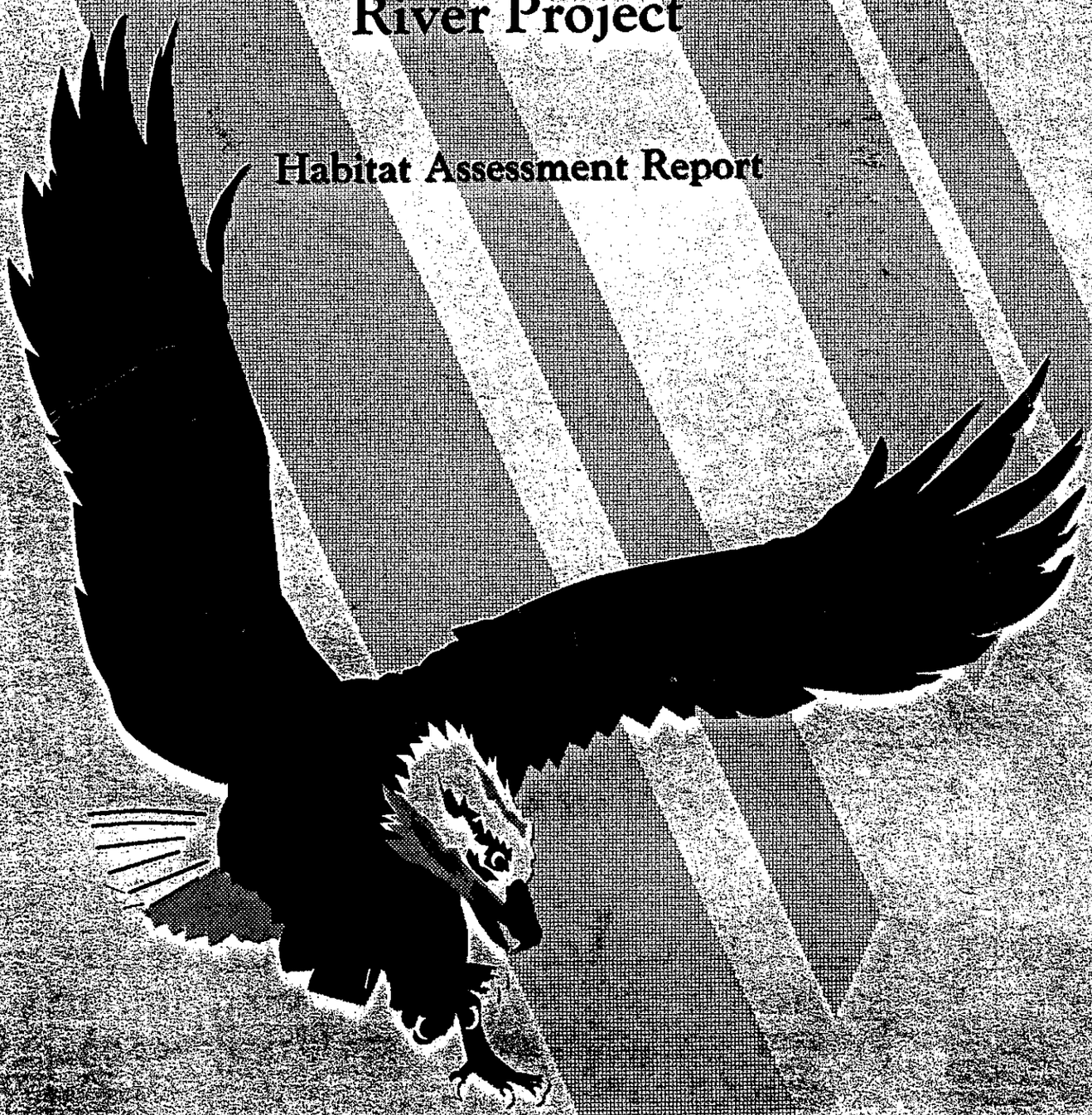
Sussex Fish and Game Association

Kennebecasis River Project

Habitat Assessment Report



Based on 1994 stream survey work completed under the COOPERATION Agreement on Recreational Fisheries and the Fundy Model Forest

KENNEBECASIS WATERSHED HABITAT ASSESSMENT REPORT

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For the
Sussex Fish and Game Association

January, 1995

Based on data collected from stream survey work completed under

The 1994 Kennebecasis Stream Survey Project

Funded By:
The COOPERATION Agreement on Recreational Fisheries
The Fundy Model Forest
The Sussex Fish and Game Association
The Kennebecasis Salmon Association
The Hammond River Anglers
The Big Salmon River Association

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Abstract

The objectives of the Kennebecasis River project were: to complete a detailed habitat assessment of the Kennebecasis watershed, gain salmonid stock information and identify areas in need of stream enhancement and habitat restoration work. From July 14, 1994 until October 12, 1994 physical, chemical and biological data was collected on 265 km of stream habitat in the Kennebecasis Watershed. Through detailed stream survey work, surface water sampling and electroseining, significant information was gained on the status of the Kennebecasis stream system. The habitat assessment data collected was compiled and entered into computer format to provide an electronic database for the Kennebecasis watershed. Erosion and lack of riparian habitat were identified as the major problems impacting on salmonid production. 171 significant problem erosion sites were identified throughout the system, resulting in high percentages of silt and sand substrate, loss of rearing habitat, and pool fill-ins. Headwater systems were found to be in generally good condition, with the major problems existing in agricultural and residential areas on the mid and lower stream sections. It is suggested that restoration and enhancement efforts commence, as soon as possible, on the most severe problem sites to prevent further habitat loss. Riparian restoration and in-stream enhancement must also take place to protect and improve the current salmonid habitat present in the Kennebecasis watershed.

1.0 Introduction

Stream survey work was carried out on 265km of the Kennebecasis river system between July 14 and October 12 of 1994 by the Sussex Fish and Game Association. Survey work was completed under funding from: the Canada/New Brunswick COOPERATION Agreement on Recreational Fisheries, the Fundy Model Forest, the Sussex Fish and Game Association, the Kennebecasis Salmon Association, the Hammond River Anglers , and the Big Salmon River Association. The goal of the survey work was to obtain a thorough habitat assessment of the watershed and to identify the problems that exist within the Kennebecasis river and its tributaries. This information is necessary in developing a long term strategic management plan for the Kennebecasis watershed.

The stream survey work was conducted to determine the physical, chemical, and biological characteristics of the main stem Kennebecasis and its tributaries. The ensuing paragraphs describe the areas surveyed, the survey methods used and the findings of the survey work.

2.0 Survey Area

The Kennebecasis watershed is a sub drainage of the Saint John River system and has an area of 1,422.6 km^2. It is composed of the main stem Kennebecasis river and four major tributaries: Trout Creek, the South Branch, Millstream and Smith Creek (figure 1.). The Kennebecasis river drainage is located in the south/south-east portion of New Brunswick and provides for a diversity of human activity including: sport fishing, hunting, forestry and mining; the major impact on fish habitat and water quality in the Kennebecasis watershed is agriculture.

Brook trout and Atlantic salmon are the primary angling species, although Striped bass, Smallmouth bass and Pickerel are angled as well. Atlantic salmon juveniles and Brook trout are found throughout the system, but the majority of adult Atlantic salmon angling occurs on the lower reaches of the main stem (from Plumseweep to the head of tide). Bass and pickerel are angled primarily in the portion of river system below Bloomfield.

As previously mentioned, 265 linear km of stream habitat was assessed in the Kennebecasis watershed. This translated to 285.5 total km (primarily due to the presence of islands) and a total of 2801186.52 square meters of habitat. It is estimated that an additional 5% should be added to the total habitat area, for a total of 2941245.85 square meters; this correction factor is applied to account for the extreme low flow conditions encountered this summer. Survey work was carried out on: 83.5 km of the Main Stem, 59.8 km of the Trout Creek system, 14.4 km of the South Branch system, 8.7 km of McLeod Bk., 47.1 km of the Millstream river system, 45.9 km of the Smiths Creek system, 12.8 km of Moosehorn Bk., 5.1 km of Musquash Bk., 3.5 km of Almshouse Bk. , 0.2 km of Clamingo Bk., and 4.5 km of Stone Bk. (Refer to Table 1. for a description of the exact survey boundaries).

Table 1. A description of the survey boundaries of the various streams surveyed under the Kennebecasis stream survey project.

Main Stem Kennebecasis: Survey boundaries are from the "Park Road", Route 114, crossing to the head of tide, located approximately 500 meters upstream of the Bloomfield bridge. This includes the lower portion of **Calamingo Brook**, start point referenced in figure 1.

Trout Creek: Survey boundaries are from the Pleasant Lake road crossing to its mouth including the tributaries of **Cedar Camp Bk., Parlee Bk., Mill Brook, Parsons Brook, and Ward's Ck.** (start points referenced on figure 1.).

South Branch: Survey boundaries are from the upper forks above Route 114 to its mouth including the lower 1.5km of **Negro Bk.** (i.e. from the confluence of Robinson Hollow Bk.).

McLeod Brook: Survey boundaries are from the Picadilly road crossing to its mouth.

Millstream: Survey boundaries are from the confluence of Wright Bk. to its mouth including the lower reaches of tributaries **Mill Bk., McNair Bk., and Sharpe Bk.** (start points referenced in figure 1.)

Smith Creek: Survey boundaries are from the confluence of Foley Bk. to its mouth including the lower reaches of tributaries **Sally Bk., Windgap Bk., and McGregor Bk.** (start points referenced in figure 1.).

Moosehorn Brook: Survey boundaries are from the Southfield road crossing to its mouth.

Musquash Brook: Survey boundaries are from the road crossing south of Drury's Cove to its mouth.

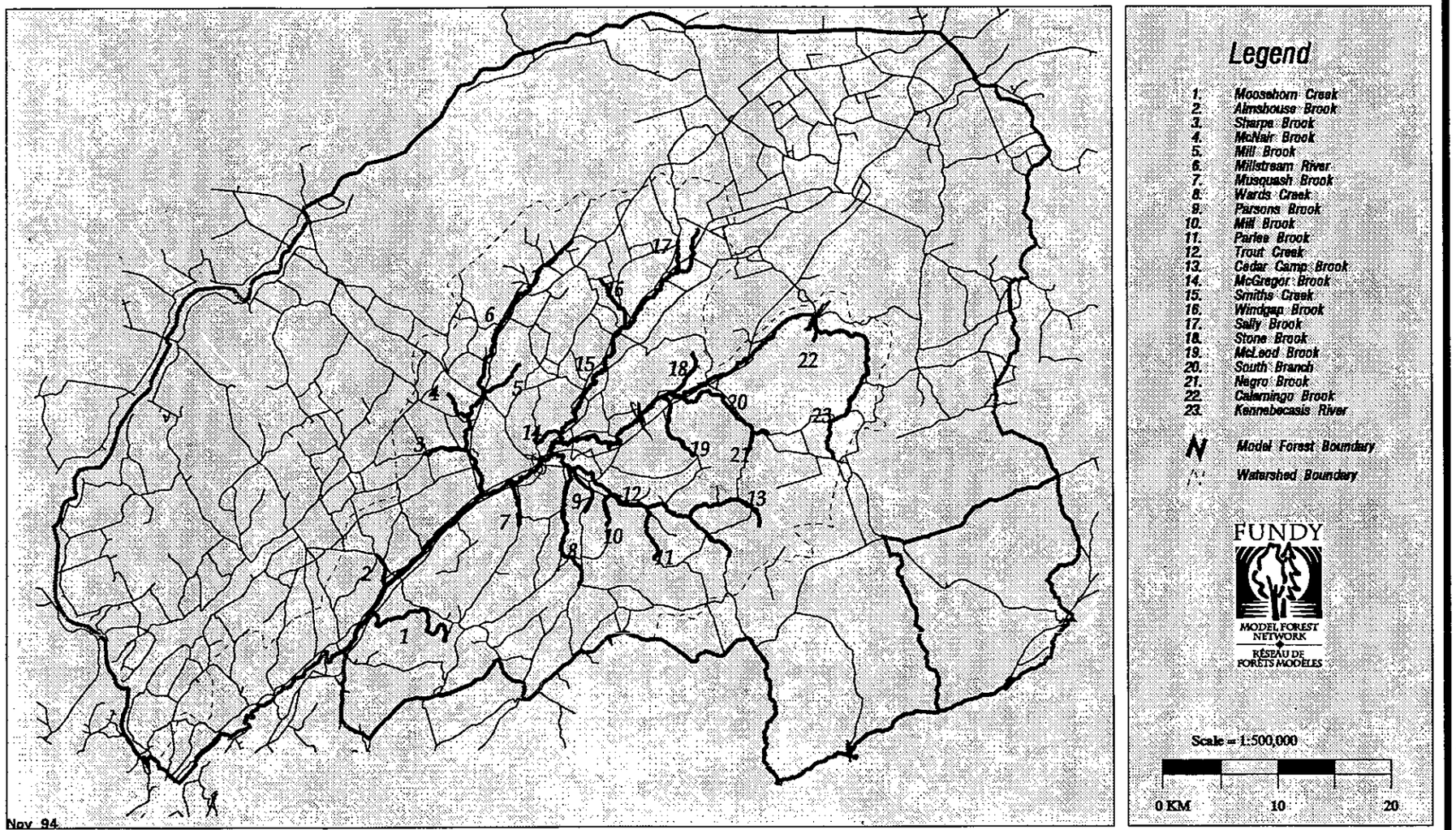
Almshouse Brook: Survey boundaries are from the route 124 crossing to its mouth.

Stone Brook: Survey boundaries are from the upper power line to its mouth.

3.0 Materials and Methods

The Kennebecasis stream survey project involved the collection of physical, chemical and biological data on the Kennebecasis watershed.
Survey information was collected according to methods developed by the Department of Fisheries and Oceans and the New Brunswick Department of Natural Resources and Energy. The stream sections surveyed were divided into reaches, with a reach beginning and ending at discernible geographic locations (e.g. a bridge, hydro line crossing, etc..). Reaches were then divided

Figure 1. *An Illustration of the Stream Sections Surveyed under the Kennebecasis Stream Survey Project*



into individual survey sections called "units"; units were numbered consecutively downstream beginning at the start of each reach. A new unit begins with each change in stream type, this means that each unit is a distinct stream type (riffle, run, pool, etc..). The length of each unit was recorded and a series of physical data, described in section 3.1, was collected for each unit. It should be noted that survey work was performed under low-flow conditions and that base flows were critically low between late July and mid November of 1994, thus a correction factor of 5% should be added for normal wetted stream habitat.

3.1 Physical Characteristics

The physical characteristics assessed in this stream survey include: the wet width, channel width, stream depth, stream type (riffle, pool, run, etc..) and its length, channel type, percent substrate present, percent undercut bank (left and right), percent overhanging bank vegetation (left and right), amount of woody debris present, water and air temperature, flow, embeddedness, the percent shade cover present, the percent of various vegetation present on the bank, and the degree of erosion on the banks (left and right). The information obtained in the physical assessment work was recorded on survey forms developed by the Department of Fisheries and Oceans and the N.B. Department of Natural Resources and Energy (Appendix A).

3.1-1 Stream Type

The individual units were identified by changes in stream type for this habitat assessment project; descriptions of the 25 stream types used for this survey are found in Table 2. The percentages of various stream types present in a river system provides information about the nature of the stream and its potential as spawning, over-wintering, and holding water for various fish species.

3.1-2 Channel Type

The channel type of each unit was identified as: 1. main channel, 2. side channel (when the flow is diverted by an island), 3. split (when the unit is composed of two or more stream types), and 4. bogan.

3.1-3 Wet width and Channel width

The wet and channel width of each unit was measured by means of a 30 meter tape or hip chain. Wet width is a measure of the average width of the wetted portion of the unit. The channel width is a measure of the average distance across the stream channel. The stream channel boundaries were identified by the vegetation and high water marks on the bank. Recording the wet and channel widths of the stream provides information on the degree of channel degradation that has occurred in a stream. Wide wet and channel widths, in combination with shallow water depths may indicate an area that has been channelized and in need of enhancement work to narrow and deepen the channel.