Preliminary Report on Phase II Testing

Grover's Creek Cove Site

July 1997

L. E. Babits, Catherine Fach and Ryan Harris

Program in Maritime Studies
East Carolina University
Greenville, North Carolina
1998

Preliminary Report on Phase II Testing

Grover's Creek Cove Site

July 1997

L. E. Babits, Catherine Fach and Ryan Harris

Program in Maritime Studies
East Carolina University
Greenville, North Carolina
1998

ABSTRACT

This paper reports on the Phase II testing of a site in Grover's Creek Cove, St. Leonard's Creek, a tributary of the Patuxent River in Calvert County, Maryland. Work was conducted on the site between 30 June and 25 July 1997. The site was originally thought to contain two vessels on the basis of remote sensing imagery. The vessel size and location suggested that they might be associated with the Chesapeake Flotilla that fought British forces during June and July 1814.

Testing revealed a single vessel, 60 feet in length between extant stem and stern posts and 20 feet in beam at the chine amidships. A centerboard suggested a date after 1815. Wire rigging indicated a date well after 1840. Recovered artifacts provided clues that the vessel was abandoned in the twentieth century.

On the basis of this investigation, the remains represent a two-masted, centerboard, plank-on-frame bugeye. This vessel was possibly an oyster dredger or a run (buy) boat involved in the Chesapeake oyster trade. However, the presence of ballast stone suggests alternative interpretations. A large vessel at this location is shown in two aerial photographs dating to 1936 and 1938. It is not shown in a later photograph indicating that it sank sometime between 1939 and 1952.

ACKNOWLEDGEMENTS

This project was accomplished by a diverse group working as a team. The central core of the project was a twelve member field school from East Carolina University, Greenville, North Carolina. Senior crew chief Deirdre O'Regan and crew chief Rusty Earl directed most of the field work. The students were Paul Avery, Jim Embrey, Jeff Enright, Caren Goldstein, Rod Linder, Suzanna Pavelle, Chris Southerly and the authors. Fil Ronca served as both a second crew chief and dive safety officer after DSO Steve Brodie was reassigned.

Betty and Sara Seifert and Gareth Evans of the Maryland Archaeological Conservation Lab in St. Leonard, Maryland directed artifact conservation. Harry Sparrow of Jefferson Patterson Park provided interpretations about artifacts and nautical expertise. He also lent us a building to house the compressor and provide shelter while filling tanks. Maritime Archaeological and Historical Society volunteers, including Dave Howe, Jamie Henderson, Mike Burkey and Bill Uttley, assisted as their schedules permitted. Family members also assisted including Dale, Sharon, and Amy Shomette.

Flotilla Project staff members, a group studying the Chesapeake Flotilla that fought in the area during 1814 oversaw work on this project site. Foremost among them was Don Shomette, the primary driving force in the maritime study of the Patuxent River and its tributaries. Eldon Volmer, his wife Ida, and daughter Lynn spent much time onsite. Ralph Eshelman, a maritime

historian with extensive regional experience helped solve numerous problems with vehicles and boats as well as giving us insights about the region's history. Richard Dodds and Robert Hurry of the Calvert Marine Museum generously gave us information about Chesapeake vessel types and their construction.

The project benefitted from the assistance of the Calvert County Soil Conservation Service with their surveying personnel, two boats and mapping expertise. Vera Thompson graciously allowed the project to dock three vessels at White Sand's Marina. Southern Maryland Dredging lent 500 linear feet of boom and drape for a silt container. The Academy of Natural Sciences at Jefferson Patterson Park let us use dock space, mooring points, and other maritime assistance.

Will Gates, Master of the *Dove*, allowed the field staff an opportunity to sail the vessel. This experience proved very informative and gave our students an opportunity to see ship construction features from an earlier period.

One and all, you have our thanks. Any errors or omissions are ours.

INTRODUCTION

This project was an outgrowth of research conducted during the late 1970's and 1980 by Donald Shomette. The Flotilla Project investigated what was thought to be the *Scorpion*, the flagship of Joshua Barney's Chesapeake Flotilla (Shomette 1981, 1995). Additional work identified other wreck sites in the Patuxent drainage. The 1997 project was designed to retest many sites and ground truth a site that included gunboats 137 and 138.

During the late summer of 1996, East Carolina University contacted Shomette and inquired about the possibility of a field school participating in his 1997 Flotilla Project. The chief work concentrated on St. Leonard's Creek, a tributary of the Patuxent River. Additional work at St. Leonard's Town and the upper Patuxent River stretched very thin at times but the results, especially in St. Leonard's Creek, proved worth the effort. After conducting a month of scientific diver training, with an emphasis on low visibility recording, the field school commenced on-site work on 30 June and continued to 26 July 1997.

SITE DESCRIPTION

The site is in Grover's Creek Cove, a shallow inlet on St. Leonard's Creek about four miles from its mouth into the Patuxent River (Shomette 1995:120-130). The cove bottom was composed of a mud fluff ranging from a foot to two feet in depth. The mud overlay a hard clay bottom. Tidal fluctuation of the slightly

brackish water was about one foot. Visibility underwater ranged from zero to almost 18 inches depending on conditions.

METHODOLOGY

Work at Grover's Creek Cove planned to identify the parameters of two vessels indicated by side scan sonar. Once located, baselines over the long axis of each vessel would guide recording. Three transects would cross each vessel (bow, midships and stern) and guide exploration of diagnostic parts to assess integrity and identify a vessel as to time period and use.

The cove was first probed by students and volunteers using eight foot stakes. This effort quickly located one vessel but never found the second. The other "ship" may have been a mirror image of the first. We are not certain as to why this occurred. It is possible that the distorted secondary image resulted when sound waves passed beyond the site and rebounded from the shoreline. The first sound waves to return noted the site. The second set of waves passed through the site, then rebounded from the irregular shoreline. Since they already marked places where vessel parts did not appear, they might seem to be another vessel.

After probing established a general site outline, divers identified key features including the stern post assembly and a portion of the keelson. A baseline based on these points was installed over the vessel. Since the side scan image suggested a ship of about 65 feet, the baseline extended beyond the posts to

include additional elements, including a debris field surrounding the vessel. Three transect lines crossed the vessel to guide a predisturbance mapping of surface materials. When this map was completed, surface materials were removed, tagged with map references, and placed in holding areas.

Excavation concentrated first on the midships transect. Dredging moved slowly because of debris and the clay bottom. The starboard side transect revealed a mix of loose planks and other timbers. The port side revealed intact frames and planks about one foot below the mud. An area exposing four frames was cleared from the keelson to the outboard framing and planks. While frame mapping continued, dredging exposed the keelson.

Data recovery concentrated on recording diagnostic features and measurements. The cleared area on the port side measured over six feet outward and 8.5 feet along the keelson. Four frames were mapped with associated ceiling planking. The keelson was mapped from bow to stern except where it was missing near the bow or concealed under ballast stone in the stern. Recovery of information relating to the bow assembly and the stern interior and exterior was completed after dredging cleared these areas.

During dredging and mapping, artifact recovery occurred. The artifacts were placed in wet storage containers after documentation by Maryland Archaeological Conservation Lab staff. Onsite artifact reburial, except for a small collection of domestic materials from the stern and some rigging elements, preceded during backfilling of the site.

Recording consisted of measuring and then creating map segments and scale drawings of vessel parts. Video and still photography did not prove useful due to low visibility. An attempt to use polyvinylsulfide to create casts of three parts of the wreck was not successful. The polyvinylsulfide casting failed, in part because no one was skilled in its use. We also tried to be more technically sophisticated than the work required. Exterior molds were too tight in some cases and not properly fastened to the timber in others. Finally, the mixture might not have been suitable for site conditions. Additional testing should ensure that pouches holding the mixture against the structure have a bulge in them to allow easy pouring. The pouch ought to be fastened to the timber with overlapping parallel staples. The mix might be better applied using a cake frosting applicator rather than a bucket, bag, or caulking gun.

Initial measurements related to the baseline. The Calvert County Soil Conservation Service provided a volunteer survey crew who shot in all key points around the cove and onsite. Their observations allowed verification of triangulated points and tied the site to formal benchmarks. Key points located along the keelson allowed triangulation directly to other vessel features. Resolution of differing measurements was accomplished by subjecting discrepancies to final onsite checking during creation of the site map.

The Calvert County Soil Conservation Service made two aerial photographs of the St Leonard's Creek area available during the

last days of site work. At the time of photography in the 1930's, two vessels were in Grover's Creek Cove. The larger vessel was in the location investigated by the 1997 field school. This vessel had at least one cabin, an extant deck, and a bowsprit.

FINDINGS

Excavation revealed several things about vessel construction and use. The vessel remains were circa 60 feet in length and 20 feet in beam at the chine 40 feet forward of the sternpost. In reality, on-deck measurements could well be as much as five to eight feet longer and perhaps a foot or two wider. Parts of the vessel originally above the waterline suffered heavy damage, apparently during a derelict removal program conducted by the state during the 1970's (Shomette 1995:147). Despite the damage, it was possible to identify the vessel type and use.

The bow was composed of several timbers (Fig. 1). The upper portions of the bow were missing, especially the diagnostic features on Chesapeake Bay vessels originating in a log boat building tradition (Brewington 1963:45). Only the lower portions were present. These included the stem, apron, and stemson (Mansir 1980:21). A drift pin indicated some missing additional elements. A possible cutwater with bobstay eyebolt lay about five feet further forward along the baseline and a disarticulated hawse pipe rested off to the starboard. The bow plan view and perspective drawing show the frames to be much more closly spaced in the bow with no cant frames, a bugeye feature (Brewington 1963:45). Mortises cut into the starboard side of the bow

assembly once held the shorter bow frames in place.

The keelson was a single timber 10.75 inches wide and 8.5 inches high at a point 38 feet forward of the sternpost (Fig. 1). It was supported by a sister keelson that began at 38 feet on the port side and extended aft. It tapered down on its forward edge then rose sharply to the top of the keelson and continued aft into the stern area where it could not be further investigated under ballast stone and mud. Traditionally two timbers with the same dimensions as the keelson served as sister keelsons (Brewington 1963:45), but only a single sister on the port side existed owing to the centerboard trunk on the starboard side.

There was a four foot long groove in the top of the keelson 27.8 feet forward of the sternpost. Initially thought to be a scarf, then a crack, this groove is the junction of the sister keelson and the keelson. It extended into the main mast step's forward end but it did not extend to the bottom of the step. It continued aft of the mast step to a rider plank.

There were two corroded peened-over drifts forward of the mast step along this crack. On the port side of the sister keelson, two inches below the top, four horizontal drifts at circa one foot intervals were driven into the keelson. These probably helped hold the centerboard trunk in place but, given their placement along this crack only two inches below the top, they also further secured the keelson.

Why this crack did not extend completely down through the mast step is unknown. A scarf should go all the way through the

keelson and this did not. It is possible that this groove represented a repaired crack. However, the crack was congruent with the starboard edge of the sister keelson making it unlikely to be unintentional. The alignment with the sister keelson's starboard edge suggests a construction feature not yet clearly understood. This inherently unstable feature should be examined very closely in any future investigation.

A rider on the keelson composed of three, two inch thick and seven inch wide planks began at 30.75 feet forward of the sternpost. This extended aft well into the stern but it could not be inspected further aft beyond 24 feet due to ballast and mud overburden. At the forward end, it was dogged or stapled to the top of the keelson aft of the centerboard trunk mortise.

The centerboard trunk (also well or case) was mortised into the keelson on the starboard side to a varying depth of 3-4 inches. Only the inboard portion of the centerboard trunk was extant. Probing below the keelson revealed planks extending an unknown depth. The centerboard extended 17.17 feet along the keelson from a point 35.4 feet forward of the stern post.

Although damaged above the keelson and to the starboard, preliminary measurements indicate that the port side trunk well was 4.5 to 5 inches thick. The headledges and the starboard side were missing. The trunk consisted of planks set on edge and held together with drift pins set at different angles and depths, a lower Chesapeake tradition (Burgess 1975). The missing headledges left pine treenails exposed at both ends of the centerboard

trunk. These treenails apparently served as stopwaters to prevent seepage along the seam between the centerboard and the keel/keelson.

There was one mast step located at 26.5 feet forward of the stern post. This mortise was centrally located on the keelson and measured 1.33 feet in length, 6 inches in width and 4 inches in depth. A treenail was driven through the mortise. This would not fasten the mast base to the keelson because it ran along the step's bottom in the forward corner. The treenail's lower edge was in the floor of the mast step and could only touch the mast foot, not lock it into place.

A possible second mast step was located at 55' on the keelson. The keelson ruptured at this point when the site was dragged. Evidence for a mast step was marginal but there was a squared corner on the starboard aft side of the break slightly offcenter in the middle of the keelson. A vertically slanting hole for a drift or treenail was also located here. The angle of the fastener hole suggested that it went through the projected mast step in such a way as to lock a foremast into place.

The composite sternpost (Fig. 1) was nine inches wide and composed of two timbers. The aft timber was six inches sided. The top end was damaged but 5.5 feet still remained. It rested on the keel. The stern assembly included an inner sternpost 4 inches sided and 8 inches molded. The deadwood had a rabbet to accept the outer hull planking which was fastened by up to five nails at the butt ends of the outer hull planks. No stealer planks were

noted (Mansir 1980:12), perhaps because not enough of the stern exterior was exposed.

The keel at the stern was 9 inches wide and 5 inches thick. It had a shoe two inches thick that extended aft forming a skeg. The rudder was 3 feet long by 3 inches thick. The rudder was 5.5 feet high. The top edge was badly damaged, probably by the drag line clearing operation. There were two iron pintle straps. These extended 1.5 feet fore and aft on the rudder. The pintle straps were two inches wide and ca 3/8 inch thick. The rudder portion of the strap appeared to have the pintle while the stern post was mounted with the socket, poor visibility and corrosion made it difficult to tell (Mansir 1983:25).

Framing on this vessel consisted of paired timbers. The floor timber was sistered to the first futtock which ran to the chine. The second futtock continued the floor around the chine. The third futtock ran from the first futtock and provided greater height (Mansir 1980:18). The frames varied in width, ranging from 3.5 to 4.5 inches. They were fastened with iron drift pins.

All mapped floor timbers were on the forward edge of the frame pairs. The floors ranged from 3 to 3.75 inches sided and 5.5 inches molded. They extended 6.25 feet from the edge of the keelson to a scarf where the second futtock started. The first futtock was on the aft edge of the paired frame. They were 4 inches sided and 5.5 inches molded. The first futtock continued upward at the chine. The chine began 8.5 feet from the keelson's edge. The second futtock was 3 feet, 2 inches long. It varied

slightly but was generally 3.5 inches sided and 4.5 inches molded. No third futtocks were found. Room varied along the keelson varied 7.5 to 8 inches. Space between frames was 13 to 14 inches.

Planking consisted of three types, outer hull, ceiling and sole in the stern cabin area. The longitudinal outer hull planking was not examined except at the stern where the planks were of varying widths (7 inches to 15 inches). The planks were 2 inches thick. At the stern, the hull planks were fastened using multiple nails. Hull planking was fastened to the midships frames using a combination of three bolts at the butt ends and two nails at other frames.

Three longitudinal ceiling planks were noted along the inner chine. These had a thickness of 1.75 inches and a width ranging from 3 to 5 inches. They were fastened by a combination of bolts and nails with one nail in each set of frames.

The fore and aft, tongue and groove sole planking rested on, but was not fastened to, beams measuring 2 inches wide and 6 inches thick. The sole planking is 3.5 inches wide and 3/4 inch thick. The four sole decking beams were spaced at different distances (varying from 22 to 25 inches) and attached to frames above the chine where they also rested on the upper edge of a ceiling plank. The foremost sole deck beam was located at 24 feet forward of the stern post, the aftermost was 18 feet forward of the sternpost.

The stern area was composed of several timbers including a

stern post and deadwood. Due to the ballast stone overburden and sole planking, the interior was not explored to any great extent. The exterior stern was partially recorded on the port side where four planks were still extant.

A square bolt and round iron rod found aft of the sternpost were first thought to be the upper tiller assembly. However, a second square bolt and rod found 14 inches away suggest that these were part of the transom support structure. If this is the case, then it is likely that the vessel had a drake tail and patent stern (Brewington 1963:44, 48).

One spar, thought to be the bow sprit, was recovered and drawn. This timber was badly damaged but iron bands provided clues to original dimensions. At the thicker inboard end, it was hexagonal with facets about six inches across with a diameter of one foot. A 2.5 inch wide metal band was inlet into the timber 3/8 inch. At the bow, the timber was round and 8 inches in diameter. A cap ring was again mortised into the timber.

Some rigging elements were also recovered. These consisted of deadeyes, blocks and rope. The wire rope was generally not served although some examples were noted. The diameter ranged from three quarters to one inch in thickness. The deadeyes had three holes and were grooved on the outer edge to take wire rope fastened in one case by a steel shackle. The blocks were of several sizes, and included both one and two sheaves. Extant sheaves were of a very hard wood, probably lignum vitae.

Artifacts recovered from the stern area below the sole

planking consisted of ballast stone, ceramics, and glassware. Both rounded cobbles of a basalt-like rock and rougher, chunks of stone were present. Neither were local in origin. Oyster shell debris found in numerous places might have been additional ballast or residue of a last catch.

The glassware, with one exception, proved to be food-related containers without their caps. They ranged from milk bottles marked Chevy Chase Dairy to Heinz condiment bottles. The exception was a red piece of glass probably used as a running light. Two stoneware jugs were found. One contained a mixture partially composed of pine tar. The other's contents were unidentified.

INTERPRETATIONS

The initial assumption was that two vessels were in Grover's Creek Cove representing the remains of Gunboats 136 and 137 from the 1814 Chesapeake Flotilla. However, there was only one vessel and it was not a gunboat because it had a centerboard. Since centerboards in the Chesapeake date from after circa 1815 (Snediker and Jensen 1992:57-58) and that gunboats did not have them (Tucker 1993:36-50), this single feature directed inquiries about the vessel toward identification of vessel type and date.

Chesapeake Bay work boats are not well known in terms of their attributes below the water line. After eliminating a gunboat, possible types considered as the Grover's Creek Cove vessel were the schooner, pungy, bugeye and skipjack. A

comparison of their attributes with the site allowed most to be eliminated.

The mast step location showed that the vessel was two masted so the skipjack was eliminated because they usually carried only one mast. A schooner was not probable because the vessel was double ended. While the pungy was plank on frame, it's clipper-ship lines did not match the double ended craft at the site. The process of elimination left only the bugeye as a probable candidate even though the Grover's Creek Cove site was a plank on frame vessel. A comparison of hull types shows distinctive differences that tend to confirm these interpretations (Brewington 1956:73).

The presence of wire rope and other artifacts indicated a date after circa 1840. Wire rope came into general use on Chesapeake work boats after the Civil War (Brewington 1963:65). Artifacts from the stern suggest a date range in the early twentieth century. The two masts and frame construction on a double ended vessel indicated that it was probably a plank on frame, centerboard bugeye.

Bugeyes were originally log boats used in the oystering business. Initially, it was an enlarged canoe with a forward cabin and two masts (Brewington 1963:37). After the Civil War, the first true bugeyes appeared. These were multi-log vessels, with framed topsides, full decking and a small forward cabin. The two masts carried a jib, foresail and mainsail (Ibid: 40; Chapelle 1935:257; 1951:298).

When trees of the requisite size were no longer available, the same form was carried on with planks and frames. The earliest date for this switch from log to plank construction is circa 1879 (Brewington 1963:44). Gasoline power came in about 1903 and many of the sailing vessels were equipped with engines. In many cases, the centerboard was removed and the masts cut down as well (Brewington 1963:30). Some were also converted to yachts.

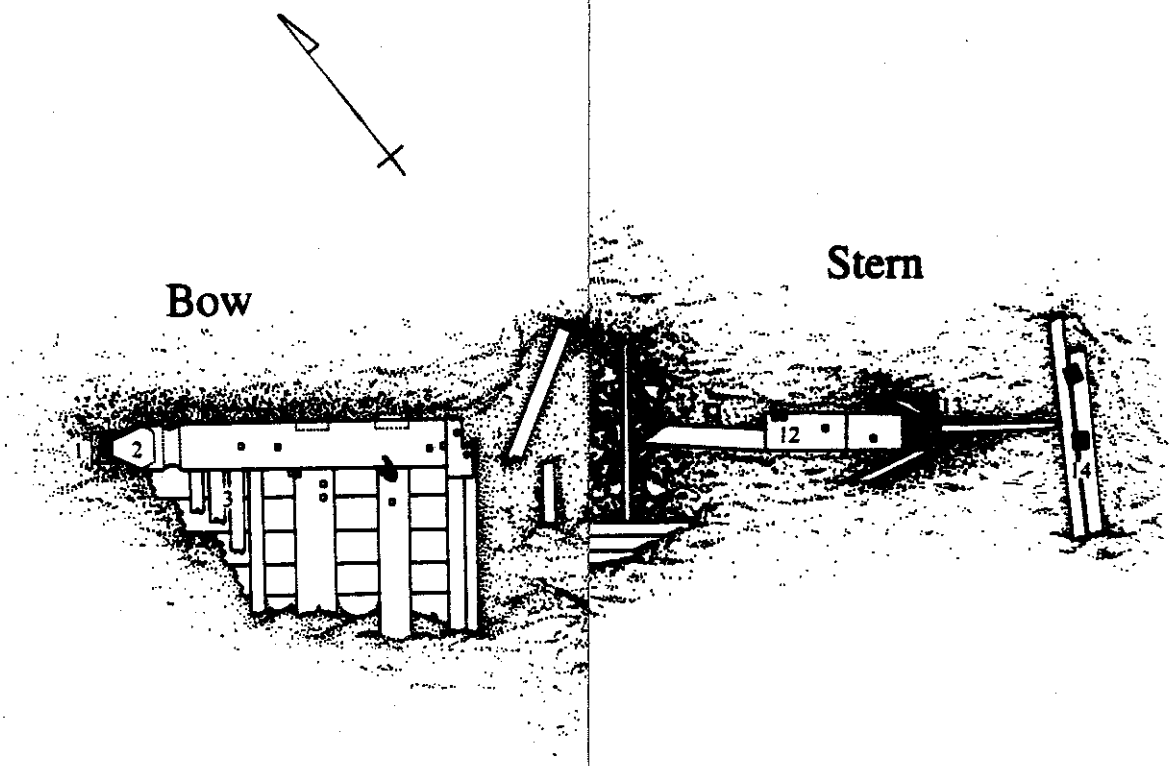
The Grover's Creek vessel does not appear to have been converted to power. A bronze drive shaft was found on the site but it was for a much smaller vessel (Harry Sparrow, personal communication, 23 July 1997). At any rate, the hull was not pierced for a propeller shaft nor were there any indications of engine rails or other mountings in the interior stern. A search for engine-related attachment points and piercing was made after the shaft was found but this effort, while it exposed additional hull elements, did not reveal any indication that an engine had been fitted.

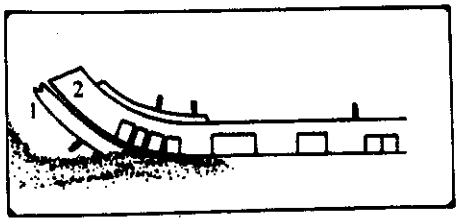
CONCLUSIONS AND RECOMMENDATIONS

Based on the vessel size, construction techniques, and artifacts, the Grover's Creek Cove vessel was most probably a plank on frame bugeye built after 1890 and in use until some time before 1936. It was still reasonably intact and had not been converted to power in 1936 when it appeared in the aerial photograph. The cove immediately across St. Leonard's Creek from the site had high ground access and docking facilities in 1936.

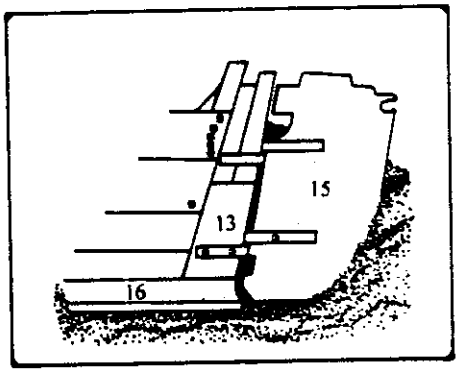
The vessel may have been affiliated with this other site and simply "parked" out of the way in Grover's Creek Cove. It finally sank prior to 1952 as it does not appear in an aerial photo taken that year.

Some portions were still visible above water after that time according to local tradition. In the 1970's, the vessel and a skiff in the cove were subjected to clearing as part of a derelict removal program. Given that few, if any, bugeyes have been investigated archaeologically, a phase III investigation would prove fruitful.





Stem profile (port side)



Stern profile (port side)

REFERENCES

Brewington, M. V.
1956 *Chesapeake Bay - A Pictorial Maritime History*. Bonanza Books, New York.

1963 *Chesapeake Bay Log Canoes and Bugeyes*. Tidewater Publishers, Centreville, Maryland.

Burgess, Robert H.
1975 *Chesapeake Sailing Craft*. Cornell Maritime Press, Cambridge, Maryland.

Chapelle, Howard I.
1935 *The History of American Sailing Ships*. Bonanza Books, New York.

1951 *American Small Sailing Craft*. W. W. Norton, New York.

Lipke, Paul, Peter Spectre, and Benjamin A. G. Fuller (eds)
1993 *Boats: A Manual for their Documentation*. American Association for State and Local History, Nashville, Tennessee.

Mansir, A. Richard
1980 *A Modeler's Guide to Hull Construction*. Moonraker, Dana Point, California.

1982 *Planking Model Ships*. Moonraker, Dana Point, California.

1983 *How to Build Ship Models*. Moonraker, Dana Point, California.

Shomette, Donald
1981 *Flotilla Battle for the Patuxent*. Calvert Marine Museum Press, Solomons, Maryland.

1995 *Tidewater Time Capsule: History beneath the Patuxent*. Tidewater Publishers, Centreville, Maryland.

Snediker, Quentin and Ann Jensen
1992 *Chesapeake Bay Schooners*. Tidewater Publishers, Centreville, Maryland.

Tucker, Spencer C.
1993 *The Jeffersonian Gunboat Navy*. University of South Carolina Press, Columbia.