. [biological oxygen demand, i. e., organic matter that uses up oxygen while decomposing] to the river..."

So choked was the river with pollutants in 1965 that there was *no* measurable oxygen *at all* in the water at Blackstrap Road Bridge in Falmouth and Presumpscot Falls (it measured 0.0 parts per million). Fumes arising from the estuary turned paint black on houses in Falmouth and Portland; the river, said to resemble a "root beer float," ran a foot deep in brown bark chips mixed with foaming chemicals, dubbed "foam burgers" by locals.

And, noted the MDIFG, the ill effects were not just aesthetic, but economic: All anadromous (river-spawning sea fish) and freshwater fish habitat were destroyed. All shellfish flats had to be closed. Farms were deprived of the use of river water for cows or crops. Living conditions for families along the river were "intolerable," said the MDIFG. "All [residential], aesthetic, and recreational values have been destroyed."

When the Federal Clean Water Act was passed in 1972, conditions began to improve. In 1976 S. D. Warren built an \$18 million purification plant, removing wastes from 19 million gallons of effluent a day. By 1979 Westbrook and Portland had treatment plants on line. The lower river, which had been deemed suitable only for one purpose—"transportation of sewage"—was now raised to Class C, meaning ideally it was clean enough for fishing and swimming. It remains there today, though it does not always meet the minimum Class C standards.

### TODAY: KEEPING TABS ON POLLUTION

TODAY THE PRESUMPCOT RIVER, while cleaner, remains the largest contributor of pollution to Casco Bay.

According to the Maine Department of Environmental Protection (MDEP), in 1987 there were 9.22 *billion* gallons of licensed discharges released into the Presumpscot. This accounted for nearly half of all such pollution that entered Casco Bay. Most—88 percent of it—came from S. D. Warren, 9 percent from the town of Westbrook, and the balance from the town of Falmouth.

It is legal to pollute water in Maine (and around the country) as long as

the polluter is granted a permit. Most of the Presumpscot's point-source polluters (i. e., businesses and municipal wastewater treatment plants, for example, as opposed to runoff from parking lots and fields) have permits to add treated wastewater to the river. Treating the wastewater, however, does not necessarily remove all the contaminants. But the state has classified all its waters and decreed that they shall not become degraded beyond a certain point (though these minimum standards are often not met).

### Water Classifications

EACH BODY OF FRESH WATER in Maine is assigned one of four "grades," ranging from AA to C, which defines how clean it should be. The Presumpscot contains stretches of Class A, B, and C water. These grades are determined by the amounts of *E. coli* and dissolved oxygen in the water.

*E. coli*, measured in colonies per 100 milliliters of sample water, are bacteria found in fecal matter and usually come from sewage, though they also come from animal feces, such as cow manure. Water with high levels of *E. coli* often contains other harmful disease bacteria as well. Contact with *E. coli*-contaminated water can cause illness in humans.

Dissolved oxygen, a measure of how much oxygen is available in the water for aquatic life, is a good indicator of a river's health. Some sensitive species, like insects, trout, and salmon, cannot "breathe" and will die when levels drop below 7 parts per million (ppm). Other fish will die when levels drop below 5 ppm. Low levels also encourage undesirable bacteria, such as *E. coli*, and mobilize pollution, such as heavy metals. A lack of oxygen can be caused by chemical reactions or too much decomposing matter in the water.

Until 1994, the Presumpscot was classified as follows:

**Class A** (from its outlet at Sebago Lake Basin to Dundee Dam\*): This is water of excellent quality, with only naturally occurring *E. coli* and at least 7 ppm of dissolved oxygen.

**Class B** (from Dundee Dam\* to Saccarappa Dam; and all of the tributaries): This water is less clean than Class A, but still supports aquatic life. It should contain no more than a geometric mean of 64 colonies of *E. coli*

*\*As this guide went to press, the state extended the Class A stretch down to the confluence with the Pleasant River.*

per 100 milliliters of water (written as 64/100 ml), and it should have a dissolved oxygen content of greater than 7 ppm.

**Class C** (everything below Saccarappa Dam): This is Maine's lowest classification. Fish can survive in Class C water, but some fish species and aquatic life that are adapted to pristine environments can't survive. This water should contain no more than a geometric mean of 142/100 ml of *E. coli*, with dissolved oxygen levels of at least 5 ppm.

The classification system is just a legal goal of water quality—what the state desires the river to be, not what it actually is. So while the state admits that none of the Presumpscot is drinkable, it maintains that Class A, B, and C water is suitable for all recreation, including swimming, even though the water in the river is at times too polluted for such activities.

Sometimes the most effective means of cleaning up or protecting a river is having it reclassified. In January of 1994, the Friends of the Presumpscot, a Windham-based citizens group, tried to do just that. Through their efforts, a bill was introduced to the legislature to upgrade the Pleasant River and the upper half of the Class B portion of the Presumpscot (Dundee Pond to Little's Island) from Class B to Class A. The reclassification would effectively have prevented further industrial and residential development in this stretch, including a proposed Portland Water District sewage treatment plant near Gambo Dam, and would have forced an upgrade of the Windham Public Schools sewage treatment plant off Route 202 on the Pleasant River. (Unfortunately, Windham officials, S. D. Warren, and St. Joseph's College objected, and the bill was eviscerated; as a result only an insignificant part of the river was upgraded as this guide went to press.)

#### PRW Sampling Results

KEEPING TRACK OF WATER QUALITY is one way to make sure the state lives up to its goal of cleaner water. By 1994, Presumpscot River Watch has completed its fourth year of monitoring water in the main stem and tributaries of the Presumpscot. While this may sound impressive, we are aware that these numbers actually represent only a very small slice of overall the picture. At this point we can begin to identify trends in the river and seek general explanations when our data reveal spots where the state standards are being violated. We recognize that a true picture of the river's health will emerge only after a great number of years. However, we have taken

the first steps to establish baseline information about the water quality, against which future data can be compared.

The techniques we used, and the pollutants that we monitored, are the same ones the state uses to officially classify water as being clean or polluted. In addition, we looked at other characteristics that the state does not consider when classifying rivers.

Trained PRW volunteers have sampled the river at nearly three dozen sites every two weeks during the summer for the past four years. They have analyzed it variously for *E. coli* bacteria, dissolved oxygen, total suspended solids, color, temperature, specific conductivity, total phosphorus, and turbidity; they have also conducted limited sampling of bottom sediments for macro-invertebrates (invertebrates visible to the naked eye).

These data make clear that much work is needed to bring water quality in parts of the river, especially the tributaries, in line with state standards. As the *E. coli* data suggest, most of the current problems in the watershed continue to be caused by humans. Only through efforts like these to identify and address sources of pollution to the river will solutions to water quality problems be possible.

Data for *E. coli*, dissolved oxygen, and total suspended solids collected for 1992 and 1993 are summarized here, just to give an idea of the work that has gone into understanding the Presumpscot. (The comprehensive summary report of river data is available from PRW; to request a copy, send \$3 for postage and handling.)

**E. Coli.** Identified sources of *E. coli* in the Presumpscot River are believed to include its tributaries, combined sewer overflows, and discharges from the Portland Water District sewage treatment plant.

In 1992 and 1993 the Class C portion of the river often exceeded the state limit (142 colonies), with geometric mean (a kind of average) levels of up to 402 colonies. The highest concentrations were located downstream of the Portland Water District Sewage Treatment Plant in Westbrook.

Bacteria levels in the (pre-1994) Class A and most of the Class B portions of the main stem fell within state standards, with yearly geometric means from 2 to 110 colonies. (The sites that exceeded the Class B standard of 64 colonies were located in South Windham.)

The tributaries were a different story, however. Though rated Class B, they generally exceeded all Class B standards for *E. coli*. Some even ex-

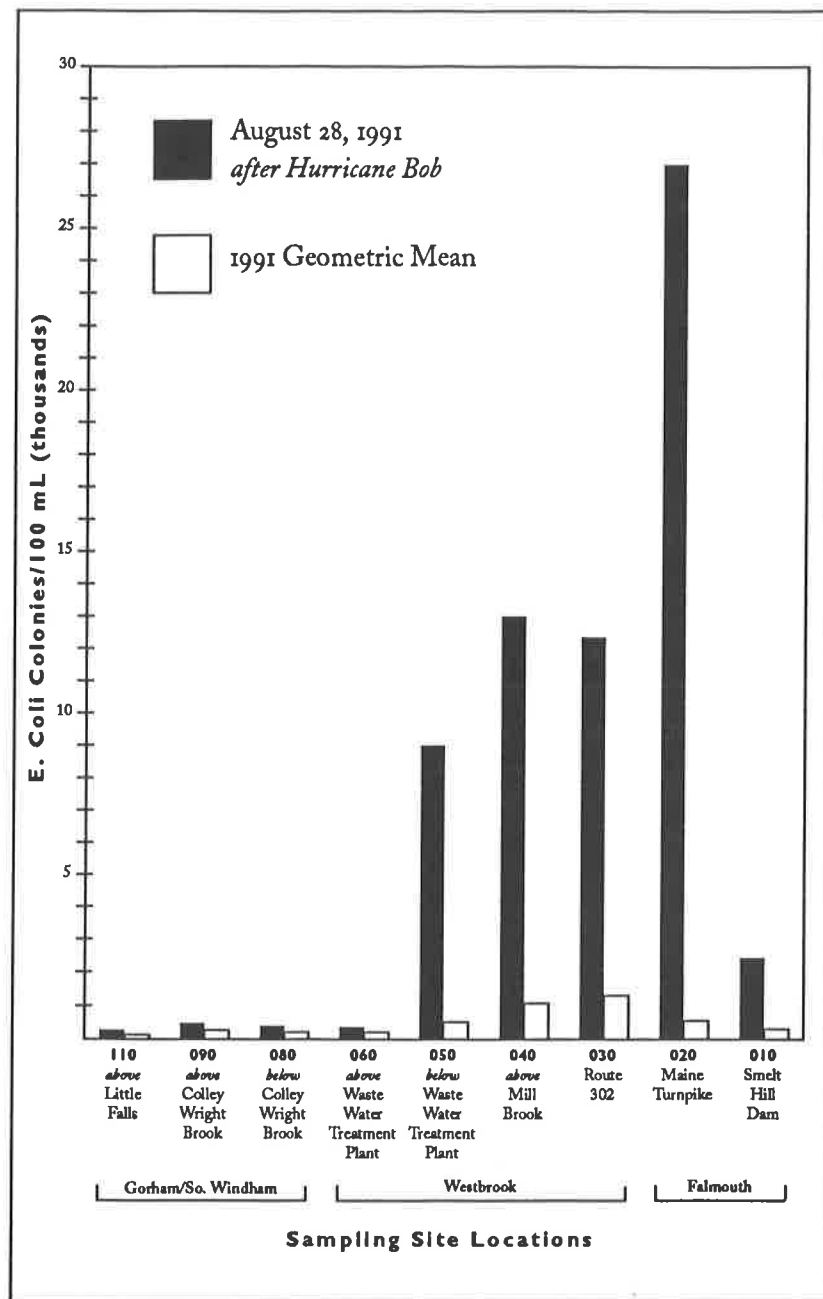


Figure 1 *E. Coli* results following Hurricane Bob (August 1991). Dramatic increase in *E. Coli* contamination below Westbrook's Waste Water Treatment Plant shows effects of combined sewage overflows.

ceeded standards for Class C water. High bacterial levels were found in the Piscataqua River system in Falmouth, in Mill Brook in Westbrook, in the Pleasant River, Baker Brook, Colley Wright Brook and Otter Brook in Windham, and in Nason Brook in North Gorham. The tributary that most often met state standards was the Little River in Gorham. The worst offender was the east branch of the Piscataqua river, with a geometric mean of 764 colonies. Sources of *E. coli* in the tributaries are believed to be agricultural (manure) runoff and small septic or sewage treatment systems that may discharge to the tributaries.

In August of 1991, Hurricane Bob's rains produced minor flooding. Presumpscot water samples immediately afterwards showed anomalous levels of bacteria up to 27,900—nearly thirty times the state maximum! (See Figure 1) This event provides a key to understanding bacteria levels in the river. The river itself gets two thirds of its base flow from Sebago Lake, which is Class A. In fact, the main stem of the river is generally cleaner than its tributaries in terms of *E. coli*, because of this heavy flow from the lake, which causes the river to flush itself fairly fast. In Portland and Westbrook, large portions of the storm water collection system are combined with the sanitary sewer system. During heavy rains, at points along this combined sewer system, the sewage treatment system can't handle the increased volume of water, so a safety valve called "combined sewer overflows" allows storm water and raw sewage to mix and flow straight into the river. The result is significantly increased bacteria levels in the river.

**Dissolved Oxygen.** On hot summer days in the not-so-distant past, fish would go belly up in the lower Presumpscot as dissolved oxygen (DO) levels dropped below even the minimum standards of Class C. The good news is that such violations are becoming increasingly rare.

PRW's main DO measurements were obtained in 1990. Concentrations ranged from 9.3 ppm to 6.2 ppm, with the lowest concentrations in the Class C portion of the river. We have not recorded violations of the water quality standards for DO on the main stem of the river. In the tributaries, DO concentrations were all within state limits, except for those from Otter Brook, whose low readings (1.3 to 2.8 ppm) are believed to be natural—caused by the decay of organic matter in the bog that the brook runs through.

**Total Suspended Solids.** Maine currently has no water classification

standard for total suspended solids (TSS), a measure of the amount of undissolved matter carried in the water. Too much TSS means less light reaching water plants, more sediment being deposited on the river bottom and choking insect life, and water that is too murky for certain species of fish to survive. TSS is also used to measure the amount of erosion that is occurring in the watershed. PRW sampled for TSS in the main stem in 1990 and in the tributaries in 1990 and 1992.

According to PRW data, the Presumpscot River in 1990 dumped an estimated 7,851 tons of suspended solids into Casco Bay each day, most of it caused by natural erosion of soil and organic matter. (This translates to a yearly loss of about 25 pounds of soil per acre in the watershed.) The largest increases in TSS occur downstream of the sewage treatment plant in Westbrook.

The 1992 results showed generally lower concentrations of TSS in the tributaries than in 1990, with the highest concentration in the Piscataqua River system.

Erosion-stemming efforts include Trout Unlimited's project to plant grass and several thousand willow trees along the banks of the Pleasant River; and the U. S. Department of Agriculture Stabilization and Conservation Service's program to educate the many farmers along the Presumpscot watershed about soil erosion.

#### Other Sources of Data

IN ADDITION TO PRW, there are several sources of water quality data on the river, representing fixed monitoring points mandated by effluent permits (such as that required by discharge permits for the Portland Water District and S. D. Warren), and U. S. Geological Survey (USGS) fixed gauging stations. These data are for the most part available for public use.

In July and August of 1993, the MDEP Bureau of Land and Water Quality, the Portland Water District, S. D. Warren, the U. S. Environmental Protection Agency, the town of Windham, and the Friends of the Presumpscot undertook a sampling effort of the river, separate from the efforts of PRW. The MDEP Waste Load Allocation Study, an effort to gauge the potential impact on the river of such projects as the proposed South Windham sewage treatment plant, collected data on total Kedjal

nitrogen, ammonia, nitrate/nitrite, total phosphorus, phosphate, chlorine, biological oxygen demand, measured flow rates from various inputs, DO, and sediment oxygen demand. Sampling focused on the main stem of the Presumpscot but also included points on the Little and Piscataqua rivers.

PRW reviewed these data and found some interesting results—primarily that DO concentrations on the main stem fell sporadically below Class C standards, and that the east branch of the Piscataqua River did not routinely meet its required standard for DO; it ranged from 6.9 to 3.8 ppm. (This last finding means the Piscataqua has the worst DO concentrations and the highest *E. coli* and TSS levels of any tributary, which indicates that there is a significant problem on this river that merits investigation.)

The data from this study are available to the public; and MDEP intends to publish its interpretation of the data in 1994. The Greater Portland Council of Governments is also currently undertaking a watershed survey, the results of which should soon be available by mid-1994.

#### Organic Contaminants

IN ADDITION TO SEWAGE, suspended solids, and bacteria, the Presumpscot has been polluted with a variety of chemicals from industrial, agricultural, and urban sources: PCB's, PAH's (polyaromatic hydrocarbons), pesticides, and other organic compounds used along the river and/or dumped into it prior to controls on pollution still persist in the sediment, and some continue to be discharged into the river.

**Dioxin.** Dioxin is a manmade contaminant created from industrial processes using chlorine, such as paper bleaching. It is one of the most potent toxins known to man. Consuming foods, such as fish, with levels as low as 1.5 parts per trillion (ppt) can cause cancer in humans. And a 1994 EPA study found that it also harms fetal development and immune systems at very low levels. Fish and shellfish in the Presumpscot have been tested annually for dioxins since 1988 when the Maine Dioxin Monitoring Program started checking suckers, bass, pickerel, and white perch caught below paper mills and municipal wastewater treatment plants.

Based on results of EPA testing in 1984-1986 and samples collected by the MDEP from 1988-1990, advisories were issued against eating fish below Westbrook. These advisories were based on a maximum permissible

concentration of 1.5 ppt, a level that results in an increased cancer risk of one in 100,000.

In 1990, in response to pressure from the MDEP, S. D. Warren implemented a new process to reduce the levels of dioxin in its effluent. It appears to have had some effect: the levels of dioxin in fish decreased from 1990 to 1992. In the 1992 report, the MDEP concluded that fish collected below Westbrook no longer had concentrations of dioxin in their tissue that exceeded the 1.5 ppt limit recommended by the Maine Department of Human Services' Bureau of Health for fish consumption. However, the 1991 data showed that fish below Westbrook and soft-shelled clams in the estuary still contained enough dioxin to be considered "significant" by the MDEP, and to present a cancer risk of one in a million. And hazardous levels of dioxin were found in estuary lobster in 1994.

An advisory against eating fish from this part of the river was lifted in 1992, as dioxin levels had fallen below the regulatory level.

**Pesticides and PAH's.** DDT and other persistent chlorinated pesticides were used widely in the Sebago Lake and Presumpscot drainages prior to government bans enacted in the 1970's and 1980's. In the early 1990's, sediment samples were collected above and below Westbrook. PAH's, a group of potentially carcinogenic chemicals related to fuel products, were present in nearly all the samples. These chemicals come from industrial activities and urban runoff.

The majority of industrial chemicals and pesticides entering rivers tend to adhere to the sediments on their journey to the ocean. Although these chemicals slowly degrade over time, most persist for very long periods. There has not been a comprehensive sediment testing study done for organic chemicals along the Presumpscot. The river bottom above Westbrook is primarily gravel and sand, which discourages chemicals from accumulating. Unfortunately, the river below Westbrook slows, and the bottom is primarily silt and mud, which provides a perfect place for chemicals to settle. This is especially true behind impoundments, where sediments are deposited. It is very likely that the years of industrial pollution, before the federal Clean Water Act, have left a scar on the lower Presumpscot.

### TOMORROW: "A FOOT DEEP IN FISH" AGAIN?

THE GOOD NEWS IS THAT each year the amount of chemicals entering the river decreases. The water that flows down the river to the estuary is much cleaner today than it was a decade or two ago. With each year that passes another winter's snow melts in the mountains, another spring's rains fall to the sea, and the river cleanses itself. We believe public opinion will continue to support clean environments and protection of our public land and waters. Continued efforts of private citizens and conservationists within the state and federal government should result in even wider protection of our groundwater, wetlands, and rivers in the future. It is encouraging to think that someday our children may be able to eat fish out of the entire river without worrying about toxic chemicals, that the fish that once thrived here—a "foot deep" at times—may return, and that someday the clam flats could again be a producer of a fine New England chowder.

#### Sources:

- Maine Department of Environmental Protection; unpublished data, Presumpscot River, 1993; (released to public in January, 1994).
- Maine Department of Inland Fisheries and Game; "The Presumpscot River, A Biological Survey Report," by Stuart E. DeRoche, 1967.
- Presumpscot River Watch, Inc.; unpublished data, Presumpscot River, 1990-1993.
- U. S. Geological Survey, Water Resources Data, Maine Water Year 1990; Presumpscot River Basin (National Water Quality Accounting Network Station); pp. 123-130.



PHOTO S. ANDREWS

*Water sampling.*

## CHAPTER FIVE

# SAFEGUARDING THE RIVER

**I**N 1989 the Greater Portland Council of Governments brought together a group of volunteers focused on one agenda: the health of the Presumpscot River. Thus was born Presumpscot River Watch. Working initially with a group called River Watch Network, based in Vermont, PRW devised a system for both monitoring the river and educating and involving the community at the same time.

By the summer of 1990 the program was ready: biologists from the University of Southern Maine helped PRW recruit and train a score or so of volunteers in the art of taking water samples and analyzing the results. Roughly three dozen potential hot spots along the main stem and tributaries were sampled and analyzed at regular intervals over the summer. That information comprised the first solid baseline data on the river, an invaluable tool for measuring its future health.

The following year an even more important element of the program got off the ground: the recruiting and training of students and science teach-

ers from four high schools in riverfront communities to provide year-round monitoring in spring and fall. These students receive an invaluable lesson in hands-on science applications, while at the same time increasing their sense of personal and communal responsibility for their environment. At present, Westbrook, Deering, Windham, Gray-New Gloucester, Bonny Eagle, and Falmouth high schools are participating in this important contribution to the environmental health of the river. All the training and supervision, as well as all necessary lab materials, are supplied by Presumpscot River Watch.

PRW's data, about to be published in a summary report of the first four years of sampling, has already proved its worth. Not only has it allowed PRW to pinpoint pollution hot spots along the river, but this baseline monitoring enabled the U. S. Department of Agriculture Stabilization and Conservation Service to implement a \$190,000 grant program to help the 300 farms along the Presumpscot watershed learn better farm management practices and reduce the amount of pollution farms add to the river. The fecal contamination, nutrient runoff, and erosion from such farms are one of the major sources of Presumpscot pollution. PRW's monitoring program was critically important in securing funds for the program.

In 1992 PRW initiated the first program in the state to use an innovative means of measuring water quality: testing the amount of macroscopic life that can survive in a river. With a complicated name—"benthic macro-invertebrate analysis"—it is nonetheless brilliant in its simplicity. Water sampling can be a hit-or-miss affair: samplers may—or may not—happen to sample at a time when pollution has been released into the water. But macro-invertebrate sampling is the ultimate test of a river's health. By counting the animals without backbones that are visible to the naked eye and live in different sections of the river, PRW can see exactly how healthy the water is over the long term: some species can survive under any water quality conditions, others will die if the water is polluted.

PRW has thrived for five years now, kept alive by grants and contributions from our members along the river. As one of the first volunteer monitoring groups in the state, we are pleased to note the recent tremendous upsurge in interest in water monitoring and the formation of citizen action groups. Both state and federal officials have assured us that independent groups like PRW, groups that actively involve their communities, are



PHOTO S. ANDREWS

*High school students performing water analysis.*

the wave of the future for protecting our rivers and lakes. The reason is simple: no government official can possibly be as conscientious in safeguarding a river as those who live near it, use it, and are willing to fight for it. And it is important to remember that collecting data is just the first step: it is up to all of us to see that these data do not sit in a box in some government office but are used to help enforce and strengthen the laws that were designed to protect the river.

We hope this guide will inspire readers to become more directly involved in the health of this magnificent river, by writing legislators and newspapers, attending public hearings, and speaking out in communities. And, of course, by participating in the activities of groups like PRW, either as a member, water sampler, board member, or in another volunteer capacity. If you are interested in PRW's work with the Presumpscot, there is membership information at the end of this guide.

One way or the other, we hope you will make yourself heard.

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# APPENDIX

## Environmental Organizations and Community Groups

Casco Bay Estuary Project  
312 Canco Rd.  
Portland, ME 04103  
Tel: 828-1043

Friends of Casco Bay  
2 Fort Rd.  
South Portland, ME 04106  
Tel: 799-8574

Friends of the Presumpscot  
P. O. Box 223  
So. Windham, ME 04082  
Tel: 892-4597

Gorham Land Trust  
P. O. Box 33  
Gorham, ME 04038  
Tel: 839-4644

Gorham Trails  
188 Narragansett St.  
Gorham, ME 04038  
Tel: 839-4644

Highland Lake Association  
P. O. Box 1684  
Windham, ME 04062

Maine Audubon Society  
118 U. S. Route One  
P. O. Box 6009  
Falmouth, ME 04105  
Tel: 781-2330

Portland Trails  
1 India St.  
Portland, ME 04101  
Tel: 775-2411

Presumpscot River Watch  
P. O. Box 3733  
Portland, ME 04104  
Tel: 773-8654

Trout Unlimited  
Sebago Chapter  
P. O. Box 3862  
Portland, ME 04104  
Tel: 781-5235

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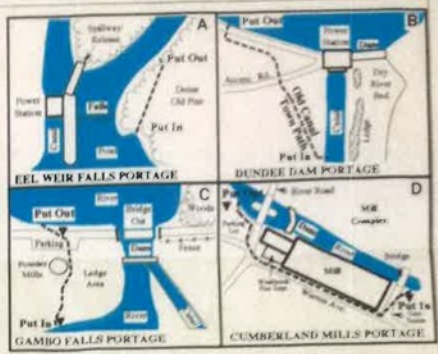
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- ▬ ROAT RAMP
- PCNOC AREA
- ▭ PORTAGE ROUTE MAPS (See boxes Above)

Not To Scale



To Route 1 and Martin's Point Bridge

# Presumpscot River Watch River Use Map