FINAL REPORT OF INVESTIGATION

American-Russian Investigation of the NEVA Wreck and Survivor Camp: 200th Anniversary Expedition, Sitka, Alaska

Prepared by:

J. David McMahan and Daniel Thompson

January 24, 2020

Appendices and Contributions by:

Evguenia Anichtchenko, PhD
Kory Cooper, PhD
John Pollack, CPIFA MSc
Gleb Mikhalev
Megan Partlow, PhD
Peter Northover, PhD
Timothy (Ty) L. Dilliplane, PhD
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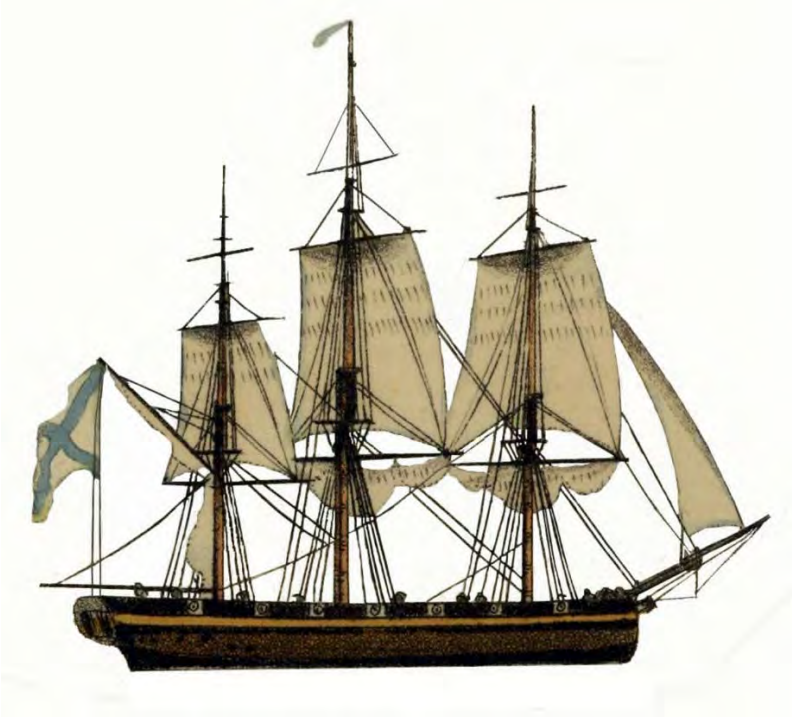

In fulfillment of:

Memorandum of Agreement among the National Science Foundation, the USDA Forest Service, the Alaska State Historic Preservation Officer, the Sitka Tribe of Alaska, and Dave McMahan

National Science Foundation Award No. PLR-1330939
USDA Forest Service ARPA Permit ID No. SIT699 / 620935010602
USDA Forest Service ARPA Permit ID No. SIT712 / 620935010602
Alaska DNR Office of History and Archaeology Permit No. 2014-02, as amended

Cover Image: A simplified drawing of the NEVA extracted / adapted from "Harbour of St Paul on the Island of Cadiack, Russian sloop-of-war *Neva"* The original image was drawn by Capt Lisiansky, engraved by I. Clark; published by John Booth, Duke Street, Portland Place, London, 1 March 1814. Adaptation artwork was done by Dave McMahan.

Note: A color version of this report, including appendices, may be downloaded at: http://mcmahanconsulting.com/home/neva_project_report.

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ACKNOWLEDGEMENTS

The NEVA Project is remarkable in many respects, and its outcomes are the result of a top-notch team of talented and dedicated scientists. Each uniquely qualified team member brought expertise and skill sets that collectively were indispensable to the investigation. In addition to the author (as former Alaska State Archaeologist), the 2012 discovery team included Jay Kinsman (former USFS Sitka District Archaeologist) and Robert (Bob) Medinger (former Director, Sitka Historical Society [SHS]). It was Bob who found the first evidence of the survivor camp through metal detecting, and encouraged the submittal of a grant proposal that led to more intensive National Science Foundation (NSF) supported investigations in 2015 and 2016. The National Marine Sanctuary Foundation (NMSF) subsidized travel costs and equipment expenses in 2012. Scientists from the National Oceanic and Atmospheric Administration (NOAA) contributed substantially to the discovery phase of the project in 2012. The NOAA Office of National Marine Sanctuaries (ONMS) promoted the project and coordinated with NOAA sister agencies to provide scientific data and staff support. NOAA scientists provided background on the vessel, cartography, historic tides, and tectonics. Frank Cantelas, NOAA Office of Ocean Exploration and Research (OER), conducted a marine magnetometer survey at the site in August 2012 while Davey Lubin captained the support vessel. Thanks are also due to marine historian Michael Burwell (U.S. Minerals Management Service, retired), who provided copies of historic newspaper accounts pertaining to the NEVA, as well as other background documents. Archaeologist and collections specialist Sue Thorsen (Sitka National Historical Park, retired) participated in the 2012 underwater investigation and helped to support the project locally throughout its duration. Mr. Glen Wilbur, a commercial fisherman who reported a submerged cannon near the project location in the 1980s, kindly conversed with the crew by satellite phone in 2012 and met with the 2015 team to go over maps.

The Sitka Historical Society, represented by its Board of Directors, was/is a key partner throughout the NEVA Project. Hal Spackman, who succeeded Robert Medinger as SHS Director, is owed special thanks for administering the NSF grant, helping to arrange local logistics and programs, and purchasing. Dr. Timothy (Ty) L. Dilliplane (Russian America historical archaeologist, former Alaska State Historic Preservation Officer, and Assistant Professor, Massachusetts Maritime Academy) served as the project's Co-PI under the NSF grant, and helped to oversee field operations during the 2015 season. Ty was unable to participate in 2016 fieldwork due to academic obligations but has remained involved through editing and decision-making. Dr. Evguenia Anichtchenko (University of Southampton) oversaw archival research and participated in all field phases of the project, including underwater investigations. As an Alaskan resident who grew up in St. Petersburg, and an affiliate of the University of Southampton, Zhenya was uniquely qualified to lead archival research in both Russia and Great Britain. Along with the author, Patricia Browne assisted with research in London and helped with laboratory / administrative work. Dr. Artur Kharinsky (Irkutsk State Technical University) and Dr. Yury Likhin (Taltsi Museum of Architecture and Ethnography, Irkutsk) participated in the 2015 fieldwork, providing a Siberian perspective on Russian material culture and the archaeology of survival. John Pollack, Institute for

Nautical Archaeology (INA, College Station, Texas), generously donated his time and the use of personal and INA assets for mapping, sonar, and bathymetry both in 2015 and 2016. Sean Adams ("3 Points in Space Media LLC," Vancouver, British Columbia) collected and processed data for 3D mapping of excavations and artifacts. Sean, who participated in both 2015 and 2016, also had a lead role in underwater investigations. Daniel Thompson (historical archaeologist and detectorist extraordinaire) contributed through an extensive knowledge of historical material culture and the archaeological use of metal detectors. Gleb Mikhalev expertly served as project photographer and videographer to professionally capture an electronic record of the findings. Alaskan expatriate Dr. John Jensen (University of Rhode Island / Sea Education Association) provided advice on marine survey and participated in the May 2015 scuba investigation, as did Travis Shinabarger (consulting archaeologist, Anchorage). Kevin Murphy capably captained the live-aboard boat for the May 2015 dive program. Dr. Brinnen Carter (Sitka National Historical Park) shared valuable advice on marine archaeology. Brinnen participated in 2015 underwater investigations, as well as terrestrial and underwater investigations in 2016. In addition to those mentioned, the 2016 field team included archaeologist Charles (Chuck) Carrig. Chuck took leave from his federal cultural resource position with the U.S. Department of Agriculture to volunteer for the NEVA Project. The 2016 team also included Russian travel specialist Zlata Lund (Klondike Travel, Anchorage). Zlata donated her expertise in arranging travel to/from Russia, as well as helping with camp operations. Her participation alongside scientists enriched her ability to accurately convey shared history to Russians visiting Alaska. Ryan Marlow (Alaska Aerial Media), along with Sean Adams, conducted a drone survey of the project area in 2016. This provided valuable data which enhanced the project.

Special gratitude is due to members of the Sitka Tribe of Alaska (STA) who were involved with the project, either through field visits or tribal review. To say the least, the ship NEVA remains infamous among the Tlingit people for its historic role in the Battle of Sitka. Understandably, their trust for the project team had to be earned through appropriate respect in the field and interactions over time. Mr. Bob Sam (STA Council Member and cultural leader), who was initially opposed to the project, visited the field team on several occasions and became a project advocate. It was the author's pleasure to give joint presentations with Bob in Sitka, Juneau, and Anchorage to insure that the Tlingit perspective was accurately represented. Other STA field visitors included Michael Baines (STA Tribal Chairman) and Pat Alexander (STA Elder and Sitka Historical Society board member). A final Tlingit blessing of the site at the conclusion of fieldwork was led by Chuck Miller (STA). This was followed by a Russian Orthodox service led by Deacon Herman Madsen and Dr. Ana Dittmar of St. Michaels Russian Orthodox Cathedral.

Many other individuals, organizations and corporations contributed to the project's overall success through ancillary studies and laboratory/facilities support. The Alaska Office of History and Archaeology (OHA) supported the author's participation during the 2012 discovery phase. OHA also provided interim storage of the collections and for specialized treatment such as electrolysis in the OHA laboratory. Molly Conley (Museums Alaska) catalogued and packaged the collection for curation at the University of Alaska Museum of the North. Ted Parsons, a graduate student at the University of Alaska Anchorage (UAA) conducted 3D scanning of select artifacts.

Drs. Ryan Harrod and Diane Hanson (Anthropology Department, UAA), provided facility and technology for 3D scanning. Dr. Hanson, along with Margan Grover (UAA), arranged for final storage of the collection before transport to the UAF Museum. Margan also assisted with the analysis of glass beads from the site. A study of faunal remains was completed by Dr. Megan Partlow (Central Washington University). Archaeo-metallurgical studies were completed by Dr. Peter Northover (University of Oxford) and Dr. Kory Cooper (Purdue University). Dr. Jim Jobling (Texas A&M Center for Maritime Archaeology and Conservation) graciously x-rayed iron concretions from the site and conducted metallurgical conservation on a pair of cannon trunnion caps. Ellen Carrlee (State Conservator, Alaska State Museum) provided advice on the measurement of chlorides and general conservation. Ole Varmer, international law expert with NOAA's Office of General Council, provided advice on "the law of the sea" relating to the NEVA. Dr. James Delgado, Senior Vice President of SEARCH, answered questions relating to both law and nautical material culture. John Middleton (Foreign Member, Russian Academy of Sciences) kindly read a draft of the Final Report and provided comments. John also provided advice on questions related to 19th century Russian and nautical material culture. Finally, I acknowledge the support of my wife Patricia Browne, who provided encouragement throughout the project.

List of NEVA Project Participants, 2012-2016

June 2012 Field Survey Participants:

1. Dave McMahan, Team Leader (Alaska Office of History and Archaeology)
2. Jay Kinsman (U.S. Forest Service)
3. Robert Medinger (Sitka Historical Society)

August 2012 Underwater Survey Participants:

1. Dave McMahan, Team Leader (Alaska Office of History and Archaeology)
2. Frank Cantelas (National Oceanic and Atmospheric Administration)
3. Robert Medinger (Sitka Historical Society)
4. Sue Thorsen (Sitka National Historical Park, retired)
5. Davey Lubin (Boat Captain)

April 2014 Site Inspection with USFS

1. Dave McMahan, PI (McMahan Consulting, Sitka Historical Society)
2. Dr. Timothy (Ty) L. Dilliplane, Co-PI (Massachusetts Maritime Academy)
3. Clay Davis (USFS Permitting Officer)
4. Jay Kinsman (USFS Sitka District Archaeologist)

September 2014 Archival Research in St. Petersburg, Russia:

1. Dr. Evguenia Anichtchenko, Archival Coordinator (Center for Underwater Archaeology, University of Southampton)
2. Dave McMahan, PI (McMahan Consulting, Sitka Historical Society)

May 2015 SCUBA Survey:

1. Dave McMahan, PI (McMahan Consulting, Sitka Historical Society)

2. Dr. Evguenia Anichtchenko (Center for Underwater Archaeology, University of Southampton)
3. Dr. Brinnen Carter (Sitka National Historical Park)
4. Dr. John Jensen (University of Rhode Island, Sea Education Association)
5. Travis Shinabarger (Consulting underwater archaeologist)
6. Kevin Murphy, Boat Captain

July 2015 Field Participants (Excavation):

1. Dave McMahan, PI (McMahan Consulting, Sitka Historical Society)
2. Dr. Timothy L (Ty) Dilliplane, Co-PI (Massachusetts Maritime Academy)
3. Dr. Evguenia Anichtchenko (Center for Underwater Archaeology, University of Southampton)
4. Dr. Artur Kharinsky (Irkutsk State Technical University, Irkutsk, Russia)
5. Dr. Yury Likhin (Taltsi Museum of Architecture and Ethnography, Irkutsk, Russia)
6. Daniel Thompson: Alaska historical archaeologist, metal detector specialist
7. Gleb Mikhalev: photographer and videographer (New York, Sitka, Moscow)
8. Dr. Brinnen Carter, Marine Archaeologist (Sitka National Historical Park)
9. John Pollack (Institute for Nautical Archaeology: Archaeological mapping and marine remote sensing specialist – Canada).
10. Sean Adams (Institute for Nautical Archaeology and 3 Points in Space Media LLC: Archaeological mapping and 3D imaging specialist – Canada).

September-October 2015 Archival Research in London, UK:

1. Dr. Evguenia Anichtchenko, Archival Coordinator (Center for Underwater Archaeology, University of Southampton)
2. Dave McMahan, PI (McMahan Consulting, Sitka Historical Society)
3. Patricia Browne (McMahan Consulting)

March 2016 Sonar Survey:

1. John Pollack (Institute for Nautical Archaeology – Canada).
2. Dave McMahan, PI (McMahan Consulting, Sitka Historical Society)
3. Travis Shinabarger (Consulting underwater archaeologist, Alaska)
4. Dr. Brinnen Carter (Sitka National Historical Park)

July 2016 Field Participants (Excavation):

1. Dave McMahan, PI (McMahan Consulting, Sitka Historical Society)
2. Dr. Evguenia Anichtchenko, marine archaeologist (Center for Underwater Archaeology, University of Southampton)
3. Daniel Thompson (Alaska historical archaeologist, metal detector specialist)
4. Gleb Mikhalev (photographer and videographer – New York, Sitka, Moscow)
5. Dr. Brinnen Carter, marine archaeologist (Sitka National Historical Park)
6. Zlata Lund, Alaska –Russia travel consultant (Anchorage)
7. Chuck Carrig, historical archaeologist (USDA Natural Resources Conservation Service)
8. John Pollack (Institute for Nautical Archaeology: Archaeological mapping and marine remote sensing specialist – Canada)
9. Sean Adams (Institute for Nautical Archaeology and 3 Points in Space Media LLC: Archaeological mapping and 3D imaging specialist – Canada)

Administration and Laboratory:

1. Bob Medinger, Director of Sitka Historical Society (2012-2013)
2. Hal Spackman, Director of Sitka Historical Society (2014-2018)
3. Kristy Griffin, Curator of Sitka Historical Society
4. Molly Conley, Consulting Museum Specialist (cataloging)
5. Patricia Browne (McMahan Consulting)

Tribal Observers / Visitors:

1. Michael Baines, Sitka Tribe of Alaska (Tribal Chairman)
2. Robert Sam, Sitka Tribe of Alaska (Tribal Council member)
3. Pat Alexander, Sitka Tribe of Alaska (Tribal elder)
4. Chuck Miller, Sitka Tribe of Alaska (Drum Ceremony leader)

Ancillary Research and Technical Support:

1. Dr. Kory Cooper (Purdue University), archaeo-metallurgy
2. Dr. Peter Northover (University of Oxford), archaeo-metallurgy
3. Dr. Megan Partlow (Central Washington University), faunal analysis
4. Ryan Marlow (Alaska Aerial Media), drone survey
5. Ted Parsons (UAA, Anthropology Dept.), 3D scanning
6. Dr. Ryan Harrod (UAA, Anthropology Dept.), facilities support
7. Dr. Diane Hanson (UAA, Anthropology Dept.), facilities support
8. Margan Grover (UAA, Anthropology Dept.), beads analysis
9. Deacon Herman Madsen (St. Michaels Russian Orthodox Cathedral, Sitka)
10. Dr. Ana Dittmar (St. Michaels Russian Orthodox Cathedral, Sitka)

Agency Involvement / Support:

1. Dr. Anna Kerttula (Program Manager, National Science Foundation)
2. Theresa Thibault (Regional Archaeologist, USDA Forest Service)
3. Judith Bittner (State Historic Preservation Officer, Alaska Office of History and Archaeology)
4. Dr. Richard Vanderhoek (State Archaeologist, Alaska Office of History and Archaeology)

ABSTRACT

A collaborative 2012 archaeological survey by the Alaska Office of History and Archaeology, the U.S. Forest Service, and the Sitka Historical Society identified a site (SIT-963) believed to be the camp of survivors from the January 1813 wreck of the Russian-American Company ship NEVA. During 2015-2016, following consultation with stakeholders under Section 106 of the National Historic Preservation Act, an international team of archaeologists from the U.S., Canada, and Russia conducted excavations at the site. After 2013, work at the site was supported by the National Science Foundation (Award No. PLR-1330939). Because the survival camp is in Tongass National Forest, upland work was conducted under USDA Forest Service Archaeological Resources Protection Act (ARPA) permits (ID No. SIT699/620935010602 and ID No. SIT712/62093501062). Concurrent research was conducted on State submerged and intertidal lands adjacent to the Tongass under an Alaska Office of History and Archaeology permit (No. 2014-02, as amended). This allowed for offshore remote sensing by marine magnetometer and sidescan sonar, as well as scuba surveys. The excavations at SIT-963 revealed features and artifacts consistent with an early 19th century shipwreck survivors camp, including gunflints, part of a nautical divider, a brass buckle, lead shot, cannon trunnion caps, a wrought drift pin, copper sheathing, and nails of copper and iron. Some of the ship's debris, such as lead shot and copper sheathing, had been modified for use in a survival situation. In an area believed to be in the trajectory of flotsam from the wreck, the team discovered cached materials that included copper sheathing, axes, iron bar stock, and hardware from a cannon carriage. A grave with the outline of a hastily constructed coffin was discovered at the edge of the survivor camp area, but was only exposed enough to see the rectangular coffin outline. While intrusive materials from a nearby mid-to-late 19th century hunting camp were present, the overall picture is one of improvisation and survival. Faunal analysis indicated that the survivors were able to harvest Sitka deer and other animals from the land and sea. The results of the field investigation, along with archival research in St. Petersburg and London, has added details to our knowledge of the NEVA's history and of the archaeology of survival in a harsh environment. It has replaced some of the "lore of the sea" with scientific outcomes.

PRINCIPAL INVESTIGATOR'S PREFACE

I was one of many young boys of my generation who watched Lloyd Bridges in "Sea Hunt," read of buccaneers and treasure in Robert Luis Stevenson's "Treasure Island," and longed to explore the remote corners of the world as an aspiring archaeologist. Most grew up to join the daily grind in workshops, offices and stores, but a very few of us were lucky enough to realize our childhood dreams. During my 40+ year career as an archaeologist on "the Last Frontier," I developed a particular interest in Russia's colonial settlements in America. Along the way, I also acquired an opportunistic interest in marine archaeology even though my training was on land. Thanks largely to my Russian friends and colleagues, and my role as Alaska State Archaeologist for a decade, I was able to extend peripheral research to the far reaches of Siberia, Mongolia, and other remote parts of Russia, thus fulfilling my quest to explore places off the beaten track. I was fortunate enough to have directed excavations at Sitka's Castle Hill, the administrative capitol of Russia's American settlements, and to have participated in several important shipwreck projects in Alaska. This is more than most archaeologists would ever hope to experience during their careers.

To have been on the discovery team of the NEVA survivor camp, along with Jay Kinsman and Bob Medinger, was a crowning moment. The search for the NEVA was a long shot, the veritable needle in the haystack, and we knew that long shots usually do not pay off even when science is involved. After all, the legendary NEVA had escaped discovery by searchers for more than 200 years. I was dumbfounded rather than jubilant in June of 2012, when we found ourselves staring at caches of Russian axes at the exact location we had predicted to be the NEVA camp based on scientific data sets, survivor accounts, and overflights. We were confident of our discovery, but verification would require a well-funded multidisciplinary investigation. The National Science Foundation (NSF) reviewers gave high marks to our proposal, but competition was stiff and selection was another long shot. NSF eventually was able to support the project with all that we had requested. The site discovery and grant application process presented a personal dilemma in that I could not justify directing a major research project on federal lands while I was employed by the State of Alaska. I was eligible to retire, but apprehensive. Retirement planning and notifications must be initiated far in advance, and many months before NSF would complete their proposal reviews. Another gamble paid off, as I retired on May 1, 2013, and received informal notification from NSF that we were to be awarded the grant in August of 2013. I was halibut fishing alone from my small boat 25 miles offshore on a beautiful sunny day when the call came. Funding would not be in place in time for work in 2013, however, so initial plans were made to begin work in 2014. I did not know at the time that there were still major obstacles to overcome.

Preliminary research of standard texts and data sets did not reveal any other known cultural resources near the survivor camp location. The camp was later found to be in a place very sacred to the Sitka Tlingit people, however, due to an association with shamanism. The U.S. Forest Service had known this at the time of the initial survey but felt that their trust relationship with the tribe would not allow disclosure outside the agency. Thus, we were unaware of the sacred nature of the location until formal consultation began under Section 106 of the National Historic Preservation Act. The NEVA remains a hated ship among the Tlingit due to its role in the Battle of Sitka, and according to oral history was lured onto the rocks at this particular place through shamanism. Despite our best efforts to articulate the importance of the project, some Tribal Council members felt that the wreck site and survivor camp should be left undisturbed. Consultation stretched into 2015, as the research design was modified to alleviate tribal concerns, but logistics were complicated and required up front planning. The Tribal Council did eventually

approve the project as amended, and we received the signed Memorandum of Agreement only after we arrived in the field. Tribal trust for the project team had to be earned through personal interactions and by carefully following MOA protocols in the field. The Tlingit perspective, along with oral history relating to the NEVA, is an important part of the wreck story.

Following the first press release in September 2015, our discoveries were the focus of media attention both in the U.S. and abroad. Another measure of success was indorsement by the U.S.-Russia Bilateral Presidential Commission. This insured an awareness of the project at the highest level of the two governments, and that both countries were on board with an international cooperative project. Just as important, my wife Patty endorsed my participation in a project that would occupy much of my time for the next several years. On a personal note, the project was complex and challenging as we endeavored to address a multi-faceted set of problems. Not only was the project site in an area with difficult access, but a whale carcass on the beach attracted large numbers of brown bears during our initial work. The bears learned to tolerate us, as we learned to cautiously live in their presence. We learned to respect the spirituality of the location and gained an understanding that is difficult to articulate and can only be gained by living there. While not all mysteries were solved, we found most that we had hoped for and were able to verify the site as the survivor camp. This would not have been possible without a top-notch crew, each with their own expertise. For their participation I am forever grateful.

CHAPTER 1: INTRODUCTION

Project Background and Overview

The Russian-American Company (RAC) ship NEVA was arguably one of the most historically important vessels in the North Pacific during the early 19th century. Originally named the THAMES, the 372 ton frigate[1] was purchased by Russia (along with LEANDER, renamed NADESZDA) in early 1803 for Russia's first round the world voyage (1803-1806). In 1804, the NEVA and NADESZDA became the first Russian ships to call in Hawaii, and later that year the NEVA played an instrumental role in the Battle of Sitka between the Russians and Kiks.ádi Clan of Sitka Tlingit Indians (Figure 1). Following the battle and withdrawal of the Tlingit, the Russians re-established the New Archangel settlement (present-day Sitka) which served as the capitol of Russian America from 1808-1867. After returning to Russia from the 'round the world voyage in 1806, the NEVA was in the service of the RAC until she wrecked near Sitka in January 1813 (Figure 2). On her last journey, the ship was in route from the Siberian port of Okhotsk with supplies and passengers bound for Russian America. Among the passengers was Tertii Stepanovich Bornovolokov, who was to replace the aging Alexander Baranov as Chief Manager of the RAC. The NEVA, while infamous even today among the Sitka Tlingit, is legendary in Alaska for stories of riches and miracles in the aftermath of the wreck. Most official records of the RAC prior to 1817 were destroyed in the 19th century, and our knowledge of the wreck is contained in a few published accounts of wreck survivors. We know that the vessel ran aground off the outer coast of Kruzof Island while sailing the last leg of her journey in fog. All attempts to save the ship failed and she eventually broke apart on the rocks, leaving 26 survivors to await rescue onshore. Thirty-two died in the wreck, and 15 others (13 by some accounts) had died during the voyage. Among those who perished trying to make it to shore was Bornovolokov. In early February, after a Native canoe was spotted and flagged down, the survivors were rescued and taken to Sitka.[2]

Despite initial salvage efforts to gather materials from the wreck site, the location was eventually lost to time. A series of newspaper articles in 1915 claimed that salvage was being planned, but there is no indication that such an effort ever took place or that the vessel had been discovered. Other articles from the late 19th and early 20th centuries perpetuate rumors of treasure, but there is no substance for the stories. Given the high energy shoreline, the vessel would have broken apart leaving only heavy items such as cannon to be found in cracks and crevices.

McMahan, who had worked extensively with artifacts from colonial Russian sites, felt that the best chance of finding evidence of the NEVA would be through a survey of the intertidal zone and adjacent uplands. With this in mind, an exploratory project to determine the location of the NEVA wreck site and survival camp was launched through the cooperative efforts of the U.S. Forest Service, the Alaska Office of History and Archeology, and the Sitka Historical Society.

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[1] The THAMES (NEVA) is often referred to as a frigate. Under the Admiralty Regulations of 1722 and similar early 19th century protocols, however, a frigate was required to be above 900 tons, have two decks and three masts, and no fewer than 32 guns (Grinev 2018:14-15). Thus, the vessel cannot qualify as a frigate."

[2] Markov (Bland 2015:296-301) presents a sensational but less credible account in which a cannoneer and promyshlennik set out to find help but were captured by the Tlingit. They are reported to have stolen a canoe and made it to New Archangel to seek help.

Figure 1. "Harbour of St Paul on the Island of Cadiack, Russian sloop-of-war *Neva.*" Drawn by Capt. Lisiansky, engraved by I. Clark. Published by John Booth, Duke Street, Portland Place, London, 1 March 1814.

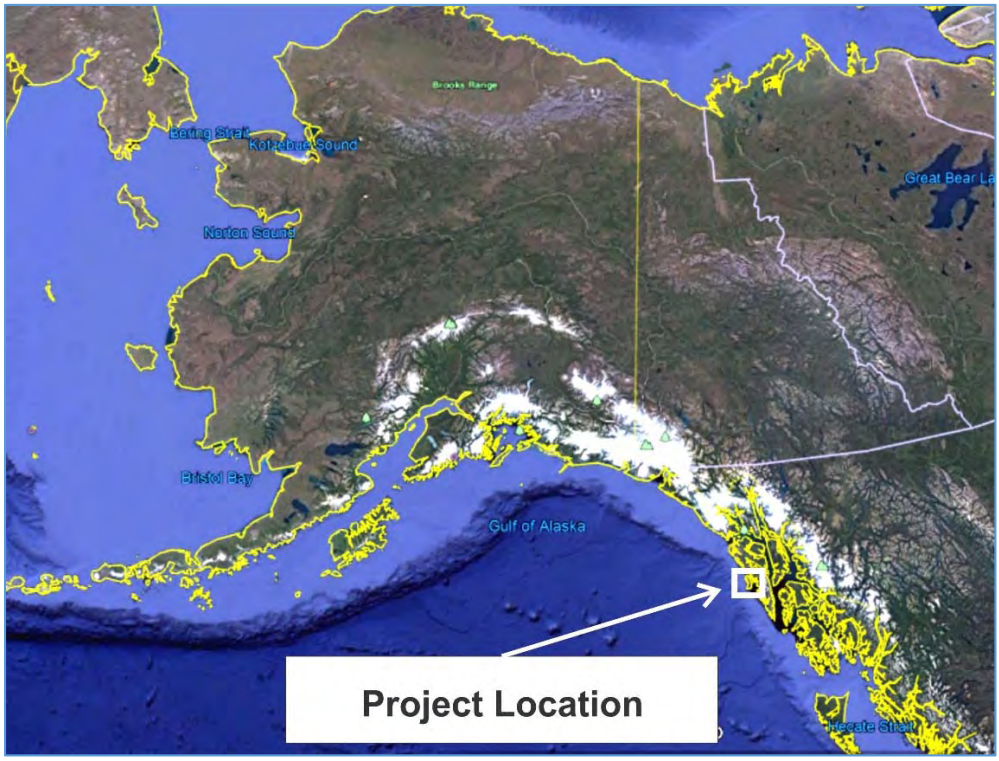


Figure 2. General location of the Survivor Camp project area on Kruzof Island,Southeast Alaska

The team narrowed the search area by reviewing published survivor accounts, aerial imagery, and information on historic tide cycles and rates of uplift. Interviews were also conducted with Sitka residents familiar with the area. The convergence of several lines of evidence, along with the report of a cannon discovery by an abalone diver in the 1980s (Wilbur 1993), suggested a likely location of the1813 wreck of the NEVA off the outer coast of Kruzof Island. To test the hypothesis in the field, a metal detector survey of the beach and forest fringe in a predetermined search area was conducted in June 2012. This resulted in the discovery of Russian axes and other materials consistent with an early 19th century deposit. At another location, a metal detector survey revealed evidence of a mid-to-late 19th century hunting camp. Believing that the earlier cluster very likely represented the NEVA survivor camp from the winter of 1813, the team ceased disturbance and pursued multi-year National Science Foundation (NSF) funding for a comprehensive research project with definable goals. The site complex was given the designation SIT-00963 in the Alaska Heritage Resources Survey (AHRS) database maintained by the State.

In August 2013, a marine magnetometer underwater survey was conducted with support and assistance from NOAA. Unfortunately, the results were problematic due to the presence or iron-bearing rocks. An earlier (1979) survey had failed for the same reason (Cowals 1980). A brief scuba survey by McMahan in June 2012 indicated that thick kelp and sea grass obscured the sea floor (McMahan 2012b).

Armed with NSF funding for a multi-year international investigation, intensive fieldwork was conducted on the site in July of 2015 and July-August of 2016 (Figures 3 and 4). It is those investigations that are the primary focus of this report. Scientists from the United States, Canada, and Russia excavated 23 one-meter square units (247.5 square feet) and numerous smaller test units. This resulted in the recovery of 373 artifacts and 2,243 faunal samples (individual or multiple specimen lots). The latter consisted almost entirely of calcined bone fragments. Also collected were soil samples and tree cores for dendrochronology. More than half the recovered artifacts are from site components associated with the NEVA survivor camp or vessel salvage. The 2015 excavations were mostly contained within two excavation blocks, termed “north block” and “south block” at the location believed to represent the 1813 survivor camp (“survivor terrace).” The 2015 work also included a 2m x 1m block excavation in an area termed “kitchen terrace” (after the team’s camp kitchen) that proved to be the location of a mid-to-late 19th century hunting camp. This area was located about 50 m (164 ft.) northwest of the “north block,” and was separated by a stream. Excavations in 2016 included additional units in the “survival terrace” area, as well as in a cove located around 100 m (328 ft.) northwest of the “north block” and 50 m (164 ft.) northwest of the “kitchen terrace.” Investigations in the cove revealed shipwreck materials believed to have been cached intentionally either by the survivors themselves or by salvors shortly after the wreck. The small but important assemblages from the “survivor terrace” and “shipwreck cache” provide a snapshot in time of the privations of the NEVA’s shipwrecked crew. They broaden our knowledge base of colonial Russian America and of shipwreck survival in the subarctic / arctic regions.

Figure 3. The 2015 NEVA Project Team. First Row L to R: John Pollack, Dave McMahan, Gleb Mikhalev, Evguenia Anichtchenko; Back Row L to R: Daniel Thompson, Sean Adams, Yury Lihkin, Timothy L. (Ty) Dilliplane, Artur Kharinsky.

Figure 4. The 2016 NEVA Project Team. L to R: Zlata Lund, Sean Adams, John Pollack, Dan Thompson, Dave McMahan, Chuck Carrig, Evguenia Anichtchenko

Legal and Operational Framework

In August 2013, in response to a successful peer-reviewed grant proposal, the U.S. National Science Foundation agreed to support a multi-year data recovery project (PLR-1330939). This led to additional underwater exploration and the more intensive excavations at the survival camp during 2015 and 2016. The upland "survivor camp" portion of the project area is within the USFS Tongass National Forest, whereas nearshore submerged lands and intertidal lands are under jurisdiction of the State of Alaska. The multi-tiered legal framework under which work was to be conducted required extensive planning and consultation under Section 106 of the National Historic Preservation Act. At the beginning of consultation, the team learned that the survivor camp is in a location sacred to the Sitka Tlingit people due to its association with shamanism and Tlingit mythology. This required prolonged consultation and modification of the original research design. Most notably, a plan to use forensic canines to locate remains of shipwreck victims was scrapped, along with plans for additional survey work in adjacent uplands. Due to ongoing consultation in 2014, the initiation of fieldwork was postponed until 2015. NSF kindly allowed modifications to the research design and extended the grant to allow for the completion of consultation and the preparation of a Memorandum of Agreement (MOA) between USFS, the Sitka Tribe of Alaska, and the Alaska State Historic Preservation Office (SHPO). The final MOA (Appendix 1) was signed on July 7, 2015, a day after the team arrived in the field and began setting up camp.

In addition to a negotiated MOA, along with ancillary documents such as a curation plan and [inadvertent] human remains discovery plan, the work required permits to conduct archaeological work in federal and state jurisdictions. For upland work in the "survivor camp" area, the USFS issued separate permits in 2015 and 2016 under the Archaeological Resources Protection Act (ARPA) (ID No. SIT699/620935010602 and ID No. SIT712/62093501062). The 2016 ARPA permit also allowed for the use of a drone and videography. For work on intertidal and submerged lands, the State of Alaska (OHA) issued a single permit, which was modified to allow for work in both 2015 and 2016 (No. 2014-02, as amended). The permits are also included in Appendix 1.

Artifacts are normally treated as the property of the owner on whose land they were found. For purposes of this project, upland artifacts (i.e., above mean high tide) from Tongass National Forest are considered property of the USFS. Artifacts from intertidal and submerged lands (i.e., between mean high tide and three miles seaward) are considered property of the State. The USFS is required to comply with the federal regulations for curation under 36 CFR 79, while the State's policy requires that artifacts from State lands be curated within the State Museum System. The University of Alaska Museum of the North (UAM) is the only repository in the state that meets both requirements and is the only repository in Alaska that has the facilities to routinely accept archaeological collections. At the time of this writing, data sets relating to the NEVA Project (artifacts, samples, fieldnotes, video, photographs, and other data) have been transferred to UAM for permanent curation. Curation was funded by NSF as a part of the award. A single artifact from

State tidelands, an iron drift pin, is curated as a State collection by UAM. The remainder of the collection, from USFS lands, is curated under an agreement between UAM and the USFS.

Ownership issues relating to submerged vessels and their cargo are often more complex than the model described above (i.e., "artifacts as property of the land owner"). The disposition and ownership of historic vessels may be influenced by: (1) traditional maritime law (i.e., the "law of salvage" and the "law of finds"), (2) the Abandoned Shipwreck Act of 1987 (ASA), and (3) the Sunken Military Craft Act of 2004 (SMCA). A summary of these laws and their application to sites in Alaska may be found in the Journal of Alaska Anthropology (McMahan 2007b:55-66). Of particular relevance to this project is the SMCA, which codifies commonly understood principles of international law and existing case law. The law protects sunken military vessels and aircraft and the remains of their crews from unauthorized disturbance. Under the SMCA, a "sunken military craft" is defined as:

> *all or any portion of—*
>
> (A) any sunken warship, naval auxiliary, or other vessel that was owned or operated by a government on military noncommercial service when it sank;
>
> (B) any sunken military aircraft or military spacecraft that was owned or operated by a government when it sank; and
>
> (C) the associated contents of a craft referred to in subparagraph (A) or (B), if title thereto has not been abandoned or transferred by the government concerned.

In essence, the SMCA confirms that sunken U.S. military vessels and aircraft are U.S. sovereign property regardless of where they are found and recognizes the sovereignty of the sunken military vessels of other nations. This has bearing on the NEVA because the RAC was a state-sponsored company granted a charter under the authority of the Ministry of Commerce of Imperial Russia. The RAC was a commercial joint stock company, but many of its shareholders were members of the Russian royal court. The RAC was primarily a commercial company, but was also charged with carrying out the responsibilities of Russian colonial government. The NEVA was purchased by the RAC for the first Russian round-the-world voyages, but was routinely under the command of Russian naval officers. Between 1807 and the time of her sinking in January 1813, she is said to have been in the exclusive service of the RAC (Frederick, in Shalkop 1979:7). Even on her final voyage, however, the NEVA was initially under the command of a Russian fleet lieutenant (Iokov Anikievich Podushkin) before command was relinquished to a civilian RAC employee (former Russian naval officer Danilo Vasil'evich Kalinin). Thus, one could make the argument either way – (1) that the NEVA was a "commercial vessel," or (2) that the vessel was a "military craft." If she is determined to have been the exclusive property of the RAC at the time of her demise, any historic claims of ownership would have been terminated when the Bolshevik Revolution overthrew the Tsarist Russian government in 1917. If the NEVA is determined to have been a "military craft" under the SMCA, then Russia may potentially have a valid claim on the wreck and cargo. This would leave the question of applicability of the SMCA to the archaeological

remains of an onshore encampment, and of archaeological materials that were potentially salvaged after the wreck and transported to a different location. These premises were discussed with Ole Varmer (Attorney-Advisor, International Section Office of General Counsel of NOAA), who kindly provided clarification of legal implications but could not speak for potential stakeholders. As with many shipwrecks, the answers are not always in black and white. Fortunately, we were able to mitigate any potential conflict by obtaining the support of both the U.S. and Russian governments. This was accomplished by the adoption of the project in 2013 by the U.S. – Russia Bilateral Presidential Commission, which is comprised of high-level officials from the U.S. Department of State and their equivalents in Russian government. Regardless of any potential ownership issues that may arise in the future, the project was conceived as an international collaboration with both U.S. and Russian participants with the common goals of preserving and interpreting the material culture of the wreck and its story for public benefit. Nothing of commercial value was recovered from the site. The only real "treasure" is the information the site can provide through proper scientific investigation.

CHAPTER 2: ENVIRONMENTAL SETTING

Location and Physiography

Kruzof Island, one of the numerous islands that comprise the Alexander Archipelago of southeast Alaska, is located just west of Baranof Island and around 14km west from downtown Sitka (Figure 5). The island is 37km long and 13km wide, comprising a land area of around 434km (67 sq. miles). The east side of Kruzof Island is protected from storms by inland waterways and numerous smaller islands, while the west side is exposed to the open ocean of the Gulf of Alaska. Off the north side of the island is Salisbury Sound, which separates Kruzof Island from the much larger Chichagof Island. The southern shore of Kruzof Island forms the northern side of the entryway to Sitka Sound. At the southernmost point of the island is Cape Edecumbe, characterized by 30m high basaltic cliffs and notorious "foul ground" and breaking seas to some 300m offshore (U.S. Coast Pilot 1932:370). The most prominent geographic feature of Kruzof Island is Mt. Edgecumbe, a dormant volcano with several cones and collapsed cones (Figure 6). The island was formed in part from the volcanic deposits of Mt. Edgecumbe. The volcano, which is visible from Sitka in clear weather, has long been used as a navigation landmark by mariners. According to Orth (1967:546), the Tlingit name for the island was "O[strov] Tlikh" as recorded in Capt. Tebenov in 1849. He further added:

> After 1775, when Don Juan de la Bodega y Quadra named Mount Edgecumbe "Montaiia de SanJacinto," the island became known as San Jacinto or, as La PCrouse called it, St. Hyacinthe. In 1787 Capt. Nathaniel Portlock named it "Pitt Island" (Wagner, 1937, p.485). The early Russian traders called it "Sitka Island," but in 1805 Capt. U. T. Lisianski, IRN, named it "Crooze Island," after a Russian admiral. In 1849 Constantin Grewingk called it "Edgecumb or Krusow Island." "Kruzof" was adopted by BGN [Board on Geographic Names] (Baker, 1906, p. 384) [Orth 1971:546].

Figure 5. Map of Kruzof Island and surrounding area.

Figure 6. Aerial view of the Mount Edgecumbe cones, facing northwest (photo by D. McMahan).

Physiographically, Kruzof Island is within the Chilkat-Baranof Mountains Section of the Pacific Border Ranges Province (Wahrhaftig 1965:42). This province consists of several mountain ranges along the Pacific Coast, along with an adjacent coastal shelf. The Chilkat-Baranof Mountains Section, "a highland of diversified topography," has been subdivided into four subsections: the Alsek Ranges, Glacier Bay, Chichagof Highland, and Baranof Mountains. Kruzof Island is within Wahrhaftig's (1965:42) Chichagof Highland subsection (57c), which he characterizes as "consisting mainly of northwest-trending ridges whose summits are accordant, rounded, and 3,000-3,500 feet in altitude and of long fiords and through valleys." Drainage in the Chilkat-Baranof Mountains Section is by short, swift streams that flow directly to the ocean (ibid). Many such streams may be found on Kruzof Island, most of which are unnamed on modern maps.

Geology and Soils

Geological studies of Mt. Edgecumbe deposits (Brew et al. 1969:D1) describe 14 rock units ranging in composition from "olivine-augite basalt to augite bearing quartz latite," and underlain by tertiary granitic inclusions. They describe the magma series as "calc-alkaline," and with a close relationship to the "high-alumina basalt series" (ibid). A later United States Geological Survey (USGS) map depicts those deposits along the southwest coast of Kruzof Island as basaltic andesite lava flows and older plagioclase basalt flows of Pleistocene age (Riehle and Lanphere 1989). The intertidal zone in the vicinity of the survivor camp area, aside from a cobble and sand pocket beach, is characterized by rough basaltic outcrops and boulders. Steep cliffs on one side of the beach, coupled with waves breaking against jagged outcrops along most of the adjacent coastline, were a test of endurance for the shipwreck survivors.

Soil development in southeast Alaska has been influenced by climate, topography, parent material, drainage, organisms, and time. They are typically classified as spodosols. An online interactive map maintained by the USDA Natural Resources Conservation Service describes the upland coastal soils along the outer coast of Kruzof Island as "73- Histic Cryaquepts - Lithic Haplocryods-Rock outcrop complex, 5 to 120 percent slopes" (USDA/NRCS). Histic Cryaquepts are shallow soils with poor aeration and drainage, whereas Lithic Haplocryods are acid soils that develop in cold-weather alpine regions. The soils are likely similar to those previously described for the area around Sitka. Rieger et al. (1979:152-154) describes them as "typic cryohumods, loamy, hilly to steep humic cryorthods, very gravelly, hilly to steep" that are found on steep hills in areas covered by volcanic ash from Mt. Edgecumbe.

The soils found in archaeological deposits at the survivor camp location were not subjected to chemical testing for acidity. Experience has shown, however, that the soils of spruce forests are typically acid and result in poor organic preservation. That seemed to be the case at the survivor camp, in that only burned faunal material preserved well.

Vegetation

Baranof Island is within a closed canopy, coastal rainforest ecosystem comprised primarily of Western hemlock and Sitka spruce (*Picea sitchensis – Tsuga heterophylla*) (Viereck and Little

1972:detached map; Viereck and Dyrness 1980; Viereck, et al. 1982). Understory components include: blueberry/huckleberry (*Vaccinium spp*.) thickets, devil's club (*Oplopanax horridum*), skunk cabbage (*Symplocarppus foetidus*), dwarf dogwood (*Cornus canadensis*), watermelon berry (*Streptopus amplexifolius*), and ferns. Disturbed areas within the region support alder (*Alnus spp*.) thickets and wild celery (*Heracleum lenatum*). A list of understory plants typical of Southeast Alaska forests is presented in Table 1. Due to difficult access, there appears to have been little human disturbance within the project area. The overstory there consists primarily of Sitka Spruce (*Picea sitchensis*). Due to uplift at a rate of 17.12mm per year (Gill 2012 e-mail), the terrace upon which the survivor camp is located was probably not colonized by spruce until the mid-to-late 19th century. This timeline is supported by dendrochronological data collected in conjunction with the NEVA shipwreck project.

Table 1. Plants of Southeast Alaska (Robuck 1977).

Common Name	Scientific Name
Fir Clubmoss	*Lycopodium selago* L.
Stiff Clubmoss	*Lycopodium annotinum* L.
Deerfern	*Blechnum spicant* (L.) Roth
Maidenhair Fern	*Adiantum pedatum* L.
Bracken	*Pteridium aquilinum* (L.) Kuhn
Spreading Woodfern	*Dryopteris dilatata* (Hoffm.) Gray
Oakfern	*Gymnocarpium dryopteris* (L.) Newm.
Beechfern	*Thelypteris phegopteris* (L.) Slosson
Swordfern	*Polystichum munitum* (Kaulf.) Presl.
Salmonberry	*Rubus spectabilis* Pursh
Pacific Red Elder	*Sambucus callicarpa* Greene
Devilsclub	*Oplopanax horridus* (Sm.) Miq.
High Bush Cranberry	*Viburnum edule* (Michx.) Raf.
Rusty Menziesia	*Menziesiaa ferruginea* Sm.
Red Huckleberry	*Vaccinium parvifolium* Sm.
Alaska Blueberry	*Vaccinium alaskensis* Howell
Early Blueberry	*Vaccinium ovalifolium* Sm.
Salal	*Gaultheria shallon* Pursh
Stink Currant	*Ribes bracteosum* Dougl.
Trailing Black Currant	*Ribes laxiflorum* Pursh
Five-leaf Bramble	*Rubus pedatus* Sm.
Fernleaf Goldthread	*Coptis asplenifolia* Salisb.
Laceflower	*Tiarella trifoliata* L.
Baneberry	*Actaea rubra* (Ait.) Willd
Yellow Skunkcabbage	*Lysichitum americanum* Hult./St. John
Deerberry	*Maianthemum dilatatum* (Wood) Nels./Macbr.
False Hellebore	*Veratrum viride* Ait. subsp. *eschscholtzii* (Gray) Love/Love
Kruhsea	*Streptopus streptopoides* (Ledeb.) Frye/Rigg
Simple-stemmed Twistedstalk	*Streptopus roseus* Michx. subsp. *curvipes* (Vail) Hult.
Clasping Twistedstalk	*Streptopus amplexifolius* (L.) DC
Heartleaf Twayblade	*Listera cordata* (L.) R. Br.
Menzies Rattlesnake Plantain	*Goodyera oblongifolia* Raf.
Single Delight	*Moneses uniflora* (L.) Gray
One-sided Wintergreen	*Pyrola secunda* L.
Liverleaf Wintergreen	*Pyrola asarifolia* Michx.
Greenishflower Wintergreen	*Pyrola chlorantha* Sw.
Arctic Starflower	*Trientalis europaea* L.
Bunchberry	*Cornus canadensis* L.
Sugarscoop	*Tiarella unifoliata* Hook
Alaska Violet	*Viola langsdorffii* Fisch
Stream Violet	*Viola glabella* Nutt.

[1] Adapted from Robuck (1977).

Fauna

Selkregg (1976:128) lists the important terrestrial mammals of the Coastal Western Hemlock–Sitka Spruce forest community: masked shrew, dusky shrew, little brown bat, red squirrel, northern flying squirrel, deer mouse, red-backed vole, long-tailed vole, porcupine, gray wolf, black bear, brown bear, pine marten, ermine, wolverine, lynx, Sitka black-tailed deer, and mountain goat. Freshwater fauna includes: water shrew, beaver, northern bog lemming, tundra vole, muskrat, mink, and river otter (Selkregg 1976:138). Marine mammal species in and around Sitka Sound include: harbor seal, sea otter, sea lion, and several species of whale (Selkregg 1976:134) (Table 2). The birds of southeast Alaska coastal forests include goshawk, sharp-shinned hawk, bald eagle, blue grouse, great horned owl, rufous hummingbird, hairy woodpecker, downy woodpecker, western flycatcher, Steller's jay, common raven, chestnut-backed chickadee, winter wren, varied thrush, hermit thrush, golden-crowned kinglet, ruby-crowned kinglet, Townsend's warbler, pine grosbeak, and pine siskin (Selkregg 1976:128). Saltwater and anadromous fish of the region include walleye pollock, Pacific cod, sablefish, Pacific pomfret, Pacific herring, albacore, sockeye (red) salmon, coho (silver) salmon, chinook (king) salmon, chum (dog) salmon, pink (humpback) salmon, steelhead trout, black rockfish, Pacific ocean perch, eulachon, sculpins, halibut and other flatfishes, and salmon shark (Selkregg 1976:136). Freshwater fish (excluding the anadromous fish reported above) include cutthroat trout, rainbow/steelhead trout, dolly varden char, sculpins, and northern pike (Selkregg 1976:138). Locally, pink and chum salmon spawn in the intertidal and lower floodplain portions of Indian River from mid-July through September, while coho salmon, steelhead trout, and dolly varden char migrate upstream (SNHP 1998:104). Georg Heinrich von Langsdorff, who was physician and naturalist on the NEVA when the ship spent the winter of 1805-06 in New Archangel, provides an interesting historical perspective on important wildlife in the area:

> Mammals found here include whales, seals, sea lions, sea, marsh, and river otters, brown and black bears. The latter I have never had an opportunity to examine closely. On account of the size and the nature of the fur I have often seen, I have concluded that the American black bear must be a very different species from the brown bear ...
>
> Individual birds belonging to this species of beautiful, white-headed, white-tailed eagles can be seen here almost the entire year... Their meat is edible. The Russians, in the first year after their arrival, here killed and ate two hundred of them. I have often stilled my hunger with their meat and found it tasty. The intestines have to be carefully removed. The liver is said to be very harmful, indeed, even poisonous [Langsdorff 1993:57-60].

Some of the species described for the region, both in current and historic literature, are now known to have been important to the NEVA survivors based on faunal analysis by Megan Partlow. Dr. Partlow provides a more complete discussion of local fauna and remains found in survivor camp context (Appendix 2).

Table 2. Fauna of Coastal Southeast Alaska (Selkregg 1976).

Important Animals of the Marine Community

Invertebrates	
Bacteria	*Schizomycetes* (Phylum)
Sponges	*Porifera* (Phylum)
Protozoa	*Foraminiferida* (Order)
	Radiolaria (Subclass)
Jellyfish	*Scyphozoa* (Class)
Sea anemones	*Anthozoa* (Class)
Marine worms	*Polychaeta* (Class)
Arrowworms	*Chaetognatha* (Phylum)
Comb jellies	*Ctenophora* (Phylum)
Shrimps	*Pandalus* and *Pandalopsis* sp.
Dungeness crab	*Cancer magister*
King crab	*Paralithodes camtschatica*
Tanner crab	*Chionoecetes bairdi*
Other crabs	*Decapoda* (Order)
Barnacles	*Cirripedia* (Subclass)
Other crustaceans	*Copepoda* (Subclass)
	Mysidacea (Order)
	Euphausiacea (Order)
	Amphipoda (Order)
Butter clams	*Saxidomus giganteus*
Other clams	*Pelecypoda* (Class)
Weathervane scallop	*Patinopectin caurinus*
Snails	*Gastropoda* (Class)
Chitons	*Amphineura* (Class)
Sea stars	*Asteroidea* (Class)
Brittle stars	*Ophiuroidea* (Class)
Sea urchins	*Echinoidea* (Class)
Sea cucumbers	*Holothuroidea* (Class)
Tunicates	*Urochordata* (Subphylum)

Fish	
Walleye pollock	*Theragra chalcogramma*
Pacific cod	*Gadus macrocephalus*
Sablefish	*Anoplopoma fimbria*
Pacific pomfret	*Brama japonica*
Pacific herring	*Clupea pallasi*
Albacore	*Thunnus alalunga*
Sockeye (red) salmon	*Oncorhynchus nerka*
Coho (silver) salmon	*O. kisutch*
Chinook (king) salmon	*O. tshawytscha*
Chum (dog) salmon	*O. keta*
Pink (humpback) salmon	*O. gorbuscha*
Steelhead trout	*Salmo gairdneri*
Black rockfish	*Sebastes melanops*
Pacific Ocean perch	*S. alutus*
Eulachon	*Thaleichthys pacificus*
Sculpins	*Cottidae* (Family)
Halibut	*Hippoglossus stenolepis*
Other flatfishes	*Pleuronectidae* (Family)
Salmon shark	*Lamna ditropis*

From Selkregg (1976:134, Figure 130)

Birds*	
Arctic loon	*Gavia arctica*
Red-throated loon	*G. stellata*
Red-necked grebe	*Podiceps grisegena*
Horned grebe	*P. auritus*
Black-footed albatross	*Diomedea nigripes*
Northern fulmar	*Fulmarus glacialis*
Sooty shearwater	*Puffinus griseus*
Short-tailed shearwater	*P. tenuirostris*
Fork-tailed storm-petrel	*Oceanodroma furcata*
Leach's storm-petrel	*O. leucorhoa*
Double-crested cormorant	*Phalacrocorax auritus*
Pelagic cormorant	*P. pelagicus*
Whistling swan	*Olor columbianus*
Canada goose	*Branta canadensis*
Black brant	*B. nigricans*
Mallard	*Anas platyrhynchos*
Pintail	*A. acuta*
American wigeon	*A. americana*
Greater scaup	*Aythya marila*
Bufflehead	*Bucephala albeola*
Common goldeneye	*Bucephala clangula*
Harlequin duck	*Histrionicus histrionicus*
White-winged scoter	*Melanitta deglandi*
Surf scoter	*M. perspicata*
Red-breasted merganser	*Mergus serrator*
Bald eagle	*Haliaeetus leucocephalus*
Peregrine falcon	*Falco peregrinus*
Shorebirds	*Charadrius* spp.
	Limnodromus spp.
	Arenaria spp.
	Calidris spp.
Northern phalarope	*Lobipes lobatus*
Parasitic jaeger	*Stercorarius parasiticus*
Pomarine jaeger	*S. pomarinus*
Long-tailed jaeger	*S. longicaudus*
Glaucous-winged gull	*Larus glaucescens*
Herring gull	*L. argentatus*
Mew gull	*L. canus*
Black-legged kittiwake	*Rissa tridactyla*
Bonaparte's gull	*Larus philadelphius*
Common murre	*Uria aalge*
Thick-billed murre	*U. lomvia*
Pigeon guillemot	*Cepphus columbus*
Horned puffin	*Fratercula corniculata*
Tufted Puffin	*Lunda cirrhata*
Rhinocerous auklet	*Cerorhynca monocerata*
Cassin's auklet	*Ptychoramphus aleuticus*
Marbled murrelet	*Brachyrhamphus marmoratus*
Ancient murrelet	*Synthliboramphus antiquus*
Parakeet auklet	*Cyclorrhynchus psittacula*

*Many of these species, particularly waterfowl and shorebirds, may be found associated with fresh water.

Mammals	
Steller sea lion	*Eumetopias jubatus*
Pacific harbor seal	*Phoca vitulina richardii*
Black right whale	*Balaena glacialis*
Gray whale	*Eschtrichtius robustus*
Minke whale	*Balaenoptera acutirostrata*
Sei whale	*B. borealis*
Blue whale	*B. musculus*
Fin whale	*B. physalus*
Right whale dolphin	*Lissodelphis borealis*
Humpback whale	*Megaptera novaeangliae*
Common pilot whale	*Globicephala melaena*
Killer whale	*Orcinus orca*
Harbor porpoise	*Phocoena phocoena*
Dall porpoise	*Phocoenoides dalli*
Sea otter	*Enhydra lutra*

CHAPTER 3: HISTORICAL OVERVIEW

Regional Prehistory

The Northwest Coast culture area, extending from Northern California to Yakutat Bay at the northern end of the Alaskan panhandle, is known for art, social complexity and the presence of large villages (Matson 2009:172). The cultures of the region have been described in detail in the *Handbook of North American Indians*, Volume 7 Northwest Coast (Suttles 1990). The earliest archaeological assemblages in this region are characterized by chipped stone tools dating to around 10,000 years ago. The outer Northwest Coast was entirely ice-free and habitable 12,000 to 13,000 years ago, although the occupation of specific regions was influenced by local events (Fladmark 1982). For example, we now know that the Queen Charlotte Islands were free of ice, and that surrounding submerged lands were above sea level, at the end of the Pleistocene. This suggests that coastal migration at the end of the Pleistocene was theoretically possible (Matson 2009:172). Potter et al. (2017) have recently published a comprehensive discussion of the colonization of northern North America via interior and coastal routes. The earliest securely dated sites along the coast of southeast Alaska postdate interior sites by at least 1700 year and are limited to the southern part of the coastal corridor (ibid:51). The earliest known sites in the region are believed to coincide with a general warming trend accompanied by resultant vegetation changes, local glacial events, and receding sea levels at the close of the Pleistocene. By 17,000 years ago, sea levels in Southeast Alaska were around 100-120 m (328-394 ft.) lower than present (Dixon 2009:231; Connor and Motyka 2009:30). While most research in the region has focused on sites associated with the modern sea level and dating within the last 5,000 years, recent studies have demonstrated the potential for finding early sites on raised terraces far from the coast (Carson and Baichtal 2015). These raised terraces were once adjacent to the coast, but are now located far inland as a result of deglaciation and isostatic rebound.

The local cultural sequence is best understood in the context of studies elsewhere in southeast Alaska and adjacent British Columbia. The following discussion is largely extracted from a previous summary prepared by McMahan (2002:10-11). Stanley Davis (1990:197), who conducted large-scale excavations at the Hidden Falls site on the east side of Baranof Island, proposed the following chronological cultural sequence for the region: (1) the Paleomarine tradition, 9000-4500 BC; a transitional stage dating 4500-3000 BC; the Developmental Northwest Coast stage, divided into an early phase 3000-1000 BC, middle phase, 1000 BC – AD 1000, and late phase, AD 1000 to European contact; and the Historic period. This scheme parallels the two stage sequence developed by Knut Fladmark (1982) for the Northwest Coast Culture area, based primarily on work in British Columbia. Fladmark's model consists of (1) a Lithic Stage comprised of an Early Lithic Substage (prior to about 10,000 years ago) and a Late Lithic Substage (10,000 to 5,500 years ago), differentiated primarily by the presence of microblades in the latter; and (2) a Developmental Stage which gave rise to the indigenous Northwest Coast societies which are known ethnographically. The Developmental Stage is characterized by "increased artifact diversification, the appearance of specialized fishing and sea-mammal hunting technology, woodworking, large houses, wealth-status objects, art, and large population aggregates" (Fladmark

1982:110). More recently, broader issues of northern Northwest Coast culture history have been addressed by Kenneth Ames, Jon Erlandson, Herbert Maschner, and Madonna Moss (Ames and Maschner 1999; Erlandson and Moss 1996; Maschner 1992; Moss 1998a, 1998b, 1992, 1989; Moss and Erlandson 1998, 1995, 1992). The summaries which follow are largely derived from Madonna Moss' (1998a) recent northern Northwest Coast regional overview, which divides the prehistoric cultural sequence into three periods. The summaries also draw heavily from Stan Davis' descriptions of sites and associated industries reported in the Handbook of North American Indians (Davis 1990:197-202).

The Early Period (ca. 10,000-7,000 BP):

The earliest dated sites in southeastern Alaska include: Ground Hog Bay 2, on the point of the mainland between Icy Strait and Lynn Canal (Ackerman 1968, 1996; Ackerman et al. 1979); Hidden Falls, on the inner central coast of Baranof Island (Davis 1980, 1984, 1996b); Chuck Lake, on Heceta Island (Ackerman et al. 1986; Ackerman 1988); and Thorne River, Prince of Wales Island (Holmes and McMahan 1988; Holmes et. al. 1989). The earliest known archaeological components in the region, termed "Paleomarine tradition" by Davis (1984, 1980), are characterized by a well-developed microblade industry with wedge-shaped cores, few if any bifacial artifacts, and an economic pattern based on coastal marine subsistence (Davis 1990:197). Despite morphological variations, these earliest southeastern Alaska assemblages share attributes with similar-aged components in coastal and interior Alaska outside the region, suggesting a common origin in northeast Asia (Moss 1998a:100). Of recent interest is On-Your-Knees Cave, Prince of Wales Island, which has produced the oldest human bones from Alaska and some of the oldest in the U.S., approaching 10,000 BP (Dixon et al. 1997). Due to the paucity of northern Northwest Coast sites dating between 6500 BP and 5000 BP, the transition between the Early and Middle periods is poorly understood. Emerging data, however, suggest the continuation of a mid-Holocene microblade tradition in the absence of a ground slate industry (Moss 1998a:100).

The Middle Period (ca. 5000-1500 BP):

Moss' (1998a:100) Middle Period generally corresponds to the three-part Developmental Stage originally defined by Fladmark (1982) for the Northwest Coast, and to the Early and Middle phases of Davis (1990) Developmental Northwest Coast Stage for southeast Alaska. This period is best represented by Components II and III from the Hidden Falls site, but is also known from several large assemblages from other sites in the region. A number of sites in southeast Alaska have occupations that span both the Middle and Late periods, suggesting cultural continuity (Moss 1998a:100). A major technological change during this period was the innovation of wood stake fishing weirs for mass salmon harvest, some with dates older than 3000 years (Moss 1998a:100; Moss and Erlandson 1998). The artifact assemblage from Component II at Hidden Falls, representing the early Middle Period, includes "ground stone points, ground single-edge tools, small planing adzes, abraders, unilaterally barbed bone point fragments, labrets, beads, ribbed stone, and utilized flakes" (Davis 1990:199). There was a notable absence of bifaces, burins, flaked

stone points, and a microblade industry (Davis 1990:199). Faunal remains associated with the Component II occupation included dog, deer, sea mammals, and anadromous and marine fish (Davis 1984). Component III at Hidden Falls is representative of the later part of Moss' (1998a:101) Middle Period (*i.e.*, the Middle Phase of Davis' Developmental Northwest Coast Stage). In addition to the artifact types found in Component II, the Component III assemblage included unilaterally barbed bone points without lashing spurs or holes, gravers, bone tubes, incised bone and stone, and drilled mammal teeth (Davis 1990:200). Present in Component III were extensive shell deposits, fire hearth areas, and evidence of structures. Faunal analysis suggested a winter-spring occupation (Davis 1990:200).

The Late Period (post-1500 BP):

The Late Period (Moss 1998a:101) provides cultural continuity between the preceding Middle Period and the following historic period. It corresponds to the Late Phase of Davis' (1990:200-202) Developmental Northwest Coast Stage. The Late Period, primarily associated with Tlingit place names, is best known from de Laguna's work at *Daax Haat Kanadaa* and Old Town, and Ackerman's work at Grouse Fort (Moss 1998a:101). Moss and Erlandson (1992) have documented numerous defensive sites which date primarily from the last 1000 years, including *Noow Tlein* (Castle Hill) in Sitka. Later work at *Noow Tlein* (McMahan 2002:39-40) revealed a shell midden with dates ranging from 660-1,100 years BP. Another probable, albeit undated, late prehistoric site was discovered on a nearby spit of land in downtown Sitka that was an intertidal island prior to filling (McMahan et. al. 2013:280). The large number of sites from the Late Period suggest that "the population of the northern Northwest Coast was as large during the Late Period as at any time in prehistory (Moss 1998a:103). There is evidence that this population growth was accompanied by increased raiding and warfare that might be explained by "territorial circumscription, scalar stress, and potentially Neoglacial conditions" (Moss and Erlandson 1992), and by the introduction of the bow and arrow (Maschner 1992). Based on the excavation of eight sites on Kuiu Island, Maschner has proposed that villages did not appear until the Late Period. Davis (1990:200) associates the Late Period with a transition to larger structures believed to be an indication of winter villages, as well as defensive sites. Artifact assemblages retained many elements of the preceding period, including ground stone technology, bone technology, labrets, chisels, splitting and planing adzes, and some chipped stone (Davis 1990:200). New elements include copper tools, stone bowls and lamps, harpoons with lashing holes, the increased use of obsidian for chipped stone tools, and the introduction of drift iron for tool manufacturing during protohistoric times (Davis 1990:200).

History of Kruzof Island

The project area is within the traditional territory of the Sheey At'iká Kwáan (Sitka Tribe) of the Tlingit Indians, whose territory included most of the southwestern portion of Baranof Island as well as smaller islands off the southwest coast (Hope et al. 2003). The latter includes Kruzof

Island, the outer coast of which was the focus of the Neva Project. Goldschmidt and Haas (1946) provide details of the historic cultural use of Kruzof Island based on interviews with Tlingit elders:

> The remains of a village can still be seen at Point Brown on Kruzof Island. It was here that the kiks'adi lived at the time of the Russians first arrived. There were about four tribal houses at this place. The village was called qussa'an. Until recently a native named Sitka Charlie used Port Krestof near the site of this village. He had a garden and a smokehouse there. The smokehouse there formerly belonged to Sitka Jack, a member of the tuqnaxadi clan. This area has, however, for a long time been a game reserve; and hunting and trapping on the island has, therefore, been prohibited. Since trapping has again been permitted, the area around Port Krestof has been trapped by Dick Johnson, a Sitka native. This area has been used by other natives for hunting deer, getting fish and smoking them. The people who utilize this area also trap and hunt on Magoun Island [Statements of George Lewis, Thomas Sanders, and Andrew Hope].
>
> Shelikof Bay was once a sea otter hunting place. It was also a place where the Sitka natives obtained fur seal. Now the bay is used for trolling, for the sea otter and fur seal have both been driven away. Both natives and whites fish there. Shelikof Bay belonged to the teokwedi clan. On the north side of the bay there used to be two houses which belong to natives. From this area they used to obtain seaweed, gumboots, deer, brown bear and halibut. Now the area is used only for trolling [Statement of Thomas Sanders].
>
> On Kalinin Bay at the north end of Kruzof Island there used to be a smokehouse which belonged to a man of the tuqnaxadi clan. Angoon witnesses stated that this bay was used and owned by Angoon people during the time of the fur seal and sea otter trade. A Sitka witness stated: "I have heard that Angoon people used to come down into this area, especially Shelikof Bay, to hunt sea otter" [Statement of Thomas Sanders]. He indicated, however, that Shelikof Bay was the area they used. The Angoon people no longer make any specific claim to this area, however. Kalinin Bay is still used for drying halibut, getting seaweed and other food from the tidelands by several families from Sitka. They do not have cabins but merely use tents [Statement of George Lewis]. At Sitka Point at the south tip of Kruzof Island there is a carving commemorating the fact that a group of natives sighted land there, and establishing native ownership rights [Statement of George Lewis][Goldschmidt and Haas 1946:107].

None of the locations described by Goldschmidt and Haas are near the Neva Project area, although it seems likely that the project area would have been visited or used for hunting when sea conditions allowed. As will be described in detail later in this report, the Neva Project team discovered archaeological remains of a mid-to-late 19th century hunting camp while searching for the *Neva* survival camp. The only mention of traditional land use at this location in archival sources appears in the 1901 United States Coast Pilot (based on a 1900 survey):

> "[a place]…northward of Cape Edgecumbe, has several Indian shacks, and the Indians find a landing place for canoes behind the reef at the north point at the entrance [U.S. Coast Pilot 1901:197].

The notation does not appear in earlier or later U.S. Coast Pilots, nor is the settlement / camp mentioned in published oral histories or inventories for the Sitka region.

Known Cultural Resources on Kruzof Island[3]

The entirety of Kruzof Island, comprised of around 67 sq. miles (173.5 sq. km), has special significance to the Sitka Tribe due to the island's important role in Tlingit oral history. In particular, certain locations on the island are associated with oral history relating to the origin of shamanism. While most of Kruzof Island is classified for public use, the U.S. Forest Service recognizes the "sacred" status of the island for planning purposes. Published inventories and ethnographies (i.e., the Alaska Heritage Resources Survey database [AHRS]; Sealaska's 1975 "Native Cemetery & Historic Sites of Southeast Alaska;" Goldschmidt and Haas 1946) make no specific mention of cultural sites or activities near the project area, the exception being the U.S. Coast Pilot notation cited above. Important sites, however, are known from other locations on Kruzof Island. Most of the cultural resource inventory surveys on the island were completed by USFS archaeologists as a part of their responsibilities under Sections 106 and 110 of the National Historic Preservation Act.

At the north end of the island is Sealion Cove Village (SIT-00155), comprised of at least five house depressions (one with 16 ft. / 4.9 m walls), gardens, and numerous pitch cut trees (AHRS; Betts and Longenbaugh 1997:CBS-174). Bodega and Mourelle, aboard the Spanish ship "Sonora" (of the Second Bucareli Expedition), visited the site in 1775 and described the village as consisting of a house within a stockade. It is regarded the site of the first European contact with the Tlingit and the site of the first Spanish claim to Alaska (ibid). Also at the north end of Kruzof Island are two petroglyph sites (SIT-00037 and SIT-00045). When the sites were surveyed by the Cooperative Parks Studies Unit (CPSU) in the 1970s (Sealaska 1975:119), informants reported former villages at both locations. However, material evidence of the villages has not yet been discovered.

At the south end of Kruzof Island is a petroglyph of a stylized face (SIT-00508), reported by an informant and recorded in the AHRS by USFS archaeologists (Betts and Longenbaugh 1997:CBS-285. The face is said to be comprised of two oval circles, each with a center dot, placed horizontally and adjacent to each other ("eyes"). Two arcs ("eye brows") lie above these "eyes" and an oval ("mouth") lies below (ibid). Nearby is another recorded site, an upright 10 ft. (3.3 m) high wooden orthodox style cross (SIT-00669) recorded by USFS archaeologists in 2004. The front of the cross is said to read "LUKE YAHONAN 1901," while a smaller plaque on the back of the cross reads, "DUPLICATED 1985 FAGUEGALLI" (AHRS). An informant reported to the USFS archaeologists that Sitka art and shop teachers Frague and Galli had maintained the cross during the 1980s but had since moved from Sitka (AHRS). Another site which the AHRS records at the south end of Kruzof Island is the site of the 1837 wreck of the sailing ship *Chilkat* (SIT-00789). The following details are derived from Anichtchenko (2004:137). The Chilkat was a 58 ton Russian schooner constructed at New Archangel (Sitka) in 1833 (Tikhmenev 1978:209). Along with the *Chichagov*, in 1834 she patrolled Russian American waters to prevent illegal trading by

[3] Exact locations, available to authorized persons via the AHRS database, are omitted here to protect sensitive resources.

the English (Tikhmenev 1978:170). In 1837 the ship received new copper sheathing and false keel, new cast hooks and hinges (Arndt 2003:83). Later that year, the *Chilkat* wrecked near Sitka while under the command of Staff Captain Voronkovskii of the Corps of Naval Navigators. This resulted in the loss of the entire crew, along with her cargo of furs from the Kurile Islands and provisions being sent to the colonies from Okhotsk (Anitchenko 2004:137). No survivors were found and the circumstances of the wrecking are unknown, although fragments of the schooner are said to have washed ashore "in the neighborhood of Cape Edgecumbe" (Tikhmenev 1978:210; Anichtchenko 2004:137). The wreck is included in the U.S. Minerals Management Service database (BOEM 2019), although without locational coordinates. An approximate location was originally recorded, and served as the basis for the location reported in the AHRS. The Chilkat wreck site has particular relevance to the Neva Project due to the potential for confusing the similarly aged wreckage. In reality, the exact location of the Chilkat wreck is not known. Reports of fragments of the ship both at Cape Edgecumbe and St. Lazaria Island (AHRS), however, suggest that the wreck occurred off the south side of Kruzof Island as indicated on the AHRS. Thus, it is unlikely, that wreckage from the Chilkat would have been deposited along the outer coast north of Cape Edgecumbe.

A number of cultural sites have been reported along the more protected east side of Kruzof Island. These include a cluster of features associated with Fort Babcock, a WWII installation (SIT-00457, SIT-01025, and SIT-01026), as well as a circa 1930s-40s Conservation Corps Shelter (SIT-00499). Other sites include a prehistoric shell midden dated to around 2,500 years ago (SIT-00240), petroglyphs (SIT-00061), two undated shell middens associated with possible canoe landings (SIT-00917 and SIT-00918), a clam garden associated with culturally modified trees (SIT-00921), and a shell midden associated with gardens and culturally modified trees dated to around 680 years ago (SIT-00507). The latter may also have an historic component in that a USFS permit was issued for a school at that location during 1921-1937. Another cluster of sites along the east side include a "cup and ring" style petroglyph (SIT-00689), traditional garden areas (SIT-00640), and a modern hunting camp (SIT-00641).

Early Nineteenth Century Russian America in Global Context

Russia's venture into North America during the latter half of the 18th century is firmly interwoven with the expansion of the fur trade in a capitalist world system (Crowell 1997:5-16; Nassaney 2015:41, 64-65). Furs were more important than any other trade item in Russian economic life, and through cooperation between the Russian state and private entrepreneurs, precipitated an eastward expansion across Siberia beginning in the sixteenth century (Black 2004:5-6). Unlike the American and British strategies of trading a broad range of goods, the Russian strategy involved subjugation and the extraction of *iasak* (taxes) in the form of furs (Black 2004:6; Nassaney 2015:149). Although steeped in the tradition of a feudal system, this strategy was encouraged by the great difficulty in transporting trade goods across Siberia from distant manufacturing centers. Russia's expansion into the North Pacific and Alaska began with voyages in 1648, 1728, 1732 and 1741. With the return of Vitus Bering's surviving crew members from the Second Kamchatka Expedition in 1742, reports of furs brought about the formation of a number of small companies seeking to profit from the newly discovered riches. In July 1799, Russia's first joint stock company, the Russian-American Company (RAC), was created under imperial charter.

The joint stock company, a precursor to the modern corporation, had been conceptualized in the early 17th century in Europe and was best exemplified by the East India Company (EIC). The EIC was formed under Royal Charter and by the 18th century accounted for more than half of the world trade. The RAC, whose shareholders included Russian monarchy and nobility, monopolized the Alaska fur trade for 68 years. During that time, no more than 823 Russians were ever present in Alaska at the same time. Of those, most lived in Sitka, with Natives and Creoles comprising the bulk of the labor force. From the time of its founding, the RAC depended on a small fleet of sailing ships mostly comprised of small two-mast galiots and single-mast, single-deck sailing ships (Grinev 2018:14). Only two three-masted vessels, the SLAVA ROSSII [Glory of Russia] and FENIX (*Phoenix*) were in the service of the RAC in the 1790s, and the FENIX was lost in 1799 (Grinev 2018:14). According to Grinev (2018:15) the Russian-American Company fleet in 1800 was comprised of only six (one and two-mast) ships with a combined displacement of only 450 tons. The addition of larger three-masted vessels capable of 'round the world voyages, therefore, would have been extremely advantageous to the company. These are the circumstances under which the NEVA came into RAC service.

The launching of Russia's first 'round the world voyage by the NEVA and NEDESHZDA in 1803 coincided with the beginning of the Napoleonic Wars, which pitted the French Empire and its allies against varying coalitions of other nations led by the British Empire. In a related action, Napoleon sold Louisiana (which included much of the interior of the U.S.) to the U.S. in 1803 to help finance the wars. That same year, Lewis and Clark set out on a fact-finding mission to explore the new territory. In 1805 Austria and Russia waged war unsuccessfully against the French forces led by Napoleon. In 1812 (Sixth Coalition) the French were soundly defeated during their invasion of Russia. The War of 1812 began when the U.S. declared war against Great Britain for maritime infractions during the Sixth Coalition of the Napoleonic Wars. The unsuccessful invasion of Russia precipitated new campaigns against France and Napoleon's permanent defeat at the Battle of Waterloo in 1815. World history and political boundaries were substantially influenced by the Napoleonic Wars, making the British and Russian empires world powers. Although isolated, the Russian-American settlements felt the effects of the Napoleonic Wars through the interruption of supply lines. With the dissolution of Russia's alliance with England in 1807 came difficulties in provisioning RAC settlements by sea from Baltic ports (Black 2004:180). This did not prevent the NEVA, under Captain Hagemeister, from arriving in Sitka with supplies in 1808. Through Baranov's connections with Americans, the settlements were also re-supplied by "Bostonian" ships. There likely would have been a formal Russian-American agreement for economic cooperation had not John Jacob Astor's "Columbia River factory" been eliminated as a consequence of the War of 1812.

CHAPTER 4: HISTORY OF THE SHIP NEVA

Vessel Construction and Early History

The NEVA, originally named the THAMES, was a 372 ton frigate constructed in England in 1800 (Krusenstern 1813:3; Shalkop 1979:9; Lloyd's Register, 1801-1802, entry 51). As a result of archival research by Anichtchenko and McMahan in London in September-October 2015, we now know that the vessel was built by Peter Everitt Mestaer at his "King and Queen" shipyard in the Rotherhithe section of London, and was launched on August 6, 1800 (Figures 7 and 8). Rotherhithe, on the south side of the Thames River in East London, was known for its prominent shipyards during the 17th-19th centuries. Many of Mestaer's ships were destined for East India

Company service, although he is also known to have constructed vessels for the British Navy. The first owner of the THAMES was Robert Taylor (Taylor and Company) "of Crutched Friars, agent," London (Lloyd's Register, 1801-1802, entry 51). Records at London's Docklands Museum that relate to late 18th century slave trade list a "Robert Taylor" as being captain of two vessels and captain/owner of one vessel involved with the Caribbean slave trade during 1791 and 1793. It is probable that this was the same Robert Taylor who later owned the THAMES. Along with Mestaer, Taylor was a captain and ship owner with ties to the East India Company. Lloyd's registry of shipping indicates that the THAMES was surveyed in August 1800, and completed a voyage from London to Hamburg during 1801-1802 under Master William Linder (Lloyd's Register, 1801-1802, Entry 51).[4] At the time of the 1800 survey, the vessel details were described as: "3 masts, 2 decks; ship's extreme length 110"6, extreme breadth 28; height between decks 5'8"; 372 1/94 Burden tons; square-sterned ship with flush deck and quarter badges, no gallery, carved 'knac' (knee?). [described variously as having a single deck and two decks]; draws 16 ft. when fully loaded" [*Registry of shipping, London foreign trade,* British National Archives, (BT 107/13, p. 217-218]. A later survey described in the Registry of Shipping, London Foreign Trade (Entry 61, February 19, 1803) repeats information from the initial survey with the exception that tonnage is listed (erroneously?) as 351 62/94 and decks as "one and a half". The survey describes a figurehead as a "kind of head." Entries for other vessels describe figureheads in more detail, such as "figure of a man" or some specific animal. The absence of such language for the THAMES suggests that her figurehead might have been a stylized representation rather than a person or animal. Mestaer's slightly smaller DUFF, at 267 tons, is depicted with a figurehead of a person – possibly a woman (Figure 9). To date, the THAMES' construction plans have not been discovered, and marine historians in London are doubtful that such plans existed or have survived. Mr. Simon Stephens, curator of ship models at the British National Maritime Museum, suggested that period ship's models may be the best source for construction details. He suggested that a British Navy 1794-1796 fourteen-gun sloop, published in a catalogue of ships models by A.H. Waite (1980:165), was probably the most similar to the NEVA.

Peter Everitt Mestaer and the King and Queen Yards

Peter Everitt Mestaer (Petr Everett Mestaer), owner of the King and Queen Yards and builder of the THAMES, was from a prominent 17th-18th century London family with holdings on both sides of the River Thames. As such, London archives contain numerous documents relating to his taxes, court proceedings, probate, insurance, and electoral records, as well as parish ledgers relating to births, baptisms, death, and burial. Anichtchenko and McMahan copied a number of these type documents, including his last will and testament, while at the London Metropolitan Archives in 2015. These records, along with extensive entries with document links at Ancestry.com, enable us to construct a reasonably detailed biography for Mestaer.

[4] William Linder and William Linder, Jr. are among signatories of masters shipping to/from Hamburg in a 1799 document pertaining to police protection during offloading in London (British National Archives at Kew, Ref. HO 42/47/25. A "William Linder, master" is also listed in numerous insurance documents held by the British National Archives.

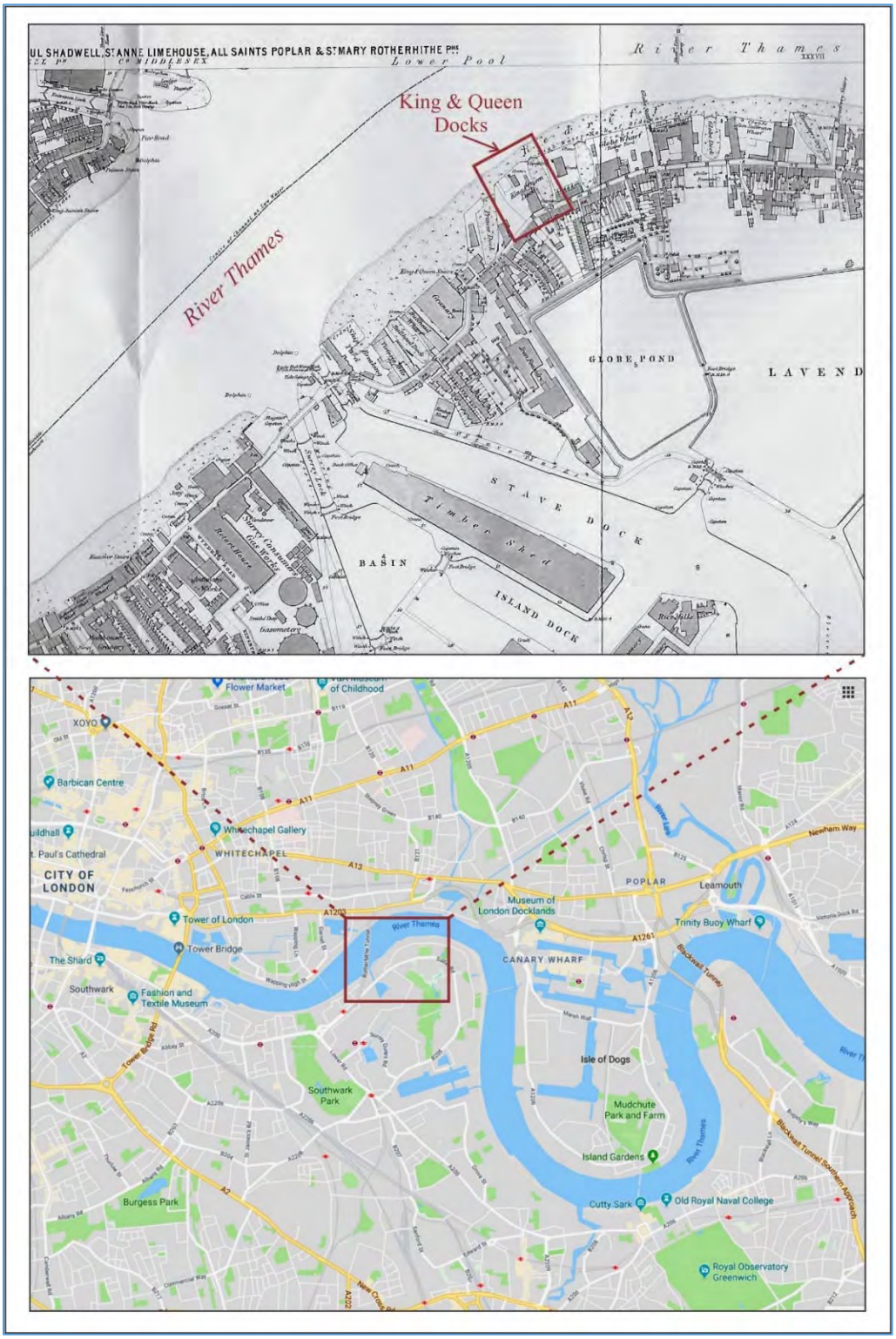


Figure 7. London maps showing the location of the King and Queen Shipyard. Top: London Ordnance Survey Map (Sheet 78), Rotherhithe 1868, Godfrey Edition reprint; Bottom: Google map showing the area covered by the top map.

Figure 8. Shipbuilding on the Thames at Redriff, 1792. Painting at the Royal Museums Greenwich, Object ID BHC1868. Mestaer's King and Queen shipyard is at the right of the frame where the moored ship is alongside.

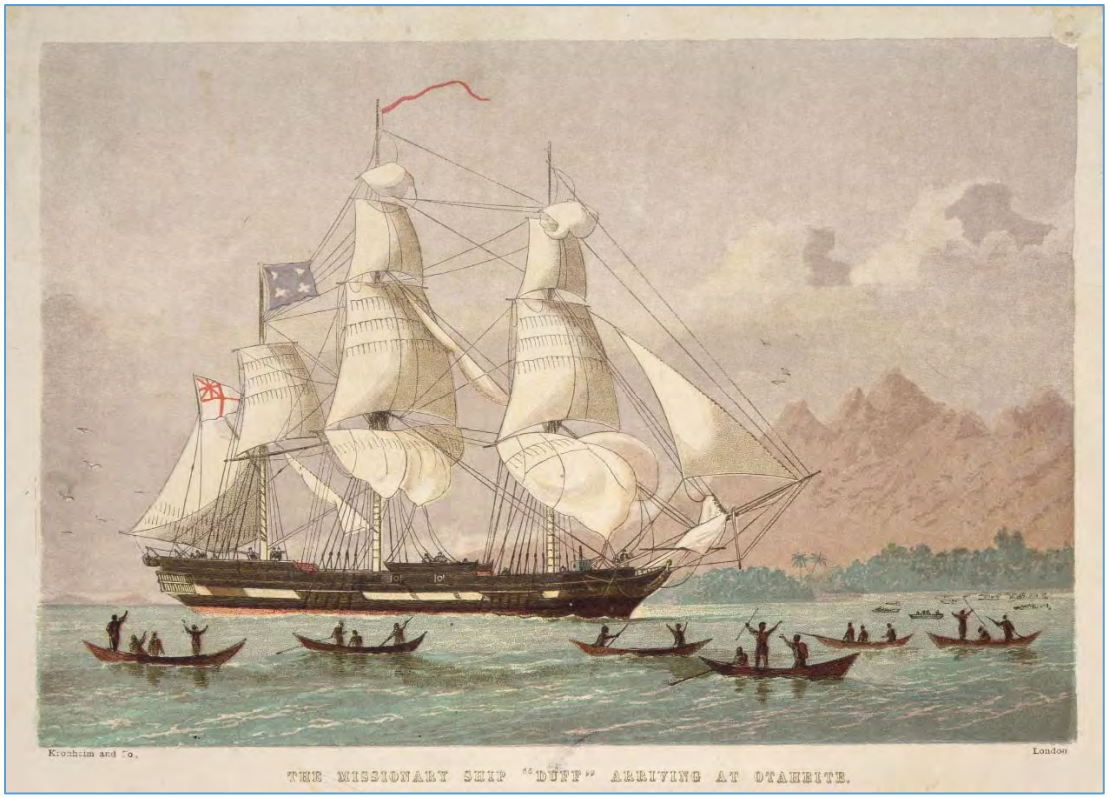


Figure 9. "The Missionary ship 'Duff' arriving (ca. 1797) at Otaheite," lithograph by Kronheim & Co, London. The DUFF, slightly smaller than the NEVA was a well-known missionary Ship built by Peter Mestaer in 1794.

Peter Mestaer, Esq.[5] was born on November 13, 1763 in the Rotherhithe section of London. It has been suggested that his family, due to the name, was of Dutch heritage (Royal Museums Greenwich, BHC1868). His baptism is recorded in the ledgers of St. Mary's Church (London Metropolitan Archives, Church of England Parish Registers, 1538-1812, Ref. No. P71/MRY/011). Mestaer attended St. Mary's his entire life. The currently standing church was built in 1714-15, but an earlier church at the same location was associated with the Pilgrim Fathers who founded the Plymouth settlement in America. Christopher Jones, the master and part owner of the MAYFLOWER (also built at Rotherhithe), is buried in St. Mary's churchyard. Peter's father, also named Peter Mestaer (1729-1791) was a wealthy shipbuilder, chandler[6] and ship owner. He married Mary Armstrong (Mary Armstrong Mestaer, b. 1744), from the Middlesex area of London, in 1760 (Ancestry.com, England, Select Marriages, 1538–1973). They had a daughter (Eleanor Everitt Mestaer), Peter's older sister, in 1761. Peter's younger brother, John Everitt Mestaer, was born in 1769 (died 1853) (Ancestry.com, England, Select Births and Christenings, 1538-1975). John eventually settled and raised a family in South Africa.

In 1778, "Peter Mestaer" is listed as a master shipwright living in the Shadwell district of East London (Ancestry.com. *UK, Register of Duties Paid for Apprentices' Indentures, 1710-1811).* The records indicate that he paid stamp duties for an apprentice, William Priddie. Peter Everitt Mestaer would have been only around 15 years old in 1778. One might speculate, contrary to the Ancestry link to Peter Everitt Mestaer, that it was Peter's father who was the master shipwright at that time. In 1788, tax records indicate that "Peter Everitt Mestaer, Esq." was the landlord of 14 properties, one of which was his home (Ancestry.com. *Surrey, England, Land Tax Records, 1780-1832*). He would have been around 25 years old at the time. A tax records for the following year, 1779, lists Peter Mestaer as a "freeholder" (i.e., a property owner). Another tax record from 1788 indicates that Peter rented property for "a yard" from "Lady Louisa" (ibid). This suggests that Mestaer's "King and Queen" yards were in operation by 1788. By 1792, his would have been one of 11 docks in the Rotherhithe Parish (British History Online, Rotherhithe Parish). The tax records for 1790 list Peter Mestaer as landlord of 11 properties, one of which was his residence (Ancestry.com, Surrey, England, Land Tax Records, 1780-1832). Another tax record from the same year indicates that Mestaer rented property from John Hyde at the "Bell Dock" (Ancestry.com, London, England, Land Tax Records, 1692-1932). This may refer to the "Execution Dock" by the Bell Inn at Wapping, across the river from Rotherhithe. The Directory of London and Westminster & Borough of Southwark (1794) does mention an instrument maker with an address at "the Bell-Dock, Wapping." The nature of the rental, whether for a business, dock usage, or residence, is not indicated. There are several tax records for the year 1790. One record simply lists Peter Mestaer as "Esq" (i.e., land owner) in the Rotherhithe District. Another lists him as the landlord of 11 properties, including his residence and a "smith's shop empty" (Ancestry.com, Surrey, England, Land Tax Records, 1780-1832). A fourth 1790 document lists "Peter Mestaer, Esq." as leasing

[5] Honorific title that is above the rank of a gentleman but lower than a knight. While commonly used by attorneys in the U.S., it does not indicate formal training in law.
[6] Dealer in ship's supplies and equipment.

"two __ __ __ over the way" in the Shadwell district [of East London] (ibid). Peter's father (Peter Mestaer Esq. Sr., b. 1729) died in 1790, with his place of residence listed as the "Wapping, London; or Carolina coffee house, London" (Ancestry.com, Wakefield's Merchant and Tradesman's General Directory for London, [1790], Wakefield, London). Probate documents list extensive holdings at the time of his death. The Carolina Coffee House, on Birchin Lane in central London's business district, specialized in trade and communications with the Carolinas and was a meeting place for businessmen with such interests. It is probable that Peter Mestaer Sr. used the coffee shop as a place of contact / mail.

Tax records for 1791 indicate that Peter Mestaer [Meastear] continued to lease property at the "Bell Dock," as well as "two houses yard __ over the way" (Ancestry.com, London, England, Land Tax Records, 1692-1932). He also is listed as a freeholder / Esq. (i.e., property owner) and landlord of 15 properties, including his own residence (Ancestry.com, Surrey, England, Land Tax Records, 1780-1832). The records for 1792-93 list similar holdings, with the notable exception that he is listed as a "licensed victualler" at Rotherhithe (Ancestry.com, Surrey, England, Licensed Victuallers, 1785-1903). These licenses were required of public house (pub) owners, confirming another vague reference that Peter became owner of a Rotherhithe pub in 1793. By 1795, tax records listed him as the landlord of 31 properties including his residence and a "house and yard" (Ancestry.com, Surrey, England, Land Tax Records, 1780-1832). The additional properties may have been partly due to inheritance from his father. In 1798, "Peter Mestaer, Esq." is listed as an agent of the East India Company with a residence at 28 New Broad Street (Ancestry.com, UK, Registers of Employees of the East India Company and the India Office, 1746-1939). Property tax records indicate that, in 1800, the year the THAMES was launched, "Peter Everitt Mestaer, Esq." was living in the Bishopsgate ward (Ancestry.com. *Surrey, England, Land Tax Records, 1780-1832*). This was London's main financial district, and Peter would have been around 37 years old. He is listed as the owner of an East India Company ship (SIR STEPHEN LUSHINGTON) in 1800 (Ancestry.com, UK, Registers of Employees of the East India Company and the India Office, 1746-1939). The following year, East India Company records list him as the managing owner of the PRINCESS CHARLOTTE (ibid). In 1802, Mestaer ran unsuccessfully for Parliament (Ancestry.com, UK, Poll Books and Electoral Registers, 1538-1893). He is also listed as an agent of the East India Company for that year. Mestaer was the victim of a well-publicized conspiracy in October of 1802, in which he received threatening letters that were investigated by the Lord Mayor (Morning Post, London, October 9, 1802). The threats were believed to have come from ship's caulkers who were unhappy because shipwrights were doing their work. Mestaer continued to be listed in tax records each year for 1804-19, including a lease from the London Dock Company (Ancestry.com, London, England, Land Tax Records, 1692-1932). In 1810, he is listed by the East India Company as the managing owner of the MONARCH (Ancestry.com, UK, Registers of Employees of the East India Company and the India Office, 1746-1939). He is listed in the 1811 London City Directory as "Mestear Peter Everett, Ship Builder, King & Queen's Dock, Rotherhithe" (Ancestry.com, UK, City and County Directories, 1766 – 1946). In 1812-14, he is

listed in the tax records under "New Broad Street" (Ancestry.com, London, England, Land Tax Records, 1692-1932).

Peter Everitt Mestaer died and was buried at "Wanstead, Essex, England" on February 13, 1819 (Ancestry.com. *England, Select Deaths and Burials, 1538-1991*; the National Archives; Kew, England; Prerogative Court of Canterbury and Related Probate Jurisdictions: Will Registers; Class: PROB 11; Piece: 1613). No cause of death is provided in the records. He would have been 55 years old if born in 1763. There is no evidence that Peter ever married, and his last will and testament divided assets among his family and friends. After Mestaer's death, the King and Queen Shipyard was taken over by William Elias Evans and used for the construction and repair of steam ships (Rotherhithe Blog 2009:12). Evans was a pioneer of the steamship industry during the 1820s-1830s. After Evans' death, the upper King and Queen Yard was renamed Prince's Dry Dock and the lower one became King and Queen Dock (ibid).

The many available records for Peter Everitt Mestaer portray a hardworking man with diverse holdings. His shipbuilding business at the King and Queen Docks was well-established, and known for building ships primarily (but not exclusively) for the East India Company during the late 18th and early 19th centuries. Some of the ships he built included the MERCURY (1779), the JUSTINIAN (1787), the DUFF (1794), the PYLADES (1794), the PRINCESS CHARLOTTE (1796), the MARTHA (1796), the NORTHAMPTON (1801), the HCS MONARCH (1801), the PRINCE OF WALES (1803), the LORD KEITH (1804), the HCS ASTELL (1809), and the HCS LADY LUSHINGTON (1809). Some of Mestaer's ships, such as the sloop PYLADES, were built for the Royal Navy. In addition to building ships, Mestaer (as an owner agent of the East India Company) also owned or co-owned a number of ships built at other yards. Some of his ships are historically well-known. For example, the DUFF is known for transporting English missionaries to Polynesia in addition to fulfilling East India Company contracts. Some of Mestaer's ships, including some that he built and some that he owned, were convict ships used to transport English prisoners to Australia. These include the PRINCE OF WALES, a well-known convict ship that was also engaged in the East India trade.

Shipbuilding at Rotherhithe suffered a sharp decline after the East India Company lost its commercial monopoly for the India trade in 1813 (Doe 2007:1). During 1803-04, 2500 ships were built in the Thames yards whereas only 250 were built in 1814 (ibid). To complicate matters, the abdication of Napoleon and end of war with the French in the spring of 1814 greatly reduced the number of naval ships being built on the Thames (ibid). To help cover his losses, Mestaer was owner of one and part owner of two British privateers that targeted American vessels during the War of 1812. These were the FORTUNE, the CLARENDON, and the SIMON TAYLOR. One of the co-owners of the SIMON TAYLOR was Robert Taylor, the first owner of the THAMES / NEVA. The actual "Letters of Marque and Reprisal" which allow the vessels to engage in privateering against American vessels are available in the British National Archives at Kew, London, and online at: https://www.1812privateers.org/GB/Reg_and_Dec.html.

Russian Voyages of the NEVA

By the time Lloyd's Register was published in June or July of 1803, the vessel formerly known as the THAMES was listed as the NEVA (Lloyd's Register, 1803-1804, Entry 289). The register further indicates that the vessel was sheathed in copper in 1803 and records a trip from London to St. Petersburg under Master "S. Bryant." Furthermore, a notation added to Entry 61 in the Registry of Shipping, London Foreign Trade, indicates that the vessel had been removed from the register on 13 May, 1803 because it had been "sold to foreigners." Historical sources, while varying in some details, have suggested that the THAMES was purchased by Russia in February 1803, along with the LEANDER (renamed NEDEZHDA), specifically for Russia's first circumnavigation of the globe (1803-1806). While negotiations probably took place during late 1802 and maybe as late as early 1803, the exact date of the purchase is unclear.[7] The London Registry of Foreign Shipping indicates that the LEANDER (NEDEZHDA) and THAMES (NEVA) were removed from the register on 4 April and 13 May, 1803, respectively, so both vessels were clearly in Russian ownership by that time. Adam Johann Ritter von Krusenstern, who lobbied for and organized the voyage, sent Yuri Fyodorovich Lisiansky to Hamburg, then London, to purchase the two vessels (Krusenstern 1813:2-3; Moessner 2003:6). It is possible that Lisiansky first became aware of the THAMES before the vessel left Hamburg in 1802, and completed the purchase in London during the spring of 1803. We now know that the THAMES was renamed NEVA before she left London and was sailed to the Port of Kronstadt with a British master and crew supplied by "the government of Great Britain," arriving safely on May 26, 1803 (Appendix 3: Russian State Historical Archives, Fond 15, opis 1, delo 1). The same set of documents includes a letter from Nikolai Rezanov dated 5/26/1803 in which he requests books from Duke Nikolai Petrovich Rumyantsev to be put aboard the two ships for the library at Kodiak (ibid). We know from Lisiansky's letter of 13 October, 1802, that the NEVA had 14 guns (believed to be 6 and 8 pounders) at the time of purchase (ibid).

At Kronstadt, Krusenstern assumed command of the NEDEZHDA while Lisiansky was made captain of the NEVA. The purchase price for the NEVA was 17,000 pounds sterling (around $27,000 in modern U.S. dollars), with another 5,000 pounds ($8,000 U.S. dollars) having been spent to repair both the NEVA and NEDEZHDA (Krusenstern 1813:3). Both vessels were similar three-masted sloop-of-war frigates, although the NEDEZHDA at 450 tons was slightly larger than the 372 ton NEVA (Moessner 1993:xiv). The NEVA is said to have carried 14 cannon (Tikhmenev 1978:71) and a crew of 50 professional sailors (Moessner 1993:xiv). Krusenstern, along with Court Chamberlain Nikolai Rezanov, led the overall expedition in 1803-1806. The NEVA and NEDEZHDA left the port of Kronstadt in June, 1803, and a year later became the first Russian ships to visit Hawaii (Lisiansky 1814:99-137). There the two vessels separated, with the NEVA traveling to Kodiak and Sitka, and the NEDEZHDA proceeding to Japan (Pierce 1990:311-313).

[7] The Russian State Historical Archive contains correspondence between Nikolai Semenovich Mordvinov, Minister of the Russian Navy and a RAC shareholder, and Yakov Ivanovich Sayanov-Smirnov, a Russian Orthodox priest in London, regarding the possibility of building or purchasing ships for Russian round-the-world voyages in London (RGIA 15-1-1, p.59). Sayanov-Smirnov contacted Harman & Co, a well-known English banking firm, for assistance (RGIA 15-1-1, p.61). The same document mentions the Randall & Brent Co.

It is for the NEVA's role in the 1804 "Battle of Sitka" that she is best known in Alaska. The battle is said to have involved at least 1,000 Russians, Aleuts, and Alutiiq peoples, as well as 500 Tlingit men, women and children. In late September, 1804, RAC General Manager Alexander Baranov joined Yuri Lisiansky on the NEVA to retake New Archangel (Sitka) from the Tlingit. Along with two smaller vessels, the CATHERINE and ALEXANDER, the NEVA was instrumental in causing withdrawal of the Tlingit from New Archangel to the Peril Straits area of Baranov Island (Lisiansky 1814:147-168). She then wintered in Kodiak, and by April had joined the NEDEZDA in China with a cargo of fur seal, beaver, and other pelts destined for Canton (Lisiansky 1814:272-273; Moessner 2003:380). Both vessels returned to Kronstadt in August, 1806. Research has turned up numerous period newspaper articles, mostly in British publications, that describe the NEVA's and NEDEZHDA's mission and ports of call during the round' the world voyage. Following his return from the 'round-the-world voyage, Lisiansky's illustrated narrative of the journey was published in Russian (St. Petersburg, 1810), German (Berlin, 1811-1812), English (London, 1814), and eventually in other languages. In 1806, the Russian naval officer Ludwig von Hagemeister was appointed to take the NEVA on its second 'round the world voyage, with the primary purpose of delivering supplies "such as anchors, guns, shells, powder, canvas, resin, food, tobacco, etc." to New Archangel (Tikhmenev 1978:108-110; Pierce 1990:185).

Correspondence between the RAC and Russian admiralty, in September and November 1806, includes a request from the RAC to the Artillery Department of the State Admiralty College for artillery for the NEVA, apparently in preparation for her second 'round-the-world voyage (Appendix 3: Russian Naval Museum, Fond 196, Part 1). The request was for six cast iron 6-pounders and four cast iron 3-pounders, along with cannon balls. The reply from the Admiralty College indicated that no cast 3-pounders were available, but that there were "copper ones on the frigate *Emmanuel*" (ibid). The same folio includes correspondence from the RAC to Deputy Minister Chevalier Pavel Vasilievich that requested "6 six-pounder cast iron guns, 3 three-pounder cast iron guns and 50 cannon balls for each of them, for fortresses in its American settlements and ships that voyage there" (ibid).

The NEVA departed Kronstadt in October 1806 and arrived at New Archangel in September 1807 (Tikhmenev 1978:108-110; Pierce 1990:185). It was during this voyage that the NEVA became the first Russian vessel to call in Australia in 1807 (Massov 2006:203-214). From New Archangel, the NEVA proceeded to Kodiak for the winter. In the spring of 1808, Baranof ordered the NEVA back to New Archangel and then to the Sandwich (Hawaiian) Islands to explore trading opportunities (Tikhmenev 1978:108-110). After a stopover at Kamchatka with a cargo of salt from the Sandwich Islands, the NEVA returned to New Archangel in the fall of 1909, and then to Kodiak for the winter (ibid; Pierce 1990:185). With a cargo of furs, she arrived back in Kamchatka at Petropavlovsk Harbor in May 1810 (Tikhmenev 1978:108-110; Pierce 1990:185). After her departure from Kronstadt in the fall of 1806, the NEVA had been in the exclusive service of the RAC (Frederick, in Shalkop 1979:7). Between May 1810 and August 1812, the NEVA was at anchor at Kamchatka, and according to a letter written by navigator Daniolo Vasil'evich Kalinin just before the final voyage, "the Neva, after standing two years in Kamchatka without any kind

of care, has begun to rot perceptibly, and I think will sail much worse than before" [Berkh, in Shalkop 1979:29]. According to Sitka historian Robert DeArmond (1946:10), the NEVA had remained at anchor in Okhotsk for a time to avoid capture while Russia supported France in a war against England.

The Final Voyage of the NEVA

Archival research has turned up little new information pertaining to the NEVA's final voyage from Okhotsk in August 1812, although correspondence in the Russian State Historical archives provides insights into plans leading up to the voyage. A letter dated May 1, 1812, from three directors of the RAC (Mikhail Fedin (?), Venedikt Kramer, and Andrei Severinov) to the Minister of Internal Affairs of the Imperial government advocates for using the NEVA to establish a settlement on Sakhalin Island (refer Appendix 3: Russian State Historical Archives, Fond 18, Opis 5, delo 1202, #137). According to the letter, the main RAC office had sent Lt. Podushkin to Okhotsk in 1811 with the task of carrying out the settlement plan. He was still in Okhotsk in May of 1812, however, because a ship of suitable size had not been available. The above-mentioned directors sent Podushkin to Petropavlovsk to sail the NEVA to Okhotsk, from whence they hoped he could gather supplies and continue to Sakhalin (ibid). The letter went on to complain about the cost of overwintering ships in Okhotsk or Kamchatka, and of lack of payment of Okhotsk government officials for services rendered by the company (ibid). A reply from the Minister of Interior, with input from the General Governor of Siberia and Committee of Ministers, on July 29, 1812, directed the RAC to <u>not</u> send the NEVA to Sakhalin and to postpone the establishment of a settlement there (refer Appendix 3: Russian State Historical Archives, Fond 18, Opis 5, delo 1202, #401). With Sakhalin out of the picture, the RAC sealed the fate of the NEVA by sending the ship on a late season resupply mission to Alaska.

Few official records of the wreck of the NEVA have been discovered, probably because the vast majority of RAC documents prior to 1818 were destroyed after the company's liquidation. The closest to an official account is a short "summary report" prepared for Chief Manager Baranov by Lieutenant Podushkin (Shalkop 1979:46-48). Also, the Russian Historical Archives contains a letter from Baranov to the main office of the RAC providing a brief notice of the wreck. Otherwise, the details of the final voyage of the NEVA are captured in only a few accounts transcribed from survivor narratives. Three accounts (Berkh, Podushkin, Golovnin) were translated from Russian to English and published by the Alaska Historical Society and Sitka Historical Society (Shalkop 1979). An English translation of a fourth account, that of Alexander Markov, was only recently published (Bland 2015:285-301) although a previous (unpublished) translation is available in the Consortium Library at the University of Alaska Anchorage (Wieler and Wieler 1979). Dates and details in the accounts do not always agree, especially between Markov and the others, but are generally consistent in the basic timeline. Markov's version is based on interviews with an unnamed survivor some 30 years after the wreck. He seems, in the author's opinion, to have exercised artistic license to sensationalize the story. The following outline is largely derived from the detailed account of Midshipman Mikhailo Il'ich Terpigorev, as originally published by Berkh

in 1817 (Shalkop 1979:19-45). Vasilii Nikolaevich Berkh, a historian of the Russian Navy, had been on the NEVA on it's first 'round the world voyage and later was a colonel in the Navy Navigator Corps (Solovjova and Vovnyanko 2002:305). The account is based on an interview with Terpigorev over a 10 day period in Berkh's home the year after the wreck, (Shalkop 1979:11). The Berkh account corresponds closely with another, much shorter, account published by Golovnin as based on the accounts of Lt. Podushkin and others who survived the wreck. Interestingly, Golovnin states his regrets that Kalinin's name is not mentioned as it should be "by the author of the journal of the ship Neva" (Shalkop 1979:51). This suggests that the NEVA's journal or ship's log might have survived the wreck, although it has not been found in archives.

We know from Berkh's account that the NEVA's planned voyage was fraught with problems even before she sailed from the Siberian port of Okhotsk on the 24th of August, 1812. Soon after departure for New Archangel, contrary winds slowed her voyage (Shalkop 1979:31). She did not pass Atka (in the Aleutian Islands) until the end of September, and strong winds prevented landings at the settlements of Unalaska and Kodiak. Finally, on November 16th she was able to enter "Resurrection Harbor" (i.e., Snug Corner Cove, north of Nuchek in Prince William Sound) for water and repairs. After a heated debate, a decision was made to sail for Sitka on November 27. After more hardships and a water shortage, early January brought clear weather, and by January 8 the NEVA was only 140 versts (93 miles) from Sitka (Shalkop 1979:33). By that evening, the shoreline and Mount Edgecumbe were within sight, and by 1 am on January 9 the ship was around 30-40 versts (20-26 miles) offshore with Mount Edgecumbe to the left (Shalkop 1979:34) (Figure 10). While clouds and rain later diminished visibility, the ship's master Mr. Kalinin had sufficient confidence in the NEVA's course that he went below decks to rest. By Terpigorev's account, at 5 am the cry went out that "the shore is under the bow" with Mount Edgecumbe to the right (Shalkop 1979:34-35). This caused Terpigorev to conclude that the man at the wheel had steered contrary to orders, and that the change in direction was compounded by the currents. The anchor was thrown out but had not been secured to the windlass. As the ship turned about, the rudder was knocked out by a rock and she went aground on submerged rocks. According to Terpigorev, "if they had delayed turning by one minute then all inevitably would have perished, because the collision would have taken place near a very high and inaccessible cliff" (Shalkop 1979:35). The ship eventually broke in half with survivors moving to the bow. By noon, the ship had been "swallowed by the waves" and survivors clung to masts and other pieces of the ship (Shalkop 1979:37).

While there is no way to know why the ship was steering contrary to orders, there is one possible explanation. Coastal navigation in the age of sail typically involved staying a safe distance offshore (generally several miles) and navigating by sighting landmarks such as prominent headlands – or in this case, Mount Edgecumbe. Navigators had a reasonably accurate formula for estimating the distance from shore so long as they could see it. During the final leg of the NEVA's journey, the Berkh account indicates that fog had moved in to obscure the shore (Shalkop 1979:34). This would have required the wheelsman to totally rely on the ship's compass,

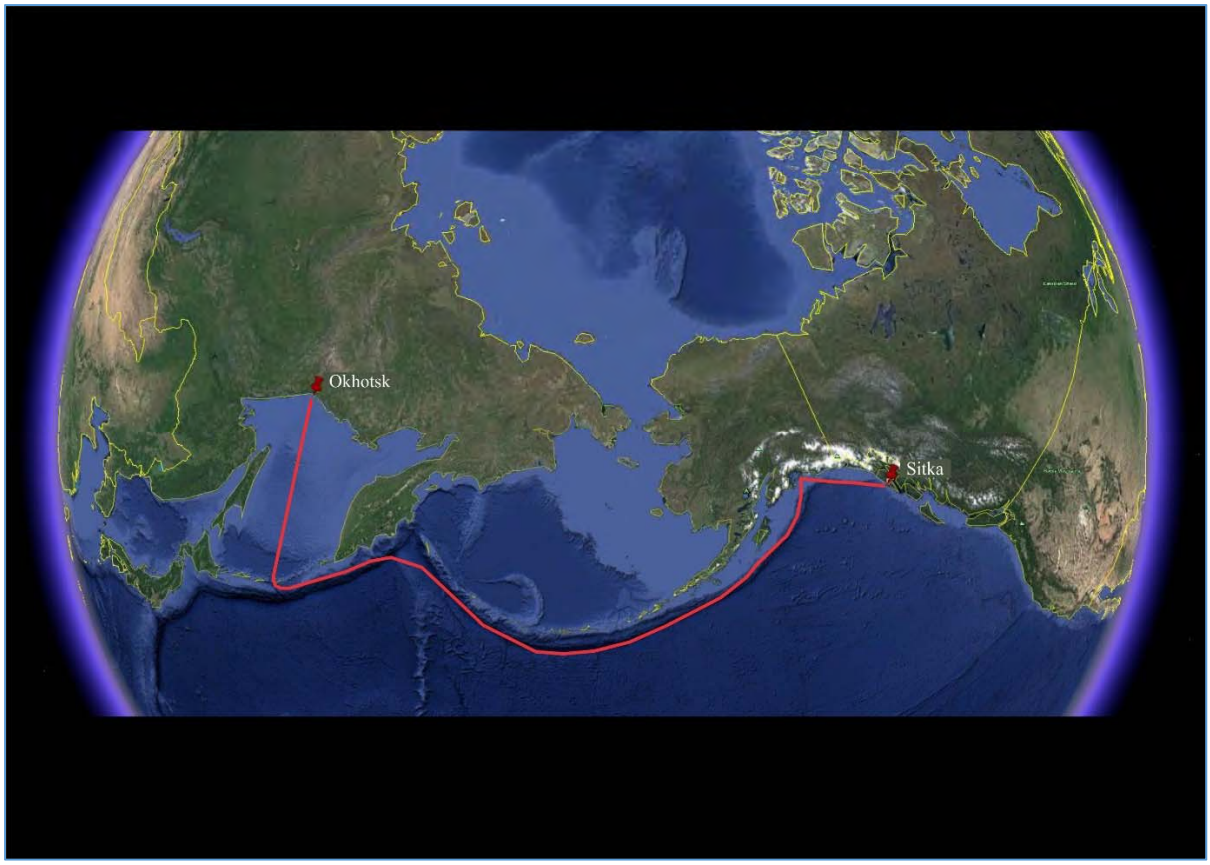


Figure 10. The final voyage of the NEVA, as planned. The actual route was erratic and meandering due to storms and unfavorable winds.

which at that time would have consisted of a dry compass with a single magnetized needle. It likely would have been more susceptible to external interference than later 19th century compasses which included liquid-filled and gyro-compasses, as well as compass binnacles with adjustable magnets or iron rods for corrections. Volcanic activities seem to have caused a very steep magnetic gradient in the vicinity of the wreck site, as inferred through attempts to use a marine magnetometer to search for wreck components (Cowals 1980; McMahan 2012:15-16). Chemical analyses of pyroclastic fallout from Mt. Edgecumbe identified up to 31% iron oxide in phenocryst samples (Riehle et. al. 1992). During scuba dives and tidelands surveys at the site, hand-held metal detectors alerted on numerous "hot rocks," i.e., rocks heavily laden with iron content. It was also noted that dive compasses sometimes fluctuated widely, presumably from substrate containing iron. This at least suggests a possibility that the rudimentary ship's compass on the NEVA was affected by local fluctuations in the magnetic gradient.

According to Lt. Podushkin's report (Shalkop 1979:46), there were 77 persons on board when the NEVA left Okhotsk (73 according to Berkh's account). Golovnin (Shalkop 1979:58) indicates that "about 15" died at sea (or 13 according to Berkh's account). About 32 drowned as a result of the wreck, and 28 made it to shore (Berkh, in Shalkop 1979:38). Of those who made it

to shore, two soon succumbed (Shalkop 1979:38)[8]. Fortunately, one of the *promyshlenniki* (fur trapper – frontiersman) was able to start a fire with a flintlock pistol, allowing the survivors to make it through the first night.[9] With strength from food items that had washed ashore, they were eventually able to construct a hut (Shalkop 1979:38). On January 24, one of two *promyshlenniki* who had been sent to explore encountered a Native boy in a kayak and was taken to New Archangel.[10] On February 2, the survivors were rescued and taken to the fort (Shalkop 1979:38), having endured January temperatures for 24 days with items either salvaged from the ship or procured from their surroundings. The recovery of cargo would have undoubtedly been attempted after the rescue, and is suggested by archaeological findings, but there is scant mention of this in the surviving archival record.

The Berkh account of the NEVA's final voyage includes a list of officers and crew (Shalkop 1979:23-24), which are mirrored in Lt. Podushkin's report (Shalkop 1979:46) and reproduced here in Table 3. The list appears to include officers and personnel considered to be noteworthy, but generally excludes the common seamen that would have manned the sails and performed routine nautical duties. Despite these shortcomings, some accounts do provide insights on crew and passenger composition. Lt. Podushkin (ibid) mentions that, in addition to named crew and passengers, there were 64 *promyshlenniki* on board. Golovnin, based on his interviews with Podushkin and other wreck survivors, indicates that in addition to those named there were 14 *raznochintsy* (commoners) and 56 *promyshlenniki* on board (Shalkop 1979:51). A footnote explains that the *raznochintsy* includes nine of those listed by name (Shilling, Nerodov, Terpigorev, Travin, Mal'tsov, Kolobov, Sorokin, Grigoriev, and Volkov) (ibid). He also mentions the four women, wives and daughters of RAC employees, that Berkh lists. The large number of *promyshlenniki* mentioned by Podushkin and Golovnin is consistent with language in the previously mentioned letter from RAC directors to the Minister of Internal Affairs of the Imperial government:

> … the crew of the ship *Neva* consists exclusively of the people, whose agreement with the company is focused exclusively on hunting, and who cannot be used for any other work other than trying to establish settlement in Sakhalin, safe and useful for both themselves and future *promyshlenniks*, because that would violate their agreements, according to which the only payment they can receive is half of the price of pelts they will manage to acquire [Appendix 3: Russian State Historical Archives, Fond 18, Opis 5, delo 1202, #137].

The number of *promyshlenniki* and commoners mentioned by Podushkin and Golovnin, combined with named crew and passengers (i.e., 85 and 90, respectively), exceed the 77 total number of

[8] Tikhmenev, in this 1861 history of the Russian-American Company (1978:148), describes "62 passengers and crew" on the NEVA, of which 37 drowned, during the final voyage.

[9] A *promyshlennik* is a professional fur hunter who enters into a formal agreement (*valovoy*) with a company to provide furs either for a half-share or an annual fee. The system lasted until 1820, with most *promyshlenniki* being peasants from northern Russia [Black and Petrov 2010:150-151].

[10] The accounts vary regarding details of the rescue. The Markov account (Bland 2015:297-301), believed to be less reliable, includes a long story about being held hostage in a Tlingit village prior to the rescue.

passengers and crew cited by Podushkin and the 73 cited by Berkh. Podushkin's figures, as captain of the NEVA, are probably the most accurate. Despite discrepancies in the exact numbers, they do provide a good general overview of crew and passenger composition. It isn't clear who was performing common seaman duties, but possibly some of the *promyshlenniki* and/or *raznochintsy*. When the NEVA set out on her 'round the world voyage, there were 28 named seamen, in addition to 21 named officers and crew (Lisiansky 1814:xxii). With a naval mission such as the first 'round the world voyage, however, the ship might have been more fully staffed than with later supply missions. Merchant ships often were staffed with as few crew as necessary in order to save on expenses and increase the bottom line. Interestingly, none of the accounts mention the presence of Creoles or Alaska Natives on board during the final voyage other than those mentioned by name in the list (i.e., the Sitka Tlingit Mal'tsov, along with the Aleut Verigina and her two daughters). Because early 19th century Russian society was very stratified in accordance with rank (Crowell 1997:18), it seems likely that Creoles and Natives would have been mentioned as a ranked group if they had been present.

Table 3. List of the Officers and Crew of the Ship NEVA [from Berkh, in Shalkop 1979:23-24].

1. **Tertii Stepanovich Bornovolokov**: Collegiate Councillor, Cavalier of the orders of St. Anna and St. Vladimir.
2. **Daniil Vasil'evich Kalinin**: *Shturman* [Navigator] of the 9th class.
3. **Iakov [Anikievich] Podushkin**: *Flota Leitenant* [Fleet Lieutenant].
4. **Mikhailo Il'ich Terpigorev**: *Gardemarin* [Midshipman].
5. **Schilling: *Podporuchik*** [Sub-Lieutenant].
6. **Mikhailo Travin**: *Uchenik moreplavania* [Apprentice Seaman].
7. **Prokofii Mal'tsov**: *Uchenik korablestroenia* [Apprentice Shipbuilder].
8. **Grigor'ev: *Botsman*** [Boatswain].
9. **Petr Kolobov**: *Prikashchik* [Supercargo].
10. **Vasilii Sorokin**: Prikashchik [Supercargo].
11. **Nerodov:** *Shturman* [Navigator] 14th class.
12. **Anna**: Nerodov's wife
13. **Anton**: Nerodov's son
14. **Brikman**: Master saddler
15. **Vaoulin**: Postmaster
16. **Volkov**: Artillerist
17. **Verigina**: *Meshchanka* [Aleut towns-woman]
18. **Aleksandra**: daughter of Verigina
19. **Maria**: daughter of Verigina
20. **Timofeev**: Mr. Bornovolokov's servant
21. **Ivan Petrov**: "The Moor"

Biographical information can be added for some of those listed in Table 3. This adds color and background to the story and sets the stage for understanding survival behavior. We know the life courses that some of the more notable survivors took after the wreck, but most faded from history. Tlingit oral history suggests that at least one survivor went to live among the Tlingit on Prince of Wales Island (Bob Sam, personal communication on 7/22/15).

Collegiate Councillor Tertii Bornovolokov was originally from the Vologda region, the son of a retired artillery officer and minor landowner (Pierce 1990:66-67). He entered military service in 1775 at the age of 11, serving both in the military and in various civil service jobs until 1812 (ibid). In his last job, from 1810 to 1812, he had served in the Ministry of Justice in St. Petersburg. With an interest in science and natural resources, and knowledge of several languages, he had studied the economics of the fur trade and had become acquainted with the directors of the RAC (ibid). The directors had appointed Bornovolokov as assistant to Alexander Baranov, chief manager of RAC colonies in America with the understanding that Bornovolokov would assume the chief manager position if Baranov decided to retire (ibid). Bornovolokov was among those who did not survive the wreck.

Daniil Kalinin, who was among the deceased, had also served as navigator on the NEVA both during the first 'round the world voyage and during the 1806-1808 voyage under Hagemeister (Lisiansky 1814:xxii; Pierce 1990:210-211). It was Kalinin who in 1805 proposed the name "Kruzof Island" in honor of Captain Yuri Lisiansky's friend, Admiral Aleksandr Kruse (1727-1799), for the place where he would later perish (Pierce 1990:210; Orth 1967:546). Kalinin had entered the Russian Navy around 1788 and served with distinction, even serving by treaty on a British flagship for a time (Pierce 1990:210-211). He had left naval service in 1808, and was living in Perm near the Ural Mountains in 1812 when the RAC director Buldakov persuaded him to sign up for another four years in America (ibid).

Russian naval officer and the last commander of the NEVA, Lt. Iakov Podushkin, had entered the naval cadet corps in 1799 at a young age (Pierce 1990:402). He served as a midshipman with distinction during 1806-1809, and participated in battles with the Turks (ibid). In 1811, he entered RAC service as a lieutenant, sailing from Kronstadt to Sitka and then Okhotsk. He returned to Sitka on the brig FINLANDIA. When back in Okhotsk, he was given the assignment of taking the NEVA to Sitka (ibid). A letter from Mr. Kalinin, written from Okhotsk to a friend just before the final voyage, adds an interesting twist to Lt. Podushkin's assignment (Shalkop 1979:27). According to the letter, Lt. Podushkin was reassigned to the FINLANDIA to replace Shturman [navigator] Vasil'ev for whom the crew refused to serve under any longer. Vasil'ev was to be given command of the NEVA, but drowned when his skiff overturned in route to his new ship. Thus, Lt. Podushkin was returned to the NEVA (ibid). Lt. Podushkin survived the wreck of the NEVA, and continued to serve the RAC with trips to the Kurile Islands, Alaska, Hawaii, and California (Pierce 1990:402). In 1818, he was on the ship commanded by Hagemeister upon which Alexander Baranov died. Lt. Podushkin retired with the rank of Captain 2nd Rank in 1823.

Mikhailo Terpigorev, whose interviews with Berkh provided details of the NEVA's final voyage, was a nephew of Collegiate Councillor Bornovolokov (Pierce 1990:506). He had graduated from the naval cadet school as a gardemarin (sublieutenant), and was accompanying his distinguished uncle to America (ibid). After the wreck, Baranov kept him in his house for three months "like his own son" (ibid). Terpigorev eventually entered the military service in the Keksholm regiment (ibid). Golovnin felt that Terpigorev was of insufficient age, rank and

experience to provide a definitive account of the final moments of the NEVA on the sea (Shalkop 1979:50-51).

Prokofii Mal'tsov, a Tlingit from Baranov Island, had been taken to St. Petersburg (presumably on the NEVA) in 1806 to pursue education (Pierce 1990:341). He was taken in by RAC director Buldakov, who enrolled him in the school of marine architecture (ibid). Mal'tsov excelled at school, and was returning to Sitka in 1812 as an apprentice shipbuilder (ibid). He perished when the NEVA wrecked on its final voyage.

There is not much personal information, even a first name, for the 35 year old boatswain Grigor'ev. Berkh's account lists him as an apprentice seaman and Podushkin refers to him as an apprentice navigator. He is mentioned several times in unflattering context in Berkh's account:

> On the *Neva* there was a boatswain, Grigor'ev, a man who had served with distinction in the fleet, and was of good behavior; but from the time of the discord that took place on the ship, he joined the opposing party and began to neglect his duty, and perhaps with intention left the cable in this condition. Probably Mr. Kalinin was deceived; probably he was told that the anchor was completely ready; otherwise it is difficult to understand that a good seaman while getting ready to enter the harbor did not remember that it was necessary to prepare the anchor. The reader will see in what followed the terrible end of this boatswain [Shalkop 1979:35].

Grigor'ev was among the 28 who made it to shore after the wreck, and later perished under "violent" circumstances which Terpigorev attributed to "bad conscience and remorse" (Shalkop 1979:12). Terpigorev blamed Grigor'ev for failing to properly secure the anchor cable to the windlass, which might have kept the ship off the rocks.[11] He describes the circumstances of Grigor'ev's death, which we would now recognize as hypothermia, in some detail:

> The boatswain Grigor'ev, whom I have mentioned, about 35 years old, suddenly went berserk, started throwing himself around and biting those who sat next to him. It was only natural that the exhausted men, who had not had the time to gather their strength, were very much stunned by this unfortunate happening, and could barely defend themselves against the raving Grigor'ev; but fortunately for them his insanity did not last long. He was in this condition only a half hour; afterwards he fell on the ground, began to scream frightfully and then gave up the ghost. If the reader will now look back, and remember my conclusion about the anchor cable, then will he not receive the same thought I had that Providence inevitably punishes the guilty? [Shalkop 1979:38].

No biographic information has been discovered for the two *Prikashchiks (*supercargos), Petr Kolobov and Vasilii Sorokin, whom Golovnin (Shalkop 1979:51) includes among the *raznochintsy* (commoners). These are the two individuals assigned by the RAC to represent the company's interests in the cargo (i.e., selling, buying, trading, etc.). The *prikashchik* is an important role, sometimes regarded second to the captain of the ship. There is no indication in the published accounts whether Kolobov and Sorokin survived the shipwreck. Likewise, there is no biographic information for Nerodov but he is mentioned by Podushkin, and several times by

[11] The Markov account indicates that the anchor hooked on something, dragged bottom, and broke loose (Bland 2015:293).

Terpigorev in the Berkh account. Podushkin mentions Nerodov (no first name given) as a navigator of the 14th class who was on board, along with his wife and son (listed by Berkh as Anna and Anton) (Shalkop 1979:46). He is listed by Golovnin as one of the *raznochintsy* (commoners) (Shalkop 1979:51 footnote). In a letter from Lt. Kalinin to a friend just before the NEVA left Okhotsk, he simply includes mention that "I and the mate Nerodov, are sailing on it to America as passengers" (Shalkop 1979:27). Other than listing Nerodov among the officers and crew, Terpigorev (in Berkh's account) mentions Nerodov only once. He writes that in the last days of December, there were only 10 people capable of performing work and "for unknown reasons Messrs. Podushkin and Nerodov also refused their duties." Not much is known of Nerodov's wife and son, Anna and Anton. It seems likely that Anton was an infant, as Markov writes of "Two infants, one the son of a navigator, the other of a steward" (Bland 2015:292).

No mention in the literature was discovered as relates to the master saddler Brikman or the postmaster Vaoulin. Leatherworking was an important industry in New Archangel, as evidenced by archaeological work at Castle Hill and Grover's subsequent analysis of shoes and other leather artifacts (McMahan 2002:146-159). If Brikman survived, his skills at New Archangel or another American settlement would have been welcomed. There is no mention of Vaoulin other than his name appearing on Berkh's list. Likewise, there is little mention of the artillerist Volkov, although Golovnin (Shalkop 1979:51, footnote) included him among the commoners. Volkov may have been the cannoneer mentioned by Markov as "a strong, big man, who was renowned among us on the ship as unusually strong" (Bland 2015:295). According to Markov's account, the cannoneer was among the survivors and one of those sent along the shore (along with the promyshlennik upon whom Markov based his account) to look for help (Bland 2015:296). Pierce (1990:532) mentions a Jose Antonio Volkov who was born in Kamchatka and served on RAC vessels. Volkov is said to have jumped ship in 1815 to become one of the first Russian settlers in California (ibid). Pierce makes no mention of the NEVA, and it is not known if this is the same Volkov who was on board during the final voyage.

Verigina and her two daughters, Aleksandra and Maria, were among the four women who were on board, the other being Nerodov's wife Anna. None of the women survived the wreck according to Berkh's account:

> On the deck of the *Neva* a long boat was tied that easily accommodated 60 men. Mr. Kalinin ordered the ropes to be lowered, and the women and the most weakened men to be seated in it with the intention of lowering it ligl1tly on the water from the inclined side of the ship, to give these helpless people the easiest means for salvation; but barely had the long boat touched the water, when a cruel wave turned it over and those who sat in it became the first victims of the wild ocean under the eyes of their comrades, who expected no better fate [Shalkop 1979:35].

Berkh's list of passengers and crew describes her as "*Meshchanka* [towns-woman] Verigina with daughters Aleksandra and Maria" (Shalkop 1979:24), while Podushkin refers to "widow Verigina, an Aleut, with two daughters" (Shalkop 1979:46). Golovnin simply refers to women on board the NEVA as "the wives and daughters of the Company employees" (Shalkop 1979:51). This suggests that Verigina had been the Aleut wife of a company employee who, perhaps, had died in Okhotsk leaving behind a widow with two (presumably Creole) daughters. Along with Malt'sov, Verigina is the only other passenger specifically mentioned as being an Alaska Native.

Not much is known of Bornovolokov's servant Timofeev, who was on Berkh's list of passengers. Lt. Podushkin's report simply mentions that those on board included the "serf of Bornovolokov" (Shalkop 1979:46). Serfdom, which required serfs to work for their landlord for a specified period of time, existed in Russia until 1861. It appears from Markov's account that Timofeev perished during the wreck:

> Near me a voice was repeated: 'Good Lord, pardon me!' I went in the direction of those words, climbed with difficulty over a hill, and what? – before me lay the governor's assistant, dripping blood that streamed from his punctured chest. There was no help for him. For the last time he opened his eyes, wanted to say something, but death locked his tongue [Bland 2015:294].

Likewise, not much is known of Ivan Petrov "the Moor," except that he was among the deceased. Berkh's account related that:

> It is known how well the Moors swim, but here even this did not help; young and of robust build, the Moor drowned, but a decrepit and enfeebled man of fifty escaped unhurt [Shalkop 1979:38].

Miracles and Legends

In keeping with the lore of the sea, stories have grown up around the NEVA and the rich cargo that some said that she carried. Newspaper accounts over the last two centuries have perpetuated these stories, melding truth with fantasy and encouraging some to look for the wreckage. Some of these stories have been related by Shalkop (1979:14-17). One story that probably follows a thread of truth involves a connection between the wreck of the NEVA and the use of salvaged materials in the construction of the iconostas at St. Michael's Cathedral in Sitka in 1816. For example, a 1932 newspaper article by Reverend Kashevaroff (Kashevaroff 1932) says that "We read in the Tikhmenef's history that the iconostas for the new church at Sitka in 1816 was made from the wood of the cabin from the Neva." Another often repeated story says that the icon of St. Michael which hangs in the church today was on the NEVA and salvaged from the shore after the wreck (Andrews 1965:41; Barry and Barry 1994:30). What we know from Tikhmenev's 1861 account is that the RAC sent a priest, Father Sokolov, to Sitka in 1816 and that with him "the board of directors sent a beautifully decorated icon of the Archangel Michael, patron saint of the colonies" (Tikhmenev 1978:146). The account goes on to indicate that soon after Father Sokolov's arrival, the existing chapel was converted into a temporary church and that the "iconostas was made from icons cast ashore from the wreck of the Neva, and, as Baranov wrote, 'the icon of Saint Michael shone among them' " (ibid). The story is repeated by Pierce (1990:476), who goes on to say that the "iconostas and other materials were brought on the KUTUZOV on 21 November 1817." It is certainly conceivable that wood salvaged from the NEVA could have been used in the construction of a temporary or permanent iconostas, as the wreck had occurred only a few years before and periodic salvage may have been ongoing. A Juneau resident, Jim Geraghty, is currently in possession of a small piece of yellow cedar said to be a piece of the NEVA (Geraghty, personal communication, 2016). Mr. Geraghty acquired the wood fragment from

USFS architect Linn Forrest, who was active with Civilian Conservation Corps projects in Southeast Alaska during the 1930s-40s. Forrest is said to have acquired the piece of wood from Benjamin Franklin Heintzlman (1888-1965), who had taken it from Saint Michaels Cathedral and sent it to USFS for species identification. Heintzlman was Governor of the Territory of Alaska from 1953-57, after a career with the USFS. The Alaska State Museum has a short cylindrical piece of yellow cedar wood, resembling a yard arm or spar segment, that exhibits a bass relieve carving of the NEVA (Figure 11). The wood is said to have come from the NEVA. The museum also has a convex piece of yellow cedar, said to have come from the NEVA's mast, with a bass relief carving of the Russian double-headed eagle. The pieces in the museum, as well as Geraghty's piece, may have all been derived from the same timber removed from church storage. According to museum records, their specimens were placed in the museum collections by the Reverend Kashevaroff, first curator of the Alaska Territorial Museum, in 1939. Yellow cedar (Chamaecyparis nootkatensis), native to the Pacific Northwest coast, was not used in the original ship's construction of the NEVA but may have been acquired in Alaska for repairs. The species extends as far north as Prince William Sound, where the NEVA took refuge during the final voyage.

Figure 11. Sections of yellow cedar resembling spar segments in the Alaska State Museum, said to be from the NEVA wreckage. Later bass relieve carvings depict the NEVA. Alaska State Libraries, Archives, and Museums; photographs by Steve Henrikson, No. ASM IIIR170 side 2, ASM IIIR170 end, and ASM IIIR250.

With more than half the U.S. coastline, Alaska abounds with tales of mystery and treasure related to shipwrecks. The wreck of the NEVA, with no official records to counter such tales, is no exception. George Kostrometinoff, the former Superintendent of Russian Churches in Alaska and one of the last surviving witnesses to the 1867 transfer ceremony in Sitka (Fairbanks Daily Times 1915), published an 1894 article in the Alaska Herald in which he related stories pertaining to the NEVA wreck. According to Kostrometinoff, two Indians came into Sitka [in 1894?] with an airtight copper tank, utensils, and oak timbers found near Mount Edgecumbe and presumably from the NEVA shipwreck (Kostrometinoff 1879-1908; Shalkop 1979:14-15). Kostrometinoff went on to describe several other stories that had been told in Sitka, including one that the ship's captain (i.e., Lieut. Podushkin, who survived the wreck) told Baranov that he "had placed the valuables saved in four barrels, interring them by a creek and near a large spruce tree, which could be identified by a notch cut in the bark" (ibid). As the story goes, the valuables were never found:

> Governor Baranoff made several attempts to discover the remains of the wreck, but never succeeded, for the survivors themselves could not exactly locate the wreck owing to fact that they had no charts. The exact spot was not known until the summer of 1867, when it was discovered by a Russian surveying party, who found a large quantity of oak timber, booms, three cannons and the foundation of the stockade. They immediately came to Sitka and reported to Prince Maksootoff, who was the governor of Alaska. The Prince sent a party out to investigate the matter, but could not find the treasure. The sand being constantly thrown up by the action of the waves has hidden the treasure and costly fixtures, comprising handsome paintings, jewels, elaborately decorated crowns, crosses, and vases of gold and silver [Kostrometinoff 1879-1908].

A similar story is told by the Reverend Kashevaroff in his 1932 article, who goes on to describe some discoveries related to the wreck:

> There is a tradition at Sitka which points to the fact that the Neva had on board a large consignment of sacred vessels made of silver and gold which was being carried for the new church at Sitka. That this treasure was ashore and that the survivors had gathered it together and buried it somewhere on the bluff just above the scene of the wreck. There is no doubt that almost all of the wreckage floated ashore. We read in the Tikhmenef's history that the iconostas for the new church at Sitka in 1816 were made from the wood of the cabin from the Neva.
>
> Many years after the wreck there were some expeditions undertaken by the Sitka people to locate this treasure, but no one, so far, has been fortunate enough to locate it. During the past summer Mr. W.R. Harlan visited the scene of the wreck. He is quite confident that he has located a cave above the high-water mark which appears to have been used as shelter by the survivors. There is all the evidence that plans were used to cover the entrance, in order to protect the people from the wind and cold. There is, also, evidence of a fire having been made inside.
>
> On the wall of the cave, facing the entrance he found marks chiseled in the solid rock. In the center there is a crown about six inches in height. On the left of the crown is a mark that looks like a shoreshoe [sic] pointing up and on the right are two horseshoes pointing down. From the study of these marks it is not clear just what they represent. Mr. Hanlan also found a portion of a Russian brass candlestick. He said that he did not dare to remain at the place very long as it is a dangerous spot at any time [Kashevaroff 1932].

Clarence Andrews, in his brief 1965 history of Sitka, also writes of the treasure but includes his own opinion regarding its validity:

> There are many traditions among the residents of Sitka concerning the wreck of the "Neva." Among them is that there was a vast treasure of gold for the use of the garrison and the traders. This is erroneous, for there was no gold used in the colonies, the trade being by barter or conducted with scrip, called *assignats*, issued by the Company for the purpose. The story of the gold has been so generally believed that serious plans have been made for attempting the salvage of the treasure [Andrews 1965:41].

Barry and Barry (1994:29-30) also mention the treasure, noting the story of a "payroll in gold" for the RAC employees. Like Andrews, they discount the story as the type of legend that grows up around shipwrecks. It is clear that tales of treasure were circulating in Sitka by 1894 when the Kostrometinoff article was published, but we may never be able to tease out all of the threads of truth around which the stories were woven. Because Tikhmenev's (1978:146) account from 1861 indicates that icons were salvaged, it seems likely that other items of value would have been recovered as well. In 1861, there likely would have been a number of folks living in Sitka that remembered the wreck and could have contributed to or vouched for Tikhmenev's account. It is certainly feasible that an 1867 surveying party discovered timbers, cannons, and evidence of a shelter (or timbers they perceived to be from a "stockade"). It is also conceivable that visitors to the wreck site might have later brought into town "an airtight copper tank [such as a map / document case], utensils, and oak timbers." We know from recent archaeological work that a Tlingit hunting camp was located very near the wreck site until at least 1900, and that those using the camp probably also conducted opportunistic salvage of the wreck site and survivor camp. By the twentieth century, it may have been difficult for the casual visitor to distinguish between early 19th century NEVA materials and later items left by hunters. Kashevaroff's story of the discovery of carvings in a cave is problematic but cannot be dismissed entirely. If the cave was just above the water in 1931 or 1932, as seems to be implied, the approximately 7 ft. (2.1 m) of uplift between 1813 and 1931 suggests that the cave would have been mostly submerged at the time of the NEVA wreck. It is unlikely that survivors would have taken shelter in a cave that was only available to them at low tide. Shallow caves near the survivor camp were scrutinized in 2012 and 2015-2016, and no evidence of carvings or artifacts was discovered.

By late 1914, the stories of treasure had caught the attention of a commercial diver from Port Townsend, Washington, who advertised his intention to "salvage" the wreck of the NEVA in a series of newspaper articles (Figure 12). Captain J.E. (Jimmie) Sayles and hard hat diver Charles F. Stagger were well known among mariners in the Pacific Northwest at that time. A series of newspaper articles during the 1914-1916 period captured at least a dozen salvage ventures, in addition to the NEVA, undertaken by Sayles and Stagger in Alaska. For example, in 1916 Stagger salvaged copper and brass from the CLARA NEVADA wreck near Haines, Alaska (Burwell nd).

Figure 12. In 1914 and 1915, a series of articles in Pacific Northwest and Alaska newspapers described plans by commercial diver Charles Stagger to salvage the NEVA. Some of the language of findings is highly questionable, and there were no follow up articles to indicate that salvage actually occurred.

The following year, he died due to equipment failure (a kinked airline) while diving on fish traps near Juneau (Alaska Daily Empire 1917). An article in the Seattle Daily Times (Dec. 16, 1914) recounted that diver C.F. Stagger had applied for a permit from the United States government to "salve treasure from the wreck of the gunboat Neva." The article includes the following background:

> An aged priest of the Russo-Greek church at Sitka told Stagger that the Neva carried nearly a quarter of million dollars in gold intended to pay salaries of Russian government officials stationed at Sitka while Alaska was under the rule of the Czar. She struck a rock and went to the bottom. The priest declared he had visited the spot where the gunboat went down and had seen the wreck lying on the bottom at a depth of not more than twelve fathoms [Seattle Daily Times, Dec. 16, 1914].

In a subsequent article, the Seattle Daily Times for February 3, 1915, reported that Stagger had discovered the NEVA wreck the previous summer and had received a permit from the "War Department" to salvage the "copper boilers," along with other brass and copper, cannons, and other items. Stagger was quoted in the article as saying that toredos (a type of mollusk that attacks wood

submerged in saltwater) had ruined the hull and that there was no possibility of getting it to the surface, but that it had kept its form (ibid). The story was picked up by other newspapers, who followed suit and added their own spin. A 1915 article in the Daily Alaska Dispatch (Juneau) reported that Stagger had received a permit to salvage "lost gold" from the NEVA (Shalkop 1979:15-16), which carried a $200,000 payroll bound for Sitka. The article went on to say that the wreck had "slid into deep water," and that recovery efforts had been abandoned by the Russian government due to "lack of a proper wrecking outfit." Numerous other articles in Pacific Northwest newspapers during 1915 recount plans by Captain J.E. Sayles and salvage diver Charles F. Stagger to salvage the NEVA, but details are sketchy and confusing. The articles are problematic in several respects. The descriptions of an intact wooden hull some 102 years after the wreck is unrealistic for the circumstances. It is clear from survivor accounts and what is known of local conditions (i.e., a very high energy coastline with rugged basaltic outcrops) that the vessel would have broken apart and become widely scattered, leaving behind only heavy items such as cannon and fittings. Also, the Seattle times article (Feb. 3, 1915) mentioned plans to "salvage the copper boilers" from the NEVA – an impossibility since a sailing ship of that era would not have had boilers for either steam power or auxiliary machinery. Finally, there is no follow up by the newspapers to suggest that any salvage was ever attempted. This is not in keeping with their other salvage efforts, which attracted media attention. Like some modern "treasure hunters," Sayles and Stagger were probably trying to entice naïve investors with improbable promises of riches.

Local infatuation with the NEVA wreck continued, and in 1966 the newsletter of the Alaska State Centennial Commission (Centennial Press 1963), reported that Sitka "skin divers" had decided to find the NEVA to commemorate the centennial of the Alaska purchase. There is no indication that anything was found. Prior to 2012, the last known major field effort to find the wreck was by the group "NevaQuest" in 1979. Led by diver Dennis Cowals, the search was guided by recent translations of the Berkh and Markov accounts (Wieler and Wieler 1979; Pierce 1983:64). The exact location of their search area is not known. Despite the use of a marine magnetometer, their effort was unsuccessful. The magnetometer is said to have encountered the same issues with iron-bearing substrate that plagued the 2012 effort (Cowals 1980).

A few NEVA "discoveries" from the recent past have added to the mystique of the wreck. An anchor currently displayed outside the Harbormaster's Office in Sitka is believed by some to have come from the NEVA. Stylistically, the anchor is of an angled crown type that is consistent with usage at the beginning of the 19th century (Stone 1993:7-10; Jobling 1983:114-115). Without association, anchors are poor indicators of the age of a ship. They often outlasted wooden ships and were traded from ship to ship for many years. According to former Sitka Historical Society Director Bob Medinger, the anchor in question was recovered from an undisclosed location around Sitka and stored in a waterfront warehouse. It was eventually dumped into the channel, later recovered for salvage and barged to Seattle, and in the 1990s was purchased by someone who returned and donated it to the City of Sitka. Because the original discovery location was never ascertained, the anchor's association with the NEVA remains a mystery. Its style, however, suggests that it was most certainly associated with a ship from Alaska's early Russian period.

Another modern mystery arose when the Sitka Historical Society received the donation of "the NEVA's bell" during late 2012. Sue Thorsen, while Museum Curator at Sitka National Historical Park (SNHP), had been contacted by Seattle's Museum of History and Industry (MOHAI) regarding a transfer of the bell to SNHP. Because the bell was not a good fit for either the MOHAI or SNHP missions, Sue helped to facilitate a transfer to the Sitka Historical Society. According to MOHAI records, the bell had been purchased from an Alaska Native by Archie Shiels, who donated it to the museum in 1966. A letter from Mr. Shiels in the MOHAI accession file states,

> "The NEVA bell came from that vessel which, as you know, was wrecked not far from Sitka. It was salvaged by one of the natives and Father Kashaverov, who knew of my interest in these things, told me of it and through him I arranged to purchase it" [Bruemmer 2012].

Archie Shiels, born in Scotland in 1878, he came to Alaska as purser on a steamship in 1893 and supervised railroad construction in Alaska until 1916 (Archives West: biographical note). In 1916, he joined the Pacific American Fisheries Company (PAC), where he served as president from 1930-1946 (ibid). He retired in 1950, and died in Bellingham in 1974 at the age of 96 (ibid). Shiels was a well-known fish buyer in Sitka and Southeast Alaska during his tenure with PAC. He also had a great interest in the history of Russian America and Alaska maritime history, having published at least 11 books and numerous papers on these topics between 1938 and 1966. His papers are housed at the Center for Pacific Northwest Studies, Western Washington University. The accession records do not indicate when Shiels acquired the bell, but it was prior to the death of Reverend Kachevaroff in April 1940.

The bronze (or brass) bell is 26 in. (66 cm) high and mounted on a stand that measures 38 in. (96.5 cm) x 15 in. (38 cm) (Figure 13). The cast yoke from which the bell is suspended is formed by the conjoined tails of two stylized dolphins whose heads rest on a wooden base. Several questions must be raised in regard to the bell's authenticity. The bell is in pristine condition to have been in a high energy beach environment, although exposure could have been limited if collected shortly after the wreck. The bell's exterior surface has obviously been refinished and coated with a clear sealant. The interior surface retains moderate corrosion that is dark in color. The wooden base appears modern and was probably added when the bell was refinished. The question remains as to whether the bell was refinished by Shiels, which seems probable, or by the person who sold it to him. The bell is lightly but sharply engraved "NEVA 1802" in unmarred Old English letters. A cursory search of museum collections and online sources has turned up no similar "dolphin" yokes from the 18th or early 19th centuries. However, a similar example (from the ATREUS) in the foyer at Lloyd's Register of Shipping, London, dates from 1951 (Figure 14). Engraving on the "NEVA" bell is much lighter than observed on other 18th-19th century ship's bells, and one also must question why "NEVA" is engraved in English rather than Cyrillic letters.

Figure 13. A bell donated to the Sitka Historical Society by Seattle's Museum of Transportation and Industry in 2012, and said to have been salvaged from the NEVA. This has not been verified by independent analysis, and some attributes appear problematic.

Figure 14. Bell from the British cargo ship, ATREUS, launched in 1951. The bell, in the foyer of Lloyd's Register of Shipping, London, is mounted in a "dolphin" stand similar to that in which the bell said to be from the NEVA is mounted.

If Reverend Kashevaroff facilitated the purchase and believed the bell to be original to the NEVA, one must wonder why he did not attempt to acquire the bell himself. He advocated for the creation of an Alaska Territorial Museum in Juneau, and was named the first curator of collections in 1919. There are presently too many unanswered questions to accept the bell as authentic, and more research is needed.

There are a few collections that do have a solid connection with the NEVA. The Alaska State Museum, in addition to the carved wooden objects described earlier, has a Russian bronze medal that was issued in connection with the NEVA's 'round the world voyage during 1803-07. The Russian Naval Museum in St. Petersburg has an identical medal, along with a few other small items (coins, medals) associated with the NEVA. For example, the displayed items include three Aleut style kayak models, presumably obtained in Alaska during the 'round the world voyage (Figure 15).

Figure 15. A small collection of NEVA-related items at the Russian Naval Museum, St. Petersburg, Russia (photo by McMahan, 2014).

CHAPTER 5: ARCHIVAL RESEARCH

Saint Petersburg, Russia (2014)

From August 30 until September 11, 2014, Anichtchenko and McMahan conducted archival research and met with colleagues in St. Petersburg, Russia. Dr. Anichtchenko, a native of St. Petersburg who is bilingual in English and Russian, made initial contacts with research institutions and coordinated all aspects of the research effort. She also remained in St. Petersburg longer (until September 21) to follow up leads and conduct additional research. The primary institutions visited were the Kunstkammer Museum of Anthropology and Ethnography, the Russian State Historical Archive (Historical Archive), the Russian State Naval Archives (Naval Archive), the Central Naval Museum, the Military Historical Artillery Museum, and marine museums at the Port of Kronstadt. McMahan also met with Heather Byrnes, U.S. Consulate, regarding potential involvement of the U.S. Department of State in future collaborations pertaining to the NEVA Project. The Russian State Historical Archive and the Russian State Naval Archive were the primary repositories examined for archival documents. Research had to be carefully coordinated due to different operating days at the two institutions, and the time required to fill document requests. Both institutions produced materials of interest in illuminating the NEVA's history prior to her last voyage, but no ship's plans or official reports relating to the wreck. The Historical Archive contains correspondence between RAC and Imperial government officials regarding the last voyage of the NEVA, and whether she would sail to Japan or Alaska. The letters also contain some insights on the composition of the NEVA's passengers (i.e., "hunters"), and her movements leading up to the voyage. Also of interest in the Historical Archives are microfilm documents that relate to planning for the 1803 'round-the-world voyage. These include correspondence relating to the purchase of the ships, general specifications, whether to commission their construction or to purchase ships already built, and the name of a contact in England. While there was a notable absence of information relating directly to the purchase of the NEVA, there are letters in the Russian Historical Archives concerning the search for a desirable ship and potential leads in London. A collection of documents by Rezanov lists the crew members of the NEVA and NADESZHDA in 1803, and a list of over 400 books sent to Kodiak on the NEVA. He also mentions a portrait of the Czar and other art that was aboard the NEVA in 1803. Importantly, a letter from Krusenstern early in the 1803 voyage describes ship's supplies, purchases, and food used during the first month. Other correspondence mentions ports of call, the repair of the NEVA's mast, scientific specimens collected during the voyage, art from China, calibration of chronometers, and a post-expedition inventory of supplies. At the Military Historical Artillery Museum numerous photos were taken of cannons, especially of the late 18th and early 19th centuries, to help compile a photographic database that might be useful in studies of Russian America.

London, UK (2015)

Anichtchenko and McMahan conducted research in London archives from around 9/30/15 – 10/9/15. Anichtchenko arrived and departed London a few days earlier. McMahan remained behind to finish loose ends with assistance from Patricia Browne. As at St. Petersburg, Dr. Anichtchenko coordinated and took the lead on archival research. As a PhD candidate at Southampton at the time, she was familiar with archives and potential sources of information in London. On 10/1/15 Anichtchenko and McMahan met with Anne Crowne, maritime historian at Lloyds Register of Shipping. Ms. Crowne helped to decipher the Lloyd's record entry system and provided some initial guidance toward prioritizing archives to be visited. Visited institutions included the National Maritime Museum's Caird Library at Geenwich, the Museum of London Docklands, the British Library, the National Archives, the City of London's Guildhall Library, and the London Metropolitan Archives. McMahan additionally subscribed to the British Library's Historic Newspapers online database, which revealed numerous entries pertaining to ports of call during the 1803-1806 round' the world voyage. The Royal Engineer's Museum and Admiralty Library, which require reservations months in advance, were unresponsive to e-mails and were not visited. In addition to archival research, Anichtchenko and McMahan met with Dr. Peter Northover regarding metallurgical analysis of sheathing samples. During the final days of London research, McMahan and Browne visited the British Museum and Museum of London to view materials pertaining to the late 18th and early 19th centuries.

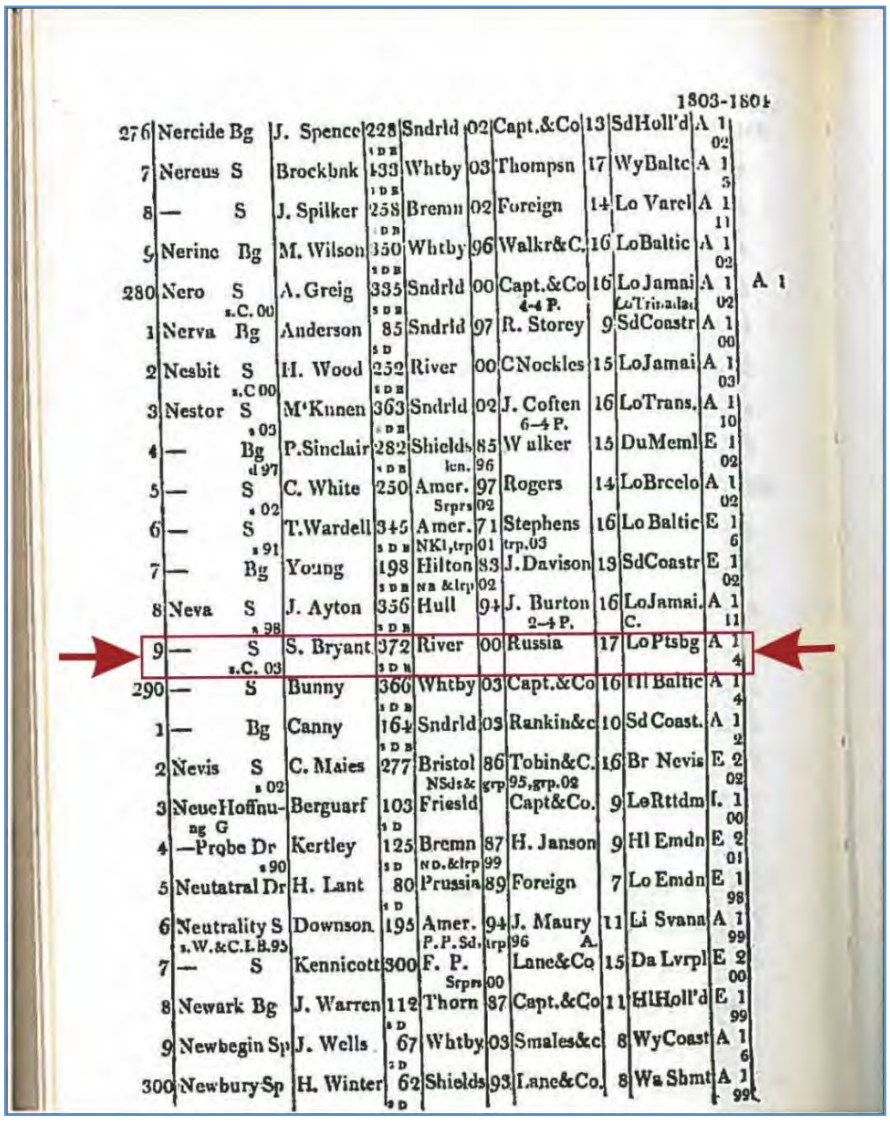
Important information on the THAMES / NEVA was found in Lloyd's Register (e.g., voyages of the THAMES, her first owner and master, tonnage, and when she was sheathed in copper) (Figure 16). The richest source of information was the Register of Foreign Shipping at the London Metropolitan Archives. Those volumes contain details of the hull based on insurance surveys (length, beam, tonnage, number of decks, etc.), as well as the builder and launch date. An interesting in the margin of Entry 61 (February 19, 1803) indicates that the "Land[?] Register, Delivered up the 13 May 1803, the vessel was sold to foreigners."[12] This is the date the NEVA left the register, but the exact purchase date is unclear. A letter from Lisiansky dated October 13, 1802, indicates that the NEVA had been purchased by that date.[13] It is possible that Lisiansky negotiated the sale in October 1802, but that it wasn't officially recorded until the spring of 1803. Correspondence from the RAC to the Tsarist government, in the Russian Historical Archive, St. Petersburg (Appendix 3: RGIA Fond 15, opis 1, delo 1), states that both the NEVA and NADEZHDA arrived in St. Petersburg on 26 May, 1803.

The London Metropolitan Archives also contains extensive records relating to the THAMES's builder, Peter Mestaer (e.g., his last will and testament, probate records, and extensive tax records). Exhibits at the Museum of London Docklands contain maps with the "King and Queen" yards (where the THAMES was built) and information on the involvement of "Robert Taylor" (probably the same Robert Taylor who was the first owner of the THAMES) in the slave

[12] A similar notation ("delivered up 4 Apr 1803") was written in the margin of Entry 23, 1803 Register of Foreign Shipping, for the LEANDER / NADEZHDA.

[13] Cited in "Issledovaniya Russkikh na Tikhom Okeane v XVIII-pervoi polovine XIX vekov," from a document in "Arkhiv Vnesheneii Politiki Rossii" (Archive of International Affairs), Moscow.

trade. The National Maritime Museum at Greenwich contains an interesting painting believed to depict a portion of the King and Queen yards (Object BHC1868) (refer Figure 8). Registers of shipwrights at the Guildhall Library contain no entries for Peter Mestaer. The Guildhall archivist indicated that listing in the register was not required for shipwrights, and that it was common for them to abstain from listing to avoid taxes. The Museum of London contains historic maps of London which depict the location of the King and Queen yards and other landmarks associated with Mestaer. Notably, no ship's plans for the THAMES were located in any of the archives. Maritime historians consulted in London were of the opinion that plans might not have ever existed, given that ships were often designed from half-hull scaled models, and suggested that period ship's models might provide a good source of information.



1803-1804

276	Nercide	Bg	J. Spence	228	Sndrld	02	Capt.&Co	13	SdHoll'd	A 1			
7	Nereus	S	Brockbnk	433	Whtby	03	Thompsn	17	WyBaltc	A 1			
8	—	S	J. Spilker	258	Bremn	02	Foreign	14	Lo Varel	A 1			
9	Nerine	Bg	M. Wilson	350	Whtby	96	Walkr&C.	16	LoBaltic	A 1			
280	Nero	S	A. Greig	335	Sndrld	00	Capt.&Co 4-4 P.	16	Lo Jamai Lo Trinidad	A 1	A 1		
1	Nerva	Bg	Anderson	85	Sndrld	97	R. Storey	9	SdConstr	A 1			
2	Nesbit	S	H. Wood	252	River	00	C Nockles	15	LoJamai	A 1			
3	Nestor	S	M'Kinnen	363	Sndrld	02	J. Coften 6-4 P.	16	LoTrans.	A 1			
4	—	Bg	P.Sinclair	282	Shields	85	W alker	15	DuMeml	E 1			
5	—	S	C. White	250	Amer. Srprs	97 02	Rogers	14	LoBrcelo	A 1			
6	—	S	T.Wardell	345	Amer. NKl,trp	71 01	Stephens trp.03	16	Lo Baltic	E 1			
7	—	Bg	Young	198	Hilton NB &trp	83 02	J. Davison	13	SdConstr	E 1			
8	Neva	S	J. Ayton	356	Hull	94	J. Burton 2-4 P.	16	LoJamai. C.	A 1			
9	—	S	S. Bryant	372	River	00	Russia	17	LoPtsbg	A 1			
290	—	S	Bunny	360	Whtby	03	Capt.&Co	16	Hl Baltic	A 1			
1	—	Bg	Canny	164	Sndrld	03	Rankin&c	10	Sd Coast.	A 1			
2	Nevis	S	C. Maies	277	Bristol NSds&	86 grp	Tobin&C. 95,grp.02	16	Br Nevis	E 2			
3	NeueHoffnung G		Berguarf	103	Friesld		Capt&Co.	9	LoRttdm	I. 1			
4	—Probe	Dr	Kertley	125	Bremn ND.&trp	87 99	H. Janson	9	Hl Emdn	E 2			
5	Neutatral	Dr	H. Lant	80	Prussia	89	Foreign	7	Lo Emdn	E 1			
6	Neutrality	S	Downson	195	Amer. P.P.Sd.	94 trp	J. Maury 96 A.	11	Li Svana	A 1			
7	—	S	Kennicott	300	F. P. Srprs	00	Lane&Co	15	Da Lvrpl	E 2			
8	Newark	Bg	J. Warren	112	Thorn	87	Capt.&Co	11	HlHoll'd	E 1			
9	Newbegin	Sp	J. Wells	67	Whtby	03	Smales&c	8	WyCoast	A 1			
300	Newbury	Sp	H. Winter	62	Shields	93	Lane&Co.	8	Wa Shmt	A 1			

Figure 16. Entry 9 from the 1803-1804 Lloyd's Register for the NEVA, with codes indicating the application of copper sheathing in 1803 and her voyage from London to St. Petersburg.

CHAPTER 6: RESULTS OF ARCHAEOLOGICAL EXCAVATIONS

Summary of 2012 Field Investigations

In June 2012, Dave McMahan (who was Alaska State Archaeologist at the time), coordinated a small multi-organizational effort to search for the NEVA wreck site (McMahan 2012a). Other participants were Jay Kinsman (Sitka District Archaeologist, USFS Tongass National Forest) and Bob Medinger (Executive Director, Sitka Historical Society) (McMahan 2012). Because the wreck was believed to be on State submerged or intertidal lands and the survivor camp on USFS lands, the project was conceived as a cooperative Federal-State survey project. From the Federal standpoint, the investigation helped to fulfill USFS inventory responsibilities under Section 110 of the National Historic Preservation Act. The Sitka Historical Society participated due to NEVA's key role in Sitka's history and the museum's mission to interpret that history to the public. The participants considered the survey effort to be worthwhile, albeit with a low probability of locating materials associated with the NEVA after 200 years (Figure 17). The June survey was followed by a marine magnetometer survey in August 2012. The National Marine Sanctuary Foundation and OHA provided modest funding and staff support. The Sitka Regional Office, Tongass National Forest (USFS), provided staff, equipment and funding for C14 dates. The Sitka Historical Society Museum (SHS) coordinated local logistics and provided office support. The NOAA Office of National Marine Sanctuaries (ONMS) served as liaison with the Foundation and coordinated with other NOAA offices.[14] ONMS also arranged for the loan of a marine magnetometer from the USS MONITOR National Marine Sanctuary, while the Office of Ocean Exploration and Research (OER) provided a staff marine archaeologist (Frank Cantelas) (Figure 18). The NOAA Office of Coast Surveys (OCS) provided scientific and historical data on past tide cycles, rates of uplift, and vessel history. This type of data, along with aerial reconnaissance and interviews with local divers, supplemented the survivor accounts, which alone did not contain sufficient information to identify the wreck site without considerable interpretation.

Prior to fieldwork, the 2012 team reviewed published survivor accounts and other records, interviewed Sitka residents and commercial divers with knowledge of the area, and reviewed existing low altitude aerial imagery to identify areas matching landforms described by survivors. This was followed up by a team overflight to identify landforms and plan for field logistics. By design, the survey was conducted on June 4-7, during the lowest tides of the year in the search area. The lowest tides on those days ranged from -2.51 to -3.35 as based on data from the Sitka station. The team was dropped off by a chartered rigid inflatable boat (RIB) in a search area that was pre-identified on the basis of preliminary research and survivor accounts as having the highest potential. It was also here that Glenn Wilber, a local abalone diver, observed a cannon consistent in size with the NEVA's naval guns (Wilber 1993:23; 2012). An intertidal survey of the high

[14] The team acknowledges the support of Dr. Brad Barr, NOAA/ONMS Senior Policy Advisor and Dr. James Delgado, NOAA/ONMS Director of Maritime Heritage for facilitating agency and foundation support. Robert Schwemmer, NOAA/ONMS West Coast Maritime Heritage Coordinator, provided the results of archival research.

Figure 17. The rugged basaltic intertidal geology in the wreck area, coupled with intense surf action over two centuries, would have destroyed all but the most durable shipwreck items cast onto the beach.

Figure 18. The August 2012 marine magnetometer survey crew. L to R: Sue Thorsen, Davey Lubin, Frank Cantelas, and Bob Medinger. Photo by D. McMahan.

energy beach yielded only a few pieces of well-worn "beach glass," some of which were inconsistent with an early 19th century timeframe. A metal detector survey of the beach and rocky crevices, likewise, did not reveal anything of interest. In general, it was considered unlikely that many NEVA artifacts would have survived the combination of crashing waves and rugged volcanic substrate unless deeply buried in fissures. A secondary target area five miles to the north was identified by a local informant, who said that a family member had observed a cannon there on an extremely low tide. However, this area was not investigated in June due to logistical constraints and landforms that were inconsistent with background research relating to the NEVA wreck site.

In the absence of intertidal discoveries during the June survey, the team turned to the uplands. On a narrow terrace ("South Terrace") predicted to be the most logical location for a survivor camp, the team conducted a metal detector survey. With the presence of significant metal detector targets, the team established a metric baseline parallel to the beach scarp by stretching a tape between two iron rebar stakes and marking intervals with chaining pins. This was used as a basis for establishing an X/Y grid for purposes of recording finds (Figure 19). Subsurface testing revealed two caches of buried Russian axe heads stacked as if they had been in crates or containers when deposited (Figure 20). One of the caches (Figure 21), contained within a large conglomerated mass, was not apparent until the mass was later dissolved via electrolytic reduction in the laboratory. During removal of the conglomerate's matrix, pockets of darker material emitted an odor characteristic of anaerobic saltwater marsh. Chloride tests confirmed the presence of salts, suggesting that the axes had been in saltwater at one time. A hearth containing a highly degraded iron spike and fragments of calcined fauna was also identified,[15] as were multiple metal detector targets that were not investigated. The axe form (shape), despite poor condition, exhibited a spike or "hook" that protrudes downward just anterior to the handle. This style evolved in Russia during the 17th century and is definitive of Russian axes, particularly during the colonial period (Viires 1969:15-17). Certainly in Alaska, axes of this style are associated exclusively with a Russian (i.e., pre-1867) context. Another apparent cultural feature at the site consisted of large, mostly buried stones that seem to have been placed as stair steps leading from the site area to an upper terrace. Recognizing the potential importance of the "South Terrace" as the location of the NEVA survivor camp, testing was suspended and no other metal detector targets were explored in 2012. McMahan donned a drysuit, mask and snorkel to examine the area of the reported cannon. This proved a futile effort, however, due to strong surf and approximately 95% coverage by kelp and eel grass.

On another terrace (the "North Terrace"), separated from the "South Terrace" by a stream and a greater distance away from the predicted wreck location, the team conducted a cursory metal detector survey. No early 19th century artifacts were discovered in this area, but the metal detector survey resulted in the recovery of several late 19th century artifacts considered to be consistent with seasonal or sporadic use of the site for hunting. These included a .45-70 brass cartridge casing (UA2012-229-0010), a machined rectangular iron bracket with two holes and an attached wire

[15] 2015-2016 investigations determined that the hearth was an intrusive mid-19th century feature.

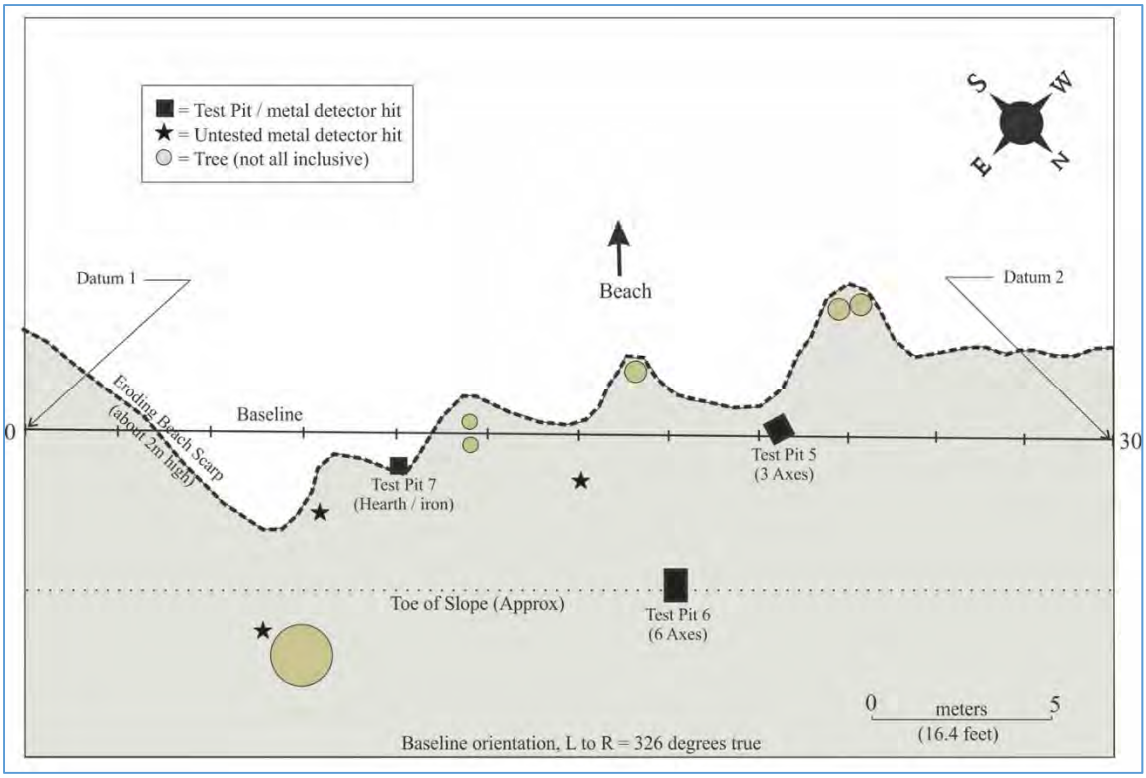


Figure 19. June 2012 field sketch depicting the locations of the baseline and test pits.

Figure 20. June 2012, Test Pit 5, showing a cache of three stacked Russian axes at the base of the sod. This was the first solid evidence of the NEVA survivor camp

Figure 21. June 2012, Test Pit 6, showing a conglomerated mass that later was determined to contain 6 Russian axes.

(UA2012-229-0011), and a globular flat-bottomed enamelware vessel with a rolled rim and bail attachment (UA2012-229-0012).

Once back in the office, work was begun on a problem-oriented research design and a National Science Foundation proposal for a comprehensive international investigation. Informal consultation was also initiated with the U.S. Department of State and with experts on maritime law (i.e., NOAA General Counsel, Ole Varmer; NOAA's chief marine archaeologist, Jim Delgado; and NPS, USFS, and State officials) regarding ownership and protocols that might affect the proposed investigation. Agency and tribal consultation under Section 106 of the National Historic Preservation Act was postponed pending the outcome of the NSF proposal, as was consultation regarding State and Federal permits. Encouraged by the June findings, more immediate plans were made for an underwater investigation via remote sensing.

In August 2012, a team comprised of Dave McMahan (team leader), Bob Medinger, Sue Thorsen, and Frank Cantelas returned to the search area with a marine magnetometer (McMahan 2012:15-18). Jay Kinsman was not able to participate due to a prior commitment. The team confined the search to the water in August (ie., State submerged lands), and did not make landfall (which would have required a permit in the absence of the USFS District Archaeologist). The survey strategy called for boat transects to run parallel to the shoreline to systematically cover the

search area. Due to heavy kelp growth in the search area, the magnetometer tow-fish was floated on the surface between two large "boat fender" type buoys. This configuration worked well to avoid kelp entanglement and had the added benefit of keeping the sensor safely above the numerous rock pinnacles in the area. Water depth in the survey area ranged roughly from 15 to 35 feet (4.5 – 10.5 m). Under normal conditions (i.e., constant magnetic gradient), the instrument would have recorded anomalies caused by large iron objects such as cannon, anchors, and rigging. However, volcanic activities near Mt. Edgecumbe seem to have resulted in pyroclastic flows that caused a very steep magnetic gradient and masked any such anomalies. Essentially, the data gathered from the magnetometer survey were unusable. The problems were determined to be localized, as the instrument operated normally at two different locations on two different days about 15 miles from Mt Edgecumbe.

As a contingency plan, McMahan inspected the area believed to have the highest potential via SCUBA survey with an underwater metal detector while Medinger followed in a dinghy for safety. Like the magnetometer, the underwater compass functioned inconsistently due to ferrous substrate. The area believed to be where Wilber observed a cannon in the 1980s is now largely covered by kelp and eel grass, providing for only about 5% visibility of the sea floor. While no shipwreck materials were discovered, the reconnaissance did identify landforms believed to warrant further inspection in a systematic manner by multiple SCUBA divers. Limited air supply and an inability to fill tanks precluded additional survey. The team traveled about five miles north for a brief reconnaissance dive in the secondary search area described above. Because only residual air from the previous dive was available, and depths exceeded estimates, only a short dive was possible. The area was characterized by pinnacles and depressions, with depths increasing quickly within a short distance of the pinnacles. No cultural materials were observed.

The convergence of several lines of circumstantial evidence, coupled with June 2012 metal detector findings, suggested that the predicted site location was accurate. The strongest evidence for the discovery of the survival camp was the discovery of two caches of "stacked" Russian axes (as having been in a container) at a location pre-identified as the most likely location for a survivor camp. Other metal detector targets at this location were recorded but not tested. Collectively, the evidence was deemed sufficient to warrant comprehensive work at the site. Data recovery at the site was also believed to be advisable from the standpoint of cultural resource management, as the terrace on which the site is located is being actively undercut and eroded.

The NSF proposal, with McMahan as Principal Investigator (PI) and Dr. Timothy (Ty) Dilliplane as Co-PI, was submitted in January of 2013 by the Sitka Historical Society. Included in the proposal were terrestrial and underwater archaeological investigations, archival research in Russia and the U.K., public outreach, and international participation by Canadians and Russians. McMahan retired from the State of Alaska in May 2013, and received informal phone notification in August that NSF intended to fund the proposal. While too late to begin work in 2013, the team began planning for fieldwork during the summers of 2014 and 2015 with the possibility of earlier archival work.

Planning, Consultation, and Permitting: 2013-2015

Once a funding scenario had been established for comprehensive work at the site, consultation was initiated under Section 106 of the National Historic Preservation Act (NHPA / Title 54 of the U.S. Code; Pub. L. No. 89-665, as amended by Pub. L. No. 96-515). Section 106 compliance is required when an "undertaking" (such as disturbance by construction or archaeological data recovery) affects federal lands, is conducted under a federal permit, or uses federal funds. A lead federal agency initiates the Section 106 process, which generally results in a Memorandum of Agreement (MOA) when activities such as ground disturbance result in an adverse effect. Key participants in this case were the NSF (lead federal agency, as per agreement with USFS), USFS (landowner), the Alaska State Historic Preservation Officer (AKSHPO), and the Sitka Tribe of Alaska (STA). The Advisory Council on Historic Preservation (ACHP), which often only participates when the other parties cannot come to an agreement, was invited but ultimately declined to participate.

Consultation proved to be more complex and time consuming than anticipated due to several tribal concerns. The USFS, as the responsible federal agency during the June 2012 survey, had determined that Section 106 consultation was not necessary because survey and minor testing on USFS lands were within the scope of their normal duties under Section 110 of the NHPA (i.e., inventory of cultural resources). Furthermore, background research had not identified any known sites or known traditional usage within the survey area. The team considered the area to have low potential for settlements due to poor access, and considered even the discovery of shipwreck materials to be a long shot. In retrospect, informal tribal consultation during the survey phase would likely have offset later issues through mutual understanding and guidance in preparing subsequent agreements. STA considers all of Kruzof Island (167 square miles / 433.7 square km) to be sacred due to its association with stories and legends important to Tlingit culture. Some of these involve the extinct volcano Mt. Edgecumbe, which is the most prominent geographic feature of the island. At the time of the 2012 survey, USFS did not feel at liberty to disclose this information (i.e., that the entire island was sacred) to the survey team because the tribe had passed along the information in confidence. Thus, the information was not available to Section 106 participants until shortly before formal consultation was initiated. The tribe had other concerns with the proposed project as well. In the background, the NEVA was/is a symbol of hostilities with Russia during the Battle of 1804. Despite a formal peace declaration with Russia at a meeting in Sitka in 2004, many in the Tlingit community still regard the NEVA as a "hated" ship. STA's more immediate and primary concern was the inclusion of a human remains component in the NSF proposal. As originally conceived, forensic dogs trained to alert on ancient burials were to be brought in to search for the graves of shipwreck victims. With support from the priest at St. Michaels Cathedral and from Russian nationals involved with the project, there were plans to try to characterize discovered remains through forensic analysis (possibly to include DNA) and to rebury them in the Russian Orthodox cemetery in Sitka. Because one of the known shipwreck victims returning from Russia was a Sitka Tlingit (apprentice shipbuilder Prokofii Mal'tsov), however, STA found the disturbance of any human remains to be unacceptable. STA was also

opposed to subsurface testing outside the terrace where historic artifacts had been discovered in 2012. For the project to go forward under mutual agreement, NSF agreed to a revised research design that eliminated the human remains and survey components. Due to changes in the research design, along with the time element of scheduling meetings and reviewing drafts among various MOA stakeholders, it was not possible to complete Section 106 consultation in time to begin work in the summer of 2014. This especially impacted Russian participants, whose visas and travel arrangements require extensive lead time. NSF kindly agreed to extend the grant a year to allow for continued consultation, with fieldwork scheduled for 2015-2016. In the interim it was possible to go forward with archival research and underwater operations, which were not covered under the MOA. In the end, the final signature on the MOA was not executed until the team had arrived on site in July 2015 (refer Appendix 1).

In addition to the MOA, an Archaeological Resources Protection Act (ARPA) permit was required for USFS lands and a State permit was required for work on State tidelands and submerged lands (refer Appendix 1). The ARPA permit (SIT699 / 620935010602) for the initiation of fieldwork was issued on July 6, 2015. Because the permit was issued for only one year, a separate ARPA permit (SIT712 / 620935010602) was issued on June 20, 2016, for the 2016 field season. In addition to archaeological excavations, the ARPA permits included provisions for a field camp, toilets, and filming. The 2016 ARPA permit additionally included a provision for drone use on the site. The State permit (2014-02) was issued by the Alaska DNR Office of History and Archaeology on March 14, 2014. It was amended on March 18, 2015, to extend the expiration date to December 31, 2016. The State permit covered dive operations, marine remote sensing, and pedestrian survey of State tidelands (i.e., any investigation below mean high tide).

Field and Laboratory Methods: 2015-2016

Field objectives and methodologies followed those described in the project's research design as appended to the NSF proposal, agency permit applications, and the MOA (refer Appendix 1). The 2012 baseline was re-established by re-stretching a 50 m tape between markers that had been left at either end (refer Figure 19). From the baseline, an X/Y/Z coordinate system was re-established via the use of a total station and tapes. The site area and surrounding landforms, including terraces and the adjacent beach, were topographically mapped by total station (Figure 22). This included an elevational cross-section from the lower intertidal zone to the upper terrace (Figure 23). In 2016, the site area was also mapped by the use of a drone, courtesy of Sean Adams ("3 Points in Space Media LLC," Vancouver) and Ryan Marlow ("Alaska Aerial Media," Anchorage). Multiple flights were undertaken at altitudes between 300 and 400 feet (91-122m). Over 1100 photos were logged, as well as high resolution video. A handheld drone was used to also gather georeferenced photos of excavation units during the course of the project. Photos from both the aerial and the handheld missions were used to build 3d models. Total station points and drone imagery were geo-referenced, along with side scan sonar and bathymetric data.

Experienced archaeological cartographers John Pollack and Sean Adams (Institute of Nautical Archaeology) oversaw all aspects of mapping, allowing archaeologists to focus on other

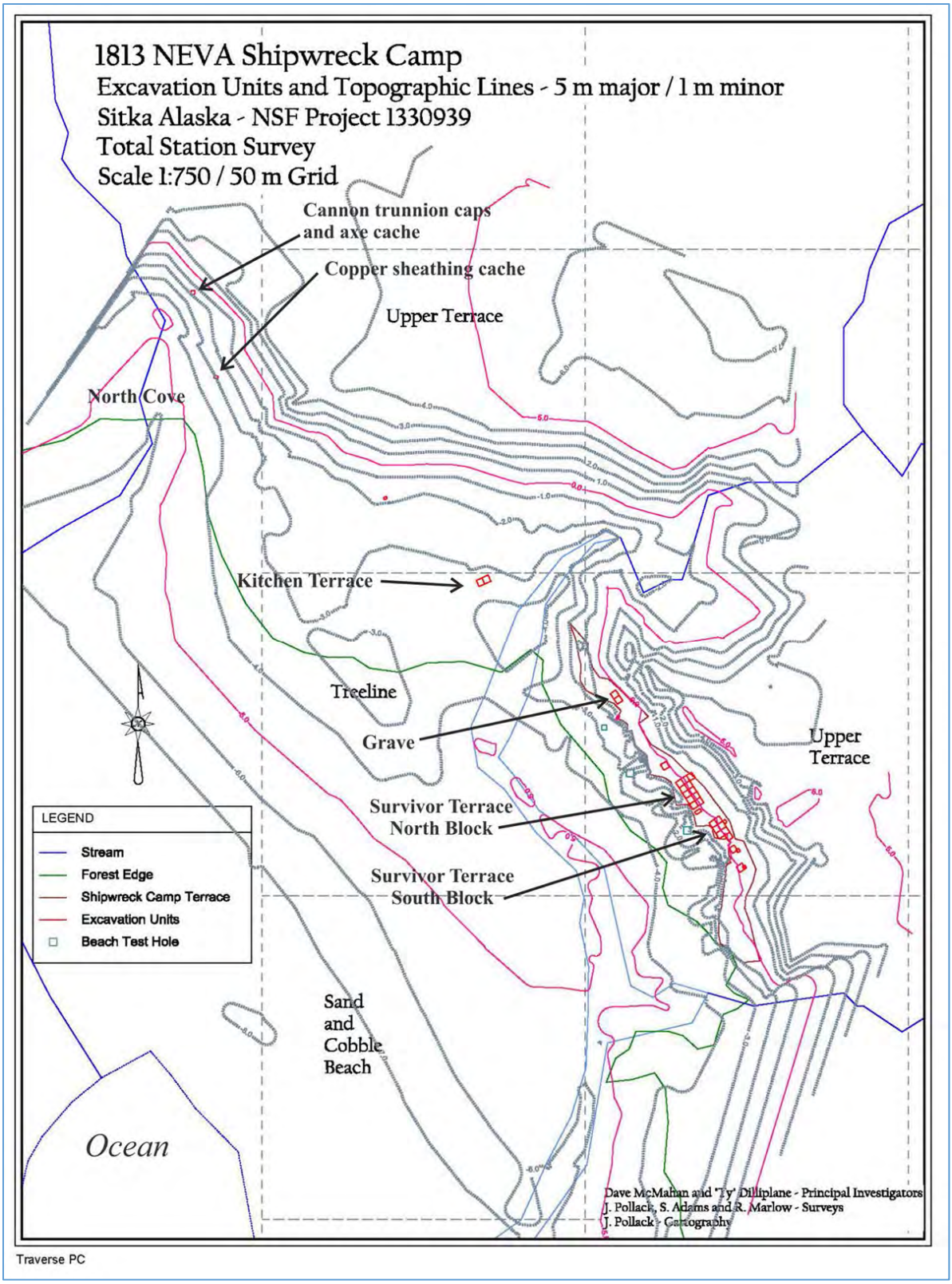


Figure 22. Topographic map of the project area with locations of principle excavation units at 1:750,000 scale. Survey and cartography by John Pollack.

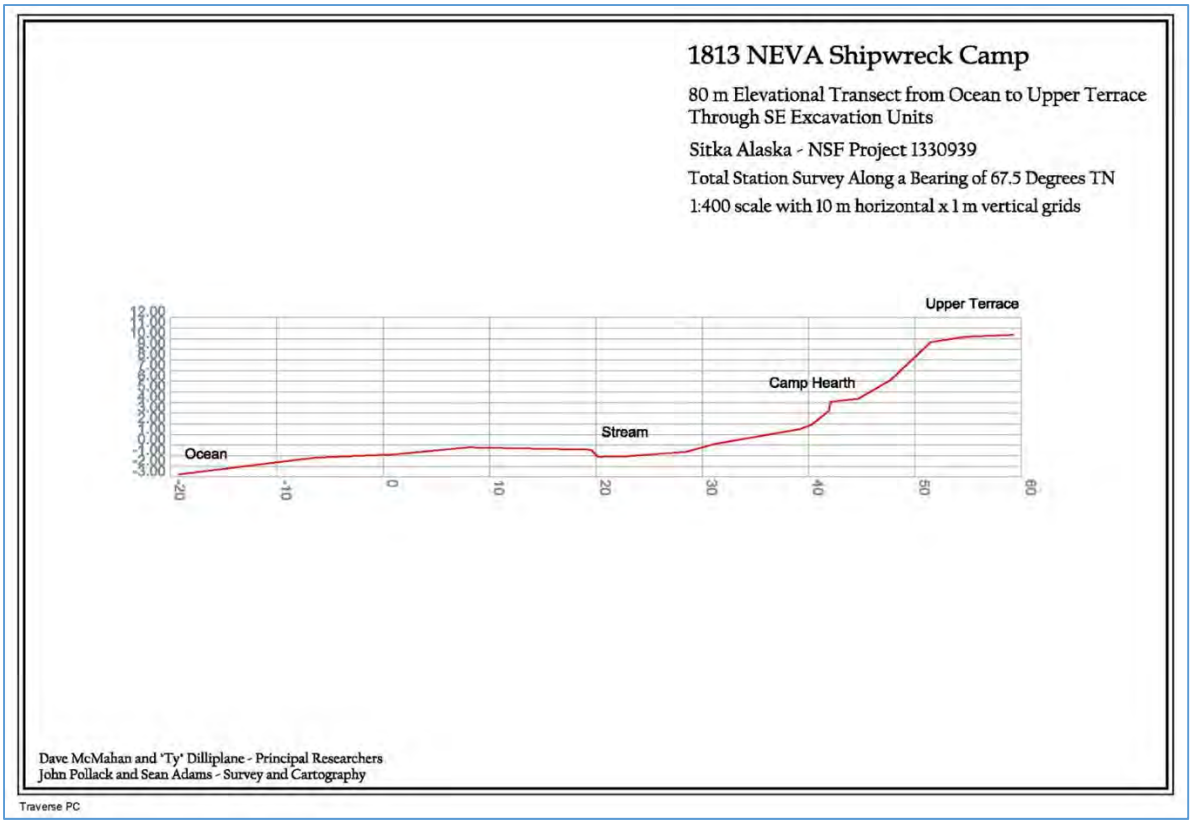


Figure 23. Elevational cross-section through the survivor camp area, extending from the beach to the upper terrace. Survey and cartography by John Pollack.

aspects of the investigation. Excavations were carried out through the implementation of block excavations, as well as 50cm x 50cm test pits. To the extent possible, each exposed artifact was assigned an X/Y coordinate and depth below surface (BS). Due to the shallow nature of the deposits, a "below datum" designation was not assigned. However, all notable artifacts were recorded in three dimensions via total station. All soil from excavation units was screened through ¼ inch mesh. The damp or muddy soil did not allow for the use of a smaller mesh size, but soil samples from hearths were collected for flotation or screening through 500 micron mesh. Artifacts and fauna from the screens were placed in unit / level bags. At the end of each day, the bagged artifacts were placed in larger bags for each day's collection and secured in a rigid plastic chest in camp.

Metal detectors were indispensable for determining test pit locations, and two different models and coil sizes were used. A Fisher CZ-21 was the primary instrument due to its sensitivity and depth penetration. A Whites M6 was used in conjunction with the Fisher to help determine the nature and composition of targets (i.e., ferrous, non-ferrous, large, small, etc.). The metal detector survey was done systematically by dividing the site area into manageable sections. Every metal detector target was assigned an identifying number and entered into a log. All locations were recorded by total station, and some were also assigned X/Y grid coordinates. The Whites M6 was fitted with a small coil to routinely check units during the course of excavation. Back dirt piles

were also routinely examined by metal detector to check for artifacts that had fallen through the ¼ inch screens. Small lead shot and other finds were recovered in this manner. A systematic metal detector survey was also conducted in the beach fringe at the base of the terrace scarp. Daniel Thompson, with a high level of experience in archaeological metal detecting, oversaw the metal detector program.

Each participant kept a field notebook with details of the daily activities in which they were involved. Details of excavation were kept in field notebooks, while stratigraphic profiles and block excavation plan drawings were done in a larger format cross-section notebook. These were later drafted and digitized. A dedicated project camera was used to record ongoing excavations, notable artifacts, stratigraphic profiles, and features. Additionally, project videographer / photographer Gleb Mikhalev conducted interviews with participants and routinely captured video and photos of progress each day.

The Alaska Office of History and Archaeology (OHA) kindly allowed preliminary unpacking and sorting of artifacts to take place in the OHA laboratory in Anchorage. OHA also allowed for the use of the facility, which has a fume hood and specialized lab equipment, for electrolysis of select iron artifacts. Flotation of soil samples was also conducted in the OHA laboratory. The NEVA Project PI contracted with Molly Conly, current President of Museums Alaska, to catalog the collection and prepare archival containers suitable for permanent curation. Molly worked on the collection at home, retrieving small portions at a time from the lab after her normal work hours. Molly entered catalogs for 2012, 2015, and 2016 into Excel spreadsheets that were later expanded upon by Daniel Thompson during artifact analysis. Upon completion of cataloging, the collection was moved to a secured area within the archaeology laboratory at the University of Alaska, Anchorage (UAA), courtesy of faculty members Dr. Diane Hanson (Chair), Dr. Ryan Harrod, and Margan Grover. Dr. Harrod facilitated the use of the Anthropology Laboratory for Cultural and Environmental Scanning (ALCES), where UAA ALCES associate Ted Parsons scanned some of the significant NEVA artifacts and developed 3D digital models. Sean Adams (3 Points in Space Media LLC) assisted with initial scanning and the later development of 3D models. Dan Thompson, with regular access to the UAA Lab, conducted formal analysis of the artifacts and did the final preparation for permanent curation. Photography was accomplished by McMahan (in the OHA laboratory) and by Thompson (in the UAA Laboratory).

Soil samples from excavation units were dried in the laboratory. Some samples were floated, while others were water-screened with the light/heavy fractions screened through a 500 micron geological sieve to extract fauna and carbonized plant materials). McMahan has conducted microscopic analysis of some specimens (for example, a carbonized grass sample associated with gunflint micro-flakes). For the most part, light fractions were comprised only of materials that occur naturally in forest soils (i.e., rootlets, etc.). Heavy fractions did yield some micro-flakes from gunflints that were probably the result of fire starting. Dendro samples, comprised of increment borer cores, were glued into grooves cut into cedar boards. The boards and imbedded cores were then sanded flat, and rings were counted under a stereo-microscope (Figure 24).

Figure 24. Prepared dendro cores from the North Cove supra-tidal slopes.

In September 2016, a number of iron concretions were subjected to radiography by the Texas A&M Conservation Research Laboratory through the courtesy of Lab Manager Jim Jobling. The lab findings and radiographic images are included in Appendix 4. Based on radiography, some of the concretions were subjected to mechanical and electrolytic cleaning to expose the artifacts within. The Texas A&M Conservation Research Laboratory also conserved two cannon trunnion caps that were discovered during the NEVA investigation in 2016. The items, which were corroded together, were deemed too challenging for in-house conservation by the project team.

Metallurgical analysis was conducted by Dr. Peter Northover (Research Laboratory for Archaeological Research and the History of Art, University of Oxford) and Dr. Kory Cooper (Department of Anthropology and School of Materials Engineering, Purdue University). A single sheet copper sample was initially sent to Dr. Northover for chemical analysis in 2015, but the results were not conclusive. Additional sheet copper samples were sent in 2016, with findings consistent with the time frame of the NEVA. In an attempt to establish a better chronological baseline for Russian copper (which was also exported to Great Britain), Dr. Northover undertook an ancillary project to analyze dated Russian copper coins spanning the late 18th to mid-19th centuries. This may benefit not only our interpretation of the NEVA artifacts, but may contribute to our understanding of collections from other Russian colonial sites in Alaska. Dr. Cooper and his students analyzed additional copper sheathing samples, as well as some other notable artifacts (marine compass, scabbard tip, lead shot). All metallography reports are included in Appendix 5. Faunal analysis was conducted by Dr. Megan Partlow (Central Washington University) in 2015 and 2016 (refer Appendix 2). McMahan transported the collection to the University of Alaska Museum of the North (UAM) in May 2018, along with field notes and other paper documents. Two portable hard drives with NEVA Project digital data were deposited at UAM in January 2019.

2015-2016 Field Investigations

Overview and Limitations:

The 2015 investigation was fraught with problems, but none that were insurmountable. At the time of helicopter deployment to the site in July 2015, a large whale carcass on the beach near the site had attracted numerous brown bears. Safety plans were in place (i.e., electric fences, bear spray, noise makers, and firearms), but wildlife safety quickly became more important than originally predicted. The electric bear fences served their purpose, although bears tried unsuccessfully to get through on several occasions. It was necessary to spray only one "adolescent" bear that approached while the fences were being set up, and the bears and archaeologists learned to cautiously tolerate each other for the duration of fieldwork. Frequent rain during the 2015 season required that the entire work area be tarped. The use of white tarps helped with natural light reflection, but visibility was still limited by the tree canopy. A lack of light required that a generator and floodlight be used during the drawing of some profiles. Because the sleeping and latrine areas were on a higher terrace, the path up the slope soon became muddy and hazardous. Constant dampness was overcome by using a portable yurt and wood stove provided by NSF (Figure 25). The challenge was to find dry wood on the beach.

The 2016 season was almost completely without rain, a pleasant break from the previous year. As originally proposed, the second field season was to be reduced in scope. Due to ongoing erosion and the complexity of finings in 2015, however, NSF agreed to support another field season of similar scope and scale. Initial mobilization and demobilization in 2016 was again by helicopter. Resupply by boat continued to be an issue, but not as severe as the previous year. When a high-pressure hose ruptured on the dive compressor, it was not possible to obtain a specialty replacement hose within a reasonable time frame. When the part finally did arrive, it was the wrong hose. Once the few filled tanks were used, the lack of refills affectively shut down diving at the site.

Resupply was an issue, particularly in 2015. While helicopter time was budgeted for initial deployment and demobilization, the crew depended on boats for resupply. Sometimes, weather would prevent boat traffic around Cape Edgecumbe for several days at a time. This became an issue, particularly when one of the Russian scientists had to make it back to Sitka to meet complicated travel itineraries. Food never ran out, but shortages occasionally mandated an unplanned reliance on ramen noodles until a boat could get around the cape.

Survivor Terrace Investigations: 2015-2016:

Seventeen one-meter-square excavation units were opened in the area believed to have been the survivor camp in 2015, followed by five additional units in 2016 (Figure 26). Most of the excavation units were in two blocks of contiguous units termed "North Block" and "South Block." The North Block, comprised of 11 contiguous units, was the first to be excavated and is believed to provide the purest representation of survivor activities. The 2015 North Block consisted of a 4

Figure 25. The archaeology lab and archaeologists' camp kitchen area at 49-SIT-963.

m x 2 m (13 x 6.5 ft.) area comprised of nine contiguous one-meter-square units: N114E100, N114E101, N115E100, N115E101, N116E100, N116E101, N117E100, N117E101, and N118E100 (Figure 27). Two additional contiguous units (N118E100, N118E101, and N118E102) were added in 2016, along with two nearby non-contiguous units. Artifacts consistent with an early 19th century time frame were recovered from within an undulating sand layer 15-50cm (6-20 in.) below surface (Figure 28, level c). This layer is interpreted as a now uplifted supra-tidal sandy beach deposit upon which the 1813 survivors established their camp. Contained within this buried beach deposit were charcoal stringers (lenses) ranging from around 1-10cm (0.4-4 in.) in thickness (Figure 28, level d). The charcoal stringers are believed to have been created from the turbation of fire pit deposits during survivor occupancy or shortly thereafter. In plan view (refer Figure 27, gray shaded areas), the stringers show up as areas of charcoal intermixed with calcined faunal remains, ash, and cultural materials (i.e., hearth deposits). At least two stone features appear to have been associated with the hearth deposits. In the northwest corner of the North Block (in unit N118E100) is a stone pile similar to features found in the South Block. The feature was intermixed with charcoal, and at least one stone showed evidence of fire-cracking. Another, apparently dispersed, stone concentration was discovered in the adjacent unit to the east (unit N118E101). A logical interpretation for the stone piles is that they were anchors for a sailcloth shelter. The Markov account (Bland 2015:296) mentions "having collected sailcloth, canvas, and fabric fragmented by the wind and waves" with which tents were constructed. The Berkh account (Shalkopp 1979:38) simply says that "they built a hut out of various fragments [that washed up on

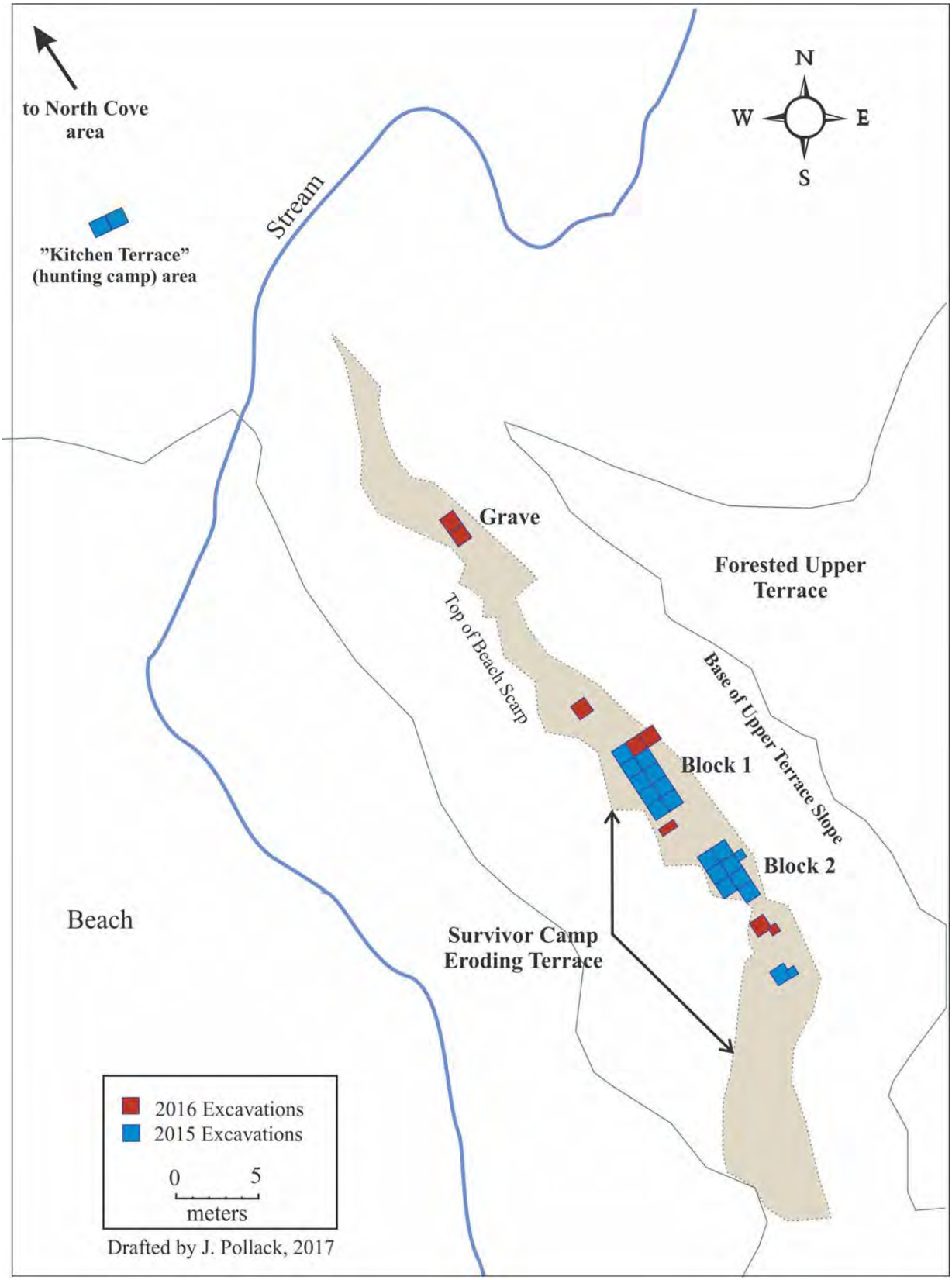


Figure 26. Unit map depicting 2015-2016 excavation areas and principal features.

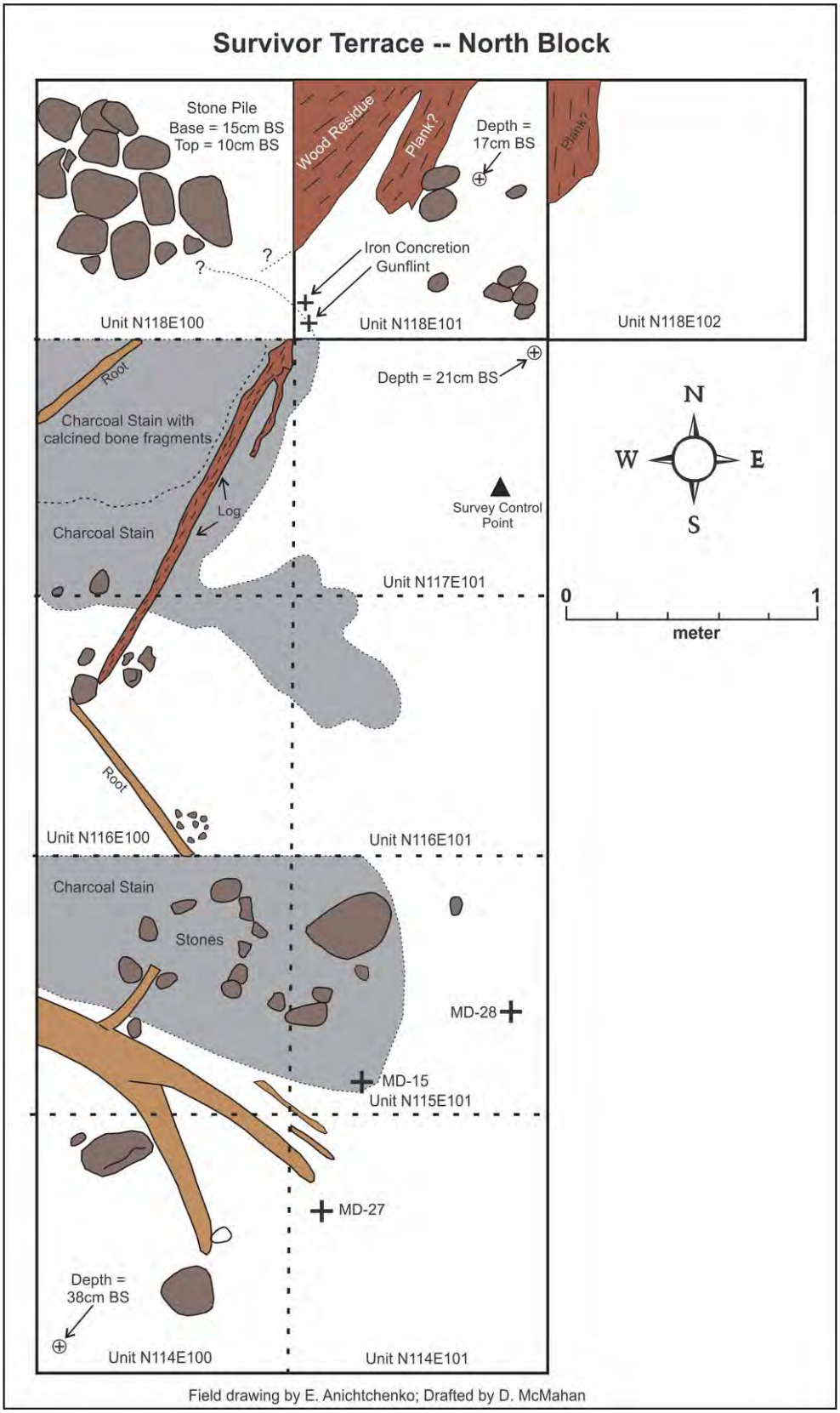


Figure 27. Plan view of the Survivor Terrace "North Block" excavation area showing key features.

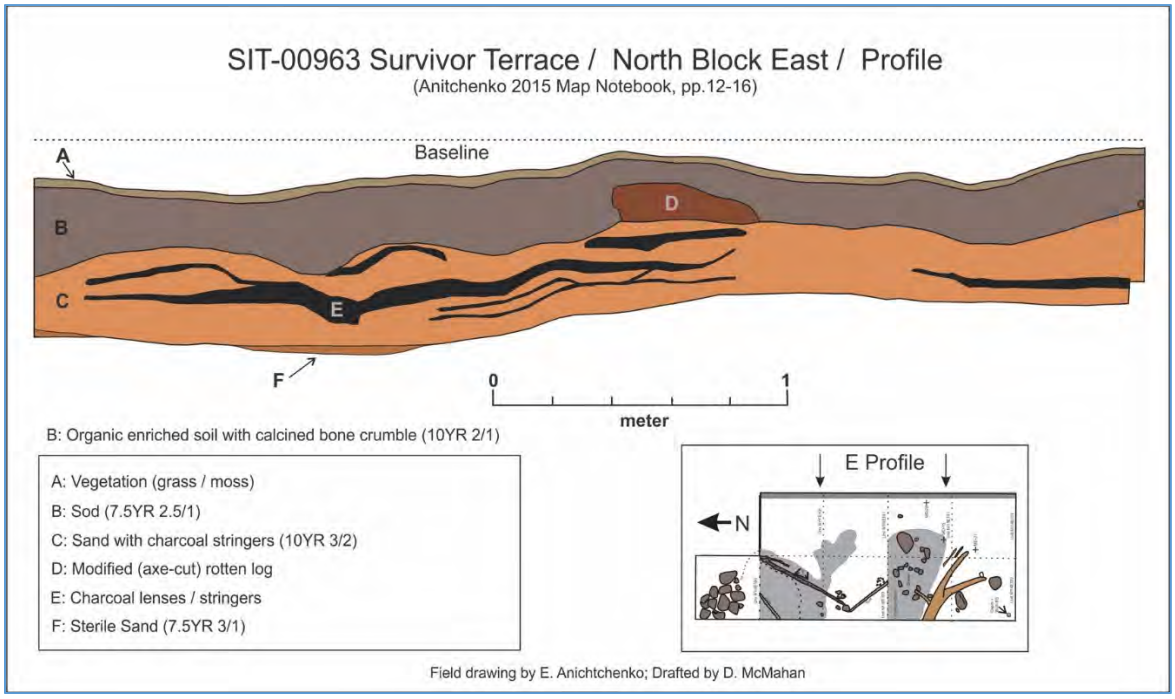


Figure 28. Stratigraphic profile: east wall of the "North Block" excavation area.

shore]," not discounting the use of sailcloth if it was available. It is also possible that one or more of the stone piles are evidence of a sweat bath, the preferred Russian interpretation. This is supported by evidence that some stones had been exposed to fire. Another stone feature, a probable fire ring, was associated with a hearth deposit in the southern half of the North Block (in unit N115E100). Elsewhere in the North Block, rotten wood representing logs and/or possible planks was recorded. Axe modification (limb removal) was noted on at least one example. Notable artifacts from the North Block include gunflints and detached gunflint flakes (Figure 29), including micro-flakes associated with a burned grass bundle. This unquestionably attests to the use of gunflints as strike-a-lights for fire starting. This is consistent with Berkh's account that "one of the *promyslzlenniks,* who had a [flintlock] pistol with him, made a fire and near him the sufferers recovered the first night" [Shalkop 1979:38]. The use of gunflints as strike-a-lights, given the damp environment, seems more credible than Markov's statement that a fire was built "by friction of wood" (Bland 2015:296). Another North Block artifact indicative of survival is a short segment of copper rod (perhaps from a ship's fastener) that was crudely cut off, perhaps for use as a firearm projectile. All of the described North Block features and cultural materials were associated with the sandy beach deposit, which was archaeologically excavated down to sterile sand.

The South Block area, located approximately three meters south of the North Block, is also within the presumed survivor camp area. The South Block was comprised of seven contiguous one-meter units excavated in 2015, and a nearby non-contiguous unit to the south excavated in 2016. The South Block consisted of a 4 m x 2 m (13 x 6.5 ft.) area comprised of eight contiguous one-meter-square units: N108E101, N109E101, N110E101, N111E101, N108E102, N109E102, N110E102, and N111E102 (Figure 30). A non-contiguous one-meter-square unit (N106E101.5)

Figure 29. A cluster of flakes and fragments from French gunflints in the Survivor Terrace "North Block" excavation area.

was opened up to the south in 2016. A large hearth area within the South Block, first encountered in a 2012 test pit, was eventually determined to be an intrusive mid-19th century feature. Mid-19th century artifacts from the hearth include a tobacco pipe fragment firmly dated to circa 1840-1870. Other mid-19th century artifacts include glass trade beads and a bone-handled pocketknife. Photos of the pocketknife were circulated among members of a knife collector's organization (https://iknifecollector.com), who felt that it was stylistically similar to examples from the mid-19th century. Outside the intrusive hearth, artifacts from the South Block are generally consistent with the early 19th century time frame of the NEVA wreck and with a survival situation. The most noteworthy artifact from this period is a leg from a navigator's (or carpenter's) compass (Figure 31), establishing a nautical connection with the occupation. The leg may have been separated for use as an awl. Other artifacts from the South Block include gunflints and detached gunflint flakes, cast lead shot, and copper sheathing fragments that were rolled to form awls. Metal detector testing to the south of the South Block resulted in the recovery of a single piece of wood with a wire nail, perhaps flotsam, indicating at least some late 19 century or early 20th century representation.

In profile, the mid-19th century hearth feature in the South Block intrudes into a sandy beach deposit with charcoal lenses that appears to be the same culture-bearing layer identified in the North Block (Figure 32). While early 19th century artifacts are located in the upper part of the beach deposit, there is not a clear stratigraphic delineation between the upper artifact-bearing deposits and underlying sterile sand. A decayed and friable unburned fragment of sea mammal

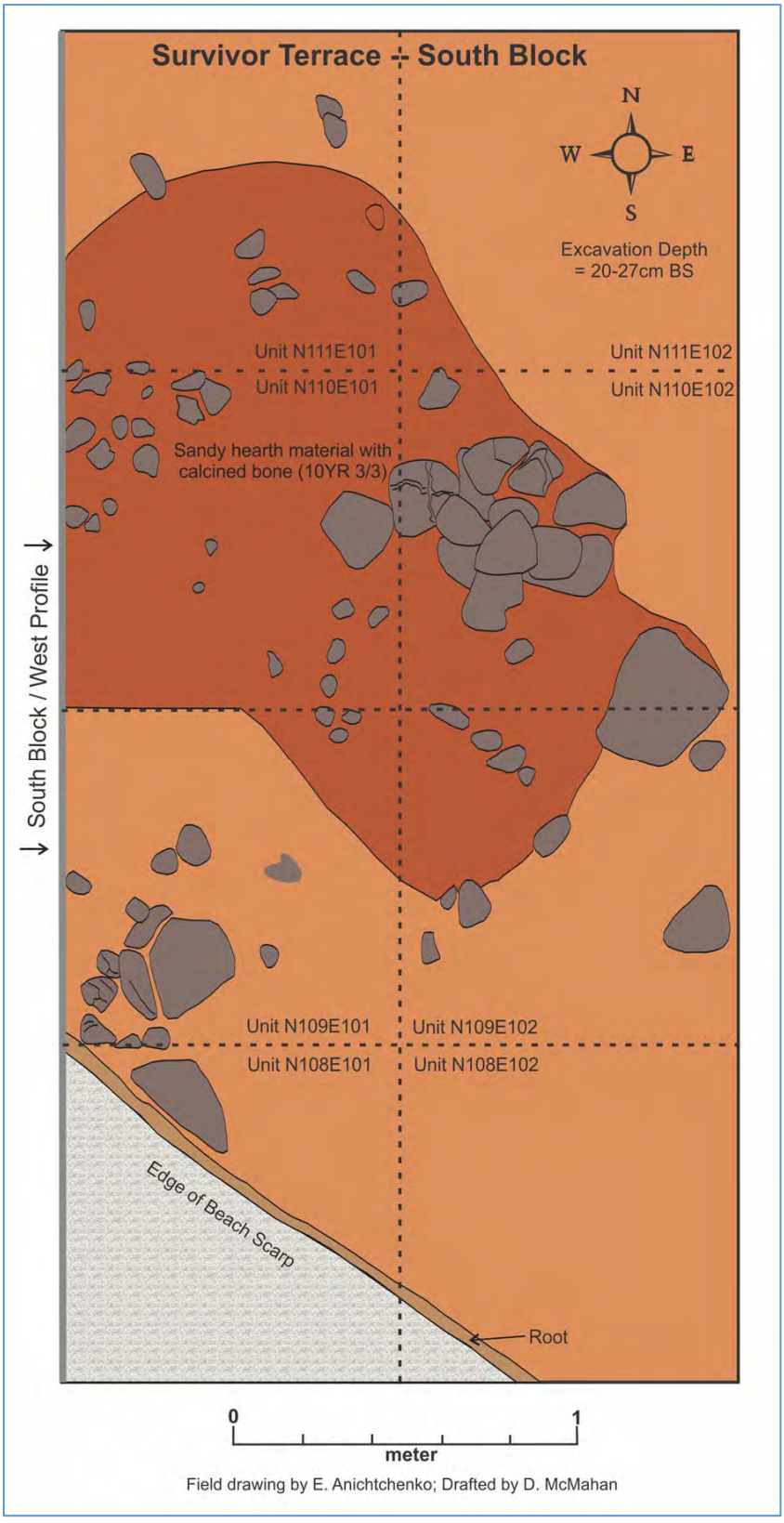


Figure 30. Plan view of the Survivor Terrace "South Block" excavation area showing key features.

Figure 31. *In situ* photo of nautical or carpenter's compass leg discovered near the top of the eroding beach scarp in the Survivor Terrace "South Block" excavation area.

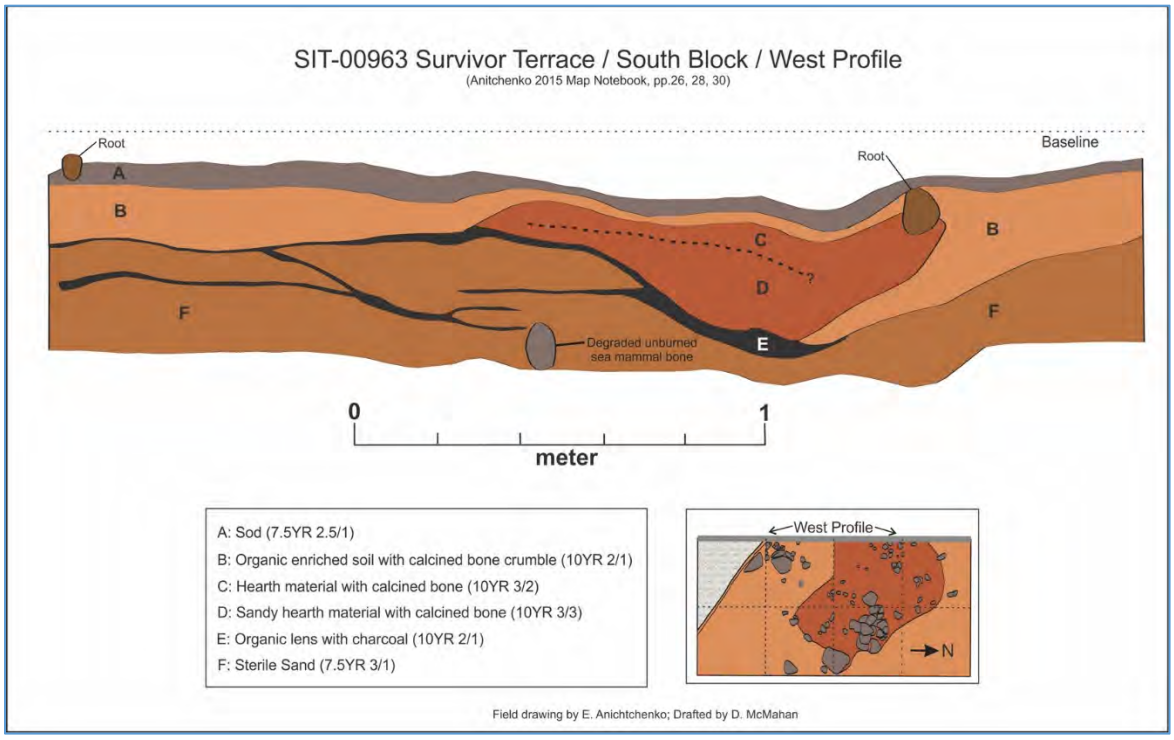


Figure 32. Stratigraphic profile: west wall of the "South Block" excavation area.

bone exposed in the lower section of the beach deposit has been interpreted as a natural inclusion (i.e., from a carcass that washed onto the beach prior to survival camp activities). Even today, the shoreline in this area is a natural catchment for the occasional carcasses of seals and sea lions. As noted earlier, even a large whale carcass was on the beach during the 2015 investigations.

In plan view (refer Figure 30), the most notable feature of the South Block was the intrusive hearth feature and its surrounding scatter of calcined bone and charcoal. Also present were two distinct clusters of stones that appear to represent boulder piles similar to the one in the North Block (Figure 33). A working hypothesis is that the stone piles predated the mid-19th century hearth and are associated with survivor activities. The most distinctive stone pile is located just southeast of the hearth center. The stones closest to the hearth center are fire-cracked, while those opposite the hearth are not burned. This favors the interpretation that they represented a tent anchor that was later partially burned by an intrusive hearth. Beneath the stone pile is organic-enriched sand, charcoal, and calcined bone that may be associated with a survivor deposit rather than the hearth. The stone piles have been interpreted as possible anchors for a sailcloth shelter, as in the North Block, notwithstanding the possibility that they might have also been used in conjunction with a sweat bath. The other South Block stone pile is outside the intrusive hearth feature to the southwest, and is on the edge of the beach scarp which is being actively undercut. The nautical compass / divider (refer Figure 62) was found eroding from the scarp about 2 m (6.5 ft.) southeast of the stone pile.

Three C-14 dates are available for the Survivors Terrace, none of which are particularly useful (Appendix 6). In 2012, USFS submitted two samples (Beta 329470 and 329471) from a test pit that we now know corresponds to the intrusive mid-19th century hearth feature in the South Block. Both samples were reported as modern (i.e., with measured ages of 10 and 50 radiocarbon years, respectively). The intercept ranges at two sigma are AD1890-1900 and post-1950. We know that these are inaccurate because artifacts from the feature securely date it to the mid-19th century. Another sample (Beta Sample 424507), from carbonized grass associated with detached gunflint flakes, was submitted in 2015. The calibrated results for this sample correspond with intercept periods of AD1685-1735, AD1805-1930, and post-1950 at the 95% probability level. While the AD1805-1930 intercept encompasses the 1813 survivor period, the time frame is too broad to be useful and the artifacts in context are a better indicator of age.

NOAA/OCS data indicate that the local land mass has risen around 3.4 m (11.2 ft.) since 1813 (Gill 2012), transforming the former beach deposit into a present-day wooded terrace. This is supported by dendrochronological data. Seven dendro cores were extracted from spruce trees in the "primary terrace" area by use of an increment borer (Figure 34). Ring counts (from cores at breast height) ranged from 55 to 132 years without correction for seedling growth or height of the core. With a conservative 5-year correction (i.e., 137 years for the oldest), this indicates that the terrace had uplifted enough to support tree growth by around 1878. In the South Block, the intrusive mid-19th century hearth intruded directly into artifact-bearing beach sand, indicating that

Figure 33. The Survivor Terrace "South Block" excavation area, facing grid south, showing Yury Lihkin and one of the stone piles. The intrusive hearth is to the right of the frame between the stone pile and west unit wall.

forest soil had not yet developed when the hearth was excavated. It seems likely that the 1813 survivors would have made use of both the upper beach and forest fringe, as trees would have served as a wind break. The Markov account, sections of which are inaccurate, does mention that tents were built on a "flat area in the forest" (Bland 2015:296).[16] The terrace upon which evidence of the survivor camp is located is narrow, much of it having been undercut and eroded away by the ocean. A steep slope rises several meters to the northeast of the survivor terrace to a higher terrace. Boulders eroding from this slope appear to have been hand-placed and may indicate that a path was stabilized to allow better access. The feature could not be dated, however, and cannot be firmly associated with survivor activities. It is unlikely that the survivors would have had the strength to access the higher terrace initially. With permission from the tribe, a small test pit was excavated on the upper terrace edge in 2016 with negative results. Under the terms of the MOA and USFS permit, widespread testing was only allowed on the lower "survivor camp" terrace.

[16] The reliability of Markov's account is questionable, as parts of the account are inconsistent with both the archaeological record and other survivor accounts. The archaeological evidence indicates that the portion of the camp excavated (including hearths and possible tent anchors) was on a beach deposit. It is likely, however, that parts of the encampment would have been in the forest fringe. Markov also indicated that they used a clever in the place of an axe, but archaeological findings indicate that at least 20 axes were salvaged.

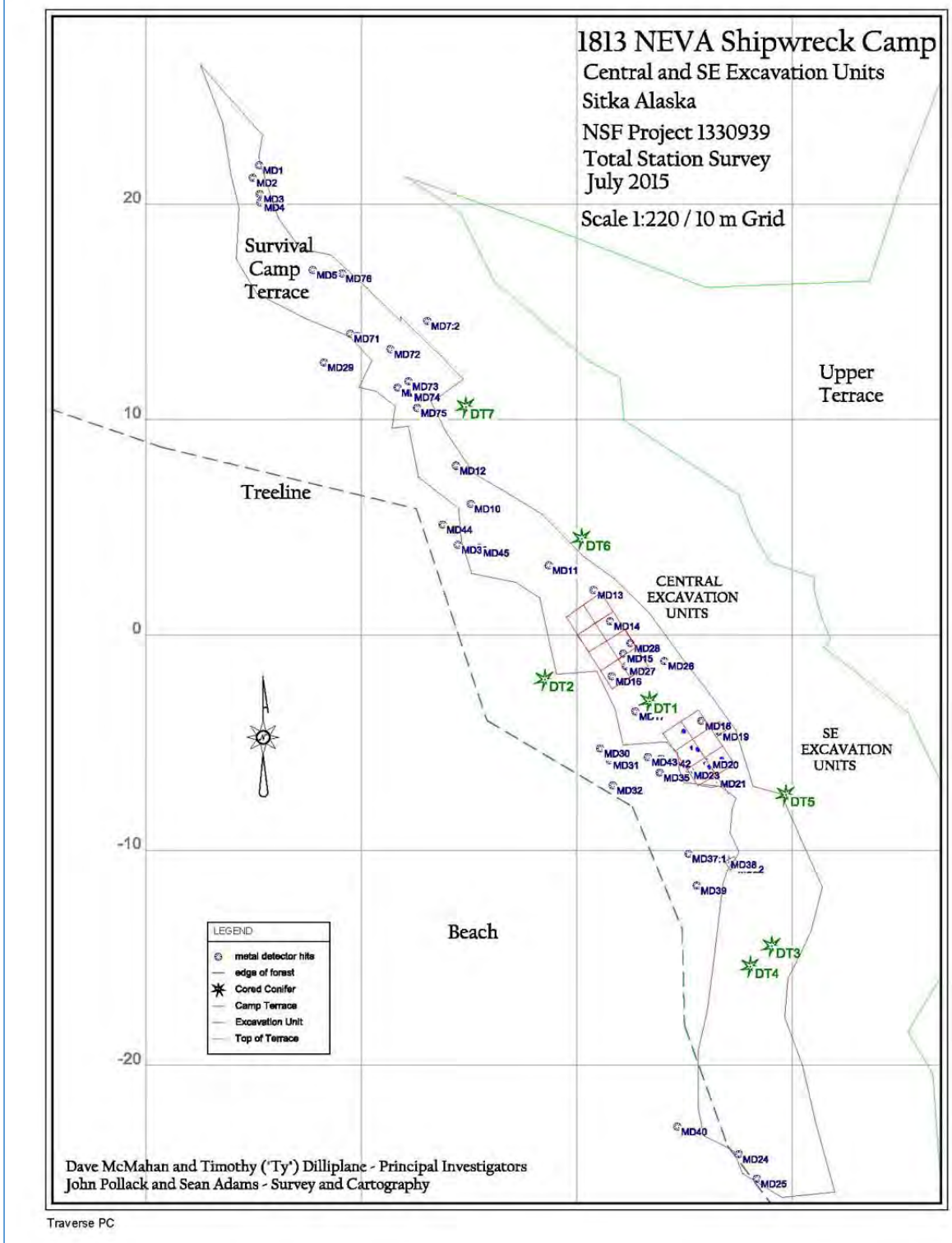


Figure 34. Locations of 2015 dendro cores on the Survivor Terrace.

The Grave of a Lost Sailor, 2016:

While the initial research design submitted to NSF had proposed to search for and respectfully document human remains associated with the wreck, this component was subsequently withdrawn at the request of STA. The revised and accepted research design included a consultation plan in the event that human remains were discovered. At the time of the proposal, it was reasoned that any survivor graves probably would be located on the upper terrace away from the survivor camp and that there would be low potential for encountering human remains in the block excavations. This held true until shortly before the end of project in 2016.

Despite a hearth eroding from the beach scarp to the north of the North Block, the team had avoided excavations in this area until excavations to the south had been completed. This is because the terrace directly above the eroding hearth was very narrow, leaving no room to divert the trail around excavations. As work in the North and South Blocks were completed and investigations were shifting to the North Cove, it was decided to excavate a one-meter-square unit in a shallow depression above the eroding hearth deposit. It was believed that the elongate depression was associated with the hearth, or possibly the result of undercutting and slumping of the shoreline. The excavation was later expanded to a 2 m x 1 m (6.5 x 3.3 ft.) unit. As expected, initial excavations identified a buried hearth deposit with charcoal and calcined faunal remains. While attempting to excavate to the base of the hearth, an organic stain began to appear at a depth of around 40 cm (15.7 in.). When several highly degraded iron nails were discovered around the periphery of the stain, a coffin burial was suspected. Excavations were continued just enough to better define the outline of the stain, which assumed a rectangular form believed to correspond to the decayed planks of the top of a coffin (Figures 35-38). Once the outline of a probable grave had been defined, excavations were stopped pending consultation with STA and the USFS. As a result of consultation, the grave was recorded and backfilled without further disturbance.

The rows of mismatched iron nails and spikes indicate that the coffin was built on-site, probably using whatever ship's lumber had washed ashore. Crewmen took great care in the interment, placing it close to camp and positioning their comrade in a traditional Russian Orthodox east to west orientation. Based upon the acid soils of spruce forests and the poor condition of unburned faunal remains in the survivor camp area, it is doubtful that the grave contains much more than a "bone stain." Accounts indicate that around 32 died as a result of the wreck, and that at least some recovered bodies were buried by their comrades. Given the weakened condition of the survivors, it is unlikely that they would have transported the remains very far. Berkh's account indicates that only two bodies were recovered "completely whole." The only burial he mentions by name is that of Bornovolokov, Baranov's intended replacement as RAC chief manager (Shalkop 1979:40). Certainly Bornovolokov would have been of high enough status to warrant the construction of a coffin under primitive conditions, but the occupant of the grave is open to speculation. At the conclusion of archaeological work, representatives of STA and St. Michaels Cathedral held ceremonies on the site to bless those who perished. At the request of the tribe, the grave was left unmarked to help protect it from vandalism. Within a decade, it will probably be eroded into the sea by shoreline undercutting.

Figure 35. Photo of the exposed grave at the northern edge of the Survivor Terrace (photo by D. McMahan).

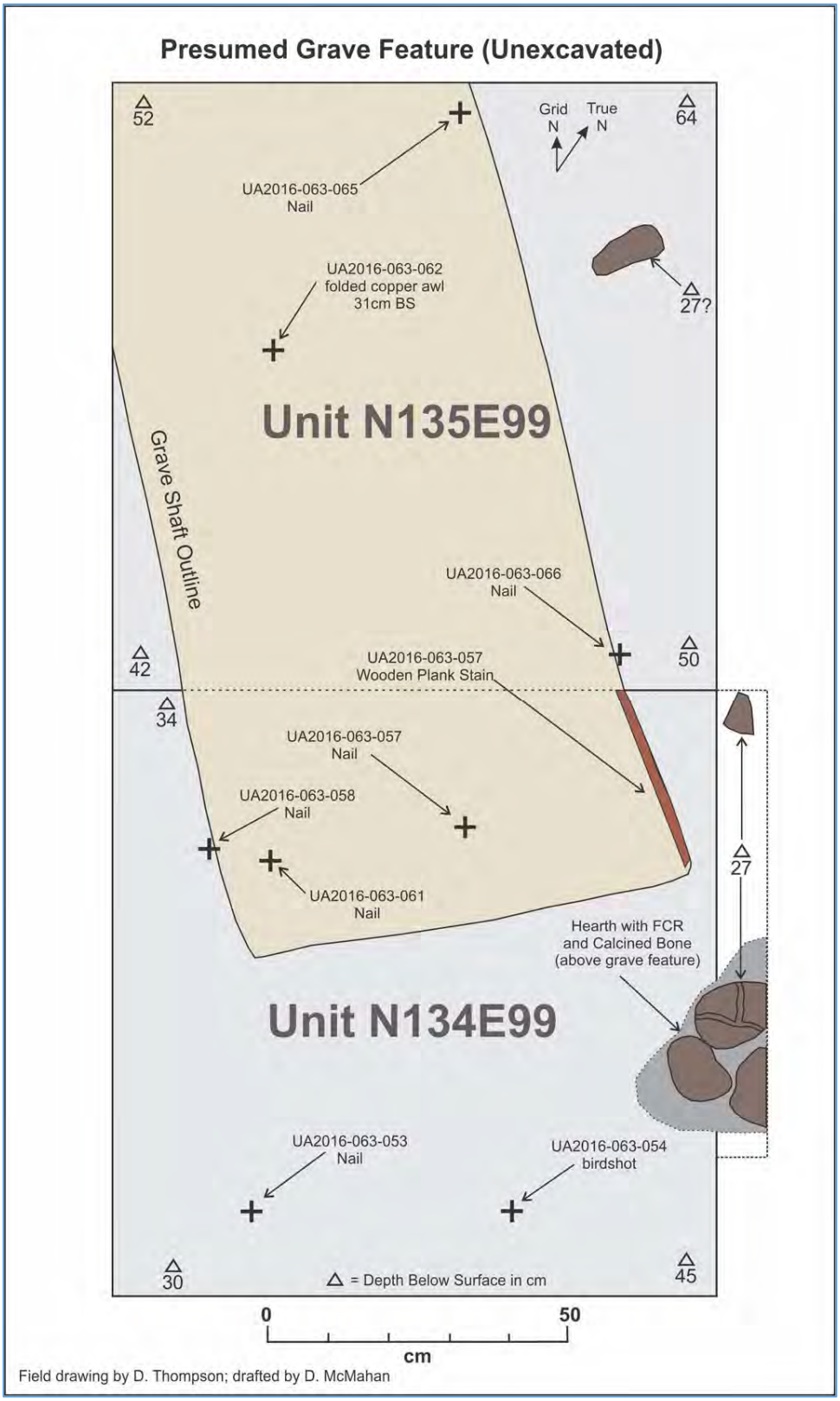


Figure 36. Plan view of the grave discovered at the northern edge of the Survivor Terrace.

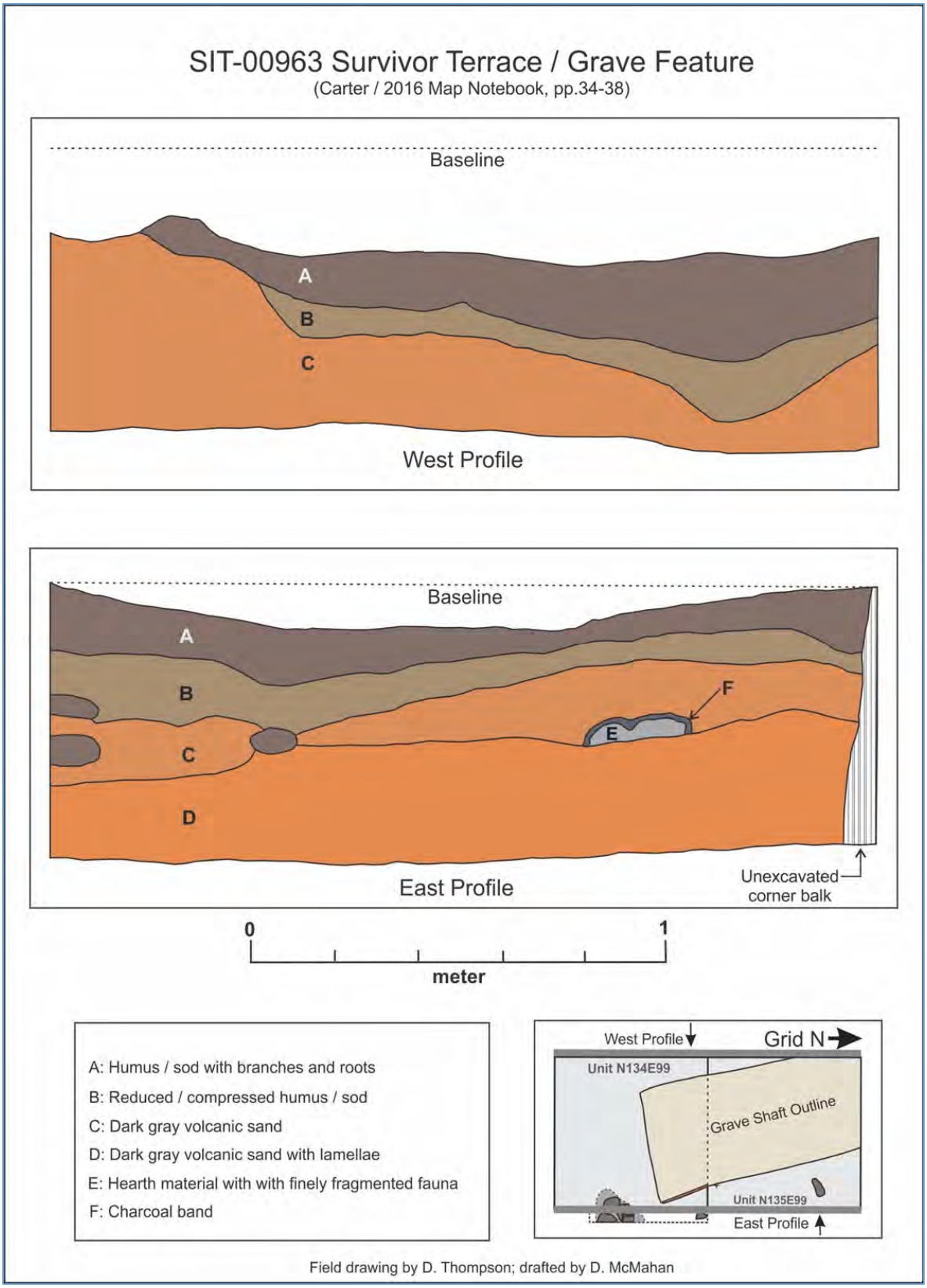


Figure 37. Stratigraphic profile of the east and west walls of the grave excavation unit at the northern edge of the Survivor Terrace.

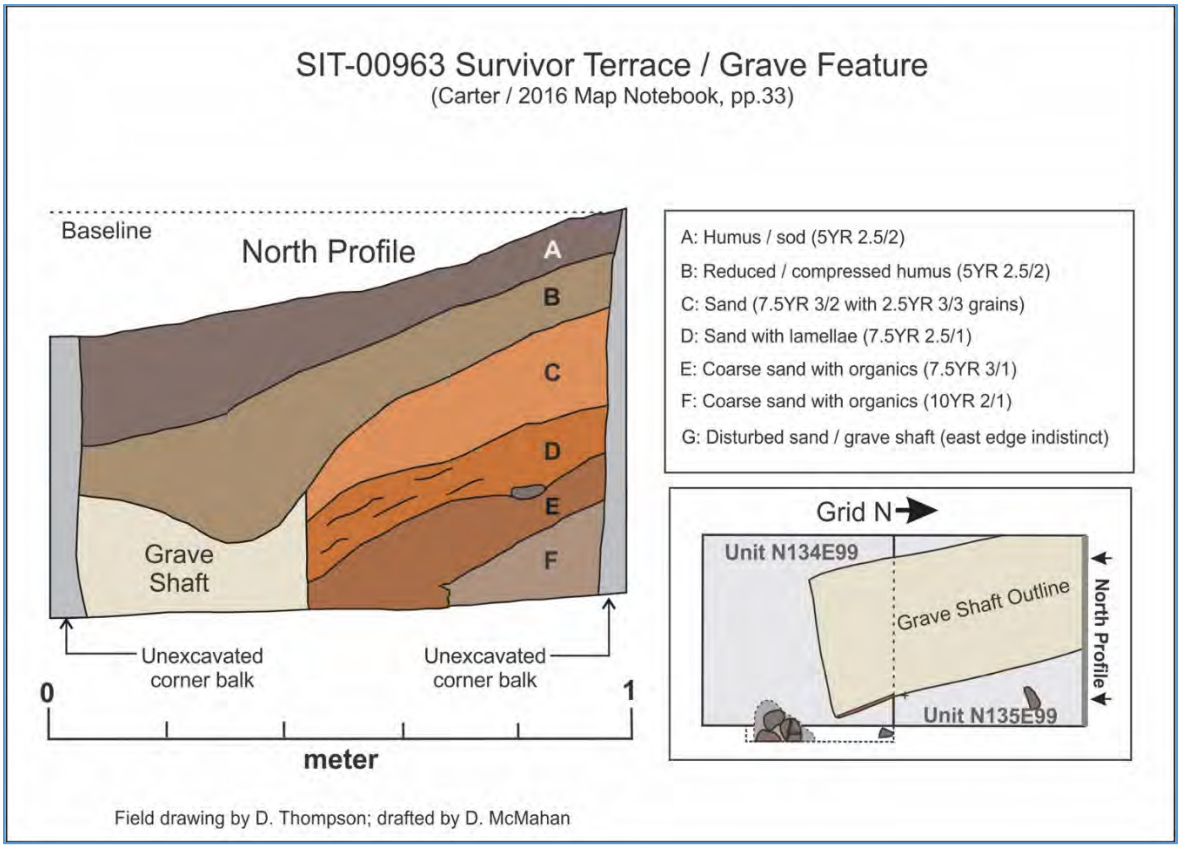


Figure 38. Stratigraphic profile of the north wall of the grave excavation unit at the northern edge of the Survivor Terrace.

Kitchen Terrace Investigations, 2015-2016:

The third 2015 block excavation area, termed "Kitchen Terrace" due to the location of the project's camp kitchen (Figure 39), was comprised of two contiguous one-meter-square units placed over a metal detector target in an area where mid-to-late 19th century materials (i.e., a .45-70 cartridge casing, machined metal, and enamelware) were recovered in 2012 (Figure 40). The block excavation was situated about 50 m (164 ft.) north of the North Block. An unnamed creek separates the Kitchen Terrace area from the Survivor Terrace area. Excavation of the Kitchen Terrace block revealed an assemblage indicative of a hunting camp that was used from the mid-19th century until the beginning of the 20th century. Stratigraphically, cultural materials were located beneath the sod in a 30 cm (12 in.) thick sandy "midden" deposit (Figure 41). This primary cultural layer rested upon a 2.5 - 5 cm (1-2 in.) thick lens of charcoal and calcined bone underlain by organic-enriched sand. The metal detector target that prompted the initial test was revealed to be a large fragment from a cast iron pot located at the base of cultural deposits. Iron had also leached from the pot fragment into the sterile sand below, creating a concretion of sand grains cemented by iron oxide. The majority of recovered calcined bone fragments from the unit, including those within the pot fragment, were identified as Sitka deer. The cultural deposit and underlying charcoal lens are interpreted as representing a hearth area that was subjected to intensive and/or recurring use. In plan-view (refer Figure 40), an iron chisel can be seen pedestaled at 28cm (11 in.) below surface,

along with the iron concretion (pot) and fire-cracked rock at the base of the unit. Numerous mid-to-late 19th century artifacts were recovered from within the cultural deposits. These include tobacco pipe fragments, glass trade beads, an incised bone fragment (probably a knife handle), sheet copper fragments, brass shell casings ceramics, and both machine-manufactured and hand-wrought nails. Because the Kitchen Terrace block was determined to post-date the survivor camp, which was the primary focus of this study, the block excavations were not expanded. Additional metal detector survey was conducted in both 2015 and 2016, resulting in several small recovery excavations less than 50 cm (20 in.) in diameter. Laboratory analysis eventually firmly dated materials from the South Block intrusive hearth to the same period as the Kitchen Terrace deposit, suggesting that the hunting camp occupants had also created the South Block hearth. As mentioned earlier, the Kitchen Terrace corresponds to an area mentioned in the 1901 United States Coast Pilot as the location of "several Indian shacks, and … a landing place for canoes behind the reef (U.S. Coast Pilot 1901:197). The notation does not appear in earlier or later U.S. Coast Pilots, suggesting that the use of the area was discontinued in the early 20th century. A settlement / camp at this location is not mentioned in published oral histories or inventories for the Sitka region. The use of the location as a hunting camp is a little puzzling, as the area is difficult to access and is associated with shamanism. Kostrometinoff (1894), in describing the fears of the shipwreck survivors, wrote "it may be stated here, that they had nothing to fear from the Indians in that vicinity, as at that time the caves were supposed to be haunted by witches." While not within the scope of this project, the Kitchen Terrace area offers tremendous potential for future research. Little is known of this period of Sitka history, especially as related to mid-19th century Tlingit use of peripheral areas. It is possible, and even likely, that one reason for the placement of the camp was to salvage shipwreck materials such as copper and iron.

The extent and duration of salvage in the aftermath of the wreck is not clear. The Berkh account describes an initial attempt at salvage:

> Mr. Baranov immediately sent to the scene of the wreck an armed party to collect goods which were cast on shore. This was a very judicious and useful order, because for the next six months they continued to find things on the shore [Berkh, in Shalkop 1979:40-42].

Kostrometinoff's much later article, which is probably based on second hand oral history accounts, indicates that:

> Governor Baranoff made several attempts to discover the remains of the wreck, but never succeeded, for the survivors themselves could not exactly locate the wreck owing to fact that they had no charts [Kostrometinoff 1894].

We know from recent field investigations that the wreck site was in a prominent geographic location, and that its re-location by survivors would not have been difficult. The archaeological record also suggests that salvage was conducted at the time of the wreck or shortly thereafter.

Figure 39. The 2015 camp kitchen and dining area. L to R: Pollack, Thompson, Kharinsky, Lihkin, Anichtchenko, McMahan, Adams, Dilliplane (photo by Gleb Mikhalev). Testing revealed nearby mid-to-late 19th century hunting camp deposits, hence the name "Kitchen Terrace."

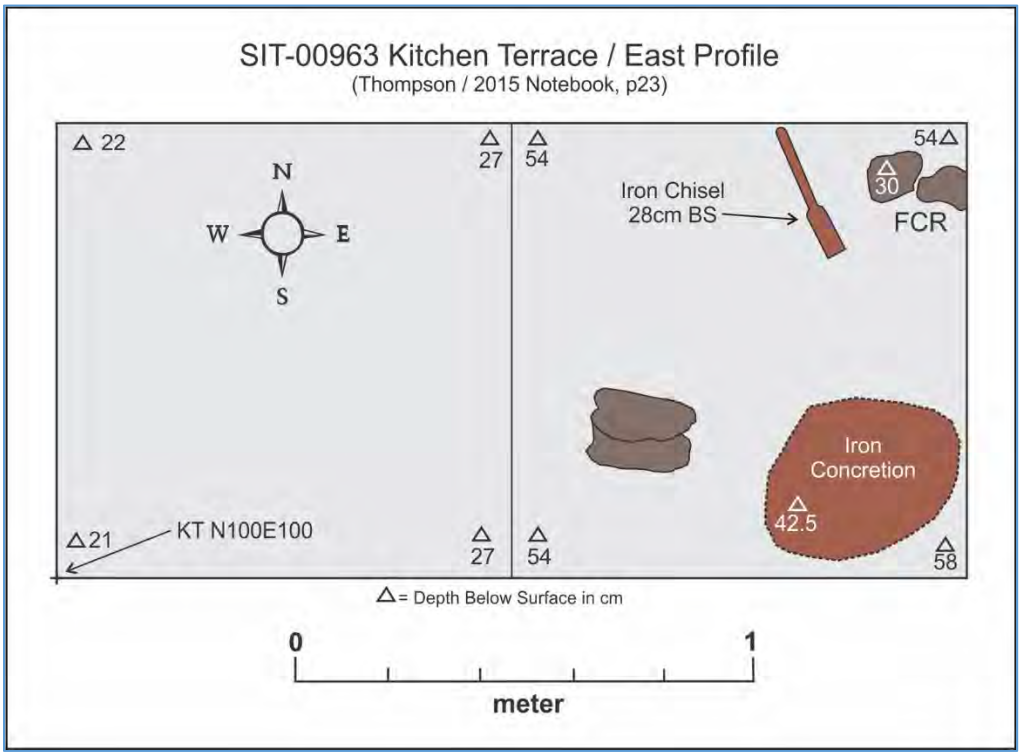


Figure 40. Plan view of the "Kitchen Terrace" block excavation unit with some key finds.

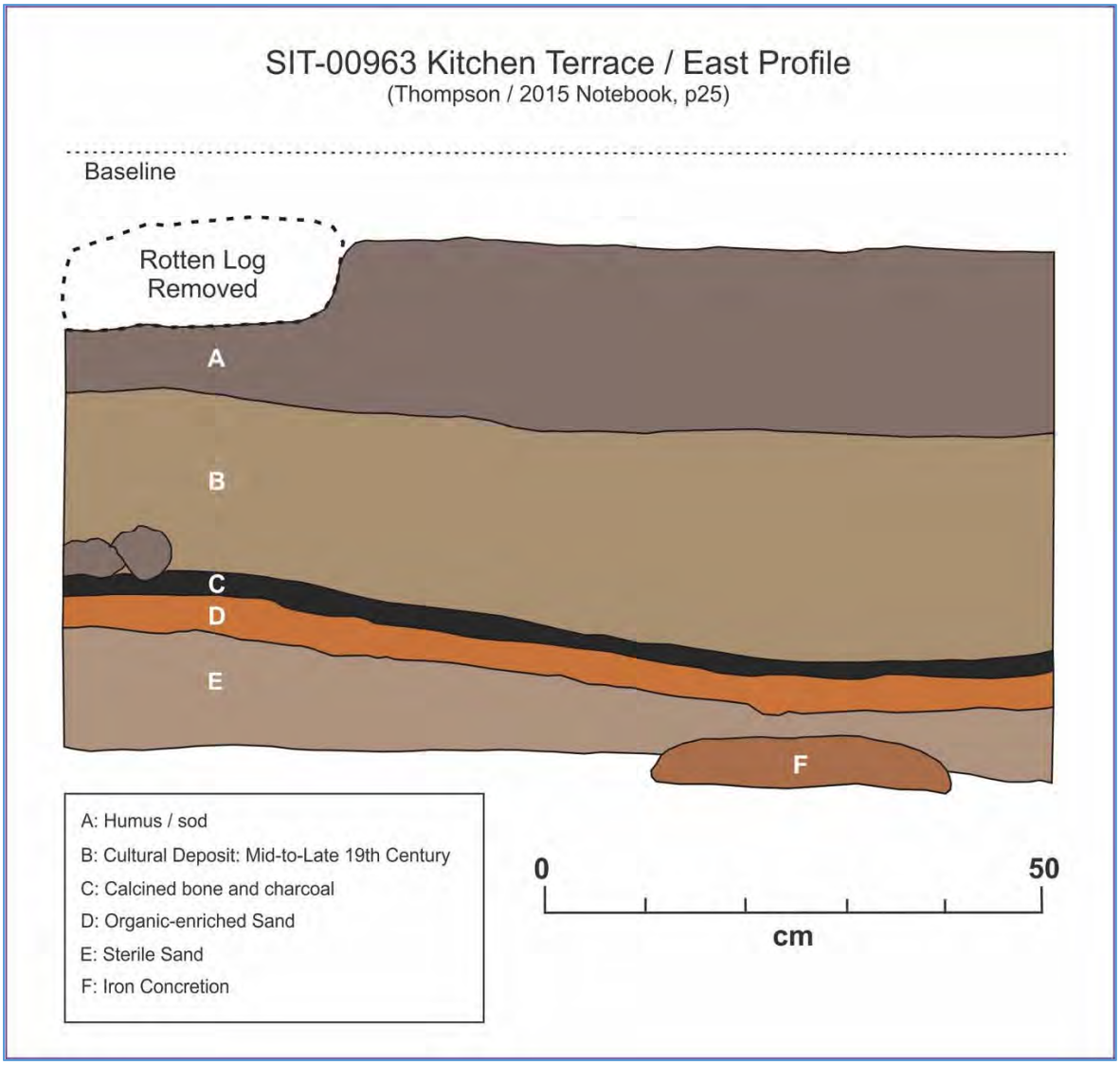


Figure 41. Stratigraphic profile of the east wall of the "Kitchen Terrace" block excavation unit.

<u>North Cove Investigations, 2016</u>:

As a part of the 2016 investigation, Thompson continued to conduct systematic metal detector surveys in the South Block, North Block, and Kitchen Terrace areas. In particular, metal detector surveys north and east of the 2015 Kitchen Terrace block excavation revealed numerous targets that were assumed to relate to the mid-to-late 19th century hunting camp (Figure 42). With the exception of a few, which confirmed mid-to-late 19th century origin, these were mapped but not excavated. One exception was a strong target adjacent to a shallow cove (termed "North Cove" area) north of the Kitchen Terrace area, albeit with an overlap zone between the two areas. Excavation revealed four sheets of copper ship's sheathing, stacked as having been cached (Figures 43-44). Beneath the copper sheets was a bundle of four iron bar stock rods secured with cordage that microscopically appears to be spruce root (Figure 45). Iron bar stock such as this is often kept aboard ship for repairs. The artifacts rested on a sandy beach deposit that is now several

meters above high tide due to uplift. This roughly corresponds to the 1813 high tide zone. During a survey of the shallow cove north of the cache (now termed "North Cove"), iron artifacts were discovered eroding from beneath a large spruce tree growing on a steep slope at the head of the cove (Figure 46). The artifacts, subsequently determined to be cannon trunnion caps, rested directly upon top of two Russian axes (Figure 47). A large metal detector target immediately downslope from the trunnion caps proved to be a cache of five Russian axes (Figure 48). Upon excavation, a rectangular organic stain in the upslope profile seemed to correspond to a wooden container which had contained the axes. A degraded iron artifact, possibly a ship's fastener, was located 30cm (12 in.) north of the axes. A large musket ball (or possible canister shot) was located a few meters to the south at a similar elevation.

The stacked nature of the copper sheathing, trunnion caps, and axes indicate caching behavior in the aftermath of the wreck. The trunnion caps exhibited evidence of burning, suggesting that the cannon carriage had been placed in a fire to remove the hardware. The locations of the caches, on a raised beach deposit, suggest that the artifacts were recovered from shallow waters or the intertidal zone and moved to locations which were at or just above the 1813 high tide limit. The caching might have taken place by the survivors themselves, or by salvors who visited the site shortly after rescue. The spruce root binding may indicate that the caching in the North Cove was done by a salvage crew that included an Alaska Native, although the *promyshlenniki* probably had similar knowledge. Due to the 2012 discovery of two axe caches on the Survivor Terrace, it seems likely that the survivors themselves were caching items they deemed useful. As on the Survivor Terrace, uplift in the North Cove area was confirmed by using an increment borer to core four trees on the slopes around the cove. The tree above the trunnion caps was determined to be approximately 91 years old (i.e., 1925) with a five-year correction for seedling growth and height of the core. The other trees were aged at 108, 109, and 122 years, respectively, with a five-year correction. This indicates that forestation at this elevation around the cove had occurred by 1894 at the latest. This is consistent with dendro and archaeological data from the Survivor Terrace, which suggests that forestation occurred on the terrace during the mid-to-late 19th century (no later than 1878).

Metal Detector Investigations Overview: 2015-2016:

In addition to the described block excavations, Thompson conducted systematic metal detecting and artifact recovery throughout the project area (i.e., the Survivor Terrace, Kitchen Terrace, and North Cove areas). Systematic metal detecting was also conducted on and at the base of the severely eroding beach scarp below the Survivor Terrace. This resulted in the identification of 76 targets during the 2015 field season and 70 targets in 2016, for a total of 146 targets. All metallic targets were mapped, but many were left undisturbed. In Appendix 7, Thompson reports the methodologies and results of the metal detector surveys in 2015-2016.

Figure 42. Dan Thompson and the "Kitchen Terrace" area, facing south. Numerous flags marking metal detector targets are visible. Only a few targets were excavated, but the vast majority are believed to relate to a mid-to-late 19th century hunting camp. Photo by Gleb Mikhalev.

Figure 43. Evgenia Anichtchenko examines a piece of copper sheathing from a cache discovered in the "North Cove" area. Photo by Gleb Mikhalev.

Figure 44. The top of a copper sheathing cache discovered in the "North Cove" area (Accession UA2016- 063-073 through UA2016-063-078). The cache consisted of four pieces of copper ship's sheathing overlying a bundle of iron bar stock. Photo by D. McMahan.

Figure 45. A bundle of four pieces of iron bar stock (Accession UA2016-063-082 through UA2016-063-085) was discovered at the base of the copper sheathing cache in the "North Cove" area. The cordage used to secure the bundle was microscopically identified by McMahan as "softwood, probable spruce root." Photo by McMahan.

Figure 46. Iron trunnion caps / brackets (Accession UA2016-063-068) from a cannon carriage were discovered eroding from the base of a large spruce tree on the slopes at the head of the "North Cove." Photo by D. McMahan.

Figure 47. The iron trunnion caps rested directly upon two Russian axes (Accession UA2016-063-071). Photo by D. McMahan.

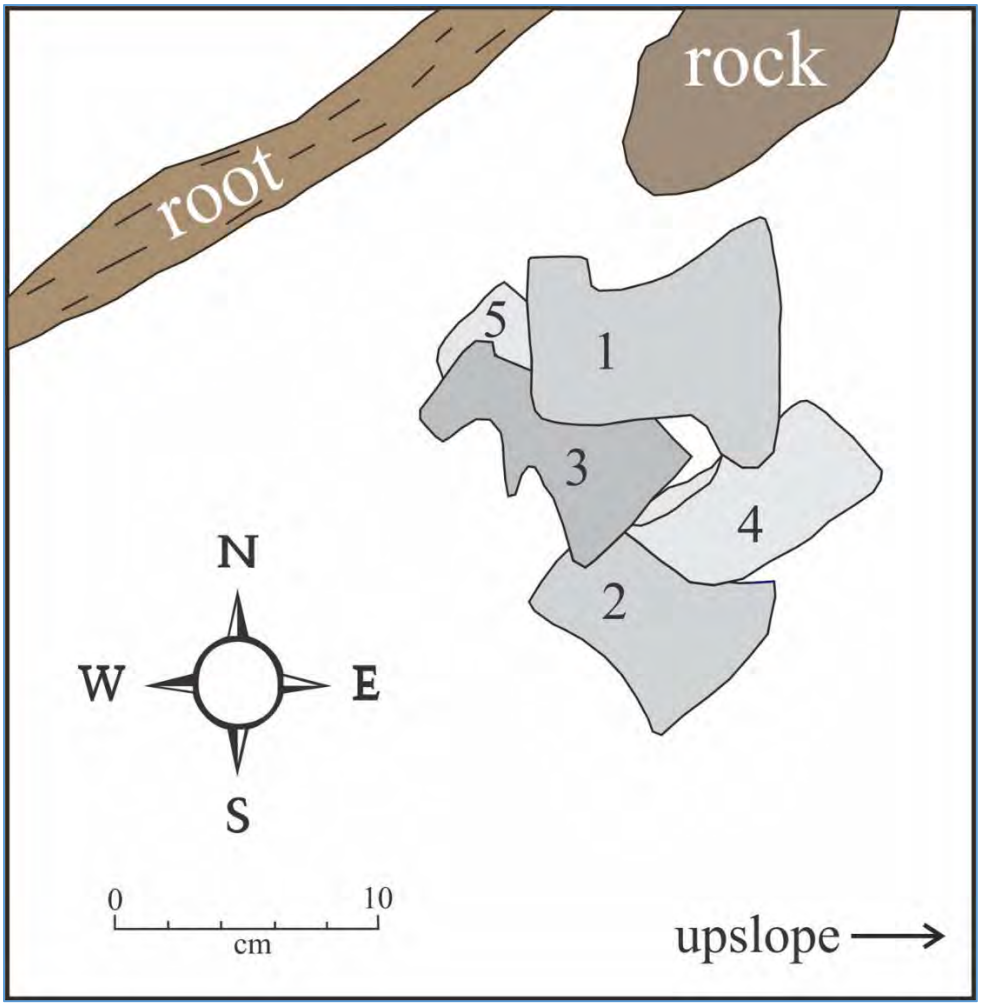


Figure 48. A cache of five Russian axes (Accession UA2016-063-086 through UA2016-063-090) was discovered just downslope from the trunnion caps in the "North Cove" area. Photo by D. McMahan.

CHAPTER 7: COLLECTIONS ANALYSIS

Collections Overview

Because McMahan moved from Anchorage in late 2016 and preferred to leave the collection in secure laboratory space at the University of Alaska Anchorage. Continuing analysis was conducted by Daniel Thompson. Thompson's valuable and comprehensive analysis of the collection is presented below, and collection catalogs are presented in Appendix 8. Specialized studies were conducted with regard to chemical metallurgy, radiography of iron concretions, and the analysis of faunal remains. These studies are summarized in separate sections and included in their entirety in appendices.

The 2012 collection is comprised of only 12 artifacts, including 9 axes from two caches on the Survivor Terrace. Other items include an iron spike from the intrusive hearth on the Survivor Terrace and several items (enamelware pot, machined iron bracket, and .45-70 shell casing) from

the mid-to-late 19th century Kitchen Terrace area. Additionally, two wood samples and two soil/hearth samples were recovered in 2012.

The 2015 investigations resulted in 286 catalog entries, including seven prepared dendro cores that were assigned catalog numbers. Some catalog entries, particularly fauna bags, contain multiple specimens from the same provenience that were packaged together. The 2015 collections include 45 entries from the North Block, 115 entries from the South Block, 46 entries from the Kitchen Terrace, 67 entries from metal detector collections without a block designation, and 14 entries from small test pits and other contexts outside the major blocks. Notable items recovered in 2015 include the nautical divider leg (UA2015-237-271), the possible tip of an improvised copper knife (UA2015-237-88), an intrusive pocketknife (UA2015-237-257) and pipe stem (UA2015-237-262), and various copper and iron nails, gunflints, lead shot, and both modified and unmodified copper sheet. From the Kitchen Terrace Block, the team recovered assorted later artifacts including a large kettle fragment with calcined fauna (UA2015-237-266), glass trade beads, nails of various types, ceramics, part of a spoon (UA2015-237-233), and a cartridge casing (UA2015-237-163).

The 2016 investigations resulted in 92 entries, including four prepared dendro cores. The 2016 collections include eight catalog entries (9 specimens) from continued work in the North Block. These include a burned gunflint that was refitted from two fragments (UA2016-63-28 and UA2016-63-29), a lead item of indeterminate function (UA2016-63-30), an expedient lithic tool (UA2016-63-11), and four faunal accessions. The 2016 collections also included 16 catalog entries (including multiple faunal specimens) from Survivor Terrace contexts outside the North Block and South Block excavations (i.e., isolated one-meter units and smaller test pits). Artifacts from these areas included a gunflint fragment (UA2016-63-1), four iron nails, an iron concretion that contained softwood (spruce?) fragments (UA2016-63-3), melted lead (UA2016-63-42), a mica fragment (UA2016-63-43), a lithic spall (FCR or manuport?) (UA2016-63-44), deformed birdshot (UA2016-63-27), and six faunal accessions. There were 18 catalog entries (including entries with multiple faunal specimens) from the block excavation subsequently identified as a grave. Other than four iron coffin nails, the collected items all derived from hearth and cultural deposits stratigraphically above the grave shaft. These included eight fauna accessions (with multiple specimens), two iron nails (UA2016-63-53 and UA2016-63-61), melted lead of indeterminate function (UA2016-63-52), cast bird shot (UA2016-63-54), an iron concretion that is probably a nail (UA2016-63-64), and a fragment of copper sheet that was folded and hammered into an awl (UA2016-63-62). There were 12 catalog entries (14 specimens) for recovered metal detector targets (MD-A through MD-M) in the Survivor Terrace area. These included six birdshot accessions (8 pellets), two iron nails (one complete and one fragment), and three iron concretions. Another notable metal detector discovery was the bayonet scabbard tip (chape) (UA2016-63-26) that had eroded from the Survivor Terrace beach scarp. Thirty-five catalog entries, including four dendro cores, were recorded for items recovered, primarily as a result of metal detector survey in the Kitchen Terrace and adjacent North Cove areas. Mid-to-late 19th century accessions relating to the Kitchen Terrace hunting camp include .44 caliber and .45-70 caliber cartridge casings

(UA2016-63-45 and UA2016-63-47), as well as a machined iron rod believed to be a modern ship's fastener (UA2016-63- 70). While metal detector surveys of the Kitchen Terrace area identified numerous targets that were mapped, very few were recovered due to their probable hunting camp association. There was, however, a concerted effort to recover materials from the adjacent North Cove area. The North Cove, in the predicted northward trajectory of flotsam from the location believed to have been the NEVA wreck site, yielded materials associated with the wreck. There are 27 catalog entries (some with multiple specimens) for items recovered from caches and other contexts within the North Cove area. Notably, these include a pair of cannon carriage trunnion caps (UA2016-63-68) and two associated iron axes (UA2016-63-71), a cache of stacked copper ship's sheathing (UA2016-63-73 through UA2016-63-78), a cache of five axes (UA2016-63-86 through UA2016-63-90), a bundle of iron bar stock (UA2016-63-82 through UA2016-63-85) found beneath the copper sheathing cache, two pieces of iron bar stock (UA2016-63-72) associated with the axe cache, a large caliber musket ball (UA2016-63-25), a piece of hammered copper fashioned into a pistol ball (UA2016-63-24), and three pieces of calcined bone. Aside from the artifacts from the North Cove, a large iron drift pin (UA2016-63-92) was recovered from between two boulders in the middle intertidal zone north of the North Cove.

Metallurgical Studies Overview: 2015-2018

Four discrete metallurgical studies were conducted in conjunction with standard archaeological analyses. It was felt that these type analyses, particularly for cuprous artifacts, might provide independent verification for the age of the ship and place of manufacture. Such studies might also contribute baseline information for dating copper artifacts from other sites in Russian America. All reports for metallurgical analyses (Cooper 2018, Northover 2016, 2018a, 2018b) are included in Appendix 5.

Dr. Peter Northover (Research Laboratory for Archaeological Research and the History of Art, University of Oxford), an expert on ship's sheathing, initially analyzed a single fragment of sheet copper recovered by metal detector survey in 2015 (Northover 2016). This specimen (UA2015-237-0286), with a distinctive square nail perforation, was in good condition albeit from inconclusive context. Chemical analysis of the specimen by wavelength dispersive spectrometry, coupled with metallography, was not definitive but suggested a probable date from the latter half of the 19th Century (Northover 2016:3). While the date is not conclusive, it would not be surprising given the subsequent identification of a mid-to-late 19th century intrusive feature in the South Block. On 5/25/17, three additional copper sheathing samples were submitted to Dr. Northover. Two of the samples (both with catalog # UA2016-063-078) were detached fragments from the bottom copper sheet in the North Cove cache. The third sample (UA2015-237-087) had been recovered by metal detector from the South Block and was of inconclusive context. In summary, it was Dr. Northover's opinion that one of the samples, No. 5285 (UA2016-063-078), was made from "typical British sheathing made from recycled copper and must represent sheathing applied to the *Neva* when she was built in 1803" (Northover 2018a:4). This specimen was one of the fragments from the North Cove cache. He was not as certain of the other two samples, but thought

it probable that they had come from the same sheet. This is of interest because one of these specimens was from the North Cove cache while the other was from the South Block. Dr. Northover was confident that neither of the latter two samples was Russian, but could not rule out either an 1803 or mid-19th century age (ibid). Dr. Northover summarized his findings in an e-mail:

> The best suggestion I can make is that the copper is Britsh and is original to her building in 1801-02 [sic] although the copper could have been repaired. At that time copper stripped from Navy ships was sent back to the rollers for recycling and I would imagine the same happened in the merchant fleet when ships were docked in the UK. Repeated recycling would tend to remove the lead and bismuth as well as some arsenic although it is very difficult to remove all the arsenic. So, on the balance of probabilities Neva was carrying her original copper. Navy ships carry spare copper sheets in the carpenter's stores and I imagine Neva might have done the same. [e-mail from Northover to McMahan, dated 1-21-18].

The samples were of considerable purity, with a minimum copper content of 99.4% (Northover 2018a:1). Copper sheathing was first used by the British Royal Navy in 1761, and began to be used by the British merchant fleet in the 1770s (Stone 1993:23). The NEVA was sheathed in copper in London in 1803 (Lloyd's Register, 1803-1804, Entry 289), apparently in preparation for her 'round-the-world voyage. This was still an early usage of copper ship's sheathing, which wasn't used in France until the 1790s and in the U.S. until 1800 (Stone 1993:23). Re-sheathing was typically done every four years (ibid). It is not known if the NEVA was re-sheathed after 1803, but spot repairs were probably implemented as needed. In 1832, Munz metal (60% copper, 40% zinc, and a trace of iron) as a cheaper alternative to copper. It became the norm by the 1850s (Stone 1993:23). The purity of the samples sent to Dr. Northover, therefore, suggest that they predate the rise of Munz metal use in the 1850s.

In conjunction with sheathing analysis, Dr. Northover conducted a project-supported analysis of dated Russian copper coins to develop baseline information on changes in Russian commercial copper and copper alloys through time (Northover 2018b). He analyzed seven coins dating between 1798 and 1842, and compared their chemistry with that of copper coins from the U.K., U.S., and Austria-Hungary, as well as the NEVA samples. All of the Russian coins were 99.5% pure copper, although variations in composition suggested that several different sources were represented through time (Northover 2018b:1-3). The Russian coins were found to be chemically different from the analyzed coins from the other nations, and different from contemporary Russian copper ordnance. The NEVA sheathing samples clustered at the lower end of the British and U.S. coin samples (both of which were struck with British copper during the Napoleonic era) (ibid). The study confirms that the NEVA sheathing samples are of British origin, but also points out the need for more robust studies to address changes in sources through time.

The final metallurgical study was conducted by Dr. Kory Cooper (Department of Anthropology and School of Materials Engineering, Purdue University). Dr. Cooper and his students analyzed additional copper sheathing samples, as well as some other notable artifacts (marine compass, scabbard tip, lead shot) (Cooper et al. 2018). Thirteen artifacts (8 catalog

numbers) were analyzed using a combination of x-ray fluorescence, optical microscopy, and scanning electron microscopy. At the request of the PI, the analyses were non-destructive and the patina was left undisturbed. This probably affected the accuracy of tests to some extent. Interestingly, one of the copper sheet fragments (UA2015-237-93) was different from the other samples in that it contained nearly 4% lead as compared to 0.11% or less for other specimens. That particular specimen had been a metal detector recovery (MD-22) from a location around 4 m (13 ft.) southeast of the Survivor Terrace South Block. Another interesting specimen was a possible knife tip (UA2015-237-88) made of copper sheet. Its chemical composition was similar to other sheet copper from the site, suggesting that it might represent an improvised knife made from ship's sheathing. Chemical analysis of a scabbard tip (chape) identified the material as a "quaternary alloy consisting of mostly copper but with appreciable amounts of lead, zinc, and some tin" (Cooper et al. 2018). The nautical / carpenter's divider leg (UA2015-237-271) was identified as pure copper rather than an alloy such as brass (ibid: Table 2). The low arsenic level in the copper may indicate a British rather than Russian origin (Northover 2018b). More baseline research is needed, however, as Drs. Northover and Cooper used different analytic techniques.

Radiography Overview

Metals generally did not preserve well in the acid soils of the spruce forested terrace. It is likely that the metals would have been exposed to saltwater during the wreck or prior to uplift, which would have accelerated corrosion. It was common, particularly in the older Survivor Terrace deposits to find metal (mostly iron) concretions. Nineteen of these were submitted to Jim Jobling at the Texas A&M Marine Conservation Laboratory for radiography. All were 2015 recoveries and most had been metal detector targets. The radiographs, along with an interpretive table and notes on exposure, are included in Appendix 4. Represented contexts included the North Block and area to the north (5 samples), the South Block (6 samples), and Kitchen Terrace (8 samples). It was not surprising that 12 of the specimens were identified as iron nails or spikes, including one with no metal remaining. Four of the North Block vicinity specimens were nails / spikes, and one specimen (UA2015-237-236) was an iron plate with a small screw. Of the South Block specimens, five were iron nails / spikes and one (UA2015-237-237) was an iron ring. The Kitchen Terrace specimens included a spoon represented by several fragments (UA2015-237-2334), a flattened canister (UA2015-237-231), an unidentifiable iron chunk (UA2015-237-232), a curved iron plate (UA2015-237-246), and four iron nails / spikes.

Faunal Analysis Overview

Faunal analysis was conducted by Dr. Megan Partlow (Central Washington University). She issued a report based upon 2015 data, then integrated 2016 data into a final report that includes analyses for both years. Her complete findings are included in Appendix 2. In summary, Dr. Partlow analyzed 2,896 specimens recovered during the two seasons. These were divided into eight analytic units based upon recovery contexts. Those contexts believed to have the most secure association with the 1813 wreck survivors are the North Block and the Survivors Terrace Midden

and Burial. Those contexts produced remains of harbor seal, Sitka black-tailed deer, and eagle, with a few remains of salmon or trout and lingcod (Partlow 2017). All of these species could have been caught by the NEVA survivors, and are markedly different from the identified fauna from Unit N105/E101.5 south of the South Block. The latter unit, which may not be associated with the survivors, contained sea otter and beaver. Sea otter would have been difficult to hunt without boats, even with skilled hunters (*promyshlenniki*) presumed to be among the survivors. The discovery of American beaver, which reportedly were not on Kruzof Island until 1925, was unexpected and may provide ancient DNA for future phylogenetic research (ibid). The South Block, with most fauna coming from the intrusive mid-19th century hearth, produced a preponderance of Sitka deer remains. In this respect, it is probably very similar to the Kitchen Terrace, whose fauna were not analyzed but visually appeared to be mostly Sitka deer. In terms of usable meat, Sitka deer would have comprised a large part of the survivors' diet. They probably would have been easy prey in January, when they would have appeared on the beach in larger numbers.

Analysis of the SIT-963 Artifact Assemblage

by Daniel Thompson

The SIT-963 assemblage includes 328 artifacts from three primary locations at the head of Neva Bay. Analyses provide evidence of NEVA's 1813 shipwreck survivors camp, potential salvage by Baranov's relief parties after February 1813, and a reoccupation of the site between ca. 1840 and 1890. Part I of this chapter presents analytical methods and assumptions. Part II includes artifact descriptions and summary observations of each assemblage.

Part I - Analytical Methods:

Assemblages are organized by function and material following typologies of South (1977) and Sprague (1982). Categories include *Personal* (clothing/adornment, knives/accoutrement, leisure), *Domestic* (food serving, storage), *Activities* (woodworking, expedient lithic tools, hunting, fishing, clothing repair/manufacture), *Activities-Maritime* (navigation), *Architectural* (fasteners, hardware), *Architectural-Maritime* (copper hull sheathing, copper fasteners, cannon trunnion brackets (caps), mica window/lantern glazing, hardware), and *Unidentified* groups.

Functional categories of the 1813 assemblage were adjusted to accommodate re-use and the production of expedient tools. For example, an awl fashioned from copper hull sheathing is included in the *Activities* rather than *Architectural* group to emphasize the behavior of site occupants rather than manufacturing intent.

Artifact analyses involved specialized methods and conservation measures. *Domestic* (food serving and storage) analyses included glass and ceramic cross-mending and description of vessel type. Beads of the *Personal* (adornment) group were examined with fluorescent lighting and used a Pantone Textile Color Guide for color standardization (Pantone Inc. 1992). Bead classification followed typologies and nomenclature of Karklins (1985), Kidd and Kidd (1970), and Ross (1990).

Conservation of iron objects required mechanical removal of oxides and selected electrolysis treatment. Texas A&M University Department of Anthropology provided X-ray scans of iron concretions. Nail and spikes of the *Architectural* group involved recordation of

manufacturing method (i.e. hand-wrought, cut, wire), and type (i.e. tack, nail, spike).[17] Attempts to determine penny size from nail length were abandoned due to the poor condition of small iron artifacts. Attributes of nail types were based on the works of Adams (2002:67-69), Wells (1998:80-93), and Nelson (1968).

Ammunition-related projectiles of the *Activities-Hunting Group* were organized into categories of Round Shot, Buckshot, and Manufactured Cartridges. Projectiles were examined for seams, firing deformities, impact scars, and material. Weight was measured on a 500g electronic balance and rounded to the nearest 0.1 gram. Shot diameter was recorded using a dial caliper, measuring perpendicular to mold seams. Calibers for deformed projectiles were estimated using the Sivilich Formula, a method to calculate diameter based upon the specific gravity of lead and 18th-19th century ammunition production data (Sivilich 2005:8; Sivilich 2016:26-27).[18]

Assemblage dating involved historical research to establish a range of manufacture and *terminus post quem* for each datable artifact. For assemblages with multiple diagnostics, a mean occupation date is offered using a formula adapted from South (1977:217) and Deetz (1996:25). This involved multiplying the median production date of each artifact by the frequency of occurrence. The resulting product is divided by the total artifact count, yielding a weighted mean date for the assemblage.

Part II - Assemblage Analyses:

This section provides artifact descriptions and analysis of three primary assemblages, a "Survivors Terrace" (Locus 1), "Shipwreck Cache" (Locus 2, “North Cove”), and "Kitchen Terrace" (Locus 3). Evidence of two phases of occupation are represented; NEVA's 1813 shipwreck survivors camp, and ca. 1840-1890 re-occupation event. Traces of Baranov's post 1813 salvage may also be indicated in the archaeology. Throughout analyses a *component* designation was used to differentiate between these phases of activity.[19] These are detailed below (Table 4).

Table 4. Proposed component and assemblage units used in SIT-963 analysis.

COMPONENT	DATE	ASSEMBLAGE	DESCRIPTION
Component 1	1813, January-February	Locus 1 "Survivors Terrace"	NEVA survivor's campsite and associated grave feature
Component 1	1813, January-February	Locus 2 "Shipwreck Cache"	Cache of hardware and tools salvaged from NEVA wreck site

[17] A "square" classification was used to describe wrought or cut nails too corroded to attribute to their primary manufacturing type.

[18] The use of *caliber* in this analysis is a measure of gun bore excluding post-depositional metal loss and windage (see Sivilich 2016:18).

[19] A component designation was not assigned to Baranov's later salvage as only a handful of artifacts could be confidently associated with this phase of activity.

Baranov's salvage parties	1813,February to unknown date	Locus 2 "Shipwreck Cache"	Cache of hardware and tools salvaged from NEVA wreck site
Component 2	ca.1850-1890	Locus 3 "Kitchen Terrace"	Mid-late Victorian campsite deposits of a probable Tlingit occupation
Component 1, Component 2	ca.1840-1890	Locus 1A "Intrusive Hearth"	Mixed deposits of NEVA survivors campsite, and hearth feature of a probable Tlingit occupation

A *Component 1* unit represents activities of NEVA's shipwreck survivors between January 9 and February 2, 1813. Deposits occur as a widespread undisturbed midden, occupational floor, and a grave feature of the Locus 1 "Survivors Terrace." This was the survivor's primary campsite. During this occupation tools and hardware from the wreck site were collected and stored in the Locus 2 "Shipwreck Cache". This cache may have also been used by *Baranov's salvage parties* in the first months or years after rescue.

Component 2 represents a major ca. 1840-1890 re-occupation of Neva Bay. These domestic middens and artifacts are largely constrained to the Locus 3 "Kitchen Terrace". A brief re-occupation of the Locus 1 "Survivors Terrace" occurred during this same period. The resulting Locus 1A "Intrusive Hearth" assemblage is a palimpsest of Late Victorian artifacts and mixed strata of the ca. 1813 survivors camp. *Component 2* is likely a subsistence-type hunting campsite occupied by local Tlingit groups.

Table 5 is a summary of artifacts by Locus designation.[20] The majority (n=141 or 43%) were collected from the Locus 1 "Survivors Terrace", the focus of project excavations. The following section provides a description of individual artifacts, artifact dating, functional group comparisons, and summary observations of each assemblage.

Table 5. Artifact frequency by primary excavation locus.

	Locus 1 Survivors Terrace	Locus 1A Intrusive Hearth	Locus 2 Shipwreck Caches	Locus 3 Kitchen Terrace
PERSONAL				
clothing/adornment	1	0	0	7
beads	0	2	0	1

[20] An assemblage of 62 artifacts, or 19% of the total SIT-963 collection, from "Locus 1-Artifacts of Unattributed Context" are excluded from this summary table. These could not be attributed to a single archaeological component.

knives/accoutrement	2	1	0	0
leisure-kaolin pipes	0	1	0	2
subtotal	3 (2.0%)	4 (10.0%)	0 (0%)	10 (17.0%)
DOMESTIC				
Food preparation-kettle	0	0	0	2
Food serving-ceramics/tableware spoon	0	1	0	11
Food serving-enamelware	0	0	0	1
Food storage-glass container	0	2	0	4
Food storage-tin cans	0	0	0	2
subtotal	0 (0%)	3 (7.0%)	0 (0%)	20 (34.0%)
ACTIVITIES-WOODWORKING				
axes	10	0	10	0
chisel/wedges	2	0	0	1
subtotal	12 (9.0%)	0 (0%)	10 (40.0%)	1 (2.0%)
ACTIVITIES-HUNTING				
round shot	6	0	3	0
birdshot	4	2	0	1
gunflints and debitage	24	0	0	0
manufactured cartridges	0	0	0	4
subtotal	34 (24.0%)	2 (5.0%)	3 (12.0%)	5 (9.0%)
ACTIVITIES-LITHIC TOOL				
expedient lithic tool/debitage	2	1	0	0
subtotal	2 (1.0%)	1 (2.0%)	0 (0%)	0 (0%)
ACTIVITIES-CLOTHING REPAIR				
Awls and awl blanks	1	0	0	0
subtotal	1 (1.0%)	0 (0%)	0 (0%)	0 (0%)
ACTIVITIES-INDETERMINATE				
iron ingots-blacksmithing stock	0	0	5	0

subtotal	0 (0%)	0 (0%)	5 (20.0%)	0 (0%)
ACTIVITIES-MARITIME NAVIGATION				
chart/compass dividers	1	0	0	0
subtotal	1 (1.0%)	0 (0%)	0 (0%)	0 (0%)
ARCHITECTURE-FASTENERS				
iron nails/spikes/tacks	24	11	0	6
subtotal	24 (16.0%)	11 (26.0%)	0 (0%)	6 (10.0%)
ARCHITECTURE-HARDWARE				
hardware	1	0	0	1
subtotal	1 (1.0%)	0 (0%)	0 (0%)	1 (2.0%)
ARCHITECTURE-MARITIME				
fasteners-copper nails	9	0	0	0
copper hull sheathing	19	8	4	2
mica window	1	0	0	0
ship hardware	0	0	3	1
subtotal	29 (21.0%)	8 (19.0%)	7 (28.0%)	3 (5.0%)
UNIDENTIFIED GROUP				
subtotal	34 (24.0%)	13 (31.0%)	0 (0%)	12 (21.0%)
	n=141(100%)	**n=42(100%)**	**n=25(100%)**	**n=58(100%)**

Locus 1: Survivors Terrace (North Block)

The Locus 1 "Survivors Terrace" assemblage includes 141 artifacts from a thin occupation surface, sheet midden, and grave feature. These *Component 1* deposits are the presumed campsite occupied by NEVA survivors during the winter of 1813.[21] Investigations involved excavation of 18.5 square meters in two blocks (South Block, North Block), and six individual 1 meter x 1 meter units. Metal detector surveys in 2012, 2015, and 2016 included mapping of metallic distributions and controlled artifact recoveries.

[21] Units N109, E101 and N109, E102 contain mixed deposits of the 1813 occupation and ca. 1840-1890 intrusive hearth. These contaminated units are analyzed separately as *Locus 1A.*

PERSONAL GROUP (Clothing/Adornment)

Strap guide (UA2015-237-278)

A brass or bronze strap guide was excavated as a MD-22.[22] The thin rectangular frame, which has not been subjected to metallurgical analysis, measures 3.65cm x 2.86cm and was likely a buckle adjustment for a lightweight cloth bag or satchel. The artifact was recovered 24cm below surface (BS) in a midden of charcoal and calcined bone (Figure 49).

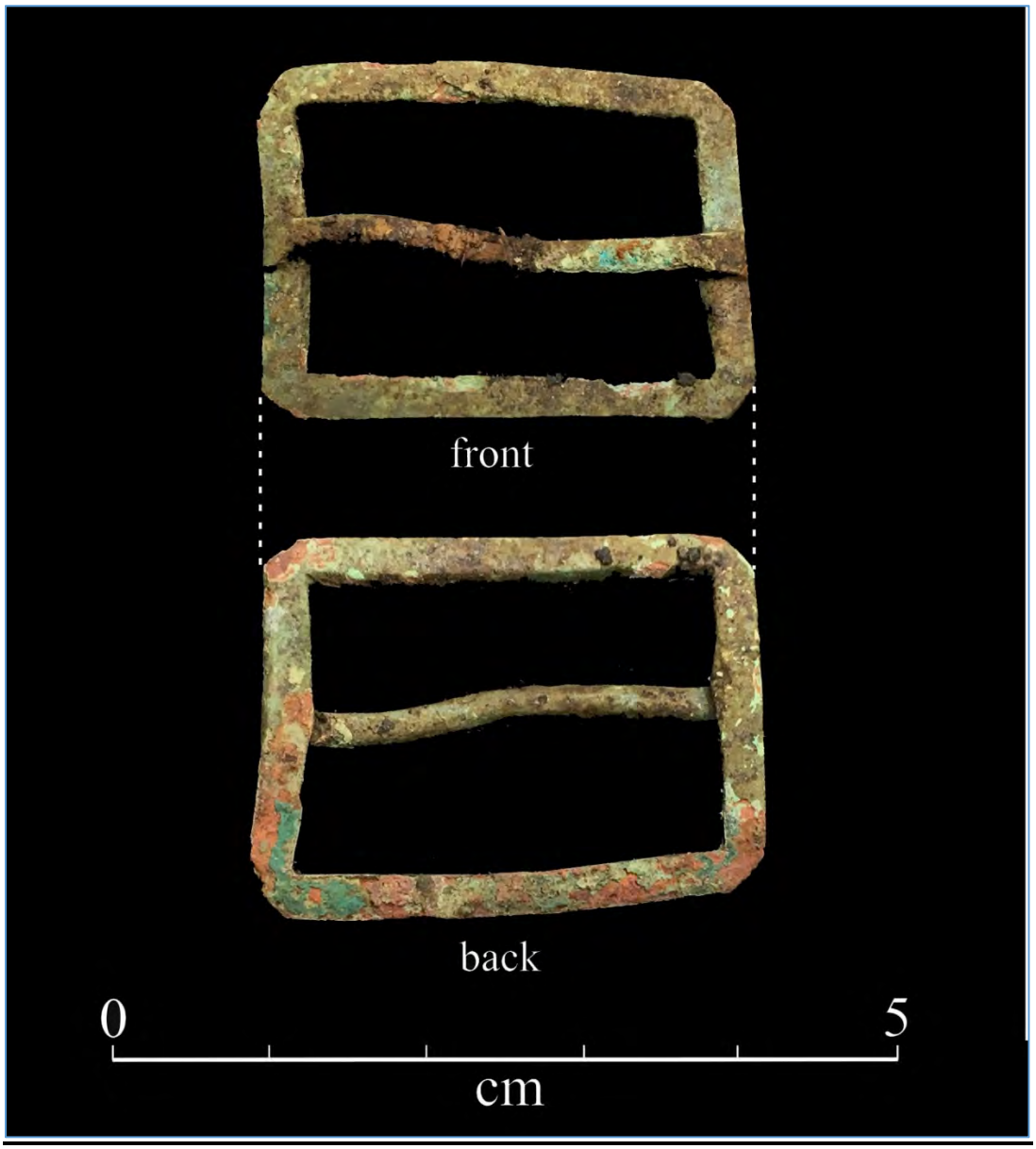


Figure 49. A strap guide that is likely a buckle adjustment for a lightweight cloth bag or satchel (MD-22; UA2015-237-278).

[22] Metal detector recoveries were assigned unique "MD" field numbers. Location maps and a summary table of MD points are provided in Appendix 7.

PERSONAL GROUP (Knives/Accoutrement)

Scabbard finial, bayonet (UA2016-063-026)

An undecorated copper alloy scabbard finial (Figure 50) was recovered from the beach just west of unit N117, E100 (MD-E). Measuring 3.26cm long with a diameter of 0.97cm at its proximal end, the acorn-shaped finial embellished the end of a leather bayonet sheath. Metallurgical analysis characterized the material as "heavily leaded tin brass" (Cooper et al. 2018). Identical specimens, known as Type 2 (*Variety c*) hollow post finials, occur within British supplied deposits of Fort Stanwix (ca. 1758-1781) (Hanson and Hsu 1975:68-71). Scabbard tips are rare in domestic-related sites and are likely associated with NEVA's naval or military-related stores.

Knife blade (UA2015-237-088)

A single copper knife blade tip measuring 3.69cm in length was recovered from N110, E101 (Figure 51). The thin almost parallel-sided blade is engraved with a shallow decorative groove. It is consistent in form with a dirk or dagger rather than a tableware knife. Metallurgical analysis determined that the specimen is essentially pure copper similar in composition to some of the copper sheet.

ACTIVITIES GROUP (Woodworking)

Axes, iron (n=10)

Ten iron axes were recovered individually and as discrete clusters (Table 6). A metal detector survey in 2012 located two clusters containing three and six specimens respectively (Test Pit-5, Test Pit-6). In both cases they were in stacked arrangements and associated with in-situ campsite deposits (McMahan 2012) (refer Figures 20-21). An additional axe (MD-7) was recovered from the primary sheet midden in 2015. Chloride salts identified during conservation indicate they were likely exposed to saltwater prior to burial (McMahan 2015:8).

Axes are entirely of hand-forged Russian manufacture, each possessing a diagnostic spike or hook protruding downward anterior to the handle socket (Viires 1969:15-17). Axes of this type are widely associated with Russian-period occupations in Alaska. Similar examples occur in Bering's 1741 survivor's camp, Yakutat's Shallow Water Town deposits (ca. 1795-1805), Old Sitka (1799-1802), Nunakakhnak Village (ca. 1840-1860), and Kolmakovskiy Redoubt (ca. 1841-1866) (Barnett and Schumacher 1967; Davis 1996; Knecht and Jordan 1985; Lenkov et al. 1992; Oswalt 1980). These can be confidently dated to the period 1741-1867.

This unusually large axe collection confirms they were a significant part of NEVA's cargo stores. While stacked arrangements suggest salvage behavior, association with occupational floors show they were used for day-to-day activities. They may have been re-handled for woodcutting, functioned as expedient mauls, or as strike-a-light steels for sparking fires.

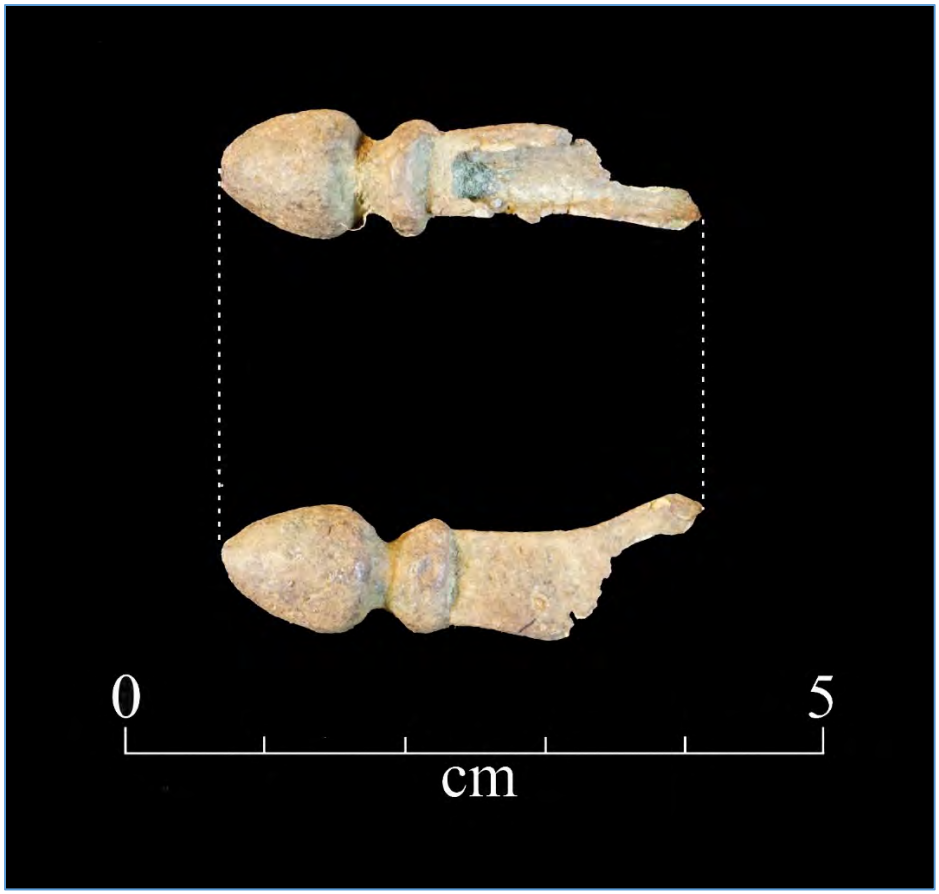


Figure 50. A scabbard finial identical to 18th century British examples (MD-E; UA2016-063-026). Metallurgical analysis characterized the artifact as "heavily leaded tin brass" (Cooper et al. 2018).

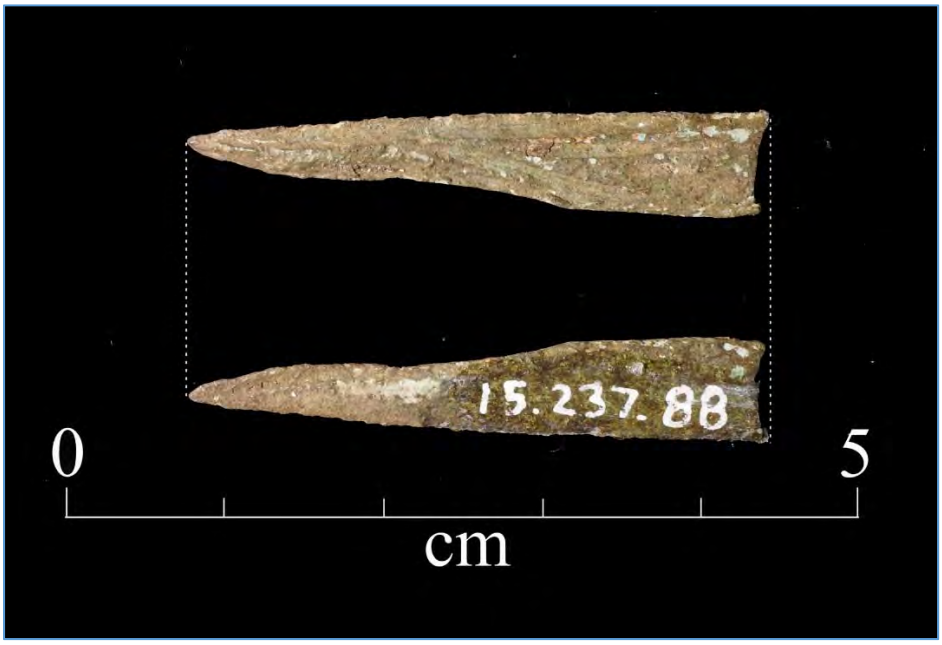


Figure 51. Possible knife blade tip (UA2015-237-088) from the South Block. The specimen was identified as copper through metallurgical analysis (Cooper et al. 2018).

Table 6. Locus 1 iron axe dimensions and provenience.

SPECIMEN	UNIT	CHEEK LENGTH[1]	BIT LENGTH[2]	EYE DIAMETER[3]	CONDITION
UA2012-229-001	Test 6	n/a	n/a	2.8	incomplete
UA2012-229-002	Test 6	15.34	n/a	2.24	incomplete
UA2012-229-003	Test 6	15.1	n/a	2.1	incomplete
UA2012-229-004	Test 6	15.58	14.14	2.75	complete
UA2012-229-005a	Test 6	16.03	11.67	2.32	complete
UA2012-229-005b	Test 6	15.97	n/a	2.21	incomplete
UA2012-229-006	Test 5	14.05	15.9	2.75	complete
UA2012-229-007	Test 5	14.75	19.14	2.64	complete
UA2012-229-008	Test 5	14.8	n/a	2.7	incomplete
UA2015-237-265	MD-7	15.2	n/a	2.42	incomplete

[1] Cheek Length (cm): measured as the maximum length of cheek, from poll to bit/blade.

[2] Bit Length (cm): measured as the maximum length of bit/blade, from toe to heel.

[3] Eye Diameter (cm): measured as the maximum internal diameter of hafting eye.

Chisel, iron (UA2015-237-263)

A rectangular wrought iron tool measuring 14.8cm long and 0.54cm thick was recovered from N115, E101 (MD-15). The flared bit has a wedge-shaped profile consistent with a woodworking-type chisel (Figure 52).

Splitting wedge, iron (UA2015-237-270)

A rectangular wedge-shaped iron tool was recovered from N101, E107 (MD-21). The hand-forged artifact measures 10.72cm x 7.14cm and is likely a splitting wedge (Figure 53).

ACTIVITIES GROUP (Hunting)

Round shot, lead and copper (n=6)

Locus 1 deposits contained four round lead shot and two related copper artifacts. Lead shot is limited to smoothbore pistol ammunition in the range of 0.35 to 0.49 caliber (Table 7) (Figure 54). The majority are 0.48 to 0.49 caliber. Broken specimens UA2015-237-142 and UA2015-237-145 refit a single 0.48 caliber round ball weighing 10.1grams. This lead specimen was whittled and carved to fit a pistol-sized firearm (Figure 55).

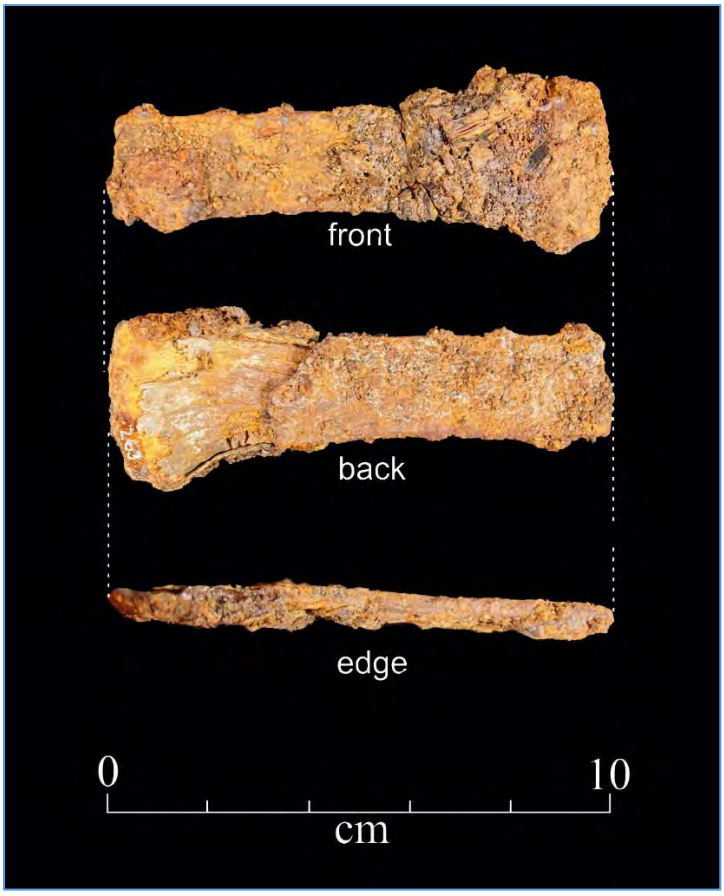


Figure 52. Wrought iron woodworking chisel (MD-15; UA2015-236-263) from the North Block.

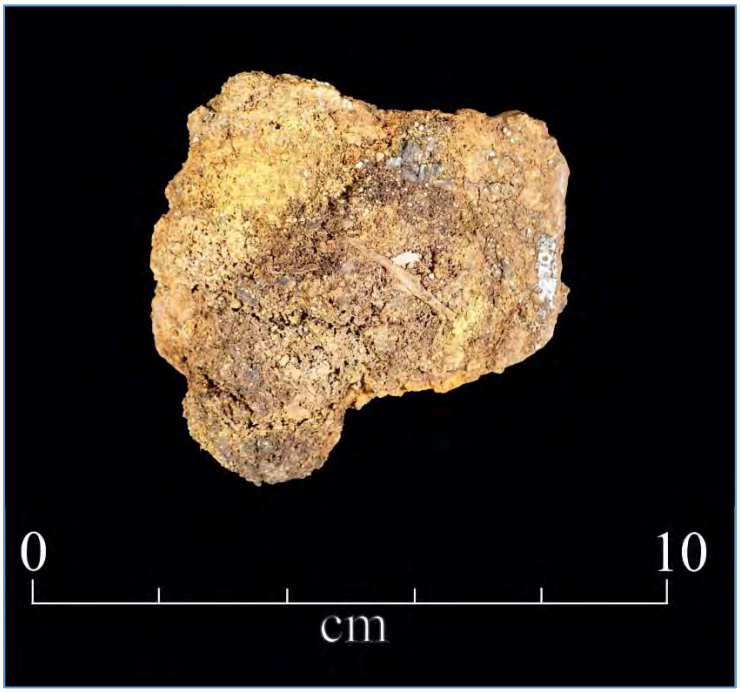


Figure 53. Wrought iron splitting wedge (MD-21; UA2015-237-270).

Figure 54. Examples of lead shot from the Survivor Terrace. Top, L to R: UA2016-063-023, UA2015-237-153, UA2015-237-143, UA2015-237-146, UA2015-237-142, and UA2015-237-145. Bottom, L to R: UA2015-237-147, UA2016-063-069, and UA2016-063-025.

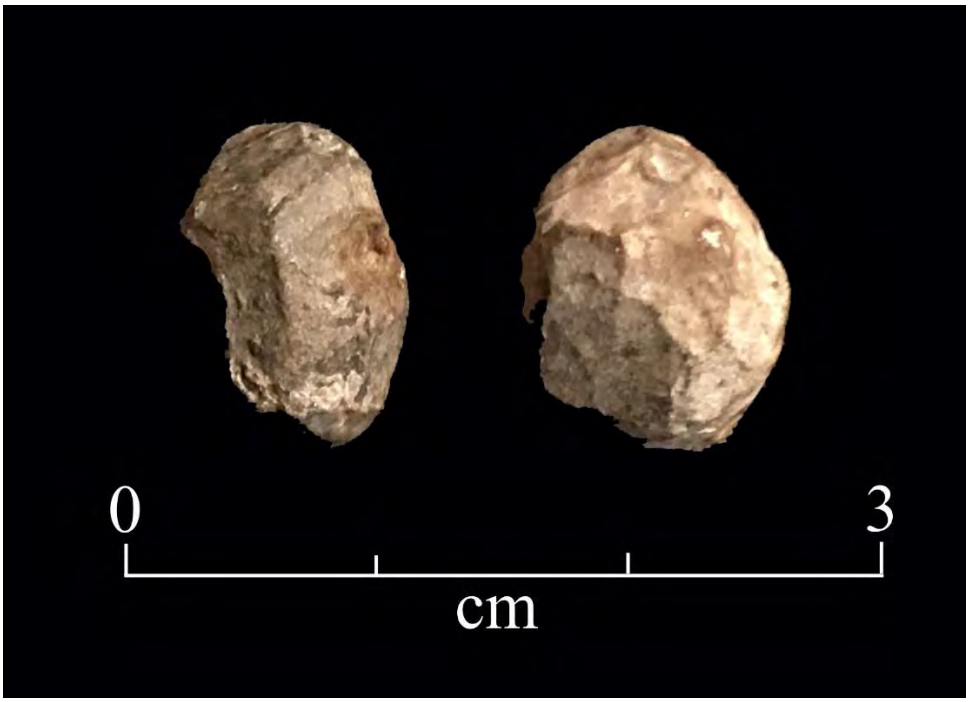


Figure 55. Details of a partial smoothbore lead shot that appears to have been whittled to fit a pistol-sized firearm. Two fragments (a:UA2015-237-142 and b: UA2015-237-145) refit to form a single 0.48 caliber round ball.

Table 7. Locus 1 round shot dimensions and firearm class.

SPECIMEN	UNIT	MATERIAL	WEIGHT (g)	DIAMETER (cm)	CALIBER	FIREARM
UA2015-237-146	N116, E101	Lead	4.0	0.9 x 1.4	0.35	Pistol
UA2015-237-142	MD-34	Lead	4.3	0.72 x 1.32	0.48	Pistol
UA2015-237-145	MD-44	Lead	5.8	0.55 x 1.32	0.48	Pistol
UA2015-237-143	N108, E101	Lead	10.9	1.9 x 1.45	0.49	Pistol
UA2015-237-75	N114, E101	Copper	9.8	1.34 x 1.4	n/a	Likely pistol
UA2015-237-76	N117, E101	Copper	14.3	1.09 x 1.64	n/a	Likely pistol

Included in this group are two medial segments of a cut copper rod (UA2015-237-75, UA2015-237-76) (Figure 56). Both are of comparable weight and dimensions as a handmade 0.52 caliber copper ball from Locus 2 Cache Feature 2 (see UA2016-063-024). These are believed to be early stage "blanks" used to fashion expedient copper ammunition. Cutting was performed by simple hammer and anvil, possibly using one of the many iron axes available to survivors. None of the pistol shot appear to have been fired.

Birdshot (n=4)

The assemblage includes four lead birdshot used for hunting game such as birds, geese, and small mammals (Table 8) (Figure 57). One (UA2016-063-027) has mold seams from casting in a hand-mold (Sivilich 2016:146-152). All are burned and may have been discarded with remains of cooked game animals.

Table 8. Locus 1 birdshot dimensions and provenience.

SPECIMEN	UNIT	MATERIAL	WEIGHT (grams)	DIAMETER (cm)
UA2016-063-054	N134, E99	Lead	1.4	0.62
UA2016-063-027	N113, E100	Lead	0.7	0.45 x 0.58
UA2015-237-152	N108, E101	Lead	0.9	0.58
UA2015-237-148	N108, E102	Lead	0.8	0.53

Gunflints and debitage (n=24)

Twenty-four gunflint and debitage fragments of blond and honey-colored flint are present (Table 9) (Figure 58). One refitted specimen (UA2016-063-028, UA2016-063-029) is a complete D-shaped spall with a convex heel and a single working edge (Figure 59). Fragments have pronounced bulbs of percussion at the heel and wedge-shaped cross sections. Both their color and

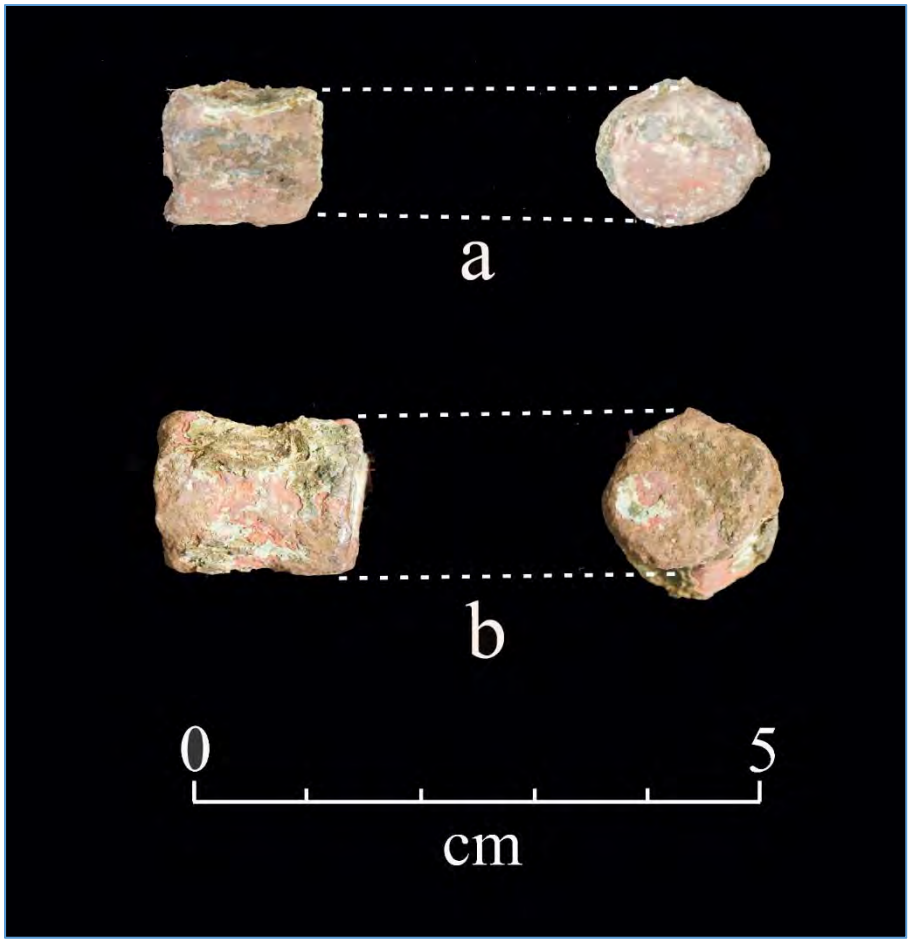


Figure 56. Two medial segments of a cut copper rod (a: UA2015-237-75, b: UA2015-237-76) believed to be early stage "blanks" used to fashion expedient copper ammunition.

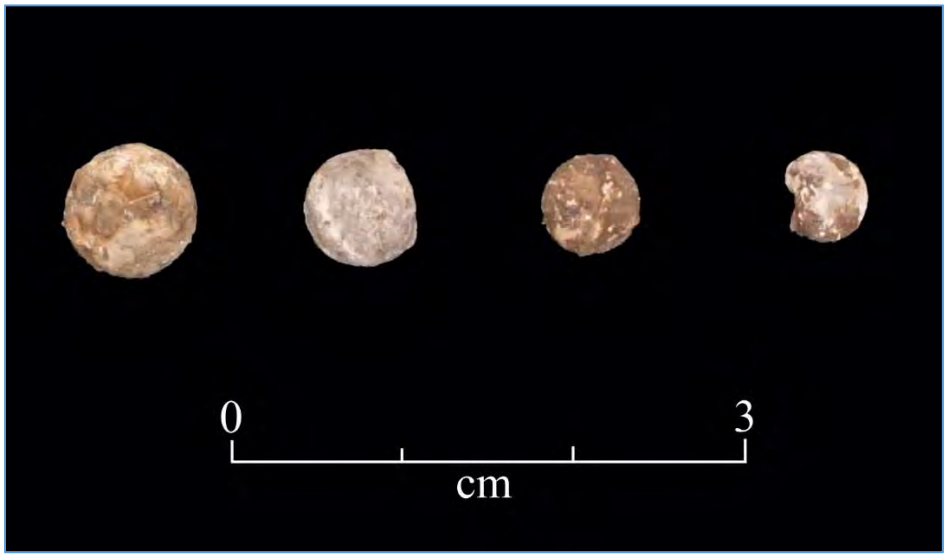


Figure 57. Examples of birdshot (UA2015-237-260) that that were collected from South Block backdirt after passing through the sifting screen. A mold seam is visible on the third specimen from the left. Eighteen birdshot were recovered during 2015-2016.

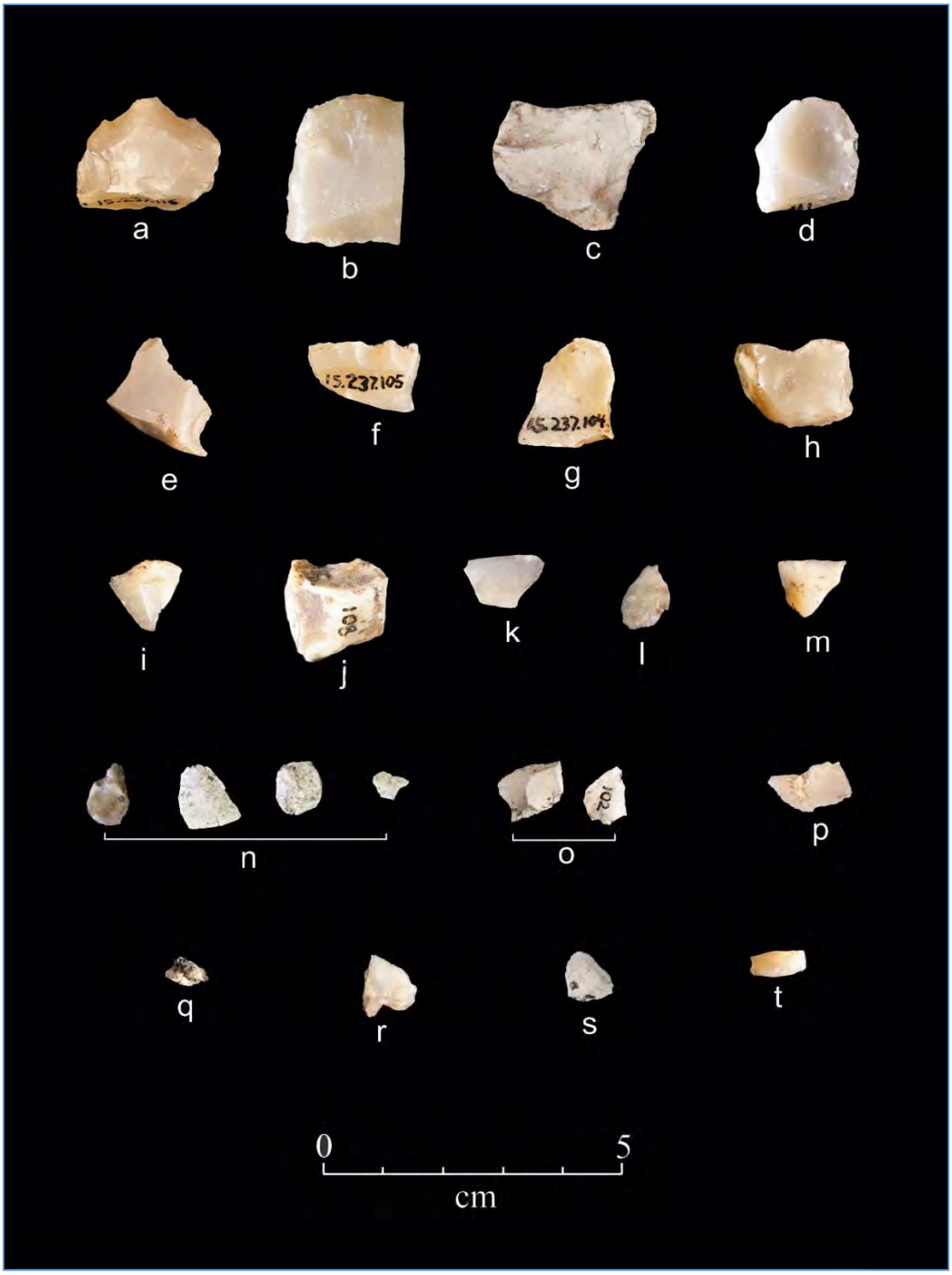


Figure 58. Gunflints and related debitage from the Survivor Terrace area. All are of honey-Colored French flint. Catalog numbers are: (a) UA2015-237-116; (b) UA2015-237-0113; (c) UA2016-063-028; (d) UA2015-237-0111; (e) UA2015-237-106; (f) UA2015-237-105; (g) UA2015-237-104; (h) UA2015-237-107; (i) UA2015-237-112; (j) UA2015-237-0108; (k and l) UA2015-237-103; (m) UA2015-237-109; (n) UA2015-237-028 (associated with burned grass); (o) UA2015-237-102; (p) UA2016-063-001; (q) UA2015-237-258; (r) UA2015-237-114; (s) UA2015-237-259; and (t) UA2015-237-110.

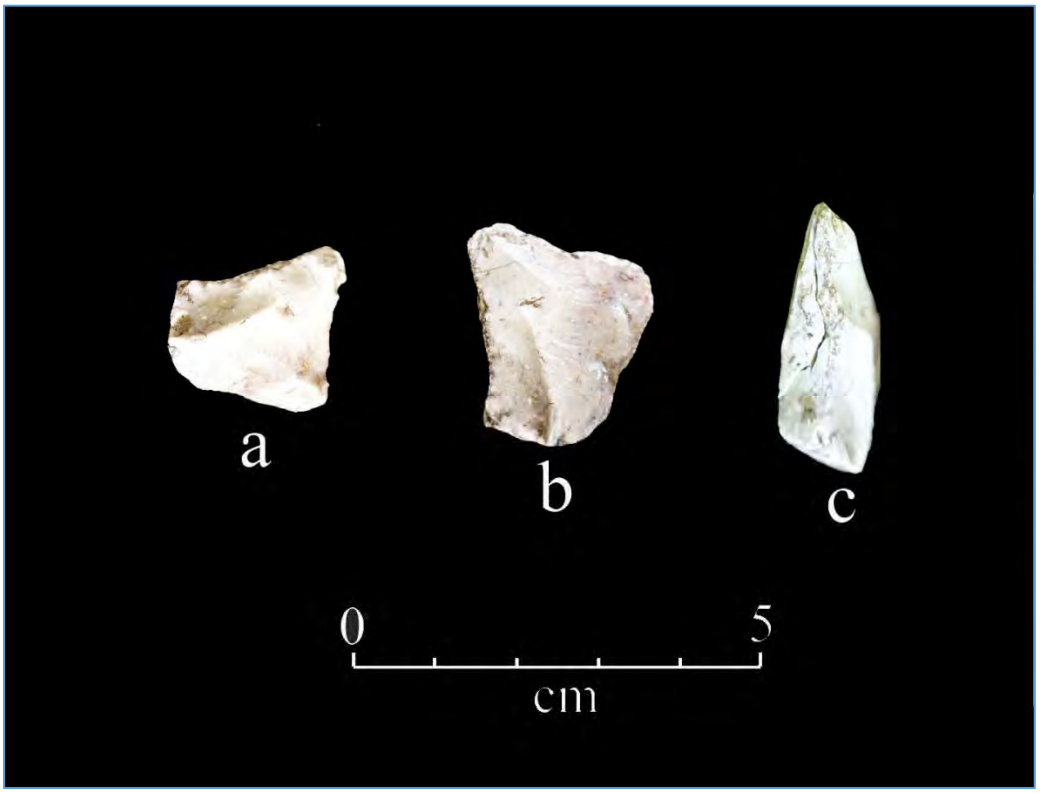


Figure 59. Complete D-shaped gunflint spall refitted from two burned pieces: (a) UA2016-063-028; (b) UA2016-063-029); (d) both pieces showing refit.

manufacturing style are diagnostic of the French gunflint tradition (Ballin 2012:119; Chelidonio 2010:37; Hamilton 1960:76; White 1975:58). French gunflints of the late 18th century were manufactured to fit four primary firearm classes, the rampart gun, musket, large pistol, and small pistol. Measured specifications for each type are based on a trade manual of 1797 provided in Delaney (1989:121). Complete refitted specimen (UA2016-063-028 / UA2016-063-029) measures 2.5cm long with a maximum width of 2.4cm. This example falls in the size range for a small flintlock pistol.

All other gunflints are highly fragmented with splintered and crushed edges from use as strike-a-lights or tinderflints (Runnels 1994:10; Skertchly 1879). As such the assemblage is dominated by steeply broken medial, edge fragments, and small flakes measuring less than 1cm^2. Flakes were detached through hard percussion. Although difficult to estimate due to battering, there were probably no more than four individual gunflints present.

Recovered within an in-situ layer of carbonized grass in N117, E101 were four burned gunflint flakes (UA2015-237-282). These and six other heat-altered gunflint flakes were probably detached during the sparking of fires. This debitage occurred in both North and South Block deposits, confirming a link between these two separate excavation blocks.

The presence of exhausted and burned pistol-sized gunflints correlates with a survivor's account provided in Shalkop (1979:38). These may very well be the same flints mentioned by midshipmen Terpigorev in his recollection of January 9, 1813, the night following NEVA's loss:

> *This same evening one of the promyslzlenniks, who had a [flintlock] pistol with him, made a fire and near him the sufferers recovered the first night.*

Table 9. Locus 1 gunflint dimensions, distribution, and condition.

SPECIMEN	UNIT	BLOCK	DESCRIPTION	CONDITION
UA2015-237-102 (n=1)	N115, E102	North Block	Flake (<1cm²)	burned
UA2015-237-103 (n=2)	N116, E101	North Block	Flakes (<1cm²)	unburned
UA2015-237-103 (n=1)	N116, E100	North Block	Flake (<2cm²)	burned
UA2015-237-105 (n=1)	N116, E100	North Block	Edge fragment	unburned
UA2015-237-106 (n=1)	N116, E100	North Block	Medial fragment	unburned
UA2015-237-107 (n=1)	N116, E100	North Block	Heel fragment	unburned
UA2015-237-108 (n=1)	N116, E100	North Block	Medial fragment	burned
UA2015-237-109 (n=1)	N110, E101	South Block	Flake (<1cm²)	unburned
UA2015-237-110 (n=1)	N108, E101	South Block	Fragment (<1cm²)	unburned
UA2015-237-111 (n=1)	N116, E100	North Block	Exhausted gunflint	unburned
UA2015-237-112 (n=1)	N115, E101	North Block	Flake (<1cm²)	unburned
UA2015-237-113 (n=1)	N114, E101	North Block	Heel and medial	unburned
UA2015-237-114 (n=1)	N108, E101	South Block	Flake (<1cm²)	unburned
UA2015-237-116 (n=1)	N116, E101	North Block	Medial fragment	unburned
UA2015-237-258 (n=1)	N115, E100	North Block	Flake (<1cm²)	unburned
UA2015-237-259 (n=1)	N108, E102	South Block	Flake (<1cm²)	burned
UA2015-237-282 (n=4)	N117, E101	North Block	Flakes (<1cm²)	burned
UA2016-063-001 (n=1)	N102, E101	n/a	Flake (<1cm²)	unburned
UA2016-063-028 (n=1)	N118, E101	n/a	Complete, refit	burned
UA2016-063-029 (n=1)	N118, E101	n/a	Complete, refit	burned

ACTIVITIES GROUP (Clothing Repair/Manufacture)

Awl, copper (UA2015-237-199)

A hand-made copper awl was recovered from N110, E101. The 2.6cm long tool is fashioned from cut, folded, and hammered sheet copper. Similar copper awl blanks (UA2016-063-62, UA2015-237-172) are included in a description of *Architectural-Maritime (copper hull sheathing)* artifacts (Figure 60). This finished specimen was likely used for clothing repair and/or manufacture.

Clothing in particular would have been of crucial importance during the winter of 1813 as many survivors came ashore naked and suffered from exposure (Shalkop 1979:58). Materials for expedient clothing manufacture were probably available for salvage. Just months after the wreck Baranov's relief expedition observed great quantities of cloth along the shoreline.

> *There was on the NEVA a lot of sailcloth and Flemish cloth which was also washed ashore; but one must suppose that the waves beat it against the rocks because not one piece was whole; it was all as if cut up with knives* (Shalkop 1979:42).

ACTIVITIES GROUP (Indeterminate-Expedient Lithic Tools)

Lithic tools (n=2)

One retouch-type flake of red chert measuring <1cm² was present within N110, E101 (UA2015-237-115). The flake refits a formal lithic tool from N109, E101 (see Locus 1A-UA2015-237-189). A 7.2cm x 13.2cm basalt cobble spall tool with unifacial edge wear was recovered from N118, E102 (UA2016-063-011) (Figure 61). Although the function of these tools is unclear, both are evidence of expedient stone tool use during the survival period.

ACTIVITIES GROUP-MARITIME (Navigation)

Chart dividers, copper (UA2015-237-271)

The single leg of a chart divider or compass, identified as copper through metallurgical analysis (Cooper et al. 2018), was recovered from N107, E102 (Figure 62). The undecorated divider is undoubtedly one of the NEVA's navigational instruments.[23] Its presence within the site indicates efforts were made to gather maps and related survival gear in the hours leading up to the ship's loss.

Although broken, the instrument could have found value as an awl for fashioning makeshift clothing or tents. Evidence of awl production is amply represented in Locus 1 deposits (see UA2015-237-199 in *Activities Group-clothing repair/manufacture,* and UA2016-063-62, UA2015-237-172 in *Activities Group-Maritime copper hull sheathing*).

[23] A similar broken compass leg was recovered from House 3 of Bering's 1741 *Sv. Petr* survivor's camp (Lenkov et al. 1992:45,50). Researchers believe it was repurposed as an expedient punch or awl.

Figure 60. Hand-made copper awls and/or awl blank from the Survivor Terrace. These improvised tools were fashioned from cut, folded, and hammered sheet copper (ship's sheathing). (a) UA2015-237-0199; (b) UA2016-063-062; (c) UA2015-237-0172.

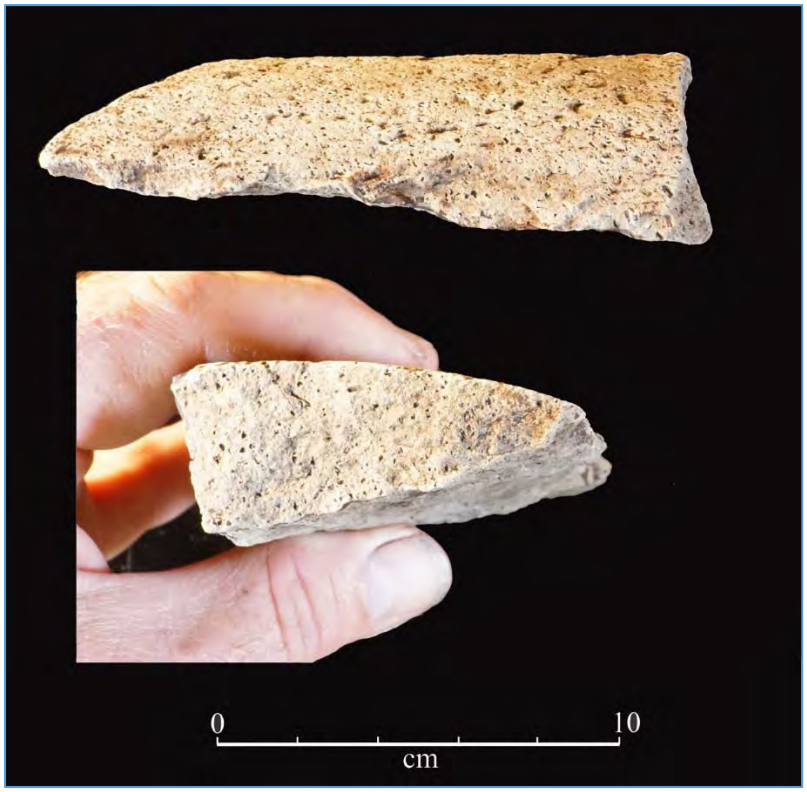


Figure 61. Cobble spall with unifacial edge wear believed to be a tool of expediency. (UA2016-063-011).

Figure 62. Leg of a copper chart divider / compass believed to be one of the NEVA's navigational instruments (UA2015-237-271).

ARCHITECTURAL GROUP (Fasteners)

Nails and spikes, iron (n=24)

The assemblage includes eighteen iron nails and six spike fragments (Table 10). Of eleven attributable to manufacturing technique, ten are hand-wrought (Figure 63).[24] The absence of wire nails (post ca. 1880) and machine-made cut nails (post ca. 1815) provides a *terminus ante quem* consistent with the early 19th century (Adams 2002:67-71; Nelson 1968; Priess and Shagnessey 1972:54; Wells 1998:86).

Fasteners were evenly distributed throughout Locus 1 excavations with two notable exceptions. A patterned arrangement of five were recovered from the N134, E99/N135, E99 burial feature. These occurred at 12 to 18-inch intervals following the outline of a wooden coffin enclosure. Use of irregularly-sized nails and spikes indicates the coffin box was built of mismatched lumber, possibly collected as splintered wreckage. Of those used in construction, one is a hand-wrought spike (UA2016-063-066) while the others can only be classified as "square" nails due to their poor preservation.

Table 10. Locus 1 iron nail and spike manufacturing type and condition.

SPECIMEN		TYPE	MANUFACTURE	CONDITION
UA2015-237-182	MD-17	spike	Hand-wrought	Incomplete, distal end
UA2015-237-180	MD-29	spike	Square, unknown	Incomplete, medial shank
UA2015-237-280	N110, E102	spike	Hand-wrought	Incomplete, head and shank
UA2015-237-238	MD-74	spike	Hand-wrought	Incomplete, medial shank
UA2016-063-010	MD-A	nail	Square, unknown	Incomplete
UA2015-237-207	N110, E101	nail	Square, unknown	Incomplete, medial shank
UA2015-237-176	N110, E101	nail	Square, unknown	Incomplete, medial shank
UA2015-237-173	N108, E102	nail	Hand-wrought	Incomplete, head and shank
UA2015-237-281	N108, E101	nail	Hand-wrought	Incomplete, head only
UA2016-063-004	N102, E101	nail	Square, unknown	Incomplete
UA2016-063-002	N102, E101	nail	Hand-wrought	Incomplete
UA2015-237-220	N114, E100	nail	Square, unknown	Incomplete

[24] An anomalous machine-made cut nail (UA2016-063-053) was recovered at the surface of N134, E99, well above the burial feature. It is probably associated with a later occupation or storm-driven flotsam.

UA2015-237-272	MD-10	nail	Hand-wrought	Incomplete, head and shank
UA2015-237-243	N110, E101	nail	Hand-wrought	Incomplete, head and shank
UA2016-063-005	N102, E101	nail	Square, unknown	Incomplete, medial shank
UA2016-063-003	N102, E101	spike	Hand-wrought	Incomplete, head and shank
UA2016-063-006	N102, E101	nail	Square, unknown	Incomplete, medial shank
UA2016-063-053	N134, E99	nail	Cut	Incomplete, head and shank
UA2016-063-064	N135, E99	nail	Square, unknown	Incomplete, medial shank
UA2016-063-057	N135, E99	nail	Square, unknown	Incomplete, medial shank
UA2016-063-058	N135, E99	nail	Square, unknown	Incomplete, medial shank
UA2016-063-061	N135, E99	nail	Square, unknown	Incomplete, medial shank
UA2016-063-065	N135, E99	nail	Square, unknown	Incomplete, medial shank
UA2016-063-066	N135, E99	spike	Hand-wrought	Incomplete, medial shank

Metal detector surveys identified a second cluster of corroded wrought or cut nails (UA2016-063-010, UA2015-237-180) from a terrace scarp just west of the burial. These may be an indication that other coffins or markers were previously lost to erosion.

ARCHITECTURAL GROUP (Hardware)

Hardware, pin or nail, iron (UA2015-237-229)

An iron hardware pin or nail measuring 11.24cm in length was recovered from N108, E102. The square shank measures 0.6cm x 0.7cm in cross-section and is hand-forged.

ARCHITECTURAL GROUP-MARITIME (Copper Fasteners)

Nails, copper (n=9)

Nine square copper nails are present (Figure 64). These include cast specimens measuring less than 3cm, and larger hand-forged "Rosehead" types of various sizes (Table 11). The majority (77%) were intentionally cut or broken.

Copper nails are generally associated with ship's architecture where they were preferred over iron fasteners for resistance to saltwater corrosion. Shank dimensions of cast specimens are identical to nail perforations of the Locus 2 copper hull plates. Two (UA2015-237-80, UA2015-237-83) with bent heads and shanks were clearly pulled from wooden architecture. These were probably collected during the removal of NEVA's hull plates.

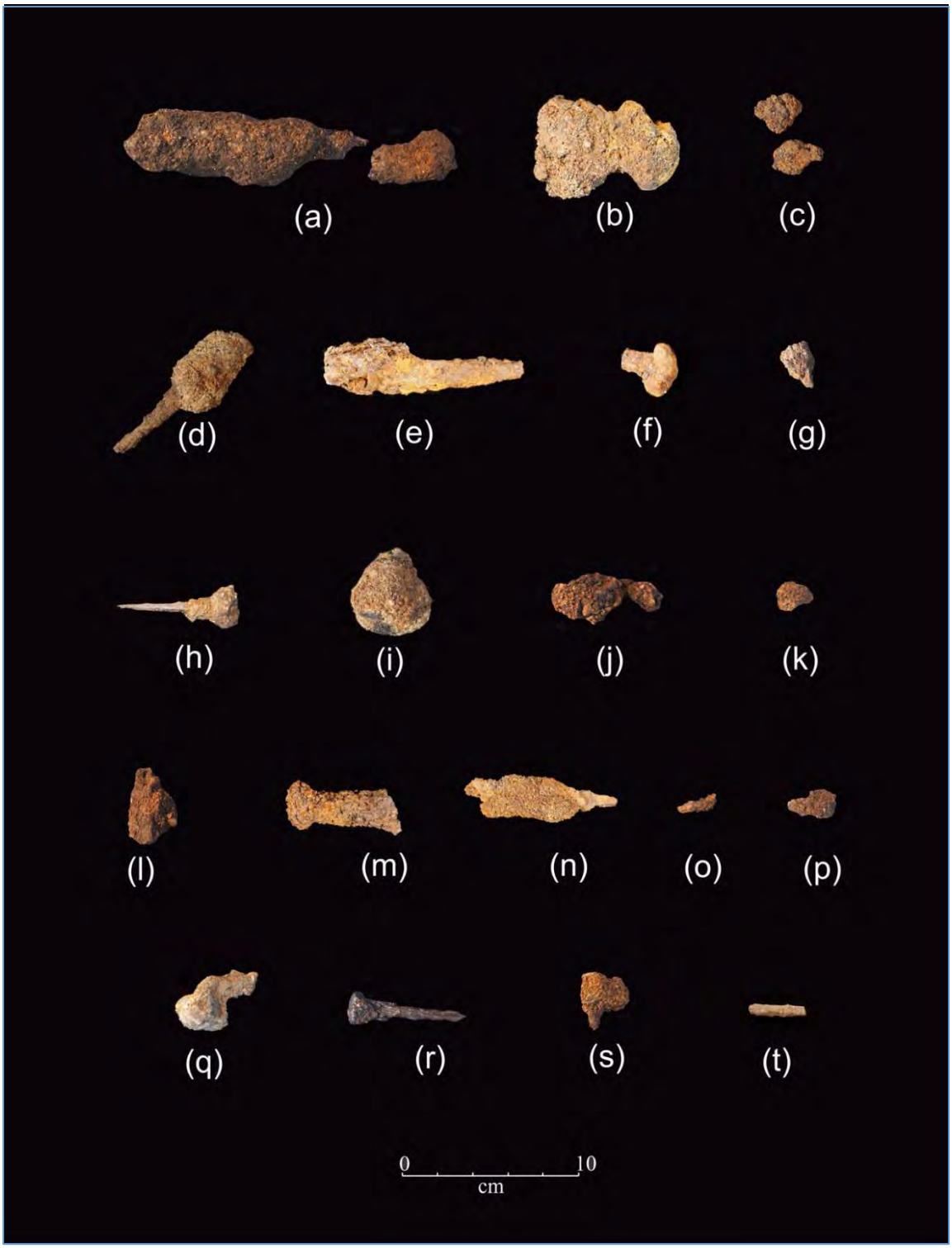


Figure 63. Wrought iron nails / fasteners from the Survivor Terrace. (a) UA2016-063-066; (b) UA2016-063-003; (c) UA2015-237-220; (d) UA2015-237-243; (e) UA2015-237-182; (f) UA2015-237-173; (g) UA2015-237-207; (h) UA2016-063-002; (i) UA2015-237-238; (j) UA2016-063-057; (k) UA2016-063-065; (l) UA2016-063-058; (m) UA2016-063-010; (n) UA2015-237-180; (0) UA2016-063-061; (p) UA2016-063-064; (q) UA2016-063-005; (r) UA2015-237-0280; (s) UA2016-063-053; and (t) UA2015-237-176.

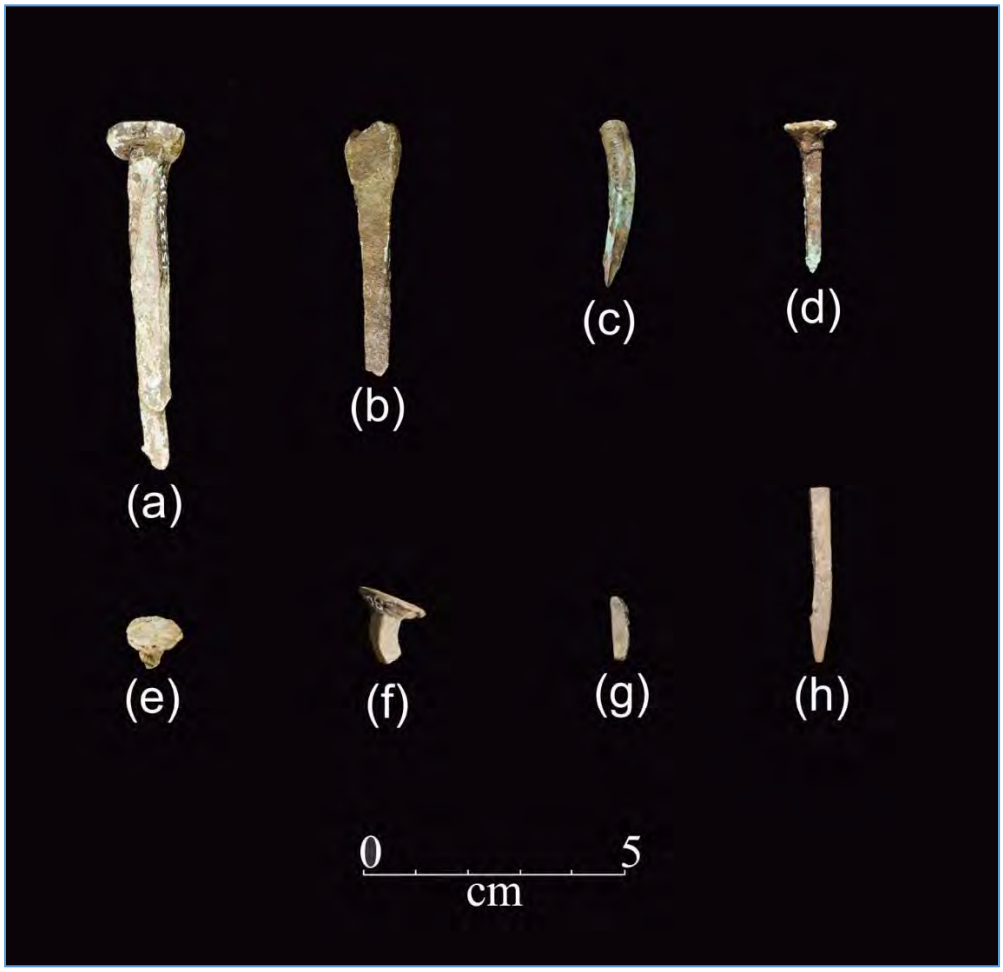


Figure 64. Copper nails from the Survivor Terrace. (a) UA2015-237-0098; (b) UA2015-237-77; (c) UA2015-237-83; (d) UA2015-237-85; (e) UA2015-237-78; (f) UA2015-237-80; (g) UA2015-237-74; and (h) UA2015-237-171.

Table 11. Locus 1 copper nail manufacture and dimensions.

SPECIMEN	LENGTH (cm)	MANUFACTURE	CONDITION
UA2015-237-85	2.96	Square, cast	complete
UA2015-237-80	1.31	Square, cast	Head with broken shank
UA2015-237-78	0.87	Square, cast	Head with broken shank
UA2015-237-74	1.22	Square, cast	Shank fragment, broken
UA2015-237-283	1.77	Square, cast	Shank fragment, broken
UA2015-237-171	3.42	Square, cast	Shank fragment, broken

UA2015-237-83	3.08	Square, cast	Shank fragment, broken
UA2015-237-77	4.71	Square, forged	broken shank
UA2015-237-98	6.49	Square, forged	complete

ARCHITECTURAL GROUP-MARITIME (Copper Hull Sheathing)

Copper, sheet fragments (n=19)

One of the more common artifacts are thin copper sheet fragments. Half of the nineteen specimens exhibit evidence of cutting, folding, hammering, and modification. These are remnants of NEVA's butchered copper skin. Table 12 summarizes attributes of size (cm²), sheet thickness or gauge, and possible function(s).

This collection is dominated by flattened and cut scraps measuring less than about 17cm², the size of a half dollar or smaller. Three are perforated, two with square and one with round holes. Only two gauges of sheet copper are present, measuring 0.7mm and 0.9mm. This same diameter copper occurs in complete hull sheathing plates of Cache Feature 3 (Locus 2).

Six rectangular fragments were cut and hammered with their edges carefully folded under. One was folded multiple times and hammered into a thick multi-layer bar (UA2015-237-72). Two were fashioned into copper rods (UA2016-063-62, UA2015-237-172). This same fold and hammer technique was used to produce a finished awl (UA2015-237-199) included in the *Activities Group (clothing repair/manufacture)* discussion (refer Figure 60). Both the awl and rod blanks measure between 2.6cm and 2.88cm in length, indicating the bars and rods were early stage "blanks" used in awl production.

Table 12. Locus 1 sheet copper assemblage.

SPECIMEN	UNIT	SIZE (cm²)	GAUGE (mm)	MODIFICATION(s)
UA2015-237-94	MD-22	8.8	0.7	none
UA2015-237-95	MD-22	3.1	0.7	none
UA2015-237-81	backdirt	0.22	0.7	none
UA2015-237-93	MD-22	1.4	0.9	none
UA2015-237-196	backdirt	0.23	0.7	none
UA2015-237-91	MD-22	1.01	0.9	none
UA2015-237-92	MD-22	0.17	0.9	none
UA2015-237-79	N110,E102	1.03	0.7	none
UA2015-237-186	N114, E100	1.07	0.7	none

UA2015-237-73	MD-9	7.8	0.7	perforated, round brad holes
UA2015-237-101	MD-13	15.01	0.7	folded
UA2015-237-100	MD-5	5.2	0.7	folded
UA2015-237-286	N109, E103	16.7	0.7	folded , perforated square nail hole
UA2015-237-70	MD-38	3.25	0.7	folded , perforated square nail hole
UA2015-237-90	MD-22	4.37	0.7	folded
UA2015-237-200	backdirt	0.92	0.7	folded
UA2015-237-72	N104, E100	1.25	0.7	folded sheet copper rod
UA2016-063-62	N135, E99	0.5	0.7	folded sheet copper rod
UA2015-237-172	MD-37	0.5	0.7	folded sheet copper rod

ARCHITECTURAL GROUP-MARITIME (Window/Lantern Glazing)

Mica (UA2016-063-043)

One 1.01cm x 0.75cm fragment of sheet mica was recovered from N105, E101 (Figure 65). Mica was typically used in the 18th and 19th century for window glazing in ship's architecture or lantern panes (Woodhead, Sullivan and Gusset 1984:65). Known during the period as *Muskovy glass*, its widespread application in Russian sailing ships was noted in 1803;

> Mica has long been used as substitute for glass. A great quantity of it is said to be used in the Russian Marine for panes to the cabin windows of ships. It is preferred because it is not as liable as glass to be broken by the agitation of the ship [Dobson 1803:500].

Similar fragments from Bering's *Sv. Petr* survivor's camp were interpreted as remnants of portholes or lanterns (Lenkov et al. 1992:44,57). Mica sheets within early 19th century workshop deposits at Castle Hill (SIT-002) were cut and perforated for use in windows (McMahan 2002:55). Although originally purchased as a British ship, the NEVA may very well have been outfitted or upgraded with this type of window glazing.

UNIDENTIFIED GROUP

Iron concretions, indeterminate (n=11)

Eleven iron concretions and non-diagnostic fragments are present (Table 13). Future conservation measures might yield information regarding their use and function. Some concretions were subjected to radiography by the Texas A&M Conservation Laboratory (refer Appendix 4).

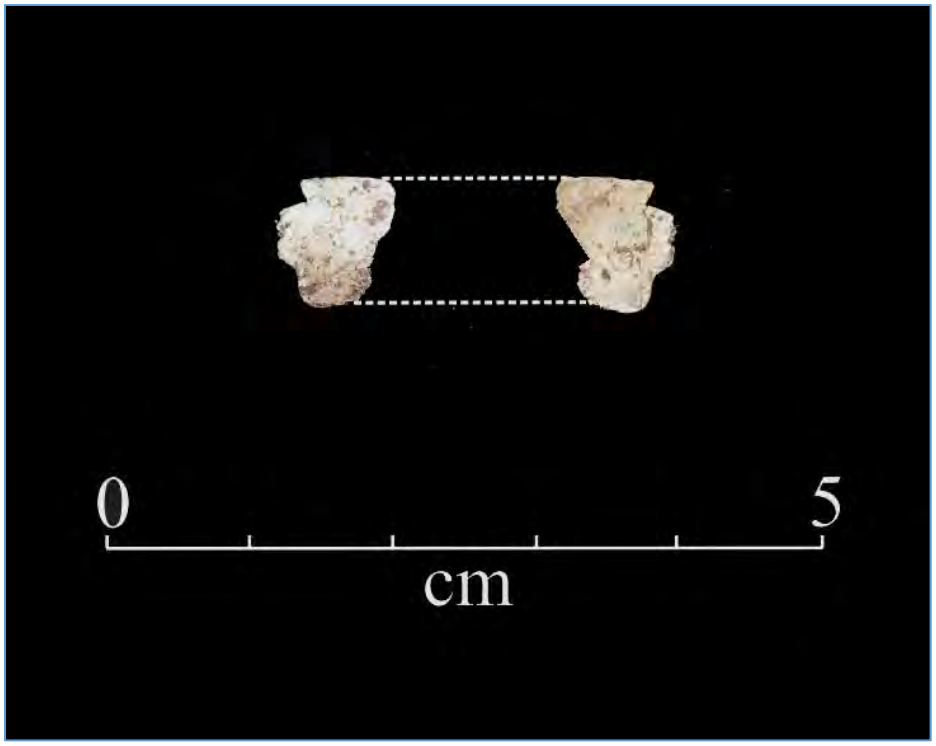


Figure 65. Sheet mica fragment ("Muskovy glass") from the Survivor Terrace (UA2016-063-043).

Table 13. Locus 1 indeterminate iron fragments and concretions.

SPECIMEN	PROVENIENCE	FUNCTION
UA2015-237-179	MD-71	indeterminate
UA2015-237-213	N116, E100	indeterminate
UA2015-237-210	N116, E101	indeterminate
UA2015-237-221	N110, E101	indeterminate
UA2015-237-211	N110, E101	indeterminate
UA2015-237-222	MD-75	indeterminate
UA2015-237-208	N110, E101	indeterminate
UA2015-237-236	MD-12	indeterminate
UA2015-237-264	MD-72	indeterminate
UA2015-237-235	MD-73	indeterminate
UA2016-063-030	N118, E101	indeterminate

Lead, indeterminate (n=17)

Seventeen lead fragments could not be ascribed to a particular function (Table 14). One flattened 0.52cm x 1.4cm circular disk (UA2015-237-137) is consistent in size with a bale seal. The artifact may be associated with stores of "Flemish cloth" and textiles known to have washed ashore after the wreck (see Shalkop 1979:42).

Table 14. Locus 1 indeterminate lead specimens.

SPECIMEN	PROVENIENCE	FUNCTION
UA2015-237-137	N116, E100	Indeterminate, possible bale seal
UA2015-237-140	MD-28	indeterminate
UA2015-237-174	N110, E102	indeterminate
UA2015-237-179	MD-71	indeterminate
UA2015-237-188	N116, E101	indeterminate
UA2015-237-213	N116, E100	indeterminate
UA2015-237-210	N116, E101	indeterminate
UA2015-237-221	N110, E101	indeterminate
UA2015-237-211	N110, E101	indeterminate
UA2015-237-222	MD-75	indeterminate
UA2015-237-208	N110, E101	indeterminate
UA2015-237-236	MD-12	indeterminate
UA2015-237-264	MD-72	indeterminate
UA2015-237-235	MD-73	indeterminate
UA2016-063-030	N118, E101	indeterminate
UA2016-063-042	N105, E101	indeterminate
UA2016-063-052	N134, E99	indeterminate

Copper or bronze, indeterminate (n=2)

The assemblage includes two small copper or copper alloy shards of unknown function (UA2015-237-71, UA2015-237-84) (Figure 66). These appear to be general metalworking debitage.

Lithic samples (n=4)

Four unmodified lithics are present. Specimens UA2015-237-184 and UA2015-237-185 are pumice fragments common to the local geology. Two samples of basaltic fire-cracked rock (FCR) were collected for future study (UA2015-237-190, UA2016-063-044).

Assemblage Summary: Locus 1 Survivors Terrace (North Block)

Locus 1 contains 141 artifacts, or 43% of the total assemblage (refer Tables 4 and 5). This *Component 1* assemblage undoubtedly represents NEVA's primary survival camp, occupied between January 9 and February 2, 1813. Russian style axes (ca. 1741-1867), hand-wrought iron nails and tools, and flintlock pistol technology (i.e. round shot and French gunflints) are of early 19th century manufacture. Copper hull sheathing and wrought/cast ships nails are diagnostic to pre-steam sailing vessels. A rare chart divider or compass, and early-style (18th century) bayonet scabbard provide evidence of a naval or military equipment.

Artifacts are dominated by *Architectural-Maritime Group* copper nails and hull sheathing (21%), and *Architectural Group* iron nails, spikes, and hardware (17%).[25] (Figure 67). Copper hull sheathing is abundant at 14%, nearly half of which was modified for expedient tool use. A handmade awl and associated awl "blanks" suggest on-site clothing manufacture or repair. Linear arrangements of iron nails and spikes recovered from a coffin indicate salvage of dimensional lumber, possibly from the NEVA's scattered wreckage. Twenty-one percent of all artifacts are small scraps and concretions of an *Unidentified Group.*

Twenty-four percent of the assemblage are pistol shot, birdshot, and gunflints. These *Hunting Group* artifacts confirm a flintlock pistol of roughly 0.48-0.52 caliber, a firearm unusual outside of military and naval contexts. Survivors apparently went to great lengths to produce workable ammunition, efforts represented by a whittled lead pistol ball and butchered copper hardware used in projectile manufacture.[26] Evidence is unclear whether this pistol shot or birdshot was ever successfully fired. Associated gunflints were reduced to battered fragments from starting fires. This pistol and exhausted flints directly corroborate the survival account of NEVA's midshipmen Mikhailo Il'ich Terpigorev (see Shalkop 1979:38).

[25] Discussion of the Locus 1 assemblage excludes 42 artifacts of the *Locus 1A* intrusive hearth, and a collection of 62 artifacts from *Locus 1 Unattributed Contexts.* These are from mixed or unclear contexts.

[26] Other evidence of expedient ammunition in the SIT-963 assemblage includes hand-hammered copper pistol shot (UA2016-063-024); copper projectile blanks (UA2015-237-075, UA2015-237-076); and cut copper nail shanks of birdshot size (UA2015-237-201, UA2015-237-284).

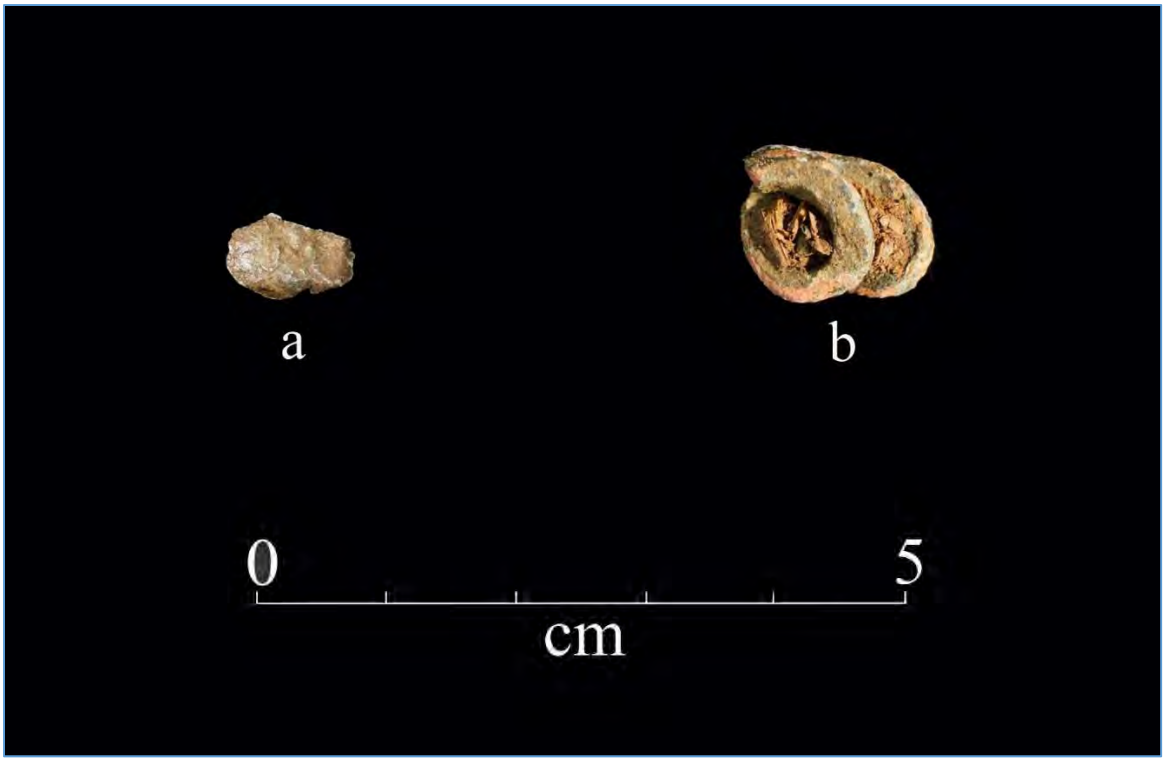


Figure 66. Unidentified copper or copper alloy artifacts from the Survivor Terrace: (a) UA2015-237-71; (b) UA2015-237- 84.

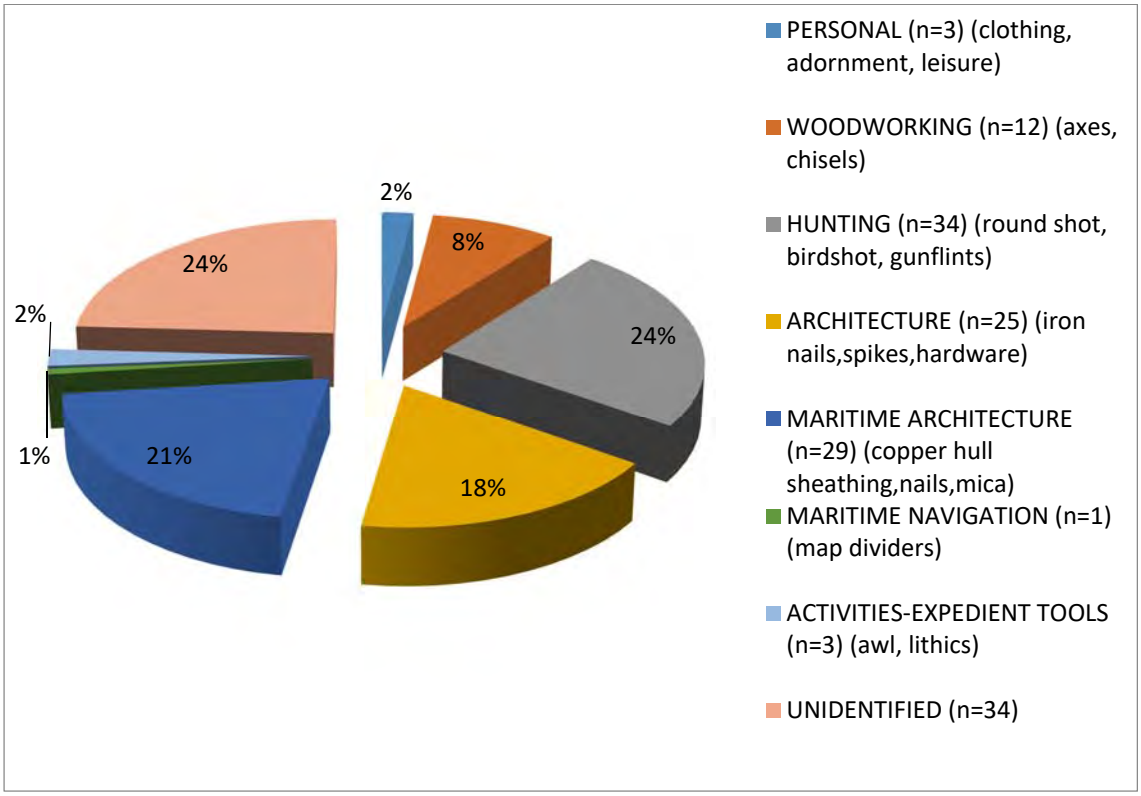


Figure 67. Locus 1 Survivors Terrace functional groups and comparative artifact frequency.

Large numbers of iron axes and chisels of the *Woodworking Group* (9%) confirm that tools were successfully recovered from the wreck. While some appear to have been dragged ashore in boxes or crates, their wide distribution indicates they were actively used. Two expedient lithic tools provide evidence that smaller hand tools were at a premium.

Personal Group items are significantly under-represented (2%). These are limited to a bayonet scabbard, knife tip, and strap guide from a bag or satchel. The presence of a nautical chart divider suggests that instruments and maps were gathered prior to NEVA's loss. Notably absent are beads, buttons, window glass, bottle fragments, kaolin pipes, and ceramics typically associated with 19th century domestic occupations. These fragile items apparently didn't survive the shipwreck.

It is clear from the assemblage that survivors faced dire material shortages. Although great quantities of axes were rescued from the cargo, most everything used for day-to-day survival was harvested from NEVA's copper skin, fasteners, or lumber. Much of this raw material was ingeniously butchered, cut, hammered, and rolled to create useable tools. Personal items were limited to a handful of objects that survivors either spirited to shore or collected from unfortunate victims. The near absence of Personal and Domestic goods is in keeping with other shipwreck survivor camps where the availability of goods is contingent on luck, fate, and the peculiarities of each disaster (see Gibbs 2003; Nash 2004).

Locus 1A: Intrusive Hearth (South Block)

The *Locus 1A* assemblage includes 42 artifacts from N109, E101 and N109, E102 of the South Block excavation. Constrained to these two units are mixed strata of the ca. 1813 period and a ca. 1840-1890 intrusive hearth. Highly-datable artifacts from the upper intrusive hearth (i.e. ceramic, beads, kaolin pipe, nails) correlate in age with Late-Victorian deposits of the Locus 3 "Kitchen Terrace". This assemblage contains evidence of both *Component 1* and *Component 2* activities.

PERSONAL GROUP (Clothing/Adornment)

Beads, glass (n=2)

Two glass beads are present (Figure 68). Specimen UA2015-237-117 is an opaque monochrome blue/turquoise (*PANTONE 16-4519)* wound bead of doughnut-shaped form (*W1b*). The 4mm x 4.9mm wide "seed" bead is a type used in fine embroidery. These occur in 18th and 19th century Alaskan archaeological contexts but are difficult to date with specificity.

UA2015-237-118 is a polychrome brick red (*PANTONE 19-1764*) with white-centered Cornaline d'Aleppo drawn bead measuring 4.8mm x 7.3mm wide (*IVa*). Beads of this type are most common after ca. 1860, replacing earlier green or clear-centered varieties (Karklins 1985; Kidd and Kidd 1970; Ross 1990:36). By about 1880 brick red colors were supplanted with brighter reds due to changes in glass additives (Sprague 1985:94-95). This bead is associated with a ca. 1860-1880 period of manufacture.

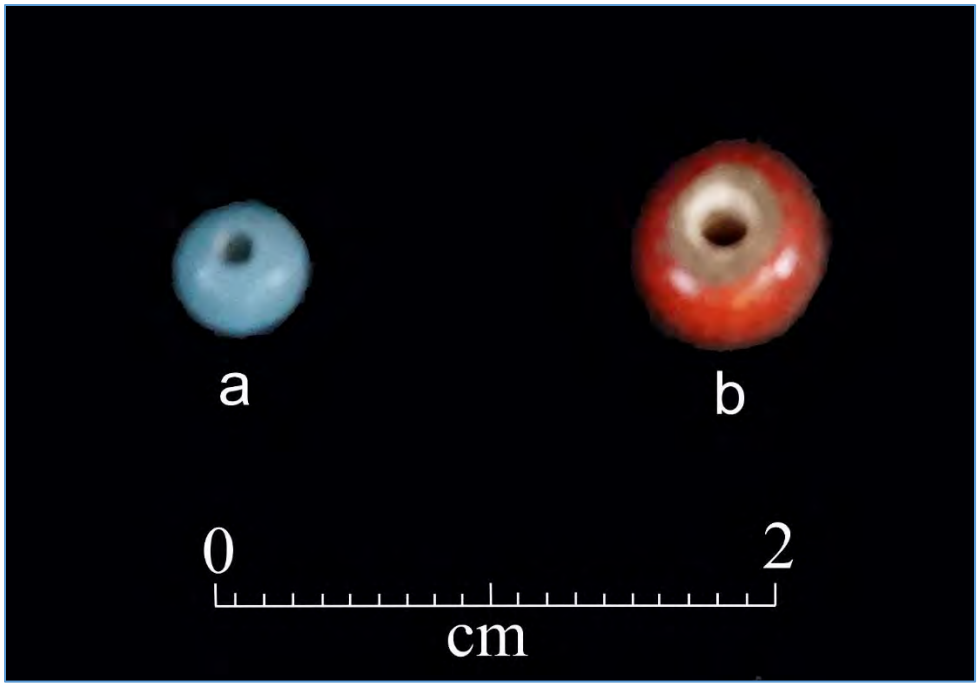


Figure 68. Glass beads from the South Block intrusive hearth (Locus 1A): (a) UA2015-237-117; (b) UA2015-237-118.

Pocketknife, iron (UA2015-237-257)

A bone-handled folding pocketknife was present within N109, E101 (Figure 69). The knife measures 8.2cm long with bolster plates and end rivets of stamped sheet iron. An undecorated rectangular inset plate of machined brass occurs on a remaining bone handle. The knife tapers from its distal (1.1cm) to proximal end (0.94cm) and has a maximum thickness of 1.04cm. Its machine-made construction is typical of the mid-late 19th century and as such is associated with the *Component 2* reoccupation.

PERSONAL GROUP (Leisure)

Pipe stem, kaolin (UA2015-237-262)

Recovered from the N109, E102 hearth is a decorated kaolin pipe stem (Figure 70). With a bore diameter 4/64", the 3.2cm long fragment is decorated with raised crosshatched lines, pelleted dots, and marked "J&T" and "FORD" within opposing rectangular cartouches. The pipe was manufactured between 1836 and 1876 by Jesse and Thomas (J&T) Ford, an English pipe maker in the Stepney District of London (Pierson 2010:8; Walker 1970:23, 1983:7).

"J&T Ford" pipes are widely associated with mid-19th century Hudson's Bay Company (HBC) sites in the Pacific Northwest, notably Fort Vancouver, Washington (see Caywood 1955:60-61; Hoffman and Ross 1973:31; Pierson 2010:8; Reid 1994:86; Ross et al. 1975; and Walker 1983:67). An identical specimen was recovered from an HBC deposit dated between 1835 and 1860. Complete examples of this pipe sometimes include a bowl mark commemorating the 1840 marriage of Queen Victoria and Prince Albert (Walker 1983:10).

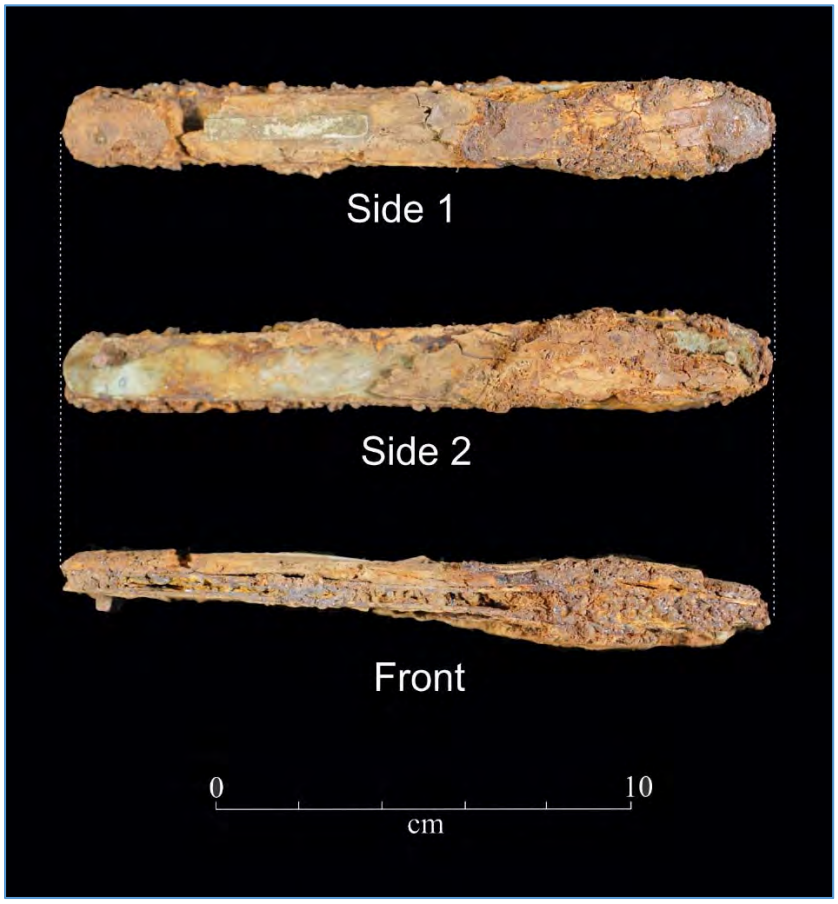


Figure 69. Bone-handled folding pocketknife from the South Block intrusive hearth (Locus 1A), UA2015-237-257.

Pipes of J&T Ford were likely acquired by the Russian American Company through their trading agreement with the HBC after June 1, 1840. Between 1840 and the 1850s British manufactured goods from the HBC, including foodstuffs and manufactured goods, made their first significant appearance in Russian Alaska (Crowell 1996; Gibson 1990). This pipe was most likely available in the Russian supply network between ca. 1840 and about 1870.

DOMESTIC GROUP (Food serving/storage)

Ceramic, vessel fragment (UA2015-237-134)

An underglaze refined-earthenware sherd in dark cobalt blue was recovered during bulk soil sampling of the N109, E101 hearth (Figure 71). Transfer-printed elements include stylized leaves, snail scrolls, and a breadfruit motif from an unknown tropical scene. Printing in dark cobalt began as early as 1802 and was most popular between ca. 1820-1840 (Samford 1997, 2014). This pearlware-type teacup or teabowl fragment is heavily water worn and spent years in a high-energy beach or river. This is the only ceramic potentially coeval with NEVA's loss and may have been collected as a curiosity during the *Component 2* reoccupation.

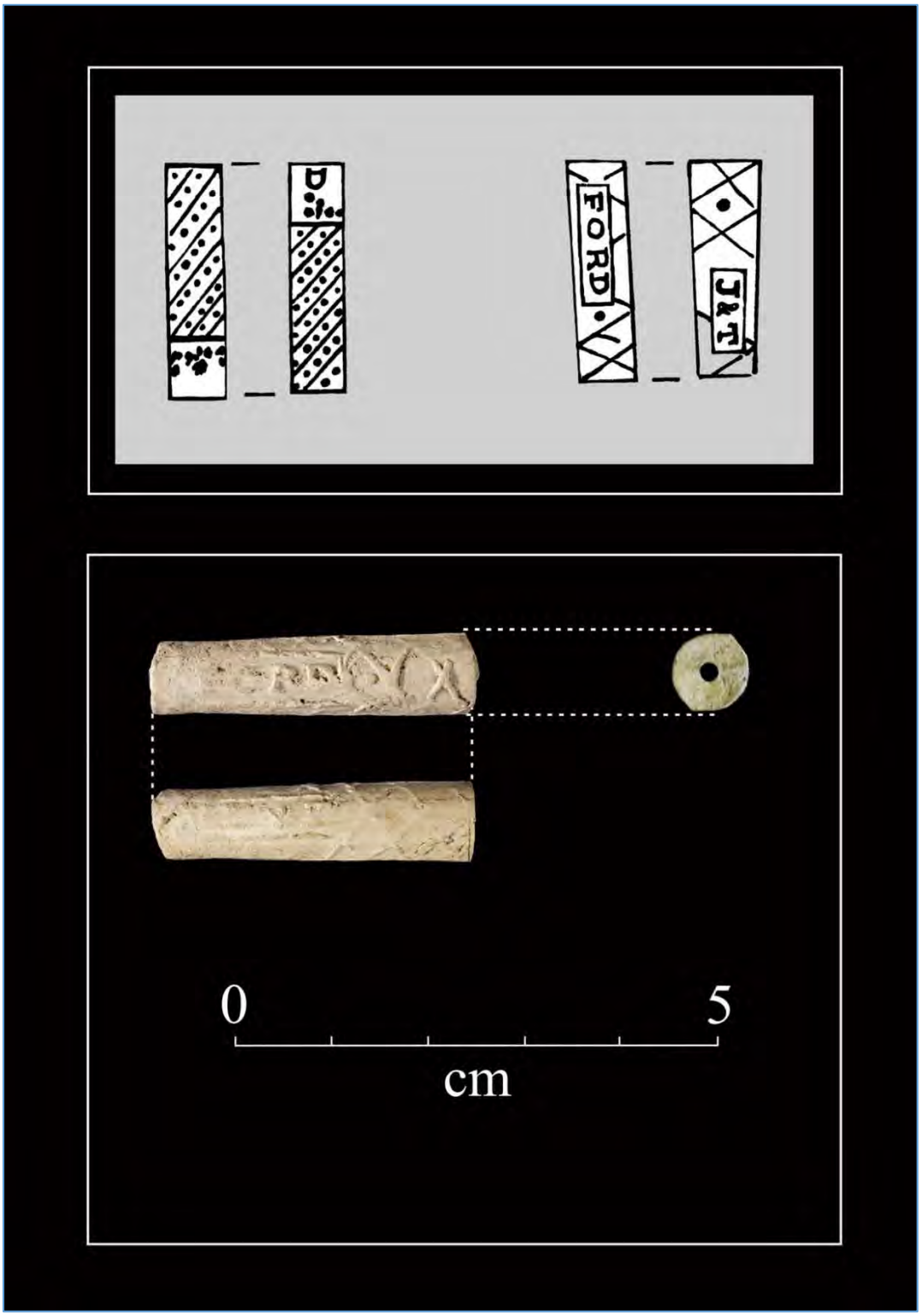


Figure 70. Decorated "J&T Ford" kaolin pipe stem, circa 1836-1876 (UA2015-237-262). Top drawing by D. Thompson.

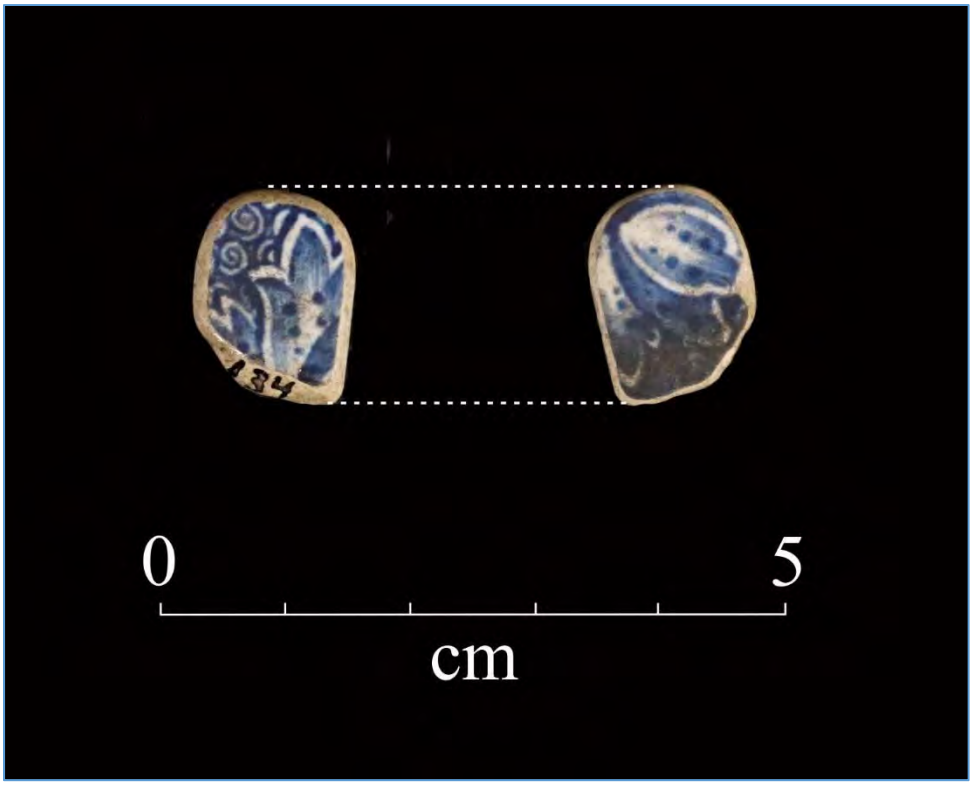


Figure 71. A water worn refined-earthenware sherd from the Survivor Terrace Locus 1A that may be coeval with the NEVA wreck (UA2015-237-134).

Glass, container (n=2)

Recovered from the N109, E101 hearth are two non-diagnostic clear glass fragments (UA2015-237-121, UA2015-237-122). Both are melted and not attributable to a vessel type or period of manufacture. These are associated with *Component 2* activities as fragile glass and ceramic artifacts do not occur in any undisturbed ca. 1813 deposits.

ACTIVITIES GROUP (Hunting)

Birdshot, lead (n=2)

Two lead birdshot were recovered from Locus 1A units (UA2015-237-150, UA2015-237-151). These are both of 0.62 cm diameter and weigh 1.3 grams and 0.7 grams respectively. They are similar in size to other small shot of the *Component 1* assemblage (refer Figure 57).

ACTIVITIES GROUP (Indeterminate-Expedient Lithic Tool)

Lithic, chert tool (UA2015-237-189)

A pyramid-shaped tool of red chert was present within N109, E101 (Figure 72). The knife-like tool has two zones of use-wear flaking from use on a hard, convex shaped object. A flake from undisturbed ca. 1813 deposits refits this specimen (see Locus 1 UA2015-237-115), confirming it was used during the NEVA survival period.

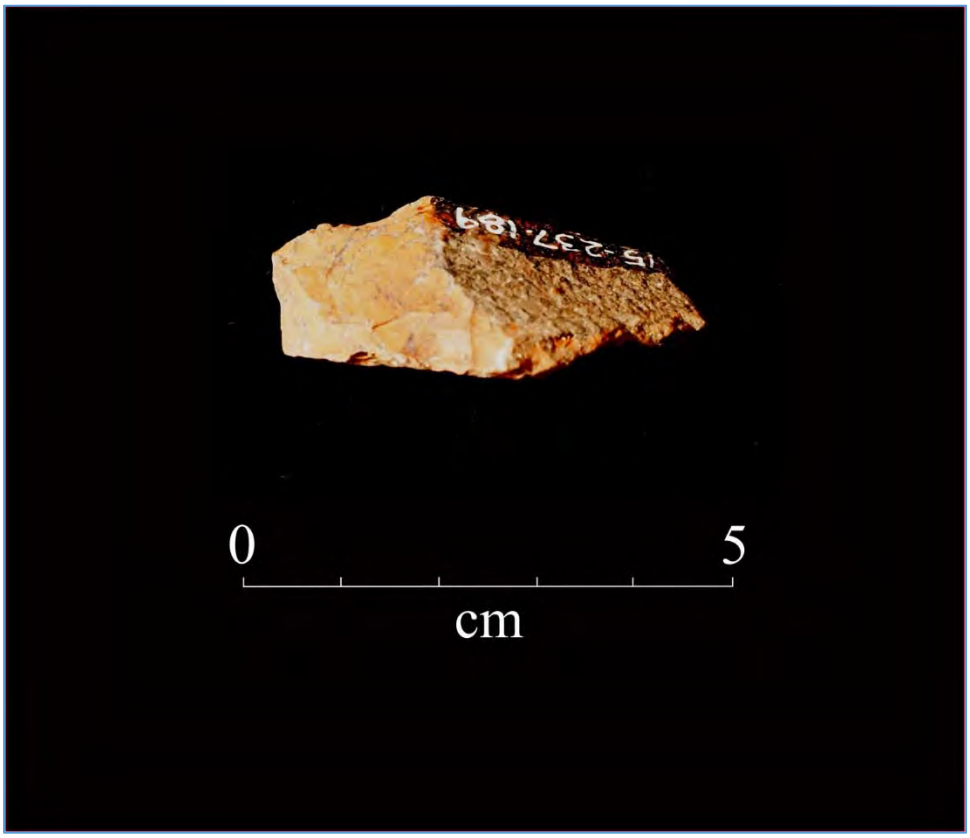


Figure 72. A red chert tool from the Survivor Terrace Locus 1A that exhibits use wear (UA2015-237-189). A flake from undisturbed circa 1813 deposits (UA2015-237-115) refits this specimen, confirming an association with 1813 survival activities.

ARCHITECTURAL GROUP (Fasteners)

Nails and spikes, iron (n=10)

Ten iron nail and spike fasteners are present (Table 15). All are of either wrought or "square" manufacture. Two are probable machine-made cut nails (UA2015-237-168, UA2015-237-218) of a type produced between ca. 1815 and the late 1880s (Adams 2002:67-71; Nelson 1968; Priess and Shagnessey 1972:54; Wells 1998:86). These cut nails are associated with the *Component 2* re-occupation.

Table 15. Locus 1A iron nail and spike fasteners.

SPECIMEN	UNIT	SIZE	MANUFACTURE	CONDITION
UA2015-237-181	MD-36	nail	Square, unknown	medial shank
UA2015-237-183	N109, E101	nail	Square, unknown	medial shank

UA2015-237-225	N109, E101	spike	Wrought	medial shank
UA2015-237-168	N109, E101	nail	Square, probably cut	medial shank
UA2015-237-215	N109, E101	nail	Square, unknown	medial shank
UA2015-237-218	N109, E101	nail	Square, probably cut	medial shank
UA2015-237-228	N109, E102	spike	Wrought	medial shank
UA2015-237-239	N109, E102	spike	Wrought	medial shank
UA2015-237-219	N109, E101	nail	unknown	medial shank
UA2015-237-240	N109, E101	nail	Wrought	head/shank

Tack, iron (UA2015-237-178)

Recovered from N109, E101 is an iron tack measuring 1.42cm long (Figure 73). The hand-forged tack is a "clout" type fastener used for furniture and sheet metal applications (Pierson 2006).

Figure 73. A hand-forged tack recovered from the Survivor Terrace Locus 1A (UA2015-237-178).

ARCHITECTURAL GROUP-MARITIME (Copper Hull Sheathing)

Copper, sheet fragments (n=8)

Eight sheet copper fragments are present. These 0.4mm to 0.7mm gauge scraps lack modification or notable characteristics. Their diameter is similar to that of NEVA's hull sheathing plates from Locus 2 Cache Feature 3.

UNIDENTIFIED GROUP

Iron concretions, indeterminate (n=11)

Eleven iron concretions within Locus 1A cannot be associated with a particular function (Table 16). Some concretions were subjected to radiography by the Texas A&M Conservation Laboratory (refer Appendix 4).

Table 16. Locus 1A iron concretions of unknown function.

SPECIMEN	PROVENIENCE	FUNCTION
UA2015-237-204	N109, E101	indeterminate
UA2015-237-206	N109, E101	indeterminate
UA2015-237-209	N109, E101	indeterminate
UA2015-237-212	N109, E101	indeterminate
UA2015-237-214 (n=3)	N109, E101	indeterminate
UA2015-237-216	N109, E101	indeterminate
UA2015-237-217	N109, E101	indeterminate
UA2015-237-227	N109, E101	indeterminate
UA2015-237-237	N109, E101	indeterminate

Copper sheet fragment, indeterminate (UA2015-237-096)

One 1.15 cm x 0.11cm fragment of sheet copper was recovered from N109, E101. The specimen measures 1.8mm in diameter, a gauge much thicker than sheet copper in the Locus 1 assemblage or NEVA's hull plates of Locus 2 Cache Feature 2. As such it may not be related to the ship's architecture.

Lead, indeterminate (UA2016-063-016)

One lead fragment of unknown function was recovered as metal detector recovery (MD-G). The melted fragment was associated with an eroding section of the N109, E101 hearth.

Assemblage Summary: Locus 1A Intrusive Hearth (South Block)

The Locus 1A "Intrusive Hearth" includes 42 artifacts, or 13% of the total assemblage (refer Tables 4 and 5). *Component 1* artifacts, those associated with the 1813 NEVA period, are limited to cut and butchered ships copper, and wrought iron nails. Diagnostic artifacts from a *Component 2* intrusive hearth are represented by a red over white center Cornaline d'Aleppo bead (ca. 1860-1880), tobacco pipe of J&T Ford (ca. 1840-1870), and machine-made cut nails (ca. 1815-1890) (Table 17). These provide a mean of 1857.5, *terminus post quem* of no earlier than 1840, and a general occupation date between ca. 1840 and 1890[27]. Artifacts confirm the assemblage is a palimpsest of *Component 1* and *Component 2* activities.

Table 17. Locus 1A Intrusive Hearth diagnostic artifacts and mean occupation date.

DESCRIPTION	ACCESSION	RANGE	NO.	MEDIAN	PRODUCT
Bead, type *IVa,* brick red	UA2015-237-118	1860-1880	1	1870	1870
Kaolin pipe, J&T Ford	UA2015-237-262	1840-1870	1	1855	1855
Machine-made cut nail	UA2015-237-168, UA2015-237-218	1815-1890	2	1852.5	3705
TOTAL			*n=4*		*n=7430*
Locus 1A Mean Occupation Date (1857.5)					

Functional categories of Locus 1A are of limited analytical value as they reflect the combined behaviors of two very different groups. The largest frequency of artifacts are iron concretions and melted lead of an *Unidentified Group* (31%). *Architectural Group* fasteners (i.e. nails) are the most prevalent at 26%, followed by sheet copper of the *Maritime-Architecture Group* (19%) (Figure 74). These fragments of sheet copper are probably associated with the stripping and modification of hull plates during the *Component 1* survivor period.

A significant admixture of Late Victorian (*Component 2)* materials is indicated by *Personal Group* (10%) and *Domestic Group* (7.0%) artifacts such as beads, glass, ceramics, pocketknife, and kaolin pipe. All of these were manufactured several decades after the NEVA's sinking. Other items of note include birdshot of the Hunting Group (5%), and an expedient chert tool fragment (2%). The chert tool fragment refits a specimen from confirmed *Component 1* deposits (see UA2015-237-115).

[27] Kaolin pipes of J&T Ford, although first manufactured in 1836, would not have been available in Russian Alaska prior to their 1840 RAC trade agreement with the Hudson's Bay Company (see Crowell 1996, Gibson 1990).

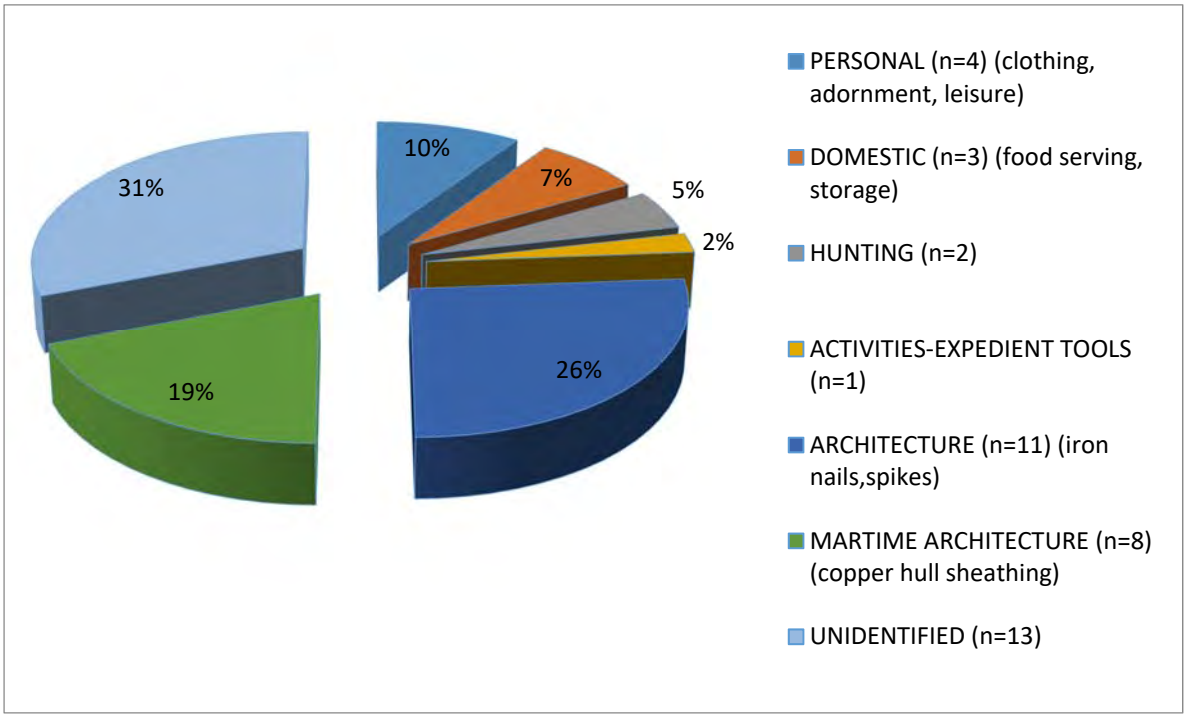


Figure 74. Locus 1A Intrusive Hearth functional groups and comparative artifact frequency.

Locus 1: Artifacts of Unattributed Context

Metal detector surveys of the Locus 1 "Survivors Terrace" yielded 62 artifacts lacking clear archaeological association. These were either shallowly buried, recovered from screened backdirt, or collected from undifferentiated beach sands adjacent to the eroding terrace. As such these items relate to occupations of the 1813 period (*Component 1*), mid-late 19th century (*Component 2*), or modern use.

ACTIVITIES GROUP (Hunting)

Round Shot, lead (n=3)

A 0.51 caliber round ball was recovered from North and South Block excavation screened backdirt (UA2015-237-153) (Figure 75b). Weighing 12 grams and 1.25cm x 1.34cm in diameter, the deformed projectile would fit a smoothbore pistol firearm. It likely relates to ca. 1813 *Component 1* deposits, an assemblage containing similar pistol-sized round shot.

A second 1.43cm x 1.78cm and 25.8 gram specimen was identified as MD-32 west of the Locus 1 terrace (UA2015-237-147) (Figure 75a). This 0.66 caliber projectile has multiple impact scars. A third round lead ball was recovered as an isolate on a cliff face south of Locus 1 (MD A-16) (UA2016-063-069). The 0.66 caliber ball measures 1.54cm x 1.72cm in diameter and weighs 25.6 grams. These 0.66 caliber round shot, and a 0.68 caliber round ball from Locus 2 Cache Feature 2 (see UA2016-063-025), were very likely fired from the same firearm. Collectively these large 0.66-0.68 shot are evidence of functional large caliber musket, possibly related to salvage expedition(s) in the first months after the wreck.

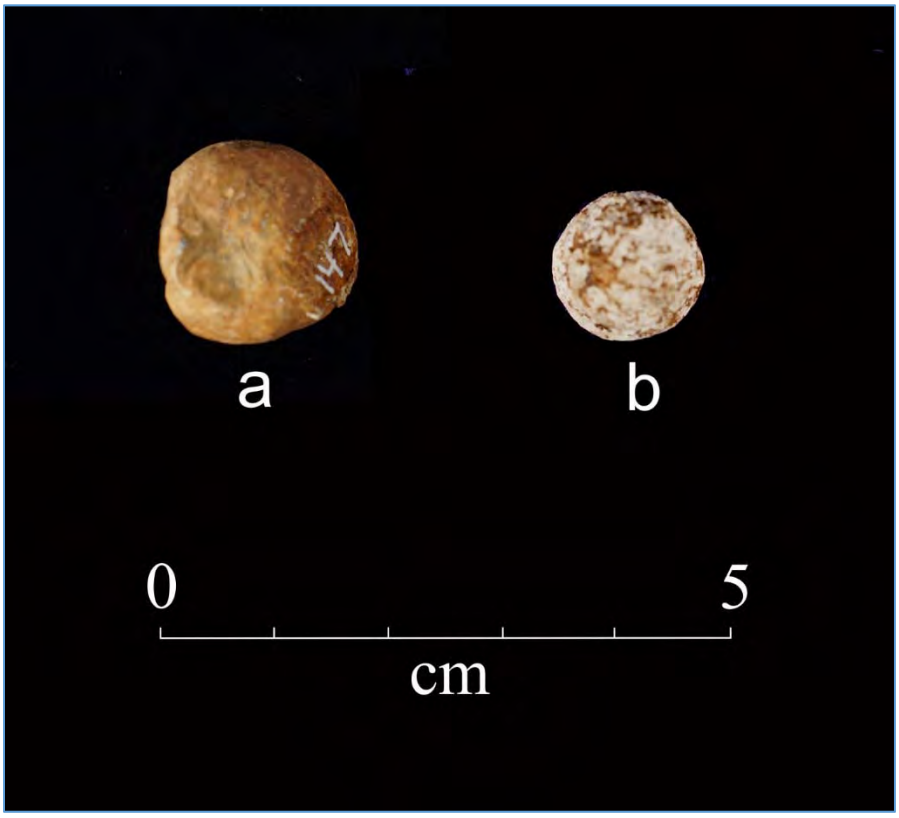


Figure 75. Lead round shot from the Survivor Terrace, unattributed context. (a) UA2015-237-147; (b) UA2015-237-153.

Birdshot, lead and copper (n=26)

Twenty-six birdshot-sized projectiles were recovered from mixed contexts (Table 18) (refer Figure 57). Nineteen were found during MD scans of Locus 1 screened backdirt. Seven were recoveries from the eroding terrace scarp. Due to their diminutive size and dark patina these small items were difficult to find in context without the aid of metal detectors.

Specimens are in generally poor condition, with 16 (62%) deformed through burning or physical damage. Two have impact scars from being fired. Most are birdshot of fowling size (less than 1.4 grams). A 2.3 gram specimen of buckshot is present, a load sometimes used for hunting larger game. Seven with ridge seams indicate they were cast by hand molds rather than industrial Rupert or Shot Tower methods (Sivilich 2016:145-152).

Two medial segments of copper ships nails (UA2015-237-201, UA2015-237-284) are of comparable dimensions to lead birdshot. Both nail shanks were intentionally cut using a hammer and anvil, the same technique used in the on-site production of pistol shot from a copper rod (see Locus 1-UA2015-237-075, UA2015-237-076 and Locus 2 Cache Feature 2-UA2016-063-24). Copper ships nails appear to have been harvested as a raw material for fowling shot.

Table 18. Birdshot-type projectiles from unattributed Locus 1 contexts.

SPECIMEN	MATERIAL	WEIGHT (g)	DIAMETER (cm)	DESCRIPTION
UA2015-237-197	Lead	1.2	0.55 x 0.69	Deformed
UA2015-237-197	Lead	0.9	0.56	n/a
UA2015-237-191	Lead	1.1	0.49 x 0.64	Dimple, deformed
UA2015-237-191	Lead	1.0	0.57	Dimple
UA2015-237-191	Lead	1.2	0.48 x 0.73	Burned, deformed
UA2015-237-154	Lead	0.9	0.53 x 0.6	Mold seam, deformed
UA2015-237-260	Lead	1.0	0.6	Dimple, mold seam
UA2015-237-260	Lead	1.1	0.59 x 0.64	Deformed
UA2015-237-260	Lead	0.9	0.57 x 0.65	Burned, deformed
UA2015-237-260	Lead	0.9	0.44 x 0.74	Mold seam, burned, deformed
UA2015-237-260	Lead	0.5	0.43 x 0.69	Deformed, burned
UA2015-237-260	Lead	1.0	0.35 x 0.88	Deformed, impacted
UA2015-237-260	Lead	0.81	n/a	n/a
UA2015-237-260	Lead	0.69	n/a	Mold seam
UA2015-237-260	Lead	0.60	n/a	Mold seam
UA2015-237-260	Lead	0.51	n/a	n/a
UA2015-237-193	Lead	2.3	0.64 x 0.91	Mold seam, deformed, impacted
UA2016-063-012	Lead	0.6	0.40 x 0.62	Deformed, burned
UA2016-063-013	Lead	0.8	0.51 x 0.63	Deformed
UA2016-063-018	Lead	0.9	0.55 x 0.65	Deformed, burned
UA2016-063-018	Lead	0.8	0.53	n/a
UA2016-063-019	Lead	0.7	0.50 x 0.55	Deformed, impacted
UA2016-063-019	Lead	1.0	0.59	n/a

UA2016-063-021	Lead	0.9	0.44 x 0.57	Deformed
UA2015-237-284	Copper	1.4	0.53 x 0.69	Nail, cut, probable ammunition
UA2015-237-201	Copper	1.6	0.61 x 0.72	Nail, cut, probable ammunition

Cartridge, brass and lead (UA2015-237-162)

A fragmentary brass cartridge and lead projectile was recovered from MD-1 (Figure 76). Although missing its headstamp the specimen is the same diameter (1.34cm) as a 45-70 cartridge recovered from Locus 3 (see UA2016-063-047). This artifact is probably associated with *Component 2* hunting activities.

Projectile jackets, brass (n=8)

Eight fired hollow-point brass projectile jackets were recovered during general MD surveys. The shattered fragments are consistent with .223-type ammunition of the mid-late 20th century. These clustered along a steep embankment west of the Locus 1 terrace, an area apparently used as a backdrop for modern target practice.

ACTIVITIES GROUP (Fishing)

Fish hook, iron (UA2015-237-261)

A hand-made iron fish hook measuring 2.6cm x 1.49cm was recovered by metal detector from the South Block screened backdirt (Figure 77). The hook is made of 0.2cm diameter round wire and has a spatulate end for line attachment. It was misidentified as copper during initial field examination. The hook could easily relate to either *Component 1* or *Component 2* occupations.

ARCHITECTURAL GROUP (Fasteners)

Nails, iron (n=5)

Five nails occurred as isolated MD locates. A complete wire nail measuring 4.45cm in length was recovered as MD-25 (UA2015-237-166). The bent specimen has traces of wood grain attached. A nail shank (UA2015-237-203) from the South Block excavation backdirt is of wrought manufacture. A complete nail of wrought or cut manufacture was located within MD-M (UA2016-063-022). West of N109, E101 was a partial square nail (UA2015-237-169) (MD-23). Another nail identifiable only as square was collected as MD-8 (UA2015-237-177).

Brad or sprig, copper and wood (UA2015-237-279)

Recovered from MD-3 was a copper fastener imbedded in a fragment of water-worn wood. The headless brad or sprig measures 4cm in length. It was shallowly buried (3cm BS) and probably washed ashore as flotsam.

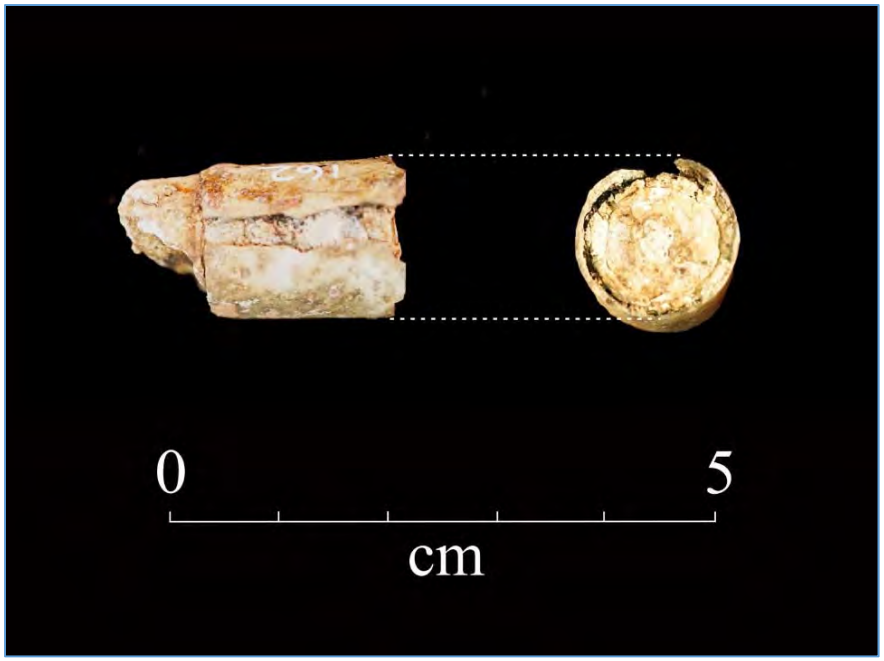


Figure 76. Fragmentary brass cartridge and lead projectile (MD-1) from the Survivor Terrace, unattributed context (UA2015-237-162).

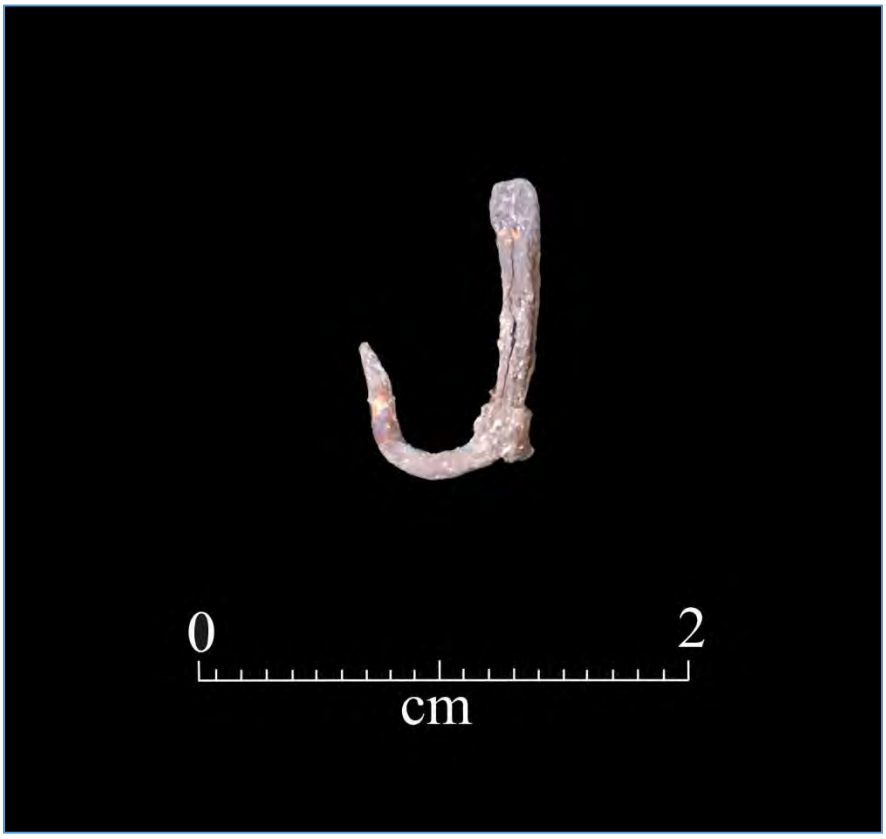


Figure 77. Hand-made iron fishhook from the Survivor Terrace, unattributed context (UA2015-237-261).

ARCHITECTURAL GROUP-MARITIME (Copper Hull Sheathing)

Copper, sheet (UA2015-237-187)

Recovered within MD-24 was a copper sheet fragment measuring 4.2cm x 2.1cm (Figure 78). The rectangular sheet is of 0.8mm gauge stock and perforated with a star-shaped hole. The artifact was shallowly buried (2cm BS).

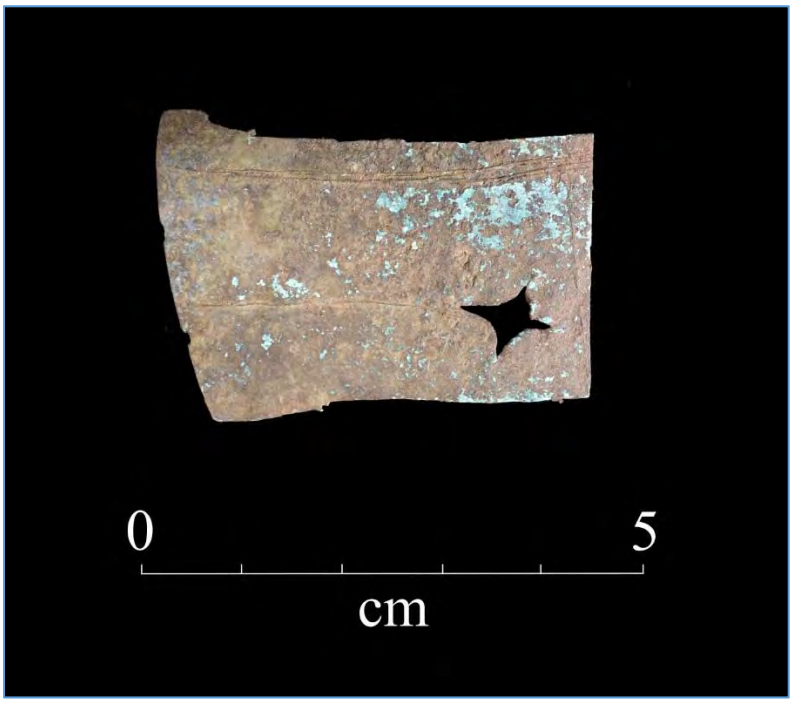


Figure 78. Copper sheet fragment of 0.8mm gauge stock perforated with a star-shaped hole (MD-24 / UA2015-237-187).

ARCHITECTURAL GROUP-MARITIME (Hardware)

Hardware pin, iron (UA2016-063-070)

A metal detector survey of the intertidal zone south of Locus 1 located an iron hardware pin measuring 44.2cm long (MD-A15). The 1.41cm diameter pin is bent in a U-shape and one end is scored by a hand file. It may be tiller hardware from a modern skiff.

UNIDENTIFIED GROUP

Iron concretions, indeterminate (n=7)

Four iron concretions were recovered from MD-6 (UA2015-237-226). Metal detection of the beach adjacent to the South Block excavation yielded two concretions (UA2016-063-016) (MD-F), and (UA2016-063-017) (MD-H). A single concretion (UA2015-237-195) was recovered from North Block excavation backdirt.

Lead, indeterminate (n=8)

Eight small fragments of lead are present. The function of these small scraps is unclear.

Locus 2: Shipwreck Cache Features (North Cove)

The Locus 2 assemblage includes tools and ship's hardware salvaged from the NEVA wreck site. Recovered from three caches (*Cache Feature 1*, *Cache Feature 2*, *Cache Feature 3*) are two naval gun carriage trunnion brackets, ten iron axes, four copper hull sheathing plates, and five ingots of iron. Three nearby round shot and one iron drift pin are included in this assemblage. These 25 artifacts provide evidence of use by NEVA survivors in January 1813 (*Component 1*), and salvage in the first months following the wreck.[28]

Cache Feature 1 (MD-A13)

Two trunnion brackets from a gun carriage and two axes were recovered as MD-A13. Artifacts were distributed between the surface and about 30cm BS in a 0.5 meter x 0.75 meter excavation. One was partially exposed in the roots of a spruce tree.

MARITIME ARCHITECTURE GROUP

Trunnion brackets, iron (n=2)

Two hand-forged trunnion brackets of identical dimensions are present (UA2016-063-068) (Figure 79; also refer Figure 46). The rectangular brackets measure 7.8cm (3") in width, 28.5cm (11¼") in length and were nested together in a parallel arrangement. Attached through an opening in each is a 32cm (12") long pin measuring ¾"/2.1cm in diameter. These were used attach the hardware to a gun carriage. Internal diameter of the half-round brackets is 13.2cm (5¼"). Similar hardware has been illustrated and described by Saint-Remy (1697:154-155, 222-226) and Kemmis (1873:7-8).

In the center of both brackets, where the hardware and cannon trunnions were in former contact, are slag-like burned concretions. This localized burning indicates they were removed from the carriage by fire rather than mechanical disassembly. During one early salvage expedition Shalkop (1979:42) reported "*the waves were once so strong they even cast up two carronades."*. This hardware provides evidence that at least one cannon was successfully recovered from the site.

WOODWORKING GROUP

Axes, iron (n=2)

Resting directly beneath the brackets were two hand-forged iron axes (UA2016-063-071) (Table 19) (Figure 80, also refer Figure 47). Both have diagnostic spike or hooks typical of Russian manufacture (Viires 1969:15-16). Axes of this same type are common to the Locus 1 survivors deposits.

[28] Alexander Baranov sent salvage parties to the wreck site for several months following the disaster. The historical record provides few details of materials salvaged (Shalkop 1979:40-42).

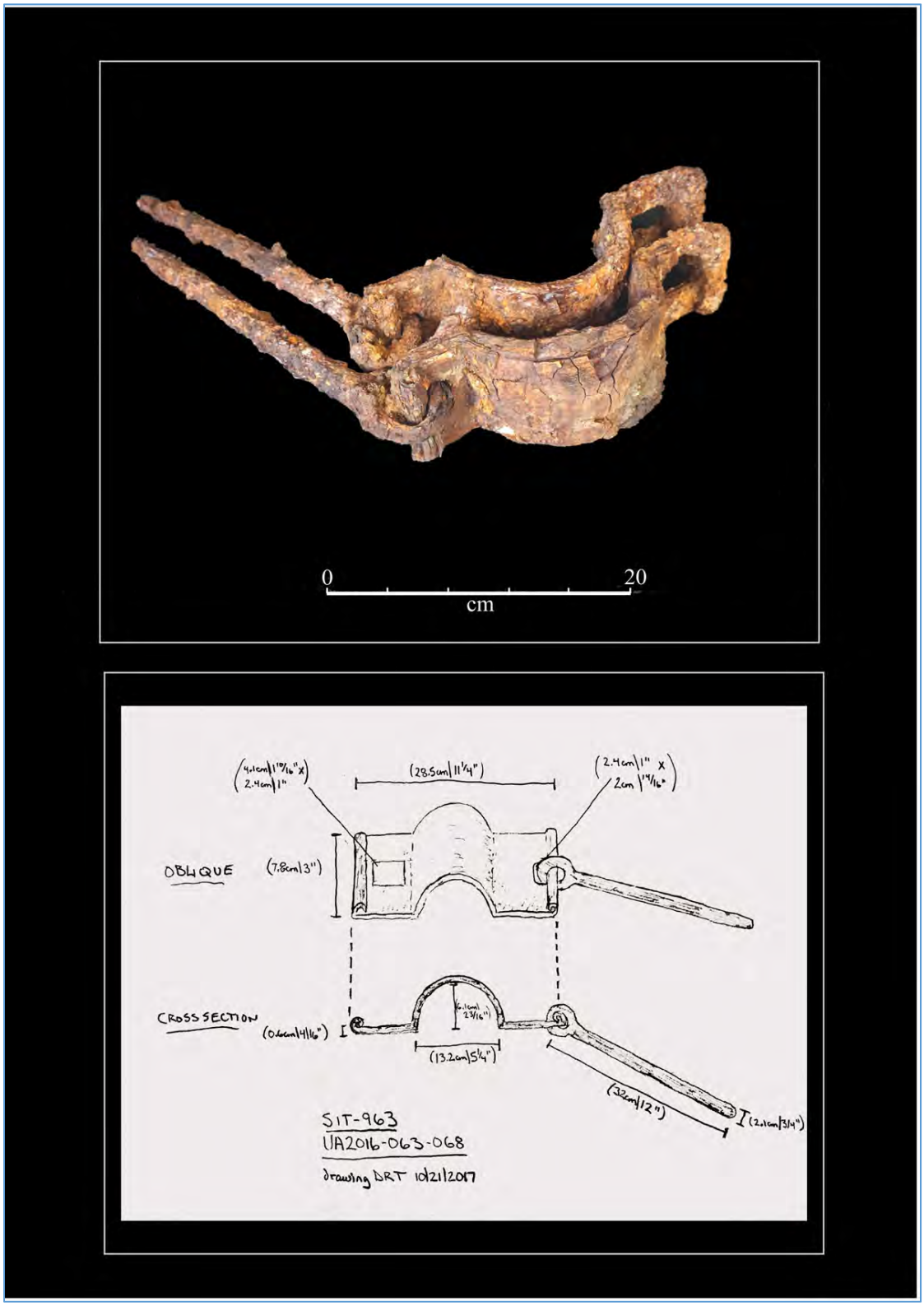


Figure 79. A pair of hand-forged trunnion brackets from a gun carriage, recovered from Cache Feature 1 in Locus 2 (North Cove) (MD-A13 / UA2016-063-068).

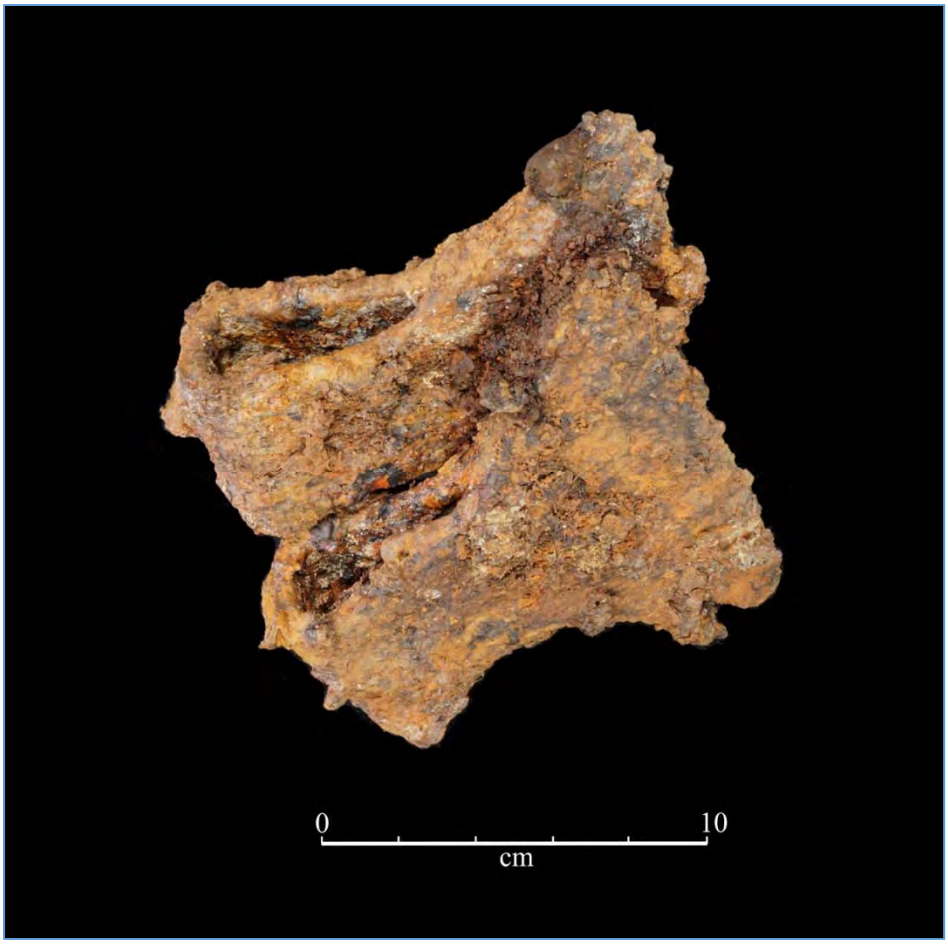


Figure 80. Two hand-forged Russian iron axes found beneath the trunnion caps in the North Cove Cache Feature 1 (UA2016-063-071).

Table 19. Cache Feature 1 iron axe dimensions.

SPECIMEN	CHEEK LENGTH [1]	BIT LENGTH[2]	EYE DIAMETER[3]	CONDITION
UA2016-063-071	12.4	15.5	2.1	complete
UA2016-063-071	11.7	n/a	2.1	incomplete

[1] Cheek Length (cm): measured as the maximum length of cheek, from poll to bit/blade.

[2] Bit Length (cm): measured as the maximum length of bit/blade, from toe to heel.

[3] Eye Diameter (cm): measured as the maximum internal diameter of hafting eye.

Cache Feature 2 (MD-A12)

A cluster of five axes and one iron ingot were recovered from MD A-12, a 0.5 meter x 0.5 meter excavation (refer Figure 48). These occurred between about 20cm and 30cm BS in a linear soil feature consistent with a decayed wooden crate or box. Dimensions of the feature were obscured by hillside slumping and erosion.

WOODWORKING GROUP

Axes, iron (n=5)

Five hand-forged Russian style axes iron axes were present (UA2016-063-086; UA2016-063-090) (Table 20). These are identical to those of Cache Feature 1, Cache Feature 3, and Locus 1.

Table 20. Cache Feature 2 iron axe dimensions.

SPECIMEN	CHEEK LENGTH [1]	BIT LENGTH[2]	EYE DIAMETER[3]	CONDITION
UA2016-063-086	14.8	n/a	2.4	incomplete
UA2016-063-087	15.3	13.7	2.1	complete
UA2016-063-088	15.0	14.2	2.3	complete
UA2016-063-089	14.7	10.2	2.3	complete
UA2016-063-090	14.2	n/a	2.3	incomplete

[1] Cheek Length (cm): measured as the maximum length of cheek, from poll to bit/blade.

[2] Bit Length (cm): measured as the maximum length of bit/blade, from toe to heel.

[3] Eye Diameter (cm): measured as the maximum internal diameter of hafting eye.

ACTIVITIES GROUP

Bar stock, iron (n=1)

A single ingot of wrought iron was recovered below the axe concentration (UA2016-063-072). The rectangular 11.54cm x 3.51cm bar measures 1.52cm thick and is identical to the four specimens of Cache Feature 3.

Cache Feature 3 (MD-N)

Cache Feature 3 was discovered on a deflated bedrock knob south of Cache Feature 1. This metal detector target (MD-N) was excavated due to its abnormally large metallic signature. Recovered within a 50cm x 50cm unit was a carefully stacked arrangement of four sheet copper hull plates, three iron axes, and four iron ingots (Figure 81; also refer Figure 44). Three nearby round shot were collected in 25cm x 25cm units (MD-18, MD-A14, MD-AG).

MARITIME ARCHITECTURE GROUP

Sheet copper, hull plates (n=4)

Four copper hull sheathing plates were recovered between 27cm and 31cm BS. Sheets were assigned unique field numbers (Sheets 1-4) according to their relative position within the feature, from top to bottom. Analysis included recordation of total surface area, copper gauge, and number and type of nail perforations (Table 21).

Specimens are generally square, rectangular, or ovoid and measure between 335cm² and 653.5cm². All sheets have multiple nail perforations that vary from 0.32cm to 0.6cm square. These are generally spaced at 4cm intervals in a single row parallel to finished edges. Perforations also occur in seemingly random locations using smaller nails, indicating later episode(s) of hull repair. Contrary to expectations each sheet is not of uniform diameter, with thicker copper occurring along finished edges. This may be due to an irregular manufacturing process. These sheets are the same 0.4mm-0.9mm gauge copper as cut and modified scraps of Locus 1 campsite deposits.

Table 21. Cache Feature 3 copper hull plate dimensions.

SPECIMEN	SHEET No.	SIZE (cm²)	GAUGE (mm)	NAIL PERFORATIONS
UA2016-063-073/074	1	653.5	0.4-0.9	n=17, square 0.32cm-0.6cm
UA2016-063-075	2	525.0	0.5-0.7	n=10, square 0.36cm, distorted
UA2016-063-076	3	335.0	0.5-0.7	n=12, square 0.42cm-0.51cm
UA2016-063-077	4	545.5	0.4	n=7, distorted

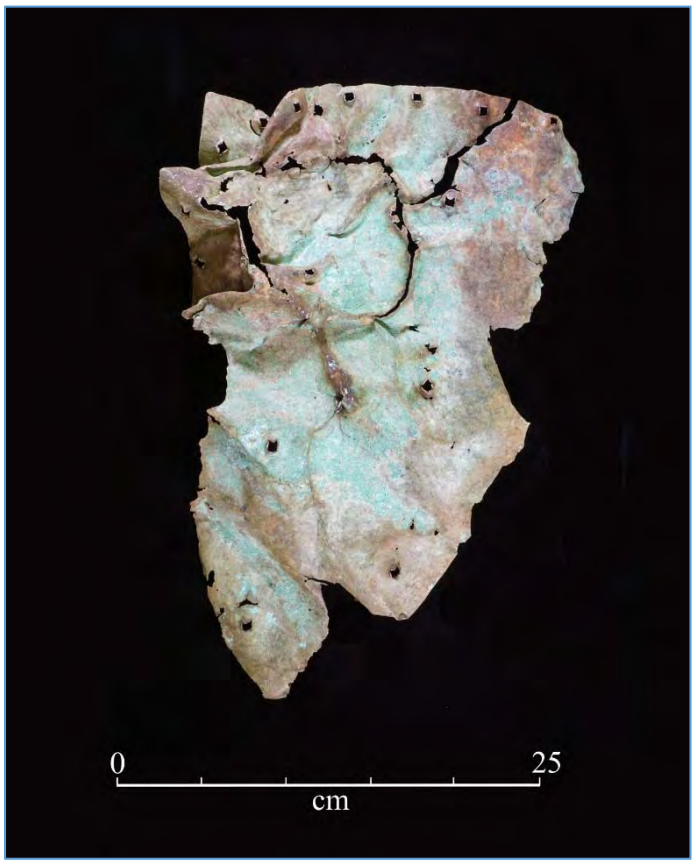


Figure 81. One of four sheets of copper ship's sheathing from North Cove Cache Feature 3 (UA2016-063-073).

WOODWORKING GROUP

Axes, iron (n=3)

Three Russian style hand-forged axes were present below the copper plates (UA2016-063-079--UA2016-063-081) (Table 22) (Figure 82). Axes were nested cheek to cheek in a linear arrangement suggesting deliberate care in their internment. Like all axes of SIT-963 they are consistent with the period of the NEVA shipwreck.

Table 22. Cache Feature 3 iron axe dimensions.

SPECIMEN	CHEEK LENGTH [1]	BIT LENGTH[2]	EYE DIAMETER[3]	CONDITION
UA2016-063-079	15.2	n/a	2.1	incomplete
UA2016-063-080	15.3	11.9	2.2	complete
UA2016-063-081	15.2	n/a	2.3	incomplete

[1] Cheek Length (cm): measured as the maximum length of cheek, from poll to bit/blade.
[2] Bit Length (cm): measured as the maximum length of bit/blade, from toe to heel.
[3] Eye Diameter (cm): measured as the maximum internal diameter of hafting eye.

ACTIVITIES GROUP

Bar stock, iron (n=4)

Four rectangular iron bars or ingots were recovered within the axe cluster (UA2016-063-082--UA2016-063-085) (refer Figure 45). Ingots measure 11cm/12cm x 3.0cm/3.8cm, with thicknesses varying between 1.4cm and 1.6cm. Specimens were bound together with organic cordage to form a solid bundle. Microscopic analysis identified this as probable spruce root. Sitka Spruce (*Picea sitchensis*) is dominant on the west shore of Kruzov Island, indicating the cordage was collected locally. A similar ingot was present within Cache Feature 2 (see UA2016-063-072).

ACTIVITIES GROUP (Hunting)

Round shot, lead and copper (n=3)

Three round shot were present just southeast of this cache (Figure 83). Specimen UA2016-063-023 (MD-AG) is a 0.51 caliber lead pistol ball of 1.32cm diameter and 5.5grams. A handmade 1.34cm diameter and 9.8g copper ball of 0.52 caliber was recovered from MD-A18 (UA2016-063-024). This faceted and hammered pistol shot is similar to cut copper rods of the Locus 1 campsite (see UA2015-237-075 and UA2015-237-076), items presumably used as "blanks" in expedient ammunition production. Pistol-caliber round shot is a defining projectile type of Locus 1 deposits, indicating the cache was used to some extent by NEVA survivors.

Specimen UA2016-063-025 (MD A-14) is a 1.73cm diameter round lead ball of 18g and 0.68 caliber. Two similar 0.66 caliber round shot were recovered as fired isolates south of Locus 1. Collectively these confirm the use of a functional 0.66-0.68 caliber musket, a type not indicated in deposits of either Locus 1 or Locus 3. This large caliber musket may very well relate to Baranov's salvage activities of 1813.

Figure 82. Three Russian style hand-forged axes found below the copper plates in North Cove Cache Feature 3. (a) UA2016-063-079; (b) UA2016-063-080; (c) UA2016-063-081; (d) the axe cluster as found, prior to conservation.

Figure 83. Three round shot from just southeast of North Cove Cache Feature 3 (MD-AG, MD-A18, and MD A-14. (a) UA2016-063-023; (b) UA2016-063-024; and (c) UA2016-063-025.

MARITIME ARCHITECTURE GROUP

Isolate, drift pin, iron (UA2016-063-092)

A judgmental pedestrian survey of the intertidal zone northwest of Locus 2 (North Cove) located a wrought iron drift pin wedged in a bedrock fissure (N57.04197, W135.84599) (Figure 84). The 3.2cm diameter round pin has a hand-forged head and is bent in a "fishhook" shape from post-depositional damage. The pin would measure 66.3cm in length if straightened. Hardware of this type was used to fasten the keelson to the keel or to join other large beams.

Assemblage Summary: Locus 2 Shipwreck Cache (North Cove)

Twenty-five artifacts, or 8% of the total assemblage, were recovered from the Locus 2 shipwreck caches (refer Tables 4 and 5). Datable materials include Russian style axes (pre-1867), hand-forged hardware, and round shot from two flintlock type firearms. Trunnion brackets from a naval gun carriage and copper hull sheathing provide unquestionable evidence of an armed early sailing ship such as the NEVA. The assemblage contains indications of use by two groups, NEVA's (*Component 1*) survivors and Baranov's salvage parties.

Cache features are dominated by Russian-style axes of the *Woodworking Group* (40%), several of which were probably contained in a box or crate (Figure 85). Multiple axes of this same style occur in Locus 1 survivors' deposits, confirming a connection between these two areas. Twenty-eight percent of the assemblage is hardware such as trunnion brackets and copper sheathing of a *Maritime Architecture* group. Butchered fragments of comparable sheathing are also prevalent in Locus 1. Iron ingots of the *Activities Group* are 20% of the assemblage. These

Figure 84. A wrought iron drift pin found wedged in a bedrock fissure in the intertidal zone northwest of Locus 2 (North Cove) (UA2016-063-092).

heavy bars were probably intended for use as blacksmithing stock in the Russian colony or for onboard ship's repairs.

Recovered in proximity to Cache Feature 3 were round shot (n=3,12%) of two distinct flintlock firearms, a 0.48-0.52 caliber pistol, and a 0.66-0.68 caliber musket. Round shot of pistol caliber is exclusive to undisturbed Locus 1 deposits, providing another indication the cache was used by NEVA's (*Component 1)* survivors. Large shot of 0.66-0.68 caliber are absent from both Locus 1 and Locus 3 assemblages but do occur as fired isolates along the coast. One can speculate this functional large caliber musket was used for hunting by Baranov's salvors after February 1813.

Evidence of Baranov's later salvage is also confirmed by items of questionable survival value. Trunnion brackets from a naval gun substantiate an effort to recover cannon, a labor-intensive task unlikely during a survival situation.[29] Similarly, multiple flat iron bars placed in the caches indicate collection for economic rather than practical reasons.

[29] Early historical accounts report at least two cannon exposed at the wreck site (see Shalkop 1979:42). The SIT-963 brackets provide strong evidence that at least one was successfully salvaged.

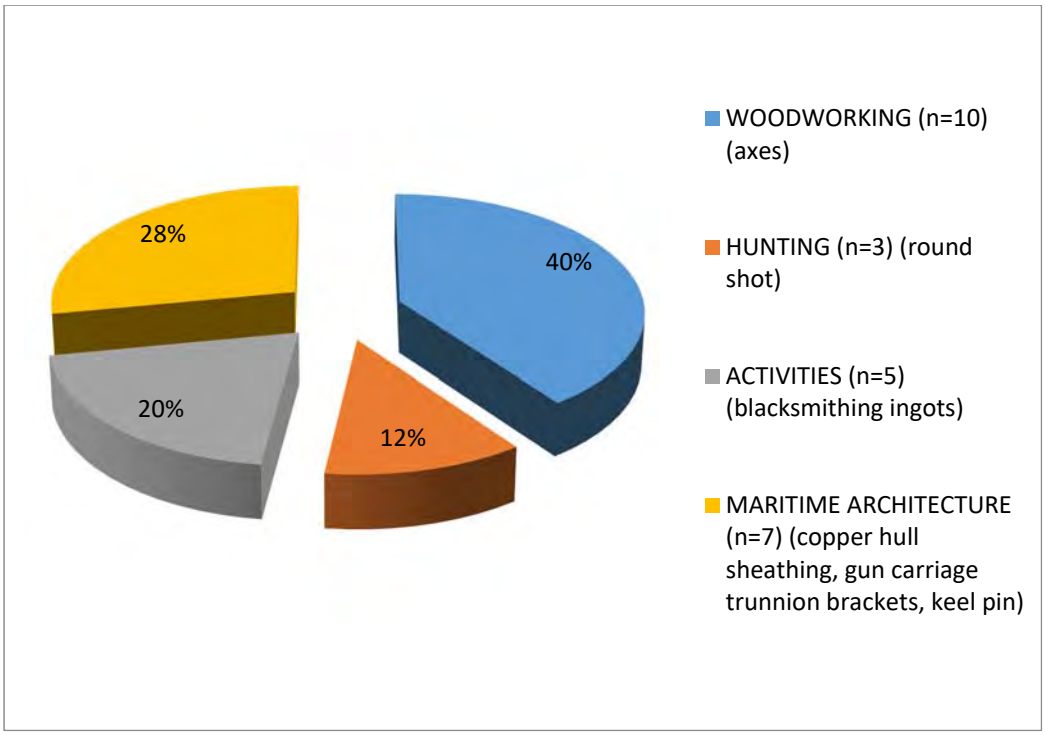


Figure 85. Locus 2 Shipwreck Cache functional groups and comparative artifact frequency.

Locus 3: Kitchen Terrace

The Locus 3 "Kitchen Terrace" assemblage includes 58 artifacts.[30] Investigations over three seasons included metal detector surveys, testing, and excavation. An initial 2012 metal detector survey yielded four artifacts (*Test Pits 1-4)*. Metal detector (MD) surveys in 2015-2016 (*MD Sample Area 1, MD Sample Area 2*) located 73 metallic indications, of which a subsample of 13 were recovered. Excavation of a 1m x 2m unit (*N100, E100/N100, E101*) in 2015 identified a midden and 31 artifacts. Recovered from a 2016 test (*Test Pit 7*) were 10 additional artifacts. This assemblage contains artifacts and middens of a mid-late 19th century subsistence type camp. Similarly dated deposits occur in the Locus 1A "Intrusive Hearth". Both assemblages represent a *Component 2* reoccupation of Neva Bay, most likely by Tlingit groups of the local region.[31]

Test Pits 1-4 (2012)

A 2012 judgmental metal detector survey located four metallic targets at the southern end of the terrace. Recovered from Test Pits 1-4 was an iron spike, iron hardware, brass cartridge, and fragments of an enameled tin vessel (Figure 86).

[30] The "Kitchen Terrace" was named for its use as the NSF kitchen during the 2012-2016 field seasons.
[31] A survey in 1900 noted several "Indian shacks" in this general area. These are assumed to be Tlingit structures (U.S. Coast Pilot 1901:197).

Figure 86. Artifacts recovered from the "Kitchen Terrace" area (Locus 3) area in 2012.
(a) Enameled tin (graniteware) vessel recovered from Test Pit 4 (UA2012-229-012);
(b) centerfire brass rifle cartridge marked "45-70" and "WRA" recovered from Test Pit 3;
(c) machined iron bracket of unknown function from Test Pit 2 (UA2012-229-011); and
(d) wrought iron spike with a rose-head and chisel-like tip recovered from Test Pit 1 (UA2012-229-009).

Test Pit 1

Recovered from Test Pit 1 was a complete wrought iron spike of the ARCHITECTURAL GROUP. The specimen measures 11.97cm long with a rose-head type, hand-forged head (UA2012-229-009). Its 1.24cm x 1.3cm square shank has a chisel-like tip.

Test Pit 2

An iron bracket of unknown function was recovered from Test Pit 2 (UA2012-229-011). The rectangular artifact measures 20.4cm x 4.4cm with identical 1.42cm-diameter machined round holes at each end. Attached to one hole is a loop of thin brass wire. This was added later, possibly related to snare or trapping activities. It is included in the ARCHITECTURAL GROUP.

Test Pit 3

Test 3 contained a centerfire brass rifle cartridge of the HUNTING GROUP (UA2012-229-010). Marked "45-70" and "WRA", this fired cartridge was manufactured by the Winchester Repeating Arms Company of New Haven, Connecticut between 1873 and 1930 (Adkins 1997:25).

Test Pit 4

A fragmentary enameled tin vessel of the DOMESTIC GROUP was recovered from Test 4 (UA2012-229-012). The flat-bottomed round vessel is constructed of 1mm gauge tin with a rolled rim and attachment loop for a bail handle. Enameled tin vessels of this type, known as graniteware or agateware, were widely produced in the United States after about 1878 (Merritt 2014).

UNIT N100, E100/N100, E101 (2015)

Unit N100, E100/N100, E101 was excavated in 2015 to investigate subsurface deposits within *MD Sample Area 1*. This excavation yielded 31 artifacts and an associated midden between 18cm and 52cm BS. Diagnostic artifacts included a bead, pipe stem, brass cartridge, and ceramics.

PERSONAL GROUP (Clothing/Adornment)

Bead, glass (UA2015-237-119)

One spherical wire wound bead in opaque green (*PANTONE 16-0732*) was recovered from N100, E100 (Figure 87). The 1.2cm long specimen is of conjoined wound manufacture (*WIb-js*), consisting of two fused spherical beads of different diameters (6.4mm and 8mm) (Ross 1990:48).

Beads of this type occur in archaeological deposits of Fort Vancouver dated between 1829 and 1860 (Cromwell, Renard, and Dorset 2013:127,140). Like the J&T Ford pipe stem recovered from the Locus 1A intrusive hearth, the bead was most likely acquired from the HBC between about 1840 and the late 1850s (Crowell 1996, Gibson 1990).

Button, glass (UA2015-237-120)

A four-hole Prosser-style white glass button was present within N100, E100. The button measures 1.02cm in diameter and 0.26cm thick. Prosser molded buttons were first produced in 1840, named for the manufacturing process and a British patent issued to Richard Prosser. These were used in undergarments, shirts, and utilitarian manufactured clothing well into the early 20th century (Grover 2004:151-152; Sprague 2002:113-124).

PERSONAL GROUP (Leisure)

Pipe stems, kaolin (n=2)

Two kaolin tobacco pipe fragments were present. UA2015-237-124 is a 3.4cm decorated stem fragment decorated with parallel roulettes of lines and pelleted dots. A partial manufacturing mark “D.” occurs adjacent to a band of stylized fleur-de-lis motifs. A second 2.9cm stem fragment (UA2015-237-125) is undecorated. Both have a bore diameter of 4/64".

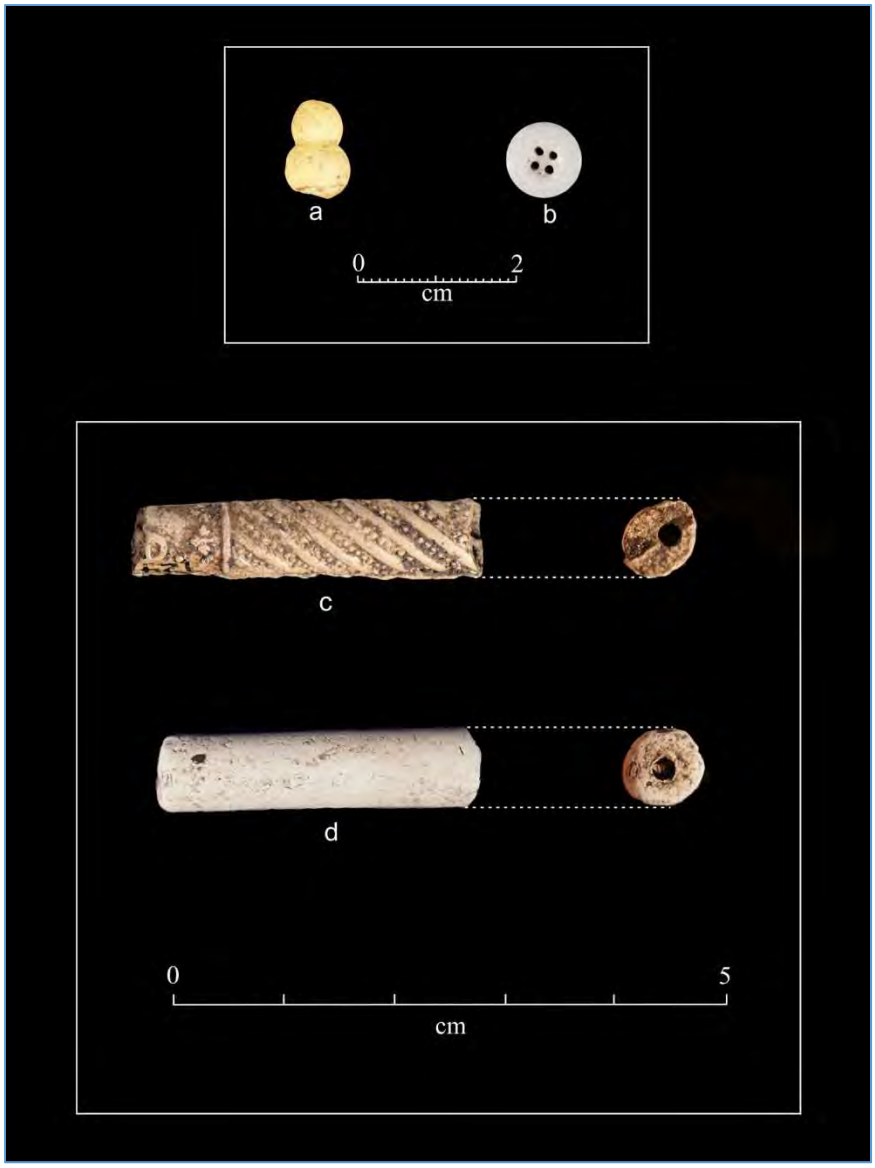


Figure 87. Personal group artifacts recovered from the "Kitchen Terrace" area (Locus 3) in 2015. (a) two fused spherical round beads / UA2015-237-119; (b) four-hole Prosser-style white glass button / UA2015-237-120; (c) decorated kaolin pipe stem fragment / UA2015-237-124; and (d) undecorated kaolin pipe stem fragment / UA2015-237-125.

DOMESTIC GROUP (Food serving/Storage)

Ceramics, vessel sherds (n=10)

The assemblage includes ten ceramic sherds representing four individual vessels (Figure 88). Specimens UA2015-237-126, UA2015-237-127, and UA2015-237-132 are fragments of a shallow undecorated whiteware plate or saucer. First patented in July 1813, thick-bodied undecorated whiteware dates most commonly after 1830, replacing earlier pearlware manufactures (Godden 1963:36; Miller 1991:5; South 1977).

A cream-colored refined earthenware vessel of unknown form is indicated by two non-diagnostic body sherds (UA2015-237-130, UA2015-237-131). A single underglaze transfer printed pearlware or whiteware teacup is present, printed in medium blue with line and stipple detail (UA2015-237-133). The pattern includes floral and trellis elements. Although underglaze line and stipple transfer printing began in ca. 1807, medium blue colors were dominant between ca. 1830-1860 (Majewski and O'Brien 1987; Samford 1997:20-23).

A fourth vessel, represented by refitted specimens UA2015-237-128, UA2015-237-129, UA2015-237-135, and UA2015-237-136 is a underglaze blue transfer printed teacup on a whiteware or pearlware body. The burned vessel is printed in a chinoisserie or a "blue willow" pattern, a transfer print common throughout most of the 19th and 20th century.

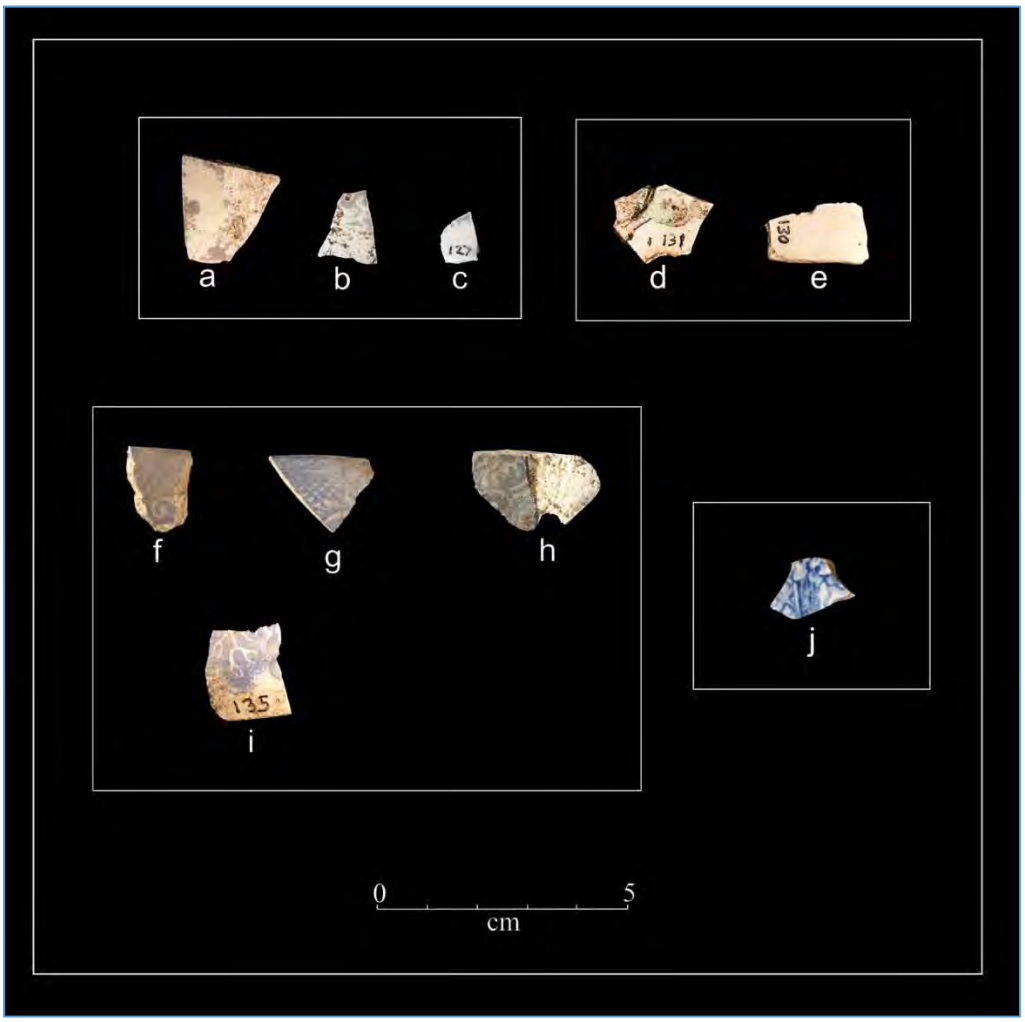


Figure 88. Ceramic sherds recovered from the "Kitchen Terrace" area (Locus 3) in 2015. Vessel 1: (a) UA2015-237-132; (b) UA2015-237-126; (c) UA2015-237-127. Vessel 2: (d) UA2015-237-131; (e) UA2015-237-130. Vessel 3: (f) UA2015-237-136; (g) UA2015-237-129; (h) UA2015-237-128; (i) UA2015-237-135. Vessel 4: (j) UA2015-237-133.

Kettle fragment, iron (UA2015-237-266).

An iron kettle fragment (Figure 89) was recovered 52cm BS within N100, E101 (MD-55). Measuring approximately 130 square inches, the thin (2.4mm) cast iron vessel shattered from use. Thick deposits of calcined bone within the kettle indicate it was used for food preparation prior to discard.

Sheet tin (n=2)

Two fragments of curved and flat sheet tin were present (UA2015-237-205, UA2015-237-224). They are part of a food can or serving vessel.

ACTIVITIES GROUP (Hunting)

Cartridge, brass (UA2015-237-163)

One fragmentary centerfire cartridge was recovered within unit N100, E100 (Figure 90). A headstamp marked "44 WCF" and "WRA Co" is identical to specimen UA2016-063-045 (MD-R) from the northern end of Locus 3. The .44-40 cartridge was manufactured by the Winchester Repeating Arms Company between 1873 and 1920. It was used in variety of lever action rifles and Colt-type revolvers of the late Victorian period (Cook 1989:113; Garnich and Sons 1920:588).

Birdshot, lead (UA2015-237-149)

One 0.7cm diameter round birdshot projectile was recovered from N100, E100. The specimen is both deformed and scarred from being fired.

ARCHITECTURAL GROUP (Fasteners)

Nails, iron (n=4)

Recovered from N100, E100 were four iron nails (Table 23). Specimens UA2015-237-170 and UA2015-237-223 are of wire manufacture. One (UA2015-237-241) is a Rosehead type wrought nail discernable in X-ray imaging. The fourth specimen (UA2015-237-167) is too corroded to determine a type of manufacture. Wire nails are generally associated with the post 1880 period (Adams 2002:68-69; Nelson 1968; Wells 1998:86-87).

Table 23. Kitchen Terrace N100, E100 / N100, E101 iron nail fasteners.

SPECIMEN	UNIT	SIZE	LENGTH (cm)	TYPE	CONDITION
UA2015-237-167	N100, E100	nail	n/a	unknown	incomplete
UA2015-237-170	N100, E100	nail	n/a	wire	incomplete
UA2015-237-223	N100, E100	nail	n/a	wire	incomplete
UA2015-237-241	N100, E100	nail	n/a	wrought	incomplete

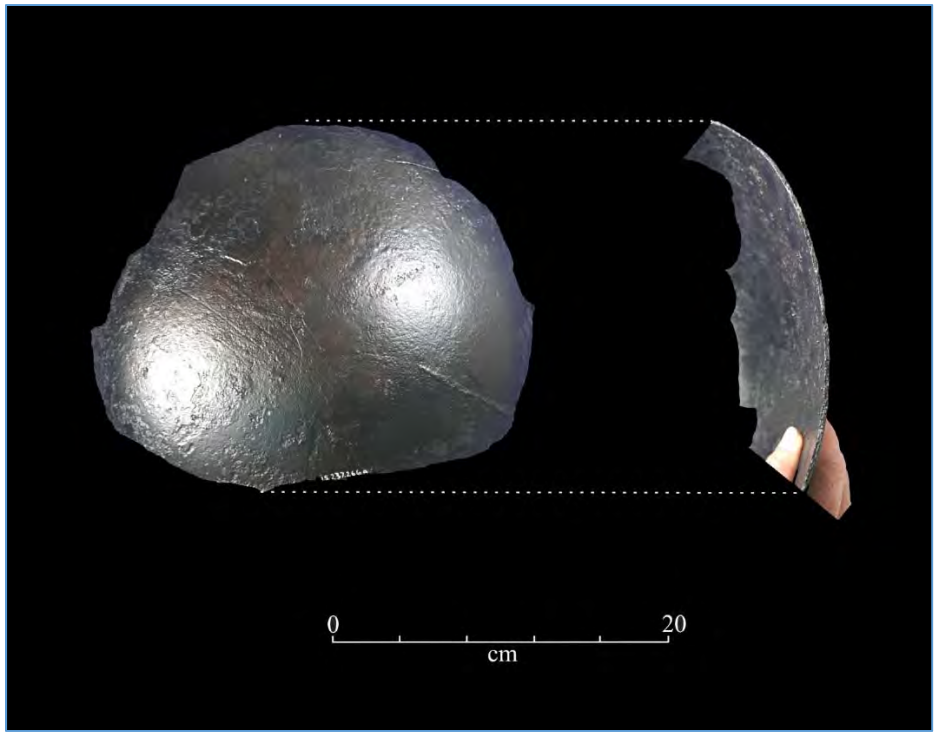


Figure 89. Cast iron kettle fragment from the "Kitchen Terrace" (Locus 3) area (UA2015-237-266).

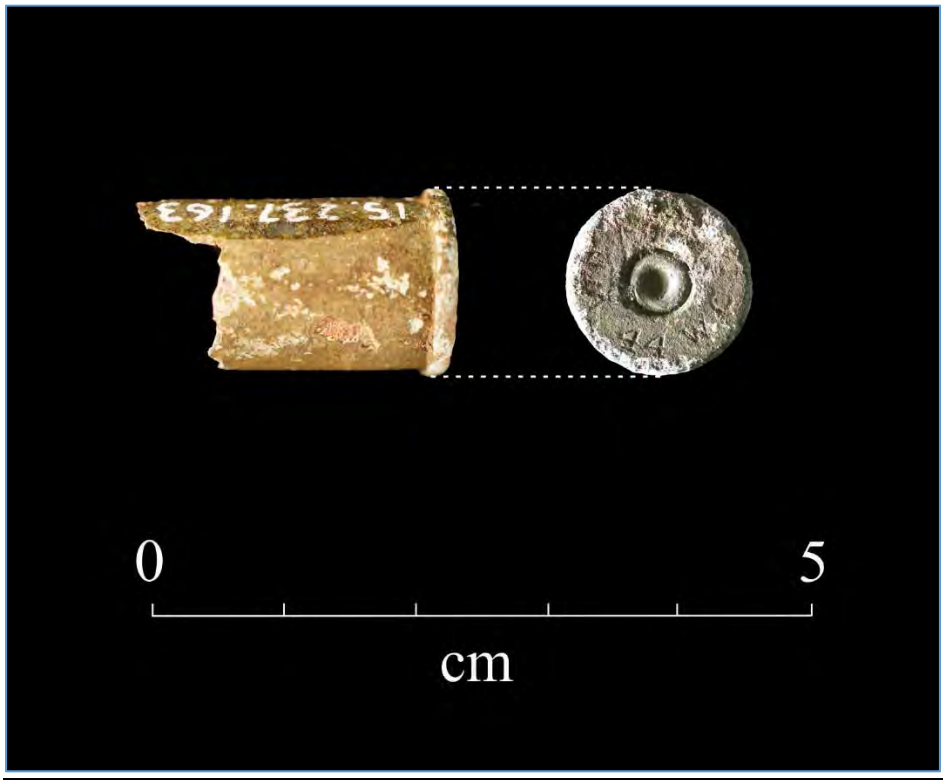


Figure 90. Centerfire cartridge marked "44 WCF" and "WRA" from the "Kitchen Terrace" (Locus 3) (UA2015-237-163). The headstamp is identical to that of specimen UA2016-063-045 from the northern end of Locus 3.

ARCHITECTURAL GROUP-MARITIME (Copper Hull Sheathing)

Copper, sheet fragments (n=2)

Two cut sheet copper fragments were present (Figure 91). Specimen UA2015-237-97 is a 8.8cm² fragment with a 0.24cm square nail perforation. The 0.9mm gauge fragment appears to have been cut with tin snips. A second triangular fragment (UA2015-237-82) measuring 0.65cm² is also of 0.9mm gauge sheet stock.

UNIDENTIFIED GROUP

Bone, incised (UA2015-237-123)

A 0.31cm thick fragment of incised bone measuring 1.2cm x 0.82cm was recovered within N100, E100 (17-19cm BS) (Figure 92). Decorated with parallel lines and fine crosshatching, the burned fragment may be part of a knife handle. Incising was likely performed with an iron tool.

Iron concretions, indeterminate (n=5)

Iron concretions UA2015-237-231, UA2015-237-244, UA2015-237-245, UA2015-237-246, and UA2015-237-247 cannot be attributed to a particular function.

Test Pit 7 (2016)

Test Pit 7 was excavated in 2016 as a graywater sump for the field kitchen. Recovered from the 50cm x 50cm test were four glass and six leather shoe fragments. Artifacts occurred between about 8cm and 40cm BS within a midden of charcoal and calcined bone.

PERSONAL GROUP (Clothing/Adornment)

Leather shoe fragments, (n=6)

Six leather fragments from a single shoe were present (UA2016-063-049) (Figure 93). Elements include heel and welt insole fragments. The heel is pegged with 1.8mm square nails and the welt machine-stitched with regularly-spaced round iron wire. Mass-produced footwear of this type was popular after the mid-19th century with the invention of the McKay sewing machine (ca. 1858), the Goodyear Welting machine (ca. 1875), and similar improvements (Grover 2002:147; Veres 2005:90). It was likely assembled using a cable nailing machine, a process which used round wire to attach the sole to the welt. The first of these machines was patented in the early 1860s (Anderson 1968:58-64).

DOMESTIC GROUP (Food serving/Storage)

Glass, container sherds (n=4)

The test contained four aquamarine glass sherds from a single London-style mustard bottle (UA2016-063-048) (Figure 94). Elements of this refitted octagonal bottle include the finish, shoulder, and portions of the body. A vertical panel is embossed "MUSTA.." in raised block lettering. The partial container measures >103mm in height, 45mm in diameter, with a neck finish height of 20mm and bore of 28mm.

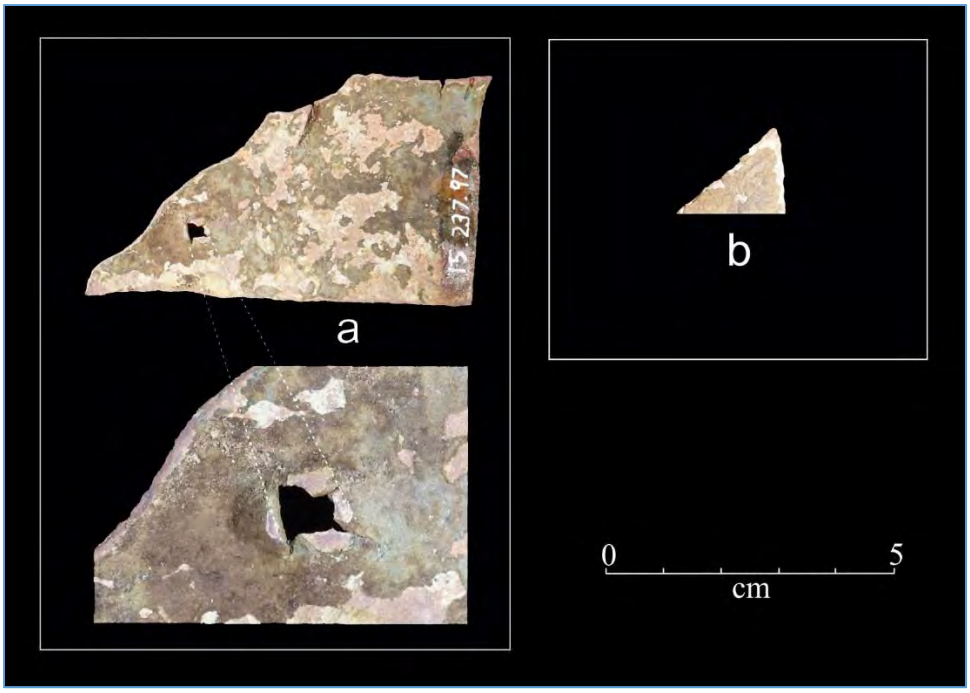


Figure 91. Sheet copper fragments from the "Kitchen Terrace" (Locus 3): (a) UA2015-237-97; (b) UA2015-237-82.

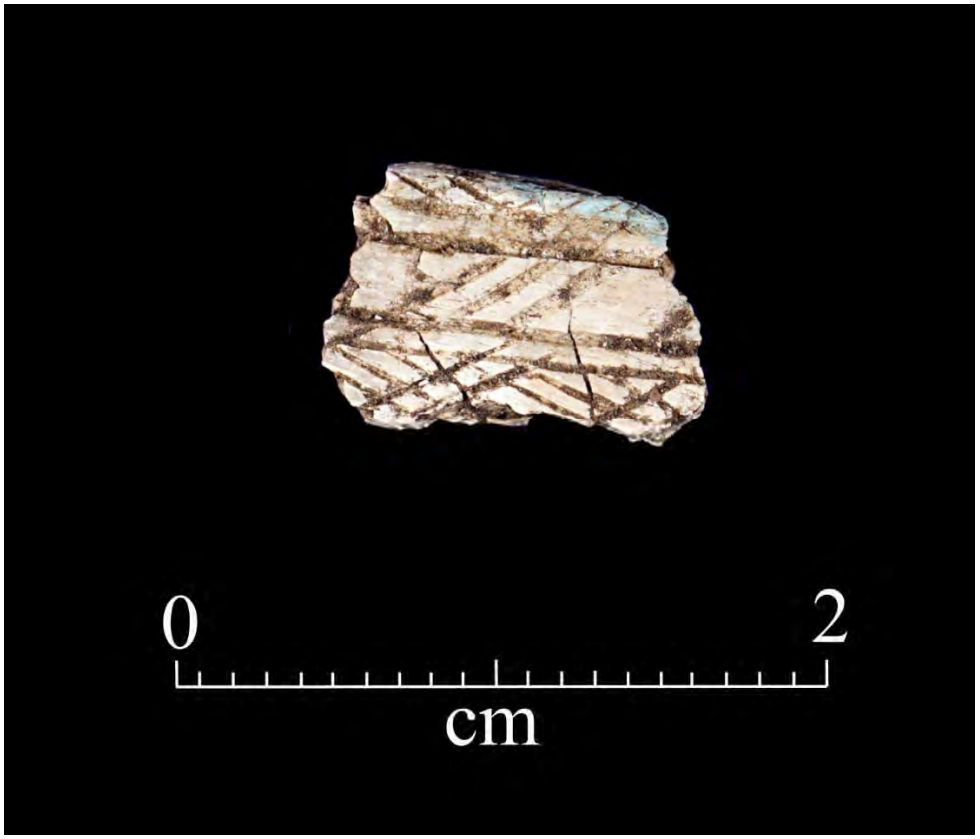


Figure 92. An incised bone fragment, possibly part of a knife handle, from the "Kitchen Terrace" (Locus 3) (UA2015-237-123).

Figure 93. Leather fragments from a single shoe from the "Kitchen Terrace" (Locus 3) (UA2016-063-049).

Figure 94. Aquamarine glass sherds from a single London-style mustard bottle from the "Kitchen Terrace" (Locus 3) (UA2016-063-048).

London-style mustard bottles of this type were produced during the 19th century by both English and U.S. manufacturers. Bottles primarily contained powdered dry mustard, a condiment often used to accompany meat dishes (Jones 1983:70-80). Known variants of this bottle type are embossed "MUSTARD" with a city, region, or proprietary mark indicated on an opposing panel. Common English bottles are marked LONDON or DURHAM, while KENTUCKY and U.S. NAVY mustards are known along the U.S. Eastern Seaboard (Jones 1983:80; McGuire 2016:683).

Octagonal forms were generally used in the second half of the 19th century with ca. 1860 being the date separating earlier square-bodied or flat octagonal bottles, known as "mustard squares", from later octagonal forms with tooled finishes (Jones 1983:71-77; Jones and Sullivan 1989:103). This specimen was blown in a two-piece mold (ca. 1810-1880) with a tooled finish (ca. 1870-1890) (Jones 1983:71; Jones and Sullivan 1989:26-27; Lindsey 2016). Based upon manufacturing characteristics the bottle was produced between ca. 1870 and 1890.

MD Sample Area 1 (2015)

MD Sample Area 1 was a gridded 15m x 15m metal detector survey of the southern portion of the Kitchen Terrace. A 2012 judgmental survey recovered four Late Victorian age artifacts in this general area, just north a small freshwater stream (see Test Units 1-4). The 2015 survey located an additional 25 locates. Sub-sampling yielded the following 11 artifacts. One of these, MD-55, was recovered during excavation of unit N100, E100/N100, E101 (see UA2015-237-266).

DOMESTIC GROUP (Food serving/Storage)

Spoon, iron (n=1)

MD recovery (MD-46) is a large iron spoon bowl measuring 7.8cm x 5.03cm (UA2015-237-233) (Figure 95a). The specimen is unmarked and missing its handle. Encased in a concretion, the specimen was identified via radiography (refer Appendix 4).

Kettle lug, copper (n=1)

A kettle lug of copper was recovered as MD-65 (UA2015-237-99) (Figure 95b). Measuring 5.8cm x 6.3cm, the curved lug has flattened ends for attachment to a copper vessel. It was hand-forged using crude roves and rivets.

ARCHITECTURAL GROUP (Hardware)

Tool, plane blade or chisel, iron (n=1)

Recovery MD-67 is a wrought iron tool measuring 13.67cm x 3.1cm with a chisel-shaped end (UA2015-237-256) (Figure 95d). The flat 0.52cm thick tool is perforated with round and oblong adjustment holes for use as a woodworking plane or hafted chisel.

Pulley lug, iron (n=1)

An iron pulley or "sheave" was recovered as a MD-53 (UA2015-237-230) (Figure 95c). The six-sided artifact has a diameter of 4.04cm and width of 1.75cm. The center lug is 2.14cm in

diameter and is bracketed by three small round holes of 0.35cm each. Pulleys were used as part of a block and tackle system in terrestrial and maritime applications.

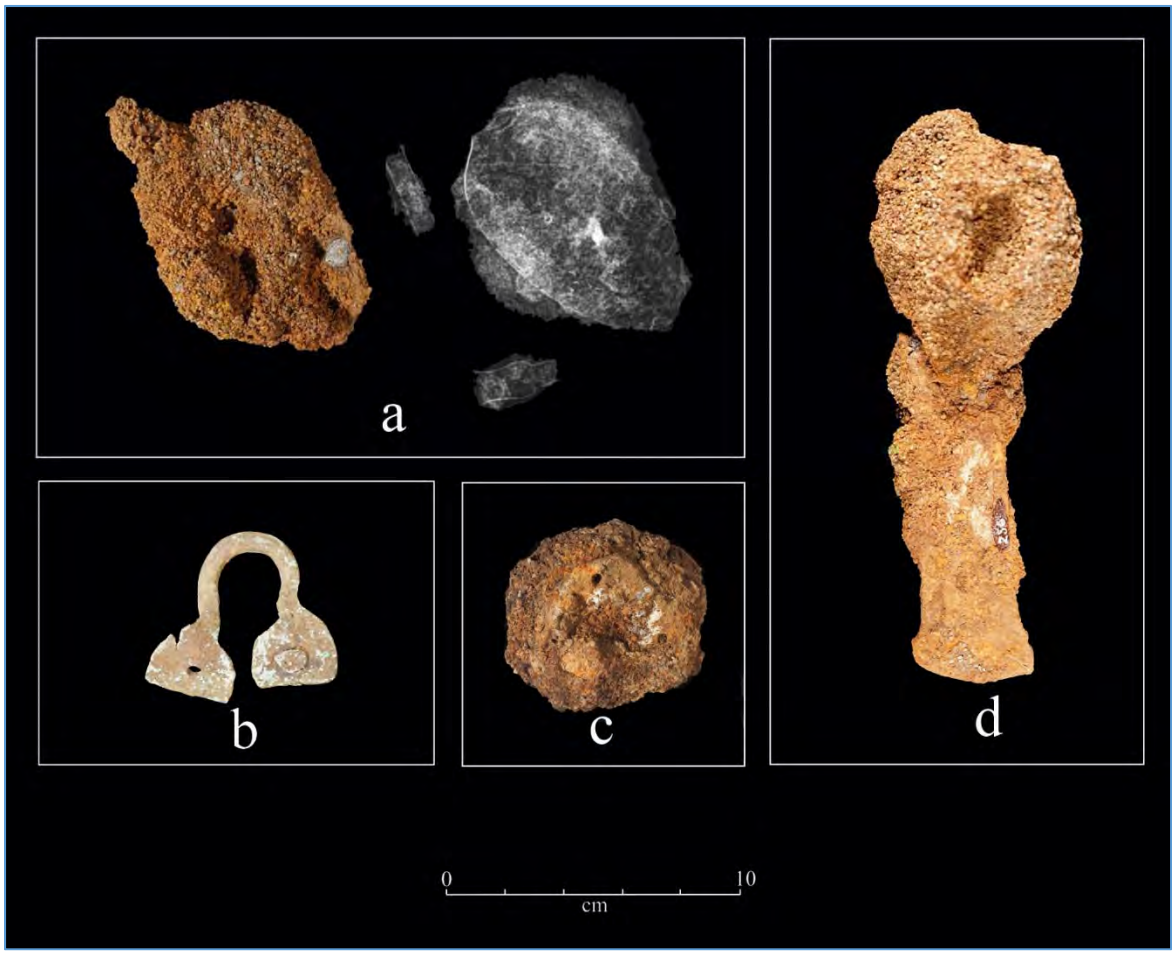


Figure 95. Artifacts from the "Kitchen Terrace," MD Sample Area 1. (a) iron spoon bowl encased in a concretion, photo and radiograph (MD-46 / UA2015-237-233); (b) hand-forged copper kettle lug with crude roves and rivets (MD-65 / UA2015-237-99); (c) iron pulley or "sheave" (MD-53 / UA2015-237-230); and (d) wrought iron tool with a chisel-shaped end (MD-67 / UA2015-237-256).

ARCHITECTURAL GROUP (Fasteners)

Nail, iron (n=1)

One partial iron nail (UA2015-237-175) was recovered as MD-47. Due to its poor condition it could only be classified as "square".

UNIDENTIFIED GROUP

Sheet iron, perforated (n=3)

Three fragments of 0.52cm gauge sheet iron were excavated as MD-68 (UA2015-237-267, UA2015-237-268, UA2015-237-269). One is perforated with two 0.59cm round holes. These refit a single object of unknown function.

Iron concretion, indeterminate (n=1)

One iron concretion was collected as MD-59 (UA2015-237-232).

Lead, indeterminate (n=2)

One melted lead artifact (UA2015-237-144) was recovered as MD-69. The triangular-shaped specimen is 0.34 cm thick with a 1.2cm diameter center hole. It may be a washer of some type. Artifact MD-66 (UA2015-237-138) is a 1.6cm long cut fragment of lead.

Locus 3: MD Sample Area 2 (2016)

MD Sample Area 2 was a gridded 15m x 30m metal detector survey of the northern end of the Kitchen Terrace. This 2016 effort located a dense cluster of 48 metallic locates, of which two highly conductive targets were selected for recovery. These were brass firearm cartridges dating to the period ca. 1873-1930, confirming late Victorian (*Component 2*) use of this area (Figure 96).

Figure 96. Centerfire brass cartridges from MD Sample area 2. (a) UA2016-063-047 / headstamp "WRA Co." and "45-70 USG"; (b) UA2016-063-045 / headstamp "WRA Co." and "44 WCF."

ACTIVITIES GROUP (Hunting)

Cartridge, brass (n=1)

A centerfire brass cartridge marked "WRA Co." and "45-70 USG" was present within MD-A2 (UA2016-063-047). The fired specimen was manufactured between 1873 and 1930 by the Winchester Repeating Arms Company of New Haven, Connecticut (Adkins 1997:25). This was

U.S. Government issued ammunition for the 1873 Trapdoor Springfield rifle and similarly-chambered civilian firearms (Huntington 1978:187). The artifact was recovered between 5cm and 14cm BS in a midden of calcined bone and charcoal.

Cartridge, brass (n=1)

A second cartridge marked "WRA Co." and "44 WCF" was recovered from MD-R (UA2016-063-045). The shell was a misfire and includes its conical-shaped lead projectile. This .44-40 ammunition was produced between 1873 and 1920 by the Winchester Repeating Arms Company for lever action rifles and Colt-type revolvers (Cook 1989:113; Garnich and Sons 1920:588). An identical specimen was recovered within unit N100, E100 at the southern end of Locus 3 (see UA2015-237-163). The cartridge was recovered 2cm BS in a deflated sand layer, just above mean high tide.

Assemblage Summary: Locus 3 Kitchen Terrace

The Locus 3 assemblage of 58 artifacts represents 18.0% of the total assemblage (refer Tables 4 and 5). An array of highly datable materials yielded a mean occupation date of *1888.2* and a *terminus post quem* of no earlier than 1830 (see Table 24). Diagnostic brass cartridges and wire nails confirm this area was occupied into the 1890s. Most artifacts (bead, buttons, ceramics) coalesce to the late Russian period. This *Component 2* assemblage broadly dates to the period ca. 1850-1890 and is likely a major Tlingit camp. Very little of this wide landform was formally surveyed or tested.

Table 24. Locus 3 Kitchen Terrace diagnostic artifacts and mean occupation date.

DESCRIPTION	ACCESSION	RANGE	NO.	MEDIAN	PRODUCT
Ceramic, whiteware	UA2015-237-130	1830-1930[1]	1	1880	1880
Ceramic, underglaze transfer-printed, medium blue	UA2015-237-133	1830-1860	1	1845	1845
Glass, "London Mustard"	UA2016-063-048	1870-1890	1	1880	1880
Bead, type *WIb-js*	UA2015-237-119	1840-1860	1	1850	1850
Button,"Prosser" type	UA2015-237-120	1840-1930[1]	1	1885	1885
Shoe, machine-made, cable-nailed	UA2016-063-049	1860-1930[1]	1	1895	1895

Graniteware, enameled vessel	UA2012-229-012	1878-1930[1]	1	1904	1904
Cartridge, 45-70	UA2012-229-010, UA2016-063-047	1873-1930	2	1902	3804
Cartridge, 44 WCF	UA2015-237-163, UA2016-063-045	1873-1920	2	1897	3794
Nails, wire	UA2015-237-170, UA2015-237-223	1880-1930[1]	2	1905	3810
TOTAL			*n=13*		*n=24547*
Locus 3 Mean Occupation Date (1888.2)					
[1]A terminal date of 1930 is used to bracket artifacts manufactured well into the 20th century. This date reflects the *terminus ante quem* of the most recent Locus 3 artifacts, 45-70 cartridges UA2012-229-010/UA2016-063-047.					

The assemblage is dominated by objects related to *Domestic Group* food serving and storage (34%) (Figure 97). These include sherds of ceramic plates, saucers, and teacups, a glass bottle, iron spoon, shattered iron kettle, tin cans, and enamelware pot fragments. *Personal Group* items such as kaolin tobacco pipes and clothing accoutrement (bead, button, leather shoe) are 17% of the assemblage. A primary activity was apparently hunting, indicated by large caliber .45-70 and .44-40 manufactured cartridges, and a lead birdshot projectile of the *Hunting Group* (9%).

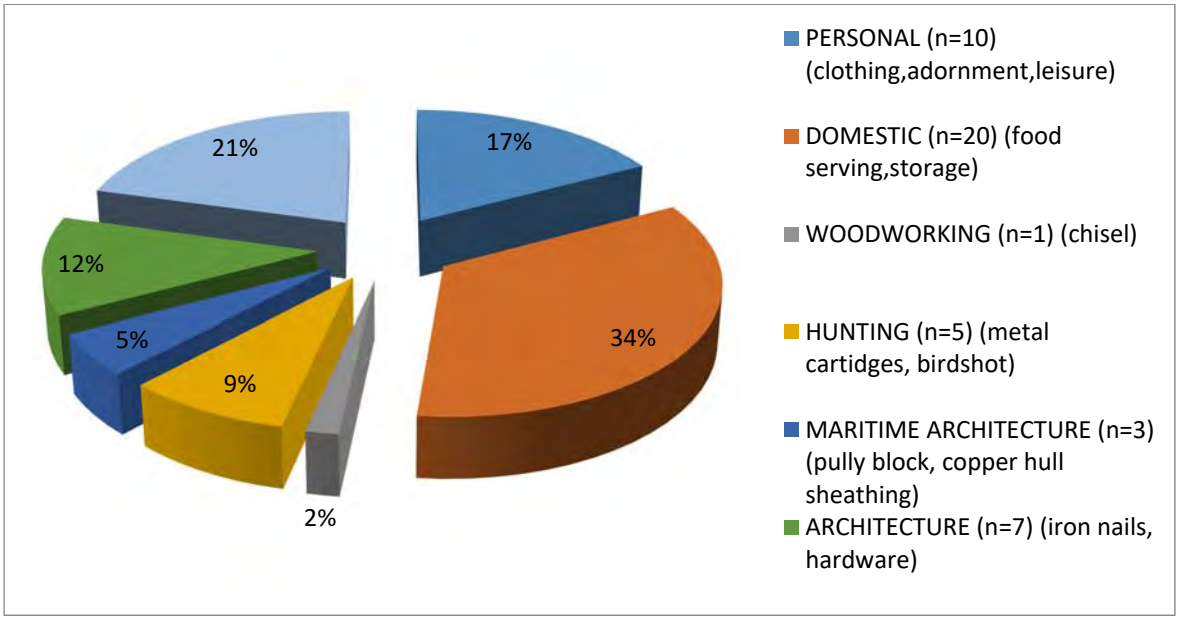


Figure 97. Locus 3 Kitchen Terrace functional groups and comparative artifact frequency.

Architectural Group artifacts (nails and unidentified hardware) are not well represented (12%) and may reflect sampling biases.[32] Incidental artifacts include a block pulley sheave and cut sheet copper of the *Maritime-Architecture Group* (5%), and a chisel or plane of the *Woodworking Group* (2%). Neither the sheave or cut copper can definitively be linked to the NEVA, although there remains a chance these later occupants had access to salvaged shipwreck materials.[33] Current archaeological research indicates that shipwrecks can provide an "economic bonanza" for local communities, sometimes for many decades after a disaster (see Gibbs 2003; Nash 2004). The incentive(s) behind settlement of this remote site is one of many important research questions that could be pursued from future testing and excavation.

CHAPTER 8: UNDERWATER INVESTIGATIONS: 2015-2016

Introduction

The mention of sunken shipwrecks conjures up Disneyesque images of three-dimensional ships resting on the ocean floor awaiting discovery by divers. The NEVA wreck site, like most non-arctic saltwater wreck sites of that era, is vastly different. Toredo worms (*Teredo navalis,* a mollusk) tend to consume the untreated wood of wooden shipwrecks, leaving behind only ballast and hardware. Typically the only wooden elements preserved on shipwrecks more than 100 years old in Alaska waters (other than the high arctic) are timbers buried in sediment or under ballast. A good example from Alaska is the KAD'YAK, a wooden Russian bark that sank off Kodiak in 1860 and was investigated by archaeologists in 2004 (Anichtchenko and Rogers 2007:36). Despite relatively protected waters, the only preserved hull fragment extended from beneath the ballast and was usually covered by sand. The NEVA wreck occurred along Kruzof Island's unprotected outer coast, known for frequent breaking seas and perilous conditions. A commercial diver characterized the underwater conditions as being turbulent enough to displace large boulders during foul weather (Glen Wilbur, personal communication, 2012). Berkh's account of the NEVA wreck says that "the waves were once so strong they even cast up two carronades [short large-bore cannons]" [Shalkop 1979:42]. We also know from Berkh's account that the NEVA broke in half, and that a raft was made from topmasts and other parts of the ship but "the infuriated wind tore it apart and scattered it over the entire area" [Shalkop 1979:35]. There seems to be little doubt that the NEVA broke apart and was scattered following the grounding, probably with heavier items such as cannon falling to the sea floor at the wreck site and lighter remains following a general northward trajectory with the prevailing current. More than 200 years of recurrent storms, particularly during winter months, would have further dispersed the remains of the wreck. To these factors, one must also add uplift at the rate of 17.12 mm (0.674 in.) per year, which means that in 2012 the seas were 3.4 m (11.2 ft.) shallower than in 1813 (Gill 2012). This means that wreckage or flotsam at the Mean Lower Low Water (MLLW) mark (i.e., "0" tide) in 1813 would now be well above the beach in the forest fringe area. According to the Berkh account, the NEVA wrecked at "the end of the fifth hour" or around 6:00 am (Shalkop 1979:35) – which roughly coincides with Podushkin's estimate of 6:30am (Shalkop 1979:48). This would have been just past peak high tide, which by the modern calendar was a 9.9 ft. tide at 5:37 am on January 9, 1813 (Gill 2012). It

[32] Metal detector surveys within Locus 3 generally prioritized recovery of highly conductive metallic items for dating purposes, thus minimizing the collection of small ferrous items such as iron nails.

[33] One thoroughly water worn ceramic sherd (UA2015-237-134) recovered from the ca. 1840-1890 Locus 1A Intrusive Hearth is potentially coeval with the NEVA shipwreck period. Collected as a possible curiosity, this beach find is tantalizing evidence that later occupants had some knowledge of shipwreck debris.

should be noted that the Julian Calendar (13 days behind the modern / Gregorian calendar) was widely used in Russia between 1709 and 1918, and longer by the Russian Orthodox Church. The Russian Department of Foreign Affairs, however, required that the Gregorian (modern) style be used in its relations with foreign countries and by commercial and naval fleets (Achelis 1954:1). Thus, it is appropriate that the modern calendar was used to calculate historic tide cycles for dates mentioned in the NEVA survivor accounts. The NEVA had a draft of 4.9 m (16 ft.) and would have grounded on any rocks that rose above that level at high tide.

The 2015-2016 underwater investigations included side-scan sonar surveys, the use of a Garmin chartplotter with integrated sonar to produce bathymetric maps, and scuba dives. As reported in the following narratives, each of the four underwater investigation phases was fraught with problems and yielded limited results. Given the limited value of a marine magnetometer in the project area, as demonstrated in 1979 and 2012 (Cowals 1980; McMahan 2012), scuba survey is considered the best method for exploring the sea floor. The ability to conduct scuba dives, however, was plagued by frequent unfriendly sea conditions, pinnacles that limit near-shore boat access, strong currents and tidal surge, dense kelp, the absence of boat anchorages near the project area, compressor and dive equipment failure, outboard motor failure, and the absence of a commercial facility in Sitka to rent gear and fill tanks. In addition to McMahan's brief dive in 2012, only 11 dives by two-person teams were conducted between May 2015 and July 2016. At least two of those were cut short due to equipment failure or safety issues. If there is a lesson to be learned about logistics, it is to (1) stage out of Sitka and budget for a lengthy stay, (2) carefully choose weather windows for dives, (3) choose a fast boat capable of carrying at least six divers with handlers and gear, (4) have redundant equipment available (compressors, inflatable boats, dive gear), (5) use geo-referenced ground lines when possible, and (6) cover a broad area to include the estimated northward debris trajectory.

May 2015 Underwater Investigations

During May 1-8, 2015, a project was undertaken to conduct underwater investigations offshore from the presumed NEVA survivor camp at a location that background research suggested was the wreck site. The project plan included scuba reconnaissance surveys, digital photography and videography, and the collection of digital GPS data. In order to maximize time in the project area, a live aboard vessel was engaged to avoid run times to and from Sitka. While the optimal time frame for water clarity was predicted to be late March or early April, charters were not available that early in the season. Furthermore, no suitable charter vessels were available in Sitka at any time during the spring. It was also not possible to rent scuba tanks and other dive gear in sitka. Thus, the M/V 18 EAGLES (Bareboat Charters) was chartered in Juneau at the beginning of the charter season. The vessel, a 42 ft. Nordic Tug, provided a stable platform and sleeping accommodations for the crew (Figure 98). The downside of the Nordic Tug was its slow speed. Kevin Murphy, Chief Ranger of Alaska State Parks Southeast Region, took leave time from his regular job to serve as vessel captain. Dr. John Jensen, a senior marine archaeologist and historian from the University of Rhode Island and Sea Education Association, helped to coordinate the search effort and ran the dive support skiff. The dive team was comprised of Dave McMahan (PI), Dr. Evguenia Anichtchenko (marine archaeologist), Dr. Brinnen Carter (marine archaeologist),

Figure 98. The Bareboat Charters' M/V 18 EAGLES, a 42 ft. Nordic Tug used for May 2015 dive operations.

and Travis Shinabarger (marine archaeologist). All dives were conducted under the parameters of a Dive Safety Plan. Due to rocky pinnacles in the dive area, divers were dropped off in teams of two via use of a small inflatable boat. The other two divers were to serve as safety divers in the event that assistance was needed. All dives were with compressed air and open-circuit scuba equipment. Tanks were filled on board the M/V 18 EAGLES with a portable compressor.

The crew, except for Carter, met in Juneau on 4/30/15 to purchase supplies, rent dive equipment, and prepare for the project. On the morning of 5/1/15, the M/V 18 EAGLES departed Auke Bay Harbor for Sitka. In order to pass through Sergius Narrows during daylight on a slack tide, it was necessary to anchor for the first night 50 miles (80 km) north of Sitka in Appleton Cove. The vessel passed through Peril Strait by 11am on 5/2/15, and arrived in Sitka at 2:45pm, the journey having taken longer than anticipated. The team met that evening with Hal Spackman, Bob Medinger, Sue Thorsen, and Glen Wilbur. Maps were examined and Mr. Wilbur pointed out the approximate location where he had observed a cannon while diving for abalone in the 1980s. On the morning of 5/3/15, the vessel arrived in the project area in time to dive on a 1:30pm slack tide. McMahan and Shinabarger did the first dive, noting 3-4 ft. kelp and an irregular bottom with boulders and rocky outcrops. A second dive team was not deployed due to strong currents with the turn of the tide. The vessel anchored for the night in a slightly protected cove at Saint Lazaria Island, about an hours run from the project area. On 5/4/15, the M/V 18 EAGLES arrived back in the project area by around 8:00am in slightly rough seas. Once on site, the team laid down A 91 m (300 ft.) north-south bottom line with buoys and anchors on either end to serve as a reference for divers. A dive team comprised of Anichtchenko and Carter were deployed at the north end of the

line with the task of swimming southward on one side of the line and returning on the other side. Jensen and McMahan followed the scuba bubbles in the inflatable dinghy, with McMahan suited up for swimming if necessary. The outboard motor on the dinghy died with about two-thirds of the task completed, and the M/V 18 EAGLES had to retrieve the dinghy and divers with rocky pinnacles posing danger. It was not possible to retrieve the baseline without the dinghy. With sea conditions worsening and no support dinghy, the team proceeded to Sitka to regroup and try to have the outboard repaired. On Tuesday 5/5/15, the team received word from the repair shop that parts had to be ordered and the outboard could not be repaired before Friday. A smaller outboard was rented, but too late in the day to make it to the project area for afternoon dives on a slack tide.

To make the most of the delays, the team conducted an archaeological reconnaissance of Signal Island in Sitka Sound. Signal Island was believed to be the location of a Russian lighthouse noted on Lisiansky's chart when he visited Sitka on the NEVA in 1805 (Arndt 2003:11). The lighthouse was depicted in a sketch by I.F. Vasil'iev on an 1809 harbor chart of Sitka Sound, and captioned "a view of the lighthouse on Maiachni [Signal] Island" (Orth 1971:615, 630, 873). The pedestrian survey by the NEVA Project team did not reveal any obvious remains of Russian use of the island. The team had a State of Alaska permit (2015-14) for the contingency survey, but was not able to gain timely approval from STA for subsurface testing. Thus, only a cursory survey was possible. The survey report for Signal Island is included in Appendix 9.

The M/V 18 EAGLES departed on 5/6/15 at 6am for the project area, arriving at 8am. With winds from the northwest and very rough sea conditions, the consensus among the skipper and crew was that it was not safe to dive. Conditions also precluded the use of the dinghy to remove the bottom line, or dives at alternate dive sites. Increasing swells prompted the team to seek shelter at Saint Lazaria Island, where they arrived at 10am. At 1pm the team again proceeded to the project area, where winds calmed in the afternoon. Divers McMahan and Shinabarger were deployed at 3:21pm with the intention of beginning the dive at the south end of the bottom line. The buoy, however, was actually attached to the anchor that had been ditched when the outboard died on 5/4/15. The divers dropped to a depth of 14 m (47 ft.), noting good visibility and exposed rock outcrops. With no baseline for reference, the dive team examined the bottom in a 9 m (30 ft.) radius before aborting the short dive as per predetermined safety protocols. A dive team comprised of Anichtchenko and Carter were deployed at the south end of the bottom line at 4:42pm, but the dive was soon aborted due to a leak in Anichtchenko's rented drysuit. At 5:14pm, Carter and Shinabarger deployed at the buoy marking the south end of the bottom line. They descended to a depth of 15 m (50 ft.) and followed the bottom line northward. They observed a series of crevasses running perpendicular to the bottom line (and shoreline), noting that this type bottom might be favorable for locating ship's wreckage that had settled into low areas during breakup. Coordinates for the ground line buoys, along with detailed locational maps are included in Appendix 10. The M/V 18 EAGLES departed for Saint Lazaria Island at 6pm despite some reluctance due to southeast winds. The reluctance was well-founded, as shifting winds necessitated weighing anchor and proceeding to Sitka at on 5/7/15 at 5am. Twenty knot winds and rough seas precluded diving on what was to be the final day at the project location. The dive compressor, ground line gear, and

other equipment were offloaded in Sitka, along with Drs. Jensen and Carter. The M/V 18 EAGLES with the remainder of the crew departed for Juneau at 12:30pm, anchoring for the night near the head of the bay at Port Chatham. The vessel departed Port Chatham in calm seas on the morning of 5/8/15, arriving in Juneau during the late afternoon. After offloading gear and taking it to air freight, Anichtchenko, McMahan, and Shinabarger returned to Anchorage on the evening flight.

The May expedition was fraught with problems that included outboard motor problems, failure of dive gear, and poor sea conditions. Dive operations in the project area are inherently difficult due to frequent hazardous conditions, strong currents and surge, and dense kelp. There are no nearby anchorages or places for vessels to take shelter, necessitating careful planning around sea conditions. In retrospect, the team concurred that a more efficient dive operation would have housed the team in Sitka and used a fast boat to transport divers to the project area during favorable conditions. While a live-aboard vessel seemed like a good way to cut costs and maximize time on site, this did not prove to be true. With an average cruise speed of less than 10 knots and a need to transit Sergius Narrows on slack tide, it took two days transit time each way between Juneau and the project area. This affectively consumed four of the eight charter days allotted for the project. The nearest fair-weather anchorage to the project area was Saint Lazaria Island, with an hour of transit time required. The transit to a more secure anchorage in Sitka took at least two hours of transit time each way. The May dives allowed the team to characterize the ocean floor in the project area, but allowed for little exploration.

July 2015 Underwater Investigations

While the priority for July 2015 investigations was terrestrial testing and excavation, plans were made for opportunistic sonar transects and dives as time and circumstances allowed. A small inflatable boat (16 ft. Achilles) with outboard was supplied by NSF for shore-based marine operations, and a portable dive compressor was set up on the beach for filling tanks. Designated divers were Adams, Anichtchenko, Carter, and McMahan. The working plan was to use side-scan sonar to identify potential targets that would be subsequently examined via scuba dives.

The sonar unit, owned and operated by John Pollack, was a Starfish 452F CHIRP (Compressed High Intensity Radar Pulse). The unit is one of the smallest professional, high resolution shallow water units that can be either pole mounted or towed on a 20 m cable. It was interfaced with a CF-30 Panasonic Toughbook laptop computer that was mounted under a protective cover on the inflatable boat. Data were post-processed with Scanline and Sonar TRX software to produce track mosaics, which were exported as “kml” files for display in Google Earth Pro. Note that all data files were transferred to the University of Alaska Museum of the North, to be curated along with collections and project files. Details on the sonar investigations are provided by Pollack in Appendix 10.

The first sonar attempt was on 7/13/15 (by Pollack, Adams, and McMahan), when three transects were run south to north parallel to the shoreline. Conditions were rainy, and choppy seas prevented north to south transects. The bottom topography showed up clearly and some anomalies (possible linear features) were marked for future examination. Six additional transects were logged

parallel to the shoreline on 7/14/15, with the focus being outside exposed rocks and in slightly deeper water than on the previous day. The data revealed a sandy bottom with periodic rock outcrops. Several anomalies were identified just outside the exposed rocks, and coordinates were recorded for further examination.

Following the sonar investigations, sea conditions did not allow for scuba dives until 7/20/15. Adams and McMahan dove on the afternoon slack tide at 4:45pm to examine one of the shallow sonar anomalies just outside the reef / rock. From the Achilles, the divers descended to the ocean floor at a depth of 4.9 m (16 ft.). They swam toward the reef and then paralleled it for a short distance. The surroundings were characterized by relatively thick kelp and a moderate surge (Figure 99). To examine the ocean floor, the kelp had to be pulled apart. The divers carried hand-held metal detectors for the examination of suspected wreckage. It was discovered, however, that many of the boulders were so iron laden that they were considered "hot rocks" and indistinguishable from metal objects. Adams placed a pelican buoy on an elongated and curved encrustation, which was to be further examined. The dives were completed at 6pm.

Additional dives were completed by Adams and Anichtchenko at afternoon slack tide on 7/21/15. The team descended at the pelican buoy deployed on the previous day and determined that the encrustation flagged by Adams was a natural formation. The divers were then towed to a "cross-shaped" anomaly a short distance seaward from the pelican buoy. That anomaly was also determined to be a natural rock formation. They swam along the bottom toward the outside of the reef, noting several metal detector targets believed to be "hot rocks" along the way. The dive, the last of the project, was completed at 6:30pm. Because sea conditions were marginal for diving and the team needed to finish terrestrial work in the remaining days, no other dives were conducted during the July 2015 investigation.

March 2016 Sonar Survey

Additional sonar scans of the project area were undertaken during March 8-10 following the annual meeting of the Alaska Anthropological Association in Sitka (refer Appendix 10). It was reasoned that better resolution could be obtained early in the season when kelp development was at a minimum. In the event of opportunistic scuba dives, water clarity prior to the herring spawn would also be optimal. It was hoped that the use of a larger vessel rather than inflatable boat would provide a more stable platform and help to provide better resolution. The *Esther G*, a 28 ft. welded aluminum vessel captained by Davey Lubin was chartered in Sitka for this purpose. The sonar fish was cable-towed from the stern using a 2 m boom offset to starboard. Participants were John Pollack, Dave McMahan, Travis Shinabarger, Brinnen Carter, and Hal Spackman. Evguenia Anichtchenko and Sean Adams were to have joined the team, but cancelled travel when it became apparent that inclement weather would prevent diving. In accordance with a weather contingency plan, side-scan sonar was conducted in protected waters at Old Sitka and Ozerskoi Redoubt under OHA Permit No. 2016-02. A report was prepared by sonar operator John Pollack. The results of these surveys, as well as a brief attempt at a sonar survey in the NEVA project area, are reported in Appendix 11.

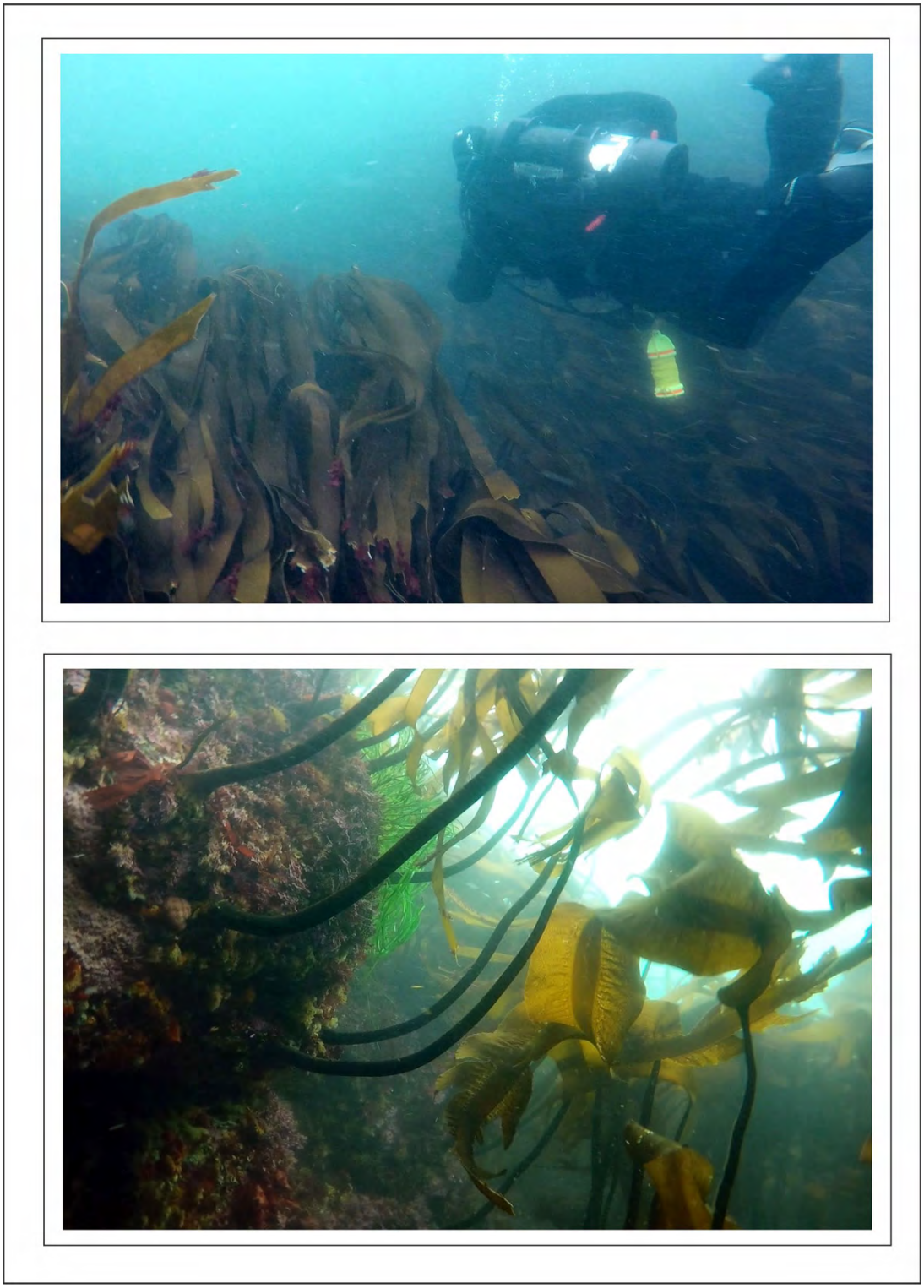


Figure 99. Underwater images that show sea floor characteristics in July 2015. Top: Sean Adams swimming over some of the thick kelp that is present throughout the dive area; bottom: kelp stalks growing on one of the many rocky pinnacles in the area. Photo by D. McMahan.

On 3/7/16 a sonar survey was conducted in the protected waters off Old Sitka State Historical Park, 8 km (4 mi.) north of the Sitka public docks. Three geo-referenced tracks were recorded. Because sea conditions were calm, with waves <1 m (3.3 ft.) high, high resolution scans were possible. Four targets were identified in depths ranging from 25-35 m (82-115 ft.). These were: (1) a cluster of debris or wreckage recorded as "OS-1," (2) a probable modern shipping container recorded as "OS-2," (3) a small rectangular object such as a box or log recorded as "OS-3," and a probable long cable or anchor chain identified as "OS-4." No dives or drop-camera examinations were attempted, although further examination was recommended for OS-1 and OS-4.

On 3/8/16 a sonar survey was conducted in Redoubt Bay, the location of Ozerskoi Redoubt, 17 km (10 mi.) south of the Sitka public wharves. Six geo-referenced tracks were recorded. Sea conditions were excellent with waves of approximately 1 m (3.3 ft.). A strong cross-wind, however, made the boat "crab" and created a diagonal tow of the sonar fish at times. For this reason, the imaging resolution was inferior to that achieved at Old Sitka. Exposed rock strata are visible and abundant in the side-scan images. Four targets were identified as suspicious, although none appeared to represent wreck debris or ballast piles. One target (RB-1) is probably a geologic formation. Two of the targets (RB-2 and RB-3) may represent either geological formations, or possibly pier or dam footings. The fourth target (RB-4) was represented by two small unidentifiable anomalies less than one-meter square. The targets range in depth from <3 m to 25 m (9-82 ft.).

Despite a small craft advisory, the weather and sea conditions had improved enough by 3/10/16 that the team attempted a sonar survey of the NEVA project area. Conditions were so rough around Cape Edgecumbe that several team members became sick. The wave height in the project area was around 3 m (10 ft.) and wind conditions exceeded the limits for high resolution scanning. To help stabilize the tow fish and protect the cable against breakage, the cable pulley was attached to the boom with bungee cords. Despite handicaps, six geo-referenced tracks were recorded. Breaking waves prevented scans in the vicinity of the reef / rocks, however, creating a data gap at one of the most promising locations. The tracks depict a sea bed comprised largely of jagged and irregular volcanic lava flows. Four indistinct targets were recorded for future examination, but none were diagnostic of wreck debris or ballast piles. Given sea conditions at the time of the survey, the consensus was that the work should be repeated during calm weather. Refer to Appendix 11 for survey details.

July 2016 Underwater Investigations

The 2016 field investigations, conducted from July 6-20, were primarily focused on archaeological metal detecting and excavation. As during the previous year, however, plans were made for opportunistic sonar transects and dives as time and circumstances allowed. The NSF 16 ft. Achilles inflatable was again available, as well as the portable dive compressor and scuba gear. Designated divers were Adams, Anichtchenko, Carter, and McMahan. The working plan was to use side-scan sonar to identify potential targets that could be subsequently examined via scuba

dives. On July 7, in reasonably calm seas, Pollack and Adams used the Starfish 452F CHIRP to scan the area offshore from the survivor camp. Particular attention was given to the area south of the previous scans, albeit with some overlap. Details of the survey may be found in Appendix 10. The first dives were conducted by Adams and Anichtchenko on the evening high tide of July 9. Their 44 minute dive focused on relatively shallow waters just outside the reef, where they noted dense kelp but nothing of cultural interest. The second dive was conducted by Adams and McMahan on the afternoon of 7/10/16, and focused on the area in front of the bluffs south of the survivor camp. During a 49 minute dive at a maximum depth of 14.5 m (48 ft.), they noted a rocky bottom characterized by pinnacles and valleys with numerous deep crevasses. Despite dense kelp, bottom visibility was estimated to be 50%. Water clarity was estimated at around 4.5 – 6 m (15-20 ft.) and the water temperature was 53 degrees F.

On 7/12/16, Adams and Pollack spent the morning collecting bathymetric data with Pollack's Garmin 74SV Echomap chartplotter. This unit integrates CHIRP sonar with the ability to produce bottom contour maps. The data are viewable with Garmin software (Figure 100), but they cannot yet be exported into a non-proprietary format. The bathymetric maps help to fill in the gaps and provide a broader view of the ocean floor topography than is possible with side-scan sonar data alone. On the evening of 7/12/16, Adams and Anichtchenko conducted a 53 minute dive in front of the bluffs south of the survivor camp. Their position was slightly inland from the dive conducted by Adams and McMahan on 7/10/16. The numerous peaks and valleys on the sea floor caused a very irregular dive profile. They reported significant surge and danger from entanglement in dense patches of small kelp from which Adams had to free himself with a knife. For this reason, subsequent dives focused on other areas. A dive compressor high-pressure line ruptured, however, and replacement parts could not be secured in a timely manner. The inability to fill tanks precluded diving, even though calm and sunny conditions prevailed for most of the remaining time on site.

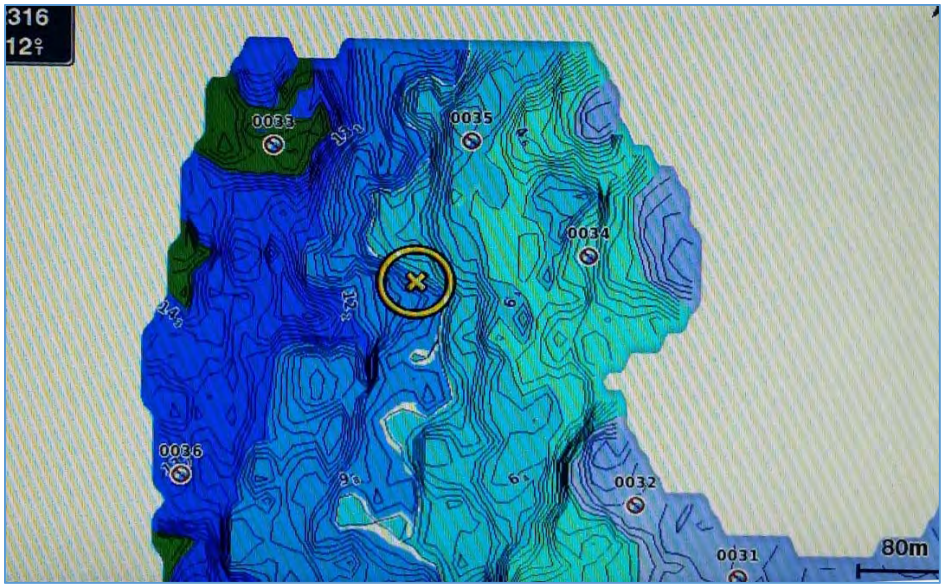


Figure 100. Example of screen print from Pollack's Garmin 74SV Echomap chartplotter that shows sea floor topography within a portion of the project area.

CHAPTER 9: THE ARCHAEOLOGY OF SURVIVOR CAMPS, HUMAN BEHAVIOR IN CRISIS

Epic stories of wilderness survival on land and sea have found captive audiences through writings, movies, and now reality TV shows. While there has been considerable public interest in shipwreck survival, including psychological trauma and the dynamics of group isolation, there have been relatively few archaeological and anthropological investigations of the phenomenon. A notable exception is the comprehensive study by Martin Gibbs of 17th – 19th century shipwreck survivor camps in Australasia and what they can tell us about human behavior in a crisis (Gibbs 2003). Despite differences in specific wreck events, he found many commonalities in survival adaptation processes (Gibbs 2003:129). To understand survival, one must understand the relationship between the ship and the culture of origin. The ship's structure and cargo is essentially a subset of the material culture of the parent group, and the survivor camp is a subset of the ship's material culture:

> A "survivor group" was, therefore, a component of the original ship cultural subset, comprised of some or all of the elements of the ship's population: social, economic, and command structures, skills and abilities that remained available following the wreck event [Gibbs 2003:129].

A survivor camp was created from whatever could be gathered from the ship's structure and cargo in the aftermath of a wreck, as well as what was available from the surrounding environment. Thus, the study of a survival camp is the study of adaptive processes (ibid). Adaptation is commonly viewed in terms of material culture but may also include authority and social organization.

Life on board a ship, especially in the 18th and 19th centuries, was strongly hierarchical and rigidly enforced. As in the military, there was a strict shipboard social separation between officers and crew. Russian society, still based on a feudal system during the early 19th century, was also scrupulously stratified according to rank or class. The Table of Ranks, established by Peter the Great in 1722, served as the basis for social organization in Russia and its territories and social rank was strictly enforced by the RAC. We know that most on board the NEVA were contract hunters or *promyshlenniki*, who would have been drawn from Siberia's serf or townsman class (i.e., peasants). Common sailors and soldiers were in the "working class," but would have been further stratified by naval rank if they had one. The highest ranked person on board the NEVA at the time of the wreck was Collegiate Councillor Tertii Stepanovich Bornovolokov, who had a civil (governmental) rank of 6th class. This was roughly equivalent to the rank of colonel in the army or captain (kapitan first rank) in the navy. The imperial government had also appointed him a cavalier ("knight or gentlemen") of the Orders of St. Anna and St. Vladimir, presumably for his distinguished career in civil service. The highest ranked person among the survivors would have been Fleet Lieutenant Podushkin, with others being ranked according to military or social class. Vice Admiral Vasily Golovnin, whose account of the NEVA wreck is based on interviews with several survivors, provides some indication of the rank and class of those on board:

> In addition to the above-mentioned employees [i.e., Bornovolokov, Podushkin, and Kalinin], there were included on the ship *Neva* in the service of the Company fourteen men, *raznochintsy* [commoners], not belonging to the Table of Ranks and fifty-six men, *promyshlenniks,* and four women: the wives and daughters of the Company employees [Shalkop 1979:51].

The *raznochintsy* would have included Sub-Lieutenant Shilling, Navigator 14th class Nerodov, Cadet Terpigorev, Apprentices Travin and Mal'tsov, *prikashchiki* Kolobov and Sorokin, fleet boatswain Grigor'ev, artillerist Volkov; and five hired employees of various ranks [ibid].

In the case of a naval vessel, there would have been a direct transfer of shipboard military authority to the terrestrial "survivor camp" setting. Because the NEVA was owned by the RAC and staffed by both naval and civilian personnel, however, there may have been situational leadership opportunities. Gibbs (2003:130) found that in some cases survivors perceived that the ship's captain had lost the right to command for allowing the wreck to occur. In the case of Lt. Podushkin, he had already relinquished shipboard command of the NEVA to the RAC civilian navigator (and former naval officer) Danilo Vasil'evich Kalinin. We know from the Berkh account (Shalkop 1979:35) that Mr. Kalinin was giving orders when the NEVA grounded, although he did not survive the wreck. We can also infer from the Berkh account (Shalkop 1979:40) that, because two promyshlenniki "were *sent* along the trail,"[34] there was some sort of command structure. It seems logical that Lt. Podushkin would have assumed a leadership role on shore, but the survivor accounts do not provide any insights in this regard. Certainly the promyshlenniki, "backwoodsmen" accustomed to the Siberian wilderness, would have been important assets to survival regardless of rank.

An interesting analog to the NEVA survival situation might exist in the 1741 Bering Expedition. Vitus Bering's ship, ST. PETER, wrecked on a remote island (later named Bering Island) in the Commodore group while returning from Alaska. Bering died while overwintering on the island, along with 28 of his comrades. The 46 crew members who survived the winter built a vessel from the wreckage, which they successfully sailed to Avacha Bay on the Kamchatka Peninsula. According to Bown (2017:207), who studied records relating to the wreck, there was a decentralization of authority and suspension of rank protocols by survivors. Instead, small bands were organized. In 1979 and 1981 a joint Russian-Danish team of scientists conducted archaeological excavations at Bering's Komandorskii Camp where the survivors had wintered (Len'kov et. al. 1992; Frost 2003). Their work included the excavation of Bering's grave, along with several others. There are several similarities between the Komandorskii and NEVA survivor situations, both of which involved winter survival under austere conditions. The story of the final voyage of the ST. PETER is contained in the log book kept by Bering and later by Lt. Waxel, as well as the writings of the naturalist Steller and others. As with the NEVA, there is a paucity of details of daily camp life. Conditions in the marine environments were similar, with January

[34] According to Markov (Bland 2015:296), those who went in search of help were: (1) the promyshlennik whose interview was the basis for the Markov account, and (2) the cannoneer [assumed to be artillerist Volkov, a commoner distinct from the promyshlenniki].

temperatures averaging 25-29 degrees F on Bering Island (Meteoblue Weather) and 32-40 degrees F at Sitka (U.S. Climate Data). The same data sources list precipitation averages at 2.5 in (62.5 mm) for Bering Island and 8.39 in (213 mm) for Sitka. These modern data do not account for historic trends such as global warming. The high precipitation in the Sitka area would have presented an increased threat of hypothermia, especially if the Berkh account is correct that clothing was shredded or lost in the surf:

> Another strange thing was that all those who escaped were on the shore without clothes, which one supposes were torn from them by the waves [Shalkop 1979:40].

The deceased on the Bering Expedition died primarily from disease and sickness brought on by their long journey at sea rather than wreck trauma. Mariners had been aware that ascorbic plants would cure scurvy since at least the 15th century, although it was not demonstrated through formal experiments until 1747. Even though Steller tried to combat shipboard scurvy on the ST. PETER with leaves and berries he had gathered on shore, the officers are said to have scorned treatment. Scurvy was considered a major factor in the declining health of those onboard the ST. PETER, including Bering himself. Modern forensic analysis of Bering's remains, however, suggest that his death was probably not related to scurvy. In the Komandorskii Camp, Bering was given the honor of being buried in a crudely constructed plank coffin while the other deceased were placed in simple excavated graves. This may be analogous to the crude coffin burial discovered at the NEVA survivor camp, which is believed to be the grave of Collegiate Councillor Bornovolokov.[35] Like Bering, Bornovolokov was the highest ranked member on the voyage. It is difficult or impossible to infer command structure or social stratification from limited archaeological evidence.

The scattered hearths at the NEVA survivor camp, however, may suggest that the survivors had organized into small bands as was suggested by Bown (2017:207) for the Komandorskii Camp. This may have been somewhat analogous to the "messes" of military bivouacs, in which soldiers of similar rank would band into small groups for purposes of preparing meals. The reports and official log books of the Bering Expedition mention building tents from sailcloth in which to house the sick (Golder 1922:277), and archaeological evidence suggests that they used a series of six pre-existing depressions between sand dunes for this purpose (Len'kov et al. 1992:11-12). At the NEVA survivor camp, it is speculated that at least some of the stone piles discovered archaeologically might represent tent anchors. Certainly, logic would dictate the use of sailcloth, and the Markov account (Bland 2015:296) does mention the construction of tents from sailcloth.

The Komandorskii Camp survivors, while short on food, had a relatively intact ship and cargo to support their daily activities. In contrast, the NEVA is believed to have broken apart and

[35] In Berkh's account (Shalkop 1979:40), he says that "Mr. Terpigorev told me that as soon as he recovered, he went searching for the lifeless corpses of Messrs. Bornovolokov and Kalinin . He found the first one not far away , completely whole, and after embracing him, he delivered him to the earth." Terpigorev goes on to report that only two whole bodies were present, the others having been dismembered on the rocks. Only Bornovolokov is specifically mentioned as being buried. It is inferred that the NEVA grave is that of Bornovolokov, but it was only excavated deep enough to outline the coffin stain.

dispersed in violent seas. This substantially reduced the inventory of useful supplies and forced the survivors to improvise by creatively adapting items salvaged from the beach and tidelands. Archaeological finds at the NEVA survivor camp indicate that the survivors were collecting fragments of copper ship's sheathing, which they rolled and hammered into awls. Likewise, a nautical compass leg which may have been intended as an awl was recovered. Perhaps these perforators were needed to make or repair clothing, or in the construction of sailcloth shelters. Faunal data indicate that the survivors were harvesting Sitka deer, which would have provided hides in addition to food. The NEVA assemblage also suggests that considerable effort was spent on making and modifying ammunition, which would have been important for subsistence hunting. Copper drift pins were cut into short segments, probably for use as ammunition, and larger lead musket balls were whittled down to a smaller "pistol size." Despite Markov's assertion that they had neither gun nor powder with which to replenish provisions (Bland 2015:296), we know from the Burkh account that a promyshlennik made it to shore with a pistol that he used to start a fire (Shalkop 1979:38). The archaeological evidence (i.e., lead shot, improvised ammunition, gunflints, and faunal remains from deer and other animals) clearly points to the presence of one or more firearms and enough powder and ammunition to harvest game. The Markov account also reports that the survivors found a cleaver, which they used in the place of an axe and knife (Bland 2015:296). This scenario, however, does not fit the archaeological record. Findings included 20 Russian axes, most of which were cached / stacked or associated with stains suggesting they had been in a box. Possibly salvaged at low tide, the axes would have been welcome additions to a survival toolkit. A single fishhook was recovered archaeologically from screened soil, but it was not possible to determine if it was from the North Block or the intrusive hearth in the South Block. Initially believed to have been fashioned from copper on site, it was later determined to be iron. The NEVA survivors had to have had a means of catching fish, which were identified during faunal analysis. Some of the items recovered archaeologically are clearly the result of caching behavior, i.e., salvaging items from the surf or intertidal zone and caching them above the beach. The caches included axes, copper sheathing, iron bar stock, and a pair of cannon carriage trunnion caps. It seems clear that the axe caches on the Survivor Terrace are associated with the survival camp. It is less clear whether the North Cove caches were placed there by the NEVA survivors themselves, or by salvage crews in the immediate aftermath of the wreck. It the latter, why would salvage crews have left valuable items such as the trunnion caps behind? The cordage binding the iron bar stock was microscopically identified as spruce root, which was commonly used for cordage and basketry throughout the range of the genus. It could be argued that the presence of spruce root cordage supports the notion of a later salvage crew that included Alaska natives. Several species of spruce are native to Siberia, however, so it is likely that the promyshlenniki also would have also used this technology.

It should be noted that Dilliplane (2016) compared the ST. PETER and NEVA final voyage and survival situations in some detail in a paper delivered at the "The History and Heritage of Russian America" International Conference in Moscow. His primary interest was the larger goal of "determining how elements of 18th and 19th Century traditional Russian cultural behavior did

or did not survive the isolation of remoteness in far-away Russian America" (Dilliplane 2016:2). Included is a day-by-day timeline of events in the NEVA survival camp as compiled from all known accounts (Dilliplane 2016:21-29).

Besides Bering's Komandorskii Camp, there are few analog studies with which to compare the NEVA survivor camp. In the Canadian arctic, studies have focused on the materials left behind by the Franklin Expedition (Beattie and Geiger 1989). There have been no similar studies in Alaska, and the exact locations of only a few shipwreck survivor camps are known. These include the winter survivor camp of the 1910 FARALLON shipwreck (ILI-00267), which was documented in 2012 by a team from Stephen R. Braund and Associates. McMahan accompanied the team as a State observer. In 2008, McMahan and Patricia Browne excavated a single test pit in a structure footprint at the 1868 survival camp of the bark TORRENT. Because the survivors camped within a recently abandoned Russian mining settlement (Coal Cove / SEL-00021), however, they were not able to isolate survivor artifacts from earlier and later materials. Maschner et al. (2012:142-144) discuss the survivor camp of the American ship ECLIPSE, which had been wrecked by the Scottsman Archibald Campbell on Sanak Island in 1807. While Maschner's team found the suspected location of the survivor camp, they were not able to confirm the site archaeologically. Interestingly, Campbell was rescued and, after loosing both feet to frostbite, accompanied Hagemeister to the Sandwich Islands (Hawaii) on the NEVA in 1808. If discovered and validated, Campbell's Sanak Island camp would make for an intriguing comparison with the NEVA camp. As it stands, the NEVA survivor camp has provided a snapshot in time for January 1813. It has provided a rare material record of human behavior in a crisis, as well as insights into the adaptations that allowed the wreck survivors to await rescue. The assemblage also contributes to our understanding of material culture supply in Russian America. With a cargo that included axes, we now know that axes were among items being imported rather than made exclusively in New Archangel's metalworking shops.

CHAPTER 10: OUTREACH AND DISSEMINATION OF FINDINGS

Articles and Presentations

Since the inception of the project, there has been considerable aesthetic and scientific interest in the NEVA both in the U.S. and Russia. Public and scholarly access to information was a large part of the NSF proposal which resulted in the project being funded. Thus, a concerted effort was made to keep the public and scientific communities informed of findings without compromising heritage sites by disclosing precise locations. In 2015 and 2016, press releases were reviewed by and coordinated with NSF, USFS, the Sitka Tribe of Alaska, and the Alaska Office of History and Archaeology. The press releases, along with shared photo and video files, resulted in dozens of online and hard copy news articles. As per prior agreement with stakeholders, news writers in Sitka were given access to the information a few days before it was made generally available to the press. Major articles appeared in the Sitka News Sentinel and Anchorage Dispatch (Anchorage Daily News), as well as numerous spin offs throughout the country via the Associated Press. The story was covered by Fox News, the Christian Science Monitor, Foreign Affairs News,

the Irish Sun, and numerous other news outlets. The project was included in feature articles in the Alaska issue of Smithsonian Journeys Travel Quarterly (Montaigne 2016), and Archaeology Magazine (Weiss 2017). A video posted by NSF on its website, and comprised of clips recorded by Gleb Mikhalev, is reported to have received a record number of views during the first few days of posting. Anichtchenko, Dilliplane and McMahan participated in radio and/or TV stories on the project both in the U.S. and Russia. In addition to popular articles, several articles have been published in peer-reviewed scientific journals since the project's inception. These include the Journal of Education and Science 'ISTORIYA' (McMahan 2017a), Reports of the Laboratories of Ancient Technologies (McMahan 2017b), the Alaska Journal of Anthropology (McMahan 2017c), and Culture of Russians in Archaeological Research (McMahan 2017d). McMahan and STA Council member Bob Sam made public presentations in Anchorage, Juneau, and Sitka in 2016-2017. McMahan is scheduled to deliver a public presentation at the Anchorage Museum on June 14, 2019, in conjunction with an upcoming shipwreck exhibit. McMahan and Anichtchenko made a public presentation for the Russian Geographical Society, Moscow, in 2016. McMahan presented research papers for the following conferences: Alaska Anthropological Association (2016 and 2017); the International Scientific Conference 'The Russian North and Arctic Regions: History, Traditions, Images,' Arkhangelsk, Russia (2016); the International Academic Conference 'The History and Heritage of Russian America,' Moscow (2016); the Society for Historical Archaeology, Houston (2017); the Congress of Russian Americans, 200th Anniversary of the Russian Fortress Fort Elizabeth, Kauai (2017); the Midwest Historical Archaeology Conference, Purdue (2017, Keynote); and the Ryazan State University Conference on Russian America, Ryazan, Russia (2017). McMahan prepared poster presentations for the International Symposium on Boat and Ship Archaeology, Marseilles, France (2018); and the University of Delaware's 'Polarizing Your Science Impact Workshop,' Newark, Delaware (2019). Dilliplane presented a paper at the International Academic Conference 'The History and Heritage of Russian America,' Moscow (2016) and Anichtchenko included NEVA findings in a paper presented at the '11th Annual Maritime Heritage Conference' in New Orleans (2018).

Virtual and Actual Museum Exhibits

Dr. Evguenia Anichtchenko, through post-project employment at the Sitka History Museum (SHM), has constructed a web-based (virtual) NEVA museum exhibit. The exhibit is online at http://sitkahistory.com/?s=neva but development is ongoing. The exhibit incorporates the newly compiled historical background on the NEVA, along with the results of project investigations. McMahan independently developed web pages in conjunction with the creation of a poster (http://mcmahanconsulting.com/home/neva_project_poster). The web pages are linked to the poster via QR codes that can be scanned with a smartphone. The development of virtual museum exhibits was discussed at NSF-supported 2011 symposia in Vologda and Totma, Russia, as a viable means for interpreting Russian America (NSF Award ARC-1153209). Such exhibits will benefit those in public schools and those who cannot otherwise travel. As a companion to web-based materials Dr. Anichtchenko and SHS Director Hal Spackman are in the process of

developing a NEVA educational curriculum for public schools. SHM hopes to work with USFS and UAM to include NEVA artifacts in an upcoming actual exhibit which will focus on Alaska shipwrecks. Photogrammetric software was used to develop 3D animations for a few of the more important NEVA artifacts as well as excavation units. The files are available for use as video clips in the virtual museum, or to print 3D copies of artifacts for use in actual museum exhibits.

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