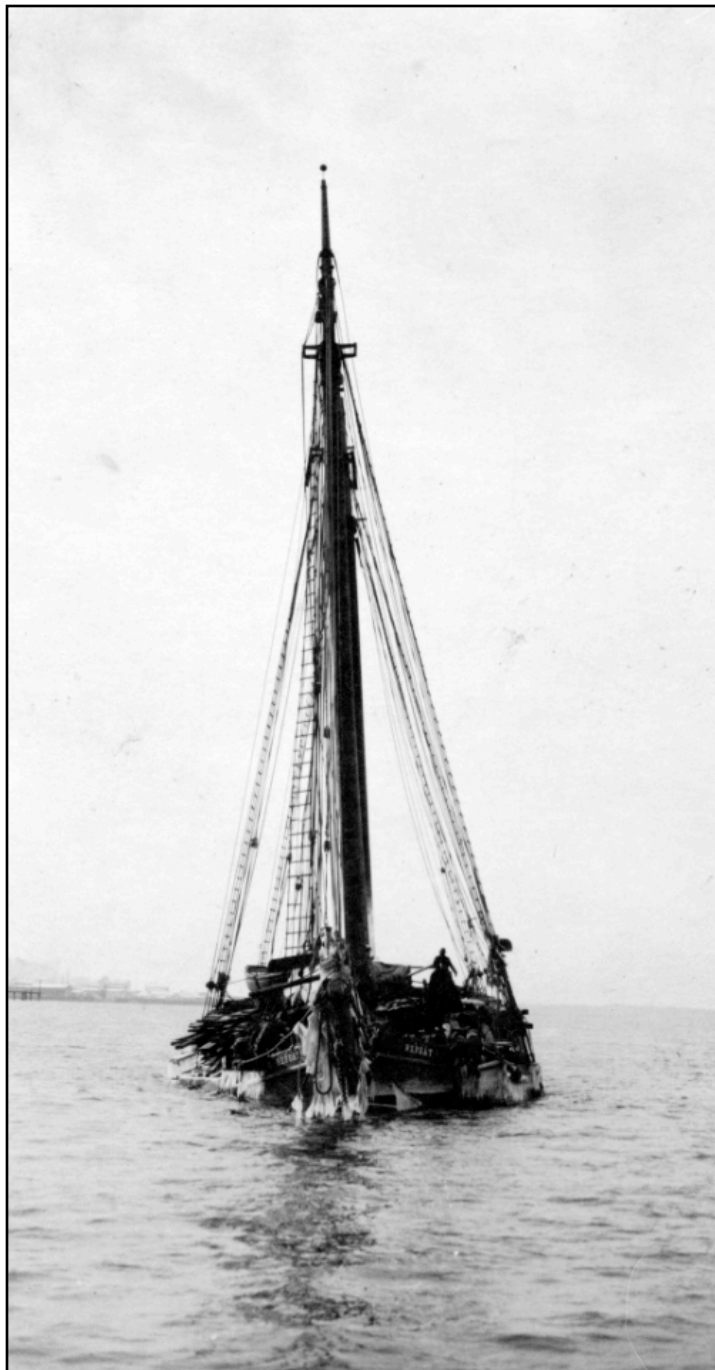


Maritime Heritage Resources at St. Croix International Historic Site



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2011

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Introduction

Scope and Purpose

In 2010-2011, National Park Service, North East Region engaged the University of Rhode Island (URI) in a project to “Study Maritime Heritage Resources at St. Croix International Historic Site” in Maine. The project arose from concerns related to the potential siting of an LNG receiving, storage and vaporizing facility approximately 2.5 miles north of St. Croix International Historic Site, on the St. Croix River, Maine.

Archival research and a literature review for the project commenced in August 2010. Park visits, research and reconnaissance field operations took place between 8/10/2010-8/14/2010. It comprised work at the Acadia National Park Office and Archives, St. Croix National Historic Site, Calais Public Library, Calais Waterfront, St. Croix Historical Society, and University of Maine at Orono. URI researchers also met with Al Churchill (President of the St. Croix Historical Society), Fred Becker (Vice-President of the St. Croix Historical Society), Brand Livingston (past President of the St. Croix Historical Society and owner of property adjacent to the “Ledges” on the St. Croix River), and members of the local scuba diving community. Researchers spent half of one day at the nearby Roosevelt Campobello International Historic Site.

Historic data gathered included almost a thousand historic photographs, as well as published and unpublished studies of the St. Croix River’s history, official records of the Saint Croix International Historic Site, historic newspaper accounts of maritime activities on the St. Croix, historic maps (including the full collection of Sanborn maps), historic diaries, historic business directories and historic census data. Archaeological data gathered included Archaeological Reports, Cultural Resource Assessments, Historic Landscape Assessments, Historic Structure Reports, and Cultural Resource Management Reports. Researchers also conducted reconnaissance pedestrian surveys of Red Beach Cove Industrial Complex, St. Croix Island, the Calais waterfront, and part of the St. Croix River known as “the Ledges.”

Proposed Development Project

The proposed liquid natural gas (LNG) facility in Calais would be owned and operated by the Calais LNG Project Company and would include a receiving, storage and vaporization facility; a marine terminal; and a natural gas pipeline. The facility and terminal would be owned and operated by the Calais LNG Project Company and the pipeline by the Calais Pipeline Company.

The proposed LNG facility and terminal would be located near Ford Point on the St. Croix River and would be within the limits of the City of Calais. Ford Point is approximately six miles down river and to the southeast of the Calais. The proposed development site comprises 337 acres with approximately 2,800 feet of water front access along the St. Croix River.

The LNG facility would include three 160,000 cubic meter storage tanks as well as a vaporization facility. The vaporization facility would deliver natural gas to the distribution network at a rate of 1.0 bscfd (1.2 bscfd peak) at about 1850 psi. The LNG marine terminal

would allow for ocean going LNG tankers to berth and offload their payloads. This would include a pier extending out into the river approximately 1000 ft from mean low water. The proposed 36-inch, natural gas pipeline would run from Ford Point to the Maritimes & Northeast Pipeline, a distance of approximately 20.7 miles.

The Calais LNG Project Company anticipates that one or two LNG 120,000 – 170,000 cubic meter tankers a day would access the proposed facility. Those tankers would enter the St. Croix River near Mill Cove and would be escorted by tugs up to the Calais LNG Marine Terminal - a distance of approximately 7.3 miles. They would transit the shipping channel to the east of St. Croix Island.

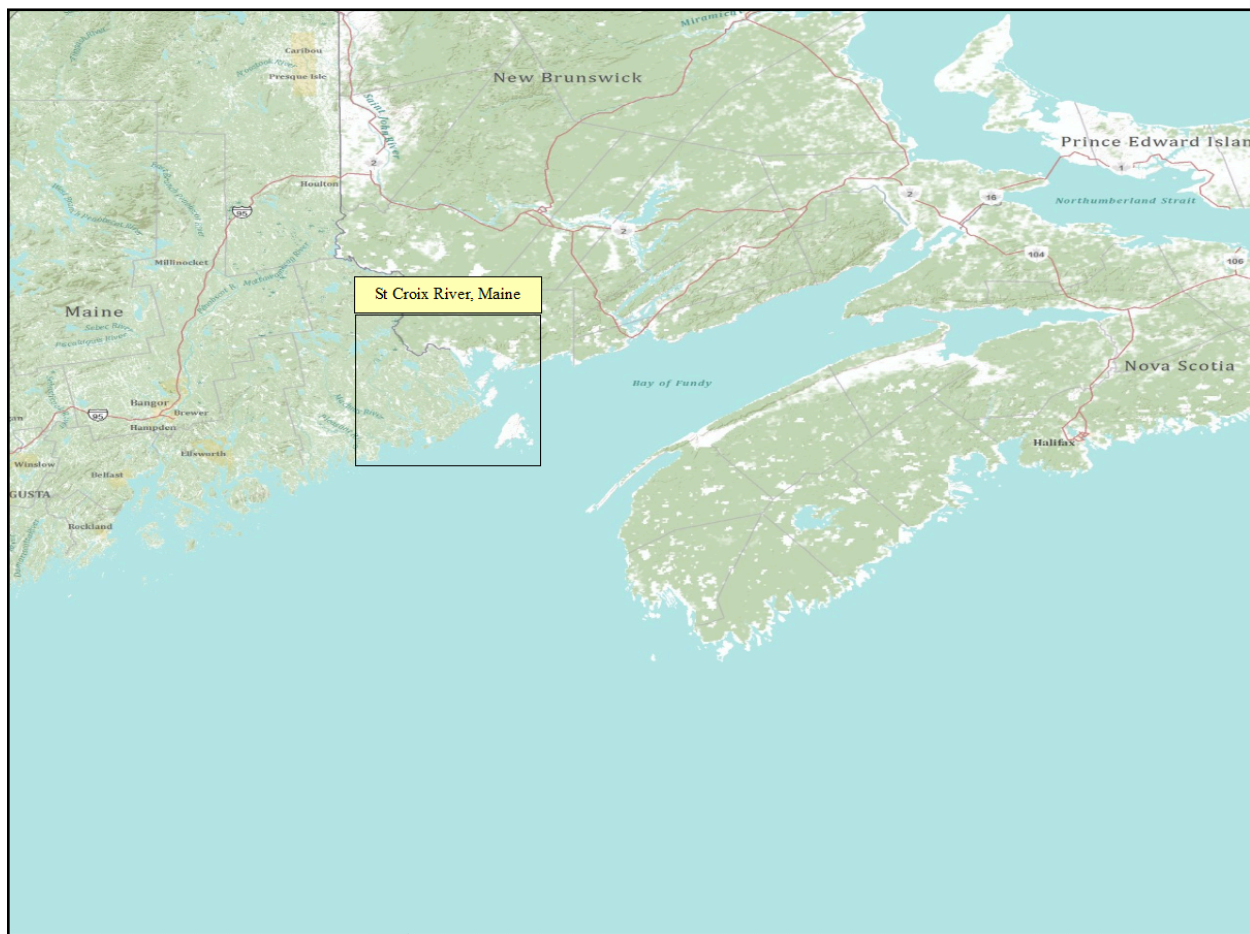


Figure 1.01. Location of the St. Croix River on the Maine – New Brunswick Border

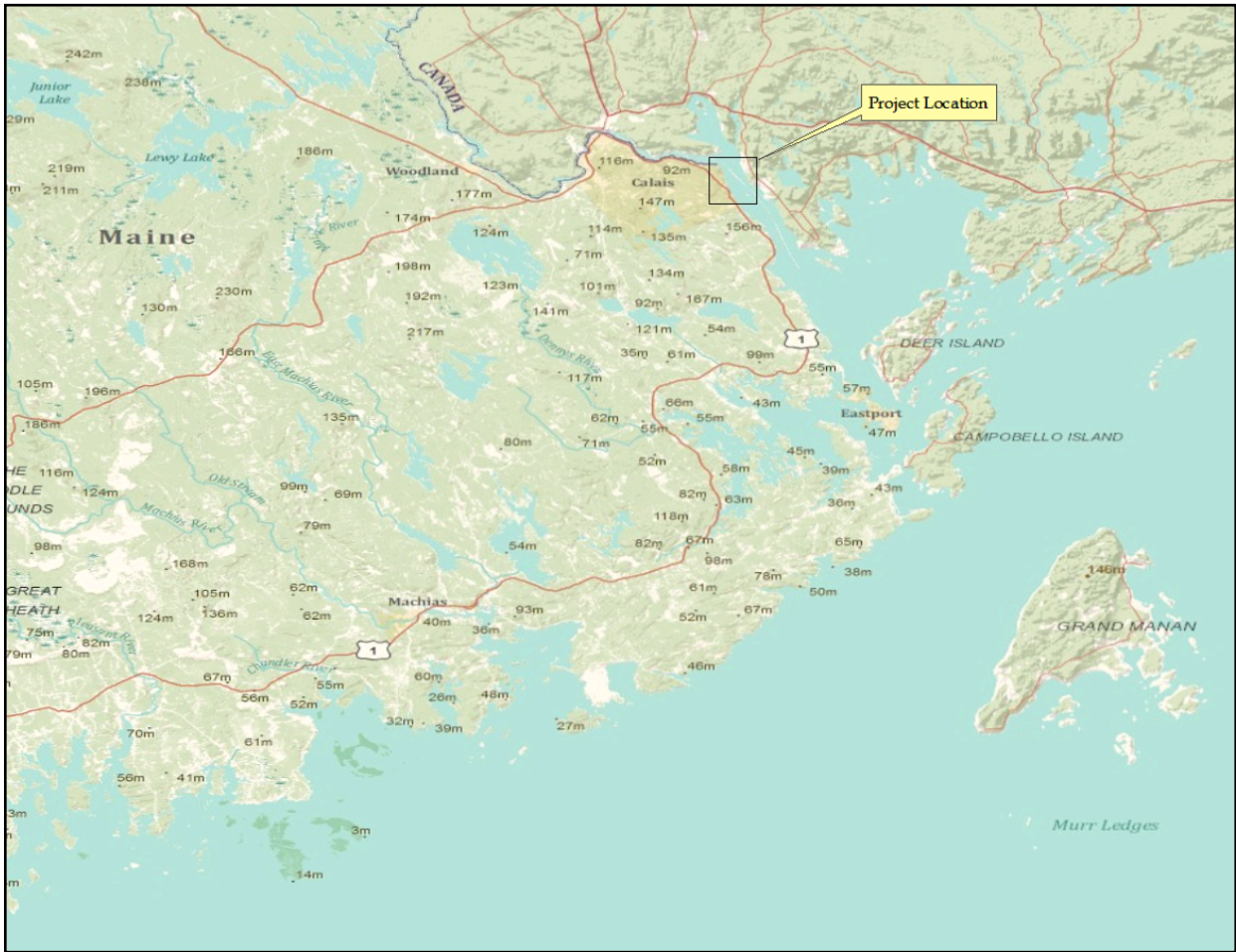


Figure 1.02. Location of St. Croix Island on the St Croix River, Maine

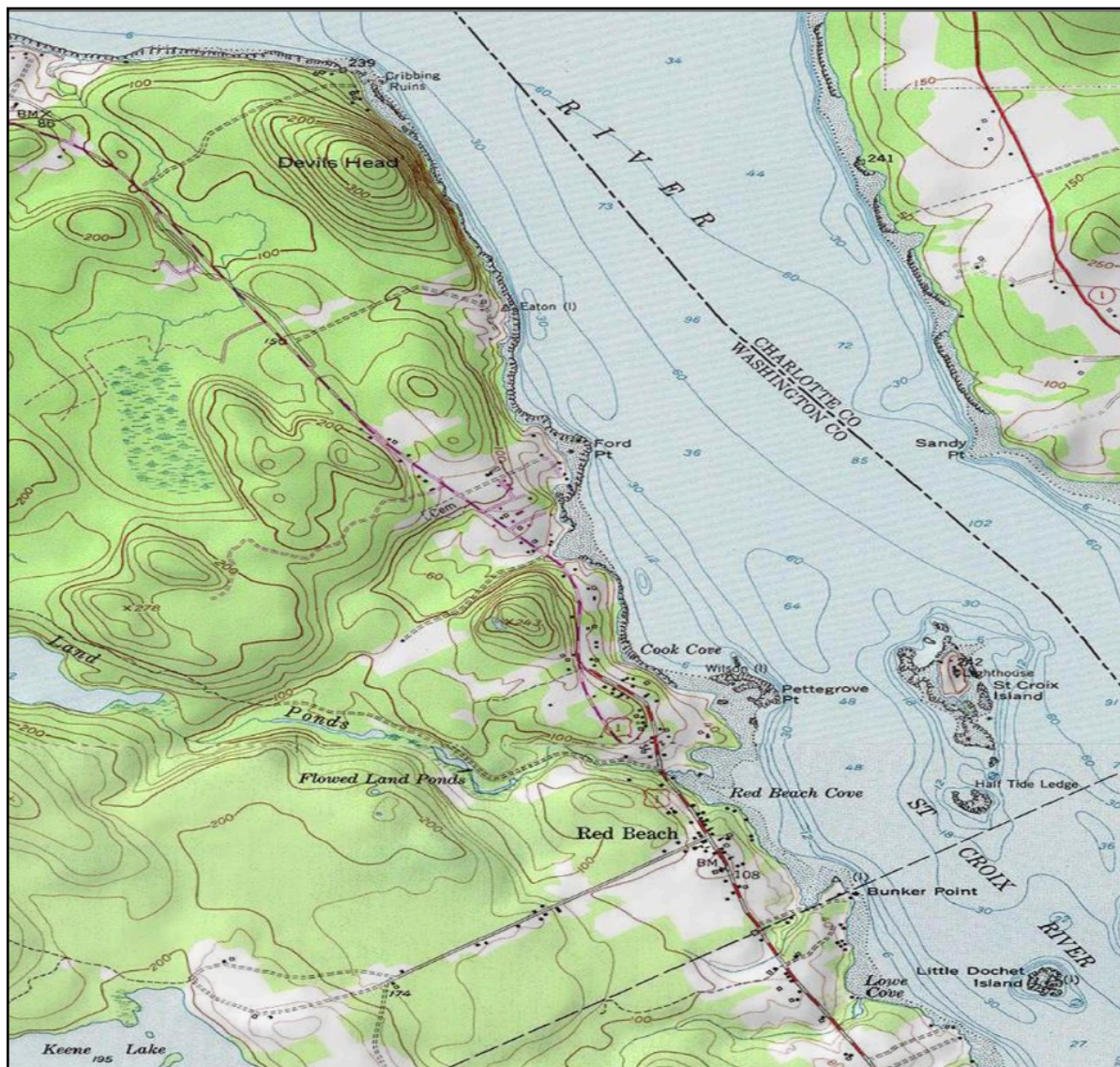


Figure 1.03. Location of St. Croix Island and Red Beach on the Devil's Head and Red Beach USGS Quadrangles

St. Croix River Hydrography and Environmental Setting

The Saint Croix River is approximately 75 miles in length; it rises in the Chiputneticook Lakes and empties into Passamaquoddy Bay. The total area of the Saint Croix River watershed is approximately 1500 square miles. The river south of Calais, Maine forms the northernmost part of the Passamaquoddy Bay estuary and is the only navigable portion of the river for commercial vessels. The effects of tidal cycles extend more than 25 miles upriver and the tidal bore can cause surges of up to 30 feet. A major undersea fault creates (Figure 1.04) upwelling springs in many locations within the estuary (Lundman 2003; Maine Rivers 2010)

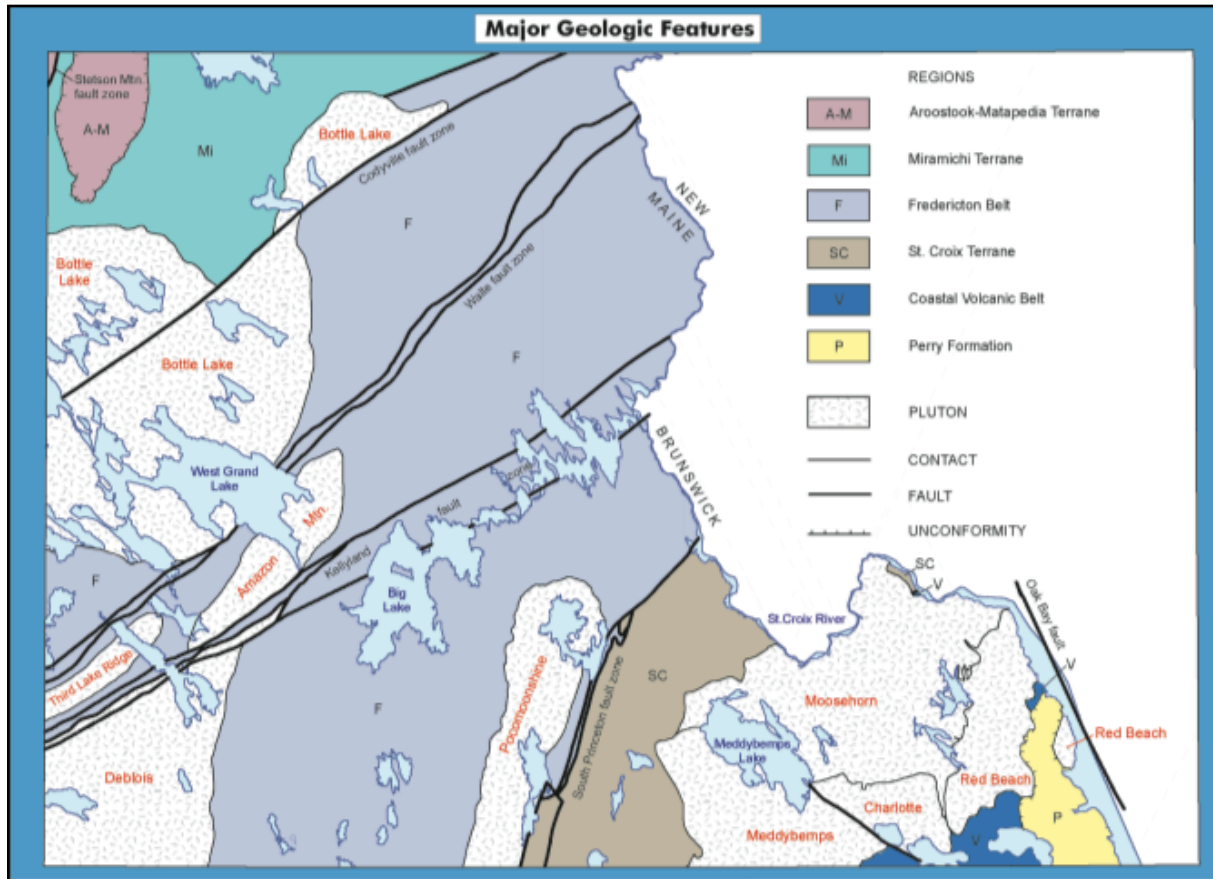


Figure 1.04: Major Geologic Features (Lundman 2003)

Bedrock geology in the vicinity of Saint Croix Island is primary Devonian intrusive igneous granite, grandiorite, and gabbro. To the north of the island near Calais, Maine are Silurian granites. To the south of the island outcrops Late Devonian-Carboniferous unmetamorphosed conglomerate and sandstone (Oberg 2002). Bedrock is well-exposed along the Saint Croix River (Abbot 1986).

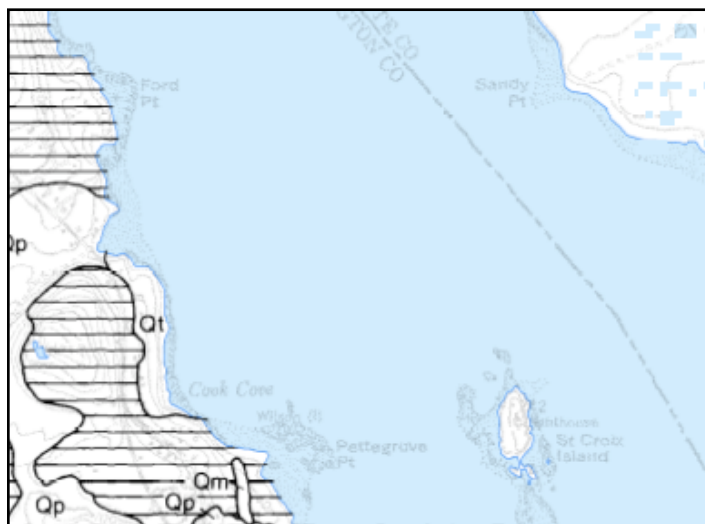


Figure 1.05: Surficial Geology of Devils Head Quadrangle (Qp: marine silt and clays; Qt: unstratified till; Qm: end moraine) (Borns 1974)

The surficial geology in the vicinity of Saint Croix island consists of pockets of glacially-derived deposits including low permeability, poorly drained marine silt and clay and unstratified till blanketed over bedrock. On the Maine mainland shore directly west of the island is the remains of an end moraine of unspecified composition (Figure 1.05). Deposits of marine silt and clay become more widespread along shore as the river estuary widens just south of the island (Figure 1.06).

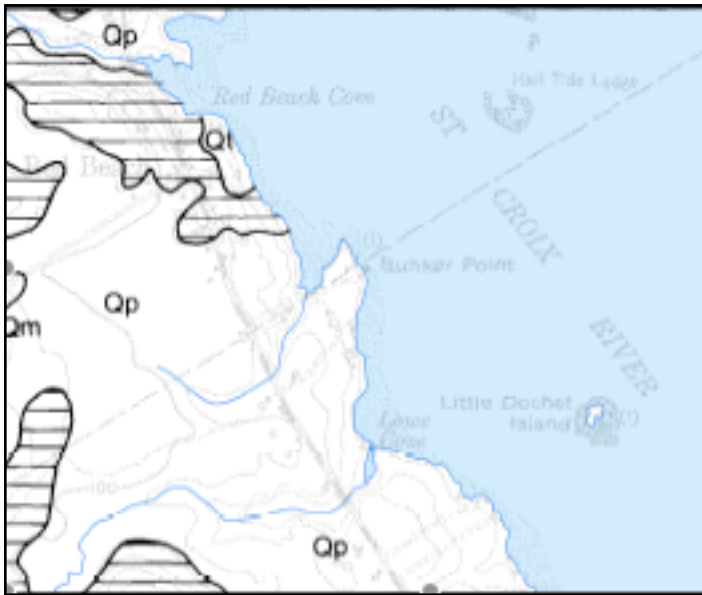


Figure 1.06: Surficial Geology of Red Beach Quadrangle (Qp: marine silt and clays; Qm: end moraine) (Borns 1974)

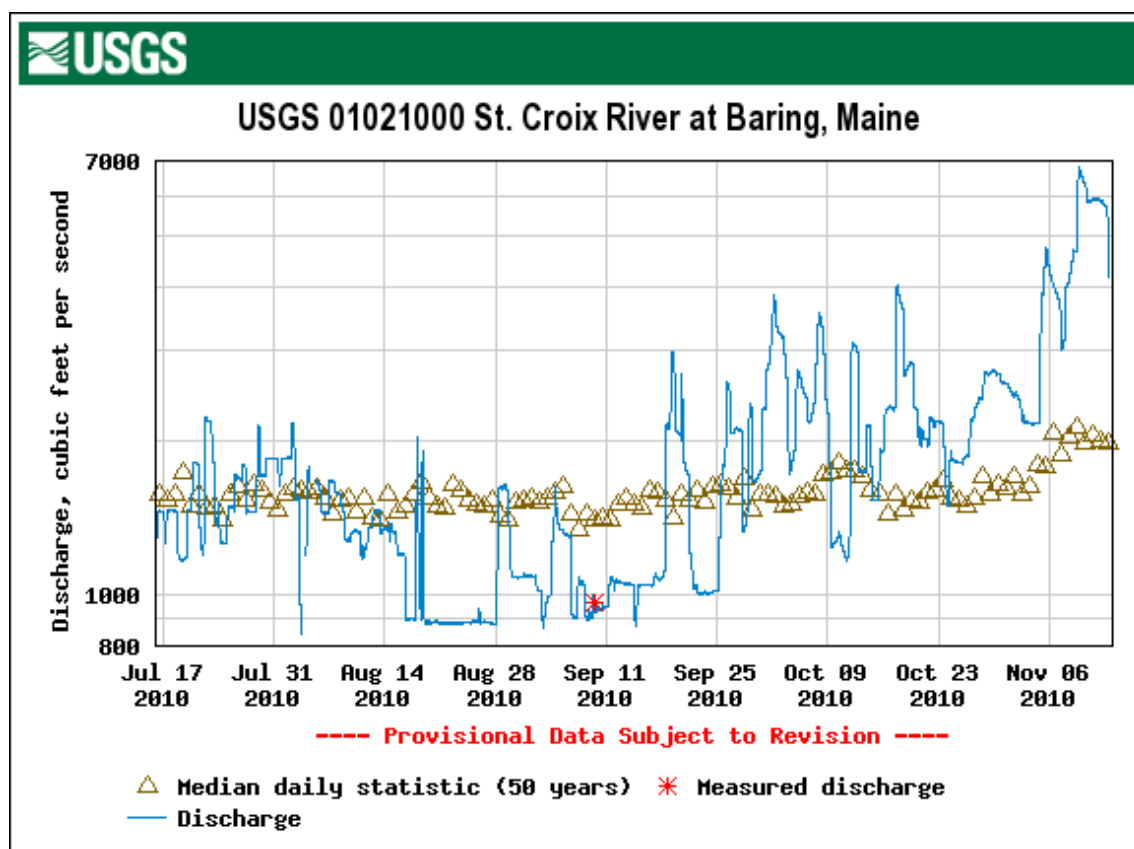


Figure 1.07: Daily Discharge of the Saint Croix River at Baring, Maine (USGS Water Information System)

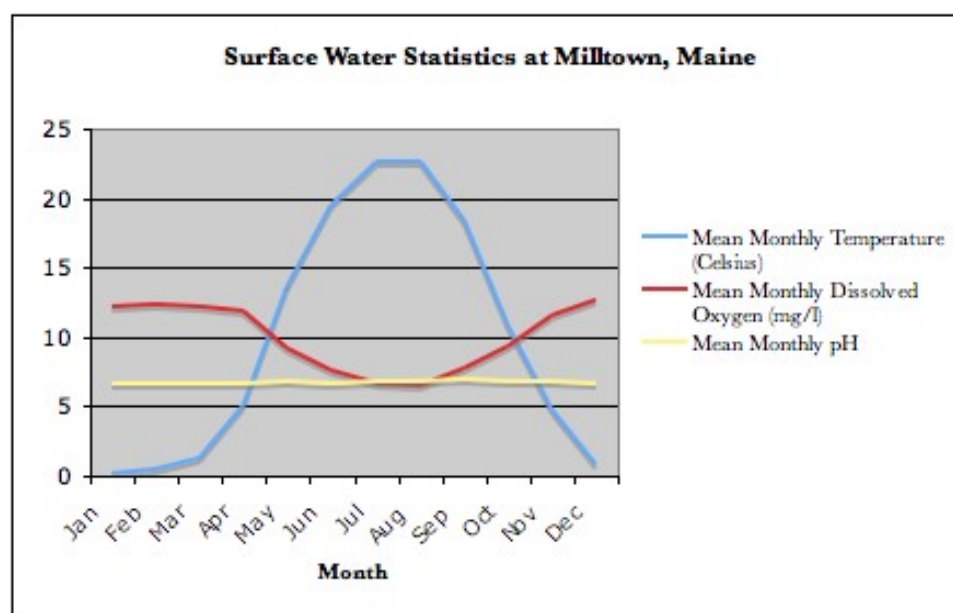


Figure 1.08: Surface Water Statistics at Milltown, Maine (USGS Water Information System)

The average daily discharge upriver at Baring, Maine is 2260 cubic feet per second (cfs). In the last 50 years, the maximum streamflow recorded was 8630 cfs in 1964. Daily discharge can vary greatly (Figure 1.07). The winter discharge increase is likely due to snowmelt within the Saint

Croix River watershed. Monthly average water temperature ranges from nearly freezing in January to approximately 24 degrees Celsius in late August. Mean monthly dissolved oxygen mirrors the overall trend in temperature dipping down to approximately six milligrams per liter (mg/l) in the summer following the spring phytoplankton bloom from an average of 13 mg/l in winter. pH remains steady year round at 6.7 (Figure 1.08).

St. Croix Island National Historic Site

Administration of the St. Croix Island International Historic Site is shared by the United States and Canada, with jurisdiction and authority resting with the National Park Service (NPS) and Parks Canada respectively. In the United States, the National Park Service administers not only St. Croix Island (approximately 6.5 acres), but also a parcel of land at Red Beach on the west bank of the St. Croix River adjacent to the island. While the Red Beach property serves as a base for administration and visitation, it does nevertheless encompass an important 19th century, plaster and granite industrial complex. The total area encompassed by the legislative boundary is 35.4 acres, of which 6.25 acres are privately owned and 29.15 acres are owned by the NPS.

St. Croix Island comprises an area of grassland with shrubs and trees along its edges. The highest part of the island is about 40 feet above sea level. The land/sea interfaces around the island consists, for the most part, of steep, rocky slopes with some areas of sandy beach, particularly at the southern end of the island. Two rocky outcrops with trees and shrubs to the south of the island are isolated during high water and form islands.

The most important historic resources on St. Croix Island are those associated with attempted French settlement of the island between 1604-1605. The enterprise was lead by Pierre du Gast, Sieur de Monts and Samuel de Champlain accompanied by 77 men. It would be difficult to exaggerate the historical significance of this expedition. While France had launched excursions into Acadia and New France in the 16th century, and had initiated colonial enterprises in Florida and South America during the same time period, the St. Croix expedition was the first attempt at permanent French settlement in the northern climes. As such it stands along side Jamestown, Plymouth, St. Augustine as pivotal moments in European colonization of the North America. St. Croix Island also has other known cultural resources. Principle among these is the remains and cultural material associated with a 19th century farming on island and the lighthouse established in 1856. Long before 19th century Euro-American use of the island and European colonization efforts, the Passamaquoddy used the island as a food storage area. Historical, ethnographic and archaeological evidence points to this and other uses, which while perhaps limited, nevertheless point to the significance of Native American habitation and land use in the region. St. Croix Island is on the National Register of Historic Places.

The Red Beach component of the park actually comprises 4 parcels; one on the west of Route 1 (which is not interpreted), and the others on the east side. The parcels on the east side have water frontage, and provide visitor access, an interpretation trail, a parking lot, rest room facilities, and a boat ramp. The parcels on the east side also have three extant historic buildings - the Robb House, the McGlashan-Nickerson House and the Pettegrove-Livingstone House. In addition, the Red Beach component of the park contains the remains of important 19th plaster and

granite industries. Principle among these are buildings and structures associated with the Red Beach Plaster Company works, the Maine Red Granite Company and the Maine Red Granite Polishing Works, along with industrial and transportation infrastructure including docks, crushing and grinding facilities, barrel stave storage buildings, company housing, cooperage, and a storehouse (Pendery 2002).

In 1991, the St. Croix River was designated a Canadian heritage river for both its natural and cultural resources (Community Improvement Corporation 1984). At the same time, a plan for the long-term management of the international waterway was developed (St. Croix International Waterway Commission 1990)

Research Objectives

The potential development of an LNG facility on the St. Croix River has broad implications for the St. Croix Island International Historic Site, that range from direct impacts on the island and its stability, to erosion, and visual impacts. It is possible that submerged archaeological sites either associated with early exploration of the United States or associated with other periods of history including the industrial and commercial development of northeastern Maine exist in the waters or along the shore of the St. Croix River. The purpose of this project was to identify previous archaeological work, collate information on known or potential archaeological sites, characterize the maritime history and cultural landscape of the St. Croix River, and recommend archaeological survey strategies.

Research Background

Previously Archeological Investigations

A succinct summary and evaluation of archeological work conducted at Saint Croix Island International Historic Site through 1996 is provided in Johnson (1996). The following is a brief outline of these archeological investigations and the results of the assessment followed by an overview and assessment of archeological investigations carried out post-1996. (Unless explicitly cited, all information in this summary section is derived from Johnson (1996)).

The Rediscovery of the Saint Croix Settlement (1797)

In 1797, Robert Pagan and Thomas Wright investigated Saint Croix Island to determine whether it was the location of the 1604 de Monts settlement. After comparing maps prepared by Champlain with the island's topography, Pagan and Wright conducted a surface survey and excavation to recover artifacts and reveal building foundations. Limited mapping was carried out, however their reports described locations of findings including basic provenience information of what were identified as structures, five total, with artifactual remains and the matrix within which they were found. General categories of found artifacts include military ordnance, construction materials, and housewares. Pagan and Wright correctly concluded that the island was in fact the location of the de Monts settlement though it is possible that some of what was identified may have dated to a later American occupation.

Johnson remarks that Pagan and Wright, though working in the interest of the British in the border dispute between Britain and the United States, recorded their findings carefully and were thorough in their descriptions of the locations, conditions, matrix, and provenience of the structures and artifacts that were identified in their surveys and excavations. It does appear however that Pagan and Wright focused their efforts on only the most obvious, easily visible ruins on the island, missing several key structures and features that are located on Champlain's map. It is likely that investigations ended once Pagan and Wright were convinced that they had identified Saint Croix Island.

Wendell Hadlock's Excavations (1950)

Wendell Hadlock conducted the first professional archeological investigation of Saint Croix Island in 1950. This research served as the preliminary study for later work carried out by Temple University in 1968-1969. The stated purpose of the excavation was to locate and identify features of the de Monts settlement in order to evaluate the accuracy of the Champlain map. Additionally, Hadlock endeavored to determine the extent of the remains, their interpretive value, and to evaluate the site for future research potential.

Most of Hadlock's excavations were confined to the north end of the island save for a unit at the south end intended to locate the settlement burial grounds. The excavation plan consisted of two-foot wide trenches in a grid pattern of 20-foot intervals totaling approximately 1500 linear feet of trench. Ten-foot intervals were used in areas of particular interest though what is of interest is unclear in the project mapping. Stone foundations were identified in a trench,

assumed to be the storehouse, around which subsequent excavation was concentrated. A total of fourteen features were identified in the northern excavations and assigned to a structure on Champlain's map. Subsequent research has rejected all of Hadlock's interpretations of structure and structural element identification except for the storehouse. Little information on observed or recovered artifacts was recorded in Hadlock's project report though he did remark that they were similar to artifacts observed from Port Royal which dates to just after the de Monts settlement. Two burials were revealed and investigated in the southern excavation.

Hadlock's report did not include discussion of field and laboratory methods, nor does it describe field techniques including excavation techniques and recording or collection plans. Provenience of artifacts within the site is not provided. These among other omissions of standard reporting procedures prevent independent review and evaluation of interpretations and limits research value. The greatest value of this investigation was that it confirmed the presence of intact archeological deposits and the site's research potential.

Temple University Excavations (1968-1969)

The Temple University excavations were the first under the purview of the National Park Service. The goal of the investigation was to locate and identify all structures within the de Monts settlement area as well as to locate and excavate all graves within the cemetery to determine burial practices and the demographics of the French colonists. Surface, magnetometry, and electrical resistivity survey and mapping were conducted in 1968 and excavation was carried out in 1969. The excavation procedure was as follows: horizontal stripping of the settlement area, limited trenching in areas of disturbance or previous construction, and extensive trenching in the cemetery. There is no evidence that excavated soil was screened.

The results of the mapping, excavation, and laboratory analysis revealed the presence of structures, graves, features, and artifacts, and information about site layout, the visibility of features, sites disturbances, and site formation processes. The structure identified by Hadlock as the storehouse was re-identified. This was the only building for which structural features were recognized. General categories of artifacts found within the storehouse include military ordnance, construction materials, housewares, personal items, and trade goods. Apart from the de Monts settlement, remains of the Hilliker farmhouse and a Native American site were also identified.

Though the project goals of identifying all de Monts settlement structures and burials was not fully achieved, Johnson feels that the methods of investigation of the settlement and cemetery was appropriate for the project. Some interpretations of the identity of features have been questioned, though not definitively, indicating that further research, using modern investigative and analytical techniques, is necessary.

Reconnaissance Survey of Mainland Tracts at Red Beach (I) (1976)

In June 1976, National Park Service archeologist L.L. Loendorf conducted a visual reconnaissance of the mainland tracts at Red Beach. Surface vegetation and surrounding

topographic features were described. Archeological features visible on the surface were identified. The cove tract included a commemorative stone plaque, cut granite, at least one structure, and the remains of a dock. The upland tract contained two collapsed houses, refuse, a well, foundations, and stonewalls. Little could be interpreted of the site without excavation though the sites and features in each tract are likely related to one another.

Loendorf's memorandum does not recommend further investigations within the cove tract as the archeological integrity was likely compromised due to modern construction activities, however he felt that there was significant research potential in the upland tract.

Reconnaissance Survey of Mainland Tracts at Red Beach (II) (1976)

In August 1976, historian Ronald Johnson and architect Merrill Wilson conducted a visual reconnaissance of the mainland tracts to inventory and evaluate all cultural resources for potential inclusion in the National Register of Historic Places. Extant historic remains in the cove tract include the Red Beach Plaster Mill, the Red Granite Polishing Works headquarters, warehouses and dockage and cribwork. Johnson and Wilson note the observation of nineteenth century archeological materials. The remains of five houses, a stone well, and stone fences were recorded in the upland tract. None of the observed structures were determined to be eligible for the National Register. They did recommend leaving all extant structures in place and, if they pose a hazard, to be filled/buried. Subsurface resources were not evaluated as part of this investigation.

Evaluation of Recent Archeological Investigations

There has been only one archeological investigation at Saint Croix Island International Historic Site since Johnson (1996) prepared his archeological overview and assessment of the park. The following will utilize the evaluative process used by Johnson (1996).

Archeological Survey of Red Beach Cove (2002)

Though both Loendorf, and Johnson and Wilson identified the Cove Tract as lacking archeological integrity, neither project tested for intact buried deposits. Proper compliance procedures however necessitate archeological clearance as part of the Section 106 process. In this case, extensive excavation was required in advance of significant construction activities. Pendery's report (2002) includes all research conducted as part of the investigation.

Report Title: *Management Summary, Archeological Survey of Red Beach Cove Project Area, Line Item Construction Package SACR 001, Saint Croix International Historic Site*

Author: Steven R. Pendery

Date of Report: 2002

Dates of Fieldwork: Archeological testing, including the excavation of 29 test pits, was conducted by the Archeology Branch, Northeast Region, National Park Service between August 6 and October 3, 2001. Laboratory analysis followed at the Archeology Branch office.

Project Goals: The project goals were to identify and evaluate archeological deposits within the SACR 001 line item construction package project area in advance of facilities upgrades. Planned construction included a new visitor parking area and interpretive trail and the relocation of maintenance facilities, boat house, and comfort station. Background research indicated the likely presence of prehistoric, contact, and historic period remains, the latter of which included archeological resources related to the de Monts settlement, the Red Beach plaster and granite industries, the wharf, evidence of fire and other taphonomic processes, and historic memorial activities related to the 17th century French settlement.

Methods: Subsurface testing involved excavation of 29 half-meter square test units along in-field identified transects established throughout the project area using the SACR 001 project engineer's baseline as the archeological field survey baseline. Test unit spacing was ten meters save for within the vicinity of the present NPS overlook where both prehistoric and historic period artifacts have been observed (five meters). Units were excavated stratigraphically with soil horizons greater than ten centimeters deep excavated in arbitrary ten centimeter levels. All excavated soils were screened through quarter-inch wire mesh (Pendery 2002: 12). Artifacts and soil samples were transported to the NPS Archeology Branch laboratory in Lowell, MA for processing. Artifacts and field documentation were catalogued into the NPS ANCS+ system.

Results: Pendery's results include a general overview of the excavation and laboratory analysis. Prehistoric resources were identified as expected in the vicinity of the NPS overlook. The remains consist of non-diagnostic lithic materials. It is likely that portions of the site have eroded along the bank. A contact period brass bead was identified in undisturbed context in test unit S05, E60. This bead was analyzed by the Chief of Collections Conservation Branch, Brigid Sullivan. A potential association with the nearby lithic scatter is unclear (Pendery 2002: 13).

Historic period artifacts were found in all but the northernmost test units. Artifacts related to domestic use and residential construction along St. Croix Drive were found in the western portion of the site. Materials related to the construction of Route 1 and for the NPS access road were found in deep stratigraphic lenses in test unit S05, W80 and along and under the access road. Slag and coal ash were found along the length of the S05 transect. The areas of the proposed relocated comfort station and maintenance shed contained a light scatter of 19th and 20th century artifacts (Pendery 2002: 14).

Interpretation: No interpretation was made of the prehistoric lithic scatter located at the NPS overlook. The brass bead was compared with similar beads curated at Harvard University's Peabody Museum of Archeology and Anthropology. This bead may have been manufactured from a repurposed 17th century brass kettle indicating that the source of the brass may have been one of the French settlements on Saint Croix Island (Pendery 2002: 13).

Mapping of the residential material in the western portion of the site reveal the taphonomic processes that have moved the artifacts throughout the site. Unburned window glass indicates that it originated in refuse deposits prior to or after a known fire that impacted several historic structures in 1926. The road construction deposits were found in a steep 20 to 40 degree grade. It is unlikely that any historic structures existed in the area.

Pendery identifies the slag and coal ash found along the S05 transect as likely deriving from a furnace located in the Red Beach industrial complex imported for use as mitigation against icy roads. Cut nails found within the vicinity confirm the presence of a stave storage shed which is depicted in an 1880 lithograph and on the 1925 Sanborn Atlas map, however archeological integrity of the site is lacking (Pendery 2002: 14).

Recommendations: Pendery concludes that there is enough intact prehistoric and contact period stratigraphy within Red Beach Cove that the areas in which they were found should be maintained as an archeologically sensitive zone. The planned walkway should be constructed about present grade and stabilized using imported fill soils. These in turn should be stabilized with grass. Additional intensive survey of the bank to evaluate for erosion impacts is recommended (Pendery 2002: 13). The site of the stave shed should not be impacted by proposed construction. Though artifacts were located at the proposed location of the relocated comfort station and maintenance shed, further archeological mitigation is unnecessary. Locations of proposed utility corridors, waysides, and signs do need to be tested in advance of construction/installation (Pendery 2002: 14-15).

Evaluation: Though the narrative of Pendery's report is not exhaustive in its description of the excavation and archeological features and artifacts, the report does provide the essential information required to effectively complete Section 106 archeological compliance in advance of the SACR 001 line item construction project. The use of standardized transect spacing and excavation of test units as opposed to shovel test pits was appropriate for an area known to contain both prehistoric and historic period resources. Comparison of the archeological results with archived historical text and image resources was thorough. Artifacts and project documentation have been archived appropriately and are accessible for further study. Recommendations for future research were practical and consistent with the finds, interpretation, and NPS cultural resources management policy.

Archives Searched and Field Research

Archival research and a literature review for the project commenced in August 2010. Park visits and reconnaissance field operations for the project took place between 8/10/2010-8/14/2010. The work comprised research at the Acadia National Park Office and Archives, St. Croix National Historic Site, Calais Public Library, Calais Waterfront, St. Croix Historical Society, and University of Maine at Orono. URI researchers also met with Al Churchill (President of the St. Croix Historical Society), Fred Becker (Vice-President of the St. Croix Historical Society), Brand Livingston (past President of the St. Croix Historical Society and owner of property

adjacent to the “Ledges” on the St. Croix River), and members of the local scuba diving community.

Historic data gathered included almost a thousand historic photographs, as well as published and unpublished studies of the St. Croix River’s history, official records of the Saint Croix International Historic Site, historic newspaper accounts of maritime activities on the St. Croix, historic maps (including the full collection of Sanborn maps), historic diaries, historic business directories and historic census data. Archaeological data gathered included Archaeological Reports, Cultural Resource Assessments, Historic Landscape Assessments, Historic Structure Reports, and Cultural Resource Management Reports. Researchers also conducted reconnaissance pedestrian surveys of Red Beach Cove Industrial Complex, St. Croix Island, the Calais waterfront, and part of the St. Croix River known as “the Ledges.”

Acadia National Park Archives

Acadia National Park is the administrative center for both Acadia National Park and St. Croix International Historic Site. As such, the archives at the Headquarters of Acadia National Park have records for the administrative history of the park and previous research conducted. These include designation information, legal jurisdictions, copies of executive orders related to the park, maps and areal photographs, and documents relating to the public consultation associated with the park’s creation. The archives also hold copies of previous archaeological and cultural resource management reports (CRM), cultural landscape studies and inventories, historic structure reports (including the St. Croix Light Station) and other correspondence related to cultural sites and material at St. Croix. All these records were examined for this project with particular emphasis on Boxes 10, 28, 29, and 37.

Calais Free Library

The Calais Free Library is located on Union Street in downtown Calais. It has a small but important archival collection centered on local history and genealogy. For the purposes of this project files under the titles “Ships,” “St. Croix Lighthouse,” “ St. Croix,” and “Storms,” were examined. In addition, collections associated with Maine Laws and Salvage, Census, Commercial Directories, Historic Photographs and Maps were consulted.

St. Croix Historical Society

The St. Croix Historical Society is located at the Dr. Job Holmes Cottage and Museum on Main Street, St. Croix, where it has both an archival and digital archival collection. For the purposes of this study, researchers focused on the historical society’s collection of historic photographs, maps, postcards, and newspapers – including the *Calais Advertiser*, *Eastport Sentinel*, *Eastport Democrat*, and *Frontier Journal*.

Consultations and Interviews in Calais

Researchers were very fortunate to meet with members of the local community who had extensive knowledge of the region’s history and cultural resources. Chief among these were Al

Churchill (President of the St. Croix Historical Society), Fred Becker (Vice-President of the St. Croix Historical Society), and Brand Livingston (past President of the St. Croix Historical Society and current owner of property adjacent to the “Ledges” on the St. Croix River). In addition, researchers met with members of the local scuba diving community.

University of Maine, Orono

At the University of Maine, Orono, researchers obtained copies of all Sanborne Charts for Calais and the neighboring towns for the years 1884-1949. They also obtain or consulted key published secondary source material for the project.

Reconnaissance Pedestrians Surveys of Red Beach Cove, St. Croix Island, the Calais Waterfront and the Ledges

As part of the project, researches conducted pedestrian reconnaissance-level surveys of several key areas. The most important of these was St. Croix Island. With generous assistance from NPS staff, researchers travelled the circumference of the island by boat and foot noting extant historic structures, evidence of archaeological resources and erosion patterns. They also conducted a rudimentary pedestrian survey of the Red Beach Cove industrial complex at low water and observed archaeological and cultural material. At the Calais waterfront and at the Ledges, researchers used photography to document the historic waterfront and associated cultural material, including docks, cribbing and artifacts associated with the lumber and shipbuilding industries.

The Historic Use and the Maritime Cultural Landscape of the St. Croix River

Pre-contact Maritime Heritage

In the more than 3000 years before the French settlement at St. Croix, Indian people developed a complex systems of fresh and saltwater technologies, seasonal strategies, and trade routes. Archaeological evidence suggests the presence of maritime adapted people on the St. Croix River at least as early as 3700 BP. The early inhabitants were thought to be representative of the southern oriented Susquehanna tradition (Johnson 1996). Sanger, in a recent review of the region's archaeology, suggests that during peopling, the Terminal Archaic period was more associated with cultures living to the north along the St. Johns River. These connections, Sanger suggests, persisted to the time of European contact. He argues that "geographical circumscription, in the form of bold sea coasts that inhabited east-west coastal communication may be involved." Inhospitable rocky shoreline on the littoral edge combined with nearly impenetrable thick spruce forest severely constrained transportation options. Canoe routes provided excellent links into the St. John and Penobscot River areas that were in use when the French arrived at St. Croix Island (Sanger 2008).

While scholars may disagree over the specific people and times of settlement, there is no question the indigenous population actively pursued maritime adaptations for thousands of years. At the time of European contact, perhaps 50,000 Wabanaki people lived between Newfoundland and the Kennebec Valley. The migratory Eastern Wabanaki people depended on hunting and gathering whereas the Western Wabanaki lived a semi-sedentary life that included agriculture. Further subdivisions existed within these groups, among them the Etchemin, whom Champlain encountered when he came to the St. Croix in 1604. (Prins and McBride 2007) Recent scholarship suggests that the Etchemin people maintained their place in the wider Wabanaki cultural network through extensive long distance fresh and saltwater voyaging. They were skilled at hunting marine mammals and catching fresh and saltwater fish using weirs, nets, hook and line, and spears.

Skilled builders of complex technologies such as canoes and fish weirs, they depended both on hunted game on land, and living marine resources. Remains of these maritime cultures have been found on St. Croix Island as well as Devils Head, strategic points in the river for weir fishing, and places that were co-opted after the arrival of the English in the eighteenth century. The fresh and saltwater maritime networks established by the Wabanaki in the centuries before European contact likely persisted in some form into the nineteenth century and help retain cultural cohesion in the face of huge changes on land (Prins and McBride 2007). Understanding how these patterns related to post contact European maritime activities, including the decision of the French to settle on St. Croix Island, is an important area for further investigation.

The watercraft employed by the Wabanaki of the Passamaquoddy is well described by Adney et al. (2007). There were clear distinctions. Coastal and ocean canoes were adapted for the rougher sea conditions and specialized tasks such as hunting porpoise. Inland canoes would likely have been smaller and lighter to aid with portaging and to navigate shallow waters. Surviving hunting canoes studied by Adney were 18 to 20 feet long and up to 44 inches in beam. Based on the limited surviving examples and fragments and historic documentation, it is clear

that Wabanaki watercraft evolved, or continued to evolve after European contact with the occasional integration of thwarts for rowing and sails. Later craft differed from nineteenth century canoes in their “high peaked ends and marked overhang fore and aft (important canoes were adorned with a variety of designs on the hull). The Wabanaki also built short-term craft out of spruce bark, hide, and rarely dugout trees.” (Adney et. al 2007). The variation and evolution described by Adney suggest significant differences in design based on external factors such as economic opportunities (19th commercial porpoise hunting) and availability of new technologies.

Early European Settlement and Exploration

The early history of St. Croix Island is quite well known, initially through the work of the Issac Knowlton’s who published in the late 19th century and then through the work of St. Croix’s most prolific historian, William Francis Ganong (Knowlton 1875; Ganong 1902). More recently, Harold Davis’ work on the international community at St. Croix advanced our understanding of one of Maine’s most interesting river valleys (Davis 1950). While all of these authors include the early French colonial settlement, their studies also extend beyond the 17th century. Our understanding of French colonization efforts at St. Croix are further enhanced by works such as David Hackett Fisher’s book on Champlain (Fisher 2008) and of course by the writings of Samuel de Champlain himself as well as his contemporaries including Marc Lescarbot and the Jesuit priest Father Pierre Biard (Champlain 1878 ; Lescarbot 1928; Levermore 1912).

The history of St. Croix Island is also documented in numerous National Park Service documents and reports from Johnson’s Overview and Assessment, to the SACR General Management Plan, the SACR Cultural Landscape Inventory and Pendery’s work at Red Beach (Johnson 1996; NPS 1998; NPS 2004; Pendery 2002). However, in most cases the narrative of French settlement at St. Croix misses an essential element of its history, namely that the de Monts/Champlain expedition was a maritime enterprise, governed in large measure by the requirements of maritime trade, defense and logistics. For this particular study, therefore, the narrative of French attempts to establish a colony on St. Croix should be retold with an emphasis on its maritime components and its broader place in the history of the Atlantic world. Through this, it is possible to see St. Croix’s place in imperial expansion, trans-Atlantic trade, and New World diplomatic negotiations – both inter-Euroean and Euro-Native American.

Sixteenth and early-seventeenth-century French colonial endeavors in the New World can be divided spatially into six areas: the St. Lawrence and Cape Breton; Acadia/Nova Scotia; South America; Newfoundland; and the Gulf of Mexico, Caribbean and Florida.

The earliest of these efforts centered on the St. Lawrence River. France and Spain spent much of the 16th century, and particularly the first half, in a state of semi-perpetual war. Initially the conflict was over power and influence in Italy, but it also intersected with competition for resources and territory in the Atlantic world. The Spanish king (Charles V, 1516-1556) had amassed a powerful empire, built in large measure upon the gold and silver reserves in Central and South America. The French king, Francis I (1515-1547) saw an opportunity to compete with Spain through the successful exploitation of New World resources and the discovery of an alternate maritime route to the Far East via a Northwest Passage.

In 1524, Francis I dispatched Giovanni Verrazano on a voyage of exploration that took the navigator all the way from the Carolinas to the Hudson Strait. A decade later (1534 and 1535), he commissioned Jacques Cartier to undertake a series of voyages to the Bay of St. Lawrence and the St. Lawrence River. In 1541-1542, an expedition under Jean Francois de la Rocque de Roberval, Francis I's appointed governor of Canada, established a trading post and colony on the St. Lawrence River at Charlesbourg Royale. Cartier provided the maritime and exploration expertise for these efforts. Upon hearing of French colonizing efforts in the St. Lawrence, Charles V is reported to have commented that there was "nothing to envy in this; for it is of no value, and if the French take it, necessity will compel them to abandon it." The last part of Charles' prediction proved to be true, but fishing, fur trading and the quest for the Northwest Passage would maintain French interest in the St. Lawrence for many years to come. In 1599, Pierre Chauvin de Tonnetuit attempted to establish a trading post at Tadoussac on the River, but it was not until Samuel de Champlain established a post at Quebec in 1608 that any permanent French settlement on the St. Lawrence was realized, although it remained tenuous for many years.

We tend to underestimate the extent of the French, Northwest Atlantic, 16th-century fishery. As early as the 1540s, at least two fishing boats a day left St. Malo headed for Cape Breton during the fishing season, and by 1578, there were at least 150 French fishing boats regularly working the Grand Banks of Newfoundland. In 1607, there were French fishermen working off Canso that had been working there each year for many decades. One such fisherman, claimed to have worked the same fishing grounds, 2800 miles from home, each year for 42 successive years. But it was not just in fish, particularly codfish and train oil, that the fisherman saw profit. The French fishery was no small time operation. The fisherman also started a lucrative trade in bear and beaver skins. Other extractable resources included walrus tusks, whale oil, and timber products. On the eve of de Monts voyage, French fishermen understood the waters off Canso and Cape Breton very well (Parkman 1867:209).

The coast of South America, particularly Brazil, also saw French colonial enterprises in the 16th century. The driving force behind these was Gaspard de Coligny, a Huguenot minister to French King Henry II. Religious divisions, between Huguenot Protestants and Catholics grew increasingly hostile during the 16th century, finally erupting in the French Wars of Religion, which lasted from 1559-1598. Coligny saw a base in Brazil as a way to weaken Spain and Portugal's overseas empires, while at the same time enhancing the prospects of French New World colonial expansion. In addition, Coligny viewed colonial expansion as offering potential sanctuary to French Huguenots, should shifts in power in France make an exodus necessary. In 1555, Coligny dispatched an expedition under Nicolas de Villegaignon to establish a settlement at Rio de Janeiro, Brazil. Villegaignon's ruthless leadership and religious intolerance, however, alienated virtually all his expedition leaders and settlers. When reports of serious discontent reached France, an expedition containing a further 700-800 settlers was abandoned.

In the aftermath of the failed French settlement in Brazil, Coligny turned his attention to Florida. On 1 May 1562, a group of French Protestants under Jean Ribault established a fort (Fort Caroline) on the banks of what today is the St. John's River, Florida. Although, French reinforcements arrived in 1564, they were insufficient in number to prevent a Spanish force under Pedro Menendez de Aviles from capturing the Fort on 8 September 1565 and executing all

132 of the French defenders. Menendez then established the town of St. Augustine in place of Fort Caroline. For France, successful colonization in the Caribbean would have to wait until the second quarter of the seventeenth century, when Louis XIII's chief minister, Cardinal Richelieu promoted the colonization of St. Christopher (1625), and Guadeloupe and Martinique (1635). Later in the century (1682), Rene-Robert Cavelier, Sieur de la Salle, sailing under the auspices of Louis XIV, claimed the entire Mississippi basin for France and named it Louisiana after his king.

With the exception of Placentia (Newfoundland) founded in 1662, the only other focus for French colonization in the 16th and 17th centuries was Acadia. In 1578, King Henry III of France decided that French incursions, attempted colonies, fishing bases and fur trading interests in modern day Canada were sufficient in scale and scope to appoint a governor for French North America. His designee was Troilus de Mesgouez, Marguis de la Roche. In 1598, King Henry IV came to the throne and renewed La Roche governor's commission over Canada, Newfoundland and Acadia. In the same year, La Roche organized a bizarre colonizing expedition. He took 250 men and women from French jails and established a colony on Sable Island about 90 miles off Nova Scotia. For five years the colonists struggled to survive. In 1603, the colony was abandoned and only 11 of the original 250 settlers made it back to France. French colonization of New World north of Florida was reinitiated in 1603 (at St. Croix) and would eventually lead to colonies at Port Royal/Annapolis (1604) and Saint Saviour (1613) Nova Scotia. The same efforts also lead to renewed colonization efforts on the St. Lawrence River which resulted in the founding of Quebec by Samuel de la Champlain in 1608. All these enterprises, then, originated in the attempted settlement of St. Croix Island by Sieur de Monts in 1603. At the time, not a single European colony existed in the Americas north of Florida.

The Charter issued by Henry IV of France to Pierre du Gast, Sieur de Monts on December 18, 1603, granted 10-year, monopolistic trading rights in Acadia, from the 40th to the 46th parallels (lines of latitude). The charter made it clear that settlement was tied to maritime trade and the extraction of valuable furs. The document anticipates trade with the "inhabitants," in "pelts and other merchandises" and also "trade and barter in skins." (Charter to De Monts 1603)

The monopoly on the fur trade was supposed to offset the costs of colonizing efforts and relieve the king of substantial financial burden. On April 7, 1704, two vessels departed Havre-de-Grace, France. One, *La Bonne-Ronmee* (120 tons), was under captain Sieur de Pont Grave; and the other, *Don de Dieu*, 150 tons and 100 feet long, was under De Monts himself. Samuel de Champlain joined De Monts on the expedition, but he was not the only high-ranking participant. Nine other gentlemen-adventurers, one of the most important of which was Jean de Biencourt, Sieur de Poutrincourt, accompanied De Monts. Lower down the ranks were shipwrights, surgeons, apothecaries, physicans, housewrights, carpenters, masons, blacksmiths, gunners, and locksmiths (who worked on gunlocks) along with a larger number of semi-skilled and unskilled laborers (Fisher 2008:156; Lescarbot 1928:7-11). The ships were well supplied and carried prefabricated parts for houses and boats. While trade in furs was to make the enterprise financially viable, Champlain makes it clear that a search for the Northwest Passage (in other words a maritime route to the Indies) was also one of the France's national objectives (Champlain 1878). In addition, French adventurers would search for minerals, particularly copper (Fisher 156). With no women on board, the enterprise was clearly focused on the establishment of a trading post settlement rather than a self-populating colony

On May 1, the expedition sighted Sable Island and from there it sailed on toward the coast of present day Nova Scotia. As Champlain approached what he refers to as Cap de la Heve (modern day Green Bay, NS) the expedition captured and then requisitioned a French vessel, *La Levrette*, that had been engaged in fur trading. Such activity was in violation of de Monts monopoly. De Monts went ashore, stayed for a few days and then sailed southwest along the coast to Port Mouton. He considered this part of the Nova Scotia coast too vulnerable to attack from other European nations to be considered a site for colonial settlement. While De Monts waited at anchor at Port Mouton, Champlain took a small 8-ton barque and explored and mapped the coast from Port Mouton down to Cape Sable, looking for safe anchorages and potential sites for colonial settlement. He then rounded Cape Sable and explored Cormorant Island, so named for the large number of seabirds encountered, and sailed on to Tusket Island (just south of present day Yarmouth, NS). His men gathered sea bird eggs, killed awks and seals, and caught cod. There is little doubt that the new world's marine resources sustained the expedition. Champlain then sailed on to Long Island (NS) and then to the head of St. Mary's Bay. Along the way he commented on harbors, iron deposits, navigation and fertile land. Unable to go no further, Champlain "came about" and headed back to De Monts (Champlain 1878: 31; Fisher 2008: 165). It was only then that, De Monts moved his expedition further down the coast. Of particular interest was a sheltered bay (modern day Annapolis Basin) which Champlain called Port Royal. Later in the year, Port Royal would take centre stage in France's colonizing efforts in Acadia. At Port Royal, Champlain commented on the harbor, rivers, forests and sea life and concluded that it would be a good site for settlement. As De Monts and Champlain headed northeast along the coast of Baye Francoise (the Bay of Fundy), they found no locations that could match Port Royal as a site for colonial settlement. At Haute Island and Advocate Harbour, near Cape Chignecto at head of the Bay of Fundy, the expedition leaders search for copper mines which had been reported from earlier voyages. Since copper deposits were scarcer than anticipated, De Monts and Champlain crossed the head of the Bay of Fundy by sailing west from Cape Chignecto making landfall in New Brunswick near West Quaco. From there they sailed southwest looking for a place to establish a colony (Champlain 1878:34-37; Lescarbot 1928). Champlain notes iron deposits at two places along the coast, and charts a bay and deep river, which he calls the St. John. The St. John River was navigable a good way upstream, and it was possible to access the St. Lawrence with only a short portage. Champlain and De Monts consulted and negotiated with the Etchemin people and explored the islands of Passamaquoddy Bay eventually entering the River of the Etchemins (St Croix River).

The French expedition leaders were pleased to see the "abounding of fish" which included "codfish, salmon, bass, herring, halibut and other kinds in great numbers." Part way up the river, Champlain and De Monts found an island, which they would later name St. Croix:

Having a circumference of perhaps eight or nine hundred paces, with rocky sides three or four fathoms high all round, except in one small place, where there is a sandy point and clayey earth adapted for making brick and other useful articles. There is another place affording a shelter for vessels from eighty to a hundred tons, but it is dry at low tied. (Champlain 1878:40)

The high bluffs and location away from the riverbanks made the island easily defensible. In addition, it could control navigation since “vessels could pass up the river only at mercy of the cannon on [the] island” (Champlain 1878:40). Upstream Champlain noted two bays, three rivers and waterfalls around which “in May or June, so great a number of herring and bass are caught there that vessels could be loaded with them” (Champlain 1878:41). From the French leaders’ perspective these factors, most of which were maritime in nature, combined with what they perceived to be relatively good soil and access to Etchemin inland trading networks, made St. Croix the best location for a trading post and colony.

De Monts and Champlain built defenses, which they call a barricade, and installed cannon on an island to the south of St. Croix and sent word to the rest of the expedition which was still on the south side of the Bay of Fundy to join them. With the exception of the mosquitoes which attacked their faces mercilessly, they spent their “time very pleasantly” (Champlain 1878:42; Lescarbot 1928).

After the remainder of the expedition arrived the French leaders set about planning and building houses and other structures. The island’s soil was not as good as they had expected so crops were planted both on the island and on the mainland.

De Mont dispatched Champlain with an Etchemin guide named Messamouet to find copper mine near St. John and shortly thereafter (at the beginning of September) sent his trans-oceanic vessels back to France under the command of Sieur de Poutrincourt (granting the latter permission to establish his own colony at Port Royal).

At about the same time, De Monts dispatched Chaplain, 12 sailors and two Etchemin guides, in a patache (a small coastal vessel or tender) of 17-18 tons to explore Norumbegue or modern day Penobscot Bay and the Penobscot River. When they returned to St. Croix, winter had already started to set in. The first snow fell on October 6, but the long harsh winter was not the only hardship endured by the French settlers. The soil on St. Croix was less fertile and more sandy than anticipated, and the island lacked water for irrigation. As the months wore on, settlers suffered from scurvy and by spring time 35 of the 79 men that had wintered on St. Croix were dead, while another 20 were almost so.

De Mont had a contingency plan, which he would put into effect at the end June if the supply ships did not return from France. It comprised sailing in their small boats (barques and shallops) from St Croix to modern day Nova Scotia and from there along the southeast coast to Cape Breton and/or the Gaspee Peninsular where there were a sufficient number of French fishing vessels each year that passage back to France was possible.

Fortunately, the first ship from France arrived back at St. Croix on 15 June, and another, the *St. Estienne*, followed shortly thereafter. With re-supplies secure, De Monts decided to search for a more suitable site for settlement. Accompanied by Champlain, he sailed southwest toward modern day Bar Harbor, Maine, and then on to Penobscot Bay, Casco Bay and south of Portland to Richmond Island. Once as far south as Saco Bay, de Monts and Champlain encountered Native Americans that practiced agriculture and lived in more permanent settlements. The French expedition then sailed even further south to Cape Ann at the northern end of

Massachusetts Bay. Champlain noted that Indians in modern day Maine built primarily birch bark canoes, while those around what would later be called Massachusetts Bay built log canoes.

Champlain and De Monts explored Massachusetts Bay and Cape Cod, but by late July 1605, they were running short of provisions and headed back toward St. Croix. In the French leaders' minds, maritime exploration to the south had failed to provide more suitable location for settlement. St Croix was still the base for operations. Champlain explains it thus:

Finding ourselves accordingly pressed by the scantiness of provisions, Sieur de Monts determined to return to the Island of St. Croix, in order to find another place more favorable for our settlement, as we had not been able to do on any of the coasts which we had explored on this voyage (Champlain 1878:76).

Although land, access to Native American agricultural products, and climate were better to the south, de Monts believed that fur trading and mining were the ways to ensure the financial viability of his colony. In this model of overseas expansion, a colony to the south would be unsuitable. Setting sail on July 25th, De Monts and Champlain reached Penobscot Bay on the 29th, where they received reports of an English ship off Monhegan Island. It was probably the *Archangel* under the command of George Weymouth who was exploring the coast of Maine in anticipation of a English colonizing effort on the west bank of the Kennebec River the following year. Unperturbed, de Monts and Champlain sailed on to St. Croix, arriving back on 2nd August (Champlain 1878: 77).

De Monts now decided, "in order to avoid the severe cold and bad winter," to abandon St. Croix and re-plant the colony at Port Royal. Since they had found nowhere more suitable, de Monts dispatched Champlain to Port Royal as head of an advanced party, while the remainder of his expedition set about dismantling the buildings at St. Croix, with a view to rebuilding them on the other side of the Bay of Fundy. Once in Annapolis Basin, Champlain found a site near fresh water, slightly elevated and with some protection from the dreaded northwest wind. With the site selected and the rest of the expedition arrived, de Monts decided to return to France. Pont Grave was put in charge of settlement at Port Royal and Champlain stayed behind hoping to make "some new explorations towards Florida." In the meantime, Champlain briefly sailed back across the Bay of Fundy to St. John in search of a copper mine and then built himself a "summer-house" at Port Royal, as he said, "for the sake of occupying [his] time" (Champlain 1878:79).

The second winter in Acadia was not as harsh as the first, and the settlers at Port Royal did not suffer the same mortality rates as they had on St. Croix. In March, Champlain and Pont Grave set sail on an anticipated voyage to Florida. Their voyage was to prove short lived. No sooner had Champlain departed Port Royal, than a storm started to build to the northeast and the French leaders were forced to put in behind Manan Island (probably near modern day Wood Island and Seal Cove on southern shore of Grand Manan). Conditions deteriorated rapidly and when the barque's anchor cable separated Champlain and his vessel were driven ashore (Champlain 1878: 82; Lescarbot 1928). But Champlain was as lucky at sea as he was skillful.

The wind and the sea cast us as the wave receded upon a little rock, and we awaited only the moment to see our barque break up, and to save ourselves if possible, upon its

fragments. In these desperate straits, after we had received several waves, there came one so large and fortunate for us that it carried us over the rock, and threw us on to a little sandy beach, which insured us for this time from shipwreck (Champlain 1878).

The French expeditionary force unloaded the barque, patched it up as best they could and then reloaded it again. Four days later, they set sail, first to the mouth of the St. Croix River (a known and safe anchorage) where they stayed until March 29, and then back to Port Royal. They set sail again on April 9, 1606, but this time Pont Grave was ill. Favorable winds arrived while Champlain was asleep and the master, Champdore, took the barque out. Unfortunately, as he exited Annapolis Basin via the Digby Strait, the tide caught the barque and put it ashore on the east-northeast coast. This time, the small vessel was lost. Pont Grave, held Champdore culpable and put the master in chains. While Champdore's seamanship had been called into question, his ability as a shipwright was unrivaled. Pont Grave, therefore released him so that he could complete another barque that was already on the stocks. Once complete, Champdore was back in chains. (Champlain 1878:83; Lescarbot 1928).

On July 16th with no sign of de Monts' return, Pont Grave and Champlain put the evacuation plan into effect. The French settlers boarded one of two barques (one 18 tons and the other 7-8 tons) and sailed for Cape Breton. The two men were left behind to take care of the settlement and the remainder of the provisions, under the protection of the local Indians.

Once again, however, the weather turned against Champlain and Pont Grave. On July 21st, off the southwestern part of Nova Scotia, they hit storms with seas rough enough to shatter the pintles of their barque's rudder. With no capacity to steer they were at the mercy of the sea. It was at this point that Champdore offered to fix the steering. He was again unchained and "taking a rope, he cut it and fastened the rudder with it in such a skillful manner that it would steer the ship as well as ever." (Champlain 1878:86). At this point Champdore had sufficiently redeemed himself that Pont Grave reluctantly acquitted the former master. Shortly thereafter, the expedition encountered a barque, which was part of a relief expedition sent by de Monts, and thereby received news that a larger vessel, the *Jonas*, had been dispatched to Port Royal with supplies. Pont Grave and Champlain headed back to Port Royal where they met the *Jonas* under the command of Sieur de Poutrincourt. Poutrincourt decided that there was insufficient time before cold weather set in to search for a different settlement location so for the rest of the summer and fall the French planted more crops, worked on settlement infrastructure, investigated reports of illegal French fur traders off Cape Breton, and prepared for their third winter in Acadia. On 5 September, Champlain and Poutrincourt set sail in an 18-ton barque on another voyage of reconnaissance. First, they headed back to St. Croix to check on their former colony. To their satisfaction, they found that some wheat had "come up as finely as one could wish; also a large number of garden vegetables, which also had come up fair and large." In the river, they "caught a large number of mackerel, which are abundant there at this season." The Island was still serving as an outpost. From St. Croix they sailed southwest to Chouacoet and Island of Bacchus (Richmond Island) and then onto to Cape Ann, Gloucester Harbor and across Massachusetts Bay to Cape Cod. At Port aux Huîtres (Oyster Harbor or modern day Barnstable Harbor) Champlain commented on the plentiful supply of oysters. Champlain and Poutrincourt also explored the Atlantic coast of Cape Cod, sailing as far as Chatham, Monomoy and

eventually Woods Hole, Massachusetts. This marked the southern extent of Champlain's coasting operations. (Champlain 1878: 88-100)

With supplies running low, the French leaders to return north. Some men had been wounded by both accident and encounters with Indians. Champlain gives us some indication as to the hardship suffered by those who became sick or wounded on board an early 17th century sailing ship for apparently "the stench from their wounds was so great, in a little vessel like our own, that one could scarcely endure it." (Champlain 1878)

On the return journey, they once again had trouble with their rudder, but with the use of a steering oar they made it back to the St. Croix River near Eastport, and then to Island of Manan. Clearly, St. Croix still occupied a central part in French operations in Acadia. On 12 November 1606, Champlain and Poutrincourt crossed the Bay of Fundy two days later arrived back at Port Royal.

The French settlers survived the Acadian winter of 1606 as well as any they had been through. Snow fell in December, some men contracted scurvy but not as badly as previous winters and leaves on the trees were green again in May (Champlain 1878:107). Crops sown in May started to grow well. On 24 May 1607, a small barque, under the command of a master named Chevalier, arrived at Port Royal with alarming news from de Monts. The "Dutch had looted fur trading stations on the St. Lawrence and de Mont's monopoly had been rescinded by the king's council." Poutrincourt moved quickly to bolster the expedition's profitability while at the same time preparing to evacuate. He sent the newly arrived barque under Chevalier to the St. Croix and St. John Rivers to trade for furs, while he set sail with Champlain toward the head of the Bay of Fundy to look for mineral deposits. At modern day Cap Split, Poutrincourt almost killed himself by climbing a cliff, 30 fathoms high. They then sailed around the Minas Basin to Hansport, which Champlain calls the Port aux Mines. Although Poutrincourt was only able to gather a few small pieces of copper, the French had clearly identified the Minas Basin or the Bassin des Mines (Basin of Mines) as an area for the extraction of mineral resources. Europeans, possibly French, had targeted the area for some time for as Champlain tells us "In one of these harbors three or four leagues north of Cap de Poutrincourt, we found a very old cross all covered with moss and almost rotten, a plain indication that before this there had been Christians there." Poutrincourt and Champlain then returned to Port Royal (Champlain 1878:110-113).

On 12 July 1607, de Monts' secretary Jean Ralleau arrived from Cape Breton in a shallop and confirmed de Monts' order to return to France. Three barques were prepared to take settlers back to Canseau (Canso), where the *Jonas*, which was fishing, would then take them back to France. They sailed on August 10, passed some Basque fishermen at Whitehaven Harbour, Nova Scotia (Port de Savalette), and seventeen days later arrived at Canso. Throughout this passage, Champlain continued his mapping. The expedition departed Canso on September 3, was off Sable Island on the 4th, the Grand Banks on the 6th and put into the port of St. Malo, France on 30th September 1607. (Champlain 1878: 113-118; Lescarbot 1928)



Figure 3.01. Samuel de Champlain, *Description des costes*, 1607. Note the centrality of the St. Croix River and the high level of detail for a map generated so early in the history of the Gulf of Maine.

In the early 17th century, French knowledge of modern day Nova Scotia, the Bay of Fundy, New Brunswick and Northern Maine was extensive. The center of their new world influence was still

Cape Breton, the Gaspee Peninsula and the St. Lawrence River, but Acadia was certainly growing in influence. Port Royal, later Annapolis, would continue to occupy French colonization efforts and was never completely abandoned, even after being sacked by the English colonists under Samuel Argall in 1613. Poutrincourt and his son Sieur de Biencourt maintained a presence and a claim. The French saw fishing, fur trading and mining as the principle opportunities in this part of the New World. They continued to fish the banks off Newfoundland, Nova Scotia and Cape Breton, and continued to see the head of the Bay of Fundy as an area of possible mineral extraction. The St. Lawrence provided access to the interior parts of Canada and a lucrative fur trade. But, St. Croix remained important also; to the fur trade, as a possible trading station, and as a geographic marker. Even after the winter of 1604-1605, the French returned to St. Croix at least five times, using it as a base for fur trading, diplomatic relations with the Etchemin, possible fishing enterprises, and launching reconnaissance and mapping missions to the south. We know that Captain Platrier, a fur trader and fisherman spent the winter of 1611 at St. Croix with four other men, and that Samuel Argall thought the place significant enough to ransacked what remained of it in 1613. Argall carried away a quantity of salt that was still being stored on the island. (Ganong 1902:194-196; Levermore 1912: 460-461) For France, St Croix marked one of the centers of commercial and colonial interests in North America. From a maritime and imperial perspective, then, its importance extends beyond the settlement built by de Monts in 1604.

The Barque – Vessel for Coastal Exploration in the 17th Century

Champlain's coastal voyages made use of a vessel type that he refers to as a "barque." These were small, coastal sailing vessels, good for inshore navigation and sailing into the wind. They were normally around 18 tons, but some were as small as 7-8 tons. The French were able to construct them in the new world, since Champlain refers to them as "on the stocks" but they were more commonly towed to the new world behind the slightly larger trans-oceanic ships. As Champlain himself explains "a barque ... draws little water, searches everywhere and finds places to one's mind for effecting settlements." (Champlain 1878: 87)

St. Croix: Settlement, Township and International Boundary from the 17th to 19th Centuries.

The 1621, James I of England and Scotland issued a charter to Sir William Alexander, for the creation of a colony in America called New Scotland that was roughly equivalent to French Acadia. French knowledge of this part of the western Atlantic was far superior to that of the English and Scottish at the time. The charter identified the St. Croix River as part of the boundary and the *de facto* separation between New England to the southwest and New Scotland. The charter defined the boundary of New Scotland thus:

The lands and islands within the promontory of Cape Sable, westward to the roadstead of St. Mary, crossing its entrance or mouth of that roadstead to the St. Croix River, following to its remotest source, from that indefinite place, direct north to the St. Lawrence; eastward along the south shore of that river to Cape Gaspé, then south-southeast to the right of the Bacalaos Isles, onward to the mouth of the Gulf at the northernmost point of Cape Breton and from there southward to and including Sable Island, and to the starting point of that Cape. (Fraser 1922:25)

Alexander understood the significance of the St. Croix River, which he renamed the “Tweed, because it doth divide New England and New Scotland, bounding one of them upon the East, and the other upon the west side thereof” (Slafter 1873). The parallel of course, is that in Britain, the River Tweed helps divide between England and Scotland. Furthermore, Alexander renamed the St. John River, the Clyde (another Scottish River) and the Northumberland Strait, the Forth.



Figure 3.02. Map of New Scotland from Sir William Alexander, *An Encouragement to Colonies*, 1624. Courtesy of the Norman B. Leventhal Map Center at the Boston Public Library. Note the Tweed, Clyde and Forth Rivers. Note also the lack of detail compared with Champlain’s charts of 20 years earlier.

England and France went to war in 1627. The conflict lasted two years, and was part of the larger European conflict referred to as the Thirty Years War (1618-1648). In 1628, an English expedition under David Kirk took the French outpost of Tadoussac on the St. Lawrence River. Kirk subsequently captured a French supply fleet destined for Quebec. The following year, he accepted Champlain’s surrender of Quebec. Kirk then sailed and took possession of Port Royal and prepared the territory for the arrival of Scottish settlers under Sir William Alexander’s son. But Scottish occupation of Port Royal was short lived. The Anglo-French War went poorly for England in home waters, and at the armistice in 1629, and the full Treaty of St. Germain-en-Laye in 1632, New France was returned to France.

In terms of European settlement, the St. Croix River Valley was sparsely populated in the 17th and 18th centuries. The territory was claimed by both France and Britain during the period, and

was eventually ceded to Britain at the Treaty of Paris in 1763, which ended the Seven Years War, 1757-1763 (French and Indian War). Anglo-American settlement at St. Croix started in the 1760s, grew during the Revolutionary War. In the conflict's aftermath a substantial group of loyalists set down roots along the river valley, particularly in what would become known as St. Stephen. The forced exodus of Acadians by the British authorities, which had accelerated after 1755, further increased during this influx. (Wright 1955:202; Griffiths 1992:95-127) Calais was settled by Euro-Americans in 1779, was designated a township in 1789, and named Calais in 1806.



Figure 3.03. Nicholas Visscher, *Carte nouvelle contenant la partie d'Amérique la plus septentrionale, ou sont exactement décrites les provinces suivantes comme le Canada ou Nouvelle France, la Nouvelle Ecosse, la Nouvelle Angleterre, les Nouveaux Païs Bas, la Pensylvanie...* 1689 and repr. 1718. Courtesy of the Norman B. Leventhal Map Center at the Boston Public Library.

While settlement of the St. Croix River was slow during the 17th and early 18th centuries, the geographic boundary established by the French in 1604, and Sir William Alexander's patent in 1621, remained highly influential. By way of example, Dutch maps produced by Nicholas Visscher in 1689 and 1718 clearly identify the St. Croix River as separating New Scotland from New England. (Figure xx) The same could be said of the Thomas Kitchen's map of 1758 (Figure xx). At the Treaty of Paris (1783), which ended the Revolutionary War, the boundary between the United States and Canada in the Northeast was in part established "by a line to be drawn along the middle of the river Saint Croix, from its mouth in the Bay of Fundy to its source, and from its source directly north to the Highlands." (Treaty of Paris) In other words, virtually the same boundary as that established by William Alexander's patent of 1621.



Figure 3.04. Thomas Kitchin, *A map of New England, and Nova Scotia, with part of New York, Canada, and New Britain & the adjacent islands of New Found Land, Cape Breton &c.*, 1758. Courtesy of the Norman B. Leventhal Map Center at the Boston Public Library. Note the dashed line along the St. Croix River and then due north marking the boundary.

While the St. Croix River was central marking the border between the United States and Canada, during the early years of the Republic there was considerable disagreement as to which river was the St. Croix. In 1794, Britain and the United States established a boundary commission to solve the issue. For the commission, the only certain way of marking the boundary was to find the river identified by de Monts and Champlain as the St. Croix. In 1797, Robert Pagen, accomplished this to both side's satisfaction. The evidence included the remains and ruins of the 1604 settlement (see section on Previous Archaeological Research).



Figure 3.05: Robert Sayer and John Bennett. *The United States of America with the British possessions of Canada, Nova Scotia, & of Newfoundland, divided with the French ...* 1783. Courtesy of the Norman B. Leventhal Map Center at the Boston Public Library. Note the boundary established by the St. Croix River.

Fish and Fisheries

The St. Croix River abundant fish and shellfish have influenced settlement patterns, household and market economies, and management of natural resources in the region for centuries. Long before Champlain and Du Mont arrived in 1604, Western Etchemin, a roving hunting and

gathering band of the Wabanaki or Passamaquoddy, peopled the area. The Etchemin had a strong maritime culture. Skilled at building lightweight canoes out of bark or sometimes moose hide, they hunted and fished in both salt and fresh water. Using small harpoons they took small whales, porpoises, seals, and sturgeon. With flaming torches to attract fish at night, they speared salmon, bass, and trout (Prins and McBride 2007).

The river's natural fecundity contributed to the French decision to settle St. Croix Island. The intertidal areas of the St. Croix Island harbored large numbers of clams and "great beds of mussels" and many other edible creatures (Ganong 1902). The Island and neighboring Red Beach contained excellent places to capture a large variety of anadromous fish including salmon, striped bass, shad, and alewives (also known as river herring). A predictable annual cycle from salt to fresh water made these fish relatively easy to catch, often in large volumes. Anadromous fish require navigational access to freshwater spawning habitats. Passamaquoddy Bay also produced large quantities of deepwater fish among them cod, haddock, pollock, mackerel, and halibut, and flounder. Passamaquoddy Bay's nutrient rich waters combined with the Saint Croix River system's extensive drainage area and many lakes supported a resource described in 1851 by Ninian Lyndsay Overseer of Fisheries for Saint Stephen and a member of one of the oldest families in the valley, as "a thing almost miraculous" (Perley 1851b: 45).

Early Commercial Fisheries

Commercial fishermen pioneered exploration of the Western North Atlantic for France and England. Early navigators, including John Cabot in 1497, recognized the potential economic value of the fisheries. During the 16th century, the fishing industry sent thousands of men and hundreds of vessels across the Atlantic to Newfoundland and further west and south to what is now Atlantic Canada and New England (Jensen and Mather 2010: 3-5). Champlain was fully aware of the commercial potential of cod. He also made close observations for Indian uses of the marine environment. When the native inhabitants did not hunt, Champlain observed, they substituted shellfish for game (Champlain 1872:53). The French dominated the early deepwater fisheries in the northwest Atlantic and fish was a significant ingredient in the French plans to colonize (Davis 1950:26-27).

William Hutchinson Rowe echoes the historic role of fishermen in his classic *The Maritime History of Maine* stating, "the first pioneers of Maine were fisherman" (Rowe 1948:10). With the collapse of French power after 1760, English fishermen began moving into the St. Croix River region. Between 1760 and 1764 or 1765, Alexander Nichols fished Passamaquoddy Bay and concluded each season at the head of navigation harvesting the abundant alewives and trading with local Indians. He was far from alone. In addition to the longtime indigenous residents, Nichols' son reported that between 30 and 40 people engaged in fishing and processing cod in 1764. Shore stations, small trading posts that engaged in the fur trade as well as fishing, sprang up around the bay. Nearer to St. Croix Island, Alexander Hodges and James Parsons established a primitive encampment at Pleasant Point and harvested large numbers of shad, herring, and salmon—the latter at the Salmon Falls at the head of the tide in the Saint Croix. The early fishing encampments and shore fishing grounds trespassed on traditional harvesting places leading a group of Passamaquoddy to complain to the governor of Massachusetts in 1763 (Davis 1950:32).

Fishing near Saint Croix Island 1800–1900

From the earliest records we know that the St. Croix River produced apparently inexhaustible quantities of gaspereau (alewives), shad, and terrific runs of Atlantic salmon. In the early 1820s, the growing activities in lumbering and fishing began to spark local concerns. In 1821, 1822, and 1823, St. Croix area residents submitted petitions asking the Maine Legislature to address the problem of river obstructions and fish. River obstructions included the increasing numbers of seines and trap weirs and, more significantly, the construction of mills and dams. In 1823, the Maine Legislature passed the first of many laws addressing St. Croix fish management. The law imposed restrictions on fishing that closed the river for specific periods and that placed restrictions on the size of weirs. The law charged local communities with empowering a fish committee to oversee that “a good and sufficient fishway [be] made and kept open, round, through or over, every mill dam on said river, and all its branches, where said fish were ever known to pass.” The law specified the opening of the fishways during a specified spring and summer spawning seasons and carried a hefty \$200 penalty for non-compliant mill owners. (Watts 2005:4)

Evidence that the law failed came with the construction of the Union Mills Dam in 1825 and the rapid collapse of historic anadromous fisheries. One of the first victims appears to have been the St. Croix alewife stock. Alewife, also known as gaspereaux or freshwater herring, are a hardy fish that hatch in freshwater, migrate to the ocean for a three to five year cycle, and return to the river in high volume runs during May and June. Before the Union Mills construction, the fishery attracted large fishing vessels from as far away as Rhode Island and, who “were never known to leave without full cargoes” (Perley 1851).

The alewife is a source of continuing controversy on the St. Croix. The recovery of the stocks after the early 1980s was associated with subsequent declines in freshwater small mouth bass, a non-native species highly prized by sports fishermen. A 1995 Maine law stopped alewife restoration efforts; part of a larger effort to exclude the fish from the river system. Anti-alewife proponents have argued that historically the fish never had access to the upper river, stating that Salmon Falls at the head of the tide at Calais naturally prevented alewife access. The controversy has resulted in significant historical and archaeological research that demonstrates quite conclusively that alewife predate the damming of the river and the establishment of fishways by thousands of years (Flagg 2007)

One of the critical documents in the history of St. Croix fisheries is Moses Perley’s (1851b) *Reports on the River and Sea Fisheries of New Brunswick*. For his report, Perley solicited written testimony and conducted personal interviews with knowledgeable long-time residents of the St. Croix. By 1851, the river’s use as industrial and commercial waterway was reaching an unprecedented threshold (See “The Lumber Era: Milling, Transportation Navigation, Shipping, and Transportation” below). Memories of the fisheries, however, remain clear, especially as it related to the Atlantic salmon.

Ninian Lyndsay, the St. Stephen Overseer of the Fishery who described the former condition of the river’s fish resources as “something almost miraculous” recalled a time when he had observed a single man dip-net 118 salmon on a tide. Edward Dyer, a Calais resident who grew

up near Salmon Falls and the site of the dam reported that thirty years previously fishermen took an average of 200 salmon per day at the Falls (Perley 1851b: 44-45).

Lyndsay and fellow Overseer William Porter both ascribed the initial decline of fish to the Union Mills Dam. The guilt appeared substantiated when the partial washing away in of the dam 1846 led to a banner year in 1848. The rebuilding of the dam, however, ended the fledgling recovery and by 1851 and salmon were again rare, with an estimated 200 taken during the previous season (Perley 1851b: 46). Despite few fish, unregulated net and spear fishing continued prompting Perley to predict that “if this state of things is permitted to exist during another season, the last remnant of the once valuable and extensive fisheries of the Saint Croix will be wholly extinguished” (Perley 1851b:48).

The Union Mills Dam was merely the lowest and most strategic of the complex series of dams that controlled the log carrying and processing capacity of the river. The higher dams clearly also had serious effects on the fisheries. Adding to the problem was the increasing volumes of industrial lumber waste pouring into the river as the mill owners harnessed power of the river’s currents and the immense tides to use as vast garbage chutes. Many dams including the Union Mill lacked the legally required fishways, and those that that existed proved inadequate as they were often clogged by “edgings, rinds, and rubbish, from the mills above” (Perley 1851b:44). Salmon were not the only victim, shad and the formerly voluminous alewives also became scarce. Whatever the dams influence, a series of futile legislative efforts in Maine suggest the more complex contours of the problem.

In 1837, the Legislature passed an amended version of the 1823 fisheries law. The law’s provisions changed little but added civil forfeitures of fishing gear and specified the division of fines between the prosecutor and the poor of town where the offense occurred. An 1839 amendment to the law substantially relaxed fishing time restrictions but increased the minimum size of fishways from four to six feet in width and from one to two and one-half feet in depth (Watts 2005).

In 1849, a petition signed by 150 citizens of Calais decried the utter failures of the then current law and requested more power to regulate dams within the city. They argued that local oversight was “the only method to be pursued to restore to the citizens of Calais the rights which they have been so long and as they believe, wickedly deprived of for many years past” (Watts 2005:7). The Legislature responded by granting the town the requested authority by establishing a local rather than countywide fish committee. The new committee was to consist only of men with no ownership or interests in the mills, but the enforcement mechanism was weak. The committee could only clear a fishway after it had been closed or obstructed for at least twenty-four hours. They were also required to “recover” their costs from the mill owners—a prospect that surely discouraged aggressive prosecution (Watts 2005). As the 1851 Perley report makes clear (1851b), the new law proved no more successful than earlier versions. In St. Stephen, the one serious attempt to enforce environmental restrictions on the lumber mills resulted in nine of ten mills refusing to pay modest fines and threatening a total shutdown of operations (Davis 1948).

Despite continuing abuse of the river by the lumber industry, efforts to improve salmon runs met with some success, especially after dramatic improvements in rail and steam transportation made

the St. Croix accessible to more populated areas of Canada and the United States. By 1899, the Washington County Railroad touted the region as a “new anglers paradise” only sixteen hours by train from Boston (Forkey 1993:181). Train- and boatloads of affluent anglers provided new economic incentives and political support for regulations, most of it focused on curtailing commercial and subsistence fisheries in favor of the superior economic value ascribed to sports fishing (Forkey 1993:183-185).

Fishing at St. Croix Island and the Red Beach Area

St. Croix Island is well placed to catch anadromous fish. The island creates natural channel in the river for fish to follow and an excellent platform for deploying nets and trapping fish. Ganong reports six salmon weirs were maintained at St. Croix Island during the 1820s and possibly into the 1830s. Tended by four Penobscot River fishermen, the salmon were cured on fish stages built on the island (Ganong 1902:215). Fishermen may have abandoned the island fisheries as early as the 1830s following the rapid declines in fish. The weirs are not mentioned in documents from the 1850s related to the lighthouse property (Snell 1975).

Directly across the river from the Island at Pettigrove’s Point, roughly 700 feet north of the NPS cove tract, was a favored fishing spot during the boyhood of newspaperman Frederick W. Keene (1874–1948) who lived at Red Beach during the 1880s. Keene, an avid explorer of his neighborhood environment described Captain Pettigrove’s weir below Wilson’s point as a good place for salmon. He reported “a good many shad were taken in the weir, in addition to some fine salmon making their way up the St. Croix.” On occasion, the weir captured other species including “a few barrels of mackerel” and the “first menhaden, or porgies, ever seen around here” (Keene 2007:60).

Pettigrove’s weir was one of three “high weirs” located in upper tidal area of the St. Croix and one of two near Red Beach identified in the U.S. Fish Commission’s multi-volume report *The Fishery and Fishery Industries of the United States* compiled and edited by George Brown Goode and published between 1884 and 1887. The third weir, operated by Lewis Wilson and Son, was located just above Devils Head. The Saint Croix Island/Red Beach Area is an excellent natural spot for a weir. “The best location” according to the Goode Report, “is the extreme end of some point of land that extends well out into the water or in a channel between two or more island and land ledges. It is usually desirable that the weir shall be placed where the tide runs with considerable force” (Goode 1887: I, 501). Archaeological evidence suggests that Devils Head was used as a fish camp, where, over multiple centuries, people consumed weir caught and deepwater fishes (Spiess and Cranmer 2005).

The actual shape of the weirs is unclear and they may have changed in the second half of the 19th century overtime as fisheries technology evolved. The weirs used on Saint Croix Island in the 1820s may have differed substantially from those at Red Beach sixty years later. High weirs consisted of a series of stakes driven into the river bottom to which the fishermen attached nets to create a series of linear and circular enclosures called “pounds.” The weirs were installed in the spring and removed in the fall. However, net weirs, as opposed to those constructed from brush commonly used in the herring fisheries further down the river, required net weights and perhaps other anchoring systems.

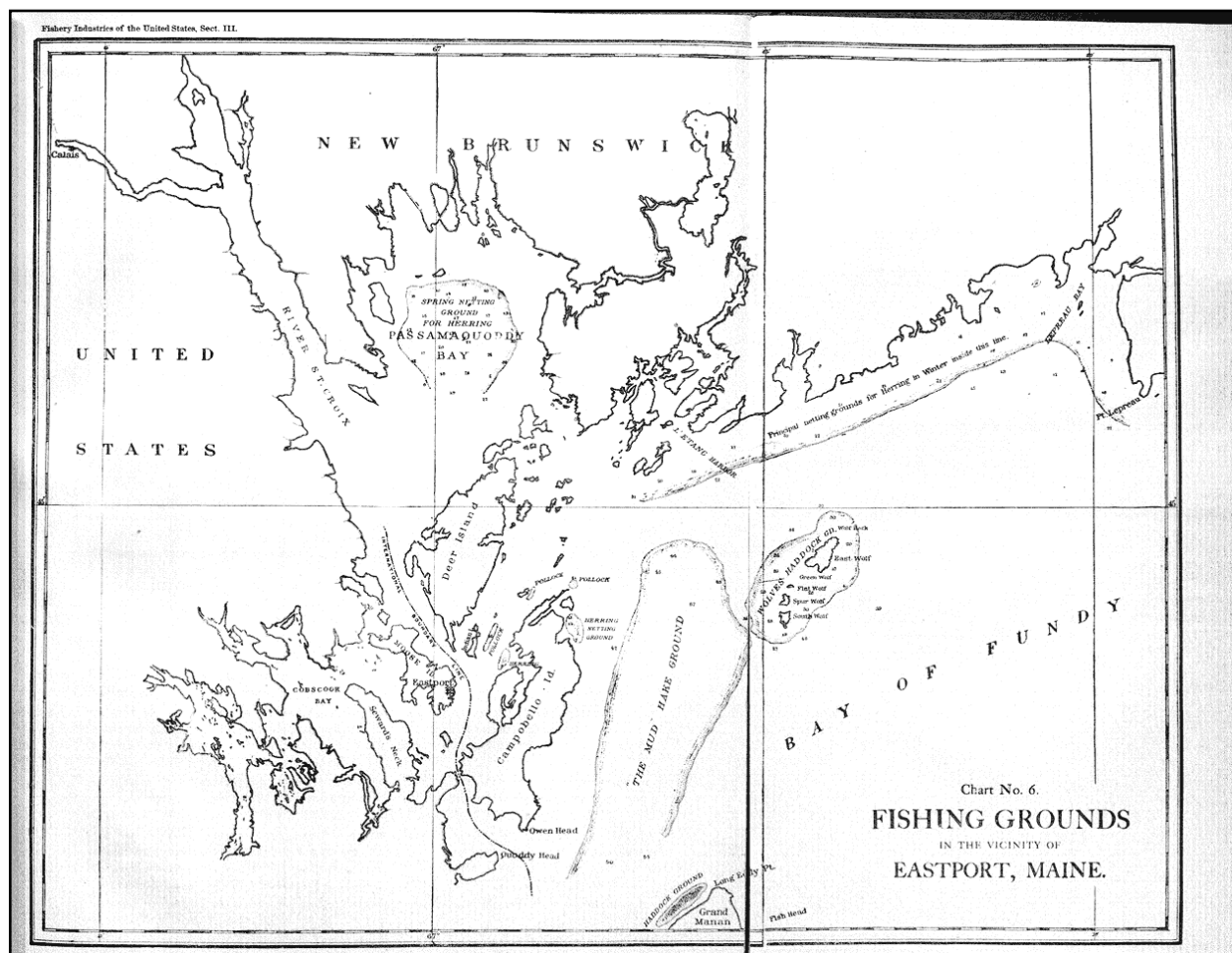


Figure 3.06. Historic Fisheries Near the St. Croix, Maine (Goode 1887)

The Lumber Era: Milling, Transportation Navigation, Shipping, and Transportation

The St. Croix River near the International Historic Site presents a quiet maritime vista. Today's recreational boating and fishing and small scale commercial lobstering create few disturbances on river that once the saw the annual transit of more than a thousand ships and 100 million feet of lumber and related products every year. The modern river may be an emptier place than when Champlain arrived in 1604 and observed a people living on bounties of the land and river. Champlain and his contemporaries saw river's potential as commercial crossroad; a place where abundant natural resources could be acquired and shipped to distant and profitable commercial markets. Two centuries later, St. Croix's nineteenth century lumber entrepreneurs realized this vision. They transformed the forest into millions of dollars, billions of feet of lumber, and into a large fleet of locally owned merchant vessels. The era left a legacy of an environment transformed and of once prosperous communities struggling for viability. Although the National Park Service considers the brief French settlement as the most significant period in St. Croix Island's modern history, stepping back to look at the river and the communities along its banks reveals that one force has shaped the local culture and the environment more than any other, the commercial harvesting of lumber. The lumber industry touches on every aspect of the St. Croix River's maritime heritage from fishing (discussed separately) to commercial navigation and

shipbuilding. The contextual descriptions that follow address major themes in the post-European maritime heritage of the upper tidal area of the St. Croix River, and provide a sense of the major human processes that have shaped the river's commercial maritime cultural landscape.

The St. Croix Commercial Maritime Geography

Before European contact, the tidal area of the St. Croix River was a strategically important place. The river allowed the easy flow of goods and people between inland areas and the coastal areas. The mouth of the river and Passamaquoddy Bay were gateways to important pre-contact coastal maritime trade routes. St. Croix Island's strategic location at the intersection of land and sea trading routes helps explain why the French settled there in 1604. The same strategic factors explain the rise and decline of the tidal Saint Croix River as a commercial/industrial waterway during the nineteenth century and early twentieth century.

Indigenous people have used the St. Croix for transportation for millennia. When Champlain and Du Monts arrived in 1604, the Western Etchemin occupied the area. The Etchemin had strong coastal maritime culture. Skilled at building lightweight canoes out of bark or sometimes moose hide, they were effective sea hunters and fishers. As migratory foraging people, the Etchemin depended on fresh and saltwater canoe routes to move quickly and efficiently across long distances. While taking advantage of natural waterways, they also managed nature by encouraging the work of the beaver, whose dams raised water tables to create canoe paths over low-lying landforms. The St. Croix inland canoe paths encompassed a wide network of streams and lakes and connected with other river systems to the south (Prins and McBride 2007).

The Etchemin, their Wabanaki cousins, and other indigenous coastal people participated in long distance maritime trading networks that extended on saltwater from Newfoundland to Cape Cod. St. Croix Island was well place for trading to the Northeast and the Gulf of St. Lawrence and to the Southwest to what are now the New England states (Prins and McBride 2007).



Figure 3.07. Robert Laurie and James Whittle. *A New and Correct Map of the British Colonies of North America* 1794. David Rumsey Map Collection. (Note the centrality of Passamaquoddy Bay and the St. Croix River. Through inland and coastal waterways, local inhabitants had access to a wide network of resources and opportunities).

The French, and later the English, understood the river's potential in regional commercial navigation, but also saw things in a larger Atlantic perspective. On the southern end of the Bay of Fundy, vessels sailing from St. Croix ports had ready access to important international sea lanes that offered good sailing connections to the broad expanse of European and colonial ports, and to the western Atlantic fishing grounds.

Navigating the Bay of Fundy was challenging, a fact made clear in this passage from British sailing directions published in 1856:

Ships navigating the Bay of Fundy have to encounter an atmosphere almost constantly enveloped in dense fogs, the tides setting with great rapidity over the rocks and shoals with which it abounds, and a difficulty of obtaining anchorage, on account of the depth; so that, under these circumstances, the most unremitting attention is requisite to prevent the disastrous consequences which must necessarily attend a want of knowledge and caution (Hobbs 1856: 45).

The Bay of Fundy's consistency and predictability of winds, currents, and tides considerably tempered dangers in navigation. The 1847 *British American Navigator* notes that the prevailing

W.S.W to S.W. winds are “nearly as steady as trade winds; excepting that, during the summer months, they are rather more southerly, accompanied with but little intermission by fog, which requires a more southerly wind to disperse it.” The Tides of described as “very rapid, but regular” (Purdey and Findlay 1847:198).

Once making the sometimes-hazardous passage into Passamaquoddy Bay, a prudent mariner who armed with local knowledge, avoided nighttime sailing, kept a close watch on the tides, anchored in appropriate places, and monitored the direction of the winds, could navigate with relative safety. The St. Croix River offered an excellent depth of water all the way to the Ledge, a shoal that extends about halfway across the river on the Maine side about four miles down river from Calais. The Ledge was the only truly serious hazard on the river. A vessel attempting to navigate down river during an extreme ebbing tide risked being swept by the rapid currents onto the Ledge. An extreme tidal event, particularly if combined with the intermittent freshets that sent vast quantities of freshwater sweeping down the river, would substantially increase the ebb current’s typical four mile per hour velocity. The risk was sufficient to justify the federal government constructing a staunch set of crib piers just upriver from the ledge. A vessel caught in the current could lie up against these piers until the current slowed. It is unclear whether the vessels regularly moored at the pier, but the structure was decked over and could have served as an effective working platform. The piers were built in 1855 and 1857 and probably reconstructed in the 1880s (U.S. Congress, 1881; U.S. Congress, 1910).

The Ledge served as the functional head of navigation for larger vessels. In 1853, one report states that 60 vessels of between 500 – 1300 tons loaded their cargo at the Ledge. Stopping at the Ledge meant additional time and costs for loading, as lumber had to be floated down the river or carried in lighters, small vessels that moved cargo from deepwater to shore. (U.S. Congress, 1853) Larger vessels could navigate above the ledges as the 20 to 25 foot tides created temporary deepwater channels twice each day. Historic Photographs reveal the presence of large four- and five-masted schooners moored at the Calais/St. Stephen part of the river. However, a position above the ledges could only be achieved during a relatively narrow span of time near the top of the flooding tide. Large vessels frequently waited five or six days to reach or leave the wharfs at Calais and St. Stephen (U.S. Congress, Letter from the Acting Secretary of War). The difficulties of reaching the town wharves added expense as well as time to commercial navigation. As the end of the 19th century approached, larger vessels assumed much of the trade, thus exacerbating a long deteriorating situation. A large amount of cargo was transshipped (lightered) as an intermediate step from vessel to dock. In 1886, a Corp of Engineers report estimated that 250 lighters of between 10 and 20 tons operated at Calais, a figure that confirms the boyhood memories of Keene. (Keene 2007)

A Schooner Voyage to Calais

Sailor George Edward Clarke published a lively account of schooner voyage to Calais during the early 1860s. Clark described his vessel, the *Comet*, which he picked up in Portsmouth New Hampshire, as “former fast packet brig.” This would make the ship a bit deeper in draft than a typical lumber schooner. After being blown back into the harbor during four attempts to sail, the *Comet* made the journey in three days.

Clark's provides a working mariners perspective on the river and the port of Calais. "We entered St. Croix River, and sailed behind shores, that rose abruptly on either hand," he wrote. He characterized the St. Croix "as a deep and narrow stream . . . pouring its waters through many saw mills." The trip up to Calais itself took little time with the vessels docking on of the many wharfs which he discussed in some detail: "the wharves on the river are thirty-six feet in height, and the tide rises generally as high as the capsill, before it shows a disposition to ebb. I have seen the water cover the highest wharves, and vessels riding nearly upon the heavy lumber" (Clark 1867: 293-5).

Calais was nearing its peak as a maritime community when Clark made this voyage in 1863 or 1864. At that time, "hundreds of vessels" loaded cargoes of lumber during the summer season. Railroad cars brought the lumber "directly to the decks of the vessels" which was loaded by "smart longshore men with their 'pickalels'" (Clark 1867:294). Clark's schooner loaded a total of 100,500 feet of two-inch planks, some stowed below in hold and the rest stacked on deck. Compared with other cargo types, wood is durable, regular in size, and has a relatively low weight to volume ratio, thus carrying a deck load was common practice of lumber schooners.

The *Comet* left Calais early in the morning but stopped at Red Beach, where Clark commented on the busy plaster mill. It is unclear why the vessel laid up at Red Beach, as they do not appear to have taken on cargo. In any event, Clark "took a stroll upon St. Croix Island, and had a view of one of the most beautiful sunsets I ever witnessed" before sailing on to Eastport (Clark 1867: 296).

Government Support for Commercial Navigation on the St. Croix

In the United States, the Army Corps of Engineers are charged with maintaining the nation's navigable waters. Compared with many other economically significant waterways, the ease of navigation along the St. Croix made the flow of commerce smooth and required relatively limited government investment. In 1854, at local request, Congress appropriated funds to build a lighthouse on St. Croix Island and to construct the Ledge piers (Snell 1975). In a letter forwarded as part of a report to Congress from Passamaquoddy Customs Collector Brion Bradury, Steamboat Captain Theodore Cary described the need for the lighthouse: "The 'Big Island' ten miles below Calais, is another point difficult to pass in the night, in fact it is never attempted by heavy vessels, being directly in the center of the river, with numerous ledges and mall island on the American side of it. A light house upon the island is very necessary, as the many vessels wrecked abundantly prove" (Snell 1975).

Cary's letter has created an impression that there are historic shipwrecks near St. Croix Island. Neither Ganong (1902) nor this project has uncovered any evidence of shipwrecks in the upper tidal river. Captain Cary was the master of the *Nequasset*, a passenger steamer that ran between Calais and Eastport (Calais Advertiser 15 July 1846). Rather than preventing shipwrecks, the light would have expanding the steamers operational hours by making nighttime navigation feasible, widening time envelope for connecting with the proper stages of the tide, and thereby increasing revenue. The light began service in 1856, but was closed three years later, remaining unlit until 1869 (Snell 1976).

The principle concern for government engineers and vessels owners and operators was the condition of the navigation channel, not the lighthouse. On the St. Croix, the key issue was the depth of the navigation channel between the Ledge and the city wharves. The Corps of Engineers made a number of studies of the river from the ledge to the Calais wharfs between 1867 and 1909. All studies pointed to the same issue, the effects of the dumping of lumber milling refuse on the depth of the channel. During the 19th century, mills sent billions of feet of lumber and associated products to market. Milling, however, produced huge volumes of by-product in the form of sawdust, slab wood, and log edgings. At Calais and as many areas of the country, mill owners depended on tides and swift currents to carry away the refuse. While sawdust on its own apparently moves well down current, in the early days of milling the heavy slab wood and log edgings would quickly sink and create traps for the dust and other debris. Although a number of laws passed on both sides of the river prohibited many types dumping, enforcement proved nearly impossible.

By the late 1860s, the upper reaches of river were plugged with lumber debris, making Calais and St. Stephen increasing difficult to reach except at high water. While governments on both sides of the boarder voted appropriations to dredge channels above the ledge, neither was willing to proceed until the industry stopped the dumping (U.S. Congress, Letter from the Acting Secretary of War). Because of industry intransigence, much was studied but little done. The problem of the shallow channel at Calais and St. Stephen remained unresolved until dredging efforts in the early 20th century (See also “The Grand Manan and the Sinking of *Barge No. 4*” in 1912” below).

General Dimensions of Maritime Trade at Calais

Davis reports that in 1863, 870 American vessels cleared Calais. The close of the Civil War ushered in a period of prosperity that saw Calais reach its peak as a port. In 1866, vessel clearances once again approached 1000. In 1866, imports included 82,000 bushels of corn, 24,000 barrels of flower, 1800 barrels of pork, 1518 tons of coal, 5,000 tons of plaster, and 13,000 hides. The exports included 77,000,000 feet of long lumber, 100,000,000 lathes, 18,000,000 shingles, 35,000 ship knees, and nearly 32,000 barrels of calcined and ground plaster. Total number of ships arriving was 976. (U.S. Congress, 1867) From that period into to the mid-1870s, it is likely that 1000 or more vessels cleared Calais, principally carrying lumber as well as significant amounts of plaster from Red Beach. In 1873, imports included 127,000 bushels of corn, 20,000 barrels of flour, 3000 barrels of pork and beef, and 8000 tons of rock plaster. Exports that year included 92,000,000 feet of long lumber, 90,000,000 laths, 40,000,000 million shingle, 51,000 ship knees and 40,000 barrels of plaster, undoubtedly from Red Beach. A total of 1195 commercial vessels arrived at Calais and paid \$43,285 in duties on their cargo. (U.S. Congress, 1874) For 1874, Knowlton reports 1177 vessel clearances, and states that port statistics had not varied from norms of the past five years. In 1875, the figures appear nearly identical. In 1878, domestic and foreign clearances at Calais fell to 768, a trend that would ultimately continue. (Davis 1948:314-19; Knowlton 175:94; Calais Advertiser 26 January 1876, 6 May 1879).

According to a Corps of Engineers Report, by 1886, the number of vessels calling at Calais had declined to under 700 per year, but, however, the average size of vessels in some trades had

grown significantly. Although lumber exports were indeed leveling off, this was partially offset by growths in imported commodities such as corn (175,000 bushels) and coal (5000 tons). On the subject of lumber, the report estimated the average size of lumber schooners at about 120 ton. One unnamed firm cleared nearly a quarter of all shipping, 147 vessels, a clear sign of the general consolidation occurring throughout the lumber industry (U.S. Congress, 1887). A substantial, although unspecified amount of commerce was traveling on steam vessels, a major change from earlier times.

Between 1880 and the end of the lumber era on the river in about 1918, a diversifying industrial economy on shore, maritime technology, and an expanding rail network, gradually altered the complexion of maritime commerce on the St. Croix. During the 1880s and 1890s, substantial growth in the local and regional railway network provided fast and relatively inexpensive land transport connections to Quebec and Southern New England. In 1899, the new Washington County Railroad provided a direct connection all the way to Bangor, and through a spur into Eastport. Across the region, the railroad ushered in tourism, opened up mid-continent markets for sardines and other regional fish, and created true competition for freight and passenger traffic. On land, the development of the pulp industry after 1903 began shifting the focus of logging from producing quality lumber and other tangible wood products to cheap paper (Davis 1948).

By 1910, Calais retained a still substantial, but greatly diminished maritime commerce. The Corps of Engineers estimated the total traffic at about 200,000 tons, including the approximately 40,000,000 feet of lumber that sailed down the river. The end of that trade, however, was in sight. The railroads were carrying increasing amongst of cargo, about 74,000 tons in 1909. About forty percent of this figure was coal that had come in by sea from the mid-Atlantic coal ports. The amount of coal coming up the river had climbed to 41,000 tons, roughly twenty-seven times the 1866 figure. The St. Croix Paper Company consumed about 25,000 tons of the coal and the railways about 15,000. The Corp report offered no figures for the number of vessels calling at Calais. The numbers were continuing to decline with the lumber industry and the increasing size of coal, general freight and lumber vessels, although in the last category many remnants of the aging local schooner fleet remained active (U.S. Congress, 1910).

William Hutchinson Rowe in his classic *The Maritime History of Maine: Three Centuries of Shipbuilding and Seafaring* (1948) makes almost no mention of the role of steamboats and steamships in history of the Pine Tree State. In addition, in raw tonnage and activity, the immense production of wooden sailing vessels and the huge fleets of Maine based and built wind craft vastly overshadow the history of steam navigation in Maine. However, a closer look reveals the strategic place of steam in Maine's coastal cities and towns. While sailing vessels profitably carried the low value bulk commodities of lumber, stone, and processed lime that dominated the local economy in Calais and St. Stephen, steamboat took over high value passenger and package freight trades soon after their introduction with the arrival of the steam brig *New York* at Eastport on May 24, 1824. The 280-ton *New York* offered thrice-monthly voyages from Eastport to Boston via Portland and "any intermediate port for a reasonable compensation." Cabin travel (first class) on the *New York* was expensive at \$10 and then \$12 dollars per passenger for a one-way trip to Boston. As was typical for the period, the financial success of pioneer steamboat operators inspired intensive and almost immediate competition and

by 1825, several boats were engaged in a ruinous steamboat war on the Bay of Fundy. That year, according to pioneer lumberman, steamboat owner and naturalist George A. Boardman, saw the first regular steamboat service between Calais/St. Stephens and Eastport on the *Tom Thumb* (Boardman 1898).

Despite the advantages of steam, sailing vessels briefly maintained a share of the region's passenger trade. In 1830, a line of three schooners combined to offered weekly departures from Eastport and Boston (*Eastport Sentinel*, 26 July 1830). Sailing vessels offered unpredictable travel times with voyages on the old "packets" according to a note in 1843 edition of the *Calais Advertiser* lasting "three and sometimes six weeks." (*Calais Advertiser* 19 July 1843) By that time, local and regional steam navigation networks were well established. In a manner much like modern air travel, smaller local steamboats provided frequent service from Calais, Robbinston, and St. Andrews to the regional "hub" of Eastport where passengers transferred to larger vessels steaming south and west for Portland and Boston or north and east for the Maritime Provinces. Passengers leaving Boston on the steamer Penobscot on a Saturday evening in 1843 could reach Calais on the steamer *Linnaeus* before dark that next day (*Calais Advertiser* 19 July 1843; Albion et al., 1994). Such ideal outcomes may have been the exception, as is suggested in the displeasure of a recent passenger on the *Portland* conveyed in an 1846 letter to the editor of the *Calais Advertiser*.

In the first place, I dislike to get on board a steamer, and find that, contrary to advertisements and newspaper puffs, she is a snail-like traveler and have for my sole consolation the fact that the owner of the boat has made such bargains with other steam boat proprietors, that he is at full liberty to consult his own, instead of the public convenience . . . A public carrier should think something of the wishes of the public. On this route a boat is needed which possess both strength and speed. It ought to average ten miles per hour. We do not wish, after reaching Eastport to wait twelve hours after the time advertised for starting, and then creep along at the rate of seven miles per hour (*Calais Advertiser* 22 May 1846).

Steamboat "combinations" were a common although unstable response to the chaos and hyper-competition that characterized pioneer steam navigation in the United States after the Supreme Court Decision in *Gibbons vs. Ogden* upheld the government's right to regulate interstate commerce in 1824.

The steamboating interests, rather than lumbering, appear to have led the drive to build the St. Croix Island lighthouse. The recommendation to build forwarded by the Secretary of Treasury included a rather dubious statement of need penned by steamboat captain Theodore Cary in 1853 (Snell 1975). Up to mid-century, outside interests principally owned steamboats on the St. Croix, but in 1852, local businessmen began to organize what would become the Frontier Steamboat Company, chartered by the State of Maine on March 13, 1854.

The Frontier Steamboat Company's initial roll of investors included William Deming, George A. Boardman, Henry F. Eaton, John McAllister, Z. Chipman, James Porter, and Joseph Lee. Most of these men had extensive interests in St. Croix lumber milling and ship owning and there presence again testifies to the integrated nature of the local economy. Lumberman, businessman, and cotton mill owner James Murchie was later president of the company and was succeeded by

George A. Boardman (Boardman: 1898; Rose 1888). The company proved successful as evidenced by its rechartering with \$100,000 in capital stock in 1868. (*Private and special laws of the State of Maine, from 1866 to 1868 inclusive: compiled in conformity with Resolves of the Legislature of March 3, 1868.*) In many areas of the country, railroads rapidly replaced steamboats in the passenger trade. Not in Maine, however, where a deeply cut and rugged coastal geography made laying track an expensive proposition. In southern New England, region-wide Maine's steamboat lines carried a wide variety of agricultural products, woolens, leather, fish and shellfish products (Taylor 1970). As the Calais/St. Stephen's economy diversified after the Civil War, steamboats brought in raw materials for processing and carried them out again as finished or partially finished goods. In the mid-1880s, the Frontier Steamboat Company, working in concert with the International Steamship Company (founded in 1860), landed 1,000 sides of hide per day as well as 50,000 pounds or 100 bales of cotton per week. The tanned hides and about 110 cases of finished cotton goods left Calais on steamboats each week. (United States, Army Corps of Engineers 1877: 477)

Leisure travel also became an important source of steamboat revenue. By 1887 an estimated 100,000 tourists were coming to Maine during the summers, about twenty-five thousand of them by steamboat (Taylor 1870). On the St. Croix, as on many American rivers during the late nineteenth and early decades of the twentieth century, leisure excursions in the form of short vacations and day trips were popular. Excursions had been popular from the beginning of steam boating, with the first occurring on the St. Croix on July 4, 1824 when 150 passengers steamed up the river on the *New York*.

By turn of the twentieth century, river excursions remained popular but increasing numbers of passengers and certain types of freight were transported by rail. In 1899, the completion of the Washington County Railroad and its subsequent acquisition by the Maine Central provided Calais with reliable daily overland travel to Bangor and beyond. Rail improvement also made it possible for regional producers to ship directly to Midwestern and other markets, rather than pass through Boston or New York (Davis). Rail did not immediately kill steam navigation, a fact underscored in surveys conducted by the Corps of Engineers 1909. That year, three steamboat companies operated on the St. Croix: the old Frontier Steamboat Company, operating the 240 gross-ton *Henry F. Eaton*; the Grand Manan Steamboat Company with the somewhat larger *Aurora*; and the Dear Island and Calais Steamboat Company, which operated a smaller boat that ran to Campobello and other distant Passamaquoddy Bay outposts. The Corps recommended and ultimately dredged a nine-foot channel to allow the passage of steamboats up to Calais and St. Stephen at all stages of the tide. However, the days of Calais/St. Stephen as a significant port were coming to a slow but ultimate finish. Weekly steamer service between Calais and Eastport continued until 1929, and a weekly International Line steamer between Eastport and Boston until 1934. A weekly boat continued to operate between St. Stephen, St. Andrews, and St. John until 1946 (Davis).

The Grand Manan and the Sinking of Barge No. 4, in 1912

While steamboats were never numerous, it was the combination of steam and steam-inspired dredging that led to one of the few verifiable wrecks to occur in the St. Croix River, the sinking of *Barge No. 4* in 1912. At 11 pm on June 26, 1912, on St. Croix River just up stream of "The

Narrows,” the Steamer *Grand Manan* collided with a barge owned and operated by the Bay State Dredging Company. The barge sank shortly thereafter killing three of its 8-man crew, including the vessel’s captain, James H. Carvey. (United States, Circuit Court of Appeals, Ninth District 1914) It was a wooden, spud barge, 80-feet long, 33-feet wide and had a 5-foot draft. Each of its four spuds was 16-inches square and 72-feet long. It had been constructed for dredging and had a crane and clamshell buckets on the bow.

Barge No. 4 had been working near the Narrows since May 16, and was engaged in clearing the river of extensive sawdust deposit. This was part of a 200-foot channel construction contract the government has issued to the Bay State Dredging Company. By May, dredging on the Canadian side was complete and the barge was moved to the American side. She was located 1/8 mile above Whitlock Mill Light on a line between the light and the Black Buoy. Her starboard side was within 35 feet of the American channel shoulder. There was approximately 134 feet between her port side and the Canadian edge of the newly constructed channel (United States, Circuit Court of Appeals, Ninth District 1914)

During dredging operations, material, mostly saw dust, was raised from bottom of the river using the clamshell buckets and deposited into scows, which were then towed to a dumping ground near mouth of the river. At the time of the accident, *Barge No.4* was orientated with her bow downstream. Two scows were secured to her port side, one 60 feet by 20 feet by 6 feet and the other 80 feet by 28 feet by 9 feet. The barge was secured with ground tackle consisting of two 950-pound anchors secured to the barge using 3/4-inch steel cable. The bow anchor was located 325 feet downstream; the stern anchor 600 feet upstream. Each anchor was marked with a timber buoy, 27 feet long and 18 inches in diameter. No lights were on the buoys (United States, Circuit Court of Appeals, Ninth District 1914).

In the evening of June 26, 1912, the wooden, screw steam vessel *Grand Manan* was sailing up the St. Croix River toward Calais. The vessel was 180-tons burden, drew 10 feet of water and had a crew of 10. She had fore and aft compound engines and could run at 10 knots. That evening, the steamship was completing an excursion cruise down to St. Andrews and back. On the bridge, Captain Ingersol was performing double duty by serving as officer in charge and helmsman. Mr. Maxwell, who had chartered the steamer, and two female guests, joined the captain on the bridge. All four people were engaged in conversation. Captain Ingersol had only been on the river 2 or 3 times that season, and had made no runs at night. Down in the engine room, the situation was little better. The engineer was talking with his friends and paying little attention to the power plant. Steam pressure on the *Grand Manan* was normally maintained at about 115 pounds, but that night it had dropped to 80-90 pounds, which meant less power and weaker handling at critical junctures. Rather than staying on the American side of the river where there was deeper water, Captain Ingersoll steered the *Grand Manan* near Hill’s Point, which brought him near the sawdust beds on the Canadian side. The steamer smelt the bottom and may have touched ground.

At about 11 pm, anchor watchman Sughrue on *Barge No. 4* was on deck and heard the *Grand Manan* coming up river. It was a clear night and the lights on the scows and barge were burning brightly so he went to the Engine Room for about 10-15 minutes to clean out one of the fires.

When he reappeared, the *Grand Manan* was only about 100 feet away. He raised the alarm, just before the steamship plowed into the barge head on cutting into her for a distance of about 8 feet. Sughrue rushed to the top house, knocking on doors and warning the eight men on board the vessel that the barge was sinking. Once back on deck he noticed that Capt. Carey, the engineer and the mate were missing, all of whom ultimately died in the incident. The barge sank with the bow of the *Grand Manan* still caught in its superstructure. It was only after the vessel hit bottom that the steamer broke free (United States, Circuit Court of Appeals, Ninth District 1914)

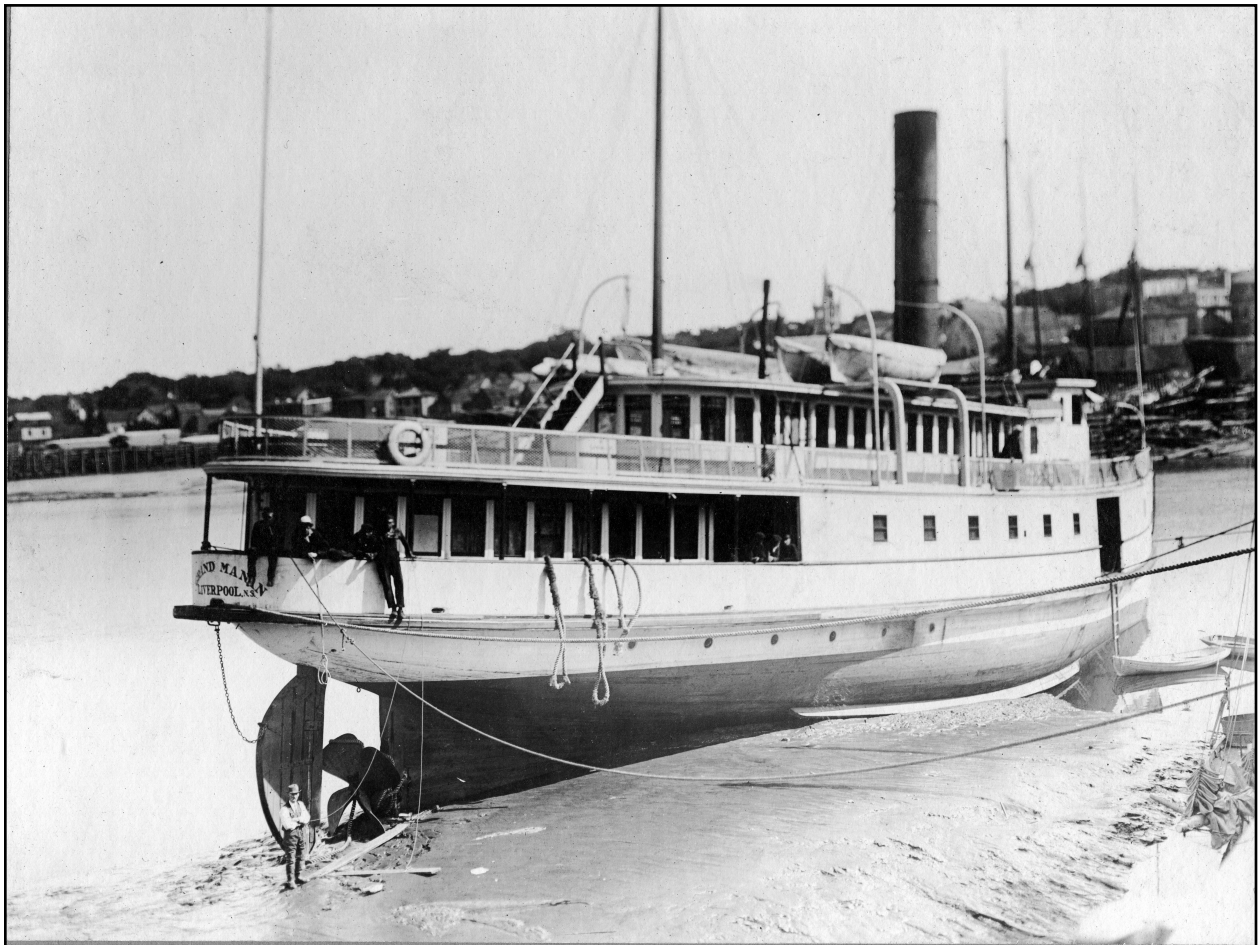


Figure 3.08. Steamer *Grand Manan* after collision with *Barge No.4*. (Note: the cable round the ship's propeller)

In the resulting lawsuit - overseen by the Honorable Clarence Hale, District Judge, Portland Maine - the steamship company claimed that the accident was caused by the barge's location in the navigation channel, the lack of proper lighting on the vessel, and an unlighted anchor with a trailing line that caught in the *Grand Manan's* propeller making the steamer unresponsive and jamming it in forward gear. This was the cause of fierce contention in court. In the end, Judge Hale ruled that the evidence supported the Bay State Dredging Company's contention that they located the dredge at an approved and appropriate place, that steamships had plenty of water to pass by, that the barge was lighted appropriately, and that the cable that caught in the steamship's propeller resulted from the collision rather than caused it. The judge held that navigational error and lack of attention on the part of Captain Ingersol caused the accident and that steamboat and the *Grand Manan* Steamship Company were responsible.

In his summing up, the judge eloquently describe some of the difficulties of navigating the St. Croix. He wrote:

It is not denied that navigation on the St. Croix river is at all times difficult, especially so in the night, at the location where the collision occurred, where the tide sets diagonally toward the American shore, turning sharply to starboard going upstream, where shifting sawdust beds cover the bottom, and where these difficulties are overcome only by the precaution of competent navigators.

Steamboats and the Maritime Landscape of the Upper St. Croix River.

The St. Croix River never saw heavy steamboat traffic, rather one or two, or at most, a handful of local steamboats of modest size and draft provided service between St. Croix communities and the regional hub at Eastport at any given time. Although not heavy in volume, these vessels were central to the local economy and society. In the absence of convenient railroads, regular access to places such as St. John, Portland, or Boston depended steamboats. Concerns about the condition of the river evidenced in numerous Army Corps of Engineers reports and projects always referenced the problems faced by steamboats caused by the filling of the river with sawdust and edging. The lighthouse on St. Croix Island seems to have principally benefited steam passenger vessels and steam tugs. St. Croix steamboats also appear to have reflected the condition of the natural environment. While a Western River steamboat of the mid and late nineteenth century might draw three or four feet of water (frequently less) St. Croix steamboats might draw eight or ten feet, a figure in line with the local sailing vessels. Rather than exclusively hauling passengers, these boats also carried substantial cargoes on and below deck. This generally prevented them from reaching the upper wharfs at Calais and St. Stephen, but allowed them the capacity to haul substantial quantities of raw materials and finished products. Unlike the schooners that hauled the timber, however, St. Croix steamboats came from distant shipyard, often from other states, and in that sense are perhaps less materially linked to the local maritime environment than the sailing vessels the dominated the waterfront.

The Transportation of Lumber

Lumber is at the heart of the post-contact history of the St. Croix River. The earliest explorer to report on the northwest Atlantic, John Cabot, mentioned, along with the extraordinary number of fish, the presence of thick forests filled with suitable mast timber (Albion et. al. 1994). Slightly more than a century later, Captain John Smith reported with similar enthusiasm on the region's shoals of fish and timber more impressive than gold and silver mines. Shipments of cut wood to supply Britain's naval yards began as early as 1635 and a steady mast timber trade was in place by 1652 (Rowe 1948: 33-4). As a naval power, Great Britain's strategic need for wood continued to grow during the next two centuries, especially after 1806 when Napoleon Bonaparte prohibited the sale of Baltic timber to England. This was triggered, of course, by the French Navy's defeat at the Battle of Trafalgar. By 1809, British North America was exporting more than 54 million board feet of timber to the home country (Wynn 1981:29). The quest for shipbuilding timber catalyzed the lumber industry in Maine and New Brunswick, but economic growth associated Great Britain's industrial revolution and the rapid geographic, demographic,

and economic growth of the United States during the 19th century quickly created huge demands for timber that were unrelated to defense. In the lumbering business, transportation represented one of the greatest challenges and sources of expense. Getting trees from forest to mill represented one transport challenge and the moving processed lumber and other forest products from mill to market, another. The following discussion centers on this second challenge, as the movement of wood was the great driver of commercial marine activity on the river and justified government efforts to improve the safety and efficiency of navigation on the river.

The Rise and Fall of the Lumber Trade

As early as 1784, primitive mills were operating near St. Stephen. In 1791, the new Brisk Mill at Salmon Falls was built. The resultant lumber, however, had to be shifted by hand from above the falls down to the tidal river where it was rafted and moved down to Ferry Point. This costly and time consuming process led the owners to build the river's first lumber sluice that carried finished wood down to the tidewater where it could be loaded on to ships (Davis 1948: 84). The success of the early enterprises encouraged further settlement and undoubtedly inspired the construction of the early St. Stephen and Calais ships.

The earliest commercial vessels clearing from the St. Andrews area carried timber and associated wood products such as shingles, staves, and masts and spars. In 1821, 144 vessels cleared St. Andrews carrying lumber. In 1824 that number climbed to 175 and these ships carried over 10,500,000 board feet of long lumber, 26,000 tons of squared timber, and 1559 masts. During the three years between 1825 and 1827, 113, 134, and 142 vessels cleared the port respectively. During the first of those years, 87 vessels sailed for Great Britain carrying wood products and 26 headed for the British West Indies. Along with wood, these vessels also carried substantial cargoes of Cod and pickled and smoked fish. Toward the end of the period, the British demand for lumber contracted significantly, however, a growing British West India market ensured stable demand. At this point, political forces favored St. Stephen over Calais as the American products and vessel were excluded from trading in either market. During the 1830s, the volume of long lumber exported from St. Stephen grew from an anemic 781,000 board feet in 1835 to a robust 11,600,000 board feet in 1837, a volume that would have filled well over 100 vessels, depending on their size and design (Davis 1948:310-13).

Long lumber shipments from St. Stephen appear to have peaked in the early 1840s. In 1841, the figure was 15,100,000 board feet. This dropped to 3,100,000 in 1849. There was substantial growth in the number of deals, a non-standard form of thick planking. In 1852, St. Stephen exported 1,800,000 feet of boards and 23,000,000 feet of deals. By this time, according to Davis, much of the New Brunswick lumber was shifted across the rivers and shipped out on American vessels as American lumber; a dubious practice that avoided stiff duties on foreign lumber (Davis 1948:310-13; Lower 1973:251).

On the American side of the river, traffic in lumber products reached significant levels by the early 1840s. In 1842, 410 vessels cleared Calais with roughly 20,000,000 feet of long lumber, 2,300,000 shingles and 35,300,000 laths. At mid-century in 1850, 776 vessels left Calais with about 45,000,000 feet of long lumber, 11,900,000 shingles, 89,000,000 laths, and 12,663 ships knees—a critical commodity in the burgeon world of American shipbuilding. Between the

traffic calling at St. Stephen and Calais, the twin ports were seeing the arrival and departure of nearly 1000 vessels during the nine-month navigation season (Davis 1948:314-315.).

Growth in lumber traffic continued into the 1870s, peaking at over 100,000,000 board feet of long lumber in 1871. Falling demand during the depression later 1870s led annual shipments of long lumber to falling below 40,000,000 feet (Davis 1948: 269, 314). In the mid 1880s, estimated annual lumber shipments hovered between 40,000,000- 60,000,000 board feet, a level that seems to have held for some years. As late a 1909, the Corps of Engineers estimated the lumber traffic at 40,000,000 board feet (U.S. Congress, 1897 and 1910). The Corps estimate may have been on the high side as in 1910, Davis estimates the production of long lumber at 20,000,000 board feet. Long lumber production ceased altogether with conclusion of World War I in 1918 (Davis 1948: 275)

The unique opportunities of the “International Community” as described by Davis helped the lumber industry to remain profitable. For lumberman and maritime entrepreneurs alike, (and many of Calais and St. Stephen’s business community were both), the fluid boarder offered the advantage of opportunities in each country, and sufficient ambiguity to sometimes avoid or at least reduce the payment of commercial duties. In 1888, a reporter for the New York Times charged the local “Lumber Kings” of smuggling thousands cargos of foreign lumber into the U.S. on American ships and of illegally bringing milled lumber from the area’s New Brunswick Mills into Calais for shipment. The report exposes the resourcefulness of the lumber industry and the centrality of the maritime sector in its long-term success:

The mills were connected by railway with St. Stephen, New-Brunswick, where their proprietors were also owners of wharves. The mill owners also controlled wharves in Calais, and it was the custom to ship the lumber to St. Stephen as fast as it was manufactured and immediately transport it on rafts or ship it out immediately upon vessels owned by the lumbermen to other United States ports. Thus the lumbermen were shippers in Canada and consignees in the United States. Canadian lumber was dutiable, according to quality, at from 50 cents to \$1.50 per 1000 feet. Under this system of doing business the Government lost the duty on a good share of the annual lumber product of the province of New Brunswick (New York Times 3 September 1888).

The reporter named two of the Lumber Kings as H.F. Eaton and F.C. Todd, two of the region’s most prominent lumbermen, as the main practitioners of this system. Whether fully true or not, the Times article accurately depicts the integrated nature of the lumber business at St. Croix. Lumber provided the resources that built and maintained Calais and St. Stephen. However, the industry depended directly and indirectly on high local investments in the maritime sectors including ship owning, shipbuilding, and steam navigation.

Shipbuilding and Ship Owning at St. Stephen and Calais

Arguably the most influential industry after lumber in the tidal areas of the St. Croix River was shipbuilding. The term “influential” is used advisedly here. Although shipbuilding provided a relatively important product for sale in local, national and international markets, the revenues produced were dwarfed by the cutting, milling, and sale of forest products and by the profits earned carrying cargo. Shipbuilding, however, had an ongoing significance to the local economy

that extended below the surface. Looking at shipbuilding and major patterns of ownership offer important ways of seeing the interconnected nature of the St. Croix economy and offers an important view of the region's maritime heritage.

Although the plaster industry employed a significant fleet, the vast majority of vessels passing by St. Croix Island and Red Beach carried lumber. If maritime commerce provided the transportation foundation for the lumber industry, shipbuilding held that place for maritime commerce. The capacity to build and repair large wooden vessels made Calais and St. Stephen truly viable commercial and industrial ports.

The number of ships built at Calais and St. Stephen remains undetermined. Government statistics are not complete at the local level and smaller craft, which photographs and statistical reports reveal in very large numbers, are highly underrepresented in historic shipbuilding records. Likewise small utility craft used upriver such as bateaux were also probably built locally and do not show up in marine records. For larger vessels the best count of Calais vessels is unsigned tabulation of vessels built at different towns in the Passamaquoddy customs districts found in the shipbuilding file at the Calais Free Library. Probably compiled by local historian H.E. Ned Lamb, the tabulation reports 221 vessels as being built at Calais, a plausible figure in light of the far ranging of fragmentary records published by Davis (1948) and surviving annual shipbuilding lists.

Like many places in Maine and New Brunswick, the St. Croix River possessed an excellent natural setting for building wooden sailing vessels. Plentiful trees of appropriate species, an extensive tidal river zone that offered ready access to materials, waterfront land, and emerging markets. Through much of nineteenth century shipbuilders required only a relatively limited tools, access to capital, and reasonably priced skilled labor. With such simple requirements sailing vessels could be built in frontier environments like the St. Croix with little more effort and less expense than in more settled places (Jensen 1994).

In a world where international power depended on wooden sailing vessels, naval stores such as masts and shipbuilding timber were strategic commodities. Early in the European era, Maine became a source of these materials. Beginning in 1634, the English began felling and commercially exporting naval timber. In the late 17th century, the British built actual warships in the Piscataquis River (Rowe: 1848 34-35, 52-55). During the 18th century, Maine's population and its merchant shipbuilding developed in tandem. Both came later to the isolated St. Croix River Valley, with the first vessels built on the St. Stephen side in 1797 and on the American side in Calais about 1804. Shipbuilding at St. Stephen and Calais was developed by the same people, and began with a common geographical location and array of natural resources. Despite these fundamental ties, the international boarder created distinct political and economic niches that led shipbuilding in the two cities to develop along strikingly different although related paths (Knowlton 1875: 93).

Shipbuilding at St. Stephen 1797–1878

During the first half of the 19th century, the international situation favored shipbuilding on the St. Stephen side of the river. Up until 1833, British policy largely excluded American vessels

from trading in the lucrative British West Indies. Until 1849, England's mercantilist Navigation Acts prohibited British merchants and ship owners from buying or employing foreign-built vessels for use within the British Empire. Such conditions meant that vessel built in St. Stephen could operate in a wider array of trades and could be sold to the English merchants who controlled the world's largest merchant navy.

Shipbuilding at St. Stephen reportedly began in 1797 with the construction of the *Alexander Gordon*. In 1799 and 1800, Joseph Porter, the owner of the area's first store and scion of an important local family had the schooner *Anne* constructed (Knowlton 1875: 93, 127). The level of local shipbuilding during much of the next two decades is unclear. Little likely occurred during the War of 1812, and its economically moribund aftermath. Beginning in 1818 with Jarius King's launching of the schooner *Unity*, however, shipbuilding in St. Stephen became an important activity. While only limited statistics are available, in the St. Andrews customs district shipbuilding appears quite active in the 1820s. In 1825, the district produced 18 vessels, followed by 14 in 1826 before dropping to 5 in 1827. How many come from St. Stephen is unknown, but was likely substantial. For these early years, fully separating out the vessels built at St. Stephen from other St. Andrews District vessels is not possible. The same is true for early shipbuilding in Calais. Adding to confusion is that St. Croix shipbuilders such as Jarius Keene who built the brig *Keziah* and O.P. Hinds builder of the schooner *Henry*, two vessels of the period, typically built vessels on both sides of the river, taking advantage of New Brunswick and Maine's distinct political and economic niches (Knowlton 1875: 94).

Much of the 1830s saw limited demand for St. Andrew's vessels; however, between 1838 and 1840 district builders launched 79 ships totalling nearly 18,000 tons. By 1839, St. Stephen had a substantial local merchant fleet of 28 vessels, principally brigs and brigantines as well as two ships, one—the *Charles Humber* built by Owen Hinds in St. Stephen in 1838 measured a substantial 640 tons (Davis 1948: 357). Several of the other St. Stephen vessels may also have been locally built. After another lull, between 1845 and 1849, St. Andrews District yards produced 69 new vessels, including several large ships. How many came from St. Stephen remains unknown, however, sources indicate the town's builders produced several larger (over 600 ton) ships. Although the St. Andrews district had solid years in 1856 (11) 1864 (13) and 1865 (8), shipbuilding was in decline after 1849 and temporarily died out in St. Stephen during the 1850s (Davis 1955: 174; Davis 1948: 357–360). A newly open international market with the repeal of the Navigation Acts and an increasingly abundant supply of American vessels likely stifled investment in New Brunswick ships, which had a reputation for poor quality when compared with American vessels. The quality of St. Stephen vessels, however, was probably not in question.

In the early 1860s, St. Stephen shipbuilding revived with the arrival of the brothers John and Charles Short from St. Andrews. They built an estimated 16 vessels at St. Stephen between 1861 and 1878. These were substantial craft with only three measuring less than 500 tons and at least six exceeded 1000 tons. Built for local merchants Chipman and Bolton, these vessels were speculative investments for sale to Liverpool syndicates for use the cotton trade between American South and England's textile manufacturing regions. Improvements in iron construction and in the efficiency of steam engines for longer distance trades in the late 1860s and 1870s gradually eroded the market for such vessels and the brothers launched the last large

vessel built in St. Stephen, the 1464-ton *Rockland* in 1878. As with many other St. Croix builders, the Short brothers worked both the New Brunswick and Maine sides of the river, and for a time they simultaneously operated yards in St. Stephen and Calais (Davis 1948: 364; Davis 1955: 181, 184).

Shipbuilding at Calais 1803–1891

Shipbuilding at Calais represents another chapter in the often-told story of America's golden age of maritime enterprise, the period between 1815 and 1860 that saw the explosive growth of the United States merchant marine. From marginal beginnings, by the 1850s, the U.S. merchant fleet had risen to second in the world, ranked only behind the British Empire in total merchant tonnage. With an expanding economy and national borders, and tremendous coastlines, internal waterways and forests shipbuilding flourished in the United States. American ships and shipbuilders developed an international reputation for size, speed, and quality.

During the wooden age, a shipbuilder required few specialized facilities. The capital required to build a vessels was tied up principally in materials and labor and not in excessive infrastructure as it the case with steel shipbuilding. An enterprising and skilled builder could get by with a plot of land adjacent to a river, and a relatively small array of hand tools such as saws, adzes, caulking irons, and other relatively low cost items. As a result shipbuilding in America from the colonial period to the close of the 1870s was a highly decentralized industry. Gifted with abundant shipbuilding real estate and resources, sparsely populated Maine emerged as the most prolific shipbuilding state in the union. Between 1820 and 1878, the Maine shipbuilders launched more than 100 ships in all but three of the years. Between 1847 and 1856 the peak of the United States shipbuilding boom, the state produced more than 300 ships every year except one. During that period more than 3500 Maine-built vessels joined America's merchant fleet. In 1855, Maine accounted for more that 1/3d of the tonnage of new construction in the United States (Rowe 1948: 144, 318). Calais's contributions when set against the state and national backdrop appear modest, but examined at a local level shipbuilding proves central to all significant economic activity especially those related to lumber where growing production from Saint Croix mills required an expanding merchant fleet.

Shipbuilding closely follows economic prosperity or the expectation of prosperity. In a sense, the decision to build a substantial vessel is important expression of producer confidence. These patterns of activity are mirrored by patterns of shipbuilding and ship owning in Calais.

Shipbuilding at Calais thrived from the 1840s through 1870s in part because American law functionally restricted the movement of American products, including milled lumber, between American ports to U.S. built vessels. For mill owners, who tended to have properties on both sides of the international line, it made little sense to build a vessel in St. Stephan when they could built it in Calais.

The Lumberman's Vessel of Choice: The Schooner

Although Calais builders launched sailing vessels of every class, the dominant vessel was the small to medium size two-masted schooner. In Calais, as it was throughout the United States

during the nineteenth century, the schooner was the preferred vessel for many coastal trades. Although the fore and aft triangular sails and rigs were relatively consistent in different places, the typical size and model of schooners could vary significantly between different regions or the between different trades within a region. More schooners were built in Maine during the nineteenth century than in another state. As other areas either retreated from shipbuilding or moved to iron and steel, Maine continued to produce enormous wooden five and six-masted coal schooners until the eve of World War I. Neither Calais nor St. Stephen engaged in the building of the large schooners, what they produced was a large number of small to medium-sized schooners for the lumber trade.

The sizes of the ships are well documented. Typical Calais-built lumber schooners discussed below ranged from somewhat under 100 tons to nearly 200 tons, but most cluster between 90 and 120 tons. We know less about their actual construction. Relatively few seem to have ever been inspected by insurance underwriters. The lumber schooners had boxy hulls with relatively flat floors. This enabled the vessel to easily remain upright when set on the bottom during an ebbing tide, a common occurrence in Calais where many of the lumber wharfs went dry during low water. Purpose built lumber schooners often had bow ports—hatches that facilitated the loading of lumber below decks. In some areas centerboards were common as well—it is unknown if this was the case with St. Croix schooners. Generally without ornament, these were quintessential working platforms; cheap to build, maintain and operate.

In many places in the United States, shipbuilding and the lumber industry thrived in tandem. Shipbuilders required access to materials, the owners of lumber mills need a mean to get their bulk products to distance markets in an inexpensive and reasonably reliable manner. The production and especially the distribution of lumber during the glory days of the St. Croix was a highly decentralized. Lumber required significant labor to load and unload as a cargo and was frequently sold in smaller lots. With large quantities afloat any most time, short-term rapid fluctuations in price were probably rare compared with some other maritime trades. Furthermore wood is durable, it doesn't spoil with time or ruin when in contact with water. In short, there was little to no demand for a fast or elaborate vessel.

What was required was a ship that was inexpensive to build, own and operate. A shallow-draft schooner-rigged vessel fulfilled those criteria perfectly. Deep vessels calling at St. Croix often went only as far up as the Ledge, and required the overwater transporting of product by lighters that could add 50 cents or more per ton. A shallow draft schooner could come access nearly the entire navigational reach of the St. Croix with less time lost for tides. Vessels with a limited draught of water were also able to call at a wide range of shallow water ports, an important characteristic in the decentralized lumber trade. The people of Calais invested heavily in their local fleets during the expanding decades of lumbering and maintained their investment as long at the lumbering remained viable.

Successful Symbiosis: Pattern of Calais Shipbuilding and Ship Owning 1860–1889

The following section analyzes a data set of 87 vessels identified in the 1889 List of the Merchant Vessel of the United States (MVUS) as built or owned in Calais, Maine. Although it probably does not capture every vessel, the MVUS certainly identifies the majority of the vessels

falling into these categories. It would not, however, reveal Calais-built vessels subsequently sold abroad. Although dwindling, the lumber industry in 1889 remained highly profitable and helped support a vibrant local fleet of 70 vessels, a drop of 11 from the 81 reported for 1878 in the Calais Advertiser (5 May 1879). In sum, although the fleet was slowly shrinking, its 1889 composition reflected long term patterns of construction and acquisition. The seventeen vessels sold out of Calais reveal the dimensions of shipbuilding beyond the lumber industry and hint at later efforts to diversify and survive.

The following paragraphs provide a broad characterization of three categories of vessels - vessels built in Calais and then sold elsewhere; vessels both built and owned in Calais; and Calais owned vessels built elsewhere.

Vessels Built in Calais and Sold Elsewhere

From the 1820s on, shipbuilders in Calais and St. Stephen built vessels destined for local and distant markets. Selling vessels seems to typify the situation in St. Stephen and was important but hardly not dominant in Calais. During the 1840s, Calais builders launched large and modest-sized barks such as the 349 ton *Sophia* and a number of brigs destined for longer distance regional and international commerce. In the 1850s, the Porter brothers built the fast clipper 1762 ton *Break 'O Day* as well as other large vessels. A 1850s Calais map included a large illustration of a major Porter vessel on the stocks. The vessel appears impressive and the shipyard relatively primitive, with stacks of lumber and men working with hand tools (Figure 3.09)

The Calais built vessels owned elsewhere in 1889 ranged in build date from the 35-ton schooner *Freeport* built in 1842 (by 21 years the oldest Calais vessel, local or owned elsewhere) to the 252-ton schooner *Grace Gower* built in 1884. The group comprised nine schooners, six barks, one brig, and one ship. Only two of the nine schooners, *Delia Hinds* and *E & J Oakley*, fall within the typical dimensions of a St. Croix lumber schooner. The Hinds family built many vessels on St. Croix and the *Delia Hinds* was as a locally owned lumber schooner when launched in 1863 and then subsequently sold. Ten of the seventeen vessels were owned in New York, with eight of these built after 1874. The average size of the sold vessel group after discarding the high and low vessels was 366 tons (413 for all with n= 17). The average depth of the group (less high and low values) was 12.6 feet.



Figure 3.09: Porter & Co. Ship Yard, Calais, Maine from Calais City Map, 1856 (Reading Room, Calais Free Library, Calais, Maine)

Vessels Built Elsewhere and Owned in Calais

Vessels built elsewhere and owned in Calais consisted of 30 wind-powered craft and a single steam vessel, which falls outside of this analysis. This group was substantially older than either Calais-built group with oldest vessel, the schooner *Pavilion* reportedly built in 1817. The group contained three vessels built in the 1840s, nine in 1850s, ten in the 1860s, five in the 1870s, and one in the 1880s. This represents a typical distribution of age across a population of mid-to late 19th century vessels. The average size of the group (less high and low figures) was 126 tons (147.8 tons for all vessels with $n=30$). The average depth (less high and low figures) was 8.06 feet. Eighteen were built in other Maine ports, with five coming from Perry, all were built between 1864 and 1868, two each from Pembroke, Gouldsborough, Ellsworth, and Eden, and Milford. Of non-Maine built places of origin only Milford, Delaware with two schooners was represented by more than one vessel in the fleet.

Calais-Built and Owned Vessels

The Calais-built and owned group exhibited the least diversity. The average size (less the high and low figures) was 162.5 tons (for all vessels it was 167 tons with n=30). The depth of hold for the group (less the high and low figures) was 8.43 feet. The oldest vessel in the fleet was built in 1860, one of eight built during that decade. Twenty-one were built between 1870 and 1875. Four of these were built in 1872, seven in 1873, five in 1874, and one in 1875. The youngest vessel in the fleet, the Brig *Eugene* built by Ridout and Lord was the only non-schooner in the group. At 443 tons, and drawing 17.3 feet of water, this vessel was not a St. Croix lumber vessel, but a deepwater merchant. The profile of these vessels suggest a significant investment in locally built new vessels, that as a group were a bit larger than older schooners—a development supported in the historical record (Hall 1884).

The three groups reveal some interesting patterns that largely, but not completely correspond with secondary historical accounts. Given the many vessels built at Calais during the 19th century, finding only 48 Calais built vessels listed in the 1889 MVUS is a bit surprising. While the number represents 22 percent of the 221 vessels ascribed to Calais in the library manuscript, the group is not representative. Among non-Calais owned and built craft, only two, the atypical 35-ton schooner *Freeport* built in 1842, and the 1863-built lumber-size schooner *Delia Hinds*, predate the end of the Civil War. This raises the question as to what happened to all of the vessels built in the busy years of the 1840s and 1850s. The presence of craft of this vintage in the non-Calais built segment of the Calais fleet in 1889 limits the possibility that age and the sea claimed all of the older local fleet. More work is required to explain this potentially interesting pattern, but the ownership patterns of 1889 and shipbuilding history of the region point suggest some revealing directions.

The 1874 Roe & Colby Map of Calais, Washington County, Maine and the Towns of St. Stephen and Milltown produced during the regions peak as a lumber town and port reveal the international nature of the local enterprises including shipbuilding and lumber milling. Along the Calais side moving up the river is the W. Hinds Shipyard and Marine Railway, H.F. Easton's Ship Yard, Ridouts Ship Yard, and another Hinds Ship Yard, and Downes Ship Yard. Further along the waterfront are an unending series of piers with names such as Todd, Porter, Eaton Bros., Murchie & Sons, across the river the mix of names is different, but old names such as Eaton, Todd and others stand out.



Figure 3.10. City of Calais, Washington County, Maine, 1894 (David Rumsey Collection) Note the Marine Railway between the R.H. Todd and Sons Pier and the Foundry. Twenty years before shipyards covered the riverfront from the Todd Pier to the A.H. Sawyer Dock.

The 1874 map discussed above depicts the international nature of local business. The managing ownership of the 1889 fleet suggests the concentration of the maritime enterprises, including lumber, in few hands. One Family name, Eaton is associated with the ownership of six schooners. The managing ownership suggested by the MVUS listing is somewhat misleading. One person rarely wholly owned a St. Croix lumber vessel. This list of share owners for the Schooner *Addie Todd* between 1876 and 1880 represents a virtual who's who of the local lumber industry and the complicated relations among families with familiar names such as Downes, Murchie, Boardman, Eaton, and Todd (Jeffries nd). The *Annie Gus* also at work in 1889 was built in 1871 and owned by Eaton, Todd, Boardman, and the Red Beach Plaster Company. The *B.L. Eaton* built in 1873 was owned by Eaton Brothers, two members of the Downes family, and the builders Rideout & Lord. Owen Hinds the likely builder of the schooner *Alligator* built in 1864, retained interest in the vessel into the 1880s. Nineteen years after her construction, the managing owner listed for the *C.H. Eaton* was the one of her builders O.B. Rideout; other owners listed up to 1880 when local tax records end include Eaton Brothers, Demings, and others. The 1873 schooner Ernst T. Lee was managed in 1889 by one of her builders G.W. Lord.

As late as 1880, Ridoubt and Lord owned 9/32 of the ship along with Eatons, Demings, Downs and others.

A deeper analysis of ownership pattern is possible through an examination federal vessel documents and a closer look at Calais vessel property tax records. The broad patterns, however, seem fairly clear. The lumbermen of St. Croix invested heavily and strategically in ships, principally lumber schooners. A large operation such as the Eaton Brothers might have small investments in dozens of different craft. By carving up the vessel into shares and selling them across the community, the businessmen pooled risks while maximizing profits. Such partnerships may have frequently obviated the need for marine insurance. The decision not to insure, if the vessel survived the season and most did, added several percent to its annual profit, which by 1880 had apparently declined to four or five percent in Calais (Jensen 1994; Hall 1884).

The involvement of local shipbuilders was also an important component of merchant marine successes. The investment in shipbuilder's labor and perhaps some material would have substantially reduced the capital outlay required for a new vessel. For shipbuilders, an occupation with extremely unstable financial returns, ownership could bring an additional source of income and possibly maintenance and repair work for their yard. Throughout the history of shipbuilding at Calais, shipbuilding and lumber existed in a symbiotic relationship that persisted into the beginning of the 20th century.

Ships were an excellent investment in the late 1860s and early 1870s and people of Calais, including builders invested heavily (Hall 1884). However, after 1875, the value of small wood schooners declined significantly and shares would have been difficult to sell at good prices. Local investments during the boom years explain the presence of so many newer Calais built vessels in the 1889 fleet. It does not explain why older local vessels are so rare. What does the age profile of Calais-built vessels differ so much from the vessels built elsewhere and brought to Calais? What happened to the vessels built at Calais before 1860? They are not in the Calais fleet and are not found elsewhere in the United States. The fluid boarder and the opportunities and challenges of associated with the American Civil War may hold the answer. But for the present, as significant segment of St. Croix's shipbuilding heritage remains missing.

In 1890 and 1891, the last new vessels came off the stocks in Calais. These vessels were aberrations. The end of wooden shipbuilding at Calais probably seemed obvious to the most knowledgeable of the local businessmen since the late 1870s. Unlike other a few other shipbuilding centers, Calais, the most distant of the state's maritime communities, was ill positioned to participate in the last major phase of American wooden shipbuilding, the construction of Maine's the famous giant huge coal schooners. By 1894, the shipbuilding industry had virtually vanished from the Calais commercial landscape. Only the marine railway remained as a vital bit of infrastructure in community that still depended on an aging fleet of wood schooners. As long as the lumber and ships still met at the tidewater of the St. Croix River, a place in the International community existed for people who understood the mechanics of the sea.