

THE LAKE GEORGE BATEAUX:  
BRITISH COLONIAL UTILITY CRAFT IN THE FRENCH AND INDIAN WAR

A Thesis

by

NATHAN A. GALLAGHER

Submitted to the Office of Graduate and Professional Studies of  
Texas A&M University  
in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

Chair of Committee, Donny L. Hamilton  
Committee Members, Kevin J. Crisman  
James C. Bradford  
Head of Department, Cynthia Werner

May 2015

Major Subject: Anthropology

Copyright 2015 Nathan A. Gallagher

## ABSTRACT

Bateaux were a key utility craft in military operations in the colonies of North America. Their size, durability, and ease of construction made them ideal for moving troops and supplies over the lakes and rivers of New York, New England and New France. General descriptions of bateaux are found in the historical record, but the archaeological record shows that they took several distinct forms between their advent in the late seventeenth century and the nineteenth century. This often causes confusion when bateaux are discussed by historians. This thesis provides a construction analysis of the remains of British colonial bateaux used during the French and Indian War. Comparison of these remains, which were recovered from Lake George and stored at the New York State Museum, provides a snapshot of British military bateau construction during the mid-eighteenth century. The examples and reconstruction of the Lake George bateaux presented in this paper show that the craft were built from a very simple design, but still required some expertise to achieve the level of craftsmanship in boatbuilding that is seen in the final result. Although these bateaux were hastily and lightly constructed, they were sturdy enough to survive the lakes and rivers they were expected to traverse. Aspects of their construction show specific adaptation to this type of environment. Details are also compared to contemporary French examples, and an admiralty draft of a bateau issued in 1776. Synthesizing the analysis of these remains with abundant primary resources that mention the use of bateaux in the French and Indian War allows a deeper understanding of their historical context and provides a basis for further comparison between bateaux of other types and from other eras.

## DEDICATION

This thesis is dedicated to my mother, Shari Gallagher, for her constant support.

## ACKNOWLEDGEMENTS

There are several parties I would like to recognize for their help in making this project a reality. All of them played an integral role in the successful completion of this thesis, and therefore they each deserve my warmest thanks.

I am thankful to Dr. Donny Hamilton for chairing my thesis committee and guiding me through the process. Dr. Kevin Crisman deserves a tremendous amount of my gratitude. He began this project in 1986 by recording Lake George Bateau 2626 and gathering numerous sources on colonial bateaux. The groundwork he laid for this study as well as his support and insight throughout my research was invaluable. Also, a special thanks to Dr. James Bradford, who provided the historian's perspective on this project. After all, it is not enough to simply describe archaeological material. We must strive to tell the human stories behind it.

A few of my colleagues have been especially helpful as I worked on this thesis. First, I would like to thank Carolyn Kennedy, who introduced me to the project and encouraged me to pursue it as my thesis topic. Grace Tsai generously shared some of her insight on cask-making, which helped with a small, but important, portion of this thesis. Finally, I would like to recognize Justin Parkhoff, Jessica Stika, and Rudi Vanzin, whose encouraging words helped me see this project through to completion. Thank you all for creating a supportive community in the Nautical Archaeology program at Texas A&M University.

This project would not have been possible without the excellent resources of the Center for Maritime Archaeology and Conservation (CMAC) at Texas A&M University,

namely the Conservation Research Laboratory, the New World Laboratory, the J. Richard Steffy Ship Reconstruction Laboratory, and the Wilder 3-Dimensional Imaging Laboratory. I would also like to thank the individual leaders of these laboratories: Dr. Donny Hamilton, Dr. Kevin Crisman, Dr. Felipe Castro, and Dr. Wayne Smith. Their instruction in their respective specialties instilled the skillset necessary to complete this project. CMAC also provided the travel grant which made it possible to visit the New York State museum to record the collections discussed in this study.

Arthur Cohn and Chris Sabick of the Lake Champlain Maritime Museum were very helpful in providing information about the bateau replica *Perseverance*. Additionally, their abundant passion for the field of nautical archaeology is inspiring.

Thanks to The Adirondack Museum, for providing information about the Lake George Bateaux when they were stored there. The responsiveness of their staff to my email messages was greatly appreciated, and helped lead me in the right direction.

The Schenectady County Historical Society also played an important role in this project. Several of their archival documents were pertinent to this project, and their staff was very helpful in getting these sources to me. They were also very accommodating in showing me their Mabee farm bateaux replicas *DeSager* and *Bobbie G*.

Of course, this thesis would not exist without the kind support of the New York State Museum, especially Robyn Gibson and Jeffrey Stringer for their generous assistance accessing and recording the Lake George Bateaux. Ms. Gibson helped set up my research appointment, and provided a lot of helpful information. Jeffrey Stringer's help at the New York State Museum off-site storage facility was integral to this project.

While I only had one business week at the museum, he helped me make the most of it by assisting me in setting up a work space, moving large timbers, and recommending resources and historical sites around New York. I could not have done effective research at the museum without him. I am also grateful to professional photographer, John Crispin, who took some photos of timbers which are included in this thesis.

## TABLE OF CONTENTS

	Page
ABSTRACT .....	ii
DEDICATION .....	iii
ACKNOWLEDGEMENTS .....	iv
TABLE OF CONTENTS .....	vii
LIST OF FIGURES.....	x
LIST OF TABLES .....	xiv
INTRODUCTION.....	1
Methodology .....	2
HISTORICAL BACKGROUND .....	4
French Bateaux.....	4
English Bateaux.....	7
Maintenance .....	16
Crewing and Stores .....	19
Organization and Payment .....	23
Combat and Movement .....	26
LAKE GEORGE BATEAUX: SINKING, DISCOVERY, AND EXCAVATION.....	29
Excavation.....	29
Preservation.....	36
Bateaux in Experimental Archaeology.....	37
CONSTRUCTION OF LAKE GEORGE BATEAU 2626.....	44

Bottom Planking.....	46
Floor Battens .....	47
Stem Configuration .....	49
Stern Configuration.....	50
Framing .....	52
Side Planking.....	53
Reconstruction.....	55
 CONSTRUCTION OF LAKE GEORGE BATEAU 4560.....	 57
Bottom Planking.....	58
Floor Battens .....	59
Stem configuration .....	60
Stern configuration.....	62
Framing .....	63
Side Planking.....	63
Reconstruction.....	64
 CONSTRUCTION OF LAKE GEORGE BATEAU 4566.....	 66
Bottom Planking.....	66
Floor Battens .....	67
Stem Configuration .....	69
Stern Configuration.....	69
Framing .....	70
Side Planking.....	70
Stringer gunwale or shelf fragment.....	71
Possible Mast or Yard Fragment.....	72
Reconstruction.....	72
 BATEAU COLLECTION 4530.....	 76
Stems .....	76
Sternposts .....	80
Mast Step.....	82
Rowlocks.....	83
Tholepins or Treenails.....	84
Mortar Shells .....	85
 BATEAU COLLECTION 4559.....	 87
Oar or Steering Sweep.....	87



Gunwale or shelf fragments .....	88
Timbers inconsistent with bateau construction .....	89
DISCUSSION .....	93
Comparison between Lake George bateaux .....	93
Comparison to French bateaux .....	97
Standardization .....	101
Propulsion .....	107
Influence .....	110
CONCLUSION .....	113
BIBLIOGRAPHY .....	115

## LIST OF FIGURES

	Page
Figure 1. Dagneau’s reconstruction of a French bateau found under Musée de la Civilisation in Québec City. (Dagneau. 285.) .....	6
Figure 2. Cross section and nail patterns of a French bateau found under Musée de la Civilisation in Québec City. (Dagneau. 286.) .....	6
Figure 3. A British bateau. (Drawing: Kevin Crisman) .....	10
Figure 4. James River bateau replica. (Crisman. “Struggle for a Continent: Naval Battles of the French and Indian Wars.” 131.) .....	13
Figure 5. Map of Northeastern United States showing the location of Lake Champlain and Lake George. ....	31
Figure 6. Map of the Lake Champlain basin. ( <a href="http://www.adirondackalmanack.com/wp-content/uploads/2012/08/Lake-Champlain-Basin.jpg">http://www.adirondackalmanack.com/wp-content/uploads/2012/08/Lake-Champlain-Basin.jpg</a> ) .....	32
Figure 7. Adirondack Museum team pulling bateau remains out of Lake George. (Photo: Adirondack Museum 1960) .....	33
Figure 8. Dr. Robert Inverarity checking a vat of Polyethylene Glycol (PEG) during conservation of the Lake George bateaux. (Photo: Adirondack Museum. 1961.) .....	35
Figure 9. John Gardner's preliminary lines for the Lake George bateaux. (Gardner “Bateau 'Reconstructed' From Remains, Drawing.” August, 1967.) .....	39
Figure 10. Basin Harbor Museum bateau replica <i>Perseverance</i> under construction. (Crisman. 136.) .....	39

Figure 11. Launching Basin Harbor Museum bateau replica <i>Perseverance</i> . (Crisman. 131.).....	41
Figure 12. Bateau replica <i>DeSager</i> at the Schenectady County Historical Society’s Mabee Farm.....	42
Figure 13. Bateau replica <i>Bobbie G</i> at the Schenectady County Historical Society’s Mabee Farm.....	42
Figure 14. Lake George Bateaux 2626 assembled in the Adirondack museum. (Photo: Adirondack Museum. 1960.).....	45
Figure 15. Scale drawing of Lake George Bateaux 2626 assembled remains. (After Crisman. “Struggle for a Continent: Naval Battles of the French and Indian Wars.” 136.) .....	45
Figure 16. Lake George Bateaux 2626 reconstructed bottom planks. ....	47
Figure 17. Lake George Bateaux 2626 reconstructed floor battens. ....	48
Figure 18. Stern configuration. (Drawing: K. Crisman). ....	50
Figure 19. Stern configuration. (Drawing: K. Crisman) .....	51
Figure 20. Lake George Bateaux 2626 reconstructed frames. (Drawing: Kevin Crisman).....	52
Figure 21. Lake George Bateaux 2626 reconstructed cross section. (Modified from Crisman. “Struggle for a Continent: Naval Battles of the French and Indian Wars.” 136.) .....	54
Figure 22. Lake George Bateaux 2626 reconstructed lines.....	56
Figure 23. A crowd observes Lake George Bateau 4560 after its raising.....	58
Figure 24. Lake George Bateaux 4560 reconstructed bottom planks. ....	59

Figure 25. Lake George Bateaux 4560 reconstructed floor battens. ....	60
Figure 26. Lake George Bateaux 4560 reconstructed lines.....	65
Figure 27. Lake George Bateaux 4566 reconstructed bottom planks. ....	67
Figure 28. Lake George Bateaux 4566 reconstructed floor battens. ....	69
Figure 29. Lake George Bateaux 4566 reconstructed lines.....	74
Figure 30. Stem A from Lake George Bateaux Collection 4530. ....	77
Figure 31. Stem B from Lake George Bateaux Collection 4530. ....	78
Figure 32. Stem C from Lake George Bateaux Collection 4530. ....	79
Figure 33. Unusual stem piece from Lake George Bateaux Collection 4530.....	80
Figure 34. Sternpost A from Lake George Bateaux Collection 4530. ....	81
Figure 35. Sternpost B from Lake George Bateaux Collection 4530. ....	81
Figure 36. Sternpost C from Lake George Bateaux Collection 4530. ....	82
Figure 37. Mast step from Lake George Bateaux Collection 4530.....	83
Figure 38. Rowlock A from Lake George Bateaux Collection 4530.....	84
Figure 39. Tholepins or treenails from Lake George Bateaux Collection 4530. ....	85
Figure 40. Oar or steering sweep. ....	88
Figure 41. Unusual timber (A) from Lake George Bateaux Collection 4559. (Photo: John Crispin 2014) .....	90

Figure 42. Unusual timber B from Lake George Bateaux Collection 4559. (Photo: John Crispin 2014) .....	90
Figure 43. Unusual timber C from Lake George Bateaux Collection 4559. (Photo: John Crispin 2014) .....	91
Figure 44. Lines of a common whaleboat in the early nineteenth century. (Chapelle. 35.) .....	100
Figure 45. Admiralty draft of a bateau from 1776. (Morgan. 319.) .....	103
Figure 46. Design of a colonial bateau, probably for use on Lake Champlain in Burgoyne's campaign of 1776, from an Admiralty draught. (Chapelle. 35.) .....	103
Figure 47. British bateaux and a sloop on Lake George during the French and Indian War. (Crisman. 135.) .....	109
Figure 48. <i>Philadelphia</i> Hull Structure. (Bratten. 95) .....	112

## LIST OF TABLES

	Page
Table 1. Comparison of reconstructed bateau dimensions and fittings (measurements in inches).....	11

## INTRODUCTION

In the North American colonies of Britain and France, it was essential to have a vessel that could navigate the myriad of rivers and lakes in New England and Canada. Starting in the seventeenth century, French colonists developed a type of small, flat-bottomed, plank-built craft to navigate these waterways. A similar design was adopted by British colonists in the early eighteenth century, and by the French and Indian War (1754-1763), these “bateaux” were used by the thousands for commercial and military purposes.<sup>1</sup> Because of the rough terrain in Canada and the relative ease of moving troops via water, bateaux became integral to British military strategy, and they were mentioned countless times in historic sources. These easy-to-build utility craft were used by military forces to transport troops and provisions, explore waterways, and even engage the enemy with small arms.<sup>2</sup> In spite of their noted contributions, the British version of the bateau has yet to be studied in much detail or given the credit it deserves for its important role in colonial history.

This thesis provides a comprehensive examination of extant British military bateaux of the French and Indian War. There is some confusion about the nuances of bateaux construction and usage in the few publications that mention them. This is largely

---

<sup>1</sup> John Gardner. “Bateaux Played Key Role in American History.” *National Fisherman*, April, 1967.

<sup>2</sup> For examples see: *British Spy or New Universal London Weekly Journal*. “Boston, May 21.” (London), Saturday, July 17, 1756. 17<sup>th</sup>-18<sup>th</sup> Century Burney Collection Newspapers Document No. Z2000126699.; *Naval Documents from the Gage Papers 1759-1775*. Collection of letters, Crown Point State Historic Site, Crown Point, New York. Vol. 8, Vol. 33, Vol. 35, Vol. 66, Vol. 112.

due to regional and evolutionary differences throughout their use from the seventeenth to the twentieth centuries. Bateaux were particularly ubiquitous during the eighteenth century. For this reason, contemporary sources mention them frequently, but rarely offer any detailed information about their construction. This leads to conflicting information when historians attempt to explain bateaux solely from documentary sources.

### *Methodology*

Archaeological remains of three British bateaux dating to 1758-1759 offer an opportunity to examine the construction of this type of craft during in the mid-eighteenth century. Reconstructions of these boats and consideration of associated artifacts provide details that are not available in the documentary record, and consequently help to clarify vague references in journals and military documents. By supplementing historical evidence with these archaeological examples, it is possible to form an accurate description of British military bateaux in the French and Indian War. The craft were examined in the specific context of this war in order to avoid an over-generalization of bateaux throughout the century. However, details of their usage in the American Revolution (1775-1781) are also considered in a more limited capacity. This provides evidence of how bateaux usage was expanded or adapted to a wider range of purposes. Essential evidence such as an Admiralty draft of a bateau from 1776 and descriptions of



specialty-sized bateaux in military documents from later eighteenth century are valuable for comparisons and clarification of references from the French and Indian War.<sup>3</sup>

Eighteenth-century sources such as military letters, newspapers, travel narratives, and personal accounts add some understanding to bateau construction, but are more useful for providing context. These sources frequently mention bateaux, making it obvious that they were ubiquitous in North America and required little explanation, but unfortunately this means that contemporary accounts rarely offer any useful information about the boats' construction. A few available descriptions, such as the ones given by Peter Kalm in his 1750 travel journal of North America, are especially helpful for comparing to the contemporary bateaux examined in this paper.<sup>4</sup> Accounts like these add to the understanding of bateau construction and are valuable as assessments of their strengths and weaknesses. They explain how bateaux were used in military and more civilian capacities, and their importance in navigating waterways in Northeastern North America.

---

<sup>3</sup> "A statement of the Battoes which is necessary to be Built at Schenectady for the United States." 11 Apr 1796. Schenectady County Historical Society. Historic Manuscripts Collections. Mil142.; See also: Pierre Pouchot. *Memoirs On The Late War In North America Between France And England*. Translated by Michael Cardy. Edited by Brian Leigh Dunnigan. Youngstown: Old Fort Niagara Association, Inc. 1994. 365. Quoted in notes by Dunnigan. Frederick MacKenzie Papers, William L. Clements Library, Volume B, p.171.

<sup>4</sup> Peter Kalm. *The America of 1750. Travels in North America in two volumes. Volume 1*. Edited by Adolph B. Benson. (New York: Dover Publications, Inc., 1964). 381.

## HISTORICAL BACKGROUND

### *French Bateaux*

The military in New France was using bateaux as early as 1665-6.<sup>5</sup> These “*batteaux plats*,” (literally “flat-boats”) were well suited to traverse the many waterways of New France. They were more durable than the native style bark canoes, more stable than log boats, and light enough to portage or tow around rapids, a common necessity on the rocky rivers of New France.<sup>6</sup> This made them ideal for transporting troops and provisions that were otherwise extremely difficult to move over the rough terrain of eastern North America. They were especially valued for their usefulness in the early conflicts that arose with the Iroquois and later with Britain. As a result the French military contracted for the production of hundreds, making them a common sight in New France.<sup>7</sup> Peter Kalm described these bateaux in his 1750 travel journal of North America:

They are always made very large here, and used for large cargoes. They are flat-bottomed, and the bottom is made of red, but more commonly of white, oak which shows better resistance when it runs against a stone than other wood. The sides are made of white fir, because oak would make the bateau too heavy.<sup>8</sup>

---

<sup>5</sup> André Lépine. “A wreck believed to be a French 'bateau' sunk during action in 1760 off Isle-aux-Noix in the Richelieu River, Quebec, Canada.” *The International Journal of Nautical Archaeology*. 10:1 (1981): 48.

<sup>6</sup> Charles Dagneau. “The ‘*Batteau Plats*’ of New France.” *The International Journal of Nautical Archaeology*. 33 no. 2. (2003): 292.

<sup>7</sup> *Ibid.*, 281.

<sup>8</sup> Kalm. *The America of 1750*, 381.

Some examples of French bateaux have survived to be studied and compared to Kalm's description. Four of them were uncovered under the *Musée de la Civilisation* in Québec City, Canada in 1985-6 and Charles Dagneau analyzed their construction. Dagneau dated these bateaux to 1740-50, making them nearly contemporary with the British bateau described in this study. They averaged about 33 feet (10.05 m) in length and were made from a variety of woods that were strategically used in the in order to reach the best compromise of lightness and strength. The bottoms consisted of four planks, the inner two of which were made of pine, and the outer two were made of oak. The sides consisted of three strakes laid flush against the frame. Each strake consisted of a single plank that ran from stem to stern. The first side strake was made of oak, while the second and third were made of pine. Kalm described this assembly as a deliberate effort to strengthen the boat at the sides of the bottom, while minimizing weight with the use of pine.<sup>9</sup>

Futtocks or side frames were made of naturally curved white cedar, although some were cut into shape, which weakened their strength.<sup>10</sup> In two of these bateaux, the posts were notched to fit over the end of the flat bottom. This was done to protect the front edges of middle pine planks, which were more susceptible to damage from rapids and portages.<sup>11</sup> These were more or less double ended craft. The ends were not perfectly symmetrical and had an intended bow and stern, but their similar configuration allowed

---

<sup>9</sup> Dagneau. "The '*Bateau Plats*' of New France." 284.

<sup>10</sup> *Ibid.*, 286.

<sup>11</sup> *Ibid.*, 284.

them to be interchanged if necessary.<sup>12</sup> The bateau had limited sailing capability, but a mast with a square sail was lifted in favorable winds.<sup>13</sup> (Figures 1-2)

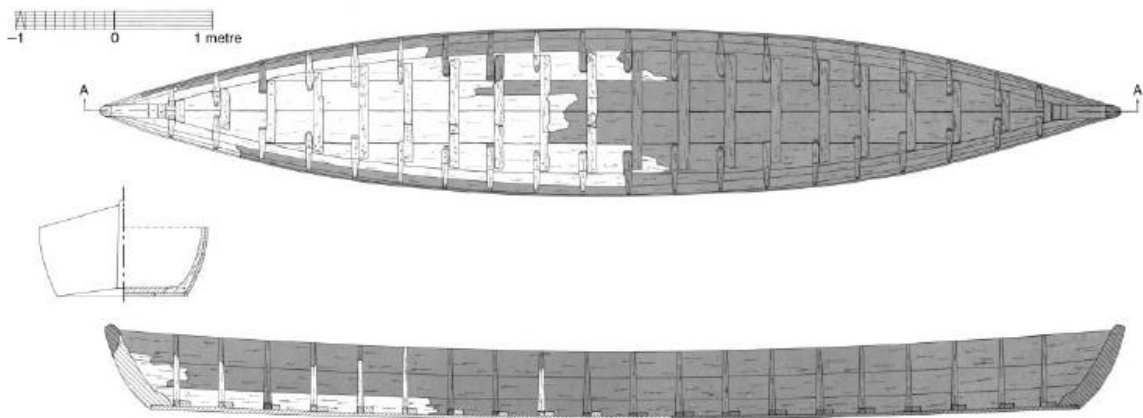


Figure 1. Dagneau's reconstruction of a French bateau found under Musée de la Civilisation in Québec City. (Dagneau. 285.)

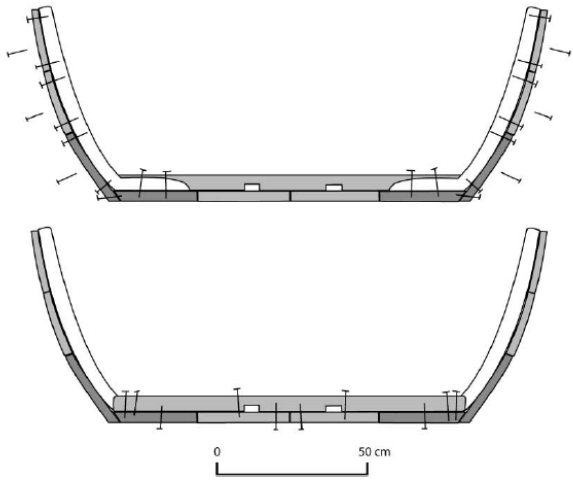


Figure 2. Cross section and nail patterns of a French bateau found under Musée de la Civilisation in Québec City. (Dagneau. 286.)

---

<sup>12</sup> *Ibid.*, 284.

<sup>13</sup> *Ibid.*, 292.

### *English Bateaux*

Although flat-bottomed boats were in use in Europe for centuries, bateaux were a characteristically North American vessel. Peter Kalm compared them to bark boats and canoes, but described them as superior to both for their durability and capacity. He also distinguished all of these craft from what was used in Europe, which demonstrates that they developed into something unique to North America.<sup>14</sup> Gardner noted that it would be fundamentally incorrect to refer to any bateau as “British,” since it was strictly a colonial creation, and had no parallel in Britain.<sup>15</sup> However, it is necessary to distinguish the British colonial bateau from its French counterpart.

It is not clear exactly when bateaux were first used in the British colonies. The 1689-1697 conflict between England and France known as King Williams War was probably not the first time the British military came in contact with bateaux, but it provided a chance to see the strategic value of such a vessel. British colonists certainly came into contact with these useful French boats during their expeditions into New France, and the terrain necessitated smaller troop transports that were capable of successfully navigating rivers. What is known for certain is that the British adopted the bateau by their next conflict with France, Queen Anne’s War (1702-1713).<sup>16</sup>

---

<sup>14</sup> Kalm. *The America of 1750*, 333.

<sup>15</sup> Gardner. “Lake George finds appeared simple, but details reveal this Famous Boat Type In Transitional Stage.” *National Fisherman*, May, 1967.

<sup>16</sup> *Ibid.*

Presumably, the French term of “*bateau plat*,” was simply shortened to “bateau” in the British vocabulary. It is obvious that using the word for “boat” was not specific enough for French speakers, but to British colonials the word came to represent this particular type of craft. The name reflects the French origin of the boats, but British phonetic spellings such as “battoe” or “batoe” are commonly seen in English historical sources. When applied to this unique version of the craft built in the English colonies, “bateau” became a word for something *sui generis*. As Peter Kalm described them:

Battoes are another kind of boats that are much in use in Albany: they are made of boards of white pine; the bottom is flat, that they may row the better in shallow water. They are sharp at both ends, and somewhat higher towards the end than in the middle. They have seats in them, and are rowed as common boats. They are long, yet not all alike. Usually they are three and sometimes four fathoms [24 feet or 7.32 meters] long. The height from the bottom to the top of the board (for the sides stand almost perpendicular) is from twenty inches to two feet [50.8-60.96 centimeters], and the breadth in the middle about a yard and six inches [1.07 meters]. They are chiefly made use of for carrying goods along the river to the Indians, that is, when those rivers are open enough for the battoes to pass through, and when they need not be carried by land a great way. The boats made of bark of trees break easily by knocking against a stone, and the canoes cannot carry a great cargo, and are easily upset; the battoes are therefore preferable to them both.<sup>17</sup>

Kalm’s descriptions and archaeological evidence both show that the French and British versions of bateaux were somewhat different, but exactly when the British design departed from the French is still a mystery. It is known that many eighteenth-century bateaux were built in Albany and Schenectady, which had significant Dutch populations

---

<sup>17</sup> Kalm. *The America of 1750*, 333.

at the time.<sup>18</sup> New York was Dutch controlled until 1664, and therefore their style of craft was pervasive on the inland waterways both before and after the British took over.<sup>19</sup> Similar types of flat bottomed craft were constructed by Dutch builders in Europe as early as the seventeenth century, and possibly even influenced the French design.<sup>20</sup> Civilian craftsman were actively recruited to build bateaux, so it is reasonable to conclude that the concentration of Dutch craftsman in New York led to their influence on the design of the British colonial version.<sup>21</sup>

Two distinct types of British bateaux have survived in the archaeological record: the remains of three bateaux discovered in Lake George in 1960 that date to around 1757, and a bateau excavated from the James River in Virginia that dates to the late eighteenth or early nineteenth century.<sup>22</sup> Both reflect aspects of Peter Kalm's description but have some essential differences.

The Lake George bateaux are considerably larger than what Kalm described, but otherwise fit his description quite closely. They had similar dimensions to the bateaux examined by Dagneau, which makes them excellent for comparing contemporary British

---

<sup>18</sup> For Albany see: *Read's Weekly Journal or British Gazetteer*. "Extract of a private letter from Philadelphia, March 4." (London) May 1, 1756. For Schenectady see: "Gage to Amherst. Albany, April 16, 1760." In *Naval Documents from the Gage Papers 1759-1775*.

<sup>19</sup> Gardner. "Lake George finds appeared simple, but details reveal this Famous Boat Type In Transitional Stage."

<sup>20</sup> Lépine. "A wreck believed to be a French 'bateau,'" 47.

<sup>21</sup> Peter Way. "Class and the Common Soldier in the Seven Years War." *Labor History*. 44: 4 (2003): 469

<sup>22</sup> Kevin Crisman. "Struggle for a Continent: Naval Battles of the French and Indian Wars." in *Ships and shipwrecks of the Americas. A history based on underwater archaeology*, edited by George Bass. (New York: Thames and Hudson, 1996), 137-8.

and French versions of the craft. Reconstructed dimensions are compared in Table 1, and are discussed in greater detail in the chapters “Construction of Lake George Bateau 2626,” “Construction of Lake George Bateaux 4560,” and “Construction of Lake George Bateau 4566.” These bateaux had a more distinct bow and stern than the other examples, being wider towards the bow and having a very sharp stern, revealing that they were designed to improve hydrodynamics over a double-ended craft. The sides were also relatively high, giving them more free board and allowing a loaded draft of almost 2 feet (.61 meters). (Figure 3)

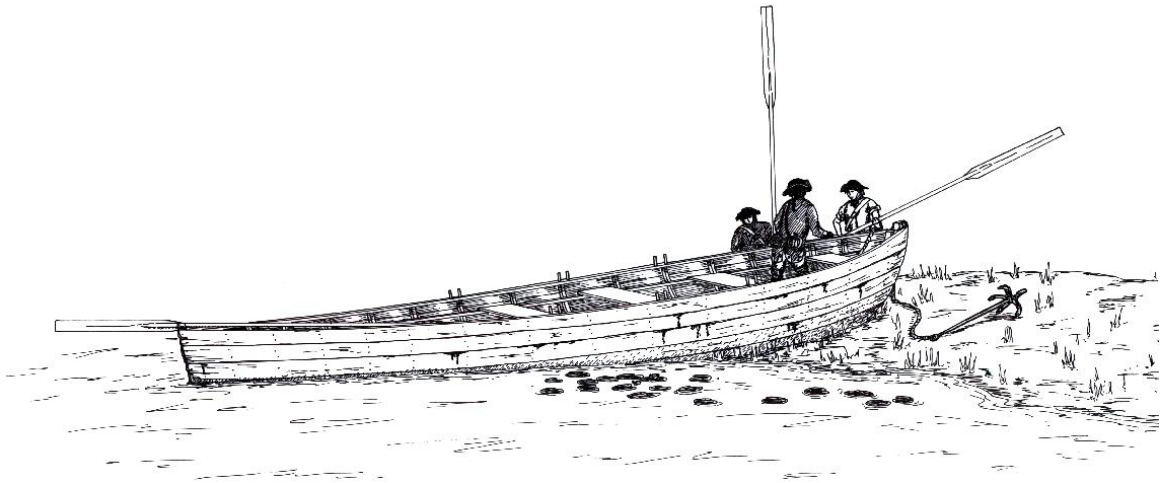


Figure 3. A British bateau. (Drawing: Kevin Crisman)



Table 1. Comparison of reconstructed bateau dimensions and fittings (measurements in inches)

Features	French Batteaux plats	Lake George Bateau 2626	1776 Drafts
Total Length	403 <sup>15</sup> / <sub>16</sub> (1026 cm)	384 (975.36 cm)	362 <sup>1</sup> / <sub>2</sub> (920.75 cm)
Maximum width	70 <sup>7</sup> / <sub>8</sub> (180 cm)	78 (198.12 cm)	78 (198.12 cm)
Height admidships	24 <sup>9</sup> / <sub>16</sub> (62.4 cm)	34 (86.36 cm)	37 (93.98 cm)
Bottom length	363 <sup>3</sup> / <sub>8</sub> (923 cm)	373 <sup>7</sup> / <sub>8</sub> (949.64 cm)	312 (792.48 cm)
Bottom width admidships	49 <sup>3</sup> / <sub>16</sub> (125 cm)	48 <sup>1</sup> / <sub>8</sub> (122.24 cm)	49 (124.46 cm)
Number of bottom planks	4	8-9	-
Bottom planks width	12 <sup>5</sup> / <sub>16</sub> (31.23 cm)	10 <sup>1</sup> / <sub>2</sub> - 12 <sup>3</sup> / <sub>4</sub> (26.67-32.39 cm)	12 (30.48 cm)
Bottom planks thickness	1 <sup>1</sup> / <sub>2</sub> (3.83 cm)	1 <sup>1</sup> / <sub>2</sub> (3.81 cm)	1 <sup>1</sup> / <sub>4</sub> (3.18 cm)
Sole's side beveled	yes	yes	-
Sole rocking	-	4 (10.16 cm)	3 <sup>1</sup> / <sub>4</sub> (8.26 cm)
Frames (futtocks) number	40	28	-
Floors (battens) number	20	14	-
Distance between floors	17 <sup>1</sup> / <sub>8</sub> (43.5 cm)	23 <sup>7</sup> / <sub>8</sub> (60.64 cm)	21 <sup>3</sup> / <sub>4</sub> (55.25 cm)
Floors width	2 <sup>9</sup> / <sub>16</sub> (6.5 cm)	7 <sup>1</sup> / <sub>2</sub> - 11 (19.05-27.94 cm)	12 (30.48 cm)
Floors thickness	1 <sup>7</sup> / <sub>8</sub> (4.812 cm)	<sup>7</sup> / <sub>8</sub> - 1 <sup>1</sup> / <sub>8</sub> (2.22-2.86 cm)	2 (5.08 cm)
Limber holes	yes	yes	-
Frames width	2 <sup>9</sup> / <sub>16</sub> (6.5 cm)	1 <sup>3</sup> / <sub>4</sub> - 2 <sup>1</sup> / <sub>4</sub> (4.45-5.72 cm)	2 (5.08 cm)
Frames thickness	2 <sup>11</sup> / <sub>16</sub> (6.75 cm)	1 <sup>1</sup> / <sub>2</sub> - 2 <sup>1</sup> / <sub>2</sub> (3.81-6.35 cm)	-
Frames height	21 <sup>5</sup> / <sub>8</sub> (55 cm)	38 <sup>7</sup> / <sub>8</sub> - 43 (98.81-109.22 cm)	37 (93.98 cm)
Number of strakes	3	5	-
Side planks width	9 <sup>5</sup> / <sub>16</sub> (23.7 cm)	10 (25.4 cm)	-
Side planks thickness	1 <sup>1</sup> / <sub>4</sub> (3.2 cm)	1 (2.54 cm)	1 <sup>1</sup> / <sub>8</sub> (2.86 cm)
First side plank beveled	yes	yes	-
Side planks arrangement	flush-laid	flush-laid	-
Number of ceiling planks	4	-	-
Ceiling planks width	9 <sup>1</sup> / <sub>16</sub> (23 cm)	-	-
Ceiling planks thickness	<sup>13</sup> / <sub>16</sub> (2 cm)	-	-

(1) All measurements for the “French batteaux plats” are averaged from the four bateaux described by Dagneau in “The *Batteaux plats*’ of New France,” and converted to English inches for comparison purposes. For individual measurements see appendix A. Measurements from the “Notary records” column were not used.

(2) The distance between floors for Lake George Bateau 2626 is an average of the distance from the center of one floor to the next. The builders scratch awl marked frames 24 inches apart.

(3) The symbol “-“ means that no data is available.

The James River bateau had much larger dimensions than the *batteaux plats* or the Lake George bateaux, at about 57 feet 6 inches (17.53 meters) long by 7 feet 6 inches (2.29 meters) broad. Like the other bateau examples, it had a very flat bottom and no keel. The ends, frames and bottoms were made of hardwood, and the sides were made of pine. Frames were fastened with clenched iron nails driven from the outside. This bateau was built mainly for poling rather than rowing, and thus had a very low sheer and ceiling planks over the frames to provide a walking surface. It was pointed at either end, which gave it a double-ended shape.<sup>23</sup> These features show it was optimized for a riverine environment and meant to remain in very shallow water. As evidenced by the later James River example, the bateau was an influential type of craft and variations on its design continued to be used well into the twentieth century. Particularly worth noting are the lumberman's bateau and a more double-ended version that remained in use in Quebec on the St. Lawrence River as late as the 1950s, retaining features similar to the eighteenth-century bateau examples.<sup>24</sup> (Figure 4)

---

<sup>23</sup> *Ibid.*, 138.

<sup>24</sup> Howard Chapelle, *American Small Sailing Craft: Their Design, Development, and Construction*. (New York: W.W. Norton & Company, 1951), 81-2.



Figure 4. James River bateau replica. (Crisman. “Struggle for a Continent: Naval Battles of the French and Indian Wars.” 131.)

Bateaux were essential to British military operations in North America by the mid eighteenth century. They were a true utility craft able to move a wide variety of supplies, and they even participated in battle. Their primary function was to transport men, provisions, and military stores. Since bateaux were rowed by four to six men, they could be operated by common soldiers, and allowed for relatively easy movement of ground forces. A typical bateau used in 1759 could transport a cargo of over two tons, allowing them to carry 23 men and a month’s worth of provisions.<sup>25</sup> They were often employed in large numbers for this purpose. Contemporary letters and military documents described expeditions with up to 600 bateaux disembarking to deliver provisions to the frontier forts of New York.<sup>26</sup> The men and supplies they carried were a welcome sight for regiments straining to defend their forts from enemy raids.

---

<sup>25</sup> Crisman, “Struggle for a Continent,” 132.

<sup>26</sup> *British Spy or New Universal London Weekly Journal*. “Extract of a letter from a gentleman in Philadelphia, dated April 24<sup>th</sup> to a merchant in Liverpool.” (London) July 17, 1756. See also: *Naval*

Bateaux also deployed soldiers directly to battle.<sup>27</sup> Occasionally, they were used as gunboats or to move artillery. Although they were not very formidable as an offensive craft, they played an important support role before, during, and after fighting. Sometimes bateaux were reinforced or doubled to form “floating batteries” that carried one to three small cannon.<sup>28</sup> Their ample capacity also made them useful for transporting artillery to forts or front lines.<sup>29</sup> In one instance, Louis-Antoine de Bougainville described pontoons made of two bateaux that were fastened together with a platform on top in order to carry cannon and mortars mounted on their carriages.<sup>30</sup> It is likely that the British employed similar means to move their guns.

The number and condition of bateaux an officer had under his command could make or break the success of his operation, so maintaining an adequate flotilla was a constant concern.<sup>31</sup> Their strategic value was clearly recognized by both sides in

---

*Documents from the Gage Papers 1759-1775*. Collection of letters, Crown Point State Historic Site, Crown Point, New York. Vol. 46

<sup>27</sup> B.F. DeCosta. *A narrative of events at Lake George, from the early colonial times to the close of the revolution*. New York, 1868. <https://archive.org/stream/narrativeofevent00decos#page/6/mode/2up>, 42.

<sup>28</sup> *Ibid.*, 22, 42. Louis-Antoine de Bougainville. *Adventure in the Wilderness; the American journals of Louis Antoine de Bougainville, 1756-1760*, edited by Edward P Hamilton. (Norman: University of Oklahoma Press). 1964. 313

<sup>29</sup> Josiah Goodrich, “Josiah Goodrich Orderbook” *The Bulletin of the Fort Ticonderoga Museum*. 14:1 (Summer 1981), 55.

<sup>30</sup> Bougainville. *Adventure in the Wilderness*, 156.

<sup>31</sup> For concern about bateaux being captured see: *British Spy or New Universal London Weekly Journal*. “Extract of a letter from a gentleman in Philadelphia, dated April 24<sup>th</sup> to a merchant in Liverpool.” For requesting bateaux see: *Naval Documents from the Gage Papers 1759-1775*. Collection of letters, Crown Point State Historic Site, Crown Point, New York. Vol. 15, Vol. 23, Vol. 46. For maintaining bateaux: Vol. 15, Vol. 111, Vol 113.

conflicts. Bateaux were targeted and burned by enemy forces whenever possible. In fact, it remained a priority even in retreat.<sup>32</sup> It was understood that if bateaux were in short supply because of enemy attacks or lax maintenance, military operations were crippled. As a result, they were often purposely sunk to preserve them and to protect them from French forces during periods of disuse.<sup>33</sup> This was the case with the Lake George bateaux, which were never recovered by the British military and therefore survived in the archaeological record.

The Lake George bateaux were mostly likely part of a flotilla ordered into “wet storage” by General James Abercrombie in October, 1758. This collection of various craft consisted of two radeaux (large, angular, flat-bottomed floating batteries), the sloop *Earl of Halifax*, some row galleys and whaleboats, and 260 bateaux that were hauled overland to Lake George for the unsuccessful attack on the French fort at Ticonderoga.<sup>34</sup> As cold and snowy weather approached Lake George, Abercrombie needed to decide what to do with his fleet on Lake George. Since Fort William Henry was destroyed and there was no garrison to attend the flotilla over the winter, it was purposely sunk in order to protect and preserve the vessels until they could be retrieved in the spring.<sup>35</sup> This became known as the “Sunken Fleet of 1758,” which was never entirely recovered.

---

<sup>32</sup> For British bateaux targeted by French see: DeCosta. *A narrative of events at Lake George, from the early colonial times to the close of the revolution* 25-6. Bougainville. *Adventure in the Wilderness*, 97. For French bateaux targeted by Britain see: *London Chronicle*. “Extract from a Letter from an Officer in Albany dated Sept. 13, 1758.” (London) Jan 25, 1759.

<sup>33</sup> Caleb Rea. *The Journal of Caleb Rea*. Edited by F.M. Ray. Salem: 1881. 69-70

<sup>34</sup> Joseph W Zarzynski and Bob Benway. *Lake George Shipwrecks and Sunken History*. Charleston: The History Press: 2011. 22.

<sup>35</sup> *Ibid.*, 22.

As some of the few archaeological examples of bateaux that have survived, it is important to examine their historical significance. These modest small craft were absolutely essential to military operations in the French and Indian War. According to Bellico, “The bateau was the workhorse of the military during the French and Indian War, the American Revolution, and was even used during the War of 1812 on Lake Champlain Provisions and light military supplies were often moved by bateau, but their most essential function was to carry troops.”<sup>36</sup> Clearly the vital role the bateau played is understood, but has yet to be examined in much depth. Many considerations were necessary for the success of the bateau service. Among these concerns were how bateaux were maintained, moved, and crewed as well as how bateau-men were organized and paid.

### *Maintenance*

It was a top priority to keep bateaux in working condition since they were an essential form of transportation. Carpenters were kept close by to repair damaged or leaking bateaux. In August, 1758, Caleb Rea wrote about an instance in which the carpenters at his camp were preparing to return home when they were detained to build floating batteries and repair bateaux in preparation for the attack on Ticonderoga.<sup>37</sup> This shows that the military used skilled civilian laborers to help maintain the fleet. A month

---

<sup>36</sup> Russel P. Bellico. *Sails and Steam in the Mountains: A Maritime and Military History of Lake George and Lake Champlain*. (Fleishmanns, N.Y.: Purple Mountain Press. 1992), 25.

<sup>37</sup> Caleb Rea. *The Journal of Caleb Rea*. Edited by F.M. Ray. Salem: 1881. 48-9.

later, the camp was still hard at work building fortifications and repairing bateaux, reflecting the large amount of bateaux used, and the amount of effort needed to keep them afloat. Ironically, these repairs were conducted just before the scuttling of the flotilla in October, 1758. Of course, this was also part of the maintenance effort. Sinking the boats preserved them over the winter and helped to prevent leaks by expanding the wood. Ideally, it also kept them out of enemy hands. This was not a guarantee, since British troops sought to recover French bateaux that sank in the lakes.<sup>38</sup> Whether these French bateaux were purposely sunk or lost in battle is unclear. Still, the cold or even frozen waters during the winter were certainly a deterrent for similar French efforts. In August 1759, Major John Hawks recorded that “caulkers” arrived at Jeffery Amherst’s camp at Crown Point to repair “the whole line” of bateaux. He added that “Commanding officers of Regts. are desired to give them all assistance they require.”<sup>39</sup> These instructions to high ranking officers to allocate soldiers to the effort are a clear indication of the importance of maintaining a functional bateaux flotilla.

Leaky bateaux were a constant concern in the campaigns of the French and Indian War. This is not surprising considering their fast and simple construction combined with the extent of their usage. Officers anticipated leaks upon preparing to move. In 1759 Josiah Goodrich ordered that “If Any [bateaux] are found Leakey they

---

<sup>38</sup> John Knox. *The Journal of Captain John Knox*. New York: Greenwood Press Pub. 1968. 46, 509.

<sup>39</sup> John Hawks. *Orderly Book and Journal of Major John Hawks on Ticonderoga - Crownpoint campaign, under General Jeffery Amherst. 1759-60*. New York: Society of Colonial Wars through the Historian and committee on historical documents. 1911. 59.

must be changed or repaired [sic] before Night.”<sup>40</sup> If bateaux were hauled out of the water, troops were to make sure that they were sealed before landing.<sup>41</sup> He also mandated that all companies have a sufficient number of scoops to bail their bateaux.<sup>42</sup> This indicates a preparedness to handle leaks once underway, showing that they were expected to occur in spite of the repairs and preventative measures that were taken before movement. As mentioned, bateaux were also “watered,” or submerged in order to expand the wood and prevent leaks.<sup>43</sup> John Knox ordered this method of tightening seams in July 1759, showing that it was periodically utilized for maintenance purposes rather than just long term storage over the winter season.

No chances were taken when it came to maintaining these important craft. Manpower was also dedicated to the protection of bateaux from various hazards, the most obvious of which was the threat from the enemy. Because of their usefulness, bateaux were often targeted and destroyed by burning or sinking in hopes of crippling the movement and supply of enemy forces. This naturally called for protective measures. During the Ticonderoga-Crown Point campaign under General Amherst in 1759, the bateaux were protected by “One sub, and thirty men.”<sup>44</sup> Additionally, boat-builders were

---

<sup>40</sup> Goodrich. “Order Book.” *The Bulletin of the Fort Ticonderoga Museum*. 14:1 (Summer 1981), 55.

<sup>41</sup> Goodrich. “Order Book.” *The Bulletin of the Fort Ticonderoga Museum*. 13:6 (Fall 1980), 429.

<sup>42</sup> Goodrich. “Order Book.” *The Bulletin of the Fort Ticonderoga Museum*. 14:1 (Summer 1981), 42. See also: Goodrich. “Order Book.” *The Bulletin of the Fort Ticonderoga Museum*. 13:6 (Fall 1980), 450.

<sup>43</sup> Knox. *Journal*, 489.

<sup>44</sup> *Ibid.*, 9.



kept under guard while new bateaux were made.<sup>45</sup> However, friendly troops were also perceived as a threat to bateaux. Improper handling by inexperienced men could lead to unnecessary degradation. Amherst hoped to remedy this concern by stationing a commissioned officer on every bateau “to take care that no damage be done or disorder committed.”<sup>46</sup> Depending on the ratio of commissioned officers to bateaux in a regiment at any given time, this order seems excessive or even impossible to satisfy, but it demonstrates the priority given to keeping the craft in good condition.

Clearly the importance of the bateau was well understood. The degree to which their maintenance was prioritized by high-ranking officers shows that they were central to the entire strategy of the French and Indian War in North America. It was not enough to simply have a sufficient number of bateaux. They had to be kept in the best possible shape so that they could carry out their function of moving troops and supplies to key points in the war. Without this ability, military operations were greatly complicated if not crippled. The constant concern over sealing leaks and repairing bateaux is reflective of their rather makeshift construction, but also of the amount of wear and tear they had to endure.

### *Crewing and Stores*

Since bateaux were primarily transport craft it is important to consider what they were capable of carrying. Journals from the French and Indian War indicate that their

---

<sup>45</sup> Knox. *Journal*, 484.

<sup>46</sup> *Ibid.*, 8.

capacity was anywhere from seven to 35 men in a single bateaux.<sup>47</sup> Smaller numbers appear during specialized operations. During significant movements, the craft were commonly mentioned carrying 20-35 men. This variance is most likely due to a combination of size differences of the bateaux themselves, and the amount of space allocated to supplies in each boat. It is difficult to tell because bateaux were classified by the amount of crew needed to operate them. Military documents from the American Revolution and afterward mentioned two handed, three handed, four handed, and six handed bateaux.<sup>48</sup> It is unclear whether these classifications were used in the French and Indian War, but it is likely that there was a similar variation in sizes. Of course, a bateau carried more men than were needed to operate it. During long journeys lasting up to several days, men who were not rowing were expected to sleep so “that they may be alert and fit for service, when landed.”<sup>49</sup>

Bateaux were useful for carrying a variety of items. Sometimes, their stores fit specific needs at hand, but most often bateaux carried barrels of pork or flour. Eighteenth-century statutes dictated that a barrel of flour weighed 196 pounds (88.9 kilograms) and a barrel of pork weighed 220 pounds (99.79 kilograms).<sup>50</sup> In July 1759

---

<sup>47</sup> Goodrich. “Order Book.” *The Bulletin of the Fort Ticonderoga Museum*. 14:1 (Summer 1981), 46; Rea, Caleb. *The Journal of Caleb Rea*. Edited by F.M. Ray. Salem: 1881. 30, 250; Robert Rogers. *Journals of Major Robert Rogers*. Ann Arbor University microfilms, INC. 1966 Xerox. 6.

<sup>48</sup> “A statement of the Battoes which is necessary to be Built at Schenectady for the United States.” 11 Apr 1796. Schenectady County Historical Society. Historic Manuscripts Collections. Mil142.

<sup>49</sup> John Hawks. “Orderly Book and Journal of Major John Hawks on Ticonderoga - Crownpoint campaign, under General Jeffery Amherst. 1759-60.” New York: Society of Colonial Wars through the Historian and committee on historical documents 1911. 973.26 H3140. 44. See also: Knox. 499.

<sup>50</sup> Kimberly Smith. “Comparative Analysis of Cask Material from Late Sixteenth Through Early Nineteenth Century Shipwrecks.” Master’s Thesis, East Carolina University, 2009. 11.

Josiah Goodrich instructed the camp at Lake George to load each bateau with twelve barrels of flour or nine barrels of pork in addition to twenty men.<sup>51</sup> In another instance, John Knox mentioned that bateaux stores were not to exceed fourteen barrels of flour or twelve barrels of pork, again with about twenty men.<sup>52</sup> These examples yield total loads from about 5000-5500 pounds (2267.96-2494.76 kilograms, 2.5-2.75 short tons, 2.23-2.45 long tons), assuming each man weighed around 160 pounds (72.57 kilograms). A bateau the size of one of the Lake George Bateaux could safely support a burden of up to 3 long tons (2721.55 kilograms).<sup>53</sup> In 1760 Thomas Moody indicated that 400 barrels of provisions were moved in 20 bateaux, equating to an average of 20 barrels each. Unfortunately it is difficult to compare this to the Goodrich and Knox accounts, since he does not indicate what type of provisions these were or how many men were in each bateaux. This suggests that either they were capable of carrying more than the maximum given by Goodrich and Knox, they were carrying fewer men, or that these were larger bateaux. When carrying such substantial cargo fascines were placed across the bottoms of bateaux to help support casks and keep them from rolling around or being damaged against the sole of the boat.<sup>54</sup>

---

<sup>51</sup> Goodrich. "Order Book." Goodrich. "Order Book." *The Bulletin of the Fort Ticonderoga Museum*. 14:1 (Summer 1981), 46.

<sup>52</sup> Knox. *Journal*, 538.

<sup>53</sup> Based on British formula defined in the sixteenth century as "Breadth x Keel length x Depth of the hold / 94." The length of the sole was used as the keel length and the load water line of 1 foot 6 inches (0.457 Meters) was used as the depth of hold. Filipe Castro. "Hull Analysis." Lecture. Sept. 25, 2013.

<sup>54</sup> Goodrich. "Order Book." *The Bulletin of the Fort Ticonderoga Museum*. 14:1 (Summer 1981), 55.

A military account from 1796 offers a chance to identify the size of the bateaux used in their campaigns. It indicates that a two handed bateau carried ten barrels of flour or six of pork, a three handed bateau carried 16 of flour or 12 of pork, and a four handed bateau carried 30 of flour or 25 of pork. According to this account, a six-handed bateau carried the same amount of provisions as a four-handed boat.<sup>55</sup> The bateaux mentioned by Goodrich and Knox fall between the two and three handed boats of this statement. Specifications for bateaux this size defined that they were 30 and 32 feet (9.144-9.754 meters) long, respectively, with beams of at least 5 feet (1.524 meters), and depths of 2 feet 5 inches (.737 meters).<sup>56</sup> The Lake George bateaux roughly fit these dimensions and were thus either two or three handed boats. Therefore, they were probably very representative of the typical bateau used in the French and Indian War as indicated by the historical record.

Bateaux were also used to carry weapons in some cases. Considering their light build, they needed to be modified and reinforced to carry artillery. Knox recorded that “some batteaus [sic] and planks were drawn to the Saw-mills, to make rafts for the heavy cannon.”<sup>57</sup> He also mentioned that bateaux and whale boats were used for transporting “provisions, artillery, stores of every king, and intrenching-tools [sic].”<sup>58</sup> In April 1755,

---

<sup>55</sup> “A statement of the Battoes which is necessary to be Built at Schenectady for the United States.” 11 Apr 1796. Schenectady County Historical Society. Historic Manuscripts Collections. Mil142.

<sup>56</sup> Pouchot. *Memoirs On The Late War*, 365. Quoted in notes by Dunnigan. Frederick MacKenzie Papers, William L. Clements Library, Volume B, p.171.

<sup>57</sup> Knox. *Journal*, 505.

<sup>58</sup> *Ibid.*, 600.

Sir William Johnson included six 18 pounder cannon and six “Large Strong Battoes for carrying the heavy Cannon” in his estimate of ordnance and stores for the fort near Crown Point.<sup>59</sup> These craft were distinctly separate from the “Battoes for carrying all other stores” in his report. Since an 18 pounder weighed around 4,700 pounds (2131.88 kilograms), a standard bateau was theoretically capable of hauling one. It is therefore notable that Johnson indicated a need for “Large Strong Battoes” rather than simply large bateaux. This proves that a sturdier bateau was necessary to carry the concentrated weight of such a gun without damaging the hull.

Contemporary references to bateaux stores help us to understand what kind of provisions they typically carried, and how much weight they were capable of supporting. Consequently, they are useful for determining the typical size of a bateaux used in the French and Indian War. References to “large” bateaux began to appear in the French and Indian War, showing that they were built in larger and stronger versions to withstand more demanding jobs such as hauling artillery or firing swivel guns.<sup>60</sup>

### *Organization and Payment*

The widespread use of bateaux required the military to organize an entity known as the Battoe Service. In 1756 William Shirley, then Commander-in-Chief of the British

---

<sup>59</sup> William Johnson. “Estimate of Ordnance and Stores,” in James A. Sullivan, Richard E. Day, et al., eds., *Sir William Johnson Papers*, 14 vols. (Albany: University of the State of New York, 1921-1965) 30 April 1755. 1:479-482.

<sup>60</sup> “A statement of the Battoes which is necessary to be Built at Schenectady for the United States.” 11 Apr 1796. Schenectady County Historical Society. Historic Manuscripts Collections. Mill42.

forces in North America, placed Colonel John Bradstreet in charge of all bateaumen, boatbuilding, and clearance of waterways. At the time, the military had 2000 bateaumen organized into 40 companies.<sup>61</sup> The service was known as the “fatiguemen” in the American Revolution, and consisted of carpenters, boat-builders, boat men, artificers, and laborers. This service formed “a regiment distinct from the militia, and classed Companies according to their several callings...”<sup>62</sup> Likely the organization changed very little between the two wars.

Bateaux were issued to regiments in proportion to their men.<sup>63</sup> If a regiment needed replacements or additional bateaux for a specific reason, they could apply to Bradstreet to obtain more.<sup>64</sup> This allotment was taken seriously as each regiment was ordered to mark and number its bateaux on the starboard bow.<sup>65</sup> Endangering a bateau through neglect or by removing any of its equipment yielded severe punishments.<sup>66</sup> Taking or misplacing an oar could result in 100 lashes without a court martial.

Sometimes regiments were assigned to the bateaux service as needed. Loading, unloading, and moving bateaux were hard jobs that were unpopular among officers and

---

<sup>61</sup> Edward P. Hamilton. “John Bradstreet.” *The Bulletin of the Fort Ticonderoga Museum*. 13:2 (June 1971), 139-40.

<sup>62</sup> “Second Albany County Regiment.” Jonathan Pearson. Schenectady County Historical Society. Pearson Collection. Mil206.

<sup>63</sup> Knox. *Journal*, 489.

<sup>64</sup> Goodrich. “Order Book.” *The Bulletin of the Fort Ticonderoga Museum*. 14:1 (Summer 1981), 48. Orderly Book and Journal of Major John Hawks on Ticonderoga. 6.

<sup>65</sup> Knox. *Journal*, 549.

<sup>66</sup> Rea. *Journal*, 73, 80.

soldiers alike. Longer journeys lasted days at a time, and were therefore very tiring. During movement, it was sometimes necessary to haul fully loaded bateaux around rapids or falls. This often required additional labor such as constructing platforms to assist with such tasks.<sup>67</sup> The military attempted to compensate for this by increasing payment for those who were ordered to the bateaux service. A typical soldier at the time grossed eight pence per day in New York currency.<sup>68</sup> Participation in the bateaux service promised one shilling per day, a 50% increase in pay.<sup>69</sup> Officers and subalterns (junior officers) received generous payments of four and two shillings, respectively.<sup>70</sup> Still, this was not enough to sway some attitudes. When his regiment was ordered to the bateaux service, Caleb Rea observed:

...this seems very displeasing to most of ye Officers, tho' there is some Tools that will always be content with their Master's smiles, and receive a complement from him as a full reward for six months service, perhaps rather than three score pounds of another Man. no doubt **SOMEBODY** [original emphasis] makes by this jobb [sic], as he has by many others.<sup>71</sup>

His disdainful tone expressed an attitude that additional payment was not enough to justify such back-breaking work. Regardless of its actual effectiveness in motivating troops, the military's willingness to bear this extra expense shows what a high priority was given to the bateau-related labor that was so central to the war effort.

---

<sup>67</sup> Theodore Burnham Lewis Jr. "The Crown Point Campaign 1755" *The Bulletin of the Fort Ticonderoga Museum*. XIII No. 1 Dec. 1970: 34.

<sup>68</sup> Way. "Class and the Common Soldier," 468.

<sup>69</sup> Goodrich. "Order Book." *The Bulletin of the Fort Ticonderoga Museum*. 13:6 (Fall 1980), 415.

<sup>70</sup> *Ibid.*

<sup>71</sup> Rea. *Journal*, 68.

### *Combat and Movement*

Bateaux were a primary means of moving men and supplies along the lakes and rivers of North America in the French and Indian War. They were typically rowed, but could also raise a simple square sail in favorable winds. The number of oars used depended on the size of the bateau. Caleb Rea described five oars in each bateau.<sup>72</sup> This likely reflects a two-handed bateau, with two oars on either side, and a steering oar at the stern. Evidence suggests that outfitting for a sail was not universal on board all bateaux. Although several British sources noted bateaux moving under sail, French officer Pouchot asserted that “The English do not fit a sail to their bateaux, which is in fact absolutely essential in many circumstances.”<sup>73</sup> This discrepancy suggests that sails were not a common sight on British bateaux. A small mast step from Lake George Bateaux collection 4530 provides physical evidence that the British military did, at least sometimes, outfit bateaux for sailing. It is possible that only some bateaux were equipped with sails, or simply that favorable conditions for sailing were rare, which could account for Pouchot’s misconception. However, Caleb Rea described bateaux men using blankets and tents as sails, supporting the hypothesis that some craft were not issued sails and had to improvise in fortunate winds.<sup>74</sup>

Although they were a useful utility craft, bateaux had definite disadvantages. Their flat-bottomed design allowed them to be pre-loaded with supplies so that a

---

<sup>72</sup> *Ibid.*, 28.

<sup>73</sup> Pouchot. *Memoirs On The Late War*, 64.

<sup>74</sup> Rea, *Journal*, 28.



regiment would be ready to move at any time.<sup>75</sup> This made launching easier, but obstacles such as falls and shallow rapids required a portage. This was complicated by the fact that bateaux were often loaded with over two tons of provisions. In contrast, whale boats only held men, and were therefore simply carried by their crews during a portage. When possible, bateaux were transferred to wheeled carriages for overland movement.<sup>76</sup> This solution was only practical when roads and wheeled carriages were available, so many portages were muscle-powered. The exact methods used were never described, and likely varied depending on circumstance and the officer in charge. Regardless, the labor was notoriously strenuous, so it is easy to understand why bateau duty was unpopular.

Bateaux participated in battles in the French and Indian War, but were rarely involved in direct combat. Rather, they were used as support craft to deploy men during fighting. In some instances, the cover of night-time was used to set up ambushes against the French.<sup>77</sup> If British troops found themselves on the opposite side of this scenario, bateaux could be quickly mobilized to bring reinforcements.<sup>78</sup> After battle, bateaux were

---

<sup>75</sup> Goodrich. "Order Book." *The Bulletin of the Fort Ticonderoga Museum*. 14:1 (Summer 1981), 57.

<sup>76</sup> Knox, *Journal*, 32.

<sup>77</sup> Rogers, *Journals*, 18-9.

<sup>78</sup> Hamilton. "John Bradstreet," 140.

used as a way to evacuate wounded soldiers away from the front.<sup>79</sup> Robert Rogers mentioned using them to remove dead soldiers from the battlefield.<sup>80</sup>

John Knox described a situation on Lake George where 400 men were sent in bateaux to drive the French from the islands of the lake.<sup>81</sup> In this case, they were escorted by “a floating-battery of one gun.”<sup>82</sup> This shows that bateaux were not intended to be directly involved in combat, but relied on the protection of larger, better armed craft. However arming bateaux was not completely unheard of. In 1755 Robert Rogers and his men approached the enemy “with a party of thirty men, in four battoes, mounted with two wall-pieces each....”<sup>83</sup> Bateaux became more central to combat tactics in the American Revolution. Benedict Arnold made several references of bateaux carrying cannon in his regimental memorandum book, including bateaux armed with one or two swivel guns.<sup>84</sup> These must have been larger or reinforced boats, as such a heavy armament on the light and fragile bateaux of the French and Indian War would have been impractical and even dangerous.

---

<sup>79</sup> Goodrich. “Order Book.” *The Bulletin of the Fort Ticonderoga Museum*. 13:6 (Fall 1980), 416.; Knox. *Journal*, 192.; Rogers. *Journals*, 180-1.

<sup>80</sup> Rogers. *Journals*, 180-1.

<sup>81</sup> Knox. *Journal*, 490.

<sup>82</sup> Ibid.

<sup>83</sup> Rogers *Journals*, 6.

<sup>84</sup> Benedict Arnold. “Benedict Arnold's Regimental Memorandum Book.” *The Bulletin of the Fort Ticonderoga Museum*. XIV No. 2. Winter 1982. 71, 257.

## LAKE GEORGE BATEAUX: SINKING, DISCOVERY, AND EXCAVATION

Very few examples of bateaux have been found and studied, due in large part to the fact that they were “cheap, lightly built craft” and probably “disintegrated soon after abandonment” or were broken up for firewood or other uses.<sup>85</sup> Historical documents do not offer many details about constructing bateaux, so archaeological remains of bateau are invaluable for understanding how they were built. The remains of more than 40 bateaux were discovered together in Lake George in 1963 and 1964. Prior to this discovery, three bateaux from the same area were raised and preserved, but have not yet been studied in detail. These recovered boats offer an important opportunity to analyze their construction and compare them to other bateau finds.

### *Excavation*

It is likely that the bateaux examined in this paper were part of the sunken fleet of 1758. According to Crisman, the vessels were “undoubtedly built in the British colonies.” He noted that there was a French expedition to the southern end of Lake George in 1757, but there is no record of any boats left behind. There are also many contemporary records of bateaux purposely sunk in the area for preservation and protection during the winter. The Lake George bateaux were indeed found with auger holes drilled into the bottom or sides, and were found in rows holding rocks or mortar

---

<sup>85</sup> Crisman. “Struggle for a Continent,” 132.

shells, which is rather conclusive evidence of “intentional rather than accidental sinking.”<sup>86</sup>

It is not known what method British troops used to raise the boats that were “watered” or intentionally sunk.<sup>87</sup> One possibility is that a towline was tied somewhere on the boat which was then hauled in by animal power. The bateaux examined in this paper had holes in their stems for towlines, but if used in this way it risked damaging the craft by tearing its nails loose. Another possibility was that free divers were sent to remove rocks and the boats were subsequently raised to the surface somehow. Whatever the method that was used, difficulty in raising or locating the boats is probably why some were left behind.

In July 1960, a group of about fourteen bateaux from the sunken fleet were found by two teenage divers.<sup>88</sup> The vessels lay on the bottom of the lake in orderly rows, indicating that they were probably sunk purposely. Soon afterwards, in September 1960, a team consisting of staff from the Adirondack Museum, divers from the Smithsonian Institution in Washington, D.C., and U.S. Navy divers recovered three of the bateaux bottoms and a smattering of other artifacts in one of the first successful underwater archaeology projects in North America.<sup>89</sup> The team was led by Dr. Robert Inverarity, who was the director of the Adirondack Museum at the time, and the recovery was

---

<sup>86</sup> Ibid., 137.

<sup>87</sup> Knox. *Journal*, 489.

<sup>88</sup> Bellico. *Sails and Steam in the Mountains*, 79.

<sup>89</sup> Ibid., 133.

conducted under a permit granted by New York State authorities.<sup>90</sup> Bateaux bottoms were raised by placing them on a makeshift flotation device, or by placing tire inner tubes around the ends and floating them to the surface where they were then hauled in by team members on the shore. (Figures 5-7)

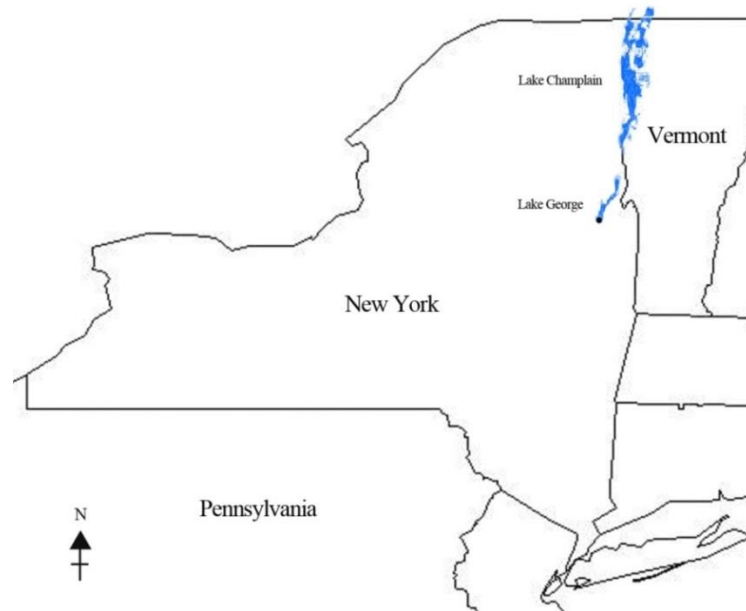


Figure 5. Map of Northeastern United States showing the location of Lake Champlain and Lake George.

---

<sup>90</sup> Ibid., 79



Figure 6. Map of the Lake Champlain basin. (<http://www.adirondackalmanack.com/wp-content/uploads/2012/08/Lake-Champlain-Basin.jpg>)



Figure 7. Adirondack Museum team pulling bateau remains out of Lake George. (Photo: Adirondack Museum 1960)

The remains were buried in mud or placed in shallow water for temporary preservation during the excavation. They were then kept under wet sawdust until conservation began in summer of 1961.<sup>91</sup> Wood pieces were conserved by immersing them in 50% polyethylene glycol (PEG) 1000 in an aqueous solution at room temperature to prevent disintegration upon drying. Some pieces were only submerged for three days. The wood was then allowed to air dry over a three week period.<sup>92</sup>

---

<sup>91</sup> Ray M. Seborg and Robert B. Iverarity. "Conservation of 200-year-old Water-logged Boats with Polyethylene Glycol." *Studies in Conservation*. 7 no. 4. (1962): 118.

<sup>92</sup> *Ibid.*

Unfortunately the long term effectiveness of this treatment is questionable now that better practices for PEG have been established. Ideally, wood should be submerged in a small increment of PEG of 2-5% and heated to 32-52°C, while the percentage of PEG is gradually increased to 70% over a period of months or years.<sup>93</sup> Additionally, PEG is now known to be corrosive to all metal, particularly iron.<sup>94</sup> The wood from Lake George was submerged with all of the wrought iron fasteners still in place, with no additional efforts to conserve the metal separately. Consequently, all of the iron fasteners are now badly corroded and the wood around them is impregnated with iron corrosive material. After being assembled and displayed in the Adirondack Museum from 1966-1993, the remains were returned to the New York State Museum and stored at an off-site location where they now remain. The facility is not climate controlled, which will be harmful to the longevity of the wood due to fluctuations in atmospheric humidity, especially since PEG reabsorbs moisture from the atmosphere. (Figure 8)

---

<sup>93</sup> Donny Hamilton. "Methods for Conserving Archaeological Material from Underwater Sites." Online. Updated Jan. 1, 1999. Accessed Sept. 24, 2014. <http://nautarch.tamu.edu/CRL/conservationmanual/ConservationManual.pdf>. 25.

<sup>94</sup> Ibid.





Figure 8. Dr. Robert Inverarity checking a vat of Polyethylene Glycol (PEG) during conservation of the Lake George bateaux. (Photo: Adirondack Museum. 1961.)

This early operation was not published and some important details, such as a site plan, are not available. However, in the summers of 1963 and 1964, a survey known as “Operation Bateaux” was conducted where the three bateaux were removed from southern Lake George, and the survey remains an important source for education about bateaux and the understanding of the Sunken Fleet of 1758.<sup>95</sup> The project was led by Dr. Robert Inverarity, who appointed Terry Crandall as “diver archaeologist.” A permit was granted for the operation by the New York Education Department and boat support was provided by Warren Country Sheriff Robert Lilly and the Lake George Park Commission. During these two seasons, divers conducted search dives at average depths of 15-25 feet (4.572-7.62 meters) by following a zig zag pattern at 45 degrees east and

---

<sup>95</sup> Bellico. *Sails and Steam in the Mountains*, 79.

west of a lubber line.<sup>96</sup> The project resulted in the finding and mapping of over 30 colonial bateaux wrecks.<sup>97</sup> Particularly well preserved bateau bottoms were hand-fanned and examined in more detail. Artifacts recovered from bottom planks and taken to the Adirondack Museum included fragments of clay pipes, musket and bird shot, and cuff links.<sup>98</sup> Historian Russell Bellico called the operation “a significant early archaeological study of French and Indian War vessels.”<sup>99</sup>

### *Preservation*

Shortly after the operation, in July 1965, the New York State Police held a training exercise on several of the bateaux and hundreds of pieces were removed. Artifacts were identified by the acting state historian, but the project did not take any measurements, findings were mixed, and the site was irreparably disturbed for any future research.<sup>100</sup> In the years that followed many more pieces that were not already eroded away were taken by recreational divers as souvenirs. Most of the bateaux were stripped down to their bottoms in spite of laws that prohibited the disturbance of archaeological and historic sites.<sup>101</sup> Four or five other wrecks were destroyed by unsanctioned salvage,

---

<sup>96</sup> Joseph Zarzynski and Bob Benway. *Lake George Shipwrecks and Sunken History*. Charleston: The History Press. 2011. 20.

<sup>97</sup> *Ibid.*, 21.

<sup>98</sup> *Ibid.*, 21.

<sup>99</sup> Bellico. *Sails and Steam in the Mountains*, 84.

<sup>100</sup> *Ibid.*, 84.

<sup>101</sup> *Ibid.*, 84.

and another was eventually covered in silt from a nearby tributary.<sup>102</sup> These circumstances illustrate the fragile state of the Sunken Fleet of 1758.

Since then there have been concerted efforts to preserve the wrecks. In 1987 an archaeological workshop to study some of these bateaux remains was conducted under the Atlantic Alliance for Maritime Heritage Conservation. The workshop was organized by Joseph Zarzynski and taught by R. Duncan Mathewson. Twenty-one sport divers used a grid system to conduct a “thorough study of some of the remaining bateau wrecks.”<sup>103</sup> The survey was also monitored via remote operated vehicle (ROV) by Philip Lord Jr., the senior scientist of New York’s Office of Archaeology.<sup>104</sup> The group went on to form Bateaux Below INC., which continued efforts to record, study, and preserve maritime archaeological remains in Lake George. Subsequent surveys through 1991 mapped seven bateaux in what is now known as the Wiawaka Bateaux Cluster. In 1992, it was listed on the National Register of Historic Places.<sup>105</sup> The wrecks lie in 25-50 feet of water and can be explored by recreational divers during the summer season.

### *Bateaux in Experimental Archaeology*

In 1987 the Basin Harbor Maritime Museum (now the Lake Champlain Maritime Museum) built the replica bateau *Perseverance* based on the 1960 Lake George finds.

---

<sup>102</sup> Zarzynski and Benway. *Lake George Shipwrecks*, 24.

<sup>103</sup> Bellico. *Sails and Steam in the Mountains*, 84.

<sup>104</sup> *Ibid.*, 84.

<sup>105</sup> Zarzynski and Benway. *Lake George Shipwrecks*, 24.

Boat-builder Dexter Cooper produced scale plans and a model using Kevin Crisman's and Arthur Cohn's notes on Lake George Bateau 2626 and John Gardner's articles in the *National Fisherman*. Compared to the reconstructions presented in this thesis, it was slightly narrower throughout, and was given higher freeboard. These plans were scaled up to produce the final product. To construct the boat, wooden risers were placed at about knee level, and the bottom planks were laid across them. Floor battens were nailed on top to hold the bottom planks together before cutting out the shape of the sole. Blocks were placed under the ends of the bottom planks to set the pre-determined rocker of 4 inches (10.16 centimeters). Posts and frames were placed exactly as they were on Lake George Bateau 2626 and nailed into the bottom planks. Side planks were temporarily clamped to the frames to bend them to the necessary shape before nailing them directly into the frames. This led Cohn to conclude that it was likely the original method used, rather than steaming the planks to facilitate bending. Finally, rails were added to the inside to support thwarts, and to the sheer strake to support rowlocks. A combination of machine and hand-tools were used, but original methods were utilized as much as possible in order to achieve the most accurate result.<sup>106</sup> (Figure 9-10)

---

<sup>106</sup> Vermont ETV. "This Old Boat." Documentary, Vermont, 1988.

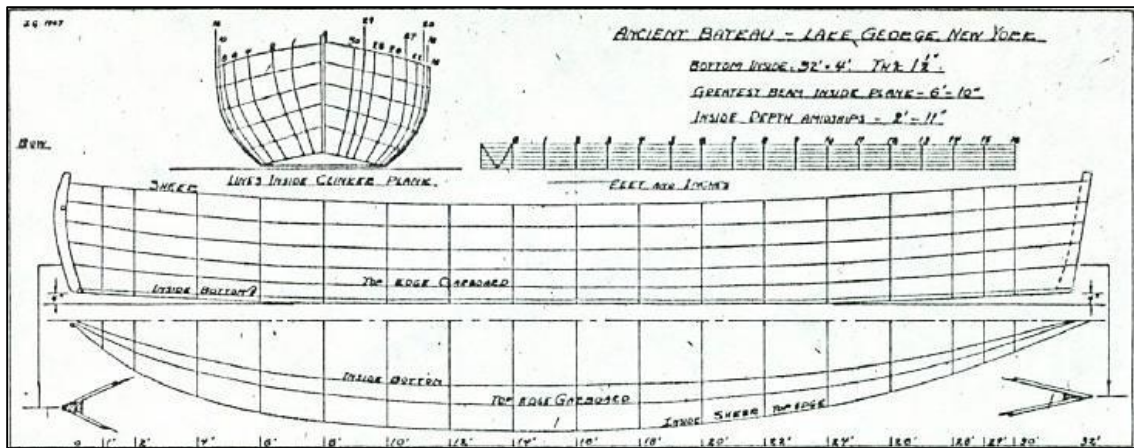


Figure 9. John Gardner's preliminary lines for the Lake George bateaux. (Gardner "Bateau 'Reconstructed' From Remains, Drawing." August, 1967.)

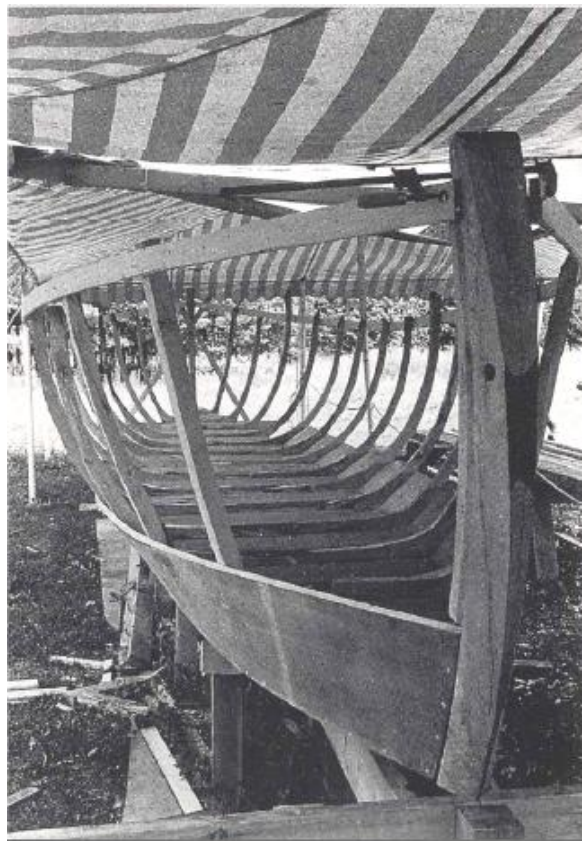


Figure 10. Basin Harbor Museum bateau replica *Perseverance* under construction. (Crisman. 136.)

The replica was launched on Lake Champlain in a public event and was successfully rowed and sailed. The crew used four oars and a steering sweep lashed to the sternpost in order to propel the boat. In spite of being inexperienced at rowing, the crew found *Perseverance* to be remarkably easy to handle. The replica was rigged with a sprit, or a square fore-and-aft sail attached to a yard behind the mast. This simple rig was also found to be very successful, and exceeded expectations when sailing both with the wind and into it.<sup>107</sup> As a result, *Perseverance* serves as an example of the value of experimental archaeology, especially by challenging the assumption that bateaux were unwieldy and very poor sailing vessels. After some years the replica became unserviceable and was removed from the lake. It is now displayed outside the main entrance of the Lake Champlain Maritime Museum and is deteriorating due to age. (Figure 11)

---

<sup>107</sup> Ibid.



Figure 11. Launching Basin Harbor Museum bateau replica *Perseverance*. (Crisman. 131.)

Two more examples of bateaux replicas, named *DeSager* and *Bobbie G*, are held at the Mabee Farm of the Schenectady County Historical Society. These were built by a middle school workshop and tested on the waters of the Mohawk River. Unlike *Perseverance*, they were found to be fairly unstable, leaky, and difficult to handle on rough water. These bateaux are now displayed at the Mabee Farm and are still rowed on occasion. With their double-ends, straight sides, and low freeboard, the structure of these boats is closer to the French bateaux described by Dagneau than the design of the Lake George Bateaux. These differences may be trivial to the layman, but they demonstrate regional and chronological confusion that tends to accompany bateaux. Still, the Mabee Farm bateaux effectively illustrate the form and function of this type of craft. Their structure is simple, they are more or less double-ended, they sit remarkably high in the water, and they are equipped to be rowed or sailed. (Figure 12-13)



Figure 12. Bateau replica *DeSager* at the Schenectady County Historical Society's Mabee Farm.



Figure 13. Bateau replica *Bobbie G* at the Schenectady County Historical Society's Mabee Farm.

The disturbed state of the bateaux in Lake George is a testament to the importance of studying the remains stored at the New York State Museum. Furthermore, the Wiawaka Bateaux Cluster and the Sunken Fleet of 1758 are now threatened by the invasion of zebra mussels, which may further degrade and obscure the boats at the site. In 2008 a middle school workshop organized by Bateaux Below INC. produced a replica of one of the bateaux wrecks and placed it in shallow water in the southwest corner of



Lake George for passersby to see and learn about the sunken fleet of 1758. It will also serve as a study of the deterioration process of wrecks in Lake George.<sup>108</sup> Replicas are an effective and educational way of preserving the legacy of these boats, but care should always be taken to reproduce the archaeological material as closely as possible.

Unfortunately the original remains are deteriorating each year, so extracting useful information from them is only becoming more difficult. Therefore it is important to study them while they still survive.

---

<sup>108</sup> Lee Coleman. "Students build replica 1750s vessel." *Daily Gazette*. (Schenectady) June 6, 2008. Accessed Dec 13, 2014. [http://www.dailygazette.com/news/2008/jul/06/0706\\_oldwreck/?print](http://www.dailygazette.com/news/2008/jul/06/0706_oldwreck/?print)

## CONSTRUCTION OF LAKE GEORGE BATEAU 2626

This section examines details of the Lake George bateau recorded by Crisman and others during its display at the Adirondack Museum (1986), and referred to here with its New York State Museum ID number as Lake George Bateau 2626.<sup>109</sup> Since it was buried in mud at the bottom of Lake George, the lower parts of the hull were well preserved. Surviving upper structure that remained exposed was badly eroded. Remains consist of bottom planks, floor battens, the stem and stern posts, the stem and stern knees, 22 frames, and some side planks. Since the bottom is most important in determining the shape of a bottom-built boat, these remains allow for an accurate reconstruction of the Lake George Bateau 2626. Crisman provided an overview of this bateau in *Ships and Shipwrecks of the Americas*, but there are still many details to expand upon. (Figures 14-15)

---

<sup>109</sup> "Bateau notebook." Notes collected by Kevin Crisman. Texas A&M New World Laboratory, College Station, Texas, 1985.



Figure 14. Lake George Bateau 2626 assembled in the Adirondack museum. (Photo: Adirondack Museum. 1960.)

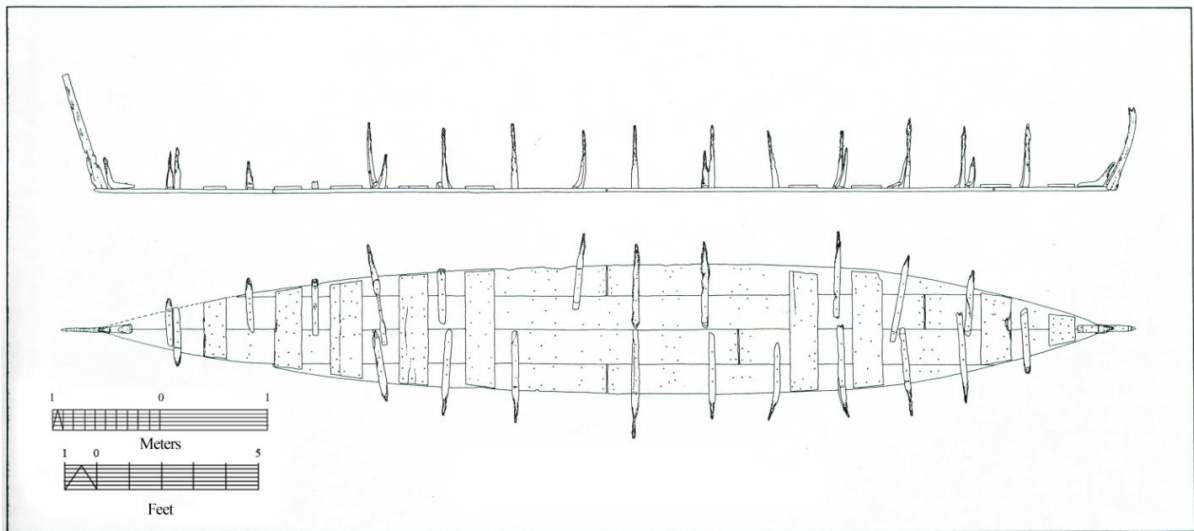


Figure 15. Scale drawing of Lake George Bateau 2626 assembled remains. (After Crisman. "Struggle for a Continent: Naval Battles of the French and Indian Wars." 136.)

### *Bottom Planking*

Bateaux were built using a bottom-based construction sequence. As such the bottom planks were laid first. The bottom or sole of Lake George Bateau 2626 has four strakes of white pine planks, each consisting of two or three planks each. For identification, they are assigned letters in order of inner starboard (A), inner port (B), outer starboard (C) and outer port (D). Numbers are assigned from forward to aft. The bottom planks are 1 to 1-½ inches (2.5 to 3.8 centimeters) thick and vary from 5 feet 7 inches to 18 feet 7-½ inches long (1.7 - 5.67 meters). They range from 10-½ to 12-¾ inches (26.7 to 32.4 centimeters) at their widest and all taper to a point except for plank B1, which ends under floor batten 12. Planks were laid edge-to-edge in preparation for joining. The outside edges of the bottom planks are beveled to fit an overlapping garboard strake. Although the bateau bottom was flattened by the weight of the mud and water at the bottom of Lake George, researchers concluded that the bottom planks were originally built with a slight rocker, or rise of the bottom toward the ends. Evidence for this was found in the curvature of the garboard strakes, which Gardner and the Adirondack Museum reconstructed in a half-scale model to find the rocker. This was determined to be 4 inches (10.2 centimeters) on either end. The planks were flat at amidships and the rockered curve began 9 to 10 feet (2.74 to 3.05 m) from the ends of the bottom planks.<sup>110</sup> (Figure 16)

---

<sup>110</sup> Gardner. "Construction Details of Old Bateaux Show Basic Design With Variations." April, 1967.

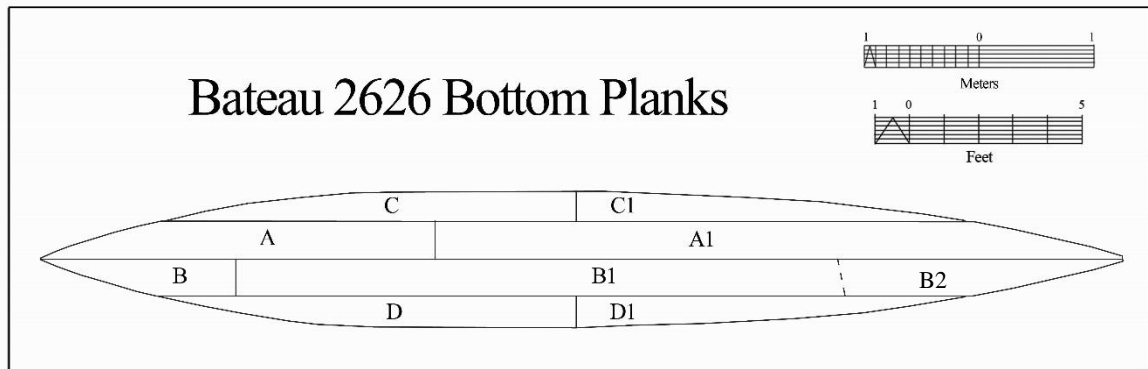


Figure 16. Lake George Bateaux 2626 reconstructed bottom planks.

### *Floor Battens*

Rather than using temporary cleats as is common with bottom-based construction, the bottom planks were held together with fourteen perpendicular battens, which remained part of the construction after the frames were in place and acted as “floors” for each frame set. Battens 3, 6, 7, 8, and 9 are missing, but their positions were determined by nail holes present in the bottom planking. Each batten was about  $\frac{7}{8}$  inches (2.2 centimeters) thick, with the exception of batten 5, which was  $1\text{-}\frac{1}{8}$  inches (2.6 centimeters) thick, and batten 10, which was 1 inch (2.54 centimeters) thick. They varied from  $7\text{-}\frac{1}{2}$  inches to 11 inches wide (19.1 to 27.9 centimeters), though most were 11 inch wide. These were particularly wide compared to the other Lake George bateaux. This is likely because of the extra support needed to hold four runs of bottom planks together rather than three. As Gardner pointed out, these size variations show that battens may have provided an excellent use for excess or scrap wood from cutting planks.<sup>111</sup>

---

<sup>111</sup> Ibid.

Together, battens 3, 6, 8, and 13 covered all the seams where the ends of bottom planks in one strake abutted one another, which added some extra strength at these joints.

Small wrought iron nails were used liberally to secure battens to the bottom planks. Nail holes indicate that there were 12-31 nails in each batten, with an average of 21.5. Nail patterns were haphazard, although there was usually a row of three to five nail holes at each side edge of the bottom planks. Another consistency was relatively straight rows of three or four nail holes at the ends of abutting bottom planks. It is also common to see a quincux pattern or several rows of three nails in the middle of bottom planks. (Figure 17)

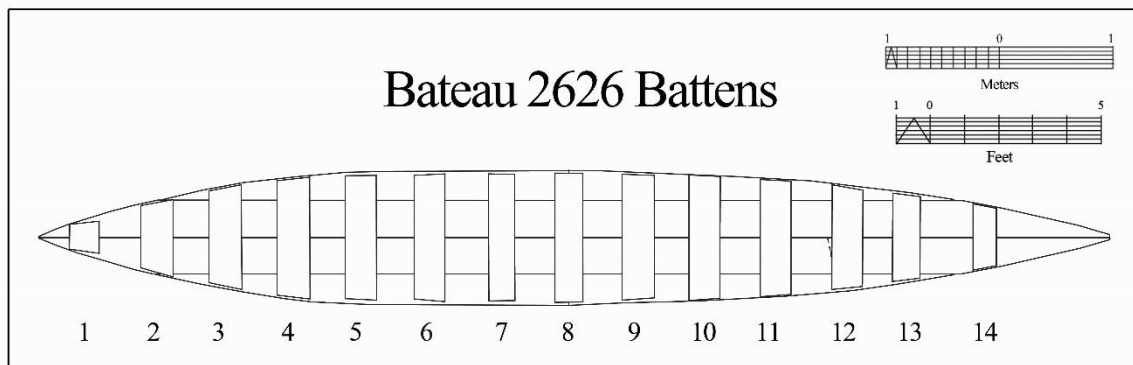


Figure 17. Lake George Bateaux 2626 reconstructed floor battens.

Two parallel rows of four nails on floor batten 12 provide strong evidence for the existence of bottom plank B2, which was missing from the assembly in the Adirondack Museum when it was recorded by Cohn and Crisman. Rather than being well centered within the floor batten, the nail holes were oriented near the forward edge of the floor batten, so the lack of coverage at this joint likely caused a structural weakness. Bottom plank "B2" was found while recording the other bateaux collections, stored with Bateau

4559. It fits perfectly into the 2626 assembly, and shows a break with a partial saw cut, making it clear that B1 and B2 were once one piece. It is possible that this broke during construction, since the break is partially outside the area of batten 12. Unfortunately without a proper site plan is it difficult to determine exactly why this piece was not originally associated with Lake George Bateau 2626 in the Adirondack Museum.

(Figure 17)

### *Stem Configuration*

The stem of Lake George Bateau 2626 was constructed from a curved piece of hardwood, most likely oak. It was broken off or completely eroded away at a height of 2 feet, 6- $\frac{1}{4}$  inches (.78 meters) from the bottom. The bottom of the stem was notched on its after side to fit over the forward point of the bottom planks, in order to protect them from splintering when the boat was beached. Nails were driven into the outer side of this groove to fasten the stem to the bottom planks. The forward end of the stem's section was narrow and widened at the after end to about 3- $\frac{1}{2}$  inches (8.9 centimeters). Its after edges were rabbeted with a groove  $\frac{5}{8}$  inches (1.6 cm) deep in order to receive the side strakes.

The stem was reinforced by a small knee, only about 2- $\frac{1}{2}$  inches (6.4 centimeters) wide at the base, and 2- $\frac{1}{2}$  inches (6.4 centimeters) thick near the crook between the bottom and the upper portion. Fastener holes indicate that it was secured with two nails to the stem and two nails to the bottom planks. The after most 2- $\frac{1}{2}$  inches (6.4 centimeters) of the knee were cut thinner in its molded dimension and tapers to a minimum of 1 inch (2.54 centimeters) at the after edge. Four additional nails were added

to this thinner portion of the stem knee in order to secure it to the bottom planks. (Figure 18)

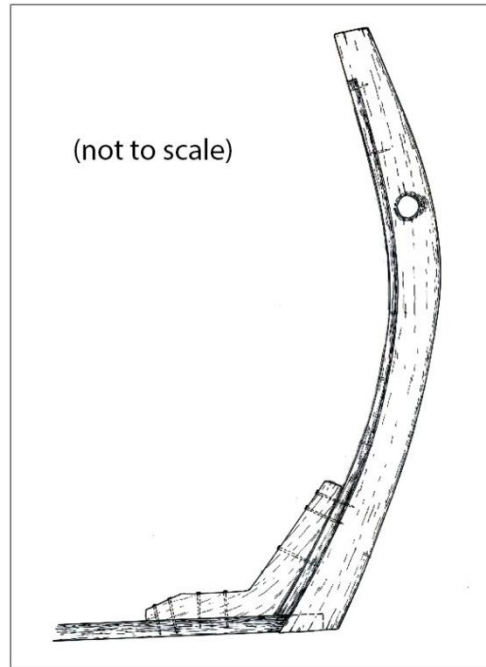


Figure 18. Stern configuration. (Drawing: K. Crisman).

### *Stern Configuration*

The sternpost of Lake George Bateau 2626 was constructed from a straight piece of hardwood. It was triangular in section and tapered slightly from the bottom to the top. The sternpost was 5-<sup>1</sup>/<sub>8</sub> inches (13.018 centimeters) thick at its widest and stood about 42 inches (106.68 centimeters) high off the bottom planks. Similar to the stem, the sternpost was attached to bottom planks by a small knee.<sup>112</sup> This knee is about 2 inches (5.1 centimeters) thick at the crook and tapers to 1 inch (2.5 cm) at its forward end. Like the

---

<sup>112</sup> Crisman. "Struggle for a Continent," 137.



stem knee it was cut flat and thinner here. Five nails secured it to the bottom planks. No additional nails were used in the base of the knee. Three fastener holes are visible in the upper part of the sternpost knee where it was secured to the sternpost. The sternpost was not rabbeted, so planks were nailed directly over it with at least two nails each. This configuration provided additional reinforcement to keep the sternpost in place, especially where the garboard was nailed into the bottom planks as well as the sternpost. (Figure 19)

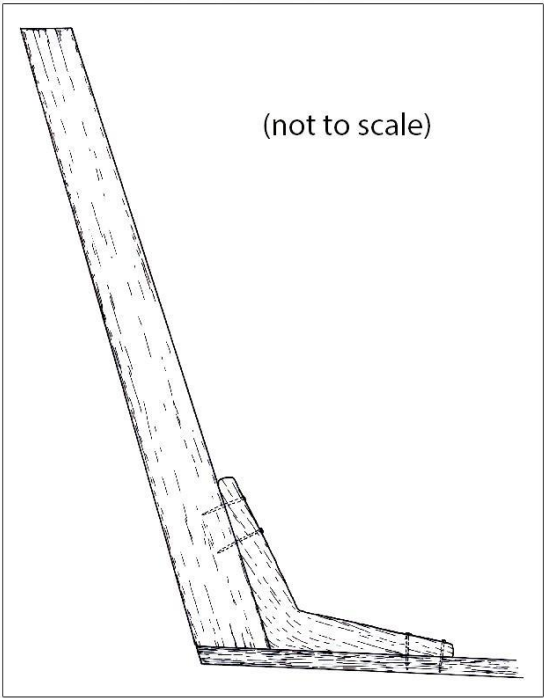


Figure 19. Stern configuration. (Drawing: K. Crisman)

### *Framing*

The frames of Lake George Bateau 2626 were built from naturally curved pieces of oak, which were thickest near the crook between the bottom and sides, and tapered near the ends. They are numbered from forward to aft, with 'S' to indicate starboard and 'P' to indicate port. Starboard frames were generally preserved better than port frames, revealing that the boat probably settled with a slight list to the starboard side. These frames were quite thin, showing that this bateau had very light construction. In general they ranged from about 1-½ inches to 2-½ inches molded (3.8 to 6.4 centimeters), and were typically about 1 ¾ to 2 ¼ inches sided (4.4 to 5.7 centimeters). (Figure 20)

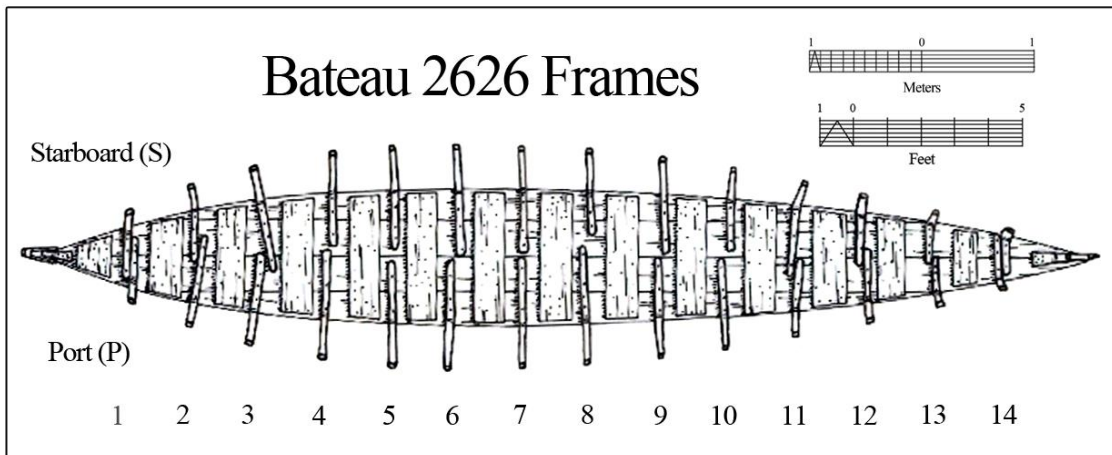


Figure 20. Lake George Bateaux 2626 reconstructed frames. (Drawing: Kevin Crisman)

Frames were secured directly to the bottom planking, usually with three, and sometimes four nails each. After frames were in place, side planks were nailed onto them. Most of the remaining frames were badly warped and eroded, but their positions

can be aligned to nail holes and matched to the angle of the bevel on the bottom planks. Since the thickest portion of each frame is near the junction between the bottom and sides, this area was warped the least and preserved under the mud of Lake George, so it is an accurate indicator for the curve of the garboard planks.

The frequency of frames (fourteen rows) and the need to fair them all properly reveal the surprisingly good craftsmanship of the bateaux. It is also clear that they were purposely spaced about 2 feet apart, noted from the shipbuilder's scratched-in awl marks still visible on the bottom planks.<sup>113</sup> In spite of this, it is of interest to note that frame 8S was cut against the grain, showing the hastiness of construction and lack of concern for long term structural integrity. It is possible that in order to expedite construction, only a few frames were put in place at first and more were added after the planks were nailed on. Unfortunately this remains purely speculative without more evidence.

### *Side Planking*

There were several fragments of garboard planks among the remains of Lake George Bateau 2626. They were made of pine and were a maximum of 1 inch (2.5 cm) thick. The longest of these planks was 13 feet 9 inches (4.19 m) long, and the shortest was 5 feet 10 inches (1.78 m) long. Their maximum width is about 10 inches (25.4 cm). The garboard planks overlapped the outside edges of the side planks and were beveled on their lower edge to lay flush with the bottom. They were nailed directly onto the

---

<sup>113</sup> Gardner. "Construction Details of Old Bateaux Show Basic Design With Variations."

bottom planks and frames, and were also beveled on their upper edges to overlap the beveled lower edge of the next strake, making them trapezoidal in section. With this configuration, higher strakes had parallel bevels. This provided additional surface area to the seams in order to increase structural integrity and water tightness. (Figure 21)

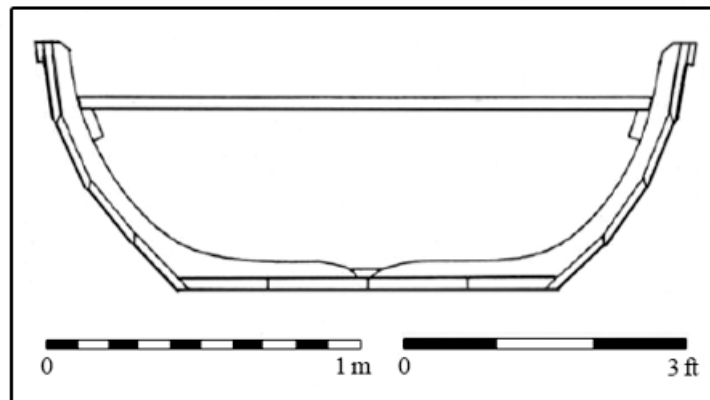


Figure 21. Lake George Bateau 2626 reconstructed cross section. (Modified from Crisman. "Struggle for a Continent: Naval Battles of the French and Indian Wars." 136.)

Fastener holes ranging from 5 to 10 inches (12.7 to 25.4 cm) apart on the edges of the planks indicate that the builders attempted to reinforce the overlapping seams with nails. Closer spacing was probably used where planks did not fit together perfectly in order to force them together, although the workmanship was good and curves were generally quite fair.<sup>114</sup> The seams were sealed with a liberal coating of tar to prevent leakage, and likely required frequent re-caulking as revealed by the amount of tar caulking recovered from the Lake George site. Three of the remaining planks display

---

<sup>114</sup> Gardner. "Bateaux played a key role in American History."

larger holes, about 1-½ inches (3.8 cm) in diameter, which were bored intentionally in order to sink the boat in Lake George.

### *Reconstruction*

Thanks to the detailed notes of Crisman et al. (1986), along with evidence from admiralty plans, a full reconstruction of the Lake George Bateau 2626 is possible with minimal conjecture. Gardner's generalized lines for the Lake George finds were also very helpful. The remains were used as much as possible to accurately build a three dimensional model of the bateau. The result shows that Gardner's lines were fairly accurate, but perhaps a bit too wide towards the bow. However, it is important to note that the reconstructed curvatures of the upper frames are conjectural, since the remains are warped inward and no longer fair with one another. As mentioned, it was possible to ascertain the curve of the garboard plank from the remains, and the rest of the upper works were projected accordingly. The reconstructed dimensions of the bateau are 32 feet (9.75 meters) long over the posts, and 6 feet 6 inches (1.829 meters) in beam, with a length to beam ratio of 4.9:1. It is slightly wider forward of amidships, but narrows significantly at both ends, giving it a shape well suited for rowing that resembles a large canoe. (Figure 22)

# Lake George Bateau 2626

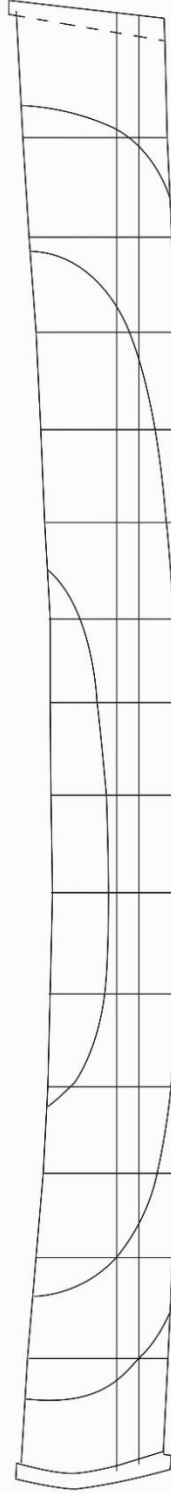
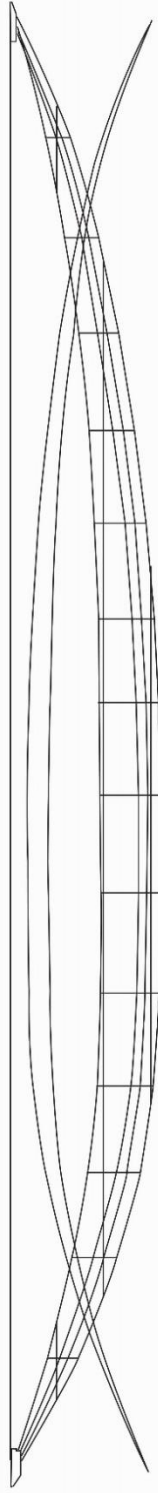
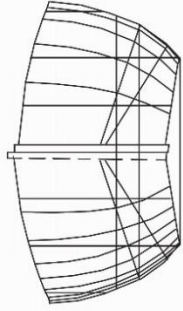
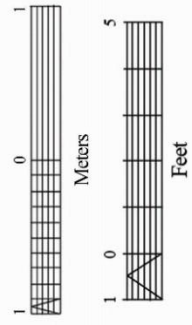


Figure 22. Lake George Bateau 2626 reconstructed lines.

## CONSTRUCTION OF LAKE GEORGE BATEAU 4560

Lake George Bateau 4560 was raised in two pieces during the 1960 excavation, and was the most photographed of the three complete bateau bottoms while they were being raised. Inner tubes were placed around either end of the bottom in order to float it to the surface and haul it out of the water. (Figure 23) It was in shallow water mud for temporary preservation until it underwent a superficial PEG treatment. It is the second most well-preserved bateau bottom of the three, having all its bottom planks and most of its battens and frame bases intact. After temporary display and storage at the Adirondack museum from 1966-1993, it was placed in storage at the New York State Museum off-site facility in Rotterdam, New York where it remains assembled in forward and aft halves.



Figure 23. A crowd observes Lake George Bateau 4560 after its raising.

### *Bottom Planking*

The bottom of Bateau 4560 consisted of only six large bottom planks which form three runs of two planks each. (Figure 24) The planks were made of white pine cut  $1\frac{1}{4}$  inches (3.175 centimeters) thick and a maximum of 16 inches (40.64 centimeters) wide. They range from 13 feet  $3\frac{1}{2}$  inches to 17 feet  $8\frac{1}{2}$  inches long. The total of the bottom is 31 feet  $9\frac{3}{4}$  inches (10.25 meters). There is no remaining rocker to the planks. Each plank tapers toward the ends, such that the bottom reaches its full width about 11 feet (3.353 meters) from the bow until 15 feet (4.572 meters) from the stern. Like the other bateaux, the edges of the bottom planks are beveled for the overlapping garboard planks. Bevel angles are well preserved, and ranged from 105 degrees at the extremities to a



maximum of 143 degrees at Port frame 5. Wide angles continued until frame 12 where the bevel is 133 degrees, after which it begins to angle up dramatically to meet the stern. These angles show that the sides of this bateau flared out rather quickly from the bow, but then maintained a fairly consistent width throughout. A difference of a few degrees on either side indicates that the sides of the bateaux were slightly asymmetrical.

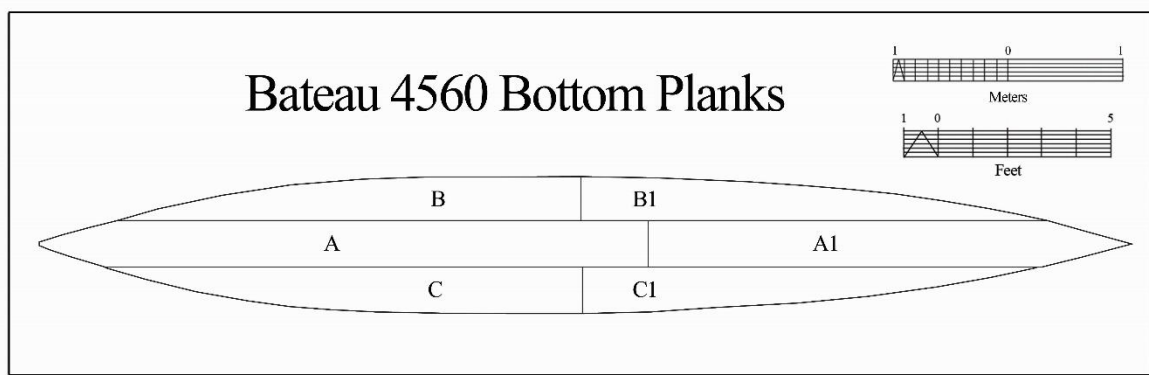


Figure 24. Lake George Bateaux 4560 reconstructed bottom planks.

### *Floor Battens*

Bateau 4560 had 14 frame sets, consisting of a starboard frame, a port frame, and a floor batten. All of the battens remain intact. As seen in the other Lake George bateaux, these were flat planks ranging from  $\frac{3}{4}$  inches to  $1\text{-}\frac{1}{4}$  inches thick. Most were about 1 inch thick. Widths are particularly consistent in 4560's battens. They have an average width of  $9\text{-}\frac{13}{32}$  inches (23.8919 centimeters) and most are around  $9\text{-}\frac{1}{4}$  inches (23.495 centimeters) wide. They were fastened perpendicular to the bottom planks with 12 to 29 small wrought iron nails, at an average of 24 nails, in order to hold the bottom planks together. The exception to this is batten 14, which was placed in the tapering

section of bottom plank A1 after planks B1 and C1 end. Therefore it does not join anything together. Nail patterns are mostly haphazard, but are often seen in rows of three near the edge of bottom planks or in a quincunx pattern in the middle of bottom planks. Battens were spaced roughly 2 feet (.61 meters) from center to center. Battens 7 and 8 cover the seams where the bottom planks abut one another at their ends. (Figure 25)

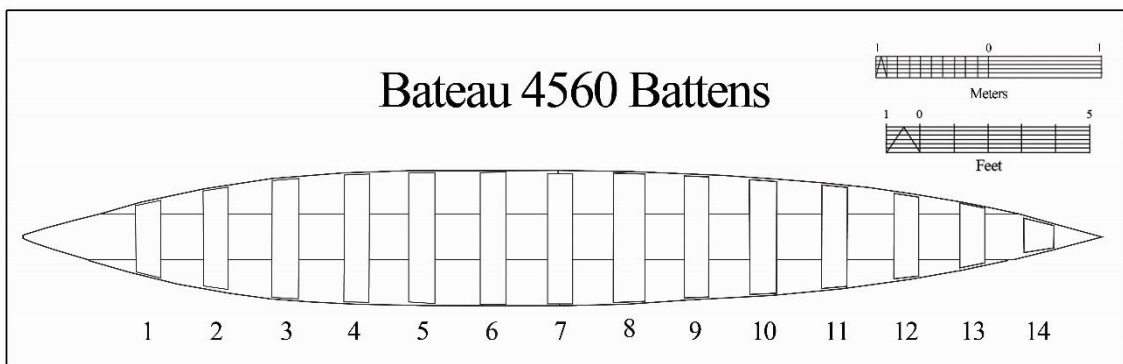


Figure 25. Lake George Bateaux 4560 reconstructed floor battens.

### *Stem configuration*

The stem of Bateau 4560 was constructed from a naturally curved piece of hardwood and was triangular in section. Its total height is 36-½ inches (92.71 centimeters), with some of the top eroded away. Originally, it probably stood at least 38 inches (96.52 centimeters), similar to the sternpost or slightly higher. It had a maximum curvature of 4-½ inches (11.43 centimeters) at a height of 18 inches (45.72 centimeters), but it did not rake forward. The base of the stem is indented to receive the bottom planks and to protect them when the bateau was brought ashore or portaged. The indent is 2-¼ inches (5.715 centimeters) deep and 2-¼ inches (5.715 centimeters) wide at the forward

edge and expands to 3-<sup>3</sup>/<sub>4</sub> inches (9.525 centimeters). At least 3 nails in the indent indicate that the stem was spiked from under the bottom planks to reinforce it. The stem of 4560 has the most well preserved rabbet of all stem examples in the Lake George bateau collections. The rabbet is 5/8 inches (1.588 centimeters) deep with 1-<sup>1</sup>/<sub>4</sub> inches (3.175 centimeters) of back rabbet. Planks entered the rabbet at an angle of about 70 degrees. There are nail holes visible directly in the rabbet along the entire height of the stem. There are also several nail holes outside of the rabbet on the side of the stem proper.

The inboard portion of the stem was 3-<sup>3</sup>/<sub>4</sub> inches (9.525 centimeters) wide at base and narrowed to 1-<sup>1</sup>/<sub>2</sub> inches (3.81 centimeters) at top where it is badly eroded. The outboard part of the stem had a maximum molded dimension of 5 inches (12.7 centimeters) and a maximum sided dimension of 4 inches (10.16 centimeters), both of which taper slightly to the top. A hole for attaching a painter began at about 23 inches (58.42 centimeters) above the base which is 3 inches (7.62 centimeters) wide and 2-<sup>1</sup>/<sub>8</sub> inches deep (5.296 centimeters). However, the hole shows signs of erosion, and was probably much smaller originally. Above the hole the outboard face of the stem is flattened.

The stem was reinforced by a small knee that is no longer part of the assembly. There were five nails in a quincunx pattern on the inboard face of the stem within 7-<sup>3</sup>/<sub>4</sub> inches (19.685 centimeters) of its base where the knee was fastened. There are no higher nail holes to indicate that an apron was utilized in this configuration. At least two nails

holes 5 inches (12.7 centimeters) and 8- $\frac{3}{4}$  inches (22.225 centimeters) from bottom plank A's forward end indicate where the stem knee was nailed into the bottom planks.

### *Stern configuration*

The stern configuration of 4560 appears to have consisted only of the sternpost, which was likely made from oak and was triangular in section. Its base was 10- $\frac{3}{4}$  inches (27.305 centimeters) long and a maximum of 3- $\frac{3}{4}$  inches (9.525 centimeters) wide, tapering to a point on its after end. The forward end of the base was cut thin at a length of about 5- $\frac{3}{4}$  inches (14.605 centimeters) and two nail holes are visible from the upper side where it was nailed into the bottom planks. In this way, a stern knee was “built in” to the sternpost. Given the lack of additional nail holes, and the small amount of space between batten 14 and the forward end of the sternpost's base, it is not likely that there was an additional knee to support the sternpost. The base was also spiked from under the bottom planks by at least one fastener 4 inches (10.16 centimeters) from the after end. The sternpost raked aft from the bottom planks at an angle of 101 degrees, and extends to a height of 38 inches (96.52 centimeters). A visible saw mark at the top indicates that this was the original height of the sternpost. Nail holes are visible very close to the top edge, indicating that the sides extended to its entire height. The sternpost is best preserved at a height of 5 inches (12.7 centimeters) from the base, where its maximum molded dimension is 5 inches (12.7 centimeters). It tapers to 2- $\frac{1}{2}$  inches (6.5 centimeters) sided by 2- $\frac{3}{4}$  inches (6.985 centimeters) molded at the top, although there is erosion on all three sides so it was originally slightly thicker.

### *Framing*

Frames were made from naturally curved pieces of oak, which were thickest near the crook between the bottom and sides, and tapered near the ends. Frames P6, P7, S7, S9, P10, S12, P14, and S14 are missing from the assembly, but their locations can be inferred from rows of nails and ghosting on the bottom planks. All frames of 4560 were poorly preserved, only reaching a maximum height of 9- $\frac{1}{4}$  inches (23.495 centimeters) above the bottom planks. They are typically well preserved along a height of about 7 inches where the garboard planks covered them. As a result, they only accurately reflect the angle of the garboard from the bottom planks, and are not useful for reconstructing the sides of the bateau. Well preserved frames from Bateau 2626 and 4566 were referred to in order to estimate original curvature. Frames are notched where the bottom planks meet the garboard planks. These notches are typically about 1 inch (2.54 centimeters) wide and  $\frac{1}{2}$  inch (1.27 centimeters) deep, and served as limber holes. Frames were nailed to the bottom planks with a row of 2-5 nails from above, and 1 nail from below, near the outside edge of the bottom plank.

### *Side Planking*

Six garboard plank fragments were included in the 4560 assembly. These planks had a maximum preserved thickness of 1 inch (2.54 centimeters). The first port garboard is preserved along its entire length, starting at the stem and extending to Frame 6, where it is beveled for a vertical flat scarf starting 2- $\frac{1}{4}$  inches (5.715 centimeters) from its after edge. This aligns directly with frame 6, which shows that scarfs were positioned to nail

into frames. The garboard plank has 4 nail holes on its forward edge, one was nailed into the bottom plank and the others were nailed into the rabbet of the stem. Garboard planks were nailed into the bottom planks every 4-6 inches (10.16-15.24 centimeters). A row of 2 or 3 nails secured them to each frame. Stern garboard planks overlapped the sternpost, and were beveled on the ends to come to a single point. At least 6 nail holes are visible on the starboard garboard where it overlapped the sternpost. Full widths of the garboards were not preserved for this bateau. They are preserved to a maximum width of 8 inches (20.32 centimeters), and likely were originally about 9-½ inches (24.13 centimeters) wide based on better preserved garboards from the other bateau collections.

### *Reconstruction*

In spite of its badly eroded frames, it is possible to reconstruct Bateau 4560 with only the bottom planks, stem, and sternpost. Based on the width of the sole and the bevel angle of the bottom planks, it reached its maximum beam slightly forward of amidships at Frame 7, or 14 feet 7 inches (4.445 meters) from the forward end of the bottom planks. Its shape remained rather full throughout most of its length, only significantly tapering before frame 3 and after frame 12. This gives it a very double-ended form in the breadth view, although it is slightly sharper toward the stern. When the bottom plank rocker of 4 inches (10.16 centimeters) is added, there is no significant forward rake of the stem and very little after rake of the sternpost. Based on the height of the sternpost it has a maximum bottom-to-gunwale height of 3 feet 2 inches (.965 meters) at its extremities and 2 feet 10 inches (.864 meters) amidships. (Figure 26)

# Lake George Bateau 4560

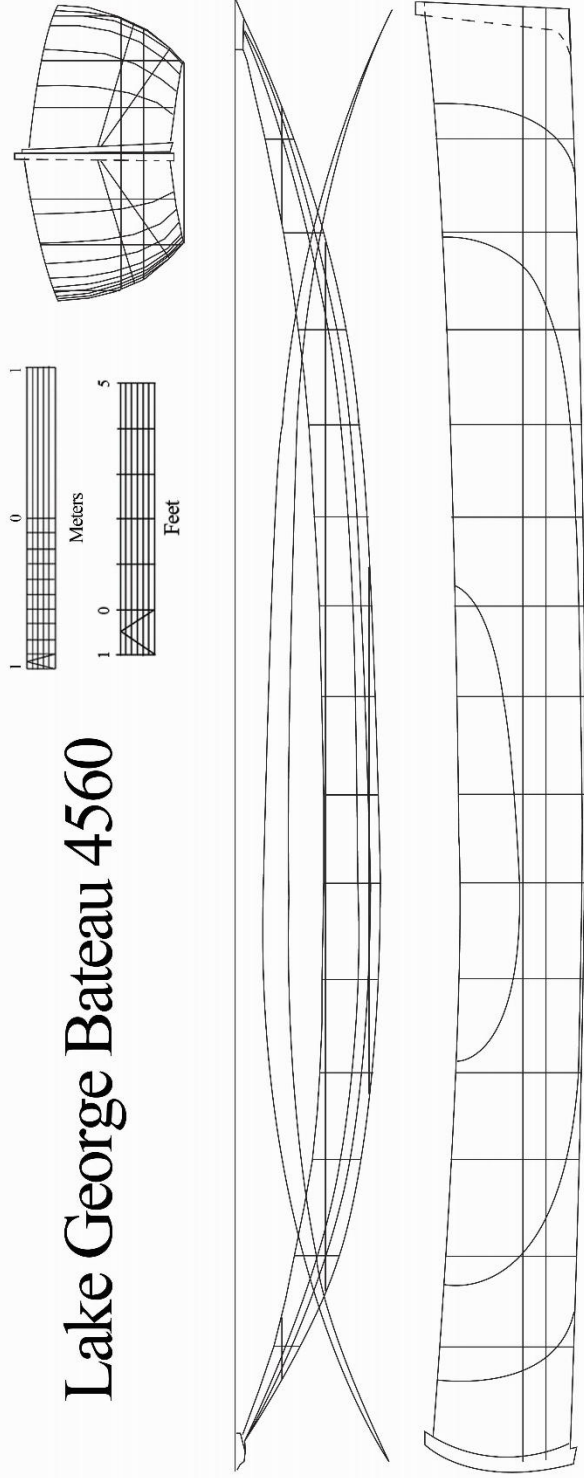


Figure 26. Lake George Bateau 4560 reconstructed lines.

## CONSTRUCTION OF LAKE GEORGE BATEAU 4566

Like Bateaux 2626 and 4560, Lake George Bateau 4566 was raised in several pieces during the 1960 excavation. It was the most poorly preserved of the three bateaux, as the outer runs of bottom planks are fragmented and eroded along the edges. Most of the bottom battens and frames were missing so their locations had to be inferred from nail holes and ghosting on the bottom planks. Only a few frames were preserved over the height of the garboard. In spite of these issues, there is still enough evidence to create a unique reconstruction of Bateau 4566 to compare to the other two examples.

### *Bottom Planking*

The bottom of Bateau 4566 consisted of nine bottom planks, which formed three runs of three planks. The planks were 1 ¼ inch (63.5 centimeters) thick white pine. The middle run of planks consisted of a forward plank that was 13 feet 10 inches (4.216 meters) long, an aft plank that was 14 feet ¼ inch long (4.274 meters), and a 3 feet 11-¾ inches (1.213 meters) long rectangular plank in the center, for a total length of 31 feet 10 inches (9.747 meters). These planks were a maximum of 17 inches (43.18 centimeters) wide. The outer planks make up the majority of the curve in the bottom. Each outside run had a short plank on either end and a longer plank in the center. The outer planks are fragmented and bottom plank C is missing. Plank C1 has a straight saw cut on its forward end, indicating there was another plank. Bottom plank C1 reached a maximum



width of 15 inches (38.1 centimeters) and bottom plank B1 a maximum of 16 inches (40.64 centimeters) wide, for a total width of 4 feet (1.219 meters) of the entire bottom.

The overall shape of the bottom was nearly identical to that of 2626 and 4560, being slightly wider forward of the center with a longer taper toward the stern. Like the other bateaux, the edges of the bottom planks are beveled for the overlapping garboard planks. Although the frames were probably slightly asymmetrical, bevel angles were taken from both sides because of the missing bottom plank C and fragmentation of starboard bottom planks abaft of B. Bevel angles begin at 94 degrees at the stem, and flare to a maximum of 141 degrees near frame 5. Angles remained wide for most of the length of the bottom, closing in to 129 degrees near frame 13, and then turning up sharply to 98 degrees at the stern. (Figure 27)

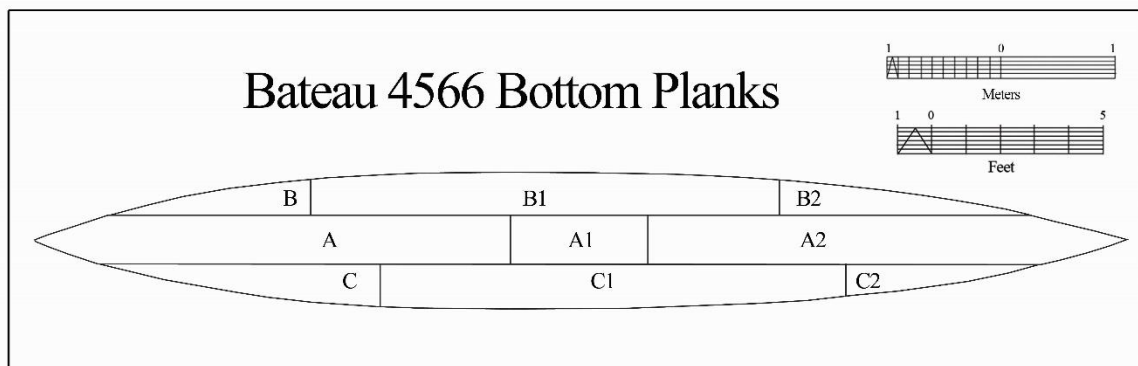


Figure 27. Lake George Bateaux 4566 reconstructed bottom planks.

### *Floor Battens*

Bottom planks were held together with thirteen perpendicular battens, which also acted as “floors” for the frame sets. Only battens 5, 6, 8, and 11 remained and were able

to be placed in the assembly with confidence by matching widths and nail holes to the bottom planks. The existence of the other battens was inferred from clear ghosting and nail hole clusters. Since there are fourteen frame sets, an additional small batten may have existed on the taper of bottom plank A2, as seen in 4560, but there were few nail holes in this area and no clear ghosting. A fourteenth batten was not necessary and was probably not placed for this reason.

Extant battens were consistently  $7/8$ -1 inch thick (2.223-2.54 centimeters), but they varied greatly in width. The narrowest (batten 5) was only  $5-1/8$  inch wide (13.018 centimeters), and the widest (batten 3) was 11 inches wide (27.94 centimeters). On average they were  $8-3/32$  inches (20.558 centimeters) wide. The widest battens were placed over the seams where the ends of bottom planks in one strake abutted one another, which added extra strength to these joints. Battens were secured to the bottom planks with 13-30 small wrought iron nails. Actual totals are not available for battens 1-4 due to the missing bottom plank C. It is assumed that there were about the same amount of nails securing them to bottom plank C as bottom plank B. With these estimates, the average amount of nails per batten was 21.38. In contrast to the other bateaux examples, nail holes were relatively consistent. In most cases rows of two or three nails were placed on either edge of each bottom plank, with another row in the middle. Additional nails were used where bottom planks abut one another in the same strake. Quincunx patterns were common near the stern. (Figure 28)

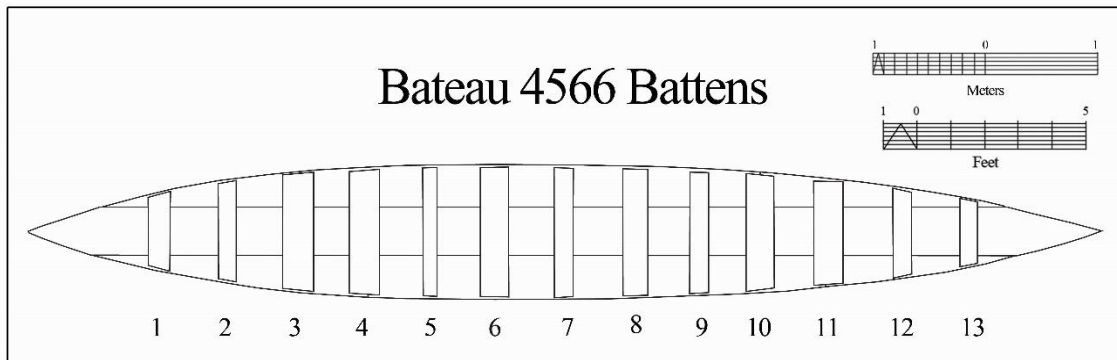


Figure 28. Lake George Bateaux 4566 reconstructed floor battens.

*Stem Configuration*

A stem was not included in the 4566 collection. However, an approximate match (Stem A) was found in collection 4530. Its characteristics were not close enough to conclude that it originally belonged with bateau 4566. It is therefore discussed in under the “Bateau Collection 4530” header.

*Stern Configuration*

The stern of 4566 was made from a single piece of slightly curved hard wood, although its curve may be exaggerated from warping. The sternpost was triangular in section and rose to a maximum preserved height of 36 inches (91.44 centimeters). Erosion at the top indicates that it was originally slightly higher. The entire post is badly eroded above height of 7 inches (17.78 centimeters). It had a maximum preserved molded dimension of 6-½ inches (16.51 centimeters) at its base, which tapered to 1-¾ inches (4.445 centimeters) at the top. In contrast, it had a very thin sided dimension of 2-¾ inches (6.985 centimeters) at the base which tapers to 1-7/8 inches (4.763 centimeters)

at the top. The sternpost slopes forward significantly at the base, allowing ample room for the four spikes that were driven up from under bottom planks. Two nail holes on the forward end of the base indicate there was probably a small knee that helped secure the sternpost to the bottom planks. There is no rabbet in the post. Side planks were nailed directly over the sternpost as indicated by numerous nail holes on either side. Side planks were beveled on the ends to overlap each other and come to a point.

### *Framing*

Several frames were included in collection 4566 but most were badly eroded. Only better preserved frames that could help with the reconstruction were recorded. These were frames S8, P8, P10, and S14. The locations of all frames were ascertained from ghosting and nail holes visible on the bottom planks. There were fourteen sets of frames that consisted of naturally curved pieces of hardwood. Framesets were made up of a starboard frame and a port frame. Port frames were placed slightly forward of starboard frames. Each frame was secured to the bottom planks with 3-7 nails. At least one of these was nailed from under the bottom planks near the edge of the bottom. They were also notched near the edge of the bottom. These notches served as limber holes. Frames have a maximum preserved height of  $22\frac{7}{8}$  inches (58.103 centimeters).

### *Side Planking*

Two examples of pine garboard planks from 4566 were particularly well preserved. One complete plank was 6 feet 3 inches (1.905 meters) long and 9 inches

(22.86 centimeters) wide. It was trapezoidal in section with a 1 inch (2.54 centimeters) bevel on the lower edge to lay flush with the bottom. Just outside of the beveled area it was nailed to the bottom planks every 4-6 inches (10.16-15.24 centimeters). It was also beveled 1-¼ inches (3.175 centimeters) on the upper edge to receive the next strake. When the next strake was in place, nails were placed in the overlapping area every 4-6 inches (10.16-15.24 centimeters) to reinforce these seams. It was also beveled about 3-½ inches (8.89 centimeters) on either end for a vertical flat scarf. Three or four nails secured this scarf to a frame. Additional rows of three or four nails secured the middle portion of the plank to each frame. The other well preserved garboard plank was 8 feet 4 inches (2.54 meters) long, but was originally longer as it is broken or eroded on the ends. Otherwise it has similar features to the garboard plank. Both were about 1 inch (2.54 centimeters) thick.

*Stringer gunwale or shelf fragment*

A thin strip of wood was included in the 4566 collection which was 3 feet 1-½ inches (.953 meters) long, ¼ inch (.635 centimeters) wide, and <sup>11</sup>/<sub>16</sub> inches (1.746 centimeters) thick. Two nail holes were present which were spaced 1 foot 3 inches apart. This spacing was too close for the piece to be nailed to frames, and was therefore probably not part of a shelf clamp to support thwarts. Rather it was probably part of a gunwale nailed onto the outboard edge of the sheer plank. Alternately, it may have been an inboard shelf at the sheer plank. In this case it would have to be nailed to the frames,

but if it supported blocks between the shelf and sheer plank for holding rowlocks, additional nails would secure these.

#### *Possible Mast or Yard Fragment*

The 4566 collection contained an object that may have been part of a mast or yard. This timber was 5 feet 6 inches long (1.676 meters), 2- $\frac{1}{4}$  inches (5.715 centimeters) sided and 2- $\frac{3}{4}$  inches molded (6.985 centimeters). It was somewhat rectangular in section. This is slightly wider than the opening in the mast step that was part of Bateau Collection 4530, so it is feasible that it might fit in a similar mast step. It is cut at the base, and tapers to  $\frac{1}{2}$  inch (1.27 centimeters) starting 4- $\frac{1}{2}$  inches (11.43 centimeters) from the top. A large iron spike went all the way through the timber at 46- $\frac{1}{2}$  inches (118.11 meters) from the base. There are also two small  $\frac{5}{8}$  inch (1.588 centimeters) nail holes 9- $\frac{1}{2}$  inches (24.13 centimeters) and 26 inches (66.04 centimeters) from the base.

#### *Reconstruction*

In spite of the lack of well-preserved frames in 4566, a reconstruction is possible using the bottom planks, the stem, and the sternpost. Bevel angles on the side edges of the bottom planks indicate the angle at which side planks departed the bottom of the bateau. As mentioned, these flared out quickly and are at the widest angle at frame 5. Angles remained wide until they began to close in again at frame 12. By setting a maximum width of 6 feet 6 inches (1.981 meters) as indicated by the 1776 admiralty

draft of a bateau, a reasonable midship frame was projected at frame 6, which is the widest point on the bottom where the bevel angle is also widest. From there bevel angles could be used to project additional sections for each frame up until the stem and sternposts. Since the complete height of the stem that most closely matches bateau 4566 was 3 feet 3 inches (.991 meters, see description of stem A in “Bateau Collection 4530), this was the maximum height for the freeboard near the end posts. With this height, it is likely that the original bateau had five strakes of planks that were 9 to 10 inches (22.86-25.4 centimeters) wide, based on the width of the garboard planks. With an overlap of about 1 inch between each strake, this comes to about 3 feet 3 inches (.991 meter). Since the sides flare out, it dips to a maximum height amidships of about 2 feet 10 inches (.864 meters). The overall shape is slightly wider forward of amidships, which begins to close in more sharply forward of frame 3 to meet the stem. It turns in more sharply to meet the stern starting at frame 11, making it somewhat sharper toward the stern. (Figure 29)

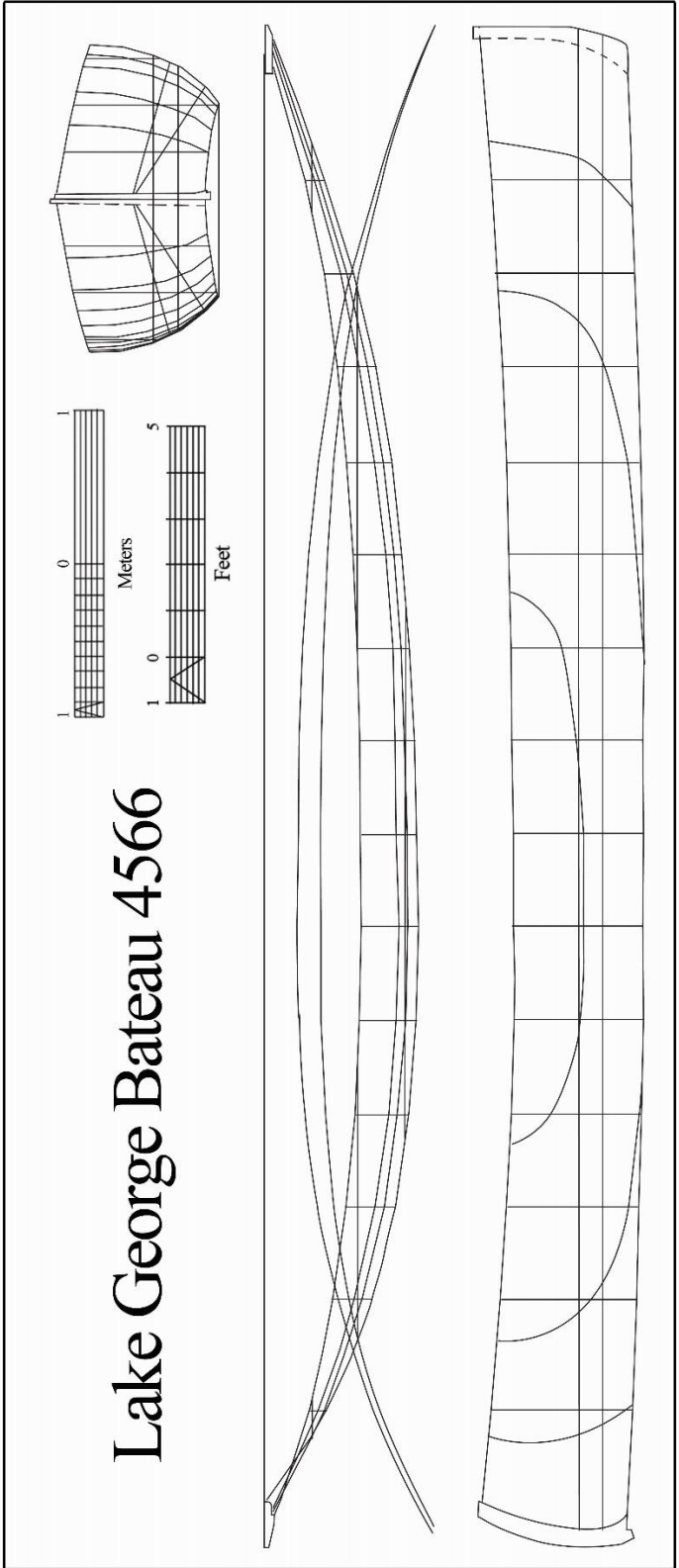


Figure 29. Lake George Bateau 4566 reconstructed lines.



One of the main differences between the three reconstructed bateaux is the amount and size of bottom planks that were used to form the bottom. Lake George Bateau 4560 was built using the fewest bottom planks of the three. Like 4566 it has three runs of bottom planks that are a maximum of 16 inches (40.64 centimeters) wide, but 4560's bottom plank runs consists of only two planks each, for a total of six bottom planks. Bateau 2626 was the most unusual, having four runs of two planks. In spite of the differences, the bottoms of all three bateaux are very close in length and beam and their shapes are almost identical. 2626 is only slightly shorter. The other unique aspect of 4560 was the forward sloping, built-in "knee" on sternpost. The others both had separate knees to support the sternpost.

## BATEAU COLLECTION 4530

Bateau collection 4530 consists of various parts that were not associated with a specific bateau such as loose frames and battens, plank fragments, stems and sternposts, a mast step, rowlocks, treenails or tholepins, and a mortar bomb. This section highlights some of the more diagnostic pieces from this collection.

### *Stems*

Three disarticulated stems were in bateau collection 4530, and one unusual piece that appeared to be a sort of forefoot.

The best preserved of the stems (A) is also an approximate fit with bateau 4566. Since it is not conclusive whether it originally belonged to bateau 4566 or with another boat, it is described here. The entire preserved height is 39- $\frac{1}{2}$  inches (100.33 centimeters). A hole was drilled through the stem at a height of about 27 inches (68.58 centimeters) above the base. The hole is 3 inches (7.62 centimeters) in diameter, but it is heavily eroded. This stem had a maximum curvature of 5- $\frac{5}{8}$  inches (14.289 centimeters) at 11- $\frac{1}{2}$  inches (29.21 centimeters) above the base. The outside edges were heavily eroded, such that a full 5/8 inches (1.586 centimeters) of rabbet is preserved, but only  $\frac{1}{4}$  inch (.635 centimeters) of back rabbet. Its maximum preserved molded dimension was 6- $\frac{3}{4}$  inches (17.145 centimeters) at the base, which narrowed to 2 inches at the top. The maximum preserved sided dimension was 3- $\frac{1}{2}$  inches (8.89 centimeters), which narrowed to 1- $\frac{1}{8}$  inches (2.858 centimeters). The stem was notched on bottom to receive

the bottom planks and protect them when the bateau was brought ashore or portaged. The notch was 1 inch wide on the forward side and widened on the after side. (Figure 30)



Figure 30. Stem A from Lake George Bateaux Collection 4530.

Unlike the other stem examples, this was likely secured directly to the bottom planks without the support of a knee. An additional 1 inch (2.54 centimeters) of the stem slopes aft to overlap the bottom planks. This overlap was originally longer, but broke off along two nail holes. These two holes indicate that it was nailed from above here, and two additional holes under the stem's base show that it was also spiked from underneath the bottom planks. The stem showed no evidence of nail holes for a knee or an apron.

Another disarticulated stem (B) was preserved at a height of 43 inches (109.22 centimeters) Most of the base was eroded, but a spike in the bottom indicates that this was probably its original height. It was triangular in section, with a molded dimension of 4 inches (10.16 centimeters), and a sided dimension of 3-3/4 inches (9.525 centimeters). This tapers to 3 inches (7.62 centimeters) molded and 3-1/2 inches (8.89 centimeters)

sided at the top, which is relatively well-preserved. It had a maximum curvature of 3-½ inches (8.89 centimeters). The rabbet was preserved to about ¾ inches (.953 centimeters) on either side, with ¾ inches (1.905 centimeters) of back rabbet. Nail holes were clearly visible in the rabbet along most of its height. This stem post had the best preserved painter hole out of all the examples, 28 inches (71.12 centimeters) above the base, with a maximum diameter of 2-½ inches (6.35 centimeters). Its side width was slightly narrower. The hole was very close to the rabbet. (Figure 31)



Figure 31. Stem B from Lake George Bateaux Collection 4530.

The last stem (C) in 4530 had a maximum height of 40 inches (101.6 centimeters). It was also triangular in section, with a maximum molded dimension of 3 inches (7.62 centimeters) and a maximum of 2-½ inches (6.35 centimeters) sided. This tapered to a molded dimension of 1-¾ inches (4.445 centimeters) and a sided dimension of 1-¼ inches (3.175 centimeters) at the top where the sides are eroded. It had a maximum curvature of 2-½ inches (6.35 centimeters). Most of the rabbet is eroded away, but it was relatively well preserved near the base. The rabbet was preserved to 7/16 inches (1.111 centimeters), with a back rabbet of 1 inch (2.54 centimeters). A few nails were

visible directly in the rabbet. There was a large 4-½ inch (11.43 centimeters) gap where the painter hole expanded starting at 28 inches (71.12 centimeters) above the base.

Erosion of the hole went through to the inboard side. (Figure 32)



Figure 32. Stem C from Lake George Bateaux Collection 4530.

An additional piece appears to be the lower part of a stem or a forefoot. It has a 7 inch (17.78 centimeters) long flat section before it begins to curve up to a notch for receiving bottom planks. This section was a maximum of 6-¼ inches (15.875 centimeters) wide on the after end. This area was raised on either side. The raised portions were 3 inches (7.62 centimeters) wide to port and 1-7/8 inches (4.763 centimeters) wide to starboard and each has several nails in it. In between the raised portions, there was a groove 1-5/8 inches (4.128 centimeters) wide. Like the stems of the complete bateaux bottoms, part of the timber extended down on the forward end to protect the bottom planks. The forward portion also curved up, like a stem, to a maximum height of 10-½ inches (26.67 centimeters). Unfortunately, due to erosion it is not possible to know its original height. The upper portion was 2-¼ inches (5.715

centimeters) sided. There were nail holes in its sides, but no apparent rabbet. If this was not simply a broken stem, it is possible that it was some kind of forefoot or knee. (Figure 33)



Figure 33. Unusual stem piece from Lake George Bateaux Collection 4530.

### *Sternposts*

There were three disarticulated sternposts in collection 4530. The first sternpost (A) was 38- $\frac{1}{2}$  inches (97.79 centimeters) high, 4 inches (10.16 centimeters) molded, and 2- $\frac{1}{8}$  inches (5.396 centimeters) sided. It tapered to 3 inches (7.62 centimeters) molded and 1- $\frac{1}{2}$  inches (3.81 centimeters) sided at the top. Two nails in the lower part of the inboard side indicate that it was reinforced by a small knee. There are also nail holes along the side where planks were nailed into it. The base was badly eroded and therefore it is not possible to determine its original rake. (Figure 34)



Figure 34. Sternpost A from Lake George Bateaux Collection 4530.

The second sternpost (B) was preserved to a height of 37-½ inches (95.25 centimeters). The ends were badly eroded, so it was probably slightly longer. It was triangular in section, with a molded dimension of 4 inches (10.16 centimeters), and a sided dimension of 2-¼ inches (5.715 centimeters). These dimensions were relatively consistent throughout. There were numerous nail holes in the sides where planks were secured to the post. (Figure 35)



Figure 35. Sternpost B from Lake George Bateaux Collection 4530.

The third sternpost (C) was very badly eroded throughout most of its height of 35-½ inches (90.17 centimeters). It was triangular in section, with a maximum preserved sided dimension of 1-⅛ inches (2.858 centimeters) and a maximum preserved molded dimension of 2 ⅝ inches (6.668 centimeters). The top is eroded to a point. Within 5-½ inches (13.97 centimeters) above the base there are three nail holes in the side where

planks were nailed in. Although the base is warped, it probably met the bottom planks at almost a 90 degree angle. Unique to this sternpost are five large nails driven in from the inboard side of the sternpost between a height of 12- $\frac{1}{4}$  inches (31.115 centimeters) and 28 inches (71.12 centimeters), suggesting that it was reinforced by a relatively large knee. (Figure 36)



Figure 36. Sternpost C from Lake George Bateaux Collection 4530.

### *Mast Step*

A small, simple mast step was included in collection 4530. It was 14- $\frac{7}{8}$  inches (37.783 centimeters) long and 4- $\frac{3}{8}$  inches (11.113 centimeters) wide. It was  $\frac{1}{4}$  inch (.635 centimeters) thick on the ends and sloped up to a maximum thickness of 1- $\frac{1}{4}$  inches (3.175 centimeters) in the middle. A 2- $\frac{1}{4}$  inches (5.715 centimeters) by 2- $\frac{1}{8}$  inches (5.398 centimeters) square mortise was located slightly off-center, and goes all the way through the mast step. Four nail holes on either side of the mortise secured the mast step to the bottom of the bateau. There is no evidence to indicate exactly where it was secured, but it was probably nailed to one of the forward battens. (Figure 37)



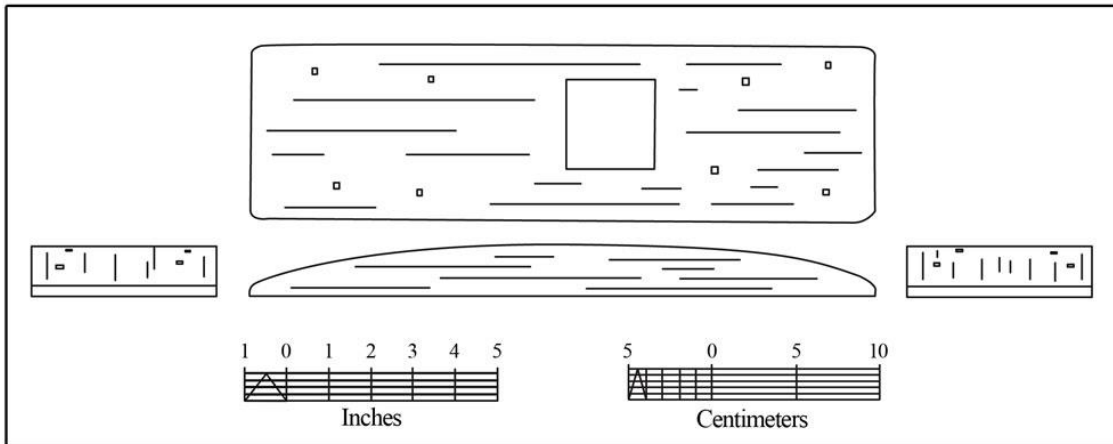


Figure 37. Mast step from Lake George Bateaux Collection 4530.

### *Rowlocks*

Collection 4530 contains at least two small blocks for holding tholepins. The best preserved example (A) was  $16\frac{1}{4}$  inches (41.275 centimeters) long and  $1\frac{3}{4}$  inches (4.445 centimeters) wide. It was 1 inch (2.54 centimeters) thick throughout most of the length, but was thinned to  $\frac{1}{2}$  inch (1.27 centimeters) at the ends where nails were driven in. Two nails were placed roughly  $\frac{3}{8}$  inches (.953 centimeters) from either end. There is insufficient evidence to conclude exactly where they were fastened. The block is not long enough for it to sit across two frames. More likely it was nailed into a gunwale, or some combination of the sheer strake, a gunwale, or a stringer. It is also possible that it was secured to a block secured on the inboard side of the sheer strake. Two small holes for holding tholepins were  $1\frac{1}{8}$  to  $1\frac{1}{4}$  inches long and  $1\frac{1}{16}$  inches wide. The holes were  $4\frac{3}{8}$  inches apart. (Figure 38)

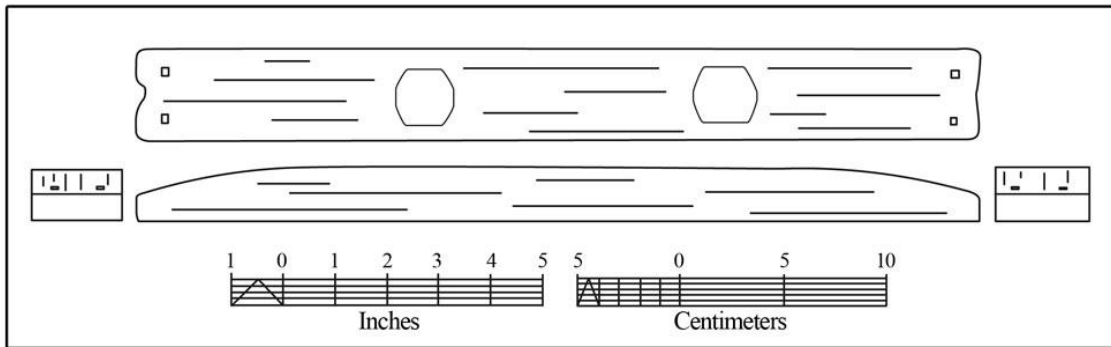


Figure 38. Rowlock A from Lake George Bateaux Collection 4530.

*Tholepins or Treenails*

At least nine examples of treenails or tholepins were included in the 4530 collection. They were elliptical or multifaceted in section. They ranged from 8 inches (20.32 centimeters) to 12 inches (30.48 centimeters) long and from  $\frac{3}{4}$  inches (1.905 centimeters) to 1 inch (2.54 centimeters) thick. All have a slight taper to one end. With these dimensions, they could not fit snugly into the holes of the previously described rowlock. It is possible that they shrank or that the holes in the rowlock expanded due to erosion or post-recovery drying out of the wood. Of course, it is also possible that these were treenails from another source and were intrusive to the bateau collection. (Figure 39)

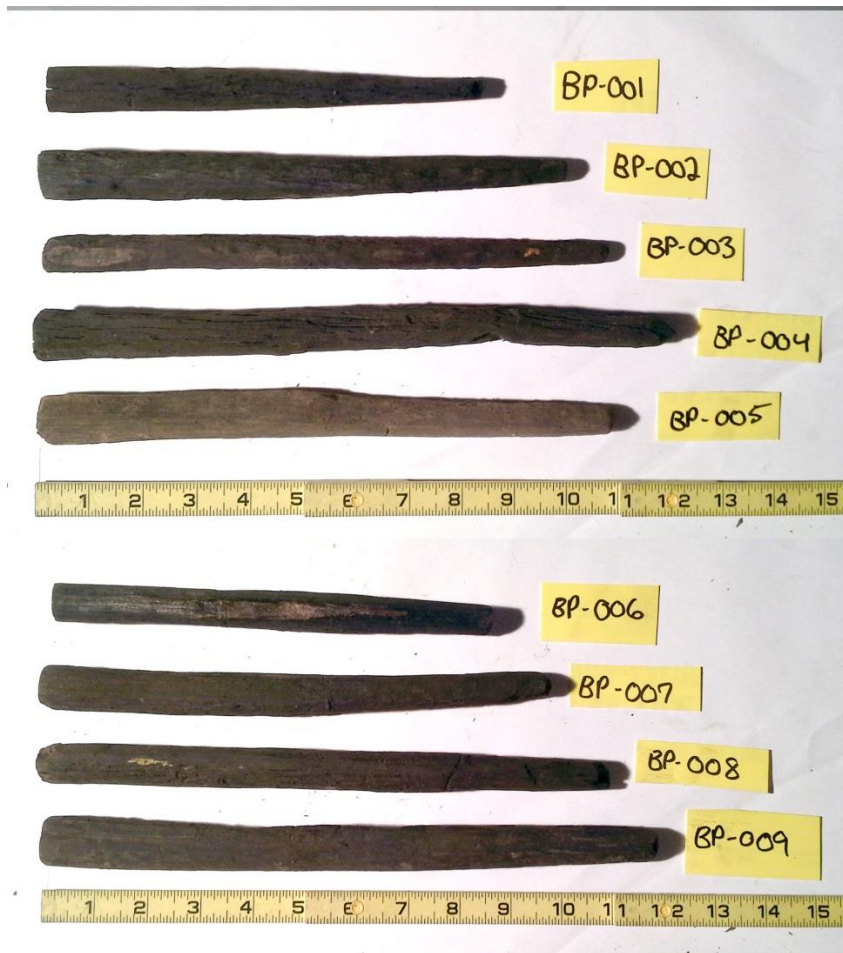


Figure 39. Tholepins or treenails from Lake George Bateaux Collection 4530.

### *Mortar Shells*

Three mortar shells associated with the Lake George bateaux were recovered in the 1960s. One remains included in collection 4530, but all three were recorded by Crisman et al. in 1986. The body of these shells were 12-½ inches (31.75 centimeters) in diameter. They had circular raised openings for the fuse hole that stood ¾ inches (1.905 centimeters) proud of the shell. They were about 2 inches (5.08 centimeters) wide with 1-½ inch (3.81 centimeters) openings. One of the mortar shells' fuse opening had an

upper section that expanded to 4 inches (10.16 centimeters) wide and rose an extra  $\frac{3}{4}$  inches (1.905 centimeters). Two of them had evidence of lifting handles about  $1\frac{1}{2}$  inches (3.81 centimeters) from the lip on either end that were  $\frac{5}{16}$  inches (.794 centimeters) thick,  $2\frac{1}{8}$  inches (5.396 centimeters) wide, and rose off the surface of the mortar shell by a maximum of  $\frac{7}{8}$  inches (2.223 centimeters). One shell was still partially filled with powder.

## BATEAU COLLECTION 4559

The New York State Museum's bateau collection 4559 contains a number of disarticulated bateau pieces including an oar or steering sweep, gunwale or shelf fragments, battens, side planks, and bottom planks. This section focuses on the oar or steering sweep and the gunwale or shelf fragments. The pieces that are well-represented in the other bateau collections, such as battens, side planks, and bottom plank fragments, have been omitted from this study. Several puzzling timbers are also associated with this collection which do not fit the consistent construction elements of the three bateau bottoms of collections 2626, 4560, and 4566. While the function or origin of these timbers cannot be discerned with current evidence, they are described in this study in hopes that future research can identify them.

### *Oar or Steering Sweep*

An oar or steering sweep was included in bateau collection 4559. It was 14 feet 4 inches (4.369 meters) long. The shaft was a maximum of 1-<sup>3</sup>/<sub>4</sub> inches (4.445 centimeters) in diameter, which began to widen into a blade at about 10 feet (3.048 centimeters). The blade reached a maximum of 3 inches (7.62 centimeters) wide before tapering again at the end. Part of the blade has been chipped away, so it was probably a bit wider when it was made. It is very likely that the entire eroded and was originally thicker. (Figure 40)

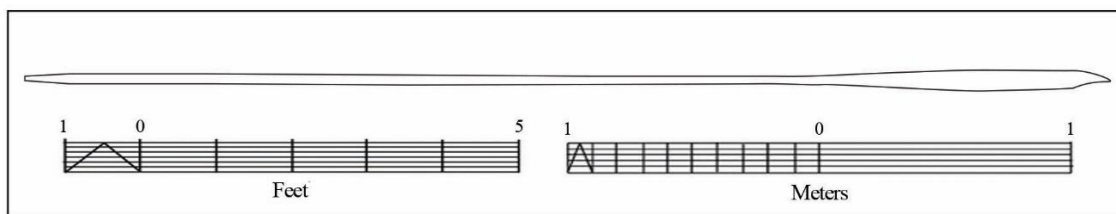


Figure 40. Oar or steering sweep.

### *Gunwale or shelf fragments*

Collection 4559 contained several examples of thin strips of wood that were likely fastened to the outboard side of the sheer strake to serve as gunwales. Some fragments were very short, while complete pieces were up to 10 feet 5 inches (3.175 meters) long. They were an average of  $1\frac{5}{16}$  inches (3.334 centimeters) wide and  $\frac{3}{4}$  inches (1.905 centimeters) thick. Frequent nail holes on the wide sides are spaced from  $2\frac{1}{2}$  inches (6.35 centimeters) to 20 inches (50.8 centimeters) apart, with an average spacing of  $10\frac{7}{8}$  inches (27.623 centimeters). This is too close for them to be nailed to the frames alone. Therefore they were probably nailed to the outboard side of the sheer strake.

One relatively well-preserved example provided a clue to how the sheer configuration may have looked. This 7 feet 6 inches (2.286 meters) long piece appeared complete, as it was beveled on either end for a vertical flat scarf. In addition to eight nail holes on its wide side spaced  $10\frac{3}{8}$  to  $12\frac{7}{8}$  inches (3.162 to 3.924 centimeters) apart, it also has two nails on the thick side near the ends. These were spaced 6 feet  $9\frac{3}{4}$  inches (2.076 meters) apart. If indeed this piece was a gunwale nailed to the outside of the sheer strake, its width of  $\frac{3}{4}$  inches (1.905 centimeters) added to the probable 1 inch (2.54

centimeters) width of the side plank yielded the perfect amount of surface area to support the rowlocks from collection 4530. Since rowlocks had two nails on either end, one was nailed into the gunwale, and the other into the sheer strake. In this case, it is assumed that the row lock was lapped over the scarf of the gunwale, since only one nail hole is visible on either end. The spacing of 6 feet 9 inches (2.057 meters) plus up to 15 inches (38.1 centimeters) for each rowlock reasonably allows for three to four rows of oars on a bateau of 32 feet (9.754 centimeters), which is consistent with a three or four handed bateau (see page 18).

#### *Timbers inconsistent with bateau construction*

Collection 4559 contained several large timbers that do not fit the bateau assembly. These pieces are most likely intrusive, but are important to describe for future researchers. Document evidence offers some possible explanations, but they remain strictly speculative.

The first example (A) was a twisted, naturally curved timber crook that was 12- $\frac{1}{2}$  inches (31.75 centimeters) long on the shorter portion and 3 feet 11 inches (1.19 meters) long on the longer portion. These portions met at a 100 degree angle. The timber had a maximum preserved thickness of 3  $\frac{1}{4}$  inches (8.255 centimeters) at its crook and tapered toward the ends. A single large bolt was driven into the short portion from the inside, and four large spikes were driven into the long portion from the inside. These spikes were spaced 7- $\frac{1}{2}$  to 22- $\frac{1}{2}$  inches (19.05 to 57.15 centimeters) apart. A piece of this timber was broken off of the end of the long portion. It measured 5- $\frac{7}{8}$  inches (14.923

centimeters) long,  $1\frac{1}{16}$  inches (2.699 centimeters) molded, and  $1\frac{5}{8}$  inches (4.1275 centimeters) sided. The semi-circular break indicates that there was once a hole in the timber, possibly for tying a line. (Figure 41)



Figure 41. Unusual timber (A) from Lake George Bateaux Collection 4559. (Photo: John Crispin 2014)

A similar timber crook was 3 feet 9½ inches (1.156 meters) long on the longer arm, and 2 feet (60.96 centimeters) long on the shorter arm. The longer arm was consistently round, but the short portion appears to have been cut flat. Nail patterns were similar, with 4 nails on the long end, and probably 1 nail on the short end. (Figure 42)



Figure 42. Unusual timber B from Lake George Bateaux Collection 4559. (Photo: John Crispin 2014)



The final example (C) was a long, straight, square timber measuring a total of 6 feet 5 inches (1.956 meters) long, 3 inches (7.62 centimeters) sided, and 2 inches (5.08 centimeters) molded. It sloped upward slightly on one end, causing this end of the timber to resemble a small knee. Near this upward slope there was a 1-¼ inch (3.175 centimeters) diameter hole. There was also a downward slope on the other end. Like the other side, there was a hole just outside this slope, but also one through the sloping portion. The remaining part of the timber was relatively flat throughout the majority of its length. Four ½ inch (1.27 centimeters) wide iron fasteners were driven into it from the top. They were consistently spaced 11 ½ inches (29.21 centimeters) apart. (Figure 43)



Figure 43. Unusual timber C from Lake George Bateaux Collection 4559. (Photo: John Crispin 2014)

The size and shape of these timbers, as well as the size of their fasteners, are inconsistent with the materials used to build the three Lake George Bateaux. Nor are they consistent with the larger, flat-bottomed radeau. Their rough and unfinished state also makes it extremely unlikely that these were part of a sloop or other ship that might have sailed on Lake George in 1758. Historical documents from the French and Indian War provide some possible explanations. In July of 1759 John Knox wrote that “An iron

eighteen-pounder was mounted to-day, in the stern of a new-built proe...<sup>115</sup> Knox was likely referring to a pontoon craft known as a *proa*. The only detail he added was that “she rolled considerably, which is imputed to her being too narrow for her length.”<sup>116</sup> Depending on the size of the *proa* being used by Knox’s men, these timbers could have been part of construction, rig, or attachments for the pontoon.

When describing boat allocations to regiments in July 1759, Knox also mentioned that General Thomas Gage’s light infantry was to receive “forty-one whale-boats, four batteaus, and the flat-bottomed boat...”<sup>117</sup> Since bateaux were flat-bottomed craft, it is interesting that Knox made the distinction between bateaux and “the flat-bottomed boat.” Since there was only one in such a large flotilla, it suggests that it was a larger boat, perhaps an oversized version of a bateau that might have accommodated the large timbers in Bateau Collection 4559.

Of course, over many years it is also possible that these timbers came from something entirely different and were simply intrusive to the bateau-related artifacts. Without a site plan or any further evidence it is impossible to make an accurate conclusion about these pieces.

---

<sup>115</sup> Knox. 485.

<sup>116</sup> Ibid., 485.

<sup>117</sup> Knox. 489.

## DISCUSSION

### *Comparison between Lake George bateaux*

The three Lake George bateaux were very similar, with some nuanced differences. The most obvious difference is the arrangement of the bottom planks. Bateaux 4560 and 4566 were both built with three runs of bottom planks. 4560 had only two planks in each run. The arrangement of 4560's bottom planks left the end-to-end seams very close to one another in the center of the boat. This allowed the entire bottom to be easily separated into two pieces when it was raised. In contrast, 4566 had three bottom planks in each run, which gave it six end-to-end seams. This resulted in smaller bottom planks but the seams are more widely spread out over the entire bottom. 2626 was unique among the three bateaux for having four runs with two bottom planks each. This gave it only four end-to-end seams, but an extra side-to-side seam, one of which was directly down the center. The bottom planks of 2626 were also slightly thinner than the others, with a thickness of  $1\frac{1}{8}$  inches (2.856 centimeters) instead of  $1\frac{1}{4}$  inches (3.175 centimeters). In spite of differences in bottom plank arrangements, the end results were remarkably similar. Each sole was a total of about 4 feet (1.219 meters) wide and 32 feet (9.754 centimeters) long, with nearly identical shapes.

Differences in bottom plank arrangements also resulted in changes among the battens. Bateau 2626 had the most consistently wide battens. Most were about 11 inches (27.94 centimeters) wide. This was probably due to its need for more seam coverage, and to add more lateral support for its four runs of bottom planks. In fact, battens 1 and 14 were in place to hold the two central runs together at the ends. Bateau 4560 also had

consistently sized battens with most around 9-¼ inches (23.495 centimeters) wide. There was less seam coverage needed and therefore the battens were not as wide. Oddly 4560's fourteenth batten spanned only the center bottom plank. This seems to be a vestigial feature that was simply there to be a "floor" for frame set 14, but served no real structural purpose. The battens of 4566 were inconsistently sized. Some were very narrow, with a minimum of 5-⅛ inches (13.018 centimeters) wide, and others were as wide as 11 inches (27.94 centimeters). Wider battens were placed over end-to-end seams. Unlike bateau 4560, 4566 probably did not have a useless fourteenth batten. They were only placed where they served to hold bottom planks together.

A comparison of the frames is slightly more problematic since there were far fewer remains in 4560 and 4566 than there were in 2626. However, it is possible to compare their bases and arrangement on the bottom planks. Each bateau had fourteen frame sets consisting of separate port and starboard frames made from naturally curved pieces of hardwood. In 4560 and 4566 battens were placed aft of the frames, while on 2626 battens were placed before the frames. As mentioned, frame set 14 of bateau 4566 did not have a corresponding batten. In most cases, starboard and port frames are staggered so that one is slightly abaft the other. In 4560 the starboard frames were placed before the port frames. This was reversed in 4566, and inconsistent in 2626. Frames bases were typically 1-½ to 2 inches (3.81-5.08 centimeters) sided and 1-⅛ to 1 ⅝ inches (2.858-4.128 centimeters) molded. Base lengths varied from 8 ¼ inches (20.955 centimeters) to 24 inches (60.96 centimeters). Near the extremities the base ends of port and starboard frames extend past one another over the center of the bottom. Closer to

amidships there was often a gap between the end of frame bases. They were secured to the bottom planks with three to five nails, and were spiked from underneath the bottom planks with at least one nail near the outer edge of the bottom. This indicates that bateaux were likely raised from the ground during construction. Most frames had a notch near the edge of the bottom planks that served as a limber hole. The most well preserved frames reached a maximum height of 28-½ inches (72.39) and extended up to 17 inches (43.18 centimeters) out from the bottom planks.

Extremity configurations also had some small variations. All of the bateaux had a stem which was affixed to the forward-most point of the sole. These stems were notched to fit over the bottom planks to protect them when the boat was hauled ashore. All were also curved and with very little, if any, forward rake. The stems were rabbeted to receive side planks, and nail holes were seen in the back rabbet of the better preserved examples. In his report, Gardner notes that there was not sufficient back rabbet to support the planks, and that an apron must have been necessary in construction of these bateaux.<sup>118</sup> However, preserved back rabbets of up to 1 inch, containing nail holes up the entire length of the stem in some cases, show that this was not the case. In addition, none of the stems had evidence of having aprons secured to them.

Sternposts were generally straight pieces of hardwood, except in the case of Bateau 4566's sternpost, which was slightly curved. In all cases, planks were nailed directly over them. Most of the end posts were supported with a small knee, except for 4560's sternpost and one of the stems in collection 4530. The longest preserved stem in

---

<sup>118</sup> Gardner. "Construction Details of Old Bateaux Show Basic Design With Variations."

collection 4530 was 43 inches high. The stem of 2626 was probably about this height, since its sternpost was 42 inches. 4560's posts were at least 38 inches high, and 4566's were at least 40 inches high. So in spite of discrepancies between extremity configurations, the fundamental form of the bateaux remained alike.

Due to the similarities in their remaining structure, it follows that the completed boats were very similar as well, but each boat was reconstructed individually in order to produce the most accurate possible reconstruction of the Lake George Bateaux. In doing so, the lines of the bateaux worked as checks on one another. The most helpful factors in the reconstructions were bevel angles on the edges of the bottom, which indicated how widely the garboard departed from the bottom, and the stem and sternposts, which show how high side strakes were built and where they terminated. As mentioned the height of the stem and sternposts was typically about 40 inches (101.6 centimeters) or more.

Based on extant garboard planks, the maximum width of a strake was up to 10 inches (25.4 centimeters). When considering other strakes, up to 1 inch (2.54 centimeters) of overlap may be subtracted from either side. Therefore it is likely that these bateaux were built with four or five side strakes. The widest bevel angle for each bateau occurred at the frame just before the maximum breadth of the bottom planks. The widest point of the bottom had the next widest angle, so this was determined to be the location of the maximum beam. With four strake of 10 inches (25.4 centimeters) or five strakes of 8 inches (20.32 centimeters) in width following the curve of preserved frames, it was reasonable for the maximum beam to be set at about 6 feet 6 inches (1.981 meters). Interestingly, this was the beam given in later admiralty drafts. This also causes

the freeboard to lower from 40 inches at the extremities to about 34 inches at midships, which also matches the “depth” given by the draft. This admiralty plan served as another check on the accuracy of the reconstruction and is discussed in more detail under the “standardization” header.

Based on bevel angles on the edges of the bottom, 4560 was the fullest throughout its entire length, narrowing less sharply than the others near the stern. 4560 and 4566 were slightly fuller below the water line than 2626. Otherwise their shapes are very similar.

#### *Comparison to French bateaux*

There are some fundamental differences between the Lake George Bateaux and the French bateaux described by Charles Dagneau in his article “The ‘Batteau Plats’ of New France” (previously discussed in the “Historical Background” chapter of this study). Dimensions and scantlings of these two types of bateaux are compared in Table 1. The most obvious difference between them is that of shape. The Lake George bateaux are shorter in length but wider, and the sides are considerably higher. In spite of this, the Lake George bateaux were built using noticeably lighter construction. Frames were less frequent and thinner throughout. They also tapered more towards the end unlike the relatively consistent thickness of the French frames. Floors were squarer in section on the French bateau, and therefore provided sturdier lateral support than was probably the case with the flat, wide battens of the Lake George bateau. However, the frames in the Lake George bateaux extended farther toward the center of the bottom planks than those

in the French bateaux, showing some compensation for the thinner batten planks. Unlike the more double-ended French bateaux, which had nearly identical end posts, Lake George bateaux 2626 had a much more distinct bow and stern. In the French examples, both posts are a single piece and have a significant outward rake. They were not rabbeted, and the planks were nailed over them in the same manner seen on the sternposts of the Lake George bateaux. (Figures 1-2, Table 1)

These structural nuances hint at an important functional difference between the two types of bateaux. Clearly the French bateaux were built much sturdier to “stand up to the necessary strain of going up the rapids,” which were common on the St. Lawrence and Richelieu rivers.<sup>119</sup> They were known for being more durable than the British boats.

French Captain Pierre Pouchot compared French and British bateaux:

The [French] bateaux used for navigation from the head of this [St. Lawrence] river can carry six thousand-weight. They are especially built to stand up to the necessary strain of going up the rapids. The ones lately built by the English are larger & lighter, but they cannot sustain this sort of navigation after their initial journeys. They always fill with water because of the buffeting they receive. The French bateaux are far more serviceable.<sup>120</sup>

When considering the shape of these bateaux compared to the James River bateau mentioned earlier, it is clear that these were optimized for riverine travel, a high priority in French territory where river travel was common. The double ended shape allowed it to move or be brought ashore in either direction if necessary.

---

<sup>119</sup> Pouchot. *Memoirs On The Late War*, 364.

<sup>120</sup> *Ibid.*, 364-5.



There is evidence that elements of British bateaux design attempted to adapt the craft to lake travel. Their bateaux fared well on rivers, as the performance of the Lake Champlain Maritime Museum's replica confirmed, but its construction shows that it was built with lake travel in mind. Its higher sides gave it more freeboard to resist waves from choppy lake water.<sup>121</sup> Gardner noted that whale boats probably had an influence on British bateaux construction.<sup>122</sup> In addition to bateaux, the British military used whale boats in large numbers. Since they were originally designed for ocean travel, they certainly fared very well on lakes, but were inadequate for traversing the shallow river environments of northeastern North America.<sup>123</sup> Robert Malcomson considered the curving sides of the British design a direct influence of the whale boat, and indeed the body shapes of whaleboats and bateaux were quite similar.<sup>124</sup> The breadth views are also somewhat similar. Both had the hydrodynamic shape of a maximum beams forward of midships, which helped them row across large bodies of water where there was no current to assist their movement.<sup>125</sup> Whaleboats were capable of much more dynamic lines since they were built with a keel, which are obvious in the sheer view. Still,

---

<sup>121</sup> *London Chronicle*. "Extract from a Letter from an Officer in Albany dated Sept. 13, 1758." Describes that "waves in the Lake Ontario rise very high with the least wind," but an army in bateaux was able to cross it with "no accident."

<sup>122</sup> Gardner. "Famous Boat Type In Transitional Stage."

<sup>123</sup> *Ibid.*, 395-6.

<sup>124</sup> Robert Malcomson. "'Nothing more uncomfortable than our flat-bottomed boats:' Batteaux in the British Service during the War of 1812." *The Northern Mariner*. 13:4 (October 2003), 18.

<sup>125</sup> Gardner. "Bateaux Played Key Role in American History."; "Lake George finds appeared simple, but details reveal this Famous Boat Type In Transitional Stage."

contemporary bateaux had a reputation for swift movement across lakes. Of course, as Malcomson pointed out, “rate of travel depended greatly on weather conditions.”<sup>126</sup> Bateaux were easily impeded by adverse wind and water conditions, but with good conditions and a combination of sailing and rowing they could achieve speeds of over 4 mph or 3.47 knots (6.44 kph), according to one account.<sup>127</sup> When compared to the French bateaux with their straight sides and double-ended shape, the influence of the whaleboat on the British design is clear. (Figure 44)

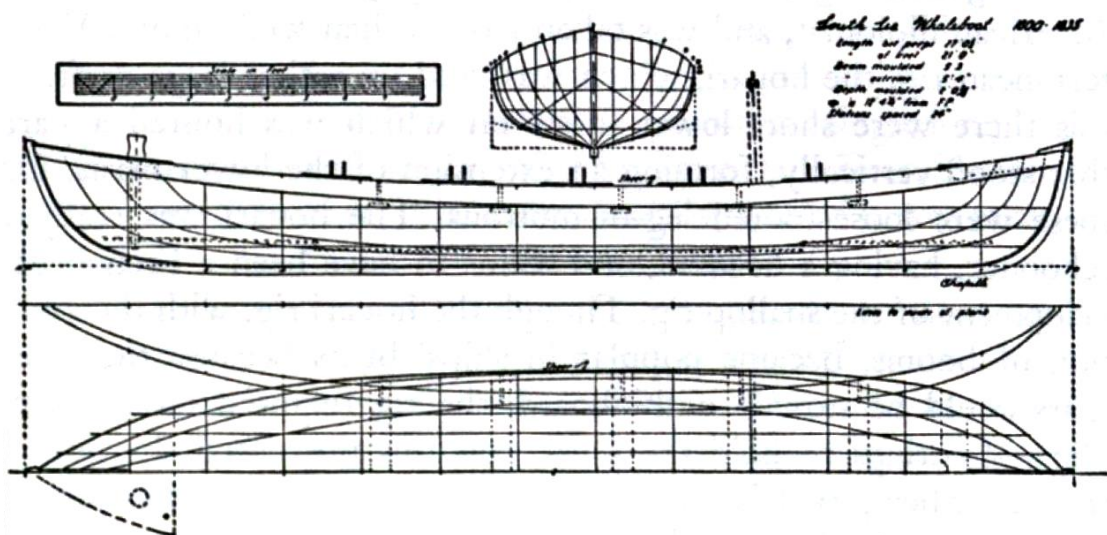


Figure 44. Lines of a common whaleboat in the early nineteenth century. (Chapelle. 35.)

Unfortunately these adaptations to a lake environment were probably counteracted by the light construction necessary for quick building during wartime and

<sup>126</sup> Malcomson. “Nothing more uncomfortable than our flat-bottomed boats,” 20.

<sup>127</sup> Rea. *Journal*, 28.

effective overland hauling from the upper Hudson River to Lake George, as well as from Lake George to Lake Champlain. Their lighter construction earned them a reputation of being weaker than French bateaux. However, this also kept the cost down. The sturdier materials needed for French bateaux made them more expensive than their British counterparts.<sup>128</sup> The compromise between optimizing the bateaux for lake travel and keeping them light and cheap is apparent in the Lake George Bateaux.

### *Standardization*

Variations in the construction of the Lake George bateaux illustrate the flexible design of the bateaux, but their similar end results reflect the mass production aspect of bateaux “factories” in Albany and Schenectady. In this scenario, one can imagine multiple shipwrights and construction teams using their own means to achieve the same ends. However, there is little evidence that there was a formal attempt to standardize bateaux construction in the Seven Years War. Contemporary accounts such as Pouchot’s description only discuss bateaux in general terms. An issue with such descriptions that bateaux were known to come in various sizes on both sides, so his generalization of the English bateaux being larger is odd. Contemporary comparisons of French and British design show that there were definite consistencies in the ways that they were built, but it is not clear if there was an officially mandated plan for them. Eventually this changed

---

<sup>128</sup> Brian Leigh Dunnigan in Pouchot. *Memoirs On The Late War*, 395.

when the British admiralty issued a draft of a bateau around the time of the American Revolution.

The draft from 1776, along with Howard Chapelle's reconstruction of it, offers an interesting opportunity to compare the reconstruction with the admiralty's understanding of how these boats should be built. It also allows the chance to look for clues about the evolution and influences of their design. Dimensions from the plan and reconstruction are collected in Table 1, and compared to those of the Lake George Bateaux. For the most part their measurements are quite similar. According to Chapelle the admiralty design was "probably for use on Lake Champlain in Bugoyne's campaign of 1776," showing the intention for this shape to optimize rowing ability on a lake.<sup>129</sup> (Figures 45-46)

---

<sup>129</sup> Chapelle. *American Small Sailing Craft*, 35.

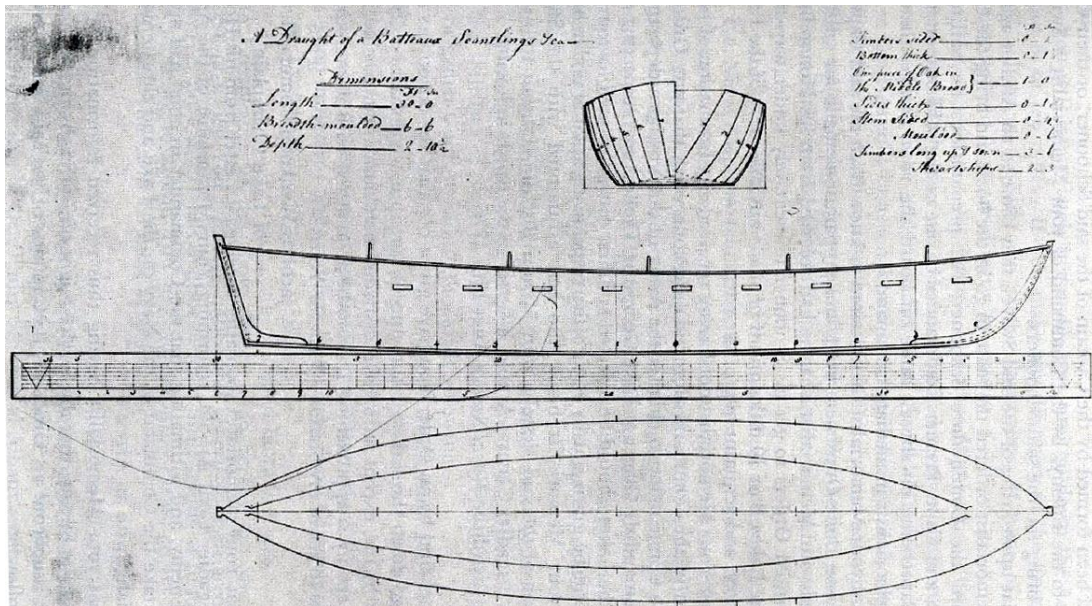


Figure 45. Admiralty draught of a bateau from 1776. (Morgan. 319.)

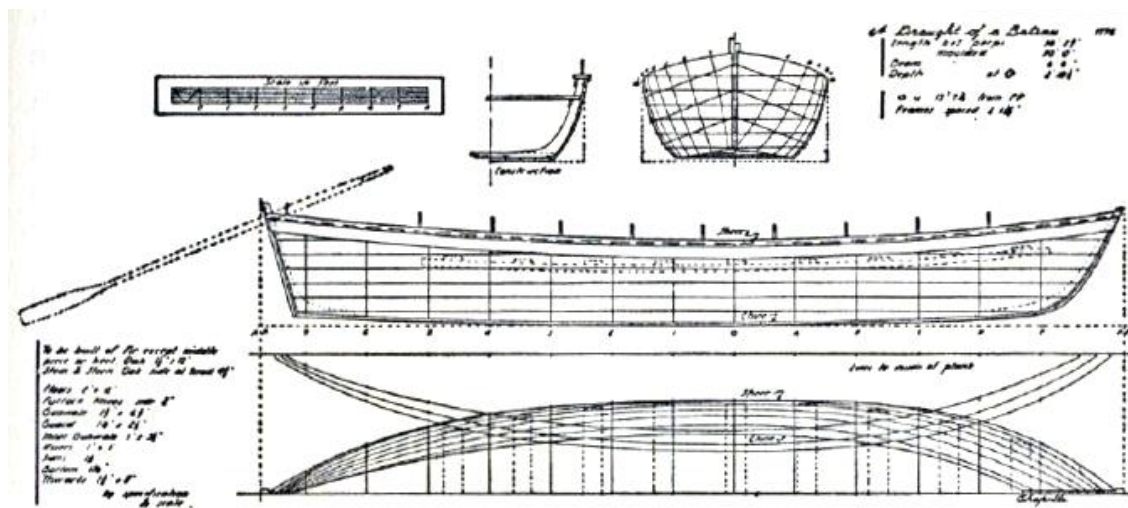


Figure 46. Design of a colonial bateau, probably for use on Lake Champlain in Burgoyne's campaign of 1776, from an Admiralty draught. (Chapelle. 35.)

Despite their similar dimensions, the shapes of the Lake George Bateaux are somewhat different from the Admiralty draft. The most noticeable difference is that the “sole” or bottom of the bateau in the admiralty draft is over 5 feet (1.524 meters) shorter than those of the Lake George bateaux. Even considering the 2 feet (.6096 meters) difference in overall length, this is significant. The variation is due to almost 1 foot (.305 meters) of aft rake in the sternpost and roughly 3 feet (.914 meters) of forward rake in the stem. In comparison, the Lake George bateaux had very little rake at either end. The stern configuration in the plan is made of one large standing knee, somewhat similar to the sternpost seen in Bateau 4560, though more dramatic. However, the other two Lake George Bateaux were built with a straight piece of hardwood supported by a small knee. The stem configuration in the draft is also made from one piece. Although their beams are similar, the Lake George Bateaux were narrower towards the extremities, while the plans show much fuller lines throughout. The admiralty plan provides a measurement for “One piece of oak in the middle broad,” and Chapelle’s reconstruction indicates that the bateau is “to be built of fir except middle piece or keel.” This shows that the bateau was meant to be built with three runs of bottom planks like Bateaux 4560 and 4566, but unlike the four seen in Bateau 2626.

These differences may express evolution of bateau construction techniques between the French and Indian War and the Revolutionary War, but it is not likely that much change occurred between the two conflicts. It is true that British officers noted some shortcomings of their bateaux during and after the French and Indian War. In 1760 General Jefferey Amherst wrote that “I think our boats are not Strong enough for the

Navigation of the Lakes and that we shall be obliged to Build Some, near the same model of the French.”<sup>130</sup> The admiralty draft shows that there was little attempt to strengthen the bateau design after the French and Indian War. The draft had one less frame set than the Lake George Bateaux, but this is not significant due to its shorter length. Frames were to be 2 inches (5.08 centimeters) sided, which is not a substantial difference from the Lake George Bateaux’s frames, which were often about 1-¾ inches (4.445 centimeters) sided, but sometimes wider. The draft did not provide molded dimensions for frames or battens, which makes these measurements impossible to compare. Side planks of the draft were slightly heavier than those of the Lake George Bateaux’s but slightly lighter than the Quebec City bateaux finds. In 1771 Captain Maxwell noted to General Gage that the clinker construction of the British bateau “Cannot answer in the rapids.”<sup>131</sup> This shows that in the years following the French and Indian war, bateaux were still built with the lapstrake configuration seen in the Lake George Bateaux. It seems that very little change occurred leading up to the American Revolution, and that the French design remained significantly sturdier despite the observations of high ranking officers. If a specific bateau plan did not exist prior to 1776, it is clear that a general design was widely in use since the French and Indian War at the latest, as illustrated by the archaeological examples. Eventually, a naval architect in the admiralty set these ideas to paper. It is likely that the admiralty plan is the work of

---

<sup>130</sup> Pouchot. *Memoirs On The Late War* 365. Quoted in the notes by Dunnigan. Amherst to Loring, Feb. 18, 1760. Amherst Papers/65.

<sup>131</sup> *Ibid.*, 365. Quoted in the notes by Dunnigan. Maxwell to Gage, March 16, 1771, Gage Papers/100.

a shipwright experienced in naval architecture attempting to draft a boat built by eye in the wilderness of North America. In fact, the Lake George Bateaux's shapes were probably better suited for its environment, and its narrow shape was faster than what is shown in the plans.<sup>132</sup> The scratch awl marks on the bottom planks show that the bateau was planned to some extent. The consistency in their end results show that some standardization did occur, especially given their similar measurements to those given by the admiralty. Still, slight variations expose the influence of the individual builders and reflect that a draft was not directly followed when building a bateau.

Further variations support this conclusion. In a letter from the period 1772-1783, Frederick MacKenzie described bateaux of various sizes, including a four-man bateau of 32 feet (9.754 meters) in length, 5 feet 6 inches (1.676 meters) in beam, and 2 feet 5 inches (.737 meters) in height.<sup>133</sup> This description indicates a similar length to the Lake George Bateaux, but the reconstructions presented in this study more closely match the overall dimensions of the admiralty draft. Given the height of the posts and width of the planks, a height of 2 feet 10 inches (.864 meters) was more feasible. Furthermore, based on the distance of the tops preserved frames from the edge of the bottom planks, the Lake George bateaux were at least 6 feet (1.829 meters) in beam. MacKenzie also described a three-man bateaux of 30 feet (9.144 meters) in length, 5 feet (1.524 meters) in beam, and 2 feet 5 inches (.737 meters) in height.<sup>134</sup> The length of this bateau is

---

<sup>132</sup> Gardner. "Bateaux Played Key Role in American History."

<sup>133</sup> Pouchot. *Memoirs On The Late War* 365. Quoted in notes by Dunnigan. Frederick MacKenzie Papers, William L. Clements Library, Volume B, p.171.

<sup>134</sup> *Ibid.*, 365.



exactly the same as the admiralty draft, but the beam is 1 foot 6 inches (.457 meters) narrower. Either MacKenzie was mistaken, or more likely, there were quite a bit of these nuances in bateau construction.

It was important that bateau construction was kept simple so that they could be built in large numbers by relatively unskilled craftsmen, so the degree of specificity shown in the admiralty drafts is strictly theoretical, and had no place in the more vernacular building of these boats.<sup>135</sup> Furthermore, boat-builders who had been constructing bateaux in their particular way for years passed their techniques down through instruction and would not change their methods based on a plan. Thus far, much of our understanding of the British bateau has come from these written sources, but the evidence provided by the Lake George Bateaux shows a slight disconnect between what was drafted by naval officers in Britain, and what was actually built in the North American frontier.<sup>136</sup>

### *Propulsion*

The upper works of the Lake George bateaux had mostly disintegrated, but there is some evidence of their configuration and propulsion in the Lake George bateaux. Bateaux were primarily meant for rowing, and thus required thwarts for rowers to sit on. Admiralty plans from 1776 depicted a bateau of 30 feet (9.14 m) in length with nine

---

<sup>135</sup> Gardner. "Lake George finds appeared simple, but details reveal this Famous Boat Type In Transitional Stage."

<sup>136</sup> Chapelle. *American Small Sailing Craft*, 34-5.

thwarts that were 8 inches (20.3 cm) wide and 1 1/8 inch (2.9 cm) thick, but with only five tholepins on either side. The plan indicated slightly less than 2 feet (0.61 m) of space between one edge of a thwart and the next.<sup>137</sup> This arrangement made for a crowded boat, but this is feasible, especially since not all the men sitting on thwarts were engaged in rowing. (Figure 45-46)

Iconography provides additional clues to the arrangement of the upper works. One contemporary depiction of British bateaux and a sloop on Lake George shows seven men in a bateau. Five men are in sitting positions facing aft, and holding oars, which alternate from starboard to port in orientation. One man stands at the bow facing forward, and another stands or sits near the stern, also facing forward. Another bateau in the background is rowed by two men who appear to be sitting on thwarts, and steered by a man at the stern. Empty bateaux are depicted with two thwarts. Obviously this drawing is not to scale, but offers some clues as to how bateaux were crewed, and may reflect how many rows of men one could expect to see on one, in this case with anywhere from two to seven thwarts. Between these two types of sources it is still not possible to conclude how many thwarts were typically used. (Figure 47)

---

<sup>137</sup> Ibid., 35.



Figure 47. British bateaux and a sloop on Lake George during the French and Indian War. (Crisman. 135.)

The admiralty plan of a bateau indicates that thwarts rested about 2 feet (0.61 m) above the bottom planks on a shelf plank attached to the inboard sides of the frames. It is unclear if the thwarts were fastened to the shelf. It is more likely that they were simply braced against the nearest frame. This way they could be added or removed as needed to optimize transport for whatever combination of men and supplies the bateau carried. As indicated by the archaeological evidence, rowlocks were fixed in place, and pairs tholepins could be added or removed as needed. Although the admiralty plan only depicts one tholepin per oar, using them in pairs was probably more practical for keeping the oars from sliding back and forth too much.

Historical accounts mention that bateaux had some limited sailing capability. The performance of a Basin Harbor Museum's replica, *Perseverance*, confirmed that a

bateau could sail successfully directly with the wind or even into the wind if a fore-and-aft sprit was used.<sup>138</sup> It is often assumed that bateaux were fitted with a square rig, but if only a simple square sail was used, the bateau was limited to sailing with the wind well abaft the beam. Although its provenience is not clear, a small mast step was found as part of the Lake George Bateaux remains. This piece was probably placed well forward of amidships. A thwart likely doubled as a mast partner when the mast was raised, and may have been notched on the after end to secure the mast. This configuration was used in the replica, *Perseverance*, and it was able to sail quite well.<sup>139</sup>

### *Influence*

In spite of their flaws bateaux remained in use by the military forces in North America into the nineteenth century. They were an integral utility craft in the operations of the American Revolution and the War of 1812. Their simple and fast construction also inspired larger craft. The Durham boat, which was simply a 40 to 60 feet (12.192 to 18.288 meters) long version of the bateau, emerged in northeastern North America in the late eighteenth century.<sup>140</sup> Bateaux also had noted influence on the gunboats known as “gondolas” used on Lake Champlain and elsewhere in the American Revolution. *Philadelphia* and *Spitfire* are surviving examples of gondolas. Their construction was very similar to that of a bateau, with a wide, flat bottom made of flush-laid planks,

---

<sup>138</sup> Vermont ETV.

<sup>139</sup> Ibid.

<sup>140</sup> Zarzynski and Benway. *Lake George Shipwrecks*, 36.

separate port and starboard standing knees as frames, a straight sternpost, and a curved stem.<sup>141</sup> When viewed from above a gondola was almost double-ended, but was slightly wider forward of midships, like the Lake George bateaux. However, gondolas were significantly larger than bateaux. *Philadelphia* was 53 feet 2 inches (15.9 meters) in length, 15 feet 2 inches (4.623 meters) in beam, and 4 feet (1.219 meters) high at amidships. Chapelle believed that the design was directly modeled after a contemporary English pram or American bateau.<sup>142</sup> John Bratten also noted the similarity in construction in his description of *Philadelphia*, calling it “similar in form to a scaled up bateau.”<sup>143</sup> Like bateaux, gondolas were valued for their ability to be built in a short amount of time by relatively unskilled craftsmen. They were ideal for use on Lake Champlain with their flat-bottoms and very shallow loaded draft of only 1 foot 11-½ inches (59.69 centimeters).<sup>144</sup> With such a construction they were able to carry an armament of one forward-mounted 12 pounder cannon, two 9 pounder carriage-mounted cannon in the waist, and eight swivel guns as well as a crew of 45 men.<sup>145</sup> The success of the bateau’s design is seen in their influence on these gunboats, which were valuable to the colonial military’s campaign on Lake Champlain in the American Revolution.

(Figure 48)

---

<sup>141</sup> John Bratten. *The Gondola Philadelphia and the Battle of Lake Champlain*. College Station. 94-98.

<sup>142</sup> Chapelle. *The History of the American Sailing Navy: The Ships and Their Development*. New York: Norton. 1949, 101.

<sup>143</sup> *Ibid.*, 98.

<sup>144</sup> Bratten. *The Gondola Philadelphia*, 94.

<sup>145</sup> *Ibid.* Armament 94. Crew 137.

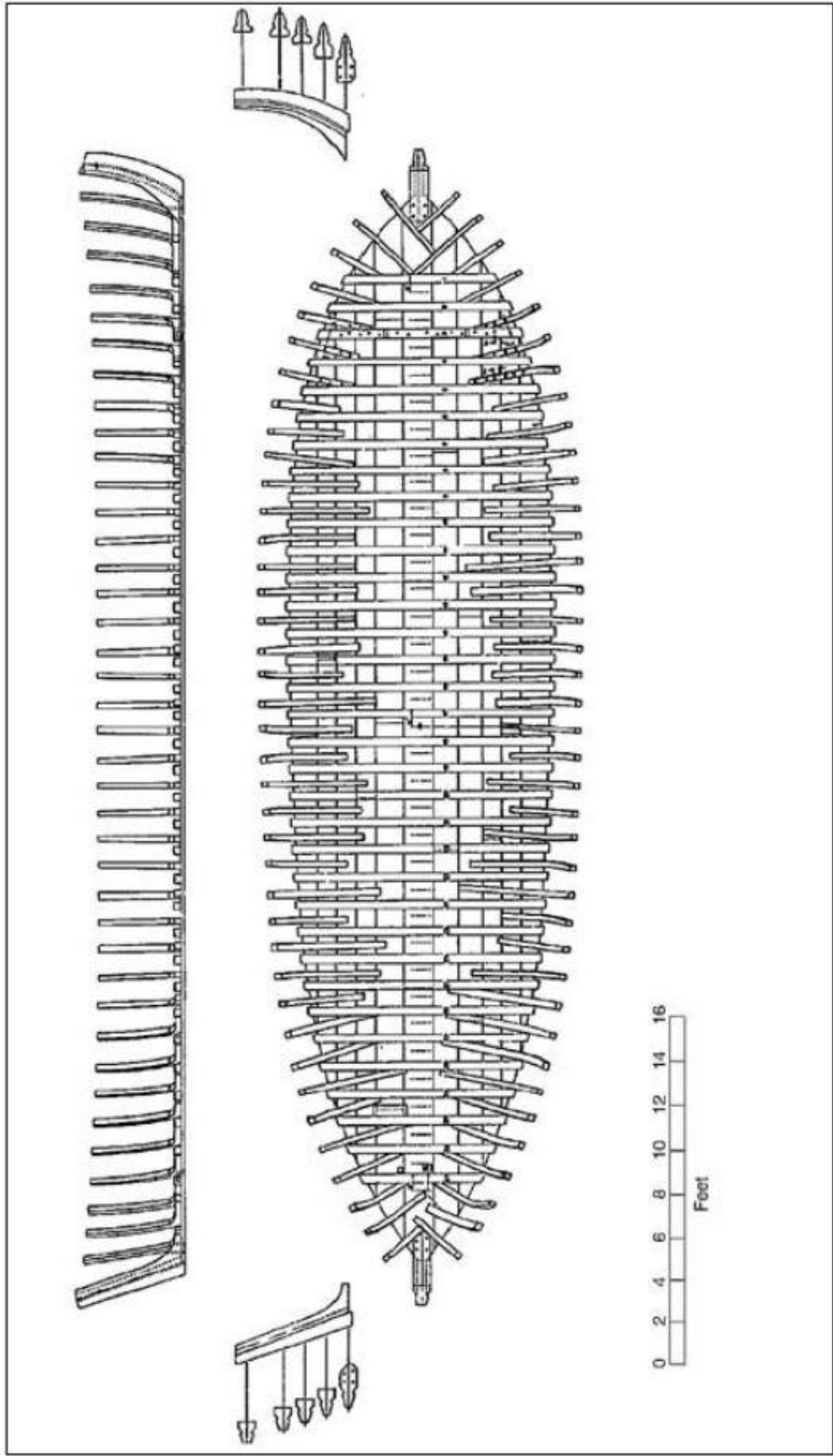


Figure 48. *Philadelphia Hull Structure.* (Bratten. 95)

## CONCLUSION

Bateaux lacked the elegance and romance of sailing ships of the eighteenth century, but they were equally important. These flat-bottomed craft were specially designed for North American waterways and played an integral role in both the French and British colonies by supplying forts and moving armies to fight the enemy. Without a sufficient supply of bateaux, war efforts in the strategic Lake George-Lake Champlain region of North America were crippled.

The utility and widespread use of bateaux is clear in historical sources, but very few survive in the archaeological record. The three Lake George examples from 1758 are the best documented British colonial bateaux from the mid-eighteenth century. The reconstructions analyzed in this study show that the craft were built from a very simple design, but still required some level of expertise to achieve the craftsmanship seen in the final result. Although these bateaux were hastily and lightly constructed, they were still sturdy enough to survive the lakes and rivers that they navigated. They were lighter and generally larger than their French counterparts, with more distinct bows and sterns. This shape with its rounded sides was likely influenced by whale boats, and aided navigation on lakes, as demonstrated by the Lake Champlain Maritime Museum replica *Perseverance*.

Thanks to their intentional sinking and partial-internment at the bottom of Lake George, these bateaux remains reveal details about a craft that was important and ubiquitous on the American frontier but inadequately described in historical documents.

The similarities of the three bateaux show the nature of their factory-like mass production in war time, while their differences show the nuances and resourcefulness of multiple builders. The Lake George bateaux serve as a reminder of the indispensable role of carpenters and builders in historical events. That the military invested so much effort and capital and made construction and maintenance of the bateaux a priority demonstrates the importance that lake and river travel had in colonial life. Such mundane craft are easily overshadowed by the larger, more elegant vessels that maritime archaeology often focuses on, but their historical and anthropological value are equally significant.



## BIBLIOGRAPHY

### *Primary Sources*

“A statement of the Battoes which is necessary to be Built at Schenectady for the United States.” 11 Apr 1796. Schenectady County Historical Society. Historic Manuscripts Collections. Mil142.

Amherst, Jeffery. *The Journal of Jeffery Amherst: Recording the Military Career of General Amherst in America from 1758 to 1763*. Edited by J. Clarence Webster. Chicago: University of Chicago Press. 1931.

Arnold, Benedict. “Benedict Arnold's Regimental Memorandum Book.” *The Bulletin of the Fort Ticonderoga Museum*. XIV No. 2. Winter 1982.

Bougainville, Louis-Antoine de. *Adventure in the Wilderness; the American journals of Louis Antoine de Bougainville, 1756-1760*, edited by Edward P. Hamilton. Norman: University of Oklahoma Press. 1964.

*British Spy or New Universal London Weekly Journal*. “Boston, May 21.” (London) Saturday, July 17, 1756. 17<sup>th</sup>-18<sup>th</sup> Century Burney Collection Newspapers Document No. Z2000126699.

---. “Extract of a letter from a gentleman in Philadelphia, dated April 24<sup>th</sup> to a merchant in Liverpool.” (London) July 17, 1756.

Goodrich, Josiah. “Josiah Goodrich Order Book” *The Bulletin of the Fort Ticonderoga Museum*. 14:1 Summer, 1981.

---. “Josiah Goodrich Order Book” *The Bulletin of the Fort Ticonderoga Museum*. Goodrich. “Order Book.” *The Bulletin of the Fort Ticonderoga Museum*. 13:6 Fall 1980.

Hawks, John. “Orderly Book and Journal of Major John Hawks on Ticonderoga - Crownpoint campaign, under General Jeffery Amherst. 1759-60.” New York: Society of Colonial Wars through the Historian and committee on historical documents 1911.

- Kalm, Peter. *The America of 1750. Travels in North America in two volumes. Volume 1.*  
 Edited by Adolph B. Benson. New York: Dover Publications, Inc., 1964.
- Knox, John. *An Historical Journal of the Campaigns in North America for the Years  
 1757, 1758, 1759, and 1760*, ed. By Arthur G. Doughty. New York, HN:  
 Greenwood Press, 1968.
- Lees, John. *Journal of J.L. of Quebec, Merchant.* Detroit: Society of Colonial Wars of  
 the State of Michigan, 1911. [http://memory.loc.gov/cgi-  
 bin/query/r?ammem/lhbtn:@field\(DOCID+@lit\(lhbtn18080div3\)\)](http://memory.loc.gov/cgi-bin/query/r?ammem/lhbtn:@field(DOCID+@lit(lhbtn18080div3)))
- London Chronicle.* "Extract from a Letter from an Officer in Albany dated Sept. 13,  
 1758." (London) Jan 25, 1759.
- Morgan, William James et al., eds. *Naval Documents of the American Revolution, vol. 6.*  
 Washington, DC: Naval History Division Department of the Navy. 1972.
- Naval Documents from the Gage Papers 1759-1775.* Collection of letters, Crown Point  
 State Historic Site, Crown Point, New York.
- Pouchot, Pierre. *Memoirs On The Late War In North America Between France And  
 England.* Translated by Michael Cardy. Edited by Brian Leigh Dunnigan.  
 Youngstown, NY: Old Fort Niagara Association, Inc., 1994.
- Rea, Caleb. *The Journal of Dr. Caleb Rea (1758).* Edited by Fabius Maximus Rae.  
 Salem, MA: Essex Institute, 1881.
- Read's Weekly Journal or British Gazetteer.* "Extract of a private letter from  
 Philadelphia, March 4." (London) May 1, 1756.
- Rogers, Robert. *The Annotated and Illustrated Journals of Major Robert Rogers.* Edited  
 by Timothy J. Todish. Fleischmanns, NY: Purple Mountain Press. 2002.
- Sullivan, James A., Richard E. Day, et al., eds., *Sir William Johnson Papers*, 14 vols.  
 Albany, NY: University of the State of New York, 1921-1965.

*Secondary Sources*

“Bateau notebook.” Notes collected by Kevin Crisman. Texas A&M New World Laboratory, College Station, Texas, 1985.

Bellico, Russell P. *Empires in the Mountains: French and Indian War Campaigns and Forts in the Lake Champlain, Lake George, and Hudson River Corridor*. Fleishmanns, NY: Purple Mountain Press. 2010.

---. *Sails and Steam in the Mountains: A Maritime and Military History of Lake George and Lake Champlain*. Fleishmanns, NY: Purple Mountain Press. 1992.

Boom, Elaine. “Diving into History: A ghostly boatyard lies below Lake George’s placid Waters.” *New York State Conservationist*. New York Department of Environmental Conservation. February, 2010. Accessed Aug 12, 2014.  
<http://www.dec.ny.gov/pubs/62199.html>.

Bratten, John R. *The Gondola Philadelphia and the Battle of Lake Champlain*. College Station, TX: Texas A & M University Press. 2002.

Chapelle, Howard. *American Small Sailing Craft: Their Design, Development, and Construction*. New York: W.W. Norton & Company, 1951.

---. *The History of the American Sailing Navy: The Ships and Their Development*. New York, NY: Norton. 1949.

Coleman, Lee. “Students build replica 1750s vessel.” *Daily Gazette*. (Schenectady) June 6, 2008.

Crisman, Kevin. “Struggle for a Continent: Naval Battles of the French and Indian Wars.” in *Ships and shipwrecks of the Americas. A history based on underwater archaeology*, edited by George Bass. New York, NY: Thames and Hudson, 1996, 129-48.

Dagneau, Charles. “The ‘Batteau Plats’ of New France.” *The International Journal of Nautical Archaeology*. 33:2. (2003): 281–96.

---. *Lake George : its scenes and characteristics, with glimpses of the olden times : to which is added some account of Ticonderoga, with a description of the route to Schroon Lake and the Adirondacks : with ... notes on Lake Champlain ....* New

- York : A.D.F. Randolph, 1868.  
<https://archive.org/stream/lakegeorgeitsce00indeco#page/n7/mode/2up>
- DeCosta, B.F. *A narrative of events at Lake George, from the early colonial times to the close of the revolution*. New York, 1868.  
<https://archive.org/stream/narrativeofevent00decos#page/n9/mode/2up>
- Gardner, John. "Bateaux Played Key Role in American History." *National Fisherman*, April, 1967.
- . "Bateau 'Reconstructed' From Remains, Drawing." *National Fisherman*, August, 1967.
- . "Construction Details of Old Bateaux Show Basic Design With Variations." *National Fisherman*, April, 1967.
- . "Lake George finds appeared simple, but details reveal this Famous Boat Type In Transitional Stage." *National Fisherman*, May, 1967.
- . "Old Sketch Provides Clue to Bateau Shape." *National Fisherman*, July, 1967.
- . "Relics of 'Ghost Fleet' Are Small Craft Bonanza." *National Fisherman*, August 1966.
- Hamilton, Donny L. "Methods for Conserving Archaeological Material from Underwater Sites." Online. Updated Jan. 1, 1999. Accessed Sept. 24, 2014.  
<http://nautarch.tamu.edu/CRL/conservationmanual/ConservationManual.pdf>.
- Lépine, André. "A wreck believed to be a French 'bateau' sunk during action in 1760 off Isle-aux-Noix in the Richelieu River, Quebec, Canada." *The International Journal of Nautical Archaeology*. 10:1 (1981): 41-50.
- Lewis Jr., Theodore Burnham. "The Crown Point Campaign 1755" *The Bulletin of the Fort Ticonderoga Museum*. 13:1 (Dec. 1970).
- Malcomsen, Robert. "'Nothing more uncomfortable than our flat-bottomed boats:' Batteaux in the British Service during the War of 1812." *The Northern Mariner*. 4 (2003): 17-28.
- Meany, Joseph F., Jr. "Bateaux And 'Battoe Men': An American Colonial Response To The Problem Of Logistics In Mountain Warfare." *New York State Division of*

*Military and Naval Affairs: Military History*. Last modified September 19, 2007.  
Accessed February 2, 2014.

<http://www.dmna.state.ny.us/historic/articles/bateau.htm>

Seborg, Ray M. and Robert B. Inverarity. "Conservation of 200-year-old Water-logged Boats with Polyethylene Glycol." *Studies in Conservation*. 7 no. 4. (1962) 111-119.

Smith, Kimberly M. "Comparative Analysis of Cask Material from Late Sixteenth Through Early Nineteenth Century Shipwrecks." Master's Thesis, East Carolina University, 2009.

Starbuck, David R. *The Great Warpath: British Military Sites From Albany to Crown Point*. Hanover, NH: University Press of New England. 1999.

Way, Peter. "Class and the Common Soldier in the Seven Years War." *Labor History*. 44 no. 4 (2003). 455-481.

Vermont ETV. "This Old Boat." Documentary, Vermont, 1988.

Zarzynski, Joseph W and Bob Benway. *Lake George Shipwrecks and Sunken History*. Charleston, SC: The History Press. 2011.