“Stripped Clean by Wind and Water”: Historical and Archaeological Investigation of a Provincetown Plum-Pudding Whaling Company and its Reaction to a Dimming Industry

By

Lindsay M. Wentzel

December 2023

Director: Jason T. Raupp, Ph.D.

Department of History, Program in Maritime Studies

ABSTRACT

Industry decline after the 1859 discovery of petroleum prompted American whalers to adopt innovative strategies for survival, such as plum-pudding whaling. Characterized by short, Atlantic expeditions, it minimized risk and proved effective during periods of uncertainty. This thesis employs social risk theory to analyze the operational history of E. & E.K. Cook & Company and the 1879 collapse of their industrial, fishing, and whaling "empire" in Provincetown, Massachusetts. Highlighting the company’s strategic shift to plum-pudding whaling in the 1860s, this study examines distinct features of plum-pudding schooners, discusses internal and external factors contributing to the company's 1879 dissolution, and establishes a theoretical framework for evaluating discrete maritime risk. Through extensive historical research and archaeological surveys of suspected Cook vessel remains, this thesis serves as a case study in understanding the impact of strategic response to crisis and risk during the whaling industry's decline.

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By Lindsay M. Wentzel
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Director of Thesis: Jason T. Raupp, Ph.D.
Thesis Committee Members:
Lynn Harris, Ph.D.
Nancy Shoemaker, Ph.D.
Nathan Richards, Ph.D.

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APPROVED BY:

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_____
Jason T. Raupp, Ph.D.

Committee Member:

_____
Lynn Harris, Ph.D.

Committee Member:

_____
Nancy Shoemaker, Ph.D.

Committee Member:

_____
Nathan Richards, Ph.D.

CHAIR OF THE DEPARTMENT OF HISTORY:

_____
Timothy Jenks, Ph.D.

INTERIM DEAN OF THE GRADUATE SCHOOL:

_____
Kathleen T. Cox, Ph.D.

Dedication

This thesis is dedicated to my late grandfather, Papa Frank.

His unrivaled love of history and enthusiasm for documenting every last detail (almost to a fault) are qualities I hope to emulate in this work.

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Table of Contents

List of Tables

List of Figures

Chapter One. Introduction

Introduction

The American whaling industry caught its final wind during the turn of the twentieth century, beginning with the discovery of petroleum in 1859 and ending with the last sail-powered voyage in 1924. Despite whale oil falling out of public demand, some whalers in the declining industry managed to spark innovation in ship construction, hunting strategy, and vessel usage through a transition to plum-pudding whaling, while broadening and diversifying maritime assets in an effort for self-preservation. Known for their short-term fishing expeditions in the Atlantic Ocean and named for their ability to easily restock coveted supplies and indulgences, Provincetown, Massachusetts (MA) led the charge on plum-pudding whaling expeditions, introducing new methods of hunting strategy that favored the use of converted, and repurposed fishing schooners previously employed in the mackerel, cod, and swordfish fisheries (Morris 1927:194; Hohman 1928:305). An understudied and undervalued narrative in maritime history teeming with opportunities for historical and archaeological research, the story of plum-pudding whaling and the Provincetown whalers is one deserving of consideration beyond popular fiction (Melville 1851:77).

This thesis evaluates the response of whaling company owners to the industry's decline during the late nineteenth century by analyzing the whaling, fishing, and industrial (e.g., economic and business) histories leading up to the 1879 fall of Provincetown's E. & E.K. Cook & Company's (Co.) maritime "empire". Among other efforts, this company's multifunctional usage of vessels and unique methods of fishing and whaling both the Grand Banks, Newfoundland fishing grounds, and the Hatteras, North Carolina (NC) whaling grounds offer

insight into the impact of crisis on behavior and risk management. Addressed through archaeological survey of two suspected wreck sites of E. & E.K. Cook & Co. vessel *Seychelle*, as well as archival and historical research conducted at NC and New England-based repositories, this thesis identifies discernable signatures of schooners that indicate plum-pudding whaling strategy such as advantageous construction features, evaluates the successes and failures of the Cook plum-pudding strategy, and establishes a theoretical framework for evaluating discrete maritime risk.

Historical Context

In the early nineteenth century, American whaling became the fifth most economically productive industry through successful exploitation of available whale populations, such as the sperm whale (*Physeter macrocephalus*), North Atlantic right whale (*Eubalaena glacialis*), and humpback whale (*Megaptera novaeangliae*) (Moment 1957:261; Davis et al. 1997:4). Despite its success, growing foreign competition, geopolitical pressures, increasing ratios of unskilled to skilled labor, and low crew retention influenced industrial change (Basberg et al. 1993:59-61). Pressure from competition, overfishing, and the drive to push further into the Pacific grounds led whalers to offload oil and bone in foreign ports to be sold or sent home during extensive, multi-year voyages, more efficiently allocating their time and resources (Basberg et al. 1993:59-61). After decades of little economic and ecological stability and low financial profit allotted to the average whaler, the introduction of kerosene in 1859, a derivative of petroleum, sealed the industry's eventual downfall during the late nineteenth century (Shultz 1999:457). Seeking profit for self-preservation in a highly constrained field, plum-pudding whaling saw re-invigorated success during the late 1800s due to its simplified methods, cost-effective structure, and low

commitment and risk, providing whalers the opportunity to also engage in supplemental maritime alternatives (e.g., fishing).

Plum-pudding Whaling

Plum-pudding brings to mind plum duff, a sailor's dessert, and its connotation as a celebratory indulgence or treat. From its origins in duff, plain flour without the addition of dried fruit, these variations of ship's bread served as a staple in the average whaler's diet (Olmsted 1841:152; Spears 1910:252; Ashley 1926:138). While additional definitions of plum-pudding are further explored in chapter three, plum-pudding whaling generally refers to short whaling voyages in the Atlantic Ocean undertaken largely by Provincetown brigs and schooners (Scammon 1874:241; Goode et al. 1887:233; Hohman 1928:85; Ommanney 1971:82; Davis 1997:19; Stoett 1997:50; Gurney 2002:20) This strategy of short, near shore operations allowed vessels to easily restock fresh provisions.

From the economic rise to the consequent fall of whaling, the industry expanded and reduced in its number and duration of expeditions, vessel size, and crew. Plum-pudding whaling favored periods of reduction, responding to limited economic, environmental, and company resources. During periods of uncertain productivity, the lower levels of commitment required by plum-pudding whaling incurred fewer costs and potential risks (Davis et al. 1987:146). Sailing from New England to the West Indies, western Africa, and the entirety of the southern to northern Atlantic Ocean, these crews counted their voyages in months, rather than the years endured by their Pacific associates (Hohman 1928:11; New Bedford Whaling Museum 2021). These "'tween seasons" of hunting brought small New England whalers into the southern United States (US) fishing grounds in search of stability and a quick profit following only a week of transit (*New York Tribune* 1913:2; Ashley 1926:103). Well suited to short voyages, schooners

characterized this largely ignored strategy in whaling, developing a unique signature through the selection for retired, converted, and repurposed vessels (Ashley 1926:103; German 1970:102). Further study of vessel selection and a theorized archetype across other case studies could provide a solid understanding of its discernable archaeological signatures.

Fishing Schooners Converted for Whaling

By the late nineteenth and early twentieth centuries, New England whaling practices had accepted the two-masted schooner as an economic alternative to its larger counterparts. Many of those schooners were previously retired or repurposed fishing vessels bought for use in the whale fishery due their known strength and hardiness as well as their slender, agile hulls (Morris 1927:194; German 1970:102). Not only did this complement the demands of whaling, but fishing schooners were particularly well-suited for the purpose of plum-pudding whaling due to their small size, quick speed, and multipurpose function.

Recycled from various other New England commercial fisheries, fishing schooners provided structural elements that benefited whaling. From a lookout station placed on the topmast of a swordfishing vessel to its bowsprit and pulpit, both offered an additional vantage and access point for whalers (Erik Ronnberg 2021, pers. comm.). The addition of more whaling-centric features such as boat davits, tryworks, cutouts, and outboard flensing platforms added to the unrivaled performance of the fishing schooner, creating a formidable whaling vessel (Morris 1927:194).

Provincetown Fishing and Whaling Schooners

Provincetown serves as a bookend example for American whaling. With its early beginnings in the seventeenth-century, the port hosted some of the first organized English

whaling activity in New England and actively supported the later continuation of the industry into the twentieth century, including the growing use of converted schooners and plum-pudding strategy (Hohman 1928:308; German 1970:102; Bryant 1998). In Provincetown, fishing vessels were distinguished by a large mainsail and reduced foresail for speed and were run by an overabundance of crew necessary to handle the schooner (Morris 1927:171-172). It has been noted that Provincetown favored smaller, ketch-rigged vessels with a jib, forestaysail, mainsail, and mizzen without topsails, a possible indication of an active or converted swordfishing schooner (Morris 1927:154-155, 172; Erik Ronnberg 2021, pers. comm.). Hardy and fast, converted fishing schooners made up the majority of E. & E.K. Cook & Co's plum-pudding fleet.

E. & E.K. Cook & Co. Strategy and Fleet (1837-1879)

The Cook family of Provincetown was a large family of whalers, fishers, and entrepreneurs that dominated the maritime industry of Provincetown's Commercial Street for four generations. Split into three family lines and consequential companies, for the purpose of this thesis any reference to the "Cooks" or "Cook family", unless otherwise stated, refers to the family line of Ephraim Cook and Epaphrus Kibby (E.K.) of E. & E.K. Cook & Co. Beginning in 1837, the Cooks ran a successful maritime business of whaling, fishing, outfitting, and supplying of associated maritime goods and services. Despite eventually declaring bankruptcy in April of 1879, the Cooks present a perfect case study for strategic response to crisis due to their operational history of risk management brought on by the failing whaling industry. Over the course of 42 years, they owned at least 26 vessels, 23 of which were fishing, whaling, or packet schooners. The vessels of their fleet ranged in size from 35 to 89 feet (ft.) in length and 47 to 109

tons. Mostly built in Essex and Medford, MA, between 1831 and 1866, these vessels included many converted and multifunctional fishing schooners.

Branching into mackerel fishing, plum-pudding whaling, and the construction of a marine railway, Ephraim and E.K. Cook may have attempted to maintain their company's grip on Provincetown's maritime industry by diversifying their interests and seeking cost-effective solutions. Despite their efforts, the Cooks faced the same susceptibility many other whaling businesses confronted in the mid to late nineteenth century due to the overall decline in demand for whale products. In one of the company's final involvements with Atlantic whaling, *Seychelle*, a 47-ton plum-pudding whaling schooner built in 1847 in Medford, Massachusetts, was brought to fish the waters off Shackleford Banks, NC in the fall of 1879. Unfortunately, this vessel never made it home to Provincetown, wrecking during a hurricane on August 18, 1879 (Cape Lookout Signal Service Observer 1879:2).

The history of Ephraim and E.K. Cook's family business provides an opportunity for social risk analysis of the response of whalers at a time of desperation during the latter part of the nineteenth century. The Cooks serve as a robust example of plum-pudding strategy and the first case study into understanding its origins, success, and unique methods. Given the Cook family notoriety in Provincetown today, this thesis delivers a new perspective on whaling strategy and highlights a neglected portion of its local history.

Seychelle and the North Carolina Hatteras Grounds

By the beginning of the nineteenth-century, small, opportunistic shore-based whaling companies hunted in NC waters due to the easy accessibility of migratory populations of sperm and North Atlantic right whales present in the nearby gulf stream (Simpson and Simpson 1990:4-6). While New England whaling had eventually transitioned to pelagic practices, NC was

foundationally restricted from ocean-going endeavors by a lack of significant shipbuilding resources and infrastructure, little local industrial demand and market, and shallow natural harbors unsuitable for the larger production necessary for pelagic pursuits (Simpson and Simpson 1988:1-51). As a result, the fishery was primarily dominated by a handful of whaling schooners, like *Seychelle*, based out of New Bedford and Provincetown. These New England whalers had been pushed southward for brief voyages due to Northern environmental and ecological constraints, wanting to take full advantage of NC's calm seas, stable weather, and bountiful migratory stock during the local whaling industry's main season of December to April as well as the summer months (Reeves and Mitchell 1988:11).

Seychelle is suspected to be one of at least 125 wrecks recorded within the boundaries of Cape Lookout National Seashore, with special consideration to sites CLS0003 and CLS0006 (ECU 1982:15; Jateff 2007:22). In an original report sent to the Army Chief Signal Officer detailing the hurricane damage-assessment as well as *Seychelle's* wrecking event, it is reported that the schooner had been at anchor within the bight when the storm surge lifted it beyond its draft, breakings its anchor and pushing it ashore half a mile from the signal station (Wilde-Ramsing 1996:14-17). Despite losing no crew, *Seychelle* itself suffered a full fatality (Reeves and Mitchell 1988:7; Wilde-Ramsing 1996:15). Known only for its wrecking event in existing literature, few other historic records pertaining to the vessel are readily available.

Plum-Pudding Whaling as a Response to Crisis: Social Risk Theory

This thesis is built upon a novel and integrated sociological framework of discrete maritime risk. Developed through consideration of Charles Perrow's *Normal Accidents: Living with High-Risk Technologies* (1999), William W. Lowrance's *Of Acceptable Risk: Science and the Determination of Safety* (1976), and Anthony Giddens's *The Constitution of Society* (1984),

the framework considers sub-themes of human agency, risk determination and inevitability, normal accidents, risk acceptability, and risk management. In its application to the marine environment, the framework has been developed to better inform behavioral, economic, industrial, and technological factors that influenced plum-pudding strategy and the selection for converted fishing schooners. Further explained in Chapter two, the framework accounts for social organization, economic pressures, traditions, and historic momentum inherent to maritime industries. In Chapter seven, the framework is used to assess the behavioral decisions and actions of the Cooks during their final whaling expedition onboard *Seychelle*.

As demonstrated previously, Provincetown schooners maintained unique signatures of locally associated features (Morris 1927:154-155, 172). As local type vessels and methods are greatly influenced and preserved through isolation and tradition inherent to smaller ports, examination of Provincetown-specific plum-pudding schooner strategy generates both a tangible, average vessel type and operational history useful to future archaeological and historical investigation (Morris 1927:209). The fleet biography and company operational history detailed in Chapters four and five provides a foundation on plum-pudding operations that compliments social risk analysis. Due to increasing economic pressure during the industry's decline, the use of retired fishing schooners may have been an avenue of mitigating cost despite increased risk. For example, E. & E.K. Cook & Co. may have preferred the use of smaller schooners, rather than the traditional whaling bark, to serve multiple roles in both whaling and fishing, a decision that would have benefitted near-shore plum-pudding strategy, rather than longer, traditional whaling voyages (*Provincetown Advocate* 1879s:2). The application of social risk theory to Provincetown plum-pudding whaling provides unique evaluations of risk on social organization, economic

pressures, traditions, and technological change exhibited during a pivotal period in local whaling operations.

Research Questions and Objectives

Research questions for this thesis were selected on the topics of possible discernable archaeological features of plum-pudding vessel types, adaptive considerations of multi-use vessels within various fisheries, and the behavioral responses of whalers to crisis and risk. Overall, this thesis evaluates plum-pudding whaling strategy to initiate a narrative on this relatively neglected portion of maritime history. The primary aim of this thesis was to discern what was the technological, behavioral, and cultural reaction of Provincetown's whaling industry to the introduction of petroleum, diminishing resources, and the rapid decline of whaling in the latter part of the nineteenth century through a case study on E. & E.K. Cook & Co. In addition, how do these responses manifest historically and archaeologically?

Subsidiary questions focus individually on each adaptive response type. These include whaling strategies (e.g., plum-pudding voyages, technological modification to vessels, and selection for multi-use of vessels across various fisheries), diversification within existing maritime industries (e.g., deliberate versus opportunistic practices in fishing and whaling), and the influence of risk and crisis on maritime efforts. This thesis discusses specialized ship construction characteristics of Provincetown plum-pudding schooners and multi-use fishing schooner designs and how these characteristics manifest archaeologically. As a result of this study, this discussion can help inform a future vessel archetype for Provincetown plum-pudding whalers to explore vessel selection and commonalities across nineteenth century whaling, cod, mackerel, and swordfish fisheries. In addition, discussion of plum-pudding strategy during crisis helps inform how each vessel interacted within the various maritime industries of Provincetown

over E. & E.K. Cook & Co.'s 42 years in operation. The discussions in Chapters four, five, and six close the known history at present of E. & E.K. Cook & Co., with Chapter seven evaluating *Seychelle* and the Hatteras Grounds as a final attempt at self-preservation. Finally, this thesis assesses the success—or lack thereof– of E. & E.K. Cook & Co.'s operational strategy in 1879 when viewed through a framework of discrete maritime risk.

Thesis Outline

This thesis consists of seven chapters, this introduction being the first. The second chapter discusses a framework consisting of social perspectives on risk theory to consider when examining behavior in plum-pudding whaling during the industry's decline. This framework provides an avenue for interpreting post-1859 behavior of Provincetown whalers through consideration for human agency, risk determination and inevitability, normal accidents, risk acceptability, and risk management. Chapter three provides a synthesis on the history of American whaling, including plum-pudding whaling, its known references, and a discussion of the economic limitations and attractions this method provided, particularly when paired with converted vessels. Chapter four further establishes historic context, focusing on nineteenth century maritime Provincetown, the background and activities of E. & E.K. Cook & Co., and a detailed examination of the Cook fleet across six decades. Using insurance registries, historic fishing and whaling reports, and other primary sources, chapter four offers an operational history and fleet biography of Cook whaling and fishing schooners. Chapter five provides a short discussion on Provincetown whaling operations in NC, including Cook schooners known to operate there: *Mary E. Simmons*, *Etta G. Fogg*, and *Seychelle*. Chapter six encompasses the archaeological analysis of the thesis, investigating, and interpreting Cape Lookout National Seashore sites CLS0003 and CLS0006. Finally, Chapter seven offers a discussion on risk and

evaluates the Cook's final year of operations through a framework based on Chapter two's social risk theory and influenced by the historical context of plum-pudding whaling (Chapter three), Cook operational history and fleet biography (Chapter four), and archaeological site analysis (Chapter six). Ultimately, Chapter seven details a framework of discrete maritime risk for plum-pudding whaling to assess the validity of *Seychelle*'s final voyage to the Hatteras Grounds as a response to crisis. The thesis then closes with final conclusions, readdressing questions, aims, and recommendations for future study of plum-pudding whaling.

Chapter Two. Social Risk Theory

Introduction to Risk Theory and Relevant Applications

Individuals employed in maritime occupations and industries face daily risks that are not only unavoidable, but to some extent contingent upon forces outside of human behavior or influence. The dynamic nature of the marine environment itself can dictate success or failure. As a result, maritime industries, such as fishing and whaling, have inherent acceptable risks that are determined by the personal resources, concerns, values, and aims of each crew member, captain, or company. Within archaeology, the personal influences that determine risk might be examined through behavioral archaeology (Schiffer 1972). Developed by American archaeologist Michael B. Schiffer, behavioral archaeology enables a better understanding of behavioral context and the identification of patterns, correlates, and signatures among similar archaeological sites. This approach allows for a more complete view of an object's role within its cultural context and the interactions surrounding it. Behavioral archaeology, as influenced by Schiffer, seeks to create generalizations that highlight human similarities over time and can be applied to multiple similar sites. Ultimately, behavioral archaeology could be applied in future studies of plum-pudding whaling that consider a multitude of case studies and material culture beyond its current limitations due to a lack of previous research. While behavioral archaeology is one valid method of theoretical analysis, this study takes a theoretical approach of risk theory based in sociology.

Risk theory has previously been examined as a theme for maritime archaeology, most notably through the work of Brad Duncan (2004) and his inclusion of risk as a factor in the consideration of maritime cultural landscapes. Other authors have conducted risk analysis in maritime archaeology but have focused primarily on broad landscapes of risk within

communities, cultures, or environments rather than discrete, small-scale case studies. Examples of landscape assessments include the determination of risk social prescriptions and group identity (Dake 1992; Souza 1996:114); the "one more voyage" hypothesis, a self-perpetuating judgment to extend a vessel's service past its safe-use life in economically stressed social groups (Murphy 1983:75); the effect of technology on perceived risk (Poser 2009); and the psychology of risk perception during crisis and its effect on rational behavior (Gibbs 2002). Risk theory was also utilized to identify historical developments made to Table Bay harbor in Cape Town, South Africa to manage shipping risks (Borrelli 2015:154-156), as well as the role of risk in historical United States Life-Saving Service operations in NC (Marano 2012).

Although the previously mentioned considerations of risk theory in archaeological literature are oriented towards long-term, broader landscapes of risk, the analysis of the current study is restricted to a discrete application of risk and risk-taking behavior (e.g., a singular wrecking event and singular Provincetown fishing/whaling operation) in response to social change or crisis. Due to this study's focus on a singular whaling company and the resulting limited material culture and representation of risk, discrete social risk theory is inherently best suited for evaluating both the historical and archaeological evidence presented in the following chapters. Beginning with a foundation in sociology, this chapter explores the concept of social risk theory and its application to historical maritime industries through a literature review of pertinent literature.

Foundations in Sociology

Though distinct disciplines, archaeology and sociology often overlap and inform one another. While archaeologists focus primarily on the past, sociologists look to both historic and modern patterns in human behavior and social organization. Due to a heavy culture of tradition

compounded by historical momentum, defined here as the continuation of historic practices or ideologies for the sake of tradition, historic maritime industries can mirror their modern counterparts (Lowrance 1976:89-90). As a result, this thesis is grounded in principles of sociology and social risk theory to better acknowledge the environment inherent to historic plum-pudding practices. The remainder of this discussion reviews the theoretical foundations of sociology and social risk theory, rather than their secondary applications.

Charles Perrow's original 1984 publication of *Normal Accidents: Living with High-Risk Technologies* (1984; 1999) and later 1999 addendum, William W. Lowrance's *Of Acceptable Risk: Science and the Determination of Safety* (1976), and Anthony Giddens's *The Constitution of Society* (1984) provide contributing frameworks on risk theory. Though none of these explicitly address an application to maritime history and archaeology, their combined influences provide a framework that helps to infer the social, economic, traditional, and technological factors that could have influenced Provincetown plum-pudding strategy. Steered primarily by Perrow (1999) and supported by Lowrance (1976) and Giddens (1984), social risk theory can be applied to marine systems through the behavioral laws of agent reflexivity, risk inevitability, normal accidents, and the social determination of acceptable risk.

Charles Perrow is known for his work as an organizational theorist and critic of cognitive psychology. *Normal Accidents: Living with High-Risk Technologies* (1984) detailed Perrow's thoughts on high-risk technologies and social choice, using a variety of case studies to demonstrate his framework. Though the book largely focuses on risky enterprises with what Perrow deems to have truly catastrophic potential, such as nuclear power plants, space missions, and genetic engineering, his framework speaks to three qualities characteristic of any accident, from a ship sinking at sea to a missed job interview. Perrow uses a motivation of managing high

risk technologies and systems to explain single-point failures and "normal accidents", or accidents caused by combined factors (Perrow 1999:3-5). Perrow's analysis of a system includes "complexity", the degree of a system's interconnectivity; "coupling", the degree of a system's ability or inability to deviate from scheduled procedures; and the "catastrophic potential" of a single accident (Perrow 1999:62-100). For Perrow, all three qualities represent heightened risk where greater degrees of complexity, coupling, and catastrophic potential result in less acceptance of the system by society. Although the book focuses on contemporary technologies and provides recommendations for reducing modern risk (Perrow 1999:304), the general principles of normal accidents deal in human behavior and are applicable to understanding historic examples of risk and risk-taking behavior.

When considering Perrow's framework of how accidents or failures occur, William W. Lowrance's *Of Acceptable Risk: Science and the Determination of Safety* (1976) contributes a method for determining societal risk acceptability that influences risk management behavior. Lowrance is a self-proclaimed scientist and critic who studies risk theory to approach issues in science as a "natural philosopher" (Lowrance 1976). Lowrance's book (1976) discusses factors that influence decision making in public safety from a technological point of view to determine social risk acceptability in scientific experimentation and testing. Though his framework is founded on research safety, Lowrance's notion of acceptable risk is applicable to understanding greater societal standards of risk acceptability in both the modern and historic eras. *Of Acceptable Risk* (1976) grapples with how much risk is socially acceptable or tolerated and how personal values, cultural norms, social and economic costs, and perceptions of control and uncertainty influence risk acceptability. Lowrance (1976:95) utilizes a system of both empirical

and normative assessments to measure social utility, individual agency, informed consent, and risk distribution.

The final contributing author is Anthony Giddens, the English sociologist credited with developing structuration theory in what he coined, a "high opportunity, high risk society" brought on by globalization and new frontiers of human existence (Giddens 2014:14). Reconceptualizing social theory by developing structuration, Giddens published *The Constitution of Society* in 1984 to critique orthodox sociology, rejecting evolutionism and historical materialism (Giddens 1984:xvi). The central tenet of Giddens's structuration theory considers time and space in human societies, acknowledging human agency, knowledge, and reflexivity (Giddens 1984:3). Rather than following Sigmund Freud's (1923:15-34) psychoanalytical categories of ego, id, and super-ego, Giddens (1984:4-45) considers the three realms of consciousness to be the unconscious, practical consciousness, and discursive consciousness to preserve human agency and validate human choice and action. A large portion of Giddens's analysis and focus falls to the realm of practical consciousness where commonplace, routinized behavior occurs. Giddens theorizes that patterns of normatively constrained behaviors are predictable through a system of structuration and recognition of agency. While *The Constitution of Society* (1984) details the broader theory of structuration, Giddens's principle of reflexivity and rejection of adaptation helps account for human agency and choice in respect to risk acceptability and risk-taking behavior.

Developing a Framework of Discrete Social Risk

Assessing risk is more than invoking "Murphy's Law" and expecting anything that can go wrong will go wrong. Discrete accidents and long-term failures are systematic and can be traced by internal interactions and external pressures. The event of an unlikely catastrophe is

small, but not out of the realm of possibility. No industry can feasibly dwell on every possible factor for catastrophe, and decisions must be made on which major accidents are worth preventing in their entirety and which are worth risking with precaution (Perrow 1999:354). In systems involving a certain net benefit and an unlikely cost, risks are often taken to assure the benefit. Complex marine systems, however, need risk theory beyond a simple cost-benefit analysis due to the dynamic nature of the environment and various social, economic, traditional, and technological factors unique to maritime industry. Though not explicitly focused on marine systems, the previously discussed works of sociologists and theorists Charles Perrow (1999), William W. Lowrance (1976), and Anthony Giddens (1984) contributed to the development of a general framework for assessing discrete historical risk, modeled in Figure 1, based on the common themes of risk perception, risk acceptance, risk management, and agent reflexivity. The proposed model serves as a general guide for assessing discrete risk, organized in a cyclical format due to the interconnectivity and influences among key themes: agency, judgement, acceptance, reaction, and reflexive influence. These key factors, denoted in gray in Figure 2, are spectrums in constant flux dependent upon interconnected relationships within the risk cycle, eventually influencing future values and perceptions of the original agent and restarting the cycle. The more times this risk cycle is repeated through discrete events, the greater the influence on the agent, be it an individual or system. This theoretical framework is adapted for Provincetown plum-pudding whaling and examined further in Chapter seven.

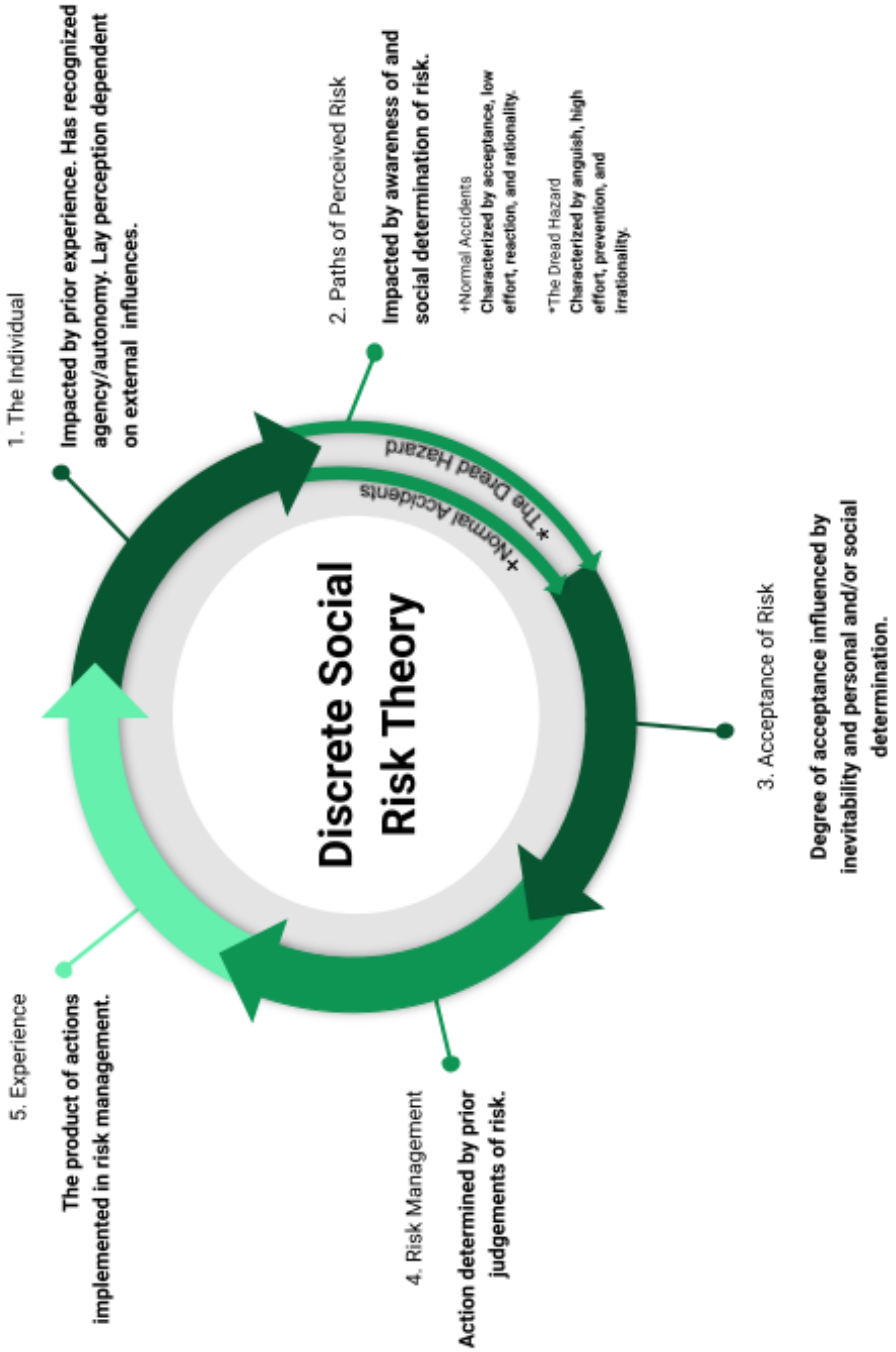


FIGURE 1. Theoretical framework of discrete social risk (Graphic by author, 2023).

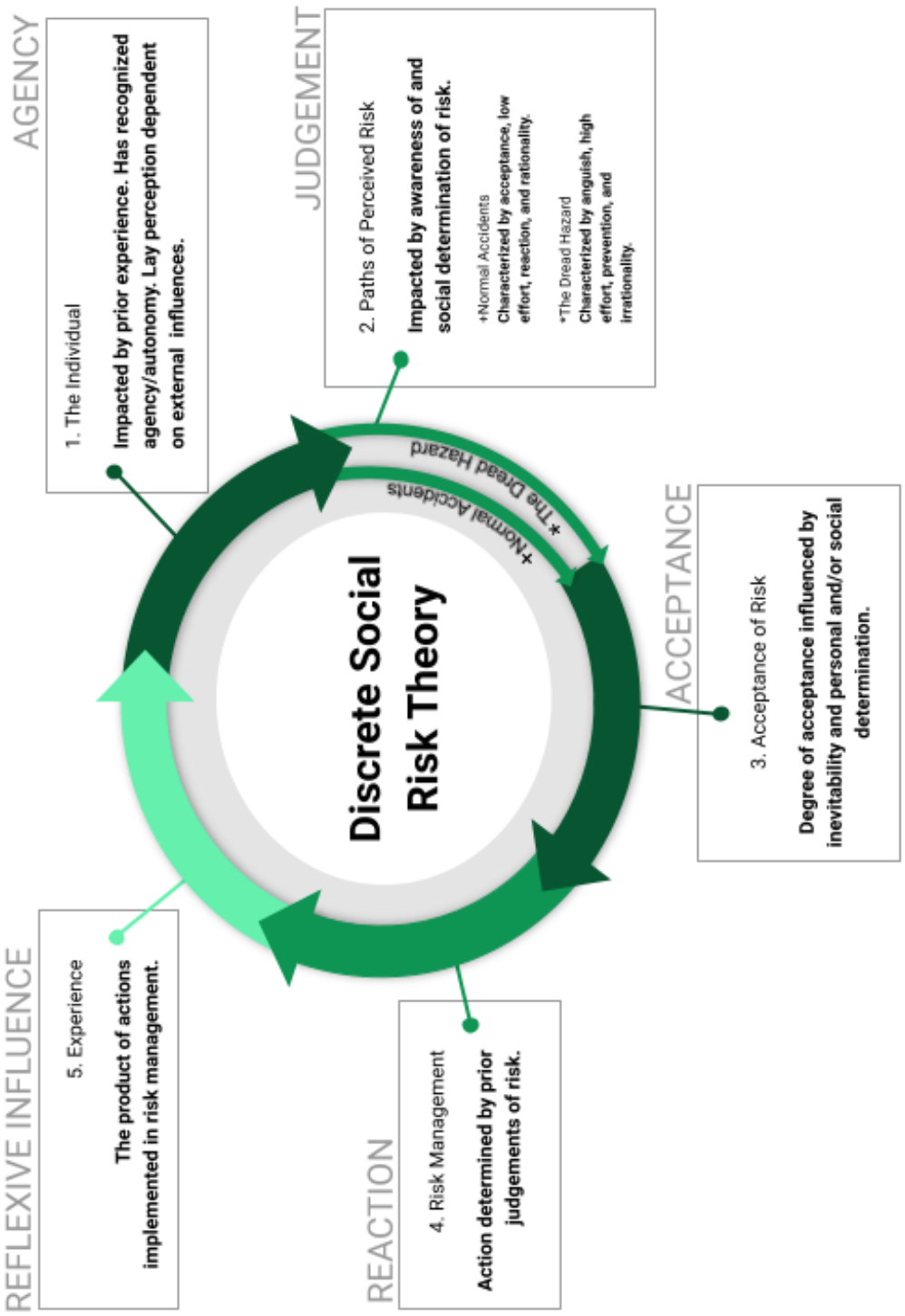


FIGURE 2. Theoretical framework of discrete social risk including overarching themes (Graphic by author, 2023).

Consideration for Human Agency

When applying risk theory to historic analysis, concepts from Perrow (1999), Lowrance (1976), and Giddens (1984; Giddens and Pierson 1998) each help to establish basic behavioral cues that together might construct a framework for risk interpretation. At the foundation of this proposed framework is the validation of agency. Consideration for human agency and choice is one of the primary tenets of Giddens's (1984:3) structuration theory. Agency allows for a humanistic perspective in social analysis, and accounts for the factors and environments that influence human behavior. In *The Constitution of Society*, Giddens (1984:xiii, xxxvi) rejects Talcott Parson's (1964, 1966, 1971; Lidz and Parsons 1972:52ff) theory of social change through evolution and adaptation where change is brought on by environmental instability, in favor of his own theory of "reflexivity", or an individual's level of autonomy. In the classic debate, where Parsons believes in the force of nurture, Giddens believes in the force of nature. By also including the lay or common person's (in opposition to a contemporary "expert" perspective) perception of risk and feelings of dread discussed by Perrow (1999) and Lowrance (1976), the resulting framework allows for irrationality and deviations from normatively predicted behavior. In Figure 1, consideration for human agency is included in Step 1. The Individual. Agency rejects environmentally driven change, or adaptation, in favor of reflexivity, and accounts for external influences on an individual that impact behavior such as lived experience and personal values and aims.

Rejection of Adaptation

As previously stated, Giddens (1984:xiii, xxxvi) rejects Parson's (1964, 1966, 1971; Lidz and Parsons 1972:52ff) theory of social change, believing that change is brought about through

the reflexivity or autonomy of the individual rather than an external environmental force that triggers adaptation within the system. American anthropologist Roy A. Rappaport (1971:60) defined adaptation as a "process by which organisms or groups of organisms through responsive changes in their states, structures, or compositions, maintain homeostasis in and among themselves in the face of both short-term environmental fluctuations and long-term changes in the composition or structure of their environments". Giddens believes, however, that adaptation is a vague concept and inadequate in producing social change. For Giddens, the mechanism of social adaptation is vacuous, superficial, and logically deficient, relying solely on a social item's superior adaptive capacity and lacking the precision of biological adaptation. In social sciences, not all forms of social change are evolutionary so by including all possible sources of influence, social adaptation becomes an amorphous concept that cannot reliably measure change. Giddens instead suggests that the only acceptable use of adaptation relates to the large-scale evaluation of multiple societies, multiple major social processes, and multiple environmental influences that contribute to social homeostasis (Giddens 1984:233-235). When evaluating risk and human behavior from a discrete perspective, Giddens opts for a metric of agent reflexivity and individual autonomy.

Theory of Agent Reflexivity

Compared to other frameworks of social theory, structuration reconceptualizes agency and social structure as a fundamental dualism influencing positioning and co-presence (Giddens 1984:162). Giddens's theory of reflexivity expands beyond the self-consciousness of an agent. Rather, it accounts for the "ongoing flow of social life", which validates human beings as purposive agents with active choice and reasoning in their behavior (Giddens 1984:3). The reflexive capacity of agents stems from the reflexive form of knowledgeability and the recursive

ordering of social practices, a continuous flux of behavior within social activity (Giddens 1984:xxiii). It operates between the discursive consciousness and practical consciousness, where agents are aware of their activities and motivations (Giddens 1984:xxiii). Reflexivity also accounts for the ability of agents to explain the reasoning behind their activities in either a truthful or a deceptive manner (Giddens 1984:3). In emphasizing reflexivity over adaptation, Giddens rejects orthodox sociology, instead stressing the ability of agents to control their daily behaviors (Giddens 1984:xvi). An agent's reflexive character enables modified action in response to changing environments and perceived risk. This in turn explains the behaviors in which agents evaluate and react to perceived risk.

The Lay Person's Perception of Risk and Dread

According to Perrow, expert analysis and analysis in hindsight are obvious biases to risk assessment. Recognizing the layperson's perception of risk, or that of the involved agent, as well as associated dread and anxiety, helps to create a more accurate assessment. Perrow (1999:325-326) legitimizes the lay perception of risk as a sophisticated metric, rejecting de-humanized expert analyses that ignore the fear of death or harm. Thus, it is the errors the lay population make in risk mitigation and the fear and anxiety felt in a risky situation that legitimize perceived risk, not the measurement of risk by an analyst (Perrow 1999:325-326). Compared to an expert, a lay person perceives unknown risk, dread, and lethality in a different, heightened, and much more personal manner. Lowrance (1976:91) further humanizes risk perception by identifying the "dread hazard". Where normal accidents and risks are accepted in a stoic manner as typical components of daily life, the dread hazard is met with greater fear, emotional reaction, and preventative measures. This spectrum can be observed in the difference between a child scraping a knee and an accidental death, or a vessel encountering poor weather and a vessel lost at sea. In

preventing normal accidents and dread hazards, opinions and efforts are often skewed to prevent the high profile, yet less common hazard, thereby reducing the priorities for preventing less dramatic, more probable accidents that come as an overall detriment to the system or community (Lowrance 1976:91). In this manner, an agent's reaction to all categories of risk is legitimized and used to account for behaviors perceived by experts to be faulty or inappropriate. Figure 1 accounts for these two perceptions of risk (e.g., normal accidents and the dread hazard) in Step 2. Paths of Perceived Risk, where each perception has a distinct characterization but leads to the same steps of risk acceptance and management.

Risk Determination and Inevitability

Risk theory and analysis deals with the assessment of both empirical fact and normative characterization. Lowrance (1976) breaks these judgements into the empirical notions of risk and efficacy and the normative characterizations of safety and benefit. He defines risk as "the measure of the probability and severity of adverse effects", while efficacy is "a corresponding measure of the probability and intensity of beneficial effects" (Lowrance 1976:94). Safety and benefit mirror these definitions, but in normative characterizations based on social judgment where safety is defined as "the degree to which risks are judged acceptable" and benefit is "the degree to which efficacies are judged desirable" (Lowrance 1976:95).

According to Giddens (1984:xxvi), the risk of a system is determined by time-space distanciation where new forms of risk are generated through separating social norms from their physical and temporal contexts. For Giddens, this creates a "risk society", where increasing awareness of risk creates social anxiety and uncertainty mitigated through risk management (Giddens 1984:51-60, 57). Giddens' risk society is not to be confused with German sociologist Ulrich Beck's concept of the same name. Beck published *Risikogesellschaft: Auf dem Weg in*

eine andere Moderne (Towards a New Modernity) in 1986, defining a risk society as one that systematically mitigates and deals with hazards resulting from modernization (Beck 1992:21). For Beck, risks are socially constructed and can be perceived as dangerous due to the influence of modern technology, such as mass media coverage. As such, Beck's risk society results in the prejudgment of risk.

While both Gidden's (1984) and Beck's (1992) concepts deal with the modern role of globalization in creating universal risk and the breakdown of a traditional industrial class structure, they differ in definition. Giddens's risk society begins with ontological security and early consciousness where agents begin learning risk management in childhood through disrupted routines and uncertain change. Giddens's risk society is also preoccupied with concerns for future safety, which in turn generate notions of risk (Giddens and Pierson 1998:209). Thus, in the context of this risk assessment Giddens's concept of risk society is more applicable than Beck's due to the priority placed on human consciousness and the reflexivity of agents where self-evaluation can lead to new risk due to uncertainty and a fluctuating environment (Giddens 1984:41-45).

Alternatively, Perrow (1999:304) organizes risk into three categories: hopeless, unavoidable with room for improvement, and risky but self-correcting. The first of these, hopeless risks, are those where potential negative effects always outweigh any benefit gained from the activity or system. The second category relates to systems that society is unable to function without but need additional effort to mitigate the current risks they pose. The last category considers risky but self-correcting enterprises that can be further improved through restriction and modest effort. Regardless of mitigation efforts and/or safety measures that may be instituted, since nothing is free of risk (Lowrance 1976:8) accidents are inevitable (Perrow

1999:3). In Figure 1, the determination and inevitability of risk operate between Step 2. Paths of Perceived Risk and Step 3. Acceptance of Risk. As risk is inevitable, there will always be perceived risk and a measure of acceptable risk. Thus, the degree of acceptable risk impacts risk management behaviors and is determined by the prior experience and influences on the agent.

Nothing under any circumstance is incapable of causing harm, thereby producing both degrees of risk and safety (Lowrance 1976:8). And while some forms of mitigation attempt to resolve risk through technological adaptation and the reduction of complexity, it is impossible to entirely negate the likelihood of producing an accident (Perrow 1999:5). Technological adaptation in particular can add to the complexity and coupling of a system, reducing certain risks while creating others (Perrow 1999:5). Risk is never eliminated entirely from a system because redundancies and backups are exhaustible. While one failure point may be manageable, multiple repeated interactions within a system can become catastrophic. As a result, it is the interaction of multiple failures that explains an accident, not any discrete failure. The accidents occurring within a system that are inevitable are then considered "normal accidents" (Perrow 1999:5-8).

"Normal Accidents"

Given the inevitability of system failures and the interaction of multiple failures (e.g., the domino effect), normal accidents are expected in any system (Perrow 1999:5). They are meant to represent a characteristic of a system, however, not a frequency of failures – as Perrow (1999:5) explains, "it is normal for us to die, but we only do it once". Perrow (1999:72-78) categorized these failures as linear, those that are known and visible even when unexpected (e.g., a dam collapsing), or complex, those that are unfamiliar, unexpected, and incomprehensible at first (e.g., a nuclear power plant meltdown) (Table 1). Increased complexity of a system's design can

often lead to the inability to foresee failures within a system due to hidden interactions (Perrow 1999:11).

TABLE 1. Summarized table explaining complex vs. linear systems, based upon Table 3.1 (Perrow 1999:88).

Summarized Table: Complex vs. Linear Systems	
Complex Systems	**Linear Systems**
Proximity	Spatial segregation
Common-mode connections	Dedicated connections
Interconnected subsystems	Segregated subsystems
Limited substitutions	Easy substitutions
Feedback loops	Few Feedback loops
Multiple and interacting controls	Single purpose, segregated controls
Indirect information	Direct information
Limited understanding	Extensive understanding

Perrow also characterized failures by their degree of system connectivity or control. Failures that are interdependent or triggered through other interactions are “tight”, while those that are independent or free from interaction are “loose” (Perrow 1999:8) (Table 2). When combined, tight and complex systems leave little room for error or forgiveness and often require automated, self-correcting – or cybernetic – abilities (Perrow 1999:79). Often with these systems, intervention of technological adaptation has a negative effect where additional pathways and redundancies only increase the likelihood of failure (Perrow 1999:79).

TABLE 2. Table explaining tight vs. loose coupling of systems repeated from Table 3.2 (Perrow 1999:96).

Tight and Loose Coupling Tendencies	
Tight Coupling	**Loose Coupling**
● Delays in processing not possible ● Invariant sequences ● Only one method to achieve goal ● Little slack possible in supplies, equipment, and personnel ● Buffers and redundancies are designed-in, deliberate ● Substitutions of supplies, equipment, personnel limited and designed-in	● Processing delays possible ● Order of sequences can be changed ● Alternative methods available ● Slack in resources possible ● Buffers and redundancies fortuitously available ● Substitutions fortuitously available

Perrow's theory of normal accidents represents how failures are more than simply operator error or the fault of agents. Often, failures are unrecognizable until after they have occurred, just as how small, seemingly trivial interactions can unexpectedly lead to larger consequences (Perrow 1999:9). While normal accidents account for major system failures and system damage, however, it is necessary to broaden normal accident analysis beyond the internal properties of a system since the unplanned interactions between systems also produce normal accidents (Perrow 1999:391). While written for complex, tightly coupled modern risk systems, such as nuclear energy, Perrow's concept of normal accidents helps to understand the interactions of any system at any level. The understanding of complexity and coupling can help in breaking apart systems, recognizing the pitfalls of fixes or redundancies, and determining the various factors and influences that contribute to a failure beyond assigning blame to an agent.

Risk Acceptability

While full risk erasure is impossible, risk can be managed without assigning unjustified blame or implementing fixes that only heighten it through increased complexity and coupling (Perrow 1999:4). The inevitability of risk requires analysis of risk acceptability. Lowrance (1976:8) considers safety as the degree of acceptable risk, for a system is safe if its inevitable risks are judged to be socially acceptable. The empirical measurement and social judgment of risk differ in that risk is scientifically measured as the probability and severity of harm, while its social determination is a normative, political activity (Lowrance 1976:75-76). Lowrance (1976:75) asserts that only risks are measured and weighed against a balance of social values, whereas safety is judged dependent on that balance. Acceptable risk is then determined from the balance of risk and social norms.

Based upon social determination rather than empirical data, acceptable risk is relative and subjective, varying depending upon the system, its agents, and the environment (Lowrance 1976:76). Often, acceptable risk is dependent on an individual's ability to opt in or out of the risk, such as in the case of differing occupations or logistics (Lowrance 1976:78). A traditional tenet within society is that each occupation or trade brings with it a set of unique risks outside of non-occupational activity. Lowrance (1976:89-90) characterizes this perspective as having strong historical momentum that is rooted in tradition, where occupational risks are assumed as part of the cost-benefit agreement for that occupation. The acceptance of risk beyond occupational activity can also be rooted in this historical momentum where risk is traditionally accepted in passive and stoic manners where agents see no alternative (Lowrance 1976:78). As a result, risk acceptability persists despite the objective hazards of an activity or occupation.

Risk Management

Simple risk management is based upon cost-benefit analysis. Perrow's (1999:63) method of risk management expands to a system of value analysis, focused on the system's properties rather than the errors created by associated agents. Modern management theory utilizes structure and organization to determine the efficiency of risk management, where a system's structure must match that of its environment and intended function. Perrow (1999:392) builds upon this concept by considering mechanic and organic system structures, pulling from concepts of mechanical and organic solidarity first explored by French sociologist Émile Durkheim. Of the two, mechanic structures are preferred for their formal and ordered systems that function in routine, stable environments. Organic structures, in comparison, lack organization and tend to be more informal and permissive. Organic and mechanical characters are derived from degrees of coupling, external and internal influences, and system complexity. Mechanical structures result from tight coupling within a system, whereas organic structures result from less rigid coupling (Table 2). Additionally, mechanical solidarity is produced by internal economic downturns and influences, while organic solidarity is created from external threats (Perrow 1999:392). Finally, increased simplicity and certainty characterizes mechanical structures while increased complexity and uncertainty characterizes organic structures.

When considering risk management, it is important to recognize the dualities of system organization and technological influence. Systems with mechanical structure are more easily managed due to higher organization. However, while heightened organization may reduce factors like unnecessary risk taking, poor behavior, and deception, it can also produce contradictions within a system (Perrow 1999:10). This is particularly true of centralized and decentralized management in tightly coupled, complex systems. These systems require both

centralized and decentralized management where complexity is best mitigated through decentralization, and tightness through centralization. This duality is a contradiction, or as Perrow (1999:10) describes, a "Dr. Dolittle-esque" organizational Pushmi-Pullyu ("push-me – pull-you"). While system operators require centralized control due to the inability of one agent to observe the system in its entirety, a system should also strive for reduced complexity through decentralization to help mitigate risk and increase safety (Perrow 1999:10). In respect to technological influence, as discussed previously, often technological adaptation is implemented to help manage and prevent system failures. Society has learned through catastrophic events, however, that while some technological fixes benefit a system, others mask internal issues, compensating for poor design and organization. These fixes can lead to accidents that create further safety measures, thus producing a cycle of introduced risk when unchecked (Perrow 1999:11).

Collectively, recognition of agent reflexivity, acceptance of the inevitability of risk, understanding of normal accidents, and social determination of allowable risk have each contributed towards risk mitigation through a better understanding of risk systems. Figure 1 places risk management at Step 4 to demonstrate the influence of the previous three steps in determining mitigation efforts and the eventual product of the risk cycle experienced by the agent in Step 5. Once at Step 5, the cycle reverts to Step 1 with the agent under a new set of influences and parameters due to lived experience. Though originally applied to modern issues, the tenets of this framework are built upon basic human behavior. As such, they can be applied to other examples of humanistic risk theory such as the discrete example of Provincetown plum-pudding strategy for whaling proposed in the current study. Although Perrow (1999) is the only theorist of those featured to write explicitly on risk within a marine environment, the collective

principals described above provide a broadly applicable framework that accounts for the social organization, external pressures, and traditions that characterize historic maritime industry. The following discussion expands upon the consideration of social risk theory within a marine industrial environment.

Application of Social Risk Theory to a Marine Environment

Though ambiguous, Perrow (1999:97) designates marine transport as a tightly coupled, linear system. Dedicated entirely to examples of marine systems of major risk such as modern, global shipping operations, Chapter six of *Normal Accidents* can at times appear needlessly pessimistic and overgeneralized, such with owners disregarding safety due to the minimized risk of vessel loss (Perrow 1999:171). Perrow accurately addresses three abiding characteristics of marine systems, however, that can inform risk analysis: social organization, economic influence, and maritime tradition. He argues that these characteristics result from the distinct, error-inducing nature of the marine system and its environment (Perrow 1999:176). The marine system includes a distinct attitude of resilience and sheer stubbornness (or blind ignorance) dependent on perspective, for which Perrow (1999:174) credits its error-inducing character to the behaviors and choices of its agents.

Social Organization: Disparity in Role and Authority

Shipboard organization is one of the only examples of a centralized human system with absolute authority (Perrow 1999:177-178). Consisting of an owner, agent, captain, and crew, the social organization operates in different realms of authority, the most obvious of which is that of the captain's influence and control onboard. This system is not easily uncoupled since authority is best kept in the hands of the individual captain, rather than splitting control of the vessel

(Perrow 1999:177). This single authority system maintains control through a strong occupational tradition and historical momentum. As a result, many historic catastrophes at sea have been ascribed to single authority figures. Perrow (1999:178) utilizes the cases of the French frigate *Medusa* (1816), the British luxury liner S.S. *Atlantic* (1873), and the British ironclad H.M.S. *Victoria* (1893) as examples to attest that absolute and centralized authority is often unchecked for human error and therefore brings about increased risk.

Economic Pressure

The marine system has in the past been correlated with the notion of risk homeostasis, or the simplistic and faulty assumption that agents crave risk and will seek it out with disregard to implemented safety measures (Perrow 1999:179). Perrow (1999:171) rejects this theory in support of economic pressure as an influencing force behind risk-taking behavior in a marine system. With increased production pressure and anticipated financial gain, perceived risk is minimized, influencing risk avoidance and risk assessment by those in authority positions. When evaluating the cause of marine accidents, however, economic pressure is difficult to prove and often relegated to an unspoken force left only to be inferred (Perrow 1999:181). Though blame can easily be passed to the crew or a technological feature of a vessel, Perrow (1999:180) expands his argument, stating that the cause of most marine accidents is "not the psychology of the [sailors,] but the failure of designers and engineers to produce a reasonably priced fail-safe device" or vessel that alleviates any safety concern. Yet, this is largely a naïve argument since, as previously discussed, risk is inevitable and normal accidents occur. Instead, the application of Giddens's (1984) theory of reflexivity to economic pressure better explains this risk-taking behavior. Due to increasing economic pressure, a captain or authority figure may adhere to required safety standards but also ignore optional standards in favor of productivity and

economic gain (Perrow 1999:180). For example, when bringing a vessel into a shallow point of interest, a calculated risk of decreased maneuverability is readily accepted in favor of proximity to the point of interest (Perrow 1999:182).

While the positive and active economic pressures of anticipated gain can build at sea, there also exists negative and passive economic pressures of missed opportunities while at port. Though occurring nearly a century later than the focus of the current study, a survey conducted in 1974 of 359 sailors and marine operators found that one third of those interviewed indicated that "refusal to sail in bad weather or with a faulty ship would bring strong censure", or criticism, of a captain (Maritime Transport Research Board 1976:77; Perrow 1999:181). Despite observable hazards to safety, vessels can still be expected to seek economic profit, even by the agents directly impacted by said hazards. In the same survey, 99.6% of respondents with previous sea experience admitted to knowingly sailing on an unseaworthy vessel, again acknowledging the risk of personal safety for economic gain (Perrow 1999:182). In addition to these arguments, however, it is also important to consider the history of maritime tradition and occupational expectation that can encourage a minimized perception of risk beyond economic pressure.

Tradition and Historic Momentum

The final factor to influence risk theory in a marine environment is the time-honored tradition of risk acceptance (Perrow 1999:174). When operating in a marine environment, sources of potential failure are encountered continuously, making risk often indistinguishable from normal operations (Perrow 1999:176). As Perrow (1999:176) vividly states, "ships operate where most of nature and most of [humanity] conspire to ravage them". Thus, in an environment riddled with risk, its acceptance is essential to successful operations.

Risk acceptance also extends beyond the vessel to insurance agencies and firms on land. Though discussing modern operations, Perrow (1999:186) critiques insurance agencies for disorganization and for failing to properly inspect the safety experience of vessel owners and vessel condition before underwriting the vessel. In doing so, each agency accepts a higher level of risk, assuming a low likelihood of vessel loss compared to the total number of underwritten vessels.

Lowrance (1976:94) described risks and hazards in terms of their considerations to clarify the nature of a problem in a discrete manner. In doing so, he created a model of 10 spectrums of safety considerations by which to judge a hazard (Table 3). Though not outwardly discussed, the three most applicable considerations for a marine environment are the judgements of "risk assumed voluntarily/risk borne involuntarily", "risk encountered occupationally/risk encountered non-occupationally", and the dualism of "common hazards/dread hazards" (Lowrance 1976:87-91). Risk assumed voluntarily and risk born involuntarily differ in the amount of freedom or control of an agent to opt in or out of a risky activity (Lowrance 1976:87). Perception of risk and safety will differ when an agent is made to participate versus when they are given the opportunity. Risks that are borne involuntarily are those over which an agent has no control over or ability to avoid. The second consideration is based upon occupational tradition. It is socially accepted that each trade has an inherent set of risks, often greater than those associated with non-occupational activities (Lowrance 1976:89). This may be further compounded with the threat of losing one's occupation or a monetary incentive if an agent chooses to opt out of risk. Finally, as outlined previously, common hazards can be met with passive, social acceptance while the dread hazard can invoke overwhelming anguish, skewing public opinion of priority and risk prevention

to the detriment of the entire system (Lowrance 1976:91). All three factors carry with them the historical momentum of tradition and risk acceptance due to a challenging environment.

TABLE 3. Table listing considerations influencing safety judgements repeated from Figure 3.1 (Perrow 1999:87).

Considerations Influencing Safety Judgements		
Risk assumed voluntarily	**–**	**Risk borne involuntarily**
Effect immediate	–	Effect delayed
No alternatives available	–	Many alternative available
Risk known with certainty	–	Risk not known
Exposure is an essential	–	Exposure is a luxury
Encountered occupationally	**–**	**Encountered non-occupationally**
Common hazard	**–**	**"Dread" hazard**
Affects average people	–	Affects especially sensitive people
Will be used as intended	–	Likely to be misused
Consequences reversible	–	Consequences irreversible

Applications for Historic Fisheries

Historic fisheries are complex, tightly coupled systems prone to normal accidents and external societal pressures. While Perrow (1999:97,182) designates marine transport as a linear and tight industry, the time dependent nature of a marine resource industry, given the extraction and delivery of a resource, tightens the coupling of the system, thus reducing its slack into a complex and tight industry. Further evidence of this is the inherent nature of having a multi-use vessel which increases complexity and tightens coupling and interconnectivity. Among the internal interactions of a fisheries venture are vessel operations, resource extraction, gear handling, resource processing, transportation, and resource marketing. In addition, the marine

environment provides a dynamic and unpredictable field of uncertain risk. Best management practices would therefore consider minimizing potential accidents by improving vessel design, training crew members, and implementing response plans on a vessel and company-wide level, while still accounting for the negative potential of technological fixes.

While expert analysis made in hindsight may call for diversified activities or assets, the lay perspective is critical to understanding the thought behind seemingly irrational behavior as the acceptability of risk is unique to the values, cultural norms, and social and economic climate of the time. The lay perspective includes the perception of stock abundance, economic potential, cultural tradition, and fear of industrial decline. Over time, influencing factors fluctuate and in turn adjust socially determined acceptability of risk. Managing this risk is challenging due to constant change within a social landscape and can be unpredictable when dealing with crisis or catastrophe. As risk is inevitable, agent reflexivity can aid in explaining irrational behaviors when faced with hazards or crisis and can help to determine a historic scale of acceptable risk with observable changes due to environmental influences.

Aside from normal risk associated with a dynamic environment, risk theory can be used when assessing phases of crisis that influence perceived and acceptable degrees of risk. For example, a discrete vessel can navigate through a system of fluctuating risk just as an industry can react and respond on a much broader scale. Crisis can also breed new methods of risk management or risk-taking behavior, such as referring to official charts or recorded local knowledge of bathymetry as physical representations or adjusting strategy, such as leaving preferred and known environments. Risk was unavoidable in the occupational landscape of historic fisheries, but could be mitigated through changing methods, technology, and environments. Finally, large-scale, observable attempts at risk management can help in

evaluating behavior and the relationship between rational and irrational decision making and associated successes or failures within an industry over time.

Summary and Management of Marine Systems

A marine system is one that encourages risk due to internal and external factors such as economic pressure, singular authority, and environmental hazards. When observing individual maritime systems, shipboard operations are considered tightly coupled, while marine insurance systems are loosely coupled (Perrow 1999:175). In general, marine systems are moderately to tightly coupled, linear systems. As repeatedly discussed, the management of marine risk through technological fixes on individual vessels can turn loosely coupled interactions into tightly coupled interactions, increasing the potential for failure points, and decreasing the ease of recovery (Perrow 1999:175). Overall, Perrow (1999:188) considers it as a system with few available fixes, a challenging environment, and less potential for catastrophic events that incurs less public intervention or safety measures. Paired with Giddens' (1984) theory of reflexivity in irrational choice and Lowrance's (1976) applicable judgements of safety, risk in marine systems can be judged and mitigated through the previously discussed theoretical framework of agency, judgment, acceptance, reaction, and reflexive influence.

Conclusion

The seminal works of Charles Perrow (1999), William W. Lowrance (1976), and Anthony Giddens (1984) informed the construction of a proposed framework (Figure 1) of discrete social risk theory. Perrow (1999) contributed an understanding of the causes and effects of complexity and coupling in a system, in addition to tenets of the inevitability of risk and the unique characteristics of social organization, economic pressure, and tradition in marine systems.

Lowrance (1976) contributed a framework for measuring empirical metrics and normative judgements of risk and safety to determine social risk acceptability and considerations for safety, such as occupational hazards, involuntary hazards, and a validation of dread in human behavior. Finally, Giddens's (1984) rejection of adaptation, theory of reflexivity, and resulting validation of agency accounts for irrationality and deviations from normatively predicted behavior.

Having both demonstrated an application for general marine systems and an application for historic fisheries, the following chapters are guided by social risk theory, with each contributing context for each step within the cycle. Through social, economic, traditional, and technological influences, Provincetown's plum-pudding whaling is interpreted in the following discussions of hunting strategy (Chapter three), operational history and productivity (Chapter four), and material culture (Chapter six). Ultimately, the proposed framework will be adapted specifically for agent reflexivity, risk inevitability, normal accidents, and the social determination of acceptable risk within late nineteenth century plum-pudding whaling and used to evaluate E. & E.K. Cook & Co.'s final whaling voyage in Chapter seven.

Chapter Three. Historic Context and Extent of Knowledge of Plum-Pudding Whaling

Introduction

Following the War of 1812, American whaling entered its golden age, becoming the fifth most productive industry by the mid-nineteenth century (Davis et al. 1997:4). The industry experienced initial success with marketable yields of oil, bone, and other whale-based products. However, financial, technological, and environmental influences on productivity quickly brought about a decline to the industry following the introduction of competitive alternatives to whale oil in 1859 (Shultz 1999:457). During its economic rise and eventual fall, the industry itself mirrored similar patterns in its expansion and later reduction in expedition frequency as well as changes in vessel size, operational ability, construction, and crew requirements.

As mentioned in Chapter one, accounts of plum-pudding voyages in the late eighteenth and nineteenth centuries refer to the practice as short voyages by Provincetown vessels into southern US fishing grounds, like those off the NC coast (Ashley 1926:103). Despite respective differences in international and domestic pursuits during the early and late periods of American whaling, the adoption of plum-pudding methods helped meet industry expectations in multiple environments regardless of contemporary technological or economic limitations. With minimal academic study paid to these short voyages in the Atlantic Ocean, plum-pudding whaling has historically been limited to its popular association with Melvillian lore, as demonstrated in *Moby Dick* (1851) and contemporary nautical vernacular (Melville 1851:77).

Review of Historic Whaling Practices

Beginning in the eighth century, Basque fishers pursued whales breeding in the Bay of Biscay (Jackson 1978:3; Davis et al. 1997:31). By 1607, keen on emulating the success of the Basque whalers, Dutch and British whalers competed to exploit the Greenland fishery and the stock associated with the islands of Spitsbergen (Jackson 1976:47). Largely a shore-based industry, Holland outcompeted the British making 1,652 voyages and capturing 8,537 whales over 130 years, profiting heavily due to low costs and a transferrable skillset obtained by fishing for herring in northern waters (Scoresby 1820:105; Davis et al. 1997:16). With better vessels and growing experience, the Dutch strategy was aggressive in both the British markets and at sea. By operating under domestically competitive prices, the high demand for Dutch oil supported their eventual pelagic expansion in Greenland and the Davis Strait (Jackson 1978:26; Davis et al. 1997:16).

In colonial America, settlers initially opportunistically harvested stranded whales. This activity eventually developed into a strategy of inshore whaling to actively pursue the northern right whale fishery until at least 1760 (Macy 1835:31). Though on a smaller scale, this strategy persisted in southern US waters until the early twentieth century, largely executed by small, shore-based operations around NC such as on Shackleford Banks (Simpson and Simpson 1990). During the late seventeenth and early eighteenth centuries, New England whalers employed a system of boat whaling, operating small vessels for weeks at a time to catch and deliver whales back to shore for oil production. Gradually, as the industry grew so did its strategy. Voyages increased from two to six weeks while 30-ton vessels replaced small whaleboats in bringing whales to shore (Davis et al. 1997:35).

In the eighteenth century, whaling companies were led by an owner or agent. Next in command, the captain was valued for physical abilities in identifying, pursuing, and killing whales rather than other typically associated duties. Hunting strategy relied heavily on a whale boat's capability to approach, harpoon, tire, and kill a whale within close range before towing it to shore for processing. This method was relatively opportunistic and brief, with later whaling ventures turning to long, pelagic pursuits. The lay system, a unique and predetermined wage arrangement which encouraged cooperation and group productivity, was heavily flawed and resulted in high labor turnover and fluctuating efficiency (Basberg et al. 1993:56-57).

The pursuit of offshore stocks brought about the issue of spoilage, especially in warmer climates, initially restricting pelagic whaling to seasonal operations or northern grounds (Raupp 2015:4). As boats were replaced by larger vessels such as sloops, schooners, and brigs, the later installation of tryworks on the decks of whaleships and adoption by American strategy in the late eighteenth century brought about a major shift in the industry by allowing vessels to process and store oil on board (Kugler 1980:4; Davis et al. 1997:36; Raupp 2015:4). Larger operations meant the expansion of offshore whaling to areas such as the Cape Verde Islands, the Caribbean, the Brazil Banks, and the South Atlantic, taking American whalers further from the US for longer periods.

By 1775, various technological and strategic adaptations had taken the American whaling industry by storm. In addition to moving the tryworks on board, whaling vessels continued to grow, and whaleboats undertook the primary hunting role. To aid in tiring the whale, log floats were added to handheld harpoons. Later, to assist tired rowers attempting to keep up with the whale, harpoons were secured directly to the whaleboat (Davis et al. 1997:36-37). Though the birth of American whaling brought with it economic and industrial growth after 1750, the

Revolutionary War restricted trade and embargoed fishing along the Atlantic coast. This resulted in the intentional destruction of much of the domestic whaling fleet by British forces, which crippled the American economy (Tower 1907:40). Later, the Embargo Act of 1807 and the War of 1812 further decimated American whalers through continued British intervention as American whale oil was prohibited from export and much of the American whaling fleet was destroyed by the British blockade (Davis et al. 1997:37,41).

Nineteenth Century American Whaling Strategy

From 1816 to 1840, American whaling productivity grew during a period of peace and reconstruction with newly recognized fishing grounds in the Pacific Ocean. Whaling companies and agents began to consider rigging, size, and provenance factors when selecting vessels for specific expeditions and locations (e.g., larger vessels were selected for voyages to the Pacific and Indian Oceans, while smaller vessels were better suited for domestic pursuits) (Davis et al. 1997:38-41). Increasing productivity on Pacific whaling grounds led to developments in hull and rig design, reducing resistance to water and accounting for higher percentages of unskilled labor. As demand for skilled labor decreased, crew retention increased as fewer whalers had the opportunity or ability to desert. With innovations in oceanography and cartography, the seas became even more accessible.

Whaling vessels were now typically larger ships or barks that lacked grace and speed but excelled in staunch sea-worthiness against weather and whales (Hohman 1928:vii). Designed for carrying capacity, these vessels were "heavily built [and] full bodied, with bluff bows, and [a] high square stern (Goode et al. 1887:233). The largest construction type during the height of whaling was the ship, a vessel constructed with three masts, each square-rigged with a topmast and topgallant mast (Davis et al. 1997:10). With their size, whaling ships had the ability and

need to carry larger crews with greater tools and resources. Comparatively, whaling barks displayed a similar rigging with three masts, the fore and main masts being square-rigged but the mizzenmast being rigged with fore-and-aft sails. The bark, the most popular nineteenth century construction type used in whaling, required fewer crew and thus less financial investment on part of the lay system and company owners. The smallest of the fleet were two-masted brigs and schooners. Brigs, having square-rigged fore and main masts, differed from the fore-and-aft rigged sails on the schooner (Davis et al. 1997:10). Both vessel types, however, were integral to quick, Atlantic whaling expeditions throughout the nineteenth century.

Technological advances in gear and vessel design remained relatively stagnant despite expansion in fleet size and harvested yield. On the North Atlantic whaling grounds, British and American whaling interests clashed not only in direct competition, but also in whaling style. While Americans maintained smaller, higher quality crews, British vessels employed larger, lesser-skilled whalers. Additionally, American strategy began to favor longer voyages while larger, British vessels adhered to traditionally short expeditions (Basberg et al. 1993:57-59). Paired with the increased demand for whale products and further expansion of hunting grounds in the South Pacific, Indian Ocean, North Pacific Ocean, and Western Arctic, American whaling entered its *Golden Age*, growing the industry's value by a factor of eleven (Davis et al. 1997:38).

The support of the industry at this time brought about further expansion. Whaling reigned in New England, tempting even the most devoted of American fishing ports (Hawes 1924:153-154). In January 1833, one entry in *The Gloucester Telegraph*, urged the citizens of Gloucester, Massachusetts to "abandon [their] codlines for iron and lance…[as] the catching of small fry might not always be prosperous – that [they] ought in self-defence [sic]…cast [their] lines in hope of catching something having more substance than mackerel or tomy-cods" (Hawes

1924:153-154). Between 1840 and 1860, the global whaling industry was dominated by American vessels, but turned fewer relative profits due to growing foreign competition and an increasing ratio of unskilled to skilled labor.

Throughout the American whaling industry, ports developed unique characters from specialized whaling strategies. Provincetown was most noted for short, single-season voyages in the Atlantic undertaken by small, swift vessels, while Nantucket developed a reputation for sperm whaling, New London for right-whaling and pursuits in the Davis Straits and Hudson Bay, and Sag Harbor and Stonington for their efforts in the northern and southern right-whale fisheries (Hohman 1928:11; Moment 1957:263; Davis et al. 1997:19). Provincetown distinguished itself from the rest of the fraternity of whaling ports through its commitment to small schooners and short cruises (Hohman 1928:11). While others voyaged up to 50 months in ships and barks up to 500-tons each on a global pursuit for sperm and right whales, Provincetown took the lead on short Atlantic voyages, employing a large fleet of whaling schooners into the early twentieth century (Scammon 1874:241; Hohman 1928:11, 308). Just as ports developed unique characters from whaling strategy, different vessel types came to be preferred for specific whaling grounds by 1887. The Arctic fishery, for instance, almost exclusively used sloops and steam-barks, while deep-sea, oceanic whaling called for larger ships (Goode et al. 1887:233). Finally, vessels began efficiently allocating capital stock by either selling or transshipping oil and other whale-based products prior to the completion of a voyage (Basberg et al. 1993:59-61).

While New England whaling was capable of transitioning to oceanic practices, despite similar access to whale populations, southern states were more restricted from ocean-going endeavors by lack of shipbuilding infrastructure, local industry demand and market, and shallow natural harbors unsuitable for larger production needs (Simpson & Simpson 1988:1-51). As a

result, New England-based whalers pushed southward for brief voyages due to northern environmental and economic constraints, dominating the near-shore eastern North American fishery without intense local competition or drastic economic input during the latter half of the nineteenth century (Hallock 1895:89-90; Ashley 1926:103).

In 1859, petroleum was introduced as a fuel alternative to whale oil. Coinciding with the Civil War, this period also saw pressure from Confederate raiders on New England whaling vessels at sea. Due to declining demand for whale products, fleet sizes began to decrease, and industrial efforts began to compress. By 1900, American whaling had stepped aside, giving way for emerging Norwegian exploitation (Shultz 1999:457). Throughout its growth and decline, the American whaling industry created innovation not only within hunting and processing tactics, but employment and business strategies. These economic-based strategies played heavily in the early disregard and later resumption of plum-pudding whaling in the latter part of the nineteenth century.

Extent of Present Knowledge of Plum-Pudding Whaling

Plum-pudding whaling has been referred to in a variety of contexts ranging from an association with a Christmas holiday dessert to Herman Melville's *Moby Dick* (1851:77). Aside from casual mention in popular culture and nineteenth century nautical vernacular, the topic of plum-pudding whaling lacks sound discussion and clear parameters. By defining the method's origins, period of use, preferred vessel type, hunting grounds, and other contributing factors, more systematic analysis can be conducted to reveal novel interpretations and a better understanding of this small-scale whaling industry.

Duff: Terminology Explained

The typical meal on a whaling voyage consisted of hardtack, potatoes, salt pork or beef, molasses, and the occasional soup. Though the opportunity for fresh produce and meat occurred whenever port was made, whalers sometimes supplemented their diets with livestock such as poultry, pigs, or goats kept on board, or through fish, porpoises, or whale meat caught during voyages (Davis et al. 1997:48). Duff is a form of ship's bread that was served onboard weekly. To prepare duff, a mixture of flour, lard, and yeast was boiled in a bag in equal parts of fresh and salt water until the dough became firm, was removed from the water, and then served with a sweetened sauce (Hohman 1928:131). American whalers were known to receive duff on specific days and as often as three times a week, typically on Sundays or Thursdays (Goode et al. 1887:228; Lindsay 1911:62; Hohman 1928:131; Davis et al. 1997:48). It was said that a ship lacking duff on Sunday was as unorthodox as a New England thanksgiving without pumpkin pie (Olmsted 1841:152; Ashley 1926:138). As any food consumed repeatedly and produced under challenging constraints, duff was also sometimes regarded with disgust. At times noted to be infested with insects, it was said to be a poor substitute for pudding that was hard in texture, difficult to chew, indigestible, and more suitable for use as ammunition than for consumption (Lightcraft 1850:24,80; Hohman 1928:46). Despite these criticisms, duff remained a well-known, sea venturing staple of the whaler's diet. A crew deprived of duff and molasses every week would certainly be more upset by its absence than its poor condition (Hohman 1928:46,131).

Other types of ship's bread separate from duff were common on voyages, typically consisting also of a boiled dumpling with an added protein. These included "lobscouse", chopped and boiled hard bread seasoned with salt meat and pepper, in addition to "sea-pies",

"dandy-funk" (also referred to as dundee-funk or dundee pudding), and "dough-boys", another dumpling made from flour sometimes with the special addition of porpoise meat (Goode et al. 1887:228; Hohman 1928:131). These breads were also common in other maritime industries during the early nineteenth century, such as the Georges Bank fishery who's fishing vessels favored dundee pudding, another hard bread consisting of flour, molasses, and salt pork fat (Goode et al. 1887:228).

Though officers typically received a greater share of duff and other forms of ship's bread, it was given to all crew, with one going to the cabin, one to steerage, and one for each group of hands on watch duty (Goode et al. 1887:228). As demonstrated, sometimes dried meat or fruit was added to the duff mixture. When raisins were added into the dough and boiled, the duff became plum duff (Spears 1910:252; Ashley 2014). Plum duff, or plum-puddings, were oval shaped and served with a sauce made of condensed milk, referred to as "Spartan Sauce" (Lindsay 1911:62). Compared to the original duff and other ship's bread, plum-puddings were often reserved for special occasions or holidays while onboard a whaleship. During one 1821 British voyage to the Greenland whale fishery from Liverpool, plum-pudding and roast beef was served to the officers, the mate, and the harpooners to honor a prosperous voyage, toasting to a "ship strong, crew healthy, ice open, and fish plenty" (Manby 1823:22).

Most popularly, plum-pudding was often associated with Christmas. The 1866 diary of Charles Edward Smith, surgeon onboard the whaleship *Diana* of Hull, England notes that the crew onboard was each given a large slice of plum-pudding in honor of Christmas, while an 1847 account remarks that the holiday meant an extra share of plum duff for dinner (Smith 1922:138; Busch 2009:161). Popular fiction also associates Christmas with the treat, noting in *She Blows! And Sparm at that!* (1922) that it tasted "good enough, although…nothing more than

soggy dumpling, with molasses over it" (Hopkins 1922:170). Just as duff was enjoyed by several nationalities, both American and British vessels viewed the addition of fruit as a rarity.

Likely due to the difficulty of regularly provisioning produce while at sea, fruited desserts were reserved for special occasions across various maritime ventures. Noted in Dr. Elisha Kent Kane's account of the 1850 United States Grinnell Expedition searching for Sir John Franklin near Canada's Arctic Archipelago, the expedition crew also celebrated Christmas with extra portions of dinner, wine, and an unfrosted plum-cake (Hyde et al. 1874:462). The origins of, distinction between, and inclusion of duff and plum duff in maritime customs and culture help provide context to understand the jargon's adoption into whaling vernacular for nineteenth century Provincetown whaling strategy.

Plum-Pudding: The Origins of a Name

The term plum-pudding whaling, as previously described, generally refers to short, between season voyages in the Atlantic Ocean typically undertaken by Provincetown whalers (Ashley 1926:103). Due to the brief nature of the fishing expeditions, plum-pudding whaling was named after a crew's ability to easily restock fresh provisions, turning duff into plum duff (Goode et al. 1887:233). The ease of shorter voyages also meant that these vessels, referred to as *plum-pud'ners*, often left their home ports in early spring and returned before the September gales. Therefore, not only did the crews have greater and more regular access to fresh produce and plum-pudding, but ships were also home in time for the Christmas holiday (Goode et al. 1887:233; Ommanney 1971:82; Stoett 1997:50). One of the more obscure references to plum-pudding whaling mentions its earlier name of a "cranberry pudding voyage", perhaps drawing similar parallels to raisins but with specific reference to one of the three native New England fruits (Ashley 2014). In addition to its physical connotation with plum duff, plum-pudding

whaling has also been characterized by a variety of alternate contributing factors including its association with Provincetown, poor reputation amongst multi-year whalers, and whimsical definition inserted into popular literature.

Prior to the expansion of American whaling into the Pacific Ocean, plum-pudding voyages referred to New Bedford whalers operating small vessels. Once the New Bedford plum-pudding fleet was replaced by larger ships that also brought with it a militaristic disciplinary system, the term was more commonly applied to Provincetown schooners. The whalers of Provincetown were said to have had an abundance of raisins and dried fruit to add to duff, while the owners of New Bedford whaling companies prohibited fruit onboard for sanitary reasons, sanctioning only plain duff (Goode et al. 1887:233). It's also thought that the plum-pudding name was developed and applied to Provincetown whalers by New Bedford whalers under the impression that Provincetown voyages were easy and unchallenging due to the simplicity of this strategy compared to multi-year voyages to the Pacific (Moment 1957:263; Ashley 2014:138). Built on skill and experience, excessive time at sea was considered an integral representation of the industry's resiliency and venturesome character. As a result, the traditionalists of New England whaling ports viewed such short-term voyages with disdain:

> One old New Bedford skipper, who had been coerced against his inclination to make such a voyage, was busily engaged casting off from the wharf when his agent approached and whispered in his ear, "Captain Jones, you've forgotten to kiss your wife good-bye!" Without shifting his gaze from aloft, the Captain demanded – "What's ailin' [sic] her? I'm only going to be gone six months" (Ashley 1926:103).

Pacific whalers also spoke with contempt of Atlantic plum-pudding whalers for numbering their voyages in only months and discrediting such voyages as "humorous interludes" (Hohman 1928:85; Gurney 2002:20).

Finally, Herman Melville also wrote of an uncommon reference to plum-pudding in whaling, defining it as scraps of whale flesh, the portion of which is attached to the blubber that contributes to its oily nature (Melville 1851:784). In *Moby Dick* (1851), the narrator (Ishmael) craves this portion of the whale's flesh, salivating over its spotted coloration dotted with areas of fat and venous tissue. Ishmael goes as far as to fantasize on its resemblance to a steak as if it were cut from King Louis VI of France after a season of feasting on venison and champagne (Melville 1851:784). In all known interpretations of the term, plum-pudding, and the whaling strategy it infers, references the increased availability of a product that is typically savored and prized due to sheer infrequency.

A History of Plum-Pudding Whaling

According to available literature, plum-pudding whaling, while not temporally exclusive, was a method primarily associated with the late eighteenth and late nineteenth centuries, bookending the whaling industry of the 1800s. The strategy's constraints to these time periods are primarily due to technological and resource-driven limitations of early voyages as well as the dropping profits, increasing costs, and uncertain returns experienced in the latter part of the nineteenth century. During the early years of whaling, plum-pud'ners sailed south from New England to the West Indies and then the Azores, moving from the west coast of Africa and back to the South Atlantic during the spring before spending the late summer fishing the North Atlantic Ocean (Goode et al. 1887:233).The earliest known mention of plum-pudding whaling by name refers to New Bedford whalers undertaking short voyages of two or three months in a fleet of 50-ton sloops to fish the waters of Newfoundland and Virginia for sperm whales in 1755 (Onmanney 1971:82; Stoett 1997:50). Twenty years later, the fleet had grown to 60 vessels

sailing from New Bedford to as far as the Falkland Islands but returning to New England in time for Christmas (Onmanney 1971:82; Stoett 1997:50).

For periods of reduction prior to peak industrial growth in 1853 and in the years immediately following whaling's decline in the 1860s, plum-pudding whaling was employed in response to economic, environmental, and company asset limitations (Davis et al. 1988:570-573). This method proved advantageous during times of uncertain productivity due to the use of smaller vessels, less crew, and shorter voyages which incurred fewer costs and potential risk (Davis et al. 1987:146). During the 1850s, American whaling gained historical and ecological significance as one of the first "successful efforts [of] natural resources exploitation" (Moment 1957:261). The prior contributions of plum-pudding whaling in the Atlantic in the early 1800s helped to reach this point while the later return to plum-pudding whaling kept the industry from completely disappearing during the 1860s. In the years following the 1850s, plum-pudding whaling was mostly constrained to coastal North American voyages in the Atlantic Ocean, taking advantage of domestic resources closer to home. Initially, plum-pudding whaling expeditions were those that lasted six months or less, left from New England, and occurred strictly in the North Atlantic Ocean between the West Indies, West Africa, and Labrador Sea (Goode et al. 1887:233). Restricted by competition with larger vessels and the resource-limited inability to withstand multi-year expeditions, plum-pudding vessels were able to use these short, near-shore trips to minimize risk while still maximizing potential opportunity for profit.

As the primary hub for American whaling until the later nineteenth century, New England gained incredible economic advantage leading to strong local maritime infrastructure and resources. As an example, at the height of its prosperity New Bedford was considered the wealthiest town in America (*Whalemen's Shipping List* 1854; Allen 1973:82; Davis et al.

1997:4). Though ships and barks whaled in the Southern Pacific, the Atlantic fishery favored brigs and plum-pudding schooners (Goode et al. 1887:233). Reserving larger, broader, and better equipped vessels for the Pacific and Arctic fisheries, these Atlantic plum-pudn'ers could manage voyages with fewer commodities and provisions, many of which Pacific whalers were unable to forgo (Goode et al. 1887:233; Hohman 1928:331).

At the center of extended pelagic expeditions, slow-moving whaleships provided the platform and resources to pursue, catch, kill, and process whales. While the ship, bark, and brig construction types were built to withstand extended time at sea, smaller, two-masted schooners were better suited to six-month plum-pudding voyages (Ashley 1926:103; Moment 1957:263). Plum-pudding whaling was structured upon the selection of these smaller, quicker, sharper-ended vessels. As the preferred vessel type for plum-pudding whaling, schooners were used heavily in the beginning stages of whaling as well as during the industry's final wind between 1890 and 1925. This is due in large part to their smaller structure and thus cheaper resupply costs, crew requirements, and outfitting needs (Hohman 1928:331). Resembling more closely the fishing fleet of Gloucester, some plum-pudding schooners maintained a poop deck and aft superstructure for officers while the majority had flush decks and officer's quarters positioned below (Goode et al. 1887:233). These vessels needed to account for the production demands of whaling and were constructed to support not only multiple whale boats placed on deck and hung on davits on either side of the vessel, but also either a heavy brick furnace (or try works) and the resulting casks of oil and other whale-product cargo processed at sea or carried to shore-based processing facilities (New Bedford Whaling Museum 2021). Due to immense constructional integrity and strength requirements, reinforcements, and modifications, such as varying hull

shape and/or frame patterning, may have been added to better suit the structural demands of plum-pudding whaling.

Defined Parameters

Despite being written for popular consumption, Herman Melville best summed up the extent of historic plum-pudding whaling in *Moby Dick* (1851) through his brief description of its use of schooners or brigs for short voyages in the Atlantic Ocean north of the Equator (Melville 1851:182). While technically pertaining to two different time periods, the two uses of plum-pudding whaling only varied slightly in hunting grounds due to economic and foreign competition constraints of the late nineteenth century dissuading farther, international voyages (Davis et al. 1988:594). As a result, plum-pudding whaling can be interpreted as a method of adaptive response when preferable, oceanic practices were unsupported by contemporary limitations. With further investigation into specific practices, such as vessel modifications and diversified hunting efforts in the following chapters, a more detailed and exact set of parameters can be defined to delineate the full extent of historic plum-pudding whaling for the purpose of this study.

Influences and Limitations of Plum-Pudding Strategy

Initial interpretation indicates that plum-pudding whaling was driven primarily by economic influences and constraints. These concerns may have been amplified by technological advancements, foreign competition, and fear over diminishing populations from both an international and domestic standpoint. While pressure felt from decreasing whale stocks in the late nineteenth century may have contributed to whaling vessels mitigating risk by choosing smaller, more economical ventures rather than longer, farther expeditions that risked a higher

deficit in profit, the American whaling industry preceded any serious issues of diminished whale populations (Davis et al. 1988:594). Technological advancements increased the capability of handling larger vessels with winches, lighter canvas sails, and the iron toggle harpoon (e.g., a more effective method of firmly attaching a whaleboat to its prey). Paired with more precise ocean cartography pushing ships further out to sea and for longer periods, it can be asserted that the later return to plum-pudding whaling was more likely due to economic limitations and foreign competition following 1859, rather than a diminished, inaccessible global population of whales (Davis et al. 1988:594; Davis et al. 1997:270, 286). Factors such as decreased availability of bowhead whale (*Balaena mysticetus*), the loss in value of whale products, and the financial risk undertaken when fitting out larger, square-rigged vessels for Arctic, Antarctic, and Pacific voyages contributed to company owners transitioning towards plum-pudding whaling (*New York Tribune* 1913:2). Overall, an economic decision made when faced at the crossroads of "adapt or die", plum-pudding whaling strategy brought about a small revival to the industry during the late nineteenth and early twentieth centuries led by "handy little schooners" bearing down towards NC's Hatteras Grounds (*New York Tribune* 1913:2).

Regarding potential bias from low effort, present studies allude to historic whaling decline off the eastern North American coast as documented whale sightings were less frequent than what would correlate with historic records of NC shore whaling operations (Reeves 2020:189). If stocks were significantly declining within the Atlantic Ocean, the decision to undertake plum-pudding whaling may have been due to greater international pressures from foreign competition and financial cost of extensive voyaging that exceeded concerns over diminishing whale stocks. This theory supports the notion of plum-pudding whaling as primarily

an economic response implemented by whaling companies during periods when significant limitations were placed on the industry.

At the whaling industry's peak, the demand for illuminants, perfume fixatives, and other whale-derived products resulted in nearly $11 million added to the gross domestic product (Davis et al. 1997; PBS 2021). With New Bedford and surrounding New England communities at the center of this economic productivity, the industry achieved incredible growth but also dramatic instability resulting from a variety of influencing factors. These included fluctuating demand, foreign competition, and the discovery of new whaling grounds, but also the depletion of older stocks, changes in land-based infrastructure (e.g., locations of resupply and refitting), technological advancements in whalecraft, hunting strategy, rig preference, and changing variations of labor supply and quality (Davis et al. 1997:7). In addition, with many whaling companies adopting a corporate form in the 1830s, "diffuse ownership structure" within the company reduced the incentive of "managers to perform their roles diligently," which raised internal company instability (Hilt 2006:222). While some of these factors contributed to the rapid growth of the industry during the 1850s, at the industry's weakest point in the following decades their combination produced fast and dramatic decline. With bigger and better ships, smarter strategies, more precise navigation, and a toolbox of advancing technology, smaller crews were able to achieve greater efficiency. From an economic standpoint, the lay system maintained employee compensation within company interests and promoted cooperation as "each man's pay depended on the performance of the entire group" (Davis et al. 1997:15). With this economic productivity resulting from large-scale pursuits, it is understandable that smaller-scale plum-pudding efforts were disregarded during the height of American whaling in favor of the advancing technology and opportunity inherent in longer, trans-oceanic voyages. Due to

underlying instability, however, once energy and illuminant alternatives were offered through the introduction of petroleum in 1859, the structure of this economic behemoth quickly crumbled. Left with high expenses and lower available capital, many American whaling operations once again returned to small-scale strategy, opting for near-shore, Atlantic ventures.

Attractions of Plum-Pudding Strategy

While decreasing demand helped to compress whaling companies' efforts, factors such as increasing cost of whale oil production, higher cost of American labor stemming from industrial expansion, and the increasing difficulty of procuring new labor due to domestic competition began to take effect. As a result, global competition began to negatively impact American whaling efforts more readily. Such as with the Norwegian whaling industry after 1880, whaling was pushed as an economic driver upon international societies lacking industrial alternatives (Davis et al. 1997:498-512). These new difficulties from industrial, domestic expansion that weakened American whaling offered up further opportunity for foreign competition to exploit stocks overseas. With rising opportunity and labor costs and falling profits stemming from whaling ventures, other domestic industries like railroads, oil, and steel took precedence and enveloped most of the investor funding and support (Davis et al. 1997:521). With "capital [beckoning] the nation's Ishmaels to the machines, away from the watery parts of the world," the fate of large-scale American whaling was sealed (Thompson 2012). Rather than completely abandon the industry, however, some whalers and companies turned back towards plum-pudding ventures due to its lower costs and focus on near-shore waters away from emerging foreign competition.

Like any business model, the history of whaling followed a pattern of innovation, with plum-pudding whaling serving as both the foundation and the fallback plan to ensure the

industry's continued productivity and success, however temporary. Beginning with plum-pudding strategy, this method saw pelagic whaling in its earliest form controlled by technological limitations that had not yet even been realized. With changing technology producing more efficient vessels and fishing gear, fewer whalers were needed to return an increasing profit. With this, the industry's needs advanced beyond the abilities of plum-pudding whaling. This change prioritized skilled labor, however, challenged company productivity through increased cases of desertion and crew turnover. As a result, the eventual drop in demand disincentivized the industry as a whole. With fewer investments, resources, and skilled labor available by the end of the nineteenth century, whaling once again saw a return of plum-pudding ventures, taking advantage of low economic costs and resource requirements. This new wave was established and built upon low-cost domestic opportunities, such as those in NC. The result carried small-scale whaling into the twentieth century. As an adaptive method, the plum-pudding strategy was not only critical in launching America's initial whaling industry, but it also provided a temporary solution following its collapse while companies and whalers diversified their maritime interests or sought new fields all together.

Plum-Pudding: An Opportunity for Converted Vessels

Small, two-masted schooners characterized the vessels of the ports of New Bedford and Provincetown, MA by the late nineteenth and early twentieth centuries. An economic alternative to more costly vessel types, such schooners were often retired fishing vessels, bought and repurposed for whaling "to seek the meager profits that still existed in the industry" (German 1970:102). Generally sleeker and sharper-ended, fishing schooners were known for their remarkable strength and sound construction, which complimented and met the demands of whaling. The fishing schooners of Gloucester, Boston, and Provincetown are said to have been

"unequaled" in quality and performance during the nineteenth century (Morris 1927:194). As the industry opted for more economic-alternatives, converted fishing schooners provided a cost-effective option to be used in conjunction with the pared down nature of plum-pudding strategy.

Converted fishing schooners often came from the cod, swordfish, and mackerel fisheries. By March 1908, New Bedford agents sought out fishing schooners to be overhauled and modified for whaling (German 1970:102). Given the economic and structural benefits of using fishing vessels for whale hunting, many schooners were converted through the addition of davits, a small tryworks, bulwark cutout, and cutting platform. From afar, despite exhibiting the sleeker construction of a fishing vessel, whaling schooners had the "unmistakable" signature of carrying at least three whaleboats—one hung at the stern and one on either side of the vessel—and a tryworks near the bow (Higgins 1927:299). These features aided in the whaling process and were necessary for any full conversion.

At the end of the nineteenth century, schooners quickly superseded the traditional square-rigged whalers. By 1880, Provincetown had the second largest whaling fleet, consisting of twenty plum-pud'ners. Though second to New Bedford with its 123 craft, in numbers Provincetown's plum-pudding strategy appears to have persisted beyond the shrinking fleets of neighboring ports of Edgartown, Boston, New London, Westport, Marion, and Dartmouth (Hohman 1928:305) By 1905, Provincetown contributed 3 plum-pudding schooners to a decreasing American whaling fleet of only 39 remaining vessels (Hohman 1928:308). Though sometimes viewed as "vastly superior to that of the old-fashioned clumsy, square-bowed barks" thanks to their performance and need for fewer hands, the success of the smaller vessels relied heavily on having a small yet experienced crew, especially in the position of harpooner or boast steerer (*New York Tribune* 1913:2). Ideally, plum-pudding strategy succeeded by cutting assets

in a manner of "quality over quantity", increasing productivity through the reduction of economic risk in an already meager margin of profit. As continuously argued, the primary driver behind this strategy's success lies in its selection of schooners over other vessel types. The selection of converted schooners only added to its economic advantage. By 1913, as one author notes, "there are still some of the old square-rigged whalers sailing…nowadays, [but their] day is over; the saucy schooner [has come] into its own" (*New York Tribune* 1913:4).

Conclusion

Despite intra-industry contemptuous undertones and little present academic study on the topic of plum-pudding whaling, the strategy has implications for better understanding the rise and fall of American whaling due to its steady involvement within nineteenth century maritime interests. As a fishing method, plum-pudding whaling began with widespread voyages in the North Atlantic and ended with smaller, near-shore Atlantic expeditions. Always characterized by its use of small vessels (e.g., schooners and brigs) and short time at sea (e.g., approximately six months), plum-pudding whaling served both as a springboard and as a safety blanket for the golden age of whaling. Further examination could illustrate the behavioral response of contemporary whaling companies to industrial decline, as well as provide much needed historical context and acknowledge the endurance of this seemingly persistent whaling strategy within a contrastingly short-lived industry. As a demonstrated adaptive response, the strategy of plum-pudding whaling should be viewed as a risk management tool adopted by nineteenth century whalers to a declining industry. Delineation of plum-pudding whaling into distinct time periods, preferred vessel types, hunting grounds, technological modifications, and home ports may reveal a systematic and intentional economic attempt by whalers to combat crisis, rather than simply opportunistic practices.

Despite small-scale practices, participating New England whaling companies attempted to mitigate contemporary technological, economic, and environmental constraints through their vessels and expeditions, not only setting the foundation for the golden age of whaling but also later carrying the dying industry into the twentieth century. By paying due diligence to an outlying area of the historic record largely unexplored by academia, a deeper understanding of nineteenth century whaling strategy, vessel construction, and behavioral response of supplementary marine resource extraction can be garnered. Not only does this chapter provide historical, economic, and environmental context for factors influencing the Cook's late nineteenth century operations, it offers a foundation in plum-pudding tradition and historical momentum. With little readily available literature, this analysis consolidates and defines plum-pudding whaling, its attraction and limitations, and its potential as a systematic and identifiable risk management strategy to crisis for E. & E.K. Cook & Co.

Chapter Four. E. & E.K. Cook & Co. Fleet Biography and Operational History

Introduction

In 1875, visitors to Provincetown were greeted by an overpowering odor of fish, a sensory experience representing not only "every imaginable offense which a fish can commit", but also the robust local fishing and whaling industries that had co-existed since the seventeenth century with English settlers (Nordhoff 1875:52-53; German 1970:102; Bryant 1998). From the early nineteenth century to the Civil War, Provincetown saw success through salt production and export (Krahulik 2005:31). Beginning in 1838, Provincetown consolidated and supported the city's whaling, cod fishing, and saltworks operations, running lucrative "industrial beehives" out of dozens of its wharves (Vorse 1942:56; Krahulik 2005:32). Through the export of fish and marine mammal products and its recognition as a desirable location for merchants, Provincetown became the fifth largest American whaling port by 1846 and the richest town per capita in Massachusetts by 1854 (Krahulik 2005:30-32). Wharves served as centers for docked or dry-docked vessel repair, the drying and curing of fish, and services essential to maritime industry such as sail lofts, chandlers, blacksmiths, tryworks, grocers, and banks (Krahulik 2005:32).

In addition to whaling, Provincetown seafarers may have supplemented catch through alternate methods of profitable marine resource extraction, such as mackerel fishing, cod fishing, swordfishing, or hunting other marine mammals. Similar vessel types, hunting practices, and tools allowed for an easy transition of whalers into these supplementary or alternate practices. This may have also led to more opportunistic hunting of marine species as the difficulty of maintaining a whaling-based maritime lifestyle heightened due to decreasing economic profitability in the late nineteenth century. The following discussion aims to explore both

Provincetown's historic whaling and fishing operations to provide context on the maritime industrial environment that impacted E. & E.K. Cook & Co. This background provides a foundation for later analysis on the efficacy of the company's strategy across maritime industries.

To assess patterns in whaling and fishing strategy and vessel selection by E. & E.K. Cook & Co. over the course of its operational history, articles from newspapers such as the *Provincetown Advocate*, *Weekly National Intelligencer*, and *Provincetown Banner* which referenced the company, the family, and their fleet of schooners were collected. Selected clippings were cross-referenced with E. & E.K. Cook & Co. insurance registrations sourced from *American Lloyd's Register of American and Foreign Shipping*, the *New-York Marine Register*, and the *Record of American and Foreign Shipping*. Articles deemed relevant were used to create the following environmental context of mid-nineteenth century Provincetown and operational history of the Cook's maritime ventures from the company's formation in 1837 to the years directly following its 1879 bankruptcy.

Nineteenth Century Maritime Provincetown

Provincetown whalers were enthusiastically opportunistic towards whales not only at sea, but also to those found within the harbor. At first sight and cry of "there she blows", whalers flocked to the shore, manning an alleged 50 or more whaleboats. Once captured, the whale(s) was towed back to shore and processed during the first ebb tide, the carcass later buried in the sand (*Provincetown Banner* 1856:2). In 1869, the District of Barnstable produced 71,932 gallons of sperm oil and 88,452 gallons of miscellaneous whale oil, valued at $123,666 and $79,671 respectively. In the same year, Barnstable registered 30 whaling vessels with successful voyages and a total of 540 associated crew while the cod and mackerel fisheries registered 269 vessels

and 3,766 crew. Barnstable fishers also produced 113,328 hundredweight (cwt.) of cured codfish valued at $687,369, 153,104 cwt. of mackerel valued at $958,116, and $387,006 in other fresh fish and fish-based products. With an overall district fisheries value of $2,235,828, whale-based products contributed only 9.1% of profit to the 1869 Barnstable fisheries report and employed significantly fewer vessels and crew (*Provincetown Advocate* 1870a:3). Compared to other towns in the district, Provincetown contributed nearly 50% of Barnstable's total enrolled vessels in 1869 and was the fourth largest producer of pickled mackerel in the state (23,998 barrels (bbl.)), following behind Gloucester (93,126 bbl.), Boston (34,135 bbl.), and Wellfleet (27,8725 bbl.), but decreasing in production compared to years prior to 1870 (*Provincetown Advocate* 1870a:3). However, in 1870 Provincetown produced 2,831 additional barrels of mackerel compared to 1869. At that time Ephraim Cook had the third largest number of inspected mackerel barrels in Provincetown (5,300 bbl.) in 1869, increasing to 5,812 bbl. in 1870 (*Provincetown Advocate* 1871b:2).

By 1871, 153 Provincetown fishing vessels harvested 1,348,590 pounds (lbs.) of fish (Krahulik 2005:31-32). Having readily adopted the knockabout rig, a revolutionary schooner designer lacking a bowsprit, in the late nineteenth century for fishing the Great Banks (Raupp 2004:62) and converted schooners and brigs for salt banking and whaling trips in the Atlantic, Provincetown vessels engaged in various fisheries, particularly that of cod, mackerel, swordfish, and whales (Vorse 1942:168; Krahulik 2005:32). By 1875, Provincetown had decreased its yield of mackerel to 10,168 bbl. and decreased its swordfish catch to 8 bbl. following the decreasing trend in catch data across the state of Massachusetts. Despite no mention of Ephraim Cook's catch, his brother and associate Ebenezer Cook had the fifth largest catch of 1,029 bbl. (*Provincetown Advocate* 1876a:2). In 1878, mackerel sold from $2.50 to $14.00 per barrel,

depending on inspected quality. However, the *Provincetown Advocate* (1878b:2) notes few mackerel in the local market at that time, and no recent sales in December of 1878.

Provincetown's Cod Fishery

In December of 1878, the *Provincetown Advocate* included an August 1878 article originally published in the *El Paso Journal* (Illinois) on Cape Cod fishing that detailed three categories of fishing employed during the 1870s. Sourced from a local fisher, Captain Zadock Bearse, the author describes day fishing, short-term offshore fishing, and seasonal bank fishing. The article's comparison of the cod and mackerel fisheries at the time provide insight not only in Chatham's local industry, but also that of the strategies used by the greater fishing industry of Cape Cod and Provincetown (*Provincetown Advocate* 1878a:1).

The day fishers of Chatham employed smaller fore-and-aft rigged vessels called fishing "smaks", capable of carrying and salting up to five tons of fish (*Provincetown Advocate* 1878a:1). With an average vessel length, breadth, and depth of 25 ft. x 7.5 ft. x 4 ft., they were operated by one or two fishers at a time. Venturing out 10 to 15 miles, day fishers stayed closer to shore and handlined for cod due to both the logistical ease of the technique and the behavior of the fish themselves, which were brought onboard with little trouble (*Provincetown Advocate* 1878a:1). Baiting their lines with clams and hanging hooks at a depth of up to 90 ft., each fisher was responsible for two lines. Once the cod stopped biting for the day, the fishers returned home with a cleaned and salted catch, using 50 lbs. of salt for every 100 lbs. of fish caught (*Provincetown Advocate* 1878a:1). Other references report 25 lbs. of salt as adequate for 100 lbs. of fish (German 1982:145). Ideally, these vessels brought back a daily catch of 200 to 800 lbs. of fish, dependent on season and weather, with the goal of 10,000 lbs. of cod caught per fisher per season (*Provincetown Advocate* 1878a:1).

Bearse continued with a description of onshore operations. Once back to port, the catch remained salted in barrels for two weeks until it was laid out and dried on flakes in the sun (*Provincetown Advocate* 1878a:1). After three to four days, the catch was ready for market. Fish buyers came to Cape Cod from New York, Boston, and Connecticut in large schooners to purchase the dried and salted cod or exchange the fish for goods. Sometimes these buyers purchased the fish directly off the dock, curing and drying the cod themselves later. Larger vessels engaged in the cod fishery were capable of short-term offshore fishing ventures lasting five days at a time (*Provincetown Advocate* 1878a:1). Traveling up to 200 miles offshore in vessels ranging from 15 to 30 tons in size, crews of up to three fishers operated in a similar manner as near-shore fishers but yielded a larger catch by spending a longer time at sea (*Provincetown Advocate* 1878a:1).

The largest vessels reportedly engaged in the cod fishery were referred to as "bankers", which were popular in Provincetown's "salt banking" industry (*Provincetown Advocate* 1878a:1). Averaging 100 tons or greater, these vessels operated for entire seasons of three to four months with a crew of up to 12 fishers. Bankers set out in March with 60 to 70 bbl. of bait and 300 bbl. of salt for curing and processing cod while away, following similar methods of handlining but on a larger scale (*Provincetown Advocate* 1878a:1). Fishing known grounds, this method sometimes created issues as sharks would follow vessels and steal their catch off lines, forcing them to move locations. Known to use both handlines and trawl lines to fish the Grand Banks, Provincetown bankers would finish their season in October (German 1982:145).

Provincetown's Mackerel Fishery

Nearly equal in economic importance to the cod industry during the nineteenth century, mackerel fishing occurred later in the year and even further from shore (German 1982:145).

Economic productivity within the mackerel fishery depended upon the grade and size of fish caught. In addition to handlining, mackerel fishers primarily used seine nets and weirs, fishing annually between Hatteras, NC and New England from April to November (German 1982:145). Mackerel vessels carried large purse seines and accompanying seine boats, gillnets, or handlining gear to catch the fish. In addition to salt-stained fishing gear, a gurry box was often kept onboard forward of the aft cabin trunk for the disposal of fish scraps when baiting hooks or cleaning a catch, and later which provided a storage area for additional fishing gear when the practice of refraining from throwing fish scraps overboard while on fishing grounds was largely retired in the early twentieth century (German 1982:145). When seining, fishers first baited the water with finely ground porgy, an abundant and migratory fish (*Sparidae* Family & *Stenotomus chrysops*). Drawing the mackerel together near the surface "in such quantities that it seems as if one could walk on them", fishers then used a 60 by 1,200-foot seine net to surround and capture the school (*Provincetown Advocate* 1878a:1). To keep its position in the water column, the net had buoyant cork floats on one end and heavy lead weights at the other. On the lower edge, a long line was fastened at either end and attached to the vessel. Once both ends of the net were drawn back together enclosing the mackerel, the seine was brought near the surface where fishers used "large dip-nets bundled with block and tackle in the rigging of the vessel" to retrieve up to 1,000 bbl. of mackerel per net (*Provincetown Advocate* 1878a:1). After retrieval, the catch was placed in the hold for later cleaning and curing.

Provincetown's maritime productivity slowly declined in the later nineteenth century as the fresh fish industry grew and whaling and wharf activity lessened (Vorse 1942:70). Local whale populations and presence had weakened, placing pressure on the industry where it was "an extra-hazardous thing for even a porpoise to show his black nose over the water in sight of the

town" (Nordhoff 1875:53). In August of 1880, an article directly referencing Provincetown's mackerel fishery was featured in the *Provincetown Advocate*. The author, though not a fisher, took issue with the season of Provincetown's mackerel fleet lasting only half of the year. As an argument, the author thought it productive to first determine where mackerel migrate over the winter. Referencing ideas from Northern Europe that claimed that the mackerel retreat into deeper water to hibernate, or that they buried themselves beneath mud, and a Norwegian theory suggesting that they spend the winter in the Polar Sea, the author believed that the mackerel most likely leave Cape Cod in the fall to spend the winter in the Sargasso Sea. Calling for Provincetown to engage state governments, the U.S. Navy, and even New England sealing and whaling captains in this scientific venture, the author argued to establish a fleet and headquarters on St. Helena Island so that Provincetown could engage in mackerel fishing throughout the year to eventually maximize profit from the industry (*Provincetown Advocate* 1880a:2). In addition, the author suggested using merchant vessels to ship fish home cheaply and efficiently to Provincetown and proposed that the fishing fleet also help transport "sassagasso weed" [sargassum seaweed] fertilizer to Europe to follow the migratory mackerel south of the Cape Hatteras grounds in early March. Whether overly fanciful or meticulously contrived, the author spoke to an economic need and opportunity in supporting "the chief industry of [his or her] native town" through year-long engagement (*Provincetown Advocate* 1880a:2).

Only eight months prior, another article in the *Provincetown Advocate* responded to a *Cape Ann Advertiser* article which mentioned Gloucester fishers and the mackerel fishery off the Hatteras Grounds and southward. Gloucester fishers had asserted that mackerel spent the winter in the gulf stream off NC, remaining active from the fall until mid-winter in dense schools purported to be up to 40 miles long. The author also calls for the "wide-awake Cape Cod

skippers [to] try their luck in the same way" and take advantage of a winter fishery in NC (*Provincetown Advocate* 1879a:2). Perhaps influenced by a shifting maritime focus away from whaling the decade prior or spurred by decreased mackerel catch in previous years, this call echoed the pressure felt by maritime Provincetown to preserve its traditional industries by adapting its strategy and furthering its reach. As a result, in March of 1880, at least in Gloucester, mackerel fishers traveled to Hatteras Inlet and its adjacent waters earlier than ever before, having a successful start to the season one month in advance (*Provincetown Advocate* 1880b:2).

Provincetown's Swordfish Fishery

The New England swordfish industry first developed between 1840 and 1855 with an organized season from June to November (German 1982:16). Compared to mackerel and cod fishing, swordfishing provided a more likely example of opportunistic fishing practices that could accompany whaling or other fishing ventures due to gear type and less required effort and storage for a larger monetary reward. Mackerel market fishers were known to opportunistically take swordfish when they revealed themselves on the surface of a shoal of mackerel or other school of fish. Anticipating this occurrence, mackerel fishers purposefully brought onboard swordfishing gear and harpoons (German 1982:39). While retrieving seines, it was noted that fishers might also catch swordfish as bycatch (*Provincetown Advocate* 1878a:1). Fresh fishing of various species complimented each other well due to the availability of ice already onboard (German 1982:43).

In the late nineteenth century, Provincetown demonstrated opportunistic catch of swordfish with reports of fish harpooned from shore (German 1982:146). In 1875, a ten-foot-long fish was harpooned along Provincetown's shore after being spotted amongst wharf pilings

(*Provincetown Advocate* 1875a:2). In October of 1898, a 310 lb. fish harpooned from shore sold for $43 (*Provincetown Advocate* 1899:2). Compared to opportunistic catch, organized New England swordfishing ventures typically began in late Spring with small vessels belonging to the shore fisheries being fitted with bowsprit pulpits, safety lines, dories, and harpoons (German 1982:39). Similar to the needs of a whaling vessel, swordfishing vessels were equipped with a topmast for lookouts, bald-headed mainmasts (e.g., lacking topmasts), and ketch rigs (Erik Ronnberg 2021, pers. comm.). Unlike the knockabout rig, swordfishing schooners kept a bowsprit and were fitted with a removable and seasonal pulpit for the harpooner, ratlines, and safety lines (German 1982:16). Figure 3 demonstrates the recognizable pulpit of a swordfishing vessel as well as its safety lines with which a harpooner can spot and strike the fish.

FIGURE 3. 1930s harpooner or "striker" pulpit for spotting and hunting swordfish (Cape Ann Museum File 11175)

Crisis Occurs – Desperation During Decline

Both whaling and salt fishing were fickle and comparatively short-lived industries. In 1865, Provincetown registered 105 cod and mackerel fishing vessels. Three decades later, only 47 vessels remained (Krahulik 2005:33-34). As one April 1871 article notes, multiple vessels previously engaged in whaling had been assimilated into Provincetown's cod fishing fleet (*Provincetown Advocate* 1871c:2). The article continued to paint a bleak future for Provincetown's whaling industry, addressing its decline along with that of "every other branch of [local] industry". The decline in whaling experienced in the 1870s contributed to a predicted oncoming disparity in wealth between the town's "fast horses and wood sawyers", with the author comparing Provincetown to the duality depicted in Charles Dickens's *A Tale of Two Cities* (*Provincetown Advocate* 1871c:2).

At the end of the nineteenth century, the Provincetown fleet of "[salt] bankers, coasters, and whalers" and accompanying 34 wharves, were led by Portuguese fishers from Provincetown's fresh fish industry (Vorse 1942:113; German 1982:74). By 1877, its 48 fishing vessels were overwhelmingly captained by Nova Scotians but became a Portuguese majority in 1883 (German 1982:74). By the beginning of the twentieth century, Provincetown's shoreline of wharves and "once lucrative seaport economy [had fallen] into jeopardy" due to consequences resulting from both the 1859 discovery of petroleum and 1898 Portland Gale (Krahulik 2005:8). As a result, Provincetown transitioned to smaller, faster vessels capable of transporting fish quickly to onshore cold-storage facilities (Krahulik 2005:35).

Background and Activities: An Introduction to the Cook Fleet

E. & E.K. Cook & Co. was formed by brothers Epaphrus "Kibby" and Ephraim Cook in 1837. Their brother, Ebenezer Cook, was known to have participated in the company's business, serving as a Captain or Master. E.K. Cook was considered a prominent and varied businessman of the town, serving as Assistant Engineer to the Ulysses Engine Company (*Provincetown Advocate* 1873a:2), Vice-President of the Firemen's Mutual Life Insurance Association (*Provincetown Advocate* 1876b:2), trustee of the town's public library (*Provincetown Advocate* 1874b:2), and a Director on Provincetown's Board of Trade which oversaw matters of the town's cod fishery, amongst other industries and occupations (*Provincetown Advocate* 1870c:2). His brother Ephraim also held stature within the community, serving as President of the Provincetown Marine Insurance Company (*Provincetown Advocate* 1871e:2, 1874c:2) and juror for the Supreme Judicial Court of Barnstable and Duke Counties (*Provincetown Advocate* 1871f:2). Both brothers served on the town's Board of Selectmen, along with other extended Cook family relatives (*Provincetown Advocate* 1879e:2).

Having a strong industrial hold on Provincetown's Commercial Street for four generations, the Cook family consisted of many entrepreneurs leading successful ventures in fishing, outfitting, and maritime goods and services (Vorse 1942:15). Having read through a collection of whaling logs kept within the house after E.K. Cook's death which described voyages to the South Seas and Arctic Circle, author Mary Heaton Vorse focused heavily on the Cooks in her writing (Vorse 1942:18):

> [Kibby] Cook… had lived and prospered in the great days of whaling. He and his brother, Captain Ephraim Cook, owned a larger fleet of whaling vessels than any other single man on the Cape…The house I live in, [Kibby] Cook's house, was built by people whose very approach to existence is so different from ours that it has altered beyond recognition (Vorse 1942:14-15).

Despite no Cooks residing in Provincetown's East End following the company's declaration of bankruptcy in April of 1879, subtle reminders of their maritime past remain. These include the masts repurposed into underpinnings of Vorse's home, ballast present in nearby yards, and rotting stumps visible at low tide stretching into Provincetown Harbor that once belonged to the E. & E.K. Cook & Co. Wharf (Vorse 1942:16,30).

At their peak of productivity and success, E. & E.K. Cook & Co.'s wharf, also known as the Eastern Marine Railway Co., supported mackerel, codfish, whale, and salt production operations in addition to running a forge, chandlery, and refit and repair service (Bryant 1978). Today, the rails of the Eastern Marine Railway Co. exist as lintels in the basement of Provincetown's Town Hall (Stephen Borkowski 2021, pers. comm.).

Across four decades, the Cooks operated a minimum of 29 vessels, 26 of which were vessels employed in Provincetown's fishing, whaling, and packet industries, many of which operated concurrently across industries. Largely consisting of small schooners ranging in size from 25 to 89 ft. in length, and 47 to 109 tons, the Cook fleet can be used as a case study to determine a preferred vessel type, or demonstrated "best fit", for the Cooks' multiple ventures across industries.

The following discussion presents the results of examining *American Lloyd's Register of American and Foreign Shipping registries* (1859-1883), *Record of American and Foreign Shipping registries* (1871-1900), and *New-York Marine Register listings* (1857 & 1858), as well as a compilation of original ship registers from the district of Barnstable, MA (1814-1913) stored in the New Bedford Customs house and prepared by the National Archives Project: Division of Women's and Professional Projects, Works Progress Administration (National Archives Project 1938). In addition, associated 1843-1878 voyage data from Lund et al.'s *American Offshore*

Whaling Voyages: A Database (2021), based on Alexander Starbuck's 1878 *History of the American Whale Fishery from its Earliest Inception to the Year 1876* and the periodical *Whalemen's Shipping List and Merchant's Transcript*, was consulted (Lund et al. 2021). Information related to the fleet is provided according to the metrics of each schooner and its demonstrated usage while associated with E. & E.K. Cook & Co. From these sources, 17 E. & E.K. Cook & Co. schooners were selected for evaluation on basis of archival evidence and relevance (Table 4).

TABLE 4. Construction details of 17 schooners believed to have been owned, partially owned, or insured by E. & E.K. Cook & Co. Compiled from *American Lloyd's Register of American and Foreign Shipping* 1859-1883, *Record of American and Foreign Shipping* 1871-1900, *New-York Marine Register* 1857 & 1858, and original ship registers from the district of Barnstable (1814-1913) stored in the New Bedford Customs house and prepared by the National Archives Project. Some vessels excluded due to insubstantial archival evidence or irrelevance.

		Tonnage	Length (ft)	Breadth (ft)	Depth (ft)	Draft (ft)
Whaling Schooners	*Alcyone*	92 - 92.22	82.2	21.75 - 27.2	8.6	-
	Esquimaux	97.44	71.67	19	8	-
	Express	69.99 - 70	72	20	7.5	-
	Medford	106.8	72.75	19	8.7	-
Fishing Schooners	*Bucephalus*	69.91 - 70	74.5	20.6	7.5	9
	Ella May	96 - 136	83	22.4	8.3	9
	Emporium	56.5 - 80	64.5	18.5	7.4	9
Both	*Abby H. Brown*	95 - 95.12	79.4	22.2	8.2	-
	Alleghania	70 - 96	70.67	19.03	8	10 - 13
	E. H. Hatfield	88 - 136.89	76.1	22	8 - 8.6	9 - 10
	E. P. Howard	47.93	63.65	20	6.95	-
	Etta G. Fogg	107.25	88.7	24.7	8.3	-
	Mary E. Simmons	104.81 - 105	85.5 – 85.6	23.5 – 23.8	8.8 – 8.9	-
	Quickstep	93.95 - 130	76.8	21.6	8.9	9
	Robert Raikes	109.16	75	19.12	8.5	9
	Sassacus	109.61 - 110	35.7	22.3	3.9	9
	Seychelle	47 - 65	61.4	17.6	6.8	8

* Construction data for *Sassacus* appears incorrect but is included as recorded in sources.

Through historic and archival review, other vessels were identified as operated or belonging to E. & E.K. Cook & Co. but were excluded for the purpose of this analysis. Although later discussion of the Cook's operational history mentions some excluded vessels for the

purpose of documenting a company timeline, the following were not considered in analysis as they did not produce sufficient evidence to clearly define their construction or place within the company's fleet. These include the schooners *American Eagle*, *Amelia F. Cobb*, *Belle Isle*, *D. Shepherd*, *Eugene*, *Mary Greenwood*, and *Norma*. Additionally, E. & E.K. Cook & Co. were affiliated with the barques *Fairy* and *Parker Cook*, the brig *Pacific*, and the schooners *Sarah* and *Samuel Lewis*. These vessels were excluded from this analysis due to non-schooner construction type or difficulty with confirming vessel identification within historic insurance registries due to a common name. Further discussion on the available vessel histories of *American Eagle*, *Belle Isle*, *Eugene*, *Mary Greenwood*, *Samuel Lewis*, and *Sarah* can be found in Appendix A (Extraneous and Unidentifiable Cook Schooners).

Whaling Schooners

Four schooners associated with Ephraim Cook, E.K. Cook, and E. & E.K Cook & Co. were examined and defined as "whaling schooners" by only participating in documented whaling activity throughout the operational history of E. & E.K. Cook & Co. These are the schooners *Alcyone*, *Esquimaux*, *Express*, and *Medford.*

Schooner Alcyone (1866-1884)

Alcyone was built in Provincetown, MA in 1866 by master builder John G. Whitcomb. Equipped with one deck, two masts, a square stern, and a billet head (e.g., decorative woodwork adorning the bow), it was built of oak (*Quercus* sp.) and had copper and iron fasteners. Its sail plan is recorded in Lemuel Cook's *Sailmaker's Plan Book* (1870-1879) (Figure 4). The *Record of American and Foreign Shipping* (1879, 1881-1884) indicated that it was registered as a whaling vessel to E. & E.K. Cook & Co., it's primary owners (National Archives Project

1938:4). *Alcyone* completed nine known whaling voyages for E. & E.K. Cook & Co., later becoming a fabled subject within Provincetown folklore with its own adventure book by George Barker, *Thrilling Adventures of the Whaler Alcyone: Killing man-eating sharks in the Indian Ocean*, *hunting kangaroos in Australia* (1916).

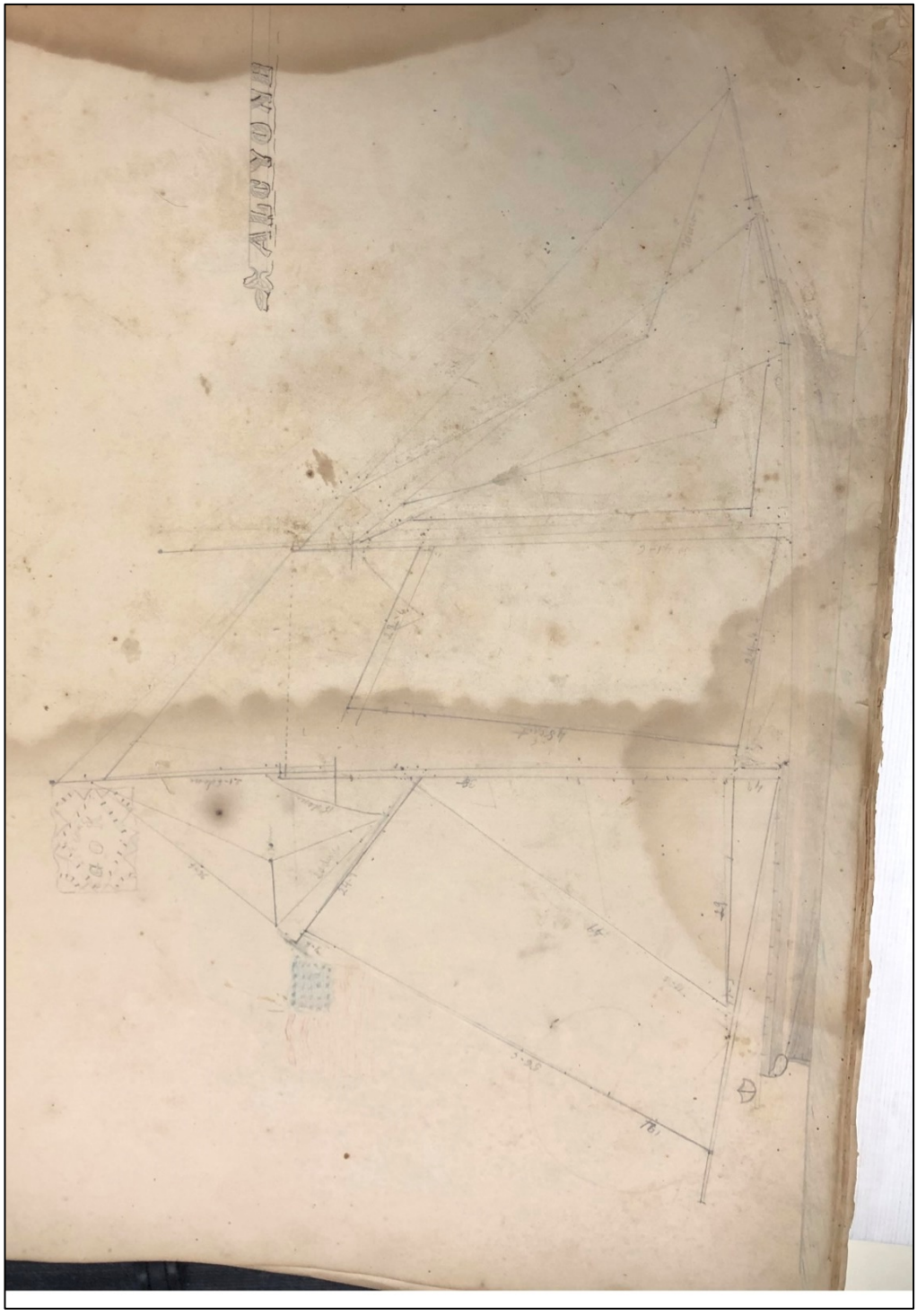


FIGURE 4. Sail plan of *Alcyone* documented by sailmaker Lemuel Cook (1828-1885). Courtesy of Peabody Essex Phillips Library, Item MSS 817+.

Schooner Esquimaux (1843)

Esquimaux, sometimes misreferred to as *Esquimanx*, is thought to have been built in Essex, MA in 1833. Featuring one deck, two masts, a square stern, a billet head, and no galleries, it was built of oak, and had copper and iron fasteners. No insurance registry data is currently available for *Esquimaux*, but it is known to have been owned by Ephraim and Ebenezer Cook and Mastered by Ephraim Cook. The schooner was engaged in one known whaling voyage in the Atlantic Ocean and West Indies in 1843 (National Archives Project 1938:33).

Schooner Express (1877-1880)

Little is known about the schooner *Express*, including its exact construction location. Built in either Boston or Duxbury, MA in 1846, it was owned by E. & E.K. Cook & Co. who had it rebuilt from a "fisherman" to a "whaler" in Provincetown, MA in 1878. It featured one deck, two masts, a square stern, and a billet head, and was constructed of oak with copper and iron fasteners. According to *American Lloyd's Register of American and Foreign Shipping* and *Record of American and Foreign Shipping*, *Express* was registered to E. & E.K. Cook, notably lacking the "& Company", as a whaling vessel in 1879 & 1880. Prior to 1879, it was listed as a fishing vessel. E.K. Cook and "E.P.H" Cook are thought to have owned 17/160 shares of the whaling vessel. 31/32 shares of the vessel were sold at the Cook's 1879 mortgagee's sale, listing *Express* as "engaged [and adapted for] the whaling business" (National Archives Project 1938:35; *Provincetown Advocate* 1879m:2). Figure 5 depicts *Express* in Lemuel Cook's *Sailmaker's Plan Book* (1870-1879). Under E. & E.K. Cook & Co. it is known to have completed one whaling voyage to the Atlantic, Cape Verde, and a whaling ground referred to as "90" (Lund et al. 2021).

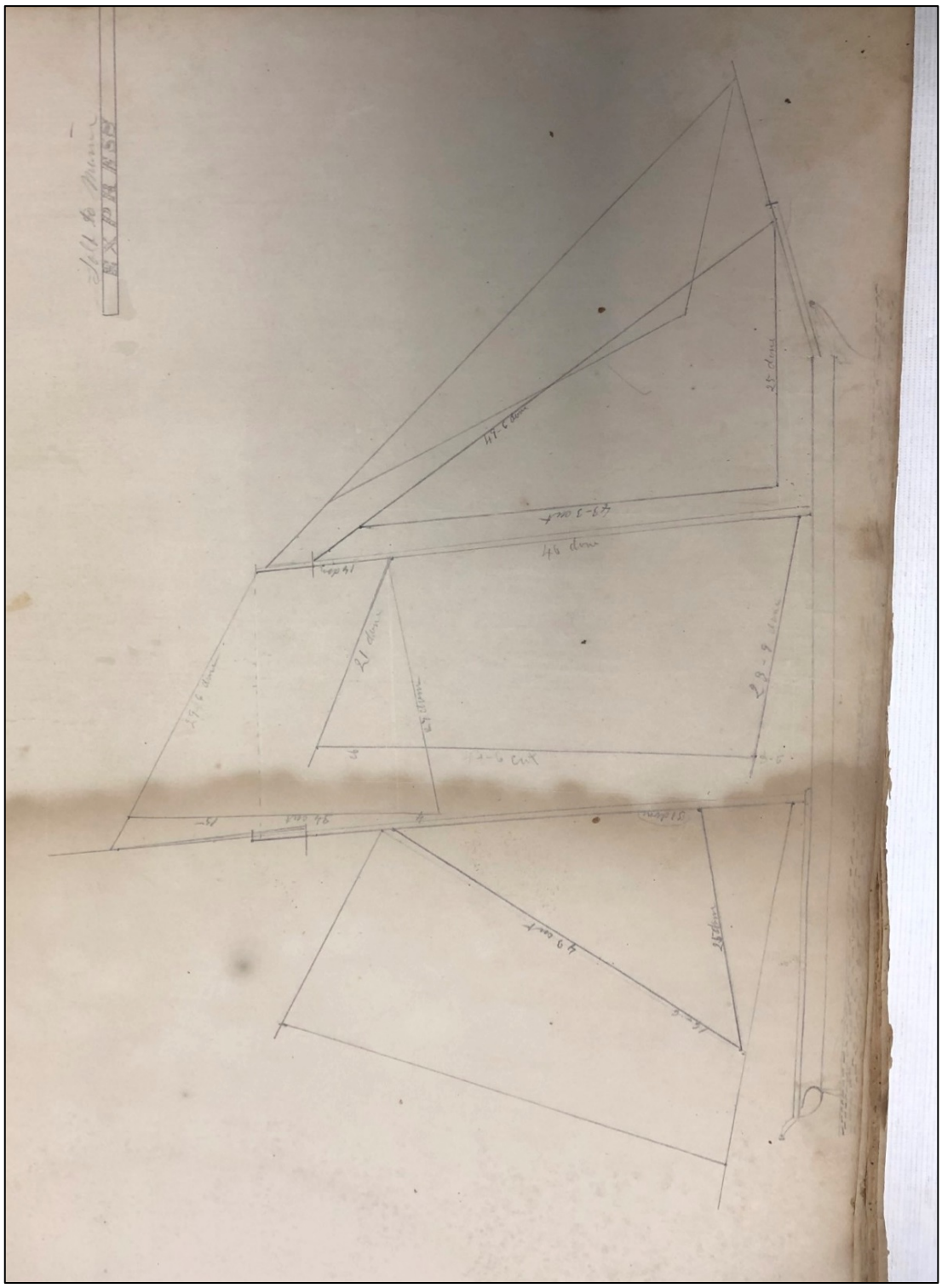


FIGURE 5. Sail plan of *Express* documented by sailmaker Lemuel Cook (1828-1885). Courtesy of Peabody Essex Phillips Library, Item MSS 817+.

Schooner Medford (1844-1846, 1850-1851)

Medford was built at Medford, MA in 1844 by Master Carpenter and Builder George Fuller, and surveyed by Hugh Jameson (Baker 1847:38; National Archives Project 1938:71). With one deck, two masts, a square stern, a billet head, and no galleries, it was built of oak, and had copper and iron fasteners. No insurance registry data is available on *Medford*, but it is known to have been partially owned by the estate of the late Ephraim Cook, as well as partially owned and mastered by Ephraim Cook, while whaling three known voyages in the Atlantic, South Atlantic, and West Indies (Lund et al. 2021).

Fishing Schooners

Three schooners associated with Ephraim Cook, E.K. Cook, and E. & E.K Cook & Co. were examined and defined as "fishing schooners" due to only participating in documented fishing activities throughout the operational history of E. & E.K. Cook & Co. These are the schooners *Bucephalus*, *Ella May*, and *Emporium.*

Schooner Bucephalus (1875-1885)

Bucephalus was built in 1858 and registered as a fishing vessel in *American Lloyd's Register of American and Foreign Shipping* and *Record of American and Foreign Shipping* until 1892. It is uncertain where *Bucephalus* was built, though it is speculated to be either Salisbury, Newburyport, or Provincetown, MA. Featuring one deck, two masts, a square stern, and a billet head, *Bucephalus* was built of oak with copper and iron fasteners. Between 1879-1885 it was co-registered to E. & E.K. Cook & Co. and J. Freeman, having been previously registered to a "Cook & O." in 1875-1877 (Record of American and Foreign Shipping 1877:141, 1885:241).

E.K. and Ephraim Cook owned 1/16 share of the schooner each. *Bucephalus* is thought to have participated in the Provincetown salt banker fishery (National Archives Project 1938:12). Figure 6 depicts *Bucephalus* in Lemuel Cook's *Sailmaker's Plan Book* (1870-1879).

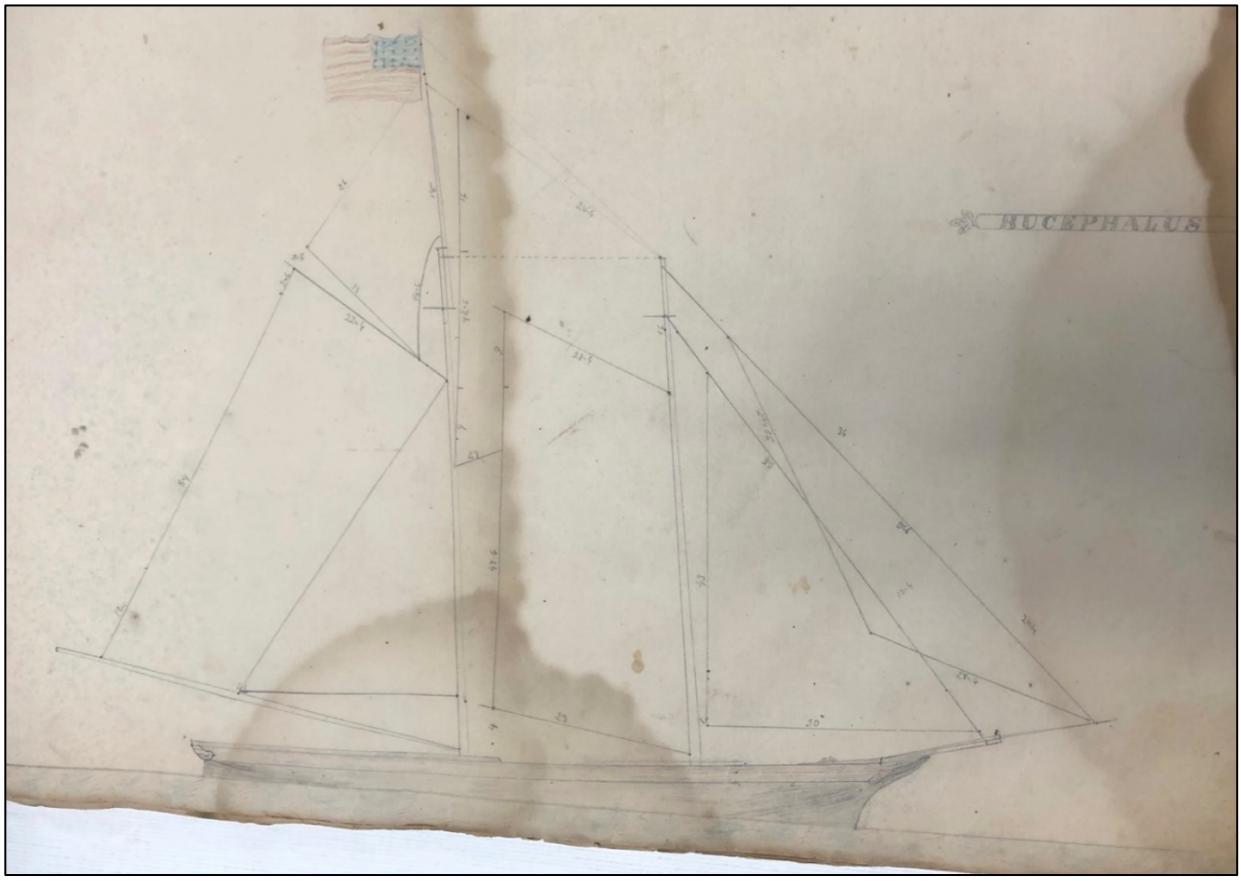


FIGURE 6. Sail plan of *Bucephalus* documented by sailmaker Lemuel Cook (1828-1885). Courtesy of Peabody Essex Phillips Library, Item MSS 817+.

Schooner Ella May (1865-1870)

Ella May was built in Kennebunk, Maine (ME) in 1864. With one deck, two masts, a square stern and billet head, it was built of oak and mixed wood and had copper and iron fasteners. Mixed wood is designated as birch (*Betulaceae* sp.), beech (*Fagus* sp.), maple (*Acer* sp.), or spruce (*Picea* sp.) (Hoadley 1990:3-6). According to *American Lloyd's Register of American and Foreign Shipping*, *Ella May* was registered to "Cook Bros & O." as a fisher, 1865-

1870. E.K., Ephraim, and Ebenezer Cook each owned 2/32 shares of the schooner. In 1879, 1/4 shares of *Ella May* were sold at the Cook's mortgagee's sale, listed as "suitable for the Cod and Mackerel fisheries" and is thought to have participated in the Provincetown salt banker fishery (National Archives Project 1938:116; *Provincetown Advocate* 1879j:3).

Schooner Emporium (1861-1866)

Emporium was built in East Boston, MA in 1846. Built of oak and featuring one deck, two masts, a square stern, and a billet head, it was fastened with copper and iron. According to *American Lloyd's Register of American and Foreign Shipping*, *Emporium* was insured to "E. Cook" as a fishing vessel from 1861-1866. The vessel's whaling voyages between 1857-1868 are largely unaffiliated with E. & E.K. Cook & Co., instead listing Daniel C. Cook as the primary agent or owner, though E.K. Cook is believed to have owned 1/16 shares (National Archives Project 1938:32). In 1868 *Emporium* was sold to the West Indies where it continued to whale under a Provincetown captain (Starbuck 1878:620-621). While it is possible *Emporium* both fished and whaled for E. & E.K. Cook & Co., no documented evidence of such is available.

Whaling & Fishing Schooners

Ten schooners associated with Ephraim Cook, E.K. Cook, and E. & E.K Cook & Co. were examined and defined as both whaling and fishing schooners due to participation in both documented whaling and fishing activities during the operational history of E. & E.K. Cook & Co. These are the schooners *Abby H. Brown*, *Alleghania*, *E. H. Hatfield*, *E. P. Howard*, *Etta G. Fogg*, *Mary E. Simmons*, *Quickstep*, *Robert Raikes*, *Sassacus*, and *Seychelle.*

Schooner Abby H. Brown (1868-1883)

Abby H. Brown, also noted as *Abbie H. Brown*, was built in Salisbury, MA in 1861. With one deck, two masts, a square stern and billet head, it was built of oak and fastened with copper and iron. According to *American Lloyd's Register of American and Foreign Shipping* and *Record of American and Foreign Shipping*, *Abby H. Brown* was registered as a whaling vessel 1871-1873, and a fishing vessel 1874-1884. From 1871-1883, it was co-insured by "Cook & O." and Thomas Hilliard of Provincetown, with Ephraim Cook and E.K. Cook owning 2/32 shares of the schooner (National Archives Project 1938:1). *Abby H. Brown* is thought to have participated in the Provincetown salt banker fishery and completed four known whaling voyages for E. & E.K. Cook & Co. while under its operation from 1868-1883 (Lund et al. 2021).

Schooner Alleghania (1854)

Alleghania, also noted as *Alegania* or *Alleghany*, was built at Truro, MA in 1846. It had one deck, two masts, a square stern, and a billet head, was built of mixed woods (e.g., birch, maple, spruce, and oak), and employed copper and iron fasteners. According to *American Lloyd's Register of American and Foreign Shipping* and *Record of American and Foreign Shipping*, *Alleghania* was registered as a whaling vessel 1865-1874 to Daniel C. Cook, with Ebenezer Cook owning 3/16 shares (National Archives Project 1938:5). In 1854, however, it was managed by E. & E.K. Cook on a 4-month Atlantic voyage, producing 228 bbl. of sperm oil (Starbuck 1878:518-519). *Alleghania* is thought to have also participated in the Provincetown salt banker fishery (National Archives Project 1938:5).

Schooner E. H. Hatfield (1861-1879)

E. H. Hatfield was built in Newburyport, MA in April of 1861. With one deck, two masts, a square stern, and a billet head, it was built of oak with copper & iron fasteners. According to *American Lloyd's Register of American and Foreign Shipping* and *Record of American and Foreign Shipping*, *E. H. Hatfield* was registered as a fishing vessel in 1872, and a whaling vessel in 1879, and 1881-1883. It was insured through E. & E.K. Cook from 1871-1883 where it completed 15 known whaling voyages between 1861 and 1878, until 27/32 of its shares were sold at the Cook's 1879 mortgagee's sale (National Archives Project 1938:24). At sale, *E. H. Hatfield* was advertised as engaged and "well adapted for [whaling]" (*Provincetown Advocate* 1879m:2).

Schooner E. P. Howard (1866)

E. P. Howard was likely built at Essex, MA in 1851. It had one deck, two masts, a square stern, and a billet head. It was primarily owned by E.K. Cook and Ephraim Cook with 8/32 shares each (National Archives Project 1938:25). *E. P. Howard* is thought to have participated in the Provincetown salt banker fishery in addition to whaling but is not listed in any major insurance registries (National Archives Project 1938:25). In 1866 it produced 64 bbl. of whale oil for E. & E.K. Cook & Co. on one known voyage (Lund et al. 2021).

Schooner Etta G. Fogg (1867)

Etta G. Fogg was built in Essex, MA in 1857 or 1861 by Charles O. Story and considered an extreme clipper build with a sharp bow (Chapelle 1973:97). Featuring one deck, two masts, a square stern, and a billet head, it was built of oak and fastened with copper and iron. According to *American Lloyd's Register of American and Foreign Shipping*, *Etta G. Fogg* was registered to

a “Capt. and O.” of Provincetown as a whaling vessel in 1868 but was originally intended for the summer mackerel-fishery and winter oyster trade (Chapelle 1973:97). The schooner was considered a “whaler converted from fisherman” and thought to be involved with the Provincetown salt banker fishery until it was lost with all hands during an 1867 E. & E.K. Cook & Co. whaling voyage (Story 1995:310; National Archives Project 1938:34; Starbuck 1878:620-621). E.K. and Ephraim Cook were listed as owning 4/64 shares of the vessel each. *Etta G. Fogg* is the only known Cook vessel with a professionally rendered lines plan (Chapelle 1973:96).

Schooner Mary E. Simmons (1865-1879)

Mary E. Simmons was built in Essex, MA in 1864. Built of oak and featuring one deck, two masts, a square stern, and a billet head, it was fastened using copper and iron. According to *Record of American and Foreign Shipping*, the schooner was registered as a whaling vessel to E. & E.K. Cook & Co. in 1879. E.K. and Ephraim Cook are thought to have owned 1/16 shares of *Mary E. Simmons* each, with 1/4 shares sold at the Cook’s 1879 mortgagee’s sale (National Archives Project 1938:69). The vessel was advertised for sale into the whaling industry and contemporarily referred to as a “whaler converted from fisherman” (*Provincetown Advocate* 1879m:2; Story 1995:321). *Mary E. Simmons* undertook 12 known whaling voyages with E. & E.K. Cook & Co. from 1865-1879, is thought to have been involved in the Provincetown salt banker fishery, and is known to have hunted elephant seals during an 1866 voyage to the Desolation Islands (Starbuck 1878:614-615). *Mary E. Simmons* is the only Cook vessel known to have been documented by photograph (Mystic Seaport Archives File 1994.53.23).

Schooner Quickstep (1861-1878)

Quickstep was built at Essex, MA in 1854 (National Archives Project 1938:84). It had one deck, two masts, a square stern, a billet head, was built of oak, and employed copper and iron fasteners. According to *American Lloyd's Register of American and Foreign Shipping* and *Record of American and Foreign Shipping*, *Quickstep* was registered as a whaling vessel to E. & E.K. Cook & Co. in 1879 after having been registered to "Cook & O." in 1868, 1870, and 1872. *Quickstep* was registered as a fishing vessel in 1863-1864. Though the name of its agent's name is not given, data collected from Starbuck's *History of the American Whale Fishery* (1878) lists *Quickstep* under E. & E.K. Cook as early as 1861, completing 14 known voyages under the Cooks by 1878. E.K. Cook and Ephraim Cook were thought to have owned 7/64 shares of the schooner each; 30/64 shares were sold at the Cook's 1879 mortgagee's sale with the vessel listed as "well adapted" for whaling (*Provincetown Advocate* 1879m:2).

Schooner Robert Raikes (1849-1874)

Robert Raikes was built in Scituate, MA in 1849. With one deck, two masts, a square stern, and a billet head, it was built of oak and fastened with copper and iron. According to *Record of American and Foreign Shipping*, *Robert Raikes* was registered as a fishing vessel to E. & E.K. Cook in 1873 and 1874 but employed previously by Ephraim Cook on two known whaling voyages from 1849-1851 (Starbuck 1878:464-465, 486-487). On November 17, 1873, five lives were lost when *Robert Raikes* struck Dread Ledge in Swampscott, MA (*Provincetown Advocate* 1873e:2). E.K., Ephraim, and Ebenezer owned 1/8 share of the schooner each (National Archives Project 1938:89).

Schooner Sassacus (1864-1873)

Sassacus was built in Salisbury, MA in 1863. Featuring one deck, two masts, a square stern, and a billet head, it was built of oak, had copper and iron fasteners, and was sheathed with copper in October 1868 for what is presumed the first time, according to available insurance data. According to *American Lloyd's Register of American and Foreign Shipping* and *Record of American and Foreign Shipping*, *Sassacus* was registered as a whaling vessel to E. & E.K. Cook from 1871 to1873 but was also thought to have been involved in the Provincetown salt banker fishery (National Archives Project 1938:94). It undertook six known whaling voyages in the Atlantic and West Indies under E. & E.K. Cook from 1864-1873 before being lost at Cape Negro, Nova Scotia on August 24, 1873 (Starbuck 1878:646-647). E.K. & Ephraim Cook owned 2/32 shares split amongst themselves, while Ebenezer Cook owned 2/32 shares.

Schooner Seychelle (1851-1879)

Seychelle was built in Medford, MA in 1847. Built of oak and featuring one deck, two masts, a square stern, and a billet head, it was fastened with copper and iron. According to *American Lloyd's Register of American and Foreign Shipping* and *Record of American and Foreign Shipping*, *Seychelle* was registered to E. & E.K. Cook & Co. in 1879 and 1881-1882, after previously being registered as a fishing vessel under "Crook & O." from 1857-1871. Data collected from Starbuck's (1878) *History of the American Whale Fishery* indicates *Seychelle* whaled under "E. Cook" as early as 1851. E.K. Cook is thought to have owned 1/16 shares of the schooner, while Ebenezer Cook owned 2/16 shares; 3/16 shares of the vessel sold at the Cook's 1879 mortgagee's sale (National Archives Project 1938:95). *Seychelle* was advertised as "suitable for the Cod and Mackerel fisheries" (*Provincetown Advocate* 1879m:2). On August 17,

1879, *Seychelle* ran aground in Cape Lookout, NC during a hurricane while under operation of an E. Cook (Cape Lookout Signal Service Observer 1879).

An E. & E.K. Cook & Co. Plum-Pudding Vessel Type

As discussed previously, the effectiveness of plum-pudding whaling relied on the use of converted fishing schooners due to their low cost and multifunctional use. As a case study, the 17 schooners examined from E. & E.K. Cook & Co.'s fleet provide a sample from which to identify a representative schooner selected and used successfully for plum-pudding whaling in nineteenth century Provincetown. Using data represented in Table 1, Two-Sample Equal Variance T-Tests compared the vessel tonnage, lengths, breadths, and depths across the three categories of whaling, fishing, and multi-use vessel. Vessel draft was excluded due to a lack of recorded values for E. & E.K. Cook & Co. whaling schooners. As a result of the 12 tests, no significant differences in metrics were found between the Cook fishing, whaling, and multi-use schooners based on each vessel's insurance registration. While small differences were observed in each category's average value, these are not considered statistically significant (Table 5).

TABLE 5. Construction averages of the 17 schooners presented in Table 1. Discrepancies in original data were averaged for comparison.

	Average Tonnage	**Avg. Length (ft)**	**Avg. Breadth (ft)**	**Avg. Depth (ft)**
Whaling Schooners	91.59	74.66	20.62	8.20
Fishing Schooners	84.74	74.00	20.50	7.73
Both	93.75	71.30	21.22	7.67

Construction values representative of the vessel type used for Cook plum-pudding whaling were determined by the whaling and multi-use vessel category data. As a result, a Cook

plum-pudding schooner had on average a tonnage of 92.67, length of 72.98 ft., breadth of 20.92 ft., and depth of 7.93 ft. During its 42 years of operation, E. & E.K. Cook & Co. employed vessels built between 1831 and 1866, almost exclusively constructed at ports other than Provincetown, and four of which were purchased new or within a year of their construction (e.g., *Alcyone*, *E.H. Hatfield*, *Robert Raikes*, and *Medford*).

The average E. & E.K. Cook & Co. plum-pudding vessel would have been built at Essex, MA; bought by the Cooks for whaling at an age of 6.43 years; and would have had a lifespan of 12 years in service to the company. In comparison, the Cook fleet's heavily evidenced and historically confirmed converted whaling schooners (e.g., *Abby H. Brown*, *E.H. Hatfield*, *Etta G.* Fogg, *Express*, *Mary E. Simmons*, *Robert Raikes*, and *Seychelle*) were purchased on average at seven years old and affiliated with the company for 15.71 years. Non-converted vessels were purchased at an average of 5.86 years old and employed for an average of 7.43 years less than their converted counterparts. With half of the examined fleet represented as converted schooners, it is fair to propose that an average Cook plum-pudding vessel might have spent its early life fishing prior to or concurrently with its involvement in whaling. Finally, this vessel would feature a single deck, double masts, square stern, billet head, and be built from oak with copper and iron fasteners.

"The Cook Saga": An Operational Maritime History in the Context of Strategic Response

With an understanding of the schooners primarily employed by E. & E.K. Cook & Co., the following discussion considers the company's operational history. Drawn from over 200 archived newspaper articles (1856-1951) from the *Provincetown Advocate*, *Weekly National Intelligencer*, and *Provincetown Banner* which reference the company, the family, and their fleet, the following discussion presents the known business record of E. & E.K. Cook & Co. and

attempts to assess any change or adaptive response to a decline in whaling. Identifying such patterns in their practices provides an opportunity for social risk analysis of strategy and confirmation of plum-pudding practices.

While E. & E.K. Cook & Co. began in 1837, the few relevant archival materials dated prior to 1853 posed a limitation to this study. As a result, the following compilation begins 16 years into the company's operations. Provided voyage dates do not denote an exact timeframe unless an estimate of months is included. Voyage destinations can also be assumed unspecified unless stated otherwise. While catch data on the Cook's whaling voyages provided by Lund et al.'s (2021) *American Offshore Whaling Voyages: A Database* has been included in the following operational history, additional details per voyage can be found in Appendix B (E. & E.K. Cook & Co. Whaling Voyages).

Early Beginnings, 1850s, and 1860s

The earliest identifiable mention of Ephraim or E.K. Cook's whaling or fishing operations comes from a six-month voyage in 1843 onboard *Esquimaux*, Mastered by Ephraim Cook. Whaling in the Atlantic and West Indies, the voyage yielded 250 bbl. of sperm oil. Between 1844 and 1846, *Medford* completed two voyages to the South Atlantic and an unspecified location, again Mastered by Ephraim Cook. These voyages yielded a total of 440 bbl. of sperm oil and 360 bbl. of general whale oil. It wasn't until an 1849-1850 *Robert Raikes* voyage yielding 110 bbl. of sperm oil, when Ephraim Cook was first listed as a whaling agent. In 1850, Ephraim served as agent to a 14 month Atlantic and West Indies whaling voyage of *Medford*, yielding 154 bbl. of sperm oil and 25 bbl. of whale oil. In 1851, Ephraim again served as agent to two voyages; the first onboard *Robert Raikes* which yielded no oil, and the second a three-month voyage to the North Atlantic of *Seychelle*, returning with 40 bbl. of sperm oil and 20

bbl. of whale oil (Lund et al. 2021). In April of 1853, a grouping of humpback whales was spotted off Race Point, a beach located directly above Provincetown's center at the northern entrance of Cape Cod Bay. Accompanied by the schooner *R.E. Cook*, the two vessels hunted the group and *Seychelle* returned the following day with one humpback whale in tow on each of its sides and anticipating upwards of 30 bbl. of oil (*Whalemen's Shipping List* 1853; *Weekly National Intelligencer* 1853). This reference is the first of inshore whaling by the Cooks. While they used a small schooner to hunt, they returned to shore to process the oil.

In June of 1860, *Quickstep* caught a total of 6,000 fish (unspecified species) near Quebec (*Provincetown Banner* 1860:2). It is unconfirmed whether *Quickstep* was operating under Cook management at this time, however, in 1861 it embarked on an extensive three year and seven-month voyage under E. &. E.K. Cook & Co. to the Gulf of Mexico, yielding 585 bbl. of sperm oil and 195 bbl. of whale oil. The same year, *E.H. Hatfield* took a 12-month journey to the North Atlantic under the Cook company and mastered by Ebenezer Cook, returning with 231 bbl. of sperm oil and 239 bbl. of whale oil. Unless otherwise specified, E. & E.K. Cook & Co. served as agents on all voyages to follow.

Two voyages were taken onboard Cook vessels to unspecified grounds in 1862; these include *Abby H. Brown*, yielding 190 bbl. of sperm oil and 110 bbl. of whale oil, and *E.H. Hatfield*, yielding no oil (Lund et al. 2021). The year 1863 saw only one known voyage; *E.H. Hatfield* whaled on unspecified grounds, yielding 408 bbl. of sperm oil and 54 bbl. of whale oil (Lund et al. 2021). In 1864, *Abby H. Brown*, *Quickstep*, and *Sassacus* each undertook one voyage lasting until 1865, producing a cumulative 679 bbl. of sperm oil and 740 bbl. of whale oil, in addition to 1,350 lbs. of baleen processed onboard *Abby H. Brown* (Lund et al. 2021). In 1865, *Abby H. Brown*, *E.H. Hatfield*, *Mary E. Simmons*, *Quickstep*, and *Sassacus* took a

collective total of six hunting voyages lasting into 1866, with *E.H. Hatfield* having taken two while *Sassacus* remained at sea until 1867. Together, 920 bbl. of sperm oil, 758 bbl. of whale oil, and 800 lbs. baleen was harvested, with *Abby H. Brown* having yielded none. E. & E.K. Cook & Co. produced a total of 627 bbl. of sperm oil and 1,083 bbl. of whale oil between five voyages beginning in 1866. *E.P. Howard*'s travel remained within the calendar year and both *Alcyone* and *Quickstep* returned in 1867; while *Abby H. Brown* undertook a 17-month voyage to the West Indies and *Mary E. Simmons* hunted the Desolation Islands for 19 months returning to Provincetown with a recorded 850 bbl. of elephant seal oil, in addition to whale oil (Lund et al. 2021).

The Cooks began multiple multi-year voyages in 1867, in addition to two single year voyages completed by *Etta G. Fogg*, yielding no oil, and *Quickstep*, procuring 173 bbl. of sperm oil and 175 bbl. of whale oil. *Alcyone* and *E.H. Hatfield* remained at sea until 1868, with *E.H. Hatfield* having spent 20 months hunting the Atlantic, Cape Verde, and West Indies. These trips produced a collective 361 bbl. of sperm oil and 133 bbl. of whale oil. Finally, *Abby H. Brown* and *Quickstep*, again, voyaged independently until 1869, producing a total of 498 bbl. of sperm oil and 255 bbl. of whale oil. In 1868, *Alcyone*, *Mary E. Simmons*, and *Sassacus* each undertook voyages that yielded a total of 1,021 bbl. of sperm oil and 393 bbl. of whale oil. In comparison, one voyage begun in 1869 by *E.H. Hatfield* and two by *Sassacus* produced only 295 bbl. of sperm oil and 15 bbl. of whale oil (Lund et al. 2021).

In 1869 and 1870, the *Provincetown Advocate's* directory regularly mentioned E. & E.K. Cook & Co. under the categories of "ship chandlers and grocers", "sail makers", "ship carpenters and spar makers", "ship smiths", and "riggers" at their 428 Commercial Street location (*Provincetown Advocate* 1869a:3, 1870b:1) (Figure 7).

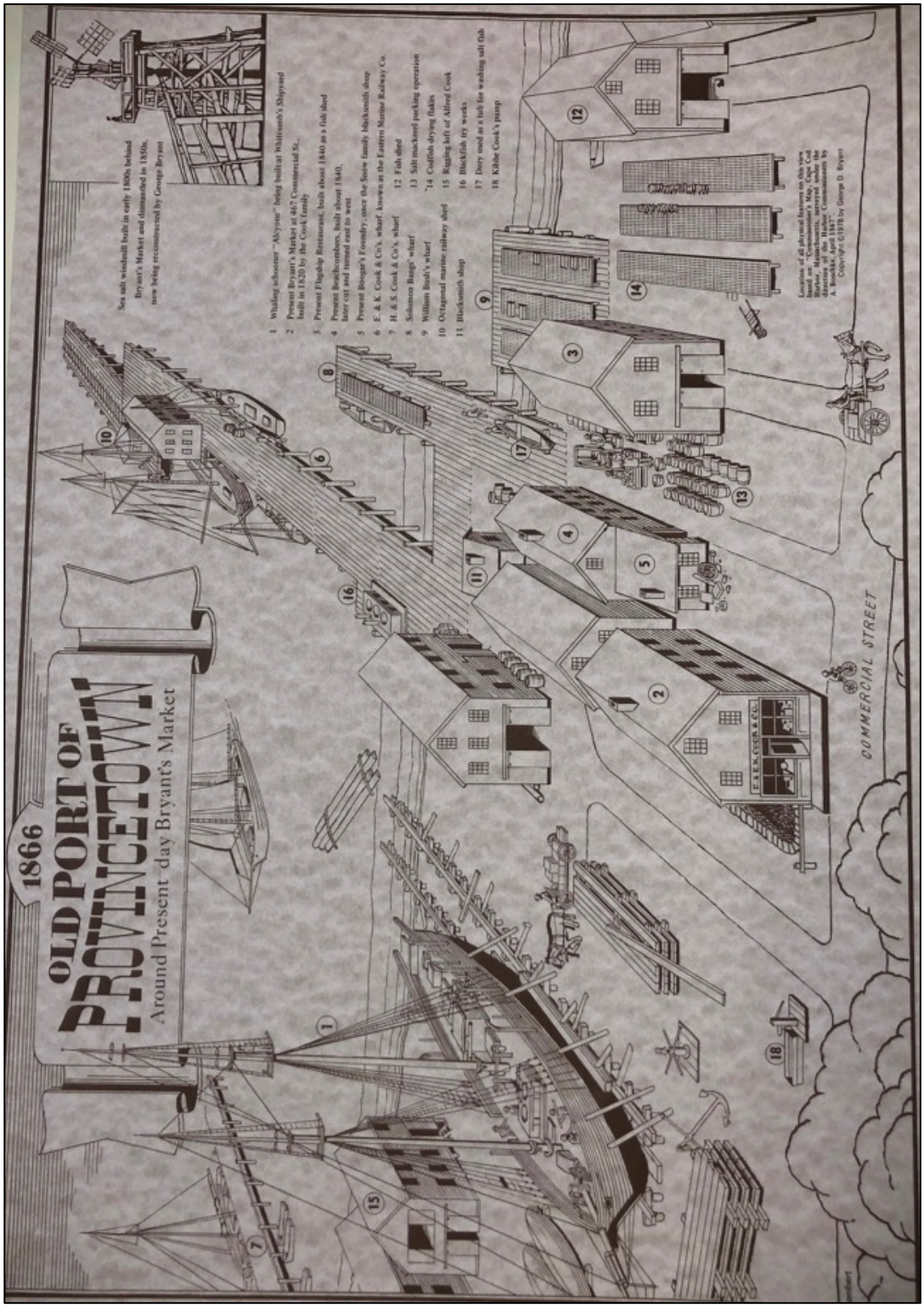


FIGURE 7. Reconstruction of Provincetown's 1866 Commercial Street by George Bryant (1978). Image details many of E. & E.K. Cook & Co.'s structures such as the wharf (*6*), ship store (*2*), and blackfish (pilot whale) tryworks (*16*). Courtesy of Peabody Essex Phillips Library, Item MH 0.230+.

Figure 7 demonstrates the multiple maritime industries undertaken by the Cook family at their Commercial Street complex, as well as their productivity during the beginning of the 1870s. The year 1869 also produced the first confirmed references of E. & E.K. Cook & Co.'s fishing operations in addition to several mentions of its whaling activities. For instance, the March 31, 1869, edition of the *Provincetown Advocate* listed E. & E.K. Cook & Co. as agents to mackerel vessels *Amelia F. Cobb* and *E.P. Howard*, cod vessels *Bucephalus*, *Ella May*, *Robert Raikes*, and *Seychelle*, "Shore Fisherman" *Norma*, and packet vessel *D. Shepherd* (*Provincetown Advocate* 1869b:1*,* 1869c:2). Confirmed Cook vessels of the time, *Alcyone*, *E.H. Hatfield*, *Mary E. Simmons*, *Quickstep*, and *Sassacus* were also listed as local whaling vessels to other, but closely affiliated, agents. Not yet assimilated into the Cook fleet, schooners *Alleghania* and *Express* were listed as part of Provincetown's whaling and *Mary Greenwood* among the mackerel fleet (*Provincetown Advocate* 1869b:1*,* 1869c:2). In late September, the Cook's operated *Robert Raikes* on the Grand Banks yielding 1,200 quintals (qtl.) of cod but remarking an observable decrease of 1/3 in normal catch across vessels on the Grand Banks (*Provincetown Advocate* 1869i:3). Lastly, after reporting a yield of 290 bbl. of sperm oil and 210 bbl. of whale oil in June, *Sassacus* experienced storm damage during a three-month whaling cruise to the Hatteras Grounds, losing its main topsail, stove, bulwarks, and two boats in addition to a sprung foremast and "wood-ends" (*Provincetown Advocate* 1869d:3, 1869g:3, 1869h:3). Up until 1869, only two known short term Cook whaling voyages lasted 6 months or less. Not only did the *Sassacus* voyage signify the beginning of an increase in short-term voyages, but it is also the first confirmed E. & E.K. Cook & Co. voyage to the Hatteras Grounds of NC, and ironically, the first mention of trouble with a NC hurricane.

1870 – 1879

E. & E.K. Cook & Co. regularly ran advertisements, such as Figure 8, in the *Provincetown News* and *Provincetown Advocate* to market the Eastern Marine Railway, their ship chandlery, and their store providing groceries, home goods, and fishing and whaling supplies. In particular, the ads primarily promoted oils, codfish, and mackerel in addition to the standard provisions of beef, pork, lard, tea, coffee, tobacco, and sugar. Aside from consumables, the business marketed waterproof or "oiled" clothing, boots, and shoes to whalers and fishers (*Provincetown News* 1871:1). In addition to personal goods, the Cooks also advertised marine supplies for vessel repair and maintenance such as blocks, line, and paint. Ads ran consistently from as early as December 7, 1870, until January 9, 1879, promoting the company's chandlery and stores at 424 Commercial Street. Similar ads promoted Amasa Taylor's "Ship Smith & Horse Shoer and Wheelwright" located on the premises of E. & E.K. Cook's Wharf (*Provincetown Advocate* 1872a:1) In addition to Amasa Taylor's business, the Cook company wharf and property was also once home to the headquarters of a company that shipped out fresh flounder caught by seine in the 1870s (*Provincetown Advocate* 1949a:2).

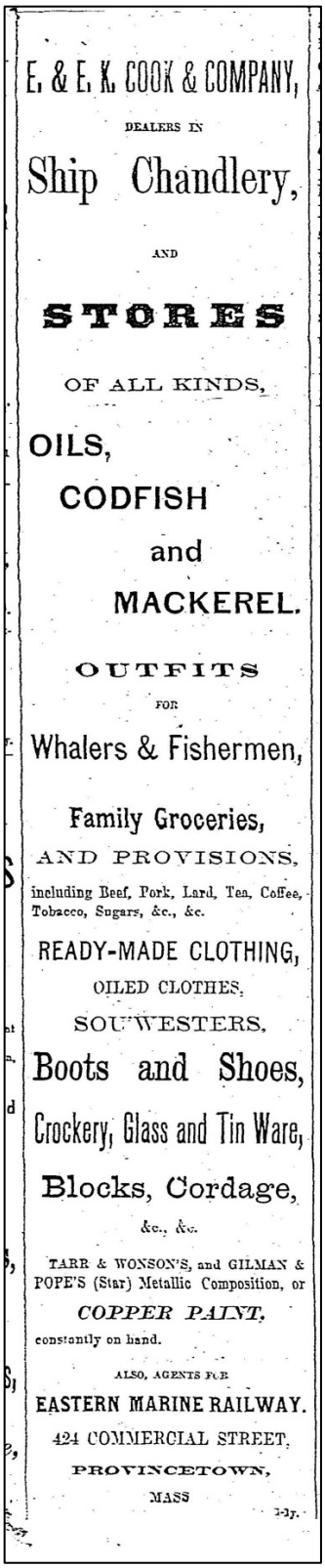


FIGURE 8. January 1871 ad for E. & E.K. Cook & Co. (*Provincetown News* 1871a:1).

In 1870, the *Provincetown Advocate* recorded three Cook whaling voyages; a July arrival following a three-month cruise to Bermuda by *Quickstep* yielding 320 bbl. of whale oil, the arrival of *E.H. Hatfield* to Provincetown in September with 215 bbl. of sperm oil and 15 bbl. of whale oil, and the September arrival of *Quickstep* to New Bedford with 200 bbl. of sperm oil and 220 bbl. of humpback whale oil from the Western Grounds (*Provincetown Advocate* 1870d:2l, 1870f:2, 1870g:2). Lund et al. (2021) record three additional 1870 voyages undertaken by *Mary E. Simmons*, *Quickstep*, and *Sassacus*, the former two producing a cumulative 376 bbl. of sperm oil and 416 bbl. of whale oil from the Atlantic while the latter yielded 65 bbl. of sperm oil and 50 bbl. of whale oil after a six-month voyage to the Atlantic and West Indies. Though not yet under the direction of the Cooks, *Ella May* was recorded fishing the Virgin Rocks of the Grand Banks, *Alleghania* was recorded whaling for both sperm whale and blackfish (pilot whale, *Globicephala* sp.), and *Express* was stated to have been withdrawn from whaling to be employed in the Provincetown's fishing industry (*Provincetown Advocate* 1870e:2, 1870f:2, 1870h:2). In late 1869, Cook vessels *E.H. Hatfield* and *Sassacus* were said to have been withdrawn from whaling to be employed in the West India Trade, however, both vessels would later continue to whale under the Cooks, *E.H. Hatfield* until 1879 and *Sassacus* until 1873 (*Provincetown Advocate* 1870h:2).

In April of 1871, the *Provincetown Advocate* mentioned *Quickstep* being fitted for an eighteen-month whaling voyage followed by announcement of 100 bbl. of sperm oil in June (*Provincetown Advocate* 1871c:2, 1872d:2). In addition to *Quickstep*, the *Provincetown Advocate* also recorded the refit of *Mary E. Simmons* in January, announcing an anticipated fleet of 20 vessels in Provincetown's Atlantic whale fishery, as well as the 250 and 200 bbl. spring catch of humpback oil caught by *Mary E. Simmons* and *Alcyone*, respectively (*Provincetown*

Advocate 1872d:2, 1872e:2). In 1873, no catch data relevant to E. & E.K. Cook was recorded by the *Provincetown Advocate*. The newspaper did, however, document *Seychelle* as a fishing vessel with an announcement of its arrival from Boston, *E.H. Hatfield's* arrival from the Hatteras Grounds, the loss of *Robert Raikes* and five of its crew in Swampscott, MA, and finally the arrest of a minor stowaway onboard *Quickstep* (*Provincetown Advocate* 1873b:2, 1873c:2, 1873d:2, 1873e:2). In 1874, *Mary E. Simmons* left Provincetown in February for the West Indies, gone "humpbacking", and later regaled the *Provincetown Advocate* audience with a tale of abandoned whale boats and crew (*Provincetown Advocate* 1874c:2, 1874e:2). An interesting examination into vessel operations once most of the crew had left to pursue a whale, the article explained how *Mary E. Simmons* became separated from its whale boats when left in the hands of a ship keeper, cook, and steward unversed in navigation and little to no wind.

Lund et al. (2021) outlines company activities between 1871 and 1874, recording a total of 12 whaling voyages split amongst 4 vessels: *Mary E. Simmons* (3), *Quickstep* (2), *Alcyone* (3), and *E.H. Hatfield* (4). Following a peak in productivity between 1865-1870, yield began to decline cumulatively across voyages, with the entire fleet harvesting 2,165 bbl. of sperm oil and 1,369 bbl. of whale oil in three years. All specified voyages between 1871-1874 whaled the Atlantic Grounds, except for *E.H. Hatfield* undertaking a six-month unspecified voyage, followed by a nine-month voyage in the Atlantic (Lund et al. 2021).

The last data set sourced from Lund et al. (2021) covers E. & E.K. Cook & Co. operations between 1875-1879, one of the more tumultuous periods in the company's history due to debt insolvency and eventual bankruptcy. In 1875, four Cook vessels made six whaling voyages producing 690 bbl. of sperm oil and 15 bbl. of whale oil. While *Mary E. Simmons* made two voyages to the Atlantic and *Alcyone* made one, *E. H. Hatfield* made one unspecified voyage,

and *Quickstep* made two, one to also hunt the Atlantic Grounds and the other a nine-month voyage to the Atlantic, West Indies, and Gulf of Mexico. The 1875 articles retrieved from the *Provincetown Advocate* reference the same six voyages with an addition of one *E.H. Hatfield* voyage, as well as mention of the seasonal whaling report which considered 1875 to be a good season with fair oil prices (*Provincetown Advocate* 1875b:2, 1875c:2). By October, Provincetown harvested a total of 2,783 bbl. of sperm oil and 1,062 bbl. of blackfish oil (*Provincetown Advocate* 1875c:2). In 1876, the *Provincetown Advocate*'s only mention of relevant items involved *Mary Greenwood* ashore and damaged following a series of heavy storms (*Provincetown Advocate* 1876c:2). It is unclear, however, whether *Mary Greenwood* was affiliated with the Cook's at the time.

1876 and 1877 saw the largest number of short-term voyages with four of the seven cruises each totaling ten months or less. The seven total voyages were made by four vessels, *Alcyone*, *E.H. Hatfield*, *Mary E. Simmons*, and *Quickstep* with *Alcyone* and *Quickstep* hunting the Atlantic, *Mary E. Simmons* in the North Atlantic, and *E.H. Hatfield* in the Atlantic, West Indies, and Gulf of Mexico. In addition, both *Mary E. Simmons* and *Quickstep* visited "Whaling Grounds 90" in 1877. Overall, the seven voyages produced a sum total of 1,483 bbl. of sperm oil and 670 bbl. of whale oil (Lund et al. 2021). The year 1877 also provided a vessel directory within the January 24 edition of *Provincetown Advocate*. Part of the Barnstable County Census, the directory detailed the 188 vessels registered in Barnstable County and their accompanying tonnage. The Cook vessels noted as engaged in the whaling industry were *Alcyone* (tonnage of 92.22), *E.H. Hatfield* (tonnage of 88.82), *Mary E. Simmons* (tonnage of 104.81), and *Quickstep* (tonnage of 93.95) (*Provincetown Advocate* 1877a, 1877b). The Cook vessels recorded but

unspecified to a fishery were *Abbie H. Brown* (tonnage of 95.12), *Express* (tonnage of 69.99), and *Seychelle* (tonnage of 47.07) (*Provincetown Advocate* 1877a, 1877b).

In addition to a vessel census, the same edition gave an overview of Provincetown's 1876 fisheries report listing a total of 21 vessels engaged in whaling, with 103,194 gallons (gal.) of sperm oil produced (with a market value of $144,471), a total of 51,717 gal. of whale oil produced ($31,031), and 68,070 gal. of other miscellaneous oil ($40,087). Aside from whaling, Provincetown produced 72,860 cwt. of cured codfish ($327,823), 16,911 bbl. of mackerel ($152,199), and $85,800 in other fresh fish for a total 1876 fisheries profit of $812,513 (*Provincetown Advocate* 1877a, 1877b). The June 6 edition of the *Provincetown Advocate* offered additional insight into the 1877 vessel census and Provincetown's local fisheries, listing 48 vessels engaged in cod fishing of the Grand Banks and 48 bankers (*Provincetown Advocate* 1877c:2). The schooners *Abbie H. Brown* (tonnage of 95.12), *Bucephalus* (tonnage of 69.91), and *Ella May* (tonnage of 96.44) are all listed as bankers with unspecified agents (*Provincetown Advocate* 1877c:2). Aside from two announcements of harvested sperm and whale oil from *Mary E. Simmons* (e.g., 170 bbl. of sperm oil and 800 bbl. of whale oil) and *E.H. Hatfield* in Fayal, Azores (e.g., 125 bbl. of sperm oil and 50 bbl. of whale oil), the rest of the Cook-affiliated vessels mentioned for 1877 concern anticipated plans and changes for the upcoming season (*Provincetown Advocate* 1877d:2, 1877e:2). In October, the addition of *Express* to the Provincetown whaling fleet was announced under principal agents and owners E. & E.K. Cook & Co. and a planned 8-month winter cruise; a Captain Fisher of *Alcyone* announced an upcoming 18-month winter cruise; a Captain Rich of *Mary E. Simmons* announced an upcoming 8-month winter cruise; a Captain Manley of *Quickstep* revealed intentions to set sail immediately for a 12-

month winter cruise; and finally a Captain Cornell of *E.H. Hatfield* announced the landing of oil in St. Michaels, Azores (*Provincetown Advocate* 1877e:2, 1877f:2, 1877g:2).

1878 is the last year of documented Cook whaling activity available through Lund et al. (2021). Split between six vessels and six voyages, E. & E.K. Cook & Co. harvested a mere 295 bbl. of sperm oil and 475 bbl. of whale oil. Of those voyages, *E.H. Hatfield* hunted in the Atlantic and on Whaling Grounds 90, while *Quickstep* and *Seychelle* cruised unspecified grounds for two months; each of them returned "clean", or empty. In addition, *Alcyone* hunted the Atlantic, *Mary E. Simmons* travelled to the North Atlantic and Whaling Grounds 90, and *Express* whaled the Atlantic, Cape Verde, and Whaling Grounds 90 over the course of six months. The *Provincetown Advocate* noted seven additional landings of oil in 1878 split between *Express* (30 bbl. of blackfish oil from St. Vincent and a Hatteras voyage yielding 25 bbl. of sperm oil and 200 bbl. of humpback oil), *Quickstep* (4 small sperm whales from the 12/40 Ground off the Atlantic coast of Brazil and additional unspecified 25 bbl. of sperm oil), *Mary E. Simmons* (60 bbl. of sperm oil and one 20 bbl. whale towed alongside as well as a Hatteras voyage yielding 100 bbl. of sperm oil, 250 bbl. of blackfish oil, and one whale towed aside) (*Provincetown Advocate* 1878e:2, 1878g:2, 1878h:2, 1878j:2, 1878k:2, 1878l:2).

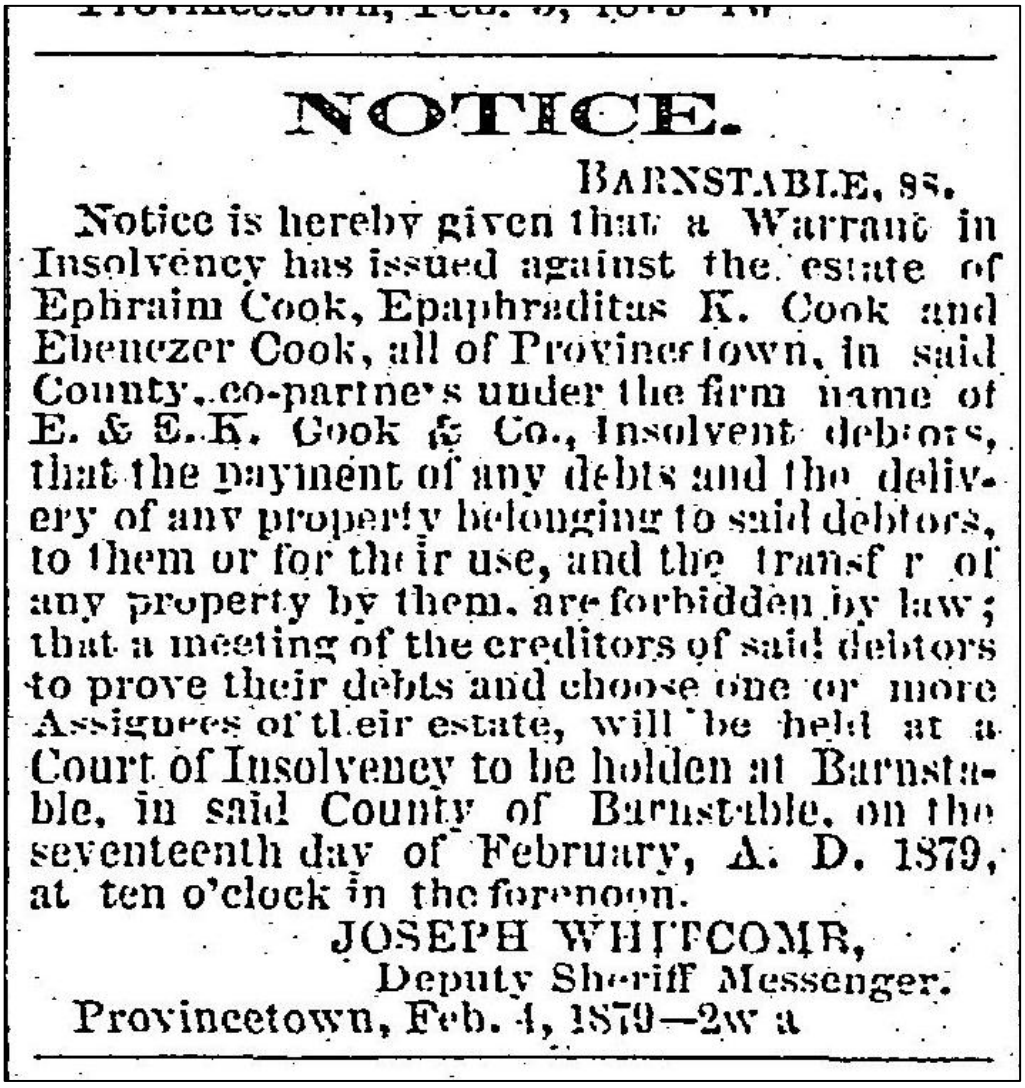
Other remarks from 1878 detail the readiness of whaling schooners *Express*, *Mary E. Simmons*, *Alcyone* for sea following winter repairs (*Provincetown Advocate* 1878d:2, 1878f:2). Over the course of five months, *E.H. Hatfield* arrived in Barbados, was rapidly refit for a short North Atlantic cruise under acting agent E.K. Cook, and appeared to voyage to the Hatteras grounds where *Quickstep* was also hunting at the time (*Provincetown Advocate* 1878f:2, 1878i:2, 1878k:2). Finally, in April of 1878, *Mary E. Simmons* experienced heavy weather causing the

loss of its jib boom and near loss of its boats while 300 miles from Guadeloupe (*Provincetown Advocate* 1878f:2).

During the early months of 1879, the *Provincetown Advocate* documented some of the final E. & E.K. Cook voyages prior to the company's bankruptcy in late spring. Between January and April six landings were made across five vessels; those included *E.H. Hatfield* (95 bbl. of sperm oil), *Express* (25 bbl. of sperm oil and 187 bbl. of whale oil), *Mary E. Simmons* (101 bbl. of sperm oil and 238 bbl. of whale oil), *Quickstep* (231 bbl. of sperm oil and 3 bbl. of whale oil), and *Alcyone*, having recorded one voyage to Tobago that yielded 30 bbl. of sperm oil and one humpback whale, and one voyage to Barbados that yielded 30 bbl. of sperm oil and 225 bbl. of humpback oil (*Provincetown Advocate* 1879q:2, 1879r:2, 1879s:2).

Shipwrecked on Land and Water – Insolvency, Bankruptcy, and Environmental Destruction

Earlier in October of 1878, E. & E.K. Cook & Co. owed $570.11 in taxes from a calculated profit of about $27,800, according to the regulated rate of taxation of $20.50 for every $1,000 (*Provincetown Advocate* 1878c:1). In February of 1879, a notice was placed in the *Provincetown Advocate* by the Deputy Sheriff Messenger issuing a "Warrant in Insolvency" to Ephraim, E.K., and Ebenezer Cook, all of whom were co-partnered under the E. & E.K. Cook & Co. firm. This debtor's notice depicted in Figure 9 announced a meeting in the Barnstable Court of Insolvency scheduled for February 17, 1879, to prove debts and establish estate assignees (*Provincetown Advocate* 1879f:3).



NOTICE.

BARNSTABLE, ss.

Notice is hereby given that a Warrant in Insolvency has issued against the estate of Ephraim Cook, Epaphraditas K. Cook and Ebenezer Cook, all of Provincetown, in said County, co-partners under the firm name of E. & E. K. Cook & Co., Insolvent debtors, that the payment of any debts and the delivery of any property belonging to said debtors, to them or for their use, and the transfer of any property by them, are forbidden by law; that a meeting of the creditors of said debtors to prove their debts and choose one or more Assignees of their estate, will be held at a Court of Insolvency to be holden at Barnstable, in said County of Barnstable, on the seventeenth day of February, A. D. 1879, at ten o'clock in the forenoon.

JOSEPH WHITCOMB,
Deputy Sheriff Messenger.

Provincetown, Feb. 4, 1879—2w a

FIGURE 9.Warrant in insolvency issued to Ephraim, E.K., and Ebenezer Cook (*Provincetown Advocate* 1879f:3).

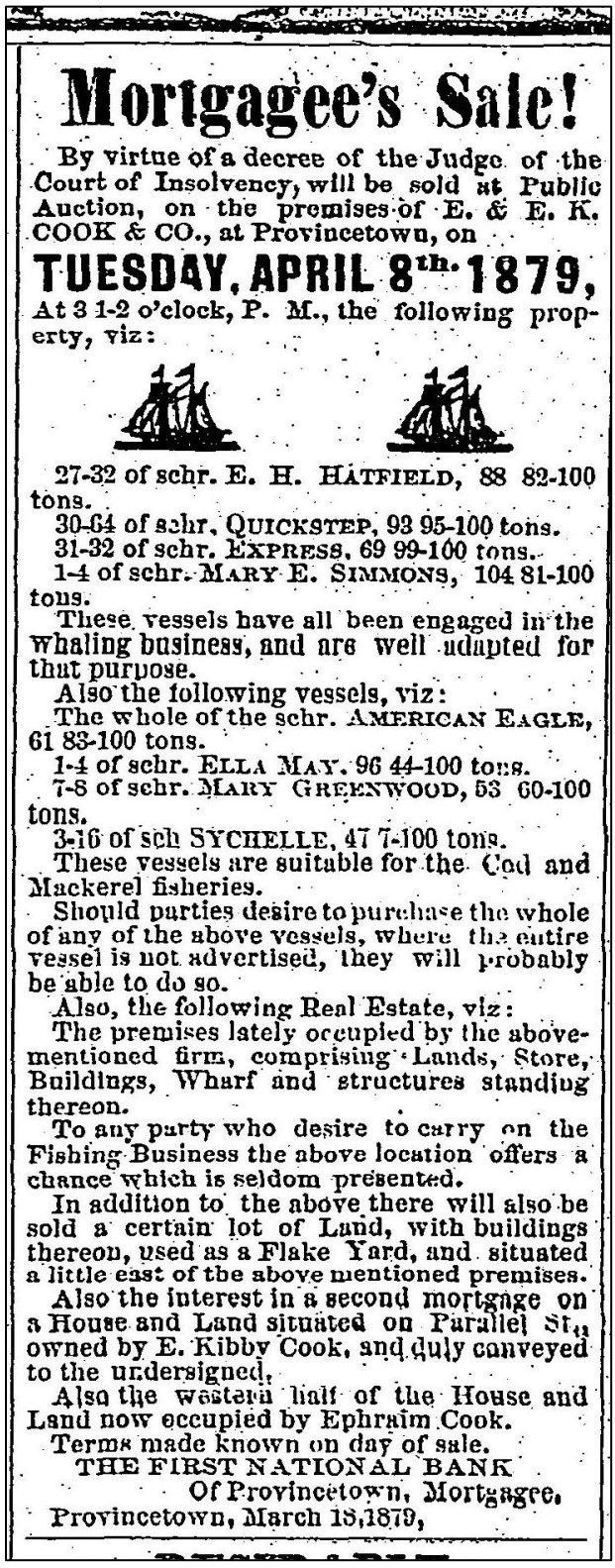
At the meeting, Joshua M. Howes of Yarmouth, and John D. Hilliard and B. F. Hutchinson of Provincetown were appointed as assignees of the Cooks' estate (*Provincetown Advocate* 1879g:3). In September of 1880, the assignees were ordered to pay a dividend of 6.15 cents on the $1.00 to the Cooks' creditors (*Provincetown Advocate* 1880f). Shortly after the property sales and assignees notice, the Cooks' bankruptcy and business was rarely mentioned in local news. In 1952, however, the Town of Provincetown Office of the Collector of Taxes published a notice in the *Provincetown Advocate* to the heirs of E.K. Cook. Due to nonpayment of taxes, interest, and incurred expenses and costs in 1950 and 1951 summing to $47.50, a parcel of land owned by the E.K. Cook estate was to be taken by John A. Dutra, Collector of Taxes for the Town of Provincetown (*Provincetown Advocate* 1952:7). This implies that the Cooks had maintained this parcel of land more than 70 years after bankruptcy.

Following the 1879 insolvency notice, the First National Bank of Provincetown petitioned for certain mortgaged property belonging to the Cooks to be sold at auction and the proceeds applied to the accumulated debt. The first assignees' sale occurred on March 7, 1879, where two horses, three jersey cows, two yearlings, three carts, two carriages, one wagon, and two harnesses of the E. & E.K. Cook & Co. estate were sold at public auction (*Provincetown Advocate* 1879i:3). On March 10, the Cooks appeared in the Barnstable Court of Insolvency (*Provincetown Advocate* 1879h:3). Their largest mortgagee's sale and public auction of maritime-related property occurred on April 8th and 9th. Partial and entire shares of eight fishing and whaling schooners were sold, in addition to the majority of the Cooks' Commercial Street complex, including residential properties of E.K. and Ephraim, multiple lots of commercial and pasture- land, the store, the flake yard, the wharf, and its associated structures and buildings on

property (*Provincetown Advocate* 1879l:3). The available property located in Provincetown was officially denoted as follows:

> Commencing at the southwestern corner of the premises on Parallel Street at its junction with Temple Street; running thence north, twenty-three degrees west by said Temple Street, sixty feet to a bound by land of Ephraim Cook and others; thence north sixty-two degrees east, fifty-three feet by land of said Cook and others, to a bound; thence south twenty-three degrees east, sixty feet by land of said Cook and others, to Parallel Street, aforesaid; and thence south, sixty-two degrees west, fifty-three feet by said street to the first named bound (*Provincetown Advocate* 1879l:3).

In addition, the April 9th auction also featured three acres of land owned in Truro, MA; the goods sold in the company's chandlery and grocery including "600 new and second-hand fish barrels, salt, casks, rigging"; four mackerel seines; three seine boats; and the machinery and chain of the Eastern Marine Railway Company (*Provincetown Advocate* 1879k:3, 1879p:3). *Provincetown Advocate* advertisements (Figure 10) for the sales highlighted this opportunity to any party that "[desired] to carry on the fishing business", noting the probability of selling vessels in their entirety rather than partial shares (*Provincetown Advocate* 1879j:3). Advertisements for the mortgagee's sale were included in the local newspaper for weeks leading up to auction.



Mortgagee's Sale!

By virtue of a decree of the Judge of the Court of Insolvency, will be sold at Public Auction, on the premises of E. & E. K. COOK & CO., at Provincetown, on

TUESDAY, APRIL 8th, 1879,

At 3 1-2 o'clock, P. M., the following property, viz:

27-32 of schr. E. H. HATFIELD, 88 82-100 tons.

30-64 of schr. QUICKSTEP, 93 95-100 tons.

31-32 of schr. EXPRESS, 69 99-100 tons.

1-4 of schr. MARY E. SIMMONS, 104 81-100 tons.

These vessels have all been engaged in the whaling business, and are well adapted for that purpose.

Also the following vessels, viz:

The whole of the schr. AMERICAN EAGLE, 61 83-100 tons.

1-4 of schr. ELLA MAY, 96 44-100 tons.

7-8 of schr. MARY GREENWOOD, 53 60-100 tons.

3-16 of sch SYCHELLE, 47 7-100 tons.

These vessels are suitable for the Cod and Mackerel fisheries.

Should parties desire to purchase the whole of any of the above vessels, where the entire vessel is not advertised, they will probably be able to do so.

Also, the following Real Estate, viz:

The premises lately occupied by the above-mentioned firm, comprising Lands, Store, Buildings, Wharf and structures standing thereon.

To any party who desire to carry on the Fishing Business the above location offers a chance which is seldom presented.

In addition to the above there will also be sold a certain lot of Land, with buildings thereon, used as a Flake Yard, and situated a little east of the above mentioned premises.

Also the interest in a second mortgage on a House and Land situated on Parallel St., owned by E. Kibby Cook, and duly conveyed to the undersigned.

Also the western half of the House and Land now occupied by Ephraim Cook.

Terms made known on day of sale.

THE FIRST NATIONAL BANK
Of Provincetown, Mortgagee.

Provincetown, March 18, 1879.

FIGURE 10. Example of the Cooks' mortgagee's sale advertisement ran in the *Provincetown Advocate* (*Provincetown Advocate* 1879j:3).

At the property sale, shares of schooners *E. H. Hatfield*, *Quickstep*, *Mary Greenwood*, and the entirety of *American Eagle* were purchased by Stephen Cook for $500 each. Five other Cook schooners were sold at auction, with shares of *Express* going to G. N. Hancox of Stonington, CT, for $2000; shares of *Ella May* going to Edwin Mayo for $475; shares of *Bucephalus* going to John Swift for $90; and the entirety of *Mary E. Simmons* sold to Lourn Snow of New Bedford for $1875. The fifth schooner, *Seychelle*, was seemingly purchased in its entirety by one of the company's co-partners and Cook brother, Ebenezer Cook for $250 (*Provincetown Advocate* 1879m:2). Other sales included the company's store property, associated buildings, and a residential property owned by E.K. Cook, bought by Stephen Cook for $1,850; C. H. Dyer purchased the flake yard for $500; and the remaining whaling gear for $1,290. In total, the auction amounted to $11,130 (*Provincetown Advocate* 1879n:2).

In May of 1879, however, property thought to have already been purchased by Stephen Cook in April went back to auction. On May 29, shares of *Quickstep*, its casks, and its associated whaling craft, boats, chronometer, and gear were put up for public sale alongside shares of *Mary Greenwood*, *American Eagle*, and other hardware, goods, nets, and boats used by E. & E.K. Cook & Co. for its chandlery and mackerel fishing operations (*Provincetown Advocate* 1879o:3).

Despite the financial trouble and property sale, on April 24, 1879, E. & E.K. Cook & Co. sent *Seychelle* on a "whaling and fishing expedition" to the Hatteras Grounds. This cruise was captained by Ebenezer Cook and crewed by E.K. Cook, John Atkins, Sam Fisher, Clarence H. Hill, Geo Backus, and an unnamed Portuguese sailor (*Provincetown Advocate* 1879s:2). On June 26, their arrival at Morehead City, NC was announced (*Provincetown Advocate* 1879s:2, 1879t:2). During this time, *Quickstep* prepared and set sail for a 15-month whaling cruise to the

Western Islands via Hatteras, Charleston, and the 12/40 Grounds, although the vessel was no longer owned by the Cooks (*Provincetown Advocate* 1879u:2, 1879v:2).

On August 21, 1879, *Seychelle* was announced ashore and full of water at Cape Lookout, NC having wrecked in a hurricane on August 17 (*Provincetown Advocate* 1879w:2). At the time *Seychelle* was anchored within Cape Lookout bight before it broke its anchor chains and was driven ashore. *Seychelle* was insured by Atlantic Mutual Fire & Marine Insurance Company located at 83 Commercial Street, Provincetown. The company insured only upon marine risks, including "freighting and fishing vessels, fishing outfits, [and] merchandise", among others, according to their advertisement (*Provincetown Advocate* 1879b:3). Having thus lost *Seychelle*, the only vessel to remain affiliated with E. & E.K. Cook after 1879 was *Alcyone*, which completed two known voyages; first in September of 1879 (180 bbl. of sperm oil and 225 bbl. of blackfish oil) and then in September of 1880 (40 bbl. of sperm oil) (*Provincetown Advocate* 1879y:2, 1880l:3). Likely, the Cook's had little to no influence over *Alcyone* following 1879 and the continuation into 1880 remains speculative due to the potential for outdated registries and documentation.

Conclusion and Summary: The Cook Saga Remembered (1880s Onward)

According to data listed in Lund et al.'s (2021) *American Offshore Whaling Voyages: A Database*, the known E. & E.K. Cook & Co. voyages between 1840-1845 produced at least 460 bbl. of sperm oil and 60 bbl. of whale oil. The overall yield increased to at least 340 bbl. of sperm oil and 300 bbl. of whale oil during the years 1845-1850, then declined to 194 bbl. of sperm oil and 53 bbl. of whale oil between 1850-1855, before decreasing to 0 known production between 1855-1860. E. & E.K. Cook & Co. oil and baleen production expanded dramatically, however, to 2,092 bbl. of sperm oil, 1,338 bbl. of whale oil, and 1350 lbs. of baleen between

1860-1865. Production peaked between 1865-1870 with 3,896 bbl. of sperm oil, 2,812 bbl. of whale oil, and 800 lbs. of baleen. From 1870-1875, the yield decreased to 2,606 bbl. of sperm oil and 1,835 bbl. of whale oil, and further dropping to 2,468 bbl. of sperm oil and 1,160 bbl. of whale oil between 1875-1880 (Figure 11).

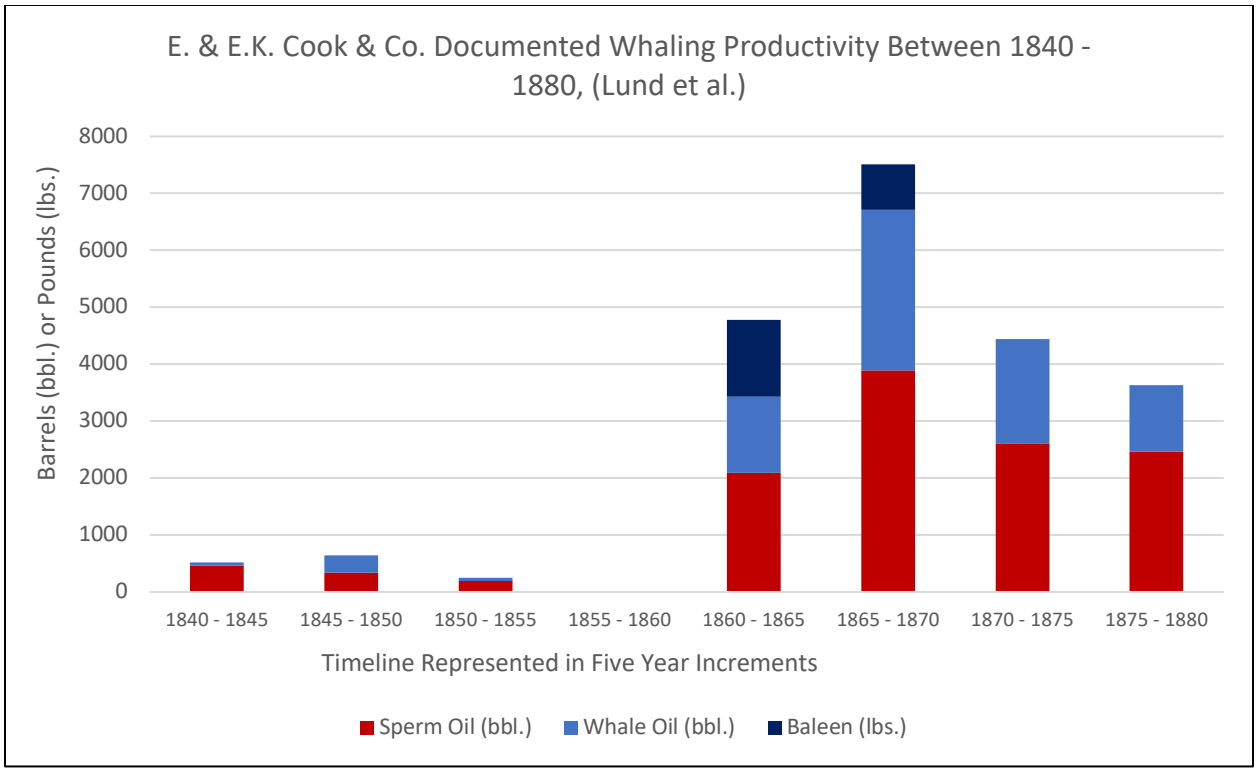


FIGURE 11. Documented whale product yield of E. & E.K. Cook & Co. between 1840-1880. Data is split into standard five-year increments. Voyages on the cusp of a division were slotted into the category representing the year in which the vessel began its whaling voyage. Data originates solely from Lund et al., *American Offshore Whaling Voyages: A Database* (2021), due to duplicates and typos present in archival *Provincetown Advocate* material.

While bias exists in the data due to the small sample size and potential for misprinted and repeated information, trends observed in documented insurance registries and the *Provincetown Advocate* article confirm a peak in productivity between 1865 and 1870. This timeframe also coincides with the period of the Cook's fleet at its largest, 1868-1873, after which it began to decline until 1879 (Figure 12). Following the decline of whaling shortly after 1851 and the

discovery of petroleum, it appears the Cooks were able to implement a profitable strategy of plum-pudding whaling in the 1860s and 1870s, as demonstrated by previously discussed trends in vessels, operations, and catch discussed in this chapter. Following bankruptcy, while the Cooks may have maintained an affiliation with their previous vessels, the appearance of E. & E.K. Cook & Co. on registries dated past 1879 are likely due to out-of-date documentation as evidenced by records presented on the 1879 estate sale(s).

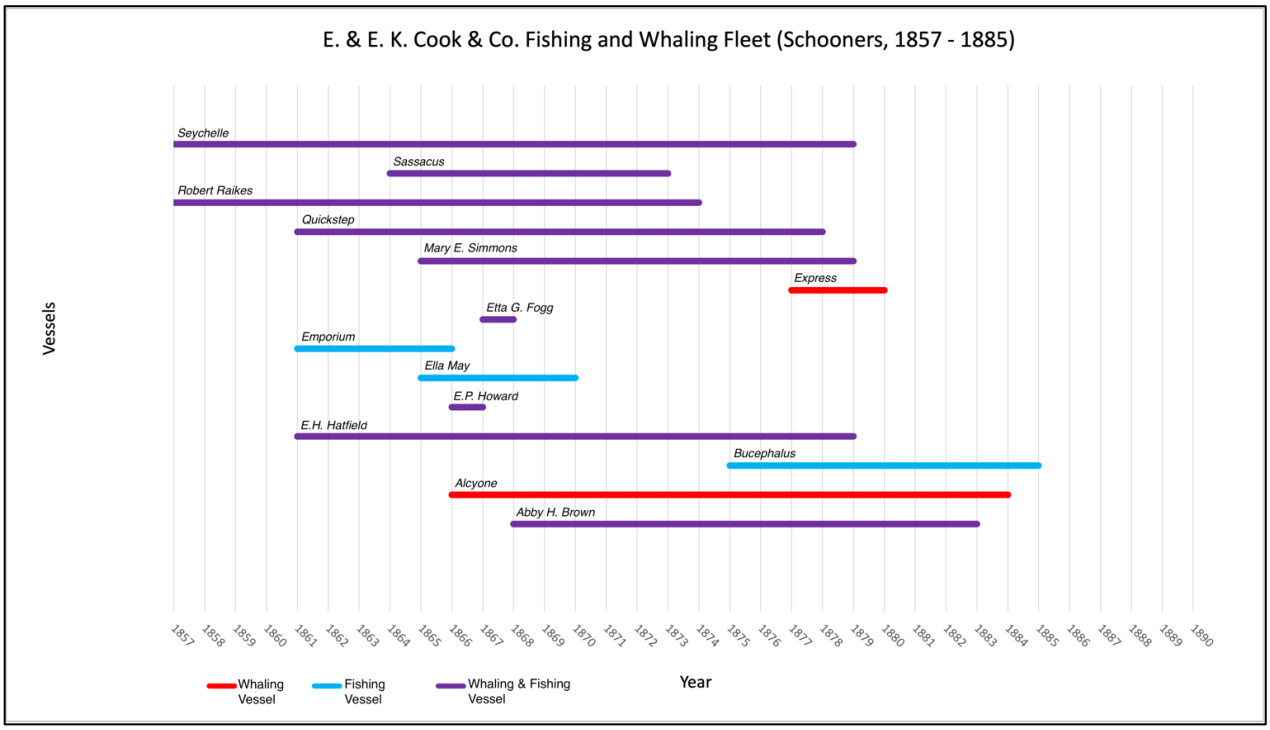


FIGURE 12. E. & E.K. Cook & Co. associated fleet (1857 – 1885). Sourced from *American Lloyd's Register of American and Foreign Shipping registries* (1859-1883), *Record of American and Foreign Shipping registries* (1871-1900), *New-York Marine Register* listings (1857 & 1858), and the National Archives Project: Division of Women's and Professional Projects, Works Progress Administration (National Archives Project 1938). *Alleghania* (1854), *Esquimaux* (1843), and *Medford* (1844-1851) excluded due to lack of registration data associated with E. & E.K. Cook & Co.

Enough evidence exists to observe a trend of decreasing voyage length in data gathered from Lund et al. (2021) pertaining to the 21 Cook recorded voyages with known durations between 1843 to 1878. Of those 21 cruises, 12 lasted for 10 months or less. Using the same five-

year increments as observed previously, trends can be assessed and identified. In the year 1843, E. & E.K. Cook & Co. undertook a single voyage lasting six months. In 1850 and 1851, the company undertook two voyages with an average of 8.5 months in duration. The year 1861 saw two voyages of 43 and 12 months, respectively. Though producing an average of 27.50 months, this data and that for the years previous lack statistical significance due to small sample size and large variance. The period of 1866-1867, however, saw four voyages with an average duration of 19.25 months. Compared to 1870-1873 with an average of seven-month cruises, it appears that voyage duration became not only more consistent but shorter. Finally, nine voyages undertaken between 1875-1878 for an average duration of 9.67 months. Although this is seemingly consistent with plum-pudding strategy, further research on known plum-pudding voyages would help to determine statistically significant trends in decreasing voyage duration in the late nineteenth century through increased sample size and available comparison.

While the status of the Cook family had disintegrated from its once strong grip on nineteenth century maritime Provincetown, small reminders of their influence remained scattered within the *Provincetown Advocate* until 1945 and mention of their vessels remained as recently as 1964 (*Provincetown Advocate* 1945a:2, 1945b:2, 1964:3). In February of 1880, it was reported that a severe storm blew a packing building off E. & E.K. Cook & Co. wharf, destroying it (*Provincetown Advocate* 1880r:2). And in April of 1880, *Abbie H. Brown* was overhauled and refit at E. & E.K. Cook & Co. wharf while *Bucephalus* was refit at Alfred Cook's wharf (*Provincetown Advocate* 1880e:2). A January 1939 comment remarked on the obscurity of the name *Seychelle*, while "throwback" articles mentioned stories of landed oil, annual fishery predictions, and stories of shipwrecks, salvage, and near brushes with death at sea (*Provincetown Advocate* 1880r:2, 1939:2, 1945b:2, 1949b:4, 1951d:4, 1951e:6). One of the final

articles pertaining to the Cook's focused on remembering *Mary E. Simmons*, which wrecked off the Cape Verde Islands in 1909 while employed in the packet business between Cape Verde and New Bedford. Harkening back to its earliest voyages in the far south seas hunting elephant seal oil, *Mary E. Simmons* represented 55 years of service to a continuously changing industry, transitioning from sealing to fishing to whaling and finally, to the packet service (*Provincetown Advocate* 1959:2). Just as Vorse (1942:14) quipped about Kibby Cook carrying in him the history of the whaling industry, he and his brother's fleet and operations as a case study represent a history of risk adaptive response and endurance that is indicative of plum-pudding whaling.

Chapter Five. Vulnerability in Southern Waters: The Hatteras Grounds

Introduction

Whaling in NC began as early as the 1660s with opportunistic harvesting of drift whales by Outer Banks residents (Reeves and Mitchell 1988:3). By 1667, whalers from Southampton, New York and Boston, Massachusetts worked in the waters around Roanoke Inlet and Currituck on a six to eight-month cruise aboard sloop *Speedwell*, manned by 14 crew (Reeves and Mitchell 1988:3). Eventually expanding in size, the hunting area was known as the "Hatteras Grounds" and designated by shore whaling stations spanning from Cape Hatteras and Cape Lookout, NC to Little River, SC, before crossing into South Carolina's Charleston Grounds (Clark 1887:49; Earll 1887:490) (Figure 13). The stations were supported by several NC ports involved with whaling including Beaufort, Currituck, Brunswick, Roanoke, and Bath. From the mid-eighteenth to late nineteenth centuries, whaling operations headquartered around Cape Lookout and Shackleford Banks took advantage of migratory population movements between December to April of each year and hunted using small boats sent from shore or by anchoring vessels within Cape Lookout's bight (Reeves and Mitchell 1988:5-6). With its proximity to the resources provided by Port Beaufort, the area of Cape Lookout and the Hatteras Grounds proved attractive to northern whalers for short, productive voyages. A popular destination with Provincetown whalers, the following discussion on the Hatteras Grounds and associated Cook vessels helps to inform the decision-making process by the Cooks to venture to NC, including their ill-fated 1879 voyage onboard *Seychelle* (Simpson & Simpson 1990:28).

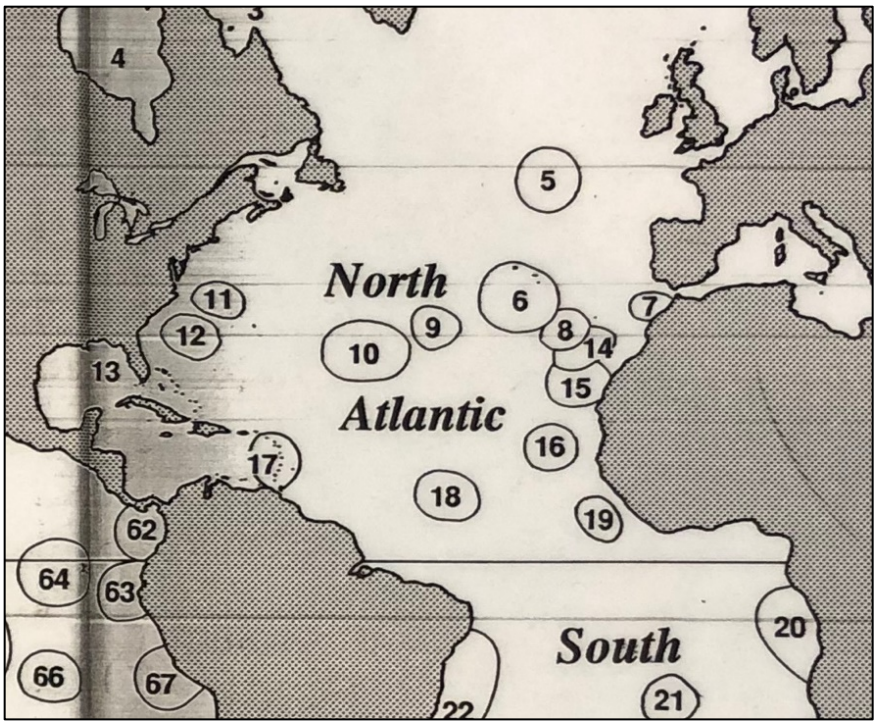


FIGURE 13. Map of global whaling grounds, cropped to focus on Atlantic. Map depicts Hatteras Grounds (*11*), Charleston Grounds (*12*), and 12/40 Grounds (*18*) (Image courtesy of the New Bedford Whaling Museum).

History of Provincetown Whaling in North Carolina

Like others from New England, Provincetown whalers fished the Hatteras Grounds of NC during the nineteenth and early twentieth centuries, despite the potential for poor weather conditions and occasional geopolitical conflict. By 1840, Provincetown whalers dominated pelagic whaling on the Hatteras Grounds (Simpson & Simpson 1990:28). Provincetown's plum-pudding whaling fleet sought profit from the grounds' sperm, blackfish, and humpback whale populations (*Provincetown Advocate* 1918:2, 1951a:8). Between 1871 and 1901, the *Provincetown Advocate* notes at least eleven successful voyages of Provincetown schooners on the Hatteras Grounds yielding 1,015 bbl. of sperm oil, 630 bbl. of blackfish oil, and 240 bbl. of undefined whale oil (*Provincetown Advocate* 1871d:2, 1872b:2, 1874a:2, 1879c:2, 1880c:2,

1880d:2, 1951a:8). Of these eleven voyages, four are recorded to have spent four to eight months on the grounds.

According to these limited metrics, the Hatteras Grounds appear to have remained profitable for Provincetown whalers during the late nineteenth and early twentieth centuries. Decreasing profits, however, still greatly impacted the industry. One June 1917 *Provincetown Advocate* article remarked upon the return of the schooners *Ellen A. Swift* (Figure 14) and *John R. Manta* with 100 and 250 bbl. of sperm oil, respectively, each sourced from the Hatteras Grounds. The dispatch notes that "now...full cargoes of sperm [oil] are needed to make owners rejoice, oil prices being just now, for the first time in many years sufficiently high to make voyages profitable" (*Provincetown Advocate* 1917:2). With as little as a three-day sail between Cape Hatteras and Provincetown, the greatest pressure placed on the continuation of Provincetown whaling proved to be primarily economic and market-based, rather than limited by smaller biological, geopolitical, or technological factors (*Provincetown Advocate* 1879d:2).

E. & E.K. Cook & Co. Schooners and the Hatteras Whaling Grounds

The Hatteras Grounds provided a relatively low-risk, high-reward opportunity for whaling schooners, and even more so for smaller, inshore vessels such as those employed in the Cook's plum-pudding fleet. Beginning in 1869 with their first noted voyage onboard *Sassacus* (*Provincetown Advocate* 1869h:3), E. & E.K. Cook & Co. undertook at least seven known whaling cruises to the Hatteras Grounds over a period of 10 years on their vessels *E.H. Hatfield*, *Mary E. Simmons*, *Quickstep*, and *Express* (*Provincetown Advocate* 1873d:2, 1878k:2, 1878l:2). In April 1879, the company owners personally undertook its final voyage to the Hatteras Grounds onboard *Seychelle*, referencing a company headquarters in Beaufort (*Provincetown*

Advocate 1879s:2) (Figure 14). It is unknown whether this refers to an established, seasonal, or temporary headquarters in Beaufort and under what parameters it was operating.

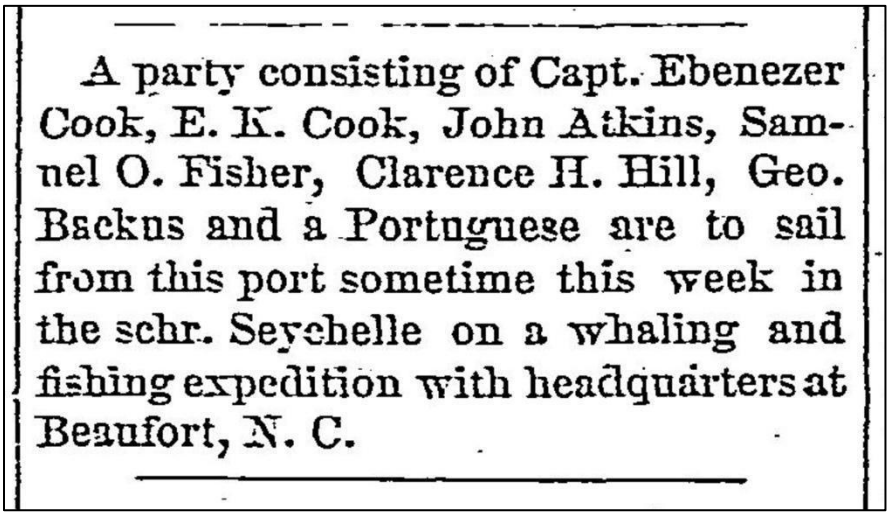

A party consisting of Capt. Ebenezer Cook, E. K. Cook, John Atkins, Samnel O. Fisher, Clarence H. Hill, Geo. Backus and a Portuguese are to sail from this port sometime this week in the schr. Seychelle on a whaling and fishing expedition with headquarters at Beaufort, N. C.

FIGURE 14. *Provincetown Advocate* newspaper clipping announcing April 1879 voyage of Seychelle (*Provincetown Advocate* 1879s:2).

E. & E.K. Cook & Co. hunted the Hatteras Grounds during the final ten years of the company's operations. This period was not only a critical point for Provincetown plum-pudding strategy, but that of the Cook's and their final activities and risk assessment. The Hatteras Grounds and the vessels that hunted upon them are representative of a last-ditch effort of self-preservation in a declining industry. As such, historic data relating to the vessels employed provide an additional lens into the Cook's plum-pudding strategy and better informs analysis on their risk-taking or risk-adverse activities. Construction information available from archival resources, demonstrated operational histories, and contemporary photographs suggest that Cook schooners *Mary E. Simmons*, *Etta G. Fogg*, and *Seychelle* best represent the tangible fishing and whaling history of E. & E.K. Cook & Co. and its voyages to the Hatteras Grounds.

Mary E. Simmons

Mary E. Simmons was used by E. & E.K. Cook & Co. for fishing, whaling, and sealing ventures. Completing 12 known voyages to the Atlantic, North Atlantic, and southern Indian Oceans for the company between 1865 and 1879, its lifelong operational history represents the greatest diversity in use, as it was employed in the packet service following the dissolution of the Cook's company (*Provincetown Advocate* 1959:2). A noted converted schooner *Mary E. Simmons* (Figure 15) is also the only Cook vessel found to have been documented by photograph during the completion of this manuscript (Story 1995:321).

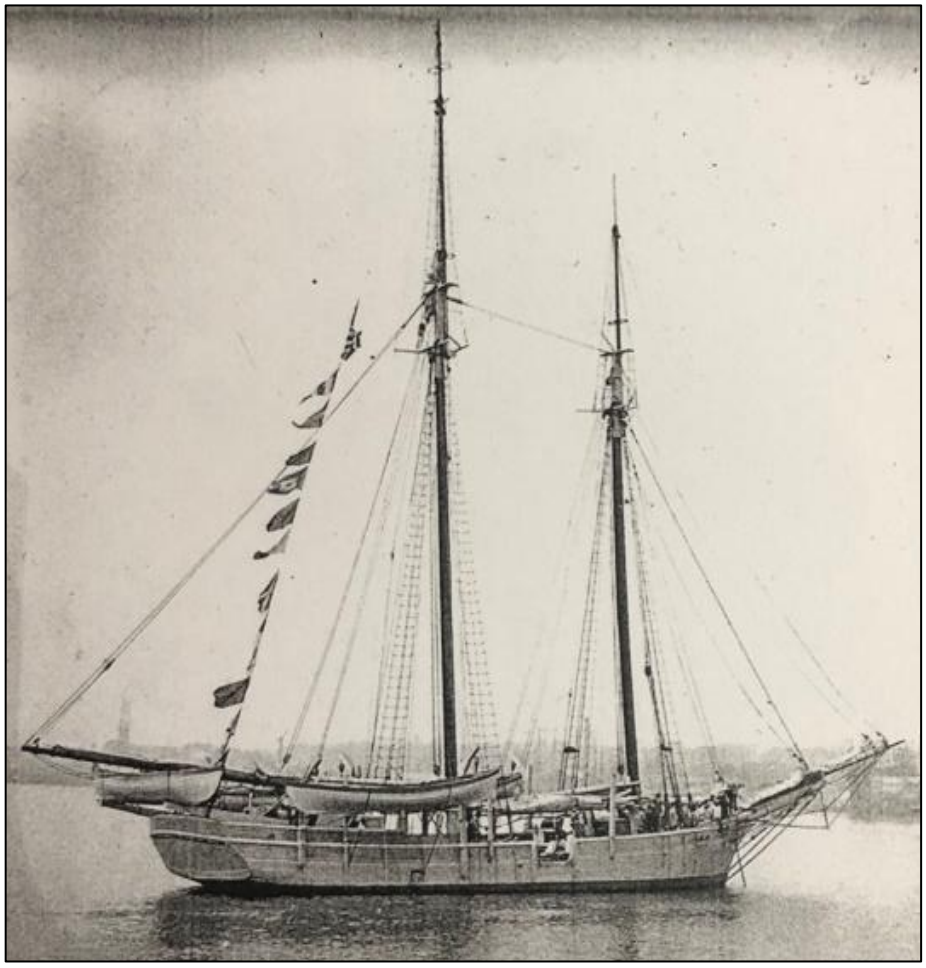


FIGURE 15. Glass negative photo of schooner *Mary E. Simmons* taken prior to 1912 (Mystic Seaport Archives, File 1994.53.23).

The image depicts *Mary E. Simmons* rigged with fore-and-aft sails and three whaleboats hung from wooden davits. Other distinct signs of whaling activity include a pair of iron hoops on its topmast to steady the lookout (Figure 16) and a cut out in the starboard gunwale where a "cutting stage" or outboard flensing platform could be hung for processing. Built as a fishing schooner, *Mary E. Simmons* is noted in its insurance registries and is observed to have a "break deck" or "brake of quarter deck", intended to keep the helmsman safe from being washed over by rushing water during weather or heavy seas (Goode et al. 1887:248). Regarding the Cook plum-pudding strategy, the known operational history and converted construction features demonstrated onboard *Mary E. Simmons* align neatly as a representative of adaptive use vessels.

FIGURE 16. Lookouts situated within topmast hoops onboard *John R. Manta*, 1925 (NBWM Item 2000.101.2.16).

Etta G. Fogg

Across its operational career, *Etta G. Fogg* was involved in the whaling, mackerel-fishing, and oyster trades (Chapelle 1973:97; Story 1995:310). A converted fishing schooner, *Etta G. Fogg* was the only Cook vessel with a professionally rendered and available lines plan (Figure 17), as it was documented by Howard I. Chapelle in 1973 (Chapelle 1973:96). The lines plan depicts the broken quarter deck indicative of a fishing schooner, as well as the vessel's windlass which served a multifunctional purpose of lifting anchor chains, hauling fishing nets, or hoisting whale carcasses and pieces of blubber (Ashley 1926:14).

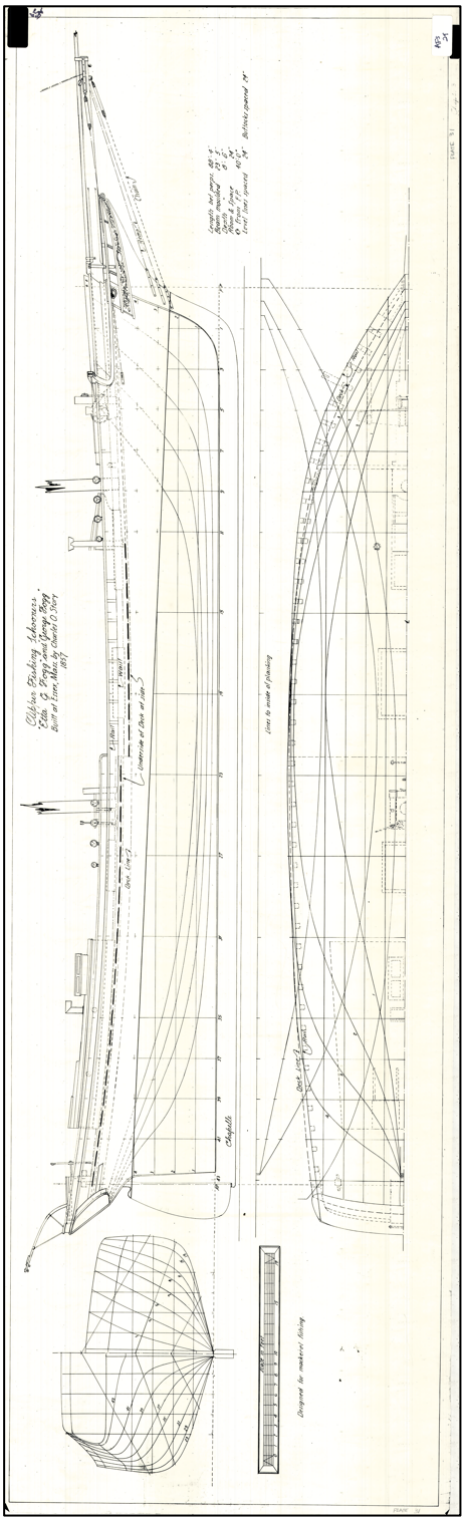


FIGURE 17. Line plan of clipper fishing schooners, Etta G. Fogg and George Fogg, drawn by Howard I. Chapelle (NMAH Item AFS 29).

Figure 18 depicts a similar windlass outfitted on *John R. Manta*, a contemporary of *Etta G. Fogg*. Though only under their direction in 1868, the accessibility of plans depicting a schooner employed by E. & E.K. Cook & Co., provides evidence for the archaeological analysis and a comparative model discussed later in Chapter six.

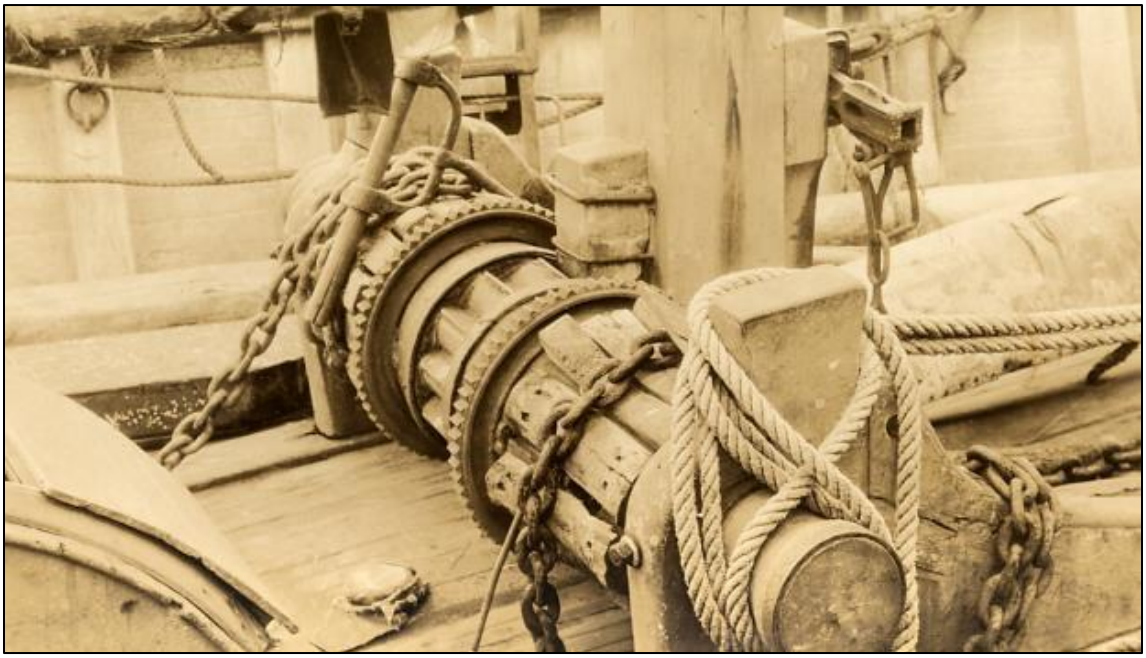


FIGURE 18. Windlass of whaling schooner *John R. Manta* (NBWM Item 1995.9.1571)

Seychelle

Finally, *Seychelle* represents the greatest potential for physical evidence of the Cook's fleet due to the detailed recording of its wrecking event. The identification of its wreckage would be the first identified remains of a plum-pudding whaling vessel, as well as the only presently known remains of the E. & E.K. Cook & Co. fleet and its last confirmed operational vessel. *Seychelle* operated between the mackerel, cod, and whale fisheries, exhibiting the features of a converted fishing schooner, though no photographs or plans of the vessel exist (*Provincetown Advocate* 1879m:2). The only depiction of *Seychelle* is a small sketch found in its May 21-August 9, 1851 logbook located in the Harvard Houghton Library Daniel B. Fearing logbook

collection (Figure 19). In his recordings, however, Chapelle documented a nameless 1848-1849 half-model of a mackerel fishing vessel with a clipper construction (Chapelle 1973:67-68). This vessel has similar dimensions to *Seychelle*, as documented by the 1879 *Record of American and Foreign Shipping*. While *Seychelle* is recorded with a length, breadth, and depth of 61.4 x 17.7 x 6.8 ft., respectively, the model represents a schooner with dimensions of 61.9 x 18 x 6.4 ft. and a molded depth of side of 7.1 ft. (Chapelle 1973:67). This vessel is the closest known representation of *Seychelle*.

Based on the logbook illustration and Chapelle's recordings of similar schooners, *Seychelle* likely had a sharpshooter or clipper bow (Figure 19), a vessel type particularly favored for the mackerel fishery (Chapelle 1973:68). As such, *Seychelle* may have also had a straight keel with moderate drag and would have been of half-clipper design. This would make *Seychelle* a sleek, quick, and fast carrier vessel with high holding capacity (Chapelle 1973:67). Almost one third of the Cooks' known fleet consisted of 'bankers', variants of the clipper bow schooner that fished the banks of Newfoundland until they filled their holds rather than making frequent trips back to shore with wet wells or ice (Chapelle 1975:66).

The stern section of Chapelle's recorded half-model is particularly interesting and may also inform *Seychelle*'s construction. It has a rudder trunk, upper and lower transoms, and slight rake to the sternpost compared to the then popular "round" tuck stern (e.g., the upper portion of the lower hull). According to Chapelle (1973:597), the rudder blade and stock would have been made of white oak (*Quercus alba*) with bronze or yellow metal bolts and braces. Built during a transitional period in 1847, *Seychelle* could have either had a straight or curved rudder blade and a downward tapered sternpost (Chapelle 1973:597). Much of what is known of *Seychelle*'s construction is from the 1879 *Register of American and Foreign Shipping*. During *Seychelle's*

last active registry under E. & E.K. Cook & Co., the remarks only indicate “oak”, “iron and copper fasteners”, and a “steeple engine” (RAFS 1879:939). Oddly, 1879 is the only reference to *Seychelle* having a steeple engine out of 15 available insurance registries. The wood species and fastener remarks, however, still provide diagnostic information that add to the hypothesized construction data drawn from Chapelle and other similar vessels.

Seychelle is significant to Provincetown and Cook whaling in NC as it is possible to explore its remains archaeologically. Though it wrecked in 1879 on its maiden voyage to the Hatteras Grounds, its previously explored history shows *Seychelle* to have been one of the longest tenured vessels in the Cook fleet and thus a good representative of vessel selection and plum-pudding strategy. Serving as a symbol of Cook risk response in 1879 as the final company vessel, *Seychelle* is also the only associated vessel known to have a detailed wrecking record and associated archaeological sites. Study of its archaeological remains and the events leading to its wrecking provide further context within the social risk framework discussed in Chapter seven.

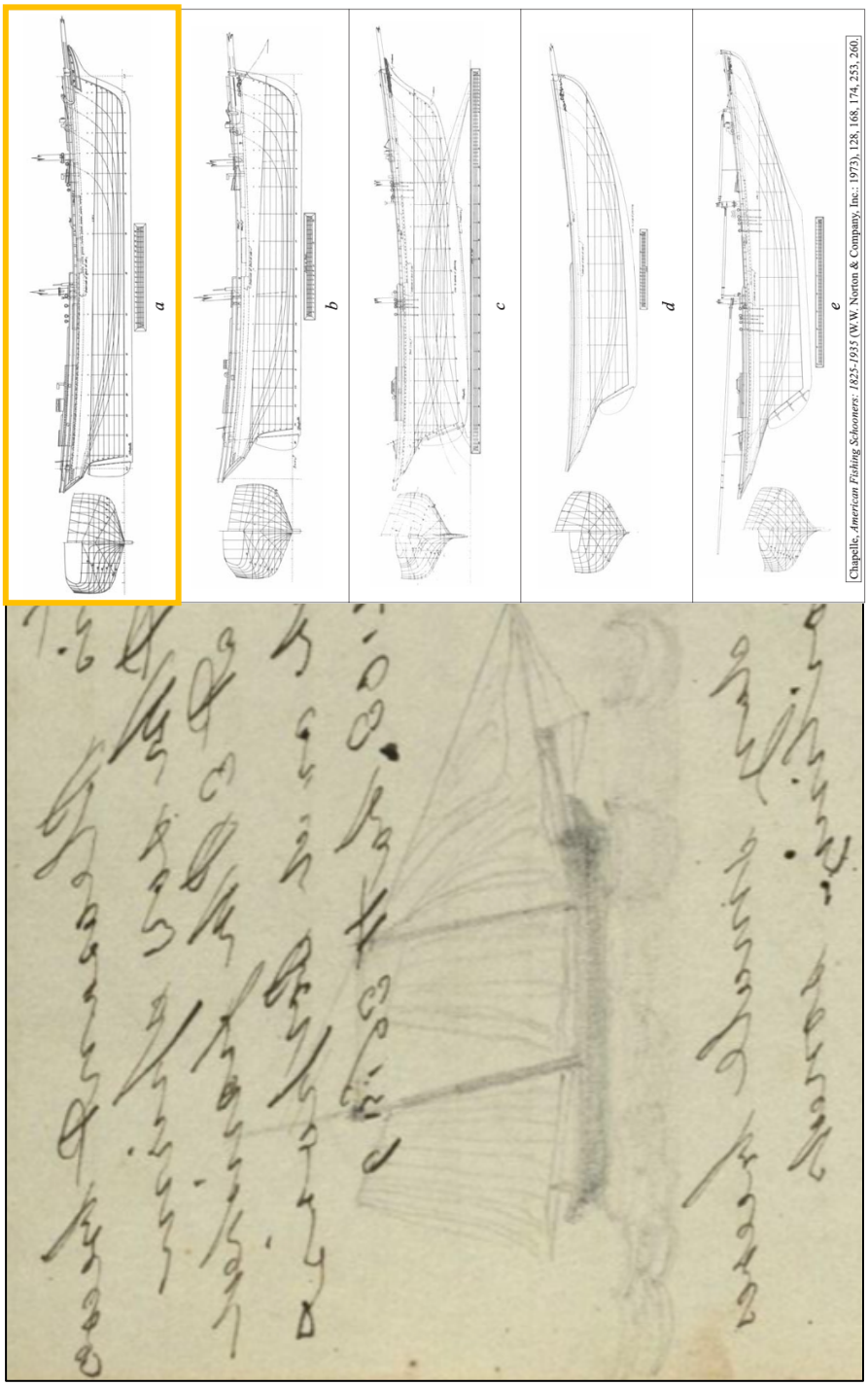


FIGURE 19. Only known available depiction of *Seychelle* compared to New England fishing schooner typological sequence. Sketch image is mirrored from the original. Sequence demonstrates *(a)* Clipper Bow Schooner, *(b)* Plumb Stemmer, *(c)* Fredonia, *(d)* Indian Header, and *(e)* Knockabout (Harvard Houghton Library Daniel B. Fearing Collection, Item F 6870.26; Raupp 2004:58).

Old Cook's Storm – The Hurricane of August 1879

On August 23, 1879, the daily journal of a Signal Service observer stationed at Cape Lookout (United States Army Signal Corps) describes a storm occurring on August 17 & 18 that led to *Seychelle's* wrecking and consequent loss. Although the hurricane began to affect the area the previous evening, on August 18 at 5:00 AM the crew of Cape Lookout's Signal Service Station were awoken by rushing water and 80 miles per hour (mph) winds (Cape Lookout Signal Service Observer 1879:2). By 6:45 AM, the station's anemometer registered gusts up to 138 mph before its cups blew away, and at 7:35 AM the winds reached a suspected 165 mph and began veering to the southwest as the tide began to fall (Cape Lookout Signal Service Observer 1879:3). By 2:00 PM, the winds finally abated to 23 mph from the west, though switched back to the southwest around 4:00 PM, and north and northeast by 8:00 PM (Cape Lookout Signal Service Observer 1879:4). In addition to a missing Light House Establishment Store House, cook house, light house fence, stable, and Signal Service mule, it was discovered that *Seychelle's* chains parted due to storm surge and the vessel was reportedly aground less than half a mile northwest of the station and lighthouse (Cape Lookout Signal Service Observer 1879:2).

Prior to the storm, *Seychelle* and its crew were anchored within the bight of Cape Lookout. The strength of the rushing waters and winds broke its anchor chain and pulled it southwest across Wreck Point before running it back northeast towards the shore (Cape Lookout Signal Service Observer 1879:2). While crossing Wreck Point, *Seychelle* drew 12 ft. of water, which was an unprecedented local tide and likely a sign that the hurricane hit during a spring tide (Cape Lookout Signal Service Observer 1879:2). Given the "New Moon", or the first lunar phase where the sun and moon have identical ecliptic longitudes, that occurred on that August 17,

1879, it is likely the area experienced a King Tide, one of the highest high-tide events of the year (U.S. Navy Astronomical Applications Department 2023).

Paired with the hurricane, E. & E.K. Cook & Co. and *Seychelle* were dealt a final blow of bad luck. After parting its chains and blowing across Wreck Point towards open water, the crew was able to maneuver the vessel under sail back to shore, crashing northwest of the Signal Station and becoming a total loss. While no lives were lost, *Seychelle* was left dry above the highest tide mark, and described locally as "stripped clean by wind and water… in no shape thereafter for whaling" (Cape Lookout Signal Station Report 1879:2; Stick 1990:186).

The residents and whalers of Shackleford Banks who interacted with the crew of *Seychelle* weeks prior, remarked how a "Captain Cook" previously came ashore inquiring about the best local weather for whaling operations. Based on these reports, it is unclear whether *Seychelle* had already begun operating within the bight or was still in a preparatory phase when the hurricane hit (Stick 1990:185-186; Cape Lookout Signal Service Observer 1879: 2). Due to E. & E.K. Cook & Company's misfortune, the hurricane was thereafter referred to as "Old Cook's Storm" (Stick 1990:186). The vessel was insured for $700 by Atlantic Mutual Fire & Marine Insurance Company, and most of the crew were likely transported back to Provincetown. E.K. (Kibbe) Cook and his wife (Sarah J. Cook) remained in NC for at least one year following the wreck; according to the Carteret County census they lived in Morehead City where Kibbe worked as a farmer (U.S. Census Bureau 1880). No further mention of an E. & E.K. Cook & Co. Beaufort headquarters is available, and the Cooks moved back to Provincetown by the turn of the century (U.S. Census Bureau 1900).

Conclusion

Provincetown whalers frequented the Hatteras Grounds during the nineteenth century (Simpson & Simpson 1990:27-28). Profitable and suited to nearshore whaling from smaller schooners, Provincetown plum-pudding whalers appear to have favored the area. E. & E.K. Cook & Co. have a demonstrated history in the Hatteras Grounds, hunting there with at least five schooners during the critical and final years of its operations. In addition to providing context on the strategic history of the company, the Hatteras Grounds and Cape Lookout, NC have the potential to provide archaeological evidence of the Cooks' operations through the wrecking location of *Seychelle*. Supported by archival material and discussion on *Mary E. Simmons*, *Etta G. Fogg*, and *Seychelle*, the following archaeological evaluation of target sites in Cape Lookout, NC not only further informs the social risk framework of the Cook's final voyage, but also provides the first assessment of discernable features of plum-pudding strategy.

Chapter Six. Searching for *Seychelle:* Archaeological Investigations At Cape Lookout

Introduction

As a symbol of the Cook's final response to industrial and operational decline and crisis, evidence of *Seychelle*'s remains would not only provide the first representation of a plum-pudding schooner in the archaeological record, but also the physical manifestation of the Cooks' final operations and risk assessment. The wreck of *Seychelle* is thought to be one of the many sites located in Cape Lookout National Seashore (CALO). On July 4, 1976, CALO was officially designated by the National Park Service to protect both its cultural and environmental resources (ECU 1982:14). Heritage sites within CALO are managed under Section 106 of the 1966 Historic Preservation Act, which states that federal agencies must consider the effects of their actions on historic properties, as well as allow an advisory council reasonable time and opportunity to comment on their actions. It requires compliance from federal agencies with environmental and historic preservation laws to avoid, minimize, or mitigate possible negative impacts on historic properties, such as wrecked vessel remains (U.S. Department of the Interior 1966).

There are more than 125 documented shipwrecks within the nearshore waters of Drum Inlet, Core Banks, Cape Lookout, Shackleford Banks, Beaufort Inlet, and Bogue Banks (ECU 1982:3). Of these, two sites located within Cape Lookout's bight are of particular interest to *Seychelle*'s identification. Designated CLS0003 and CLS0006 to indicate their location within the NC Office of State Archaeology's Underwater Archaeology Branch site file system, each site rests on tidal beaches within the boundary of CALO. Site CLS 0003 consists of four sections located along a shallow sand bank, while CLS0006 is located at the mouth of a small, marshy

creek (Figure 20). As a result, each site experiences dry and submerged periods through tidal shifts, as well as fluctuating sand accretion and removal. Although both are included in the NC state site file, neither has been nominated for listing to the National Register of Historic Places, a record maintained by the National Park Service as the nation's official list of cultural resources worthy of preservation.

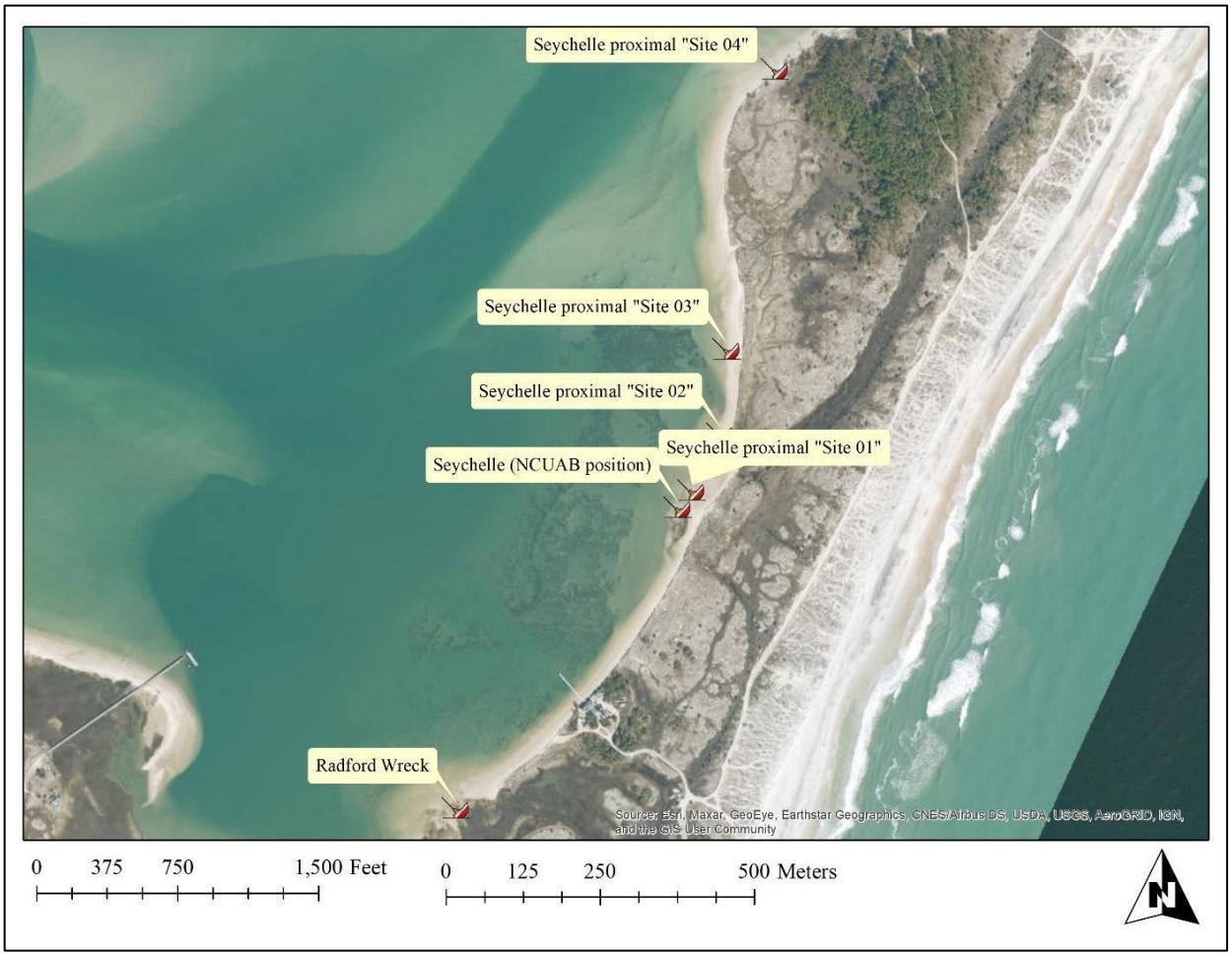


FIGURE 20. Tabulated locations of CLS0003 (*Seychelle* proximal sites) and CLS0006 (Radford Wreck) debris positions examined during Core Banks archaeological recording activities as part of ECU's Program in Maritime Studies Summer 2021 Field School (all UTM positions in Zone 18, WGS1984 datum) and map of positions. Map created by Nathan Richards (Richards et al. 2021: 7).

Both sites have been considered as possible candidates for *Seychelle*'s remains and previous research was conducted at each over the past four decades by ECU, the NC Division of Archives and History Underwater Archaeology Unit (UAU; present day UAB), the NC Maritime Museum in Beaufort, and a nonprofit marine archaeology and exploration company, Surface Interval Diving Company (Smith 1995). In the summer of 2021, ECU's Program in Maritime Studies conducted a summer field school (HIST 5530) in areas around Shackleford Banks and Cape Lookout. Working under a National Park Service Scientific Research and Collecting Permit and a NC Department of Natural and Cultural Resources Exploration Permit, the course introduced graduate students to a variety of non-disturbance marine archaeological methodologies and conducted detailed documentation of archaeological sites within CALO. Among the goals of the project was the investigation of CLS0003 and CLS0006, to determine whether either site is in fact the remains of *Seychelle*.

Over the course of three weeks ECU thoroughly documented both sites through photography and videography and much of the collected imagery was processed using Agisoft Metashape to create detailed three-dimensional (3D) models. In addition, standard recording techniques, such as baseline-offset documentation, were employed to produce detailed, hand-drawn plans of each site. Historically, CLS0003 was subject to the greatest amount of dedicated survey time, but CLS0006 has no known site history predating ECU's recent investigations. Consideration for expected construction elements and recognition of multiple social and environmental factors which impacted *Seychelle*'s wreck site since 1879 provide an opportunity for study even if a positive identification is unlikely.

Projected Wreck Site

As stated above, the *Seychelle* shipwreck site is suspected to lie within the boundaries of CALO. With a draft of eight ft., *Seychelle* would have likely anchored within Cape Lookout bight outside of the shallow, tidal zone. Although it is unknown exactly when on August 18, 1879, *Seychelle* ran aground, it likely would have been pushed across Wreck Point during the period of strong southwesterly winds (between 6:45 AM and 7:35 AM), before the schooner made landfall northwest of the signal station. The file for *Seychelle* provided by the North Carolina Underwater Archaeology Branch (UAB) lists GPS coordinates that reference wreckage located half a mile south of the Signal Station office (NC UAU 1992:1). However, the original US Army Signal Corps daily journal lists *Seychelle* as landing roughly one-half mile northwest from Cape Lookout lighthouse (Cape Lookout Signal Service Observer 1879:2).

Figure 21 represents a hypothetical reconstruction of *Seychelle*'s wrecking event given the reported storm timeline, wind directions, and vessel movements discussed previously. The schooner image and associated path represent *Seychelle*'s movements during the hurricane including its hypothesized original location when anchored within Cape Lookout Bight, its travel across Wreck Point (in blue), and the direction of its suspected landfall. The yellow circle of Figure 21 represents the .5-mile radius noted in the Signal Station Reports surrounding the US Army Signal Corps Station office located near Cape Lookout Lighthouse. The red arrow depicts a northwesterly direction from the station and the likely direction of where *Seychelle* is noted to have landed. As a result, the intersection of the red arrow and yellow radius (in black) represents the best estimate for the location of *Seychelle*'s original site of wrecking given the available archival sources. Today, much of this area has since been dredged to maintain Barden inlet. However, due to the dynamic nature of Cape Lookout, including local tidal and shoaling

influences, parts of wreckage could have broken away and swept into the hook of Cape Lookout Bight. As a result, shore and tidal wrecks located within Cape Lookout Bight, such as CLS0003 and CLS0006, also represent potential areas of interest for further archaeological investigation into determining any extant remains of *Seychelle* as both sites are situated within the reasonable vicinity of its wrecking (Figure 21).

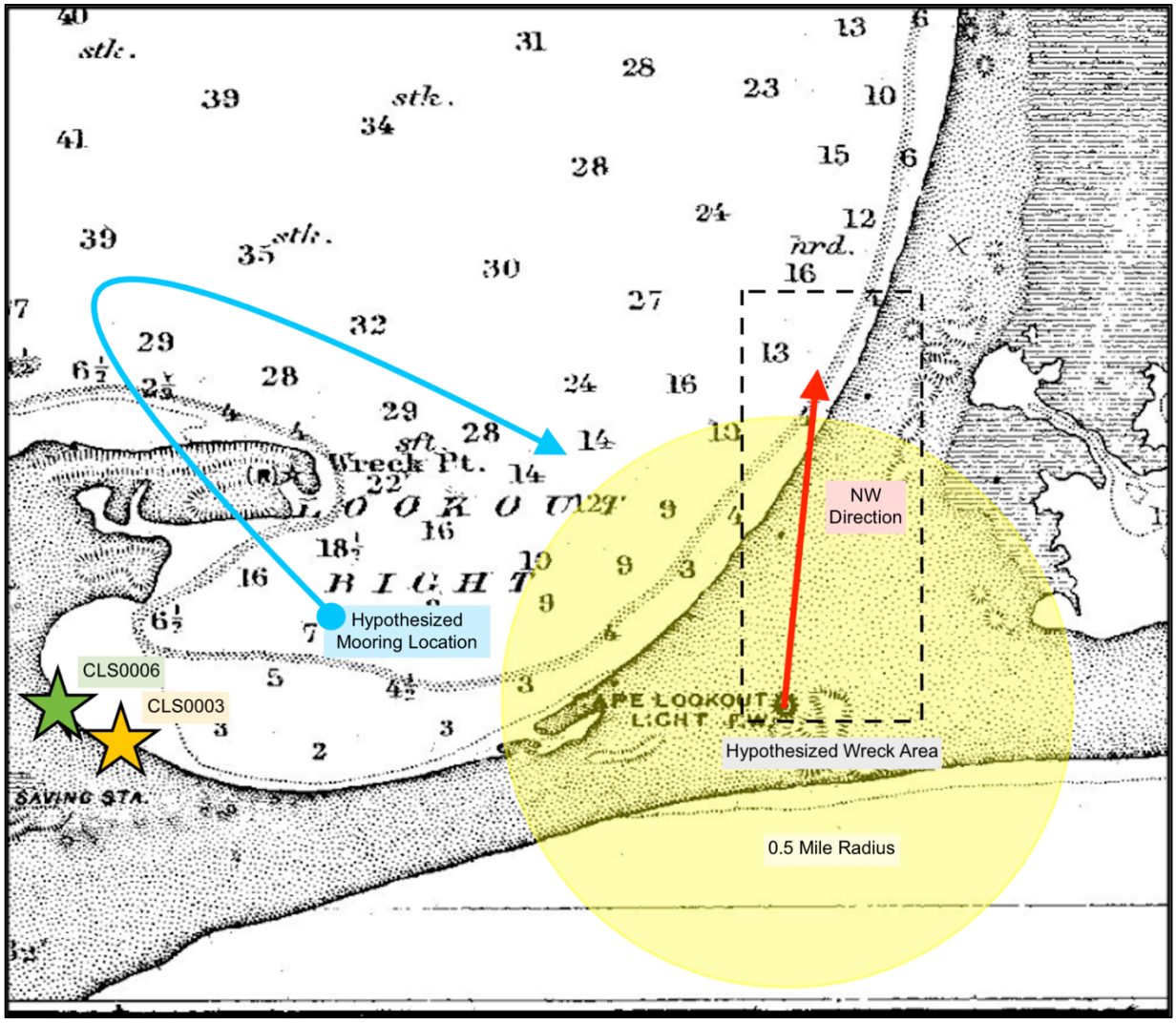


FIGURE 21. Projected location of *Seychelle* wreck site, superimposed on an 1876 Navigational Chart. Site CLS0003 is designated in orange while CLS0006 is designated in green. Reported path across Wreck Point designated in blue. Yellow radius represents an area of 0.5 miles from the Signal Station while the red arrow signifies a northwest direction. The black box represents the hypothesized area of *Seychelle*'s landing. Image by author.

Site CLS0003 - Background

Designated CLS0003 by the NC UAB, the site consists of four Debris Sites (referred to as proximal sites) located within the same general vicinity on Cape Lookout (Figure 20). Archaeological documentation of CLS0003 was conducted in 1982, 1993, 2021, and 2022. In 1982, a group from the Maritime History and Underwater Research Program at ECU (now the Program in Maritime Studies) conducted a one-month summer field school with the intention of surveying, identifying, and assisting with the management efforts of several submerged archaeological sites within CALO. In collaboration with the NC Division of Archives and History, UAU, and the NC Maritime Museum in Beaufort, the field school team conducted a general survey of CLS0003 but did not conclusively identify or examine it independently (ECU 1982:2). According to recorded student field diaries available in the CLS0003 NC site file, the largest of the CLS0003 Debris Sites, Site 01 and 02, were surveyed (NC UAU 1992:4-6). Field observations depict Site 01 as consisting of 11 parallel planks, each approximately 1 ft. wide, and a series of stringers with a windlass, consisting of two drums, at one end of the site (Figure 22). Site 02 was described as a potential keelson. A small trench was excavated across Site 01 by the field school students, revealing additional details on the plank and stringer construction, such as 1 ft. wide planks and 8 inch (in.) wide stringers (NC UAU 1992:4-6).

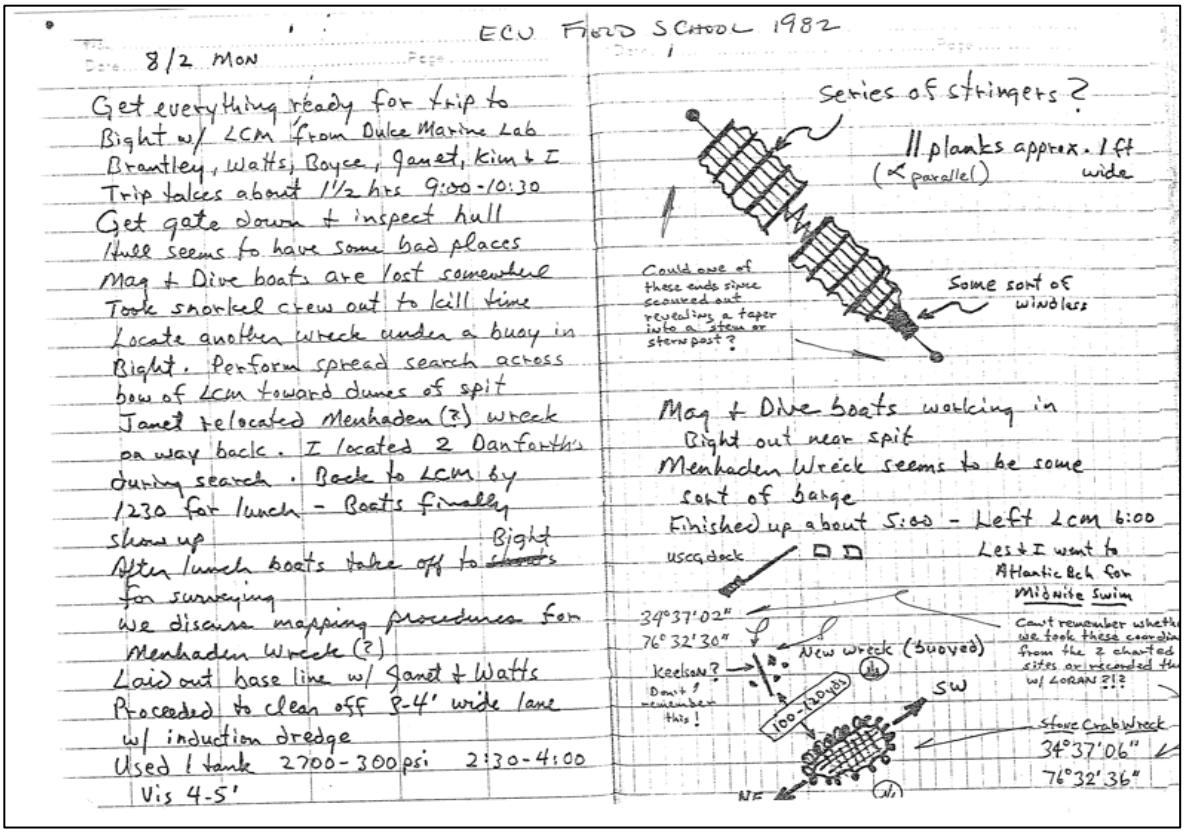


FIGURE 22. Field diary observations collected from ECU 1982 field school depicting CLS0003 Debris Sites 01 and 02 (NC UAU 1992:4-6).

Ten years later, the site was uncovered dramatically, prompting UAU and the NC Maritime Museum to conduct a two-day summer camp for middle schoolers. The 1993 camp aimed to teach the students about safe and ethical maritime archaeology, including recording techniques such as systematic surveying, proper documentation of artifacts, and understanding the importance of maintaining original context of a site as well as that of *in situ* preservation (Wilde-Ramsing 1994:5). Over the two days, the camp revisited Debris Sites 01 (Figure 23), 02, and 03. UAU archaeologists determined Site 01 to be a composite keelson, consisting of ten timbers, and measuring a total length of 60.8 ft. and width of 11.9 ft. (Wilde-Ramsing 1993:1). At Debris Site 02, a portion of hypothesized upper hull measured a total length of about 40 ft. and included a concreted chainplate. Investigations at Debris Site 03 yielded two sections of

heavily concreted and unidentifiable wreckage. As a group, the campers worked toward identifying the site as the remains of *Seychelle*, believing the wreck remains to belong to a late nineteenth or early twentieth century sailing vessel (Wilde-Ramsing 1994:7). Although the program was successful in involving students and spurring a public interest in maritime archaeology, UAU staff member Mark Wilde-Ramsing recounted in a public article the need for additional field analysis and professional historical research to positively identify the site as belonging to *Seychelle* (Wilde-Ramsing 1994:7).

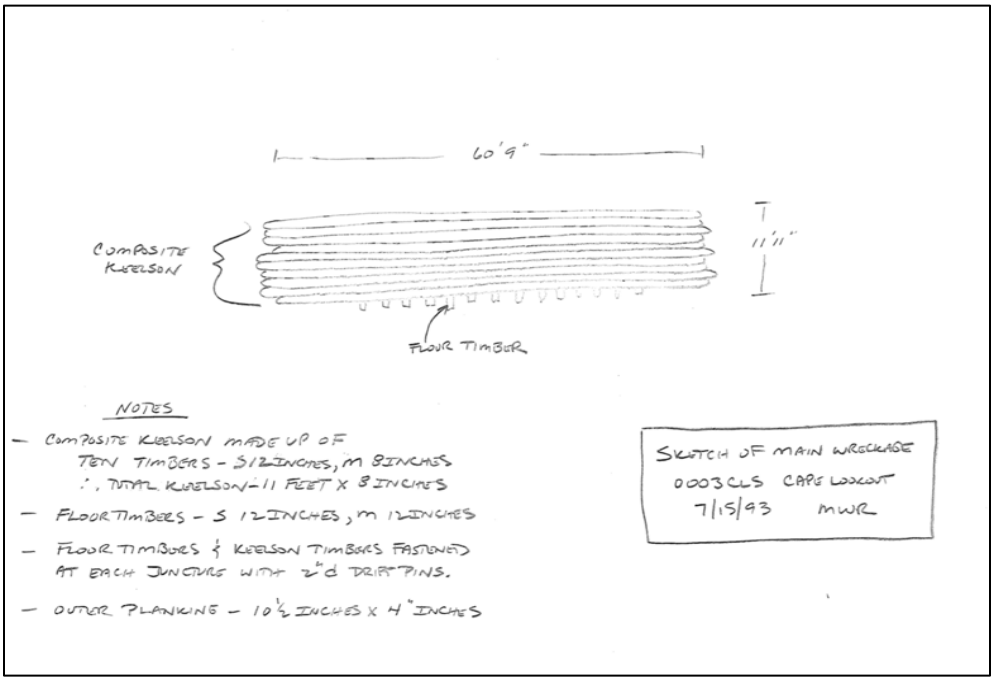


FIGURE 23. Sketch of CLS0003 Debris Site 01 by UAU July 15, 1993 (Wilde-Ramsing 1993:1).

In 2021, ECU's summer field school surveyed all four debris locations of CLS0003, focusing on terrestrial, intertidal, and marine efforts. Each Debris Site faced periods of exposure and submergence depending on tidal variation, as evidenced by heavy oyster growth. Using standard non-disturbance archaeological techniques, including baseline-offset and trilateration recording, each of the four associated sites were documented via drafting methods. Debris Sites

01-03 were also surveyed for metal detection, while the debris associated with Site 04 appeared mobile and was not embedded in its environment. Ferrous and conductivity readings were marked with PVC flags and recorded geospatially, producing 498 metal anomalies. It is important to note that much of the survey area was littered with metal debris, likely due to modern maritime activity in and around CALO, as well as the historic remains of automobiles where were intentionally placed beginning in the 1930s to arrest sand dune erosion near Sites 01-03 (*The Dispatch* 1976:3; Richards et al. 2021:19).

In assessing any relevance to *Seychelle*, drafted site plans of Sites 01-04 and photogrammetric models of Sites 01, 02, and 04 were of greater use for interpretation (Figures 24-27). Remote sensing techniques including conductivity-logging metal detectors (e.g., Minelab CTX3030) were used in shallow waters adjacent to CLS0003, a Geometrics 882 marine magnetometer, and a Klein 3000H side-scan sonar were used in Barden Inlet within the potential wrecking radius previously discussed (Figure 21). Targets identified through remote sensing techniques were investigated through diver visual inspection. None of the targets identified within Barden Inlet produced sites of interest. Finally, all targets were geospatially fixed with handheld GPS and RTK GNSS systems throughout the survey (Figure 20) (Richards et al. 2021).

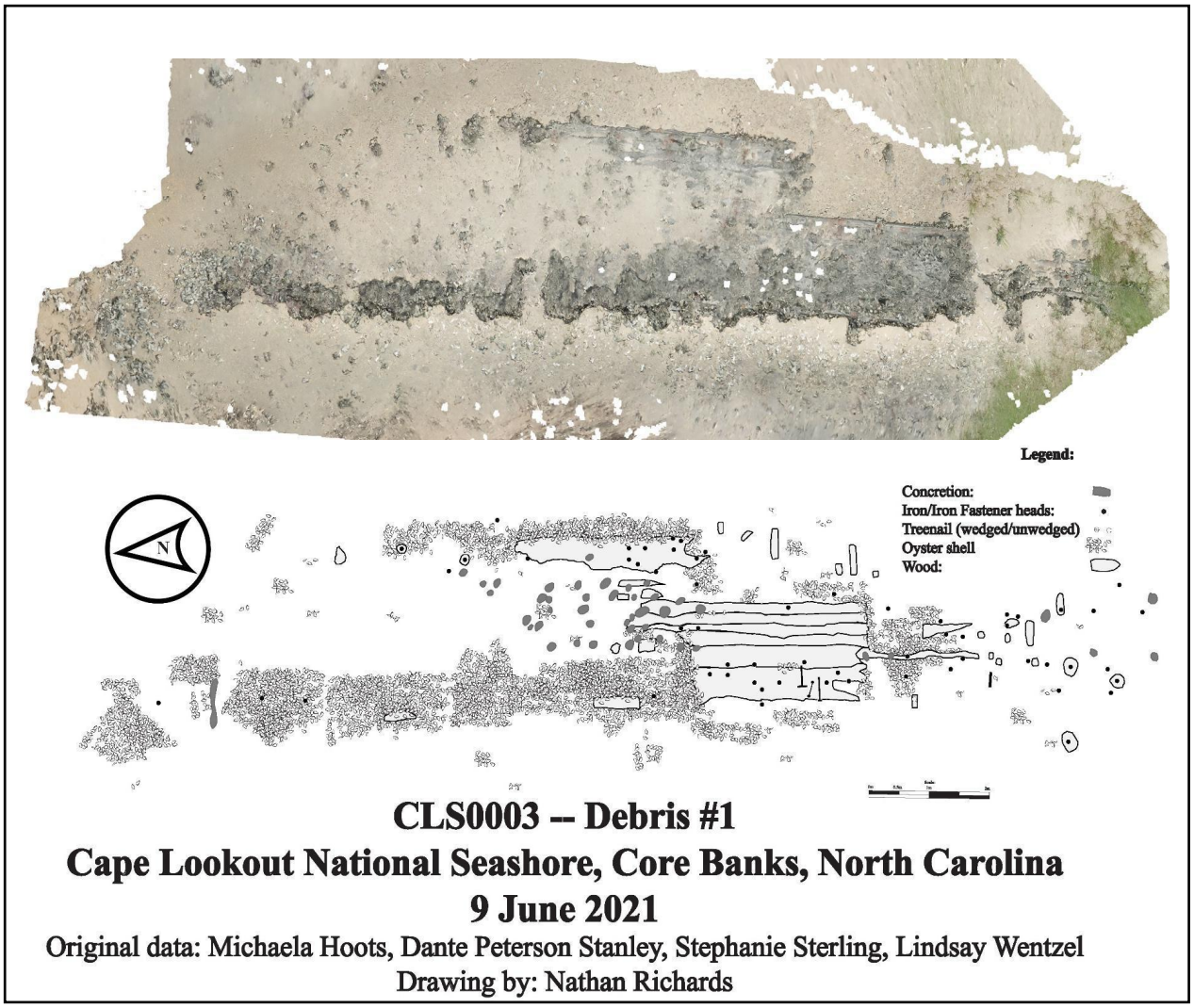


FIGURE 24. Orthomosaic (top) and Orthographic drawing (bottom) of CLS0003 Debris Site 01 drawn by Nathan Richards (Richards et al. 2021:9).

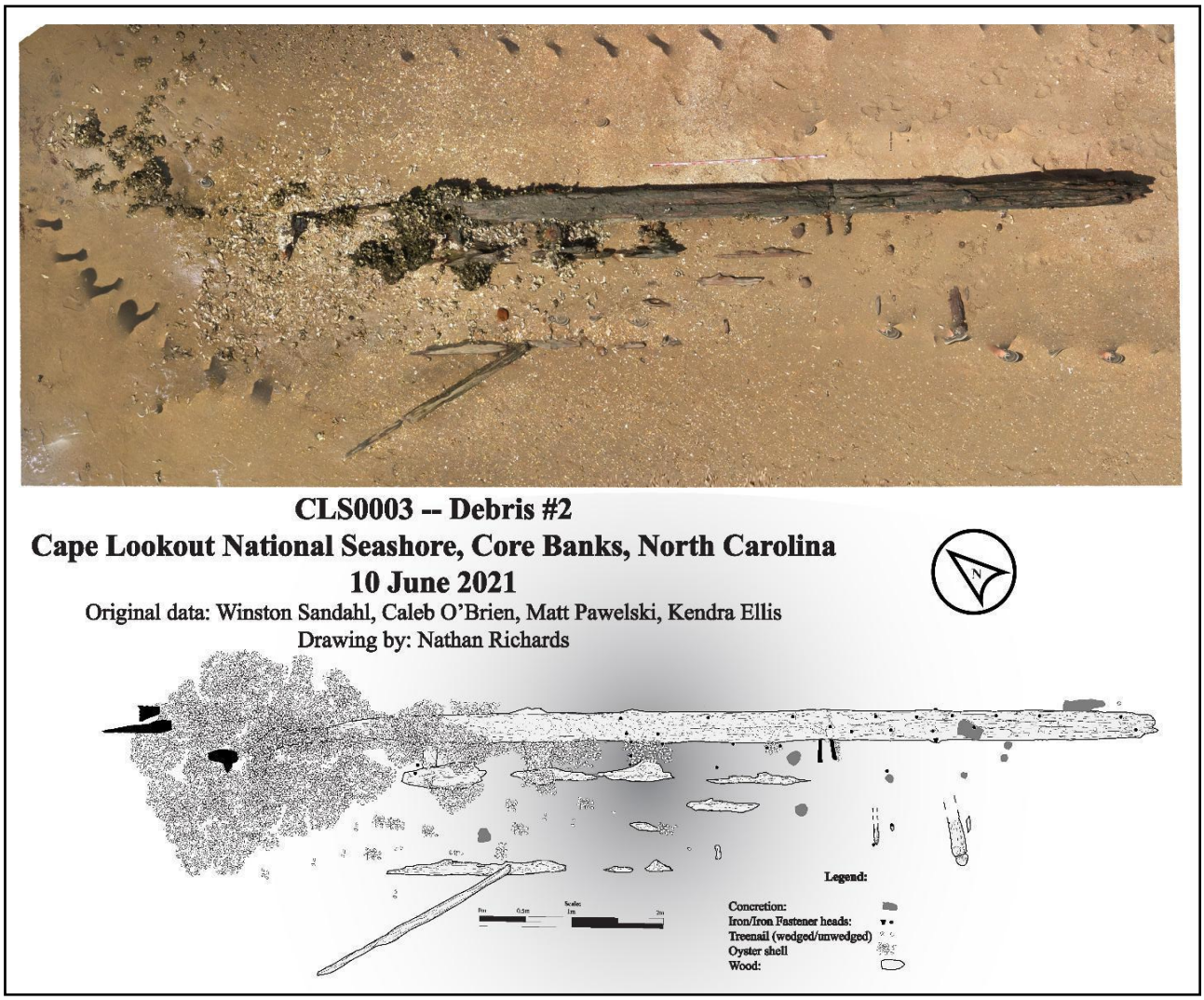


FIGURE 25. Orthomosaic (top) and Orthographic drawing (bottom) of CLS0003 Debris Site 02 drawn by Nathan Richards (Richards et al. 2021:10).

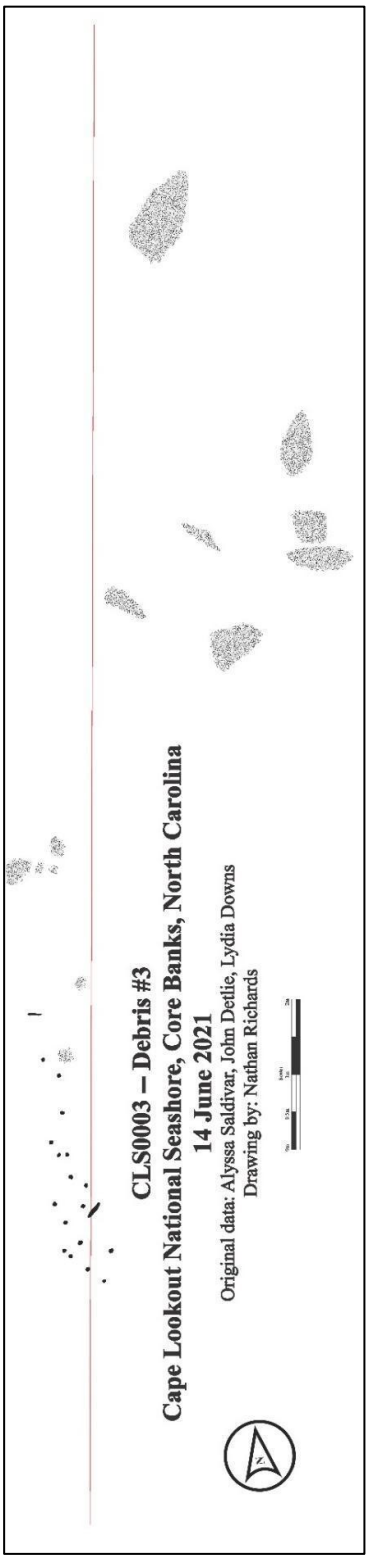


FIGURE 26. Orthographic drawing of CLS0003 Debris Site 03 drawn by Nathan Richards (Richards et al. 2021:11).

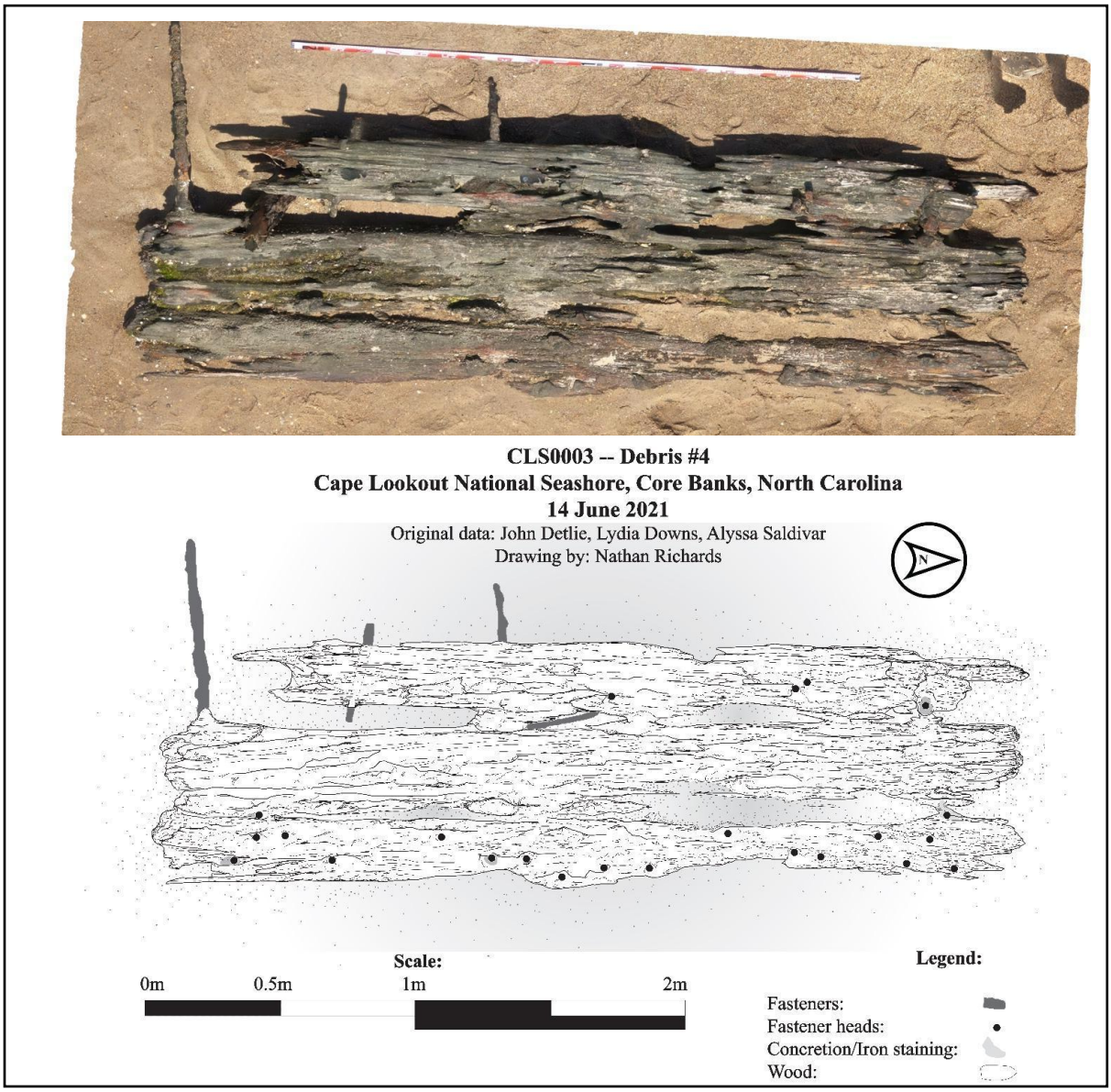


FIGURE 27. Orthomosaic (top) and Orthographic drawing (bottom) of CLS0003 Debris Site 04 drawn by Nathan Richards (Richards et al. 2021:12).

2021 CLS0003 Interpretations

In 2021, students geospatially recorded features on CLS0003 and surveyed each debris site through baseline-offset mapping, subsurface probing, metal detecting, and remote sensing as previously described. The main portion of CLS0003 wreckage, Debris Site 01, appears to have heavily degraded since its original survey in 1982. The top photograph in Figure 28 shows Site

01 as it looked in the 1950s shows Site 1 in the 1950s, while the lower image from the same vantage point dates to the 1980s. From these images it is clear that significant loss to framing timbers occurred during that period.

FIGURE 28. CLS0003 Debris Site 1. Top photo photographed by Bruce Roberts circa 1950s (Cheryl Roberts 2021, elec. comm.) and bottom photo courtesy of NC UAB (Wild-Ramsing 1996).

CLS0003 Site 01 is thought to represent the remains of a keelson, framing, and planking with an extensive number of iron fasteners. When compared to the documented dimensions of *Seychelle*, immediate discrepancies are apparent with data recovered from Site 01. First, the 1879 *Record of American and Foreign Shipping* lists *Seychelle* as a vessel with a total length of 61.4 ft. (RAFS 1879:939). Given that the total length of CLS0003 Debris Site 01 was recorded as 60.8 ft. and no stem or stern assembly was observed (Figure 24), Site 01 is immediately too big to belong to *Seychelle*. Furthermore, when revisiting measurements from 1993, the floor timbers recorded on Debris Site 01 more closely resemble a vessel of at least 400 tons, according to the 1879 *Record of American and Foreign Shipping* (RAFS 1879:XXVIII). This record also lists *Seychelle* as having both copper and iron fasteners (RAFS 1879:939); not only is Debris Site 01 extensively iron fastened, but no copper fasteners were noted at the site. Thus, based on the 2021 site inspection it is unlikely that Debris Site 01 reflects a clipper-built vessel of *Seychelle*'s size and design.

The 2021 investigations produced overall length measurement of 38.1 ft. for Debris Site 02. This section consists of two large structural timbers placed one on top of the other measuring a width of 13.8 in., with four smaller timbers running into sand and parallel beneath the main structure to the east, as well as a large oyster covered chain plate at its northwestern end. Although the chain plate was too encased with oyster to record proper measurements without invasive techniques, the 1993 observations record a flat iron chain plate length of 7.2 ft. Given *Seychelle* had a depth of 6.8 ft, the chain plate is entirely too large for a vessel the size of *Seychelle* (RAFS 1879:939). Like the observations pertaining to large structural timbers and extensive iron fastenings at Debris Site 01, Site 02 appears to be heavily built for a vessel of such smaller construction such as *Seychelle*.

Debris Sites 03 and 04 were recorded in 2021 but produced little diagnostic data. Debris Site 03 consists of thirteen heavily oyster-encrusted metallic concretions and an array of patterned fasteners. Though suspected to be a portion of the same wreckage as that of Debris Sites 01 and 02, no wooden structure was observed at the site. Debris Site 04 was noted to be a mobile piece of disarticulated wreckage consisting of three timbers fastened together. Due to its small size, mobility, and minimal diagnostic features, Site 04 was excluded from further analysis (Richards et al. 2021). Ultimately, despite former hypotheses of a connection to *Seychelle*, observations made in 2021 of Site CLS0003 indicate it is likely the remains of a larger, more robustly constructed vessel.

Future Avenues of Investigation: Site CLS0004

In 1995 and 1996, two additional surveys were conducted in the vicinity of CLS0003 focused on the area of known wreck, *Olive Thurlow* (CLS0004) (UAU 1992:17; Smith 1995). The suspected site of the 660 gross-ton barkentine *Olive Thurlow* (CLS0004) is located within 1,640 ft. of CLS0003. Wrecked in Cape Lookout on December 5, 1902, CLS0004 was surveyed in 1995 under a NC state exploration and recovery permit by a team of commercial divers and avocational archaeologists (Smith 1995). The vessel's remains documented by Robert K. Smith revealed measurements for much of the site's construction including the keel, keelson, deck planking, and frames (Smith 1995:22,41,50). However, like much of the earlier data collected at CLS0003, many of the findings are ambiguous, incomplete, and speculative. In the case of CLS0004, it is important to note that the 1995 survey was conducted by individuals untrained in archaeological recording techniques, which likely produced discrepancies in identified timbers within the report (Smith 1995). In 1996, the UAU conducted a magnetometer survey of the area with a team of divers to ground-truth any identified targets. The survey was focused specifically

on the bow, boiler, and stern sections of CLS0004 and only yielded a suspected windlass and a scattering of metal debris (Wilde-Ramsing 1996:1-2).

Given that the 2021 interpretations of CLS0003 point towards a much larger, more robust vessel, CLS0003 could be associated with CLS0004. The data currently available for CLS0004, however, is too unreliable to make any reasonable conclusion. With the similarities in size, future study may consider resurveying CLS0004 and comparing its features to CLS0003.

Site CLS0006 – Background and Interpretations of the "Radford Wreck"

Another site situated in CALO and possibly associated with *Seychelle* is known as the "Radford Wreck". Listed as CLS0006 in the UAB Site File, it consists of a small portion of disarticulated wreckage that could have swept into Cape Lookout bight. Fieldwork completed during the 2021 field season produced a photogrammetric model, orthomosaic, and basic diarized observations of timber lengths, widths, and presence of fasteners and bolts mapped through basic measurements taken by hand. The 3D photogrammetric model was later converted to an orthomosaic site plan. It is important to note that CLS0006 was only briefly surveyed, as it was not the focus of the field school activities at that time (Richards et al. 2021).

During post-processing of the data recorded at CLS0006, the resemblance to the stern assembly of a small fishing schooner prompted a follow up visit in the Spring of 2022. Observations were aided through discussion with noted Gloucester fishing schooner expert, Erik Ronnberg (2021, pers. comm.) of the Cape Ann Museum in Massachusetts. The site was re-recorded via diarized observations of timber lengths, widths, and depths, and the presence of fasteners and bolts were noted and mapped by hand. Analysis of data recovered from CLS0006 suggest that it is an intact 3.6 m by 1.5 m portion of a wooden vessel consisting of four to five articulated timbers, including a sternpost, deadwood assembly, and after portion of keelson

(Figure 29). A seven-foot square area around the wreck was probed for the presence of any buried remains; the lack of positive returns suggest that it represents disarticulated wreckage. The site was re-imaged for modelling before wood samples were recovered for dendrological analysis and identification.

FIGURE 29. The Radford Wreck (CLS0006); figure depicts keelson, deadwood consisting of 4-6 timbers, and a portion of sternpost (Image by ECU Program in Maritime Studies).

2022 CLS0006 Interpretations

Figure 30 provides a plan view map derived from archaeological recording of CLS0006. Due to wood degradation, it is unclear whether the wreckage consists of four or 5 timbers, as noted by the dashed line. All recorded timbers are angled and degraded on their southwestern ends. The sternpost measures 10.2 in. by 7.5 in. sided and moulded and has an estimated rake of 75-80 degrees. The bottom timber (potential portion of keelson) measured a maximum width, or moulded dimension, of 15 in. and sided measurement or depth of 8.7 in. The next deadwood timber directly above the suspected keelson measured a maximum width of 10 in. Above this

timber, the next portion of deadwood was difficult to distinguish. Noted with a dotted line in Figure 30, this portion is thought to consist of two individual timbers fastened together but could not be confirmed without invasive measures. These timbers are 7.1 in. moulded and 15 in. sided, respectively. Finally, the uppermost timber has a moulded measurement of 8.3 in. and sided measurement of 6 in. In addition, this timber has a 1.2 in. diameter fastener hole and a small "right angle" cut, which may indicate that additional structure or strapping from the rudder gudgeon was attached.

When compared to data listed in the 1879 *Record of American and Foreign Shipping*, the measurements of the CLS0006 sternpost best reflect those of a 100-ton vessel (e.g., 9 x 11 in.) (RAFS 1879:XXVIII). The measurements for the possible keelson timber are less conclusive but within reason for those of a 100-ton vessel (e.g., 10 x 11 in.) (RAFS 1879:XXVIII). Based on the measurement of timbers alone, CLS0006 most likely represents a portion of a small, wooden vessel.

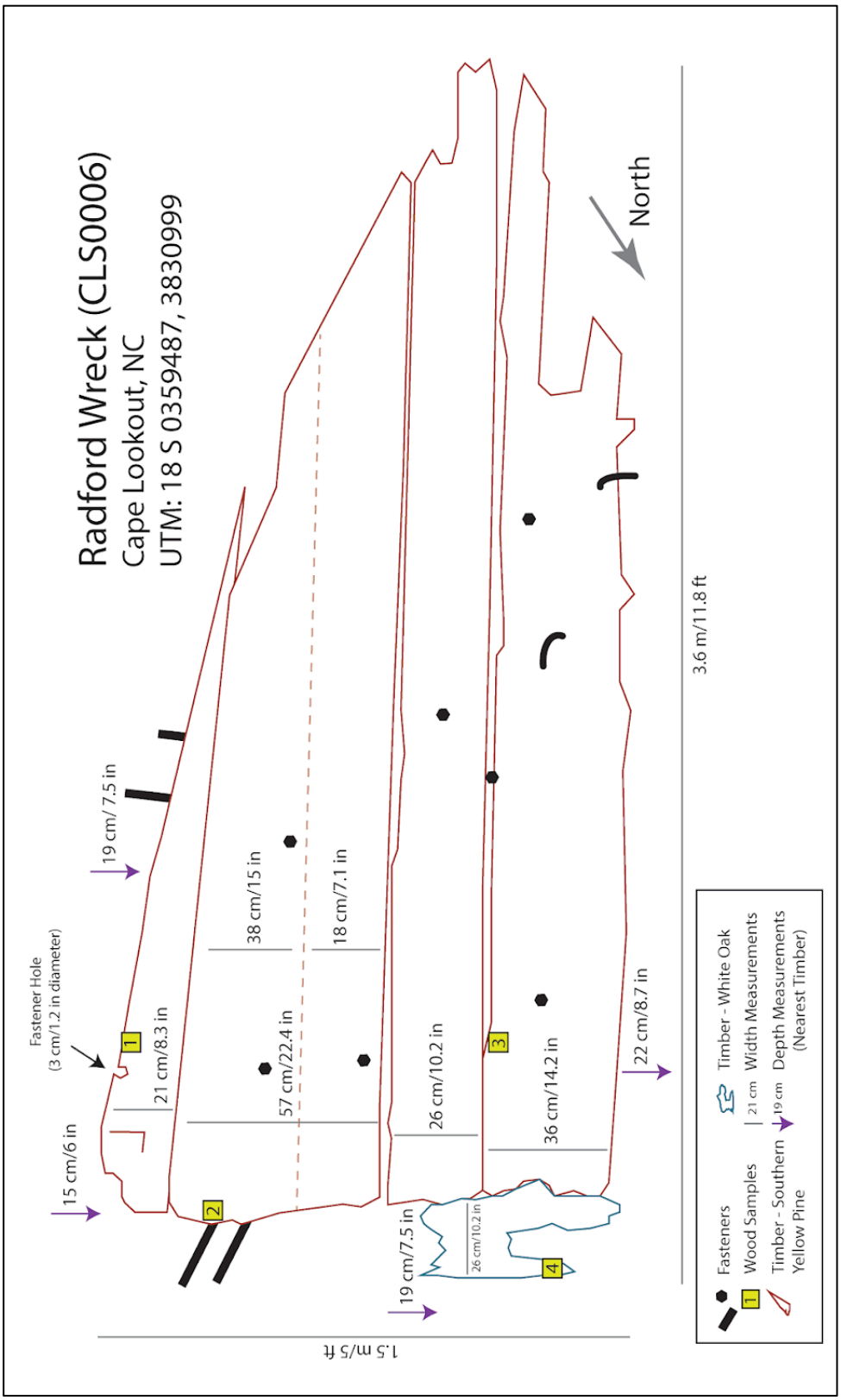


FIGURE 30. Site plan of the Radford Wreck (CLS0006) recorded spring 2022. Site plan by author.

CLS0006 Dendrological Analysis

Four timber samples were taken from CLS0006 for dendrological analysis. Locations for these include two areas of the deadwood (Samples 1 and 2), one area of the potential keelson (Sample 3), and one area of the sternpost (Sample 4) (Figure 30). Each sample was kept in seawater and transported to the Department of Sustainable Biomaterials Lab at Virginia Polytechnic and State University (Virginia Tech) in Blacksburg, Virginia. Assisted by Dr. Brian Bond (2022, pers. comm.), Professor of Sustainable Biomaterials, the samples were analyzed under a hand lens and microscope. Samples 1, 2, and 3 were identified as southern yellow pine (*Pinus* sp.) due to the presence of resin canals, dentae ray tracheids, and pinoid pits (Figure 31) (Brian Bond 2022, pers. comm.; Hoadley 1990:26-27). "Southern yellow pine" refers to a species group rather than an individual species, typically including loblolly pine (*Pinus taeda*), long leaf pine (*Pinus palustris*), shortleaf pine (*Pinus echinata*), and or slash pine (*Pinus eliottii*) (Hoadley 1990:4). Sample 4 was identified as white oak due to the presence of rays, banded parenchyma, and tyloses inside of the vessels (Figure 32) (Hoadley 1990:6,104).

According to Chapelle (1973:646), New England fishing schooners, particularly those built in Essex and Gloucester, were built primarily of oak and white pine prior to the 1840s. Between 1845-1865, vessels were made of white pine top timbers with oak and pine planking (Chapelle 1973:646). As oak supplies diminished, imported southern long-leaf yellow pine was often used as a substitute, in addition to juniper (*Cupressaceae juniperus*), maple, birch, spruce, and white oak imported from Virginia and Maryland following 1865 (Chapelle 1973:646; Hoadley 1990:3-6). Following 1865, fishing schooner keels were built from white oak, yellow pine, maple, or birch. Keelsons were typically 12 x 12 in. and could also be hewn from yellow pine, red or white oak, maple, or birch. Deadwood was often built from yellow pine, oak, maple,

or birch and stem and stern posts were of white oak (Chapelle 1973:646-647). While these identifications do not hold a smoking gun for the construction of CLS0006 in New England, they are consistent with the species listed in *Seychelle*'s insurance documentation and shipbuilding practices of the time (RAFS 1879:939).

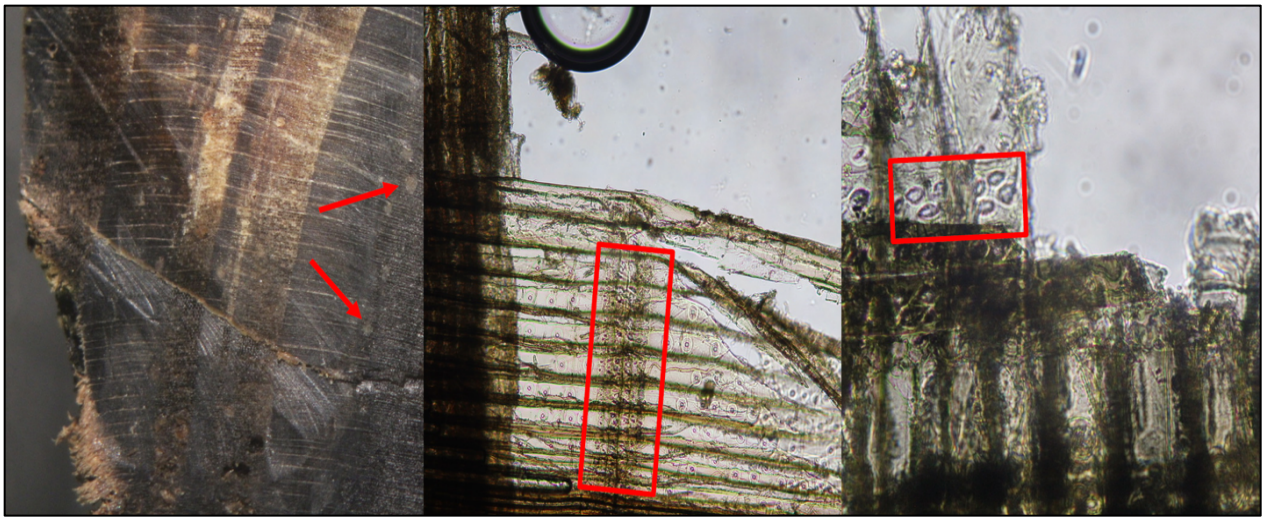


FIGURE 31: Diagnostic features of Samples 1, 2, and 3 indicating southern yellow pine. Red highlighting shows resin canals (left) (Hoadley 1990:20), dentae ray tracheids (middle) (Hoadley 1990:16-17), and pinoid pits (right) (Hoadley 1990:26-27).

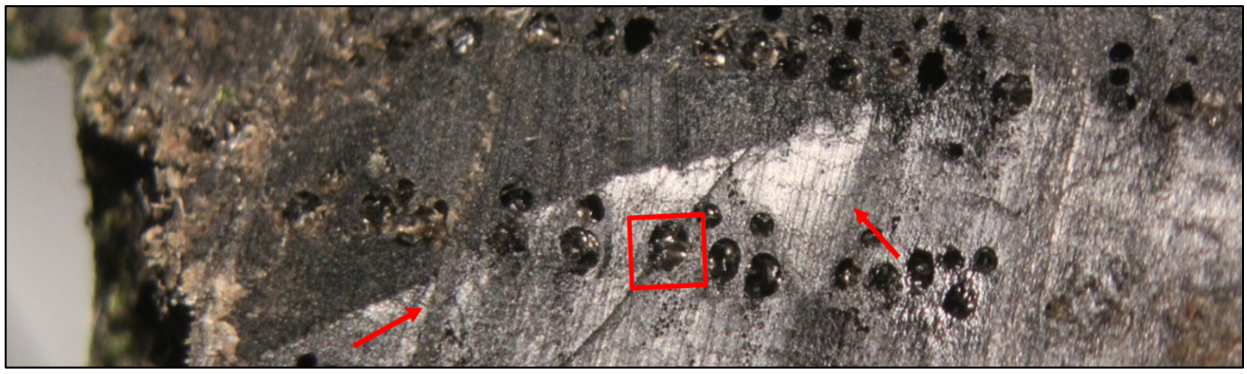
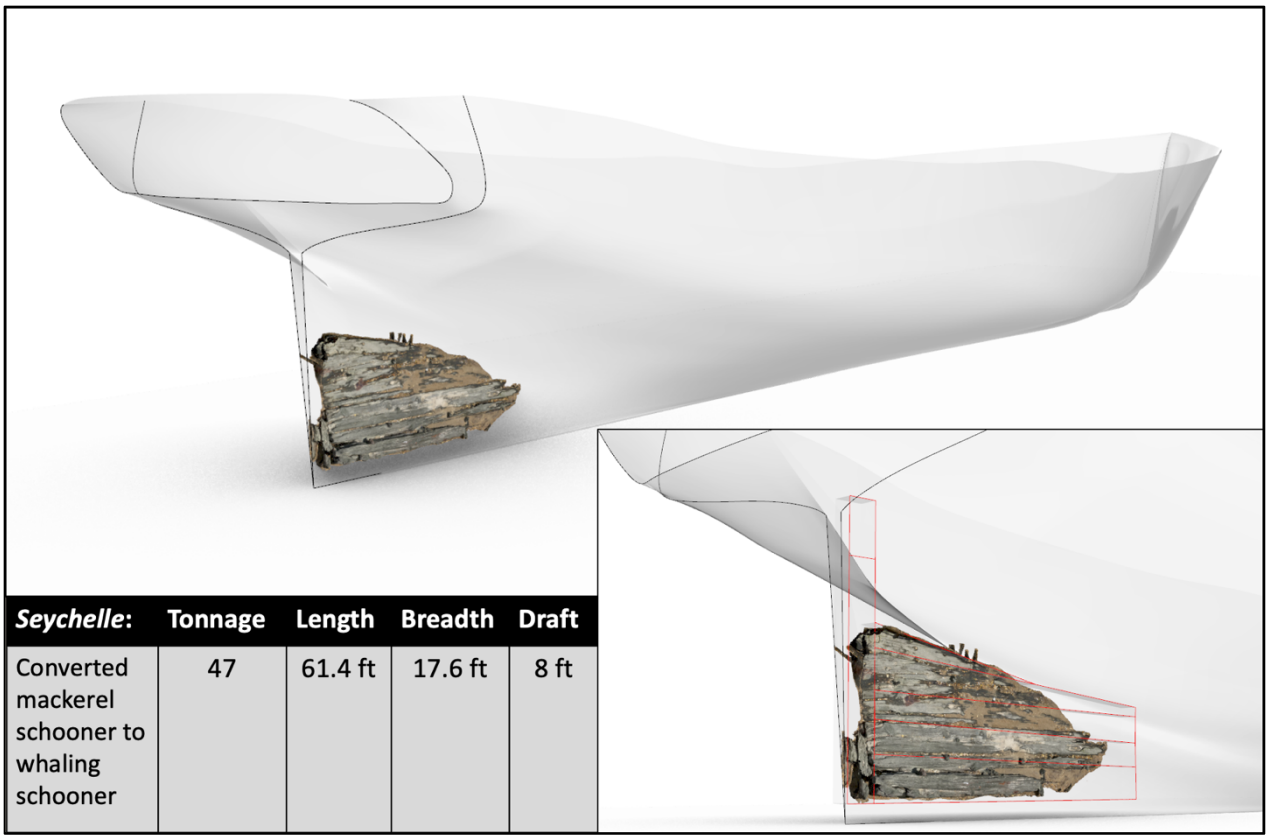


FIGURE 32: Diagnostic features of Sample 4 indicating white oak. Red highlighting shows rays (left), tyloses inside of vessels (middle), and banded parenchyma (right) (Hoadley 1990:104).

Efforts to assess a relationship between CLS0006 and *Seychelle* also included comparative analysis with other New England fishing schooners of the period. Although the dimensions of the clipper mackerel schooner previously described by Chappelle (1973:67-68) closely match the recorded dimensions of *Seychelle*, digital scans of it were unavailable. Instead, the lines of *Etta G. Fogg*, provided by the National Museum of American History (Figure 17), were considered. Despite Chappelle's (1973:97) recorded length, breadth, and depth (88.7, 24.7, and 8.3 ft.) for *Etta G. Fogg* being significantly larger than those registered for *Seychelle* (61.4, 17.6, and 6.8 ft.), the vessel was chosen for comparison due to its known operational history as a converted schooner, its clipper construction, and its association with E. & E.K. Cook & Co. To visualize the reconstruction of *Etta G. Fogg*, a three-dimensional (3D) model was created using Rhinoceros 3D software. To construct the model, a shell of the vessel was first created using its digitized lines. Once constructed, the photogrammetric model of CLS0006 taken in 2021 was mirrored, scaled, and exported into Rhinoceros 3D and placed at the stern assembly of the vessel (Figure 33). This proved useful, as the wreckage represented at CLS0006 fits the stern assembly of a clipper-style New England fishing schooner.



Seychelle:	Tonnage	Length	Breadth	Draft
Converted mackerel schooner to whaling schooner	47	61.4 ft	17.6 ft	8 ft

FIGURE 33. Reconstruction of lines of *Etta G. Fogg* with mirrored model of CLS0006 juxtaposed.

Though a positive identification as the wreck of *Seychelle* is unlikely due to the constraints in size, diagnostic features, and archaeological context, CLS0006 is undoubtedly a more plausible candidate than CLS0003. As a result, future surveys for *Seychelle* should expand beyond CLS0003, since this initial investigation of CLS0006 demonstrates that CALO has archaeological material that could be of significance that has yet to be fully documented or interpreted.

Summary and Future Considerations: Adaptive Reuse of Shipwrecks

For centuries whalers visited NC for its deep harbors, proximity to the Gulf Stream, and seasonal fair weather. The connection between the Hatteras Grounds and Provincetown has

potential to produce archaeological evidence of plum-pudding operations through remains of lost or abandoned vessels. One such vessel is that of the converted fishing schooner *Seychelle*, which was wrecked at Cape Lookout in 1879. Despite investigations at some of the shipwreck sites situated within the boundaries of CALO, none has yet been conclusively identified as the remains of that schooner.

In the 144 years since its wrecking, *Seychelle*'s identifiable features have likely been erased, disarticulated, or removed from their context. Though previously suggested to be the wreck of *Seychelle*, the remains documented at CLS0003 are likely unrelated given evidence recovered from Debris Sites 01 and 02 which suggest a better match with a much larger vessel and that from Debris Sites 03 and 04 which provides inconclusive data. The wreckage recorded at CLS0006, however, presents a much better case for further investigation as the remains of *Seychelle*. And though a positive identification for *Seychelle* is unlikely given local environmental factors such as extreme weather events and cultural activities like dredging in Barden Inlet, the focused analysis of CLS0006 demonstrates that CALO has a greater potential for maritime archaeological survey than is currently realized.

One final consideration for future study is the role of *Seychelle* in another resource-driven and heavily risk-influenced society: the shore whaling community of Shackleford Banks. At the turn of the twentieth century, Cape Bankers (or "Ca'e Bankers") were driven from Shackleford Banks by poor weather and a scarcity of whales (Allen 2019). In their exodus to Morehead City, NC, they established the "Promise Land" neighborhood, an area spanning five streets between the areas of Arendell Street and Bogue Sound (Allen 2019). This area is home to stories, reports, and existing structures that depict a history of maritime salvage and adaptive reuse, including many of its structures which are built from repurposed ship timbers or floated across from

Shackleford Banks (Little 2001:29). One example of this is Franklin Memorial Church, originally located at 1112 Arendell Street (Little 2001:29). Built by its congregation between the late 1880s and early 1890s, its original structure incorporated shipwreck planks floated over from Shackleford Banks (Figure 34) (Franklin Memorial Methodist Church 1962:3). Unfortunately, the original structure was demolished shortly before World War I and rebuilt with brick in 1923 so the possibility some of those timbers belonged to *Seychelle* cannot to explored (Franklin Memorial Methodist Church 1962:3; Little 2001:29).

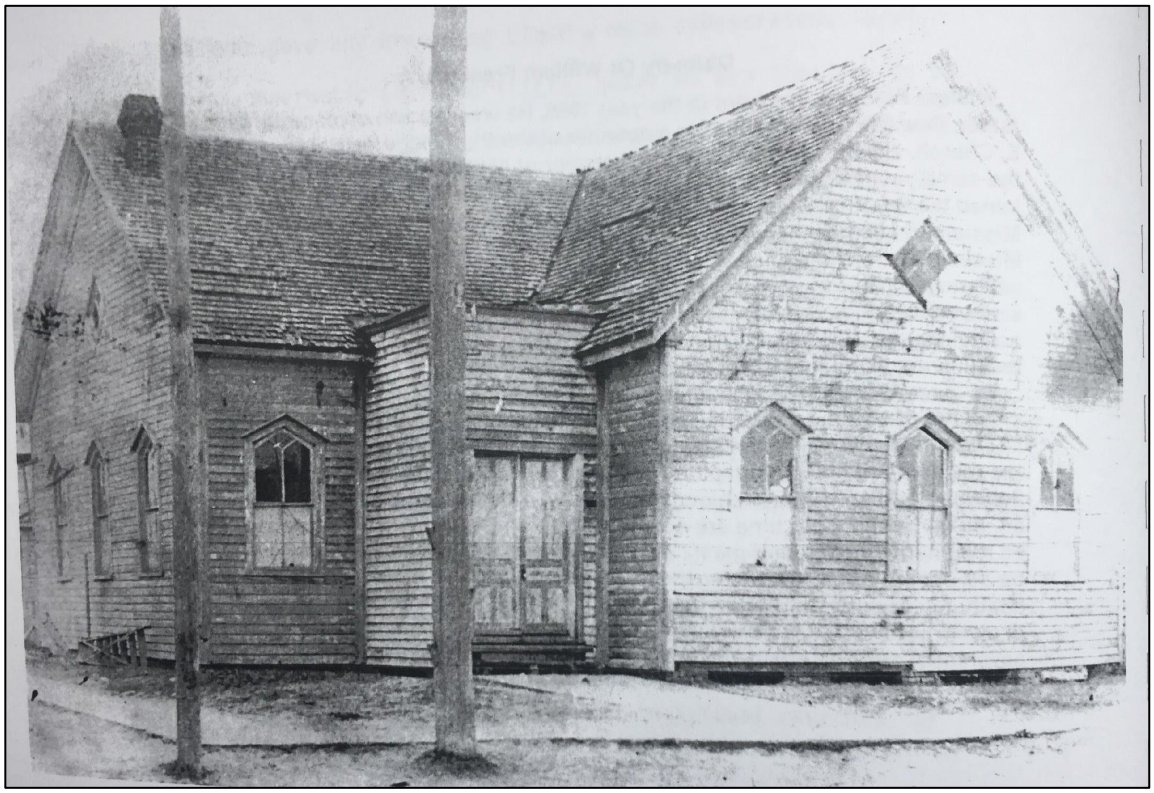


FIGURE 34. The original building of Franklin Memorial Church constructed of lumber from local shipwrecks (Courtesy of Reverend Donald Thomas).

Conclusion

In a 1955 interview with local resident and descendent of the Shackleford Banks community, Jimmy Guthrie, author David Stick reports that *Seychelle* was salvaged where it lay shortly after its wrecking (Stick n.d.). Though this is a singular line of evidence, the wreck

Seychelle would have likely been scavenged for its resources if readily accessible in this environment. Stripped of its timbers and hardware, leaving only the heavier, foundational portions of the vessel such as the keel or stern assembly that were more difficult to transport, the resources gleaned from *Seychelle* could have provided structural material and a potential risk management tool for the Shackleford Banks community. In this case, years of storm activity likely broke apart whatever remained of *Seychelle*, dispersing wreckage into the bight. While no conclusive archaeological evidence of *Seychelle* currently exists, the investigation into its construction and that of other vessels of the E. & E.K. Cook & Co. fleet conducted in this chapter provides further context in examining their operational history and factors that may have contributed to their final risk-taking and risk-averse behavior.

Chapter Seven. Discussion and Conclusions

Introduction

The preceding chapters provided a history of plum-pudding strategy, a fleet biography of E. & E.K. Cook & Co., an operational history of the company, and an archaeological evaluation of sites suspected to be affiliated with *Seychelle* and the Cook's final voyage to the Hatteras Grounds. While evaluated individually, the data presented can be ultimately interpreted together through the theoretical framework of risk assessment introduced in Chapter two. As discussed, that framework was built upon the social risk theories of Charles Perrow (1999), William W. Lowrance (1976), and Anthony Giddens (1984) and applied to discrete applications of maritime systems, specifically Provincetown plum-pudding whaling.

Summary and Review of Maritime Social Risk Theory

The model (Figure 35) representing the theoretical framework of risk assessment for Provincetown plum-pudding whaling offers a guide for evaluating risk and its resulting behaviors. As a cycle, its five steps are interconnected and influence one another through individual agency, judgement, acceptance, reaction, and experience. Each completed cycle produces experience that is recycled into the next turn, thus influencing agent values and perceptions. The decisions (being a successful or failed attempt at risk management) of the agent determine whether the risk cycle returns a positive or negative output. Depending on the outcome, as the cycle continues to repeat, the agent gains additional values, such as confidence or fear, that can both benefit and hinder future risk management and behaviors.

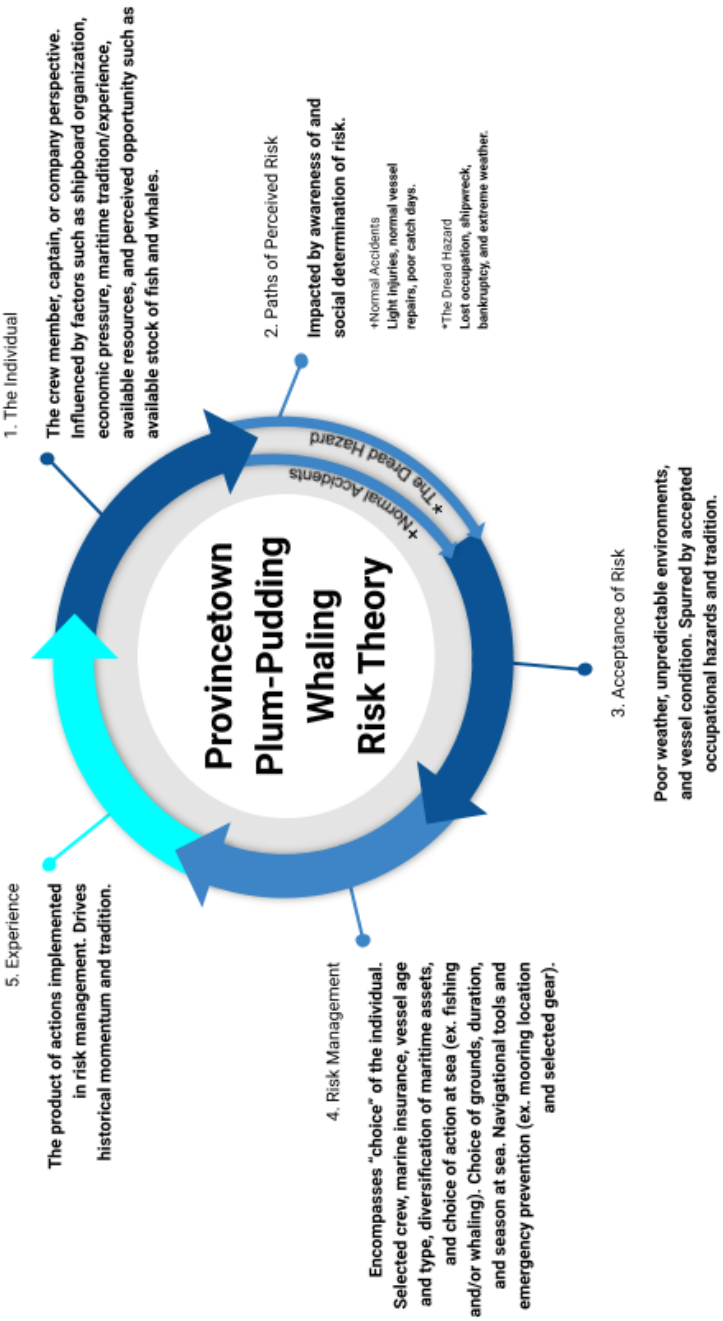


FIGURE 35. Discrete social risk theory for Provincetown plum-pudding whaling. Developed by the author.

Using E. & E.K. Cook & Co. as a case study, the framework accounts for the social, economic, traditional, and technological factors that influenced their operations between 1837 and 1879. These influencing factors are inherent in maritime systems as the environment of marine industries often encourages or enables risk due to economic pressures, singular shipboard authority, and environmental hazards. The dynamic, marine environment presents inherent challenges and potential for catastrophic events that are often unchecked or instead publicly accepted due to maritime tradition and natural isolation. As discussed in Chapter two, maritime systems are often moderately to tightly coupled, linear systems meaning their components are often simple, but moderately interdependent. As a result, technological solutions, or solutions that increase interdependency, in risk management of marine systems often result in increased failure points and decreased ease of recovery (Perrow 1999:175). For example, a maritime company that manages risk through diversifying assets, such as engaging in multiple separate but related industries, may increase the overall coupling of the company and increase its susceptibility to failure should one industry decline.

Finally, the application of social risk theory to maritime industry must also include recognition of agent reflexivity, risk inevitability, normal accidents and dread hazards, and acceptable risk. In review, reflexivity is the agency and self-evaluating tendency of agents to influence their own behaviors. Essentially a "human error" factor, agent reflexivity can account for irrational behavior and poor decision making in the face of crisis and offer insight on historic values of acceptable risk. Reflexivity and agency are considered with Step 1, *The Individual* (Figure 35). Be it the perspective of a crewmember, captain, or company, all perspectives can be considered under the term "agent". While prior influences including experience, tradition, and the marine environment can be recycled through to the next cycle or event where the agent

undergoes risk, Step 1 is where new factors that influence behavior enter and where the biggest changes or developing crises are first observed by an agent.

After observing a new or reoccurring risk in Step 1, the cycle then moves on to Step 2, *Paths of Perceived Risk*, in which risk inevitability operates (Figure 35). As nothing is free of risk (Lowrance 1976:8), accidents are inevitable (Perrow 1999:3). While mitigation and previous experience may lower risk, nothing fully removes it. The awareness and social determination of a risk by an agent determines whether it is a normal accident or dread hazard. As previously discussed, normal accidents are those caused by combined factors, rather than single-point failures (Perrow 1999:3-5). They are considered standard risks, such as light bodily injuries like bruises or burns, small and manageable vessel repairs, and days with unideal weather or low catch of fish or whales in maritime industries. While none of these risks are catastrophic by themselves, however, combined events and interactions can become devastating, though preventive management is often minimal. In contrast, dread hazards are rare events that produce a larger emotional reaction and preventative management, such as shipwreck and extreme weather. Loss of occupation could be considered a dread hazard to an individual crew while bankruptcy may invoke the same response to a company. In Step 2, the agent's perception is what later affects its behavior or reaction, but only after considering accepted risks in Step 3, *Acceptance of Risk* (Figure 35).

Steps 2 and 3 are closely connected as perception of risk is often determined or later altered by levels of acceptable risk. As noted previously, risks are inevitable, so there must be some level of accepted risk in any productive industry. Acceptable risk is determined from prior judgements made by the agent, the industry, or the environment, such as established safety measures, experience, and social determination of risk. Maritime environments inherently carry

acceptable risks such as poor weather, poor vessel conditions while away from port, and a history of occupational hazards and tradition as stated in the framework and prior discussion. Operating in remote areas or isolating environments while on a voyage, maritime industries carry less social determination of risk and are far more internally driven by tradition, historic momentum, and difficulty of an agent to decline certain risks. Ultimately, accepted risk is relative and subjective, and varies depending upon the environment in which the agent operates (Lowrance 1976:76). After perceiving an event as a normal accident or dread hazard and accounting for acceptable factors such as a dynamic environment, an agent then utilizes judgement and prior experience to determine its method of risk management.

Step 4, *Risk Management* (Figure 35), is the final step in the cycle over which the agent has direct influence. Step 4 is the action produced by the interactions of the previous three steps resulting in choices made by an agent. In a maritime environment or on a plum-pudding vessel, this encompasses hired crew, purchase of marine insurance, and choice of activity (fishing or whaling), as well as choice of grounds, voyage length, and operating season. Ultimately, the vessel itself is also a product of this step as it was selected as the best fit for the voyage just as any navigational tools or systems of emergency prevention were selected as preventative measures. Once the cycle leaves Step 4, Step 5 (Figure 35), *Experience*, demonstrates the product of these choices and whether they were sufficient in managing risk effectively. Experience is the outcome of the cycle but is also one of the driving forces as the cycle restarts and factors like historical momentum and tradition again influence the agent in future decision making and behaviors.

As previously discussed, the assessment cycle is in a continuous state of interpreting, evaluating, and managing risk throughout the duration of an event, be it a voyage or entire

company operational history. Though the tenets of this framework provided by Charles Perrow (1999), William W. Lowrance (1976), and Anthony Giddens (1984) were originally meant for modern, occupational hazards, they are based in basic human behavior and applicable to a marine environment, maritime industry, and specific maritime activity like Provincetown plum-pudding whaling. Determined previously through archival and archaeological materials, the E. & E.K. Cook & Co. example presents as a case study in risk theory where the consideration of plum-pudding strategy and Cook vessels, operations, and productivity can ultimately lead to a better framework for evaluating the events of 1879 and the company's bankruptcy. The following discussion evaluates these factors individually before inserting the events of 1879 into the framework and forming conclusions on the validity of the Cook's actions and that of plum-pudding strategy.

Plum-Pudding Strategy

Chapter three evaluated the known history of plum-pudding whaling during the late eighteenth and late nineteenth centuries. It explored its origins, including the association of its name in a variety of contexts from food to *Moby Dick* (Melville 1851:77). As discussed, plum-pudding whaling generally refers to short, near-shore Atlantic whaling voyages typically undertaken by Provincetown schooners (Ashley 1926:103). It is unique as a strategy built on opportunistic practices, including whaling during the off periods of other fishing seasons (Ashley 1926:103), the selection of converted fishing schooners refit for whaling (German 1970:102), and the limitation of time spent on voyages to maximize profits during the industry's decline, all of which allowed the strategy to persist into the twentieth century (Hohman 1928:308). Bookending the industry during periods of growth and decline, plum-pudding whaling strategy

was primarily an economic response to reduce risk in the whaling industry when faced with limited resources and opportunity for profit.

Maritime Social Risk Theory: Plum-Pudding Strategy

The framework of maritime social risk theory developed for this study, while applicable to general maritime industry, is intended specifically to evaluate Provincetown plum-pudding whaling. The framework provides a baseline understanding of the practice and the risks that contributed to the historical momentum and tradition observed in E. & E.K. Cook & Co.'s operations. Compared to the general framework discussed in Chapter two, the one applied to plum-pudding considers the driving economic pressures and limited resources (Step 1) inherent to the strategy. The normal accidents and dread hazards (Step 2) that could result from whaling on small, converted schooners in turn influenced risk mitigation measures (Step 4), such as undertaking near-shore voyages, restricting them to the Atlantic Ocean, and seizing the opportunity for profit via normal fishing operations when not whaling. This in turn produced a system of whaling and perception of limited associated risk and high reward that would later contribute to historic momentum and influence on Cook operations. While plum-pudding strategy sets the general structure, foundation, and limitations of this framework, consideration of the Cooks as a case study provides the opportunity for discrete evaluation of their fleet, operations, and productivity, thus creating a customized framework to assess the company's dissolution.

E. & E.K. Cook & Co. Fleet

The first half of Chapter four evaluated the fleet biography of E. & E.K. Cook & Co., focusing on 17 out of its 26 vessels involved in Provincetown's fishing, whaling, and packet

industries. The majority of the Cook's fleet were schooners that were either fully converted for whaling or operated concurrently in both the fishing and whaling industries. The Cooks owned the largest schooner fleet during 1868-1873 with at least 10 vessels in operation. Prior to 1865, the Cooks operated a maximum of four schooners annually in the whaling industry. After 1865, the whaling fleet grew to a maximum of nine schooners but declined to five from in 1870-1875 and six 1875-1879. Of the 17 evaluated schooners, 10 were used for both fishing and whaling activities over their service life, while four were used strictly as whaling schooners and three as fishing schooners. The Cook's fleet overall displays a multi-use characteristic. Vessels were intentionally selected to match a preferred construction, as demonstrated by the overall statistical significance in similarity between individual constructions and metrics. As a result, on average Cook plum-pudding schooners weighed 92.67 tons and measured 72.98 ft long, 20.92 ft wide, and 7.93 ft deep. The fact that only four of the company's schooners were newly built or purchased within a year of their construction indicates a significant preference for older vessels purchased by the Cooks, with an average age of 6.43 years. Each schooner's average lifespan was 12 years of service with the Cooks and, as previously discussed, likely incorporated construction features from originally planned function as a fishing vessel, such as a clipper build and break deck. Overall, the E. & E.K. Cook & Co. fleet biography is characterized by multi-use vessels and economical risk mitigation.

Maritime Social Risk Theory: Fleet Biography

In terms of the framework, the E. & E.K. Cook & Co. fleet provided a method of risk management through economic, multi-use vessels. As discussed previously, these vessels were fast but heavily built and provided the carrying capacity necessary for both fishing and whaling ventures. Given the extended use and age characteristic of the Cook fleet, however, this would

have also presented potential challenges for repairs. In addition to age, each schooner would have also been susceptible to the expected normal accidents and dread hazards of the industry, such as shipwreck. While maintaining a large fleet may have placed economic pressures on the company, the fleet had not dramatically decreased by the time of its dissolution. Likely, a larger economic pressure resulted in eventual bankruptcy, such as lack of profits from whaling or unsustainable growth of the Cook's other maritime industries. Overall, given the size of the fleet and multifunction use of the schooners, the fleet is considered a risk management tool rather than a factor that increased risk for the company.

E. & E.K. Cook & Co. Operations

The second half of Chapter four evaluated the operational history of E. & E.K. Cook & Co. based upon 151 *Provincetown Advocate* references, over 450 individual insurance registries, and data from 72 recorded voyages (1843-1878) listed in Lund et al.'s (2021) *American Offshore Whaling Voyages: A Database*. In terms of voyage trends, more than half of the Cook's voyages (with recorded durations) lasted 10 months or less and voyages became consistently shorter following 1867. Compared to other 5-year increments, the Cooks undertook the highest number of whaling voyages between 1875 and 1879, with nine total voyages and an average voyage duration of 9.67 months. As previously discussed, though they were undertaking more voyages during this period, they used fewer vessels. In terms of voyage destinations, of the 34 Cook voyages (with known locations), 31 fished in the Atlantic Ocean; of those voyages, 14 were spent in the generic location of "the Atlantic" and 17 at specified destinations like Cape Verde, the West Indies, and the Gulf of Mexico. Of the voyages with recorded locations, the Cooks undertook the greatest amount of unique, single-visit voyages from 1865-1870 when the company operated the largest number of active whaling schooners. This period saw the Cooks

fish in the Atlantic, but also voyaging to the Desolation Islands of the Southern Indian Ocean and the West Indies. Between 1870 and 1879, all 25 Cook whaling voyages with known locations were in the Atlantic. During the company's highest period of voyaging, between 1875-1879, the Cooks traveled three times to the West Indies, two times to the Gulf of Mexico, and once to Cape Verde. With an operational history restricted mostly to the Atlantic Ocean and its nearby regions, E. & E.K. Cook & Co. is representative of plum-pudding strategy and near-shore schooner operations.

Maritime Social Risk Theory: Operational History

In respect to the theoretical framework of risk assessment, the strategy of short, specialized voyages also functioned as a risk management tool. The Cooks experienced a distinct shift to plum-pudding whaling following 1867. Limited time spent at sea produced fewer expended resources and in turn minimized potential risk and loss. By focusing efforts largely on the Atlantic grounds, the Cooks specialized their operations rather than searching for new grounds and undertaking unknown risks in the Pacific Ocean. Their fleet of near-shore schooners was fit for voyages from New England to the Cape Verde Islands and demonstrated success through this strategy. In addition, the observable trends towards the end of their operations with increased voyages but decreased available vessels and time spent at sea is interpreted as a risk mitigation strategy and response to limited resources and declining profits. Though longer periods spent at sea might produce additional profits, this would have been considered an acceptable risk in plum-pudding strategy as the security of short, near-shore voyages far outweighed any unknown benefit given the overall economic pressures of the industry during its decline.

E. & E.K. Cook & Co. Productivity

The final contributing factor for evaluation of E. & E.K. Cook & Co. is its productivity, or level of success. In 1866 shortly before the Cooks switched to shorter whaling voyages and expanded the fleet, E. & E.K. Cook & Co.'s wharf supported mackerel, codfish, whale, and salt production and included a forge, chandlery, and ship refit and repair service (Bryant 1978). This period leading into the 1870s appears to have been the company's busiest. This theory is mirrored in the recorded catch data. Between 1855 and 1860, there is no known recorded oil production by the Cooks. However, in 1860-1865 oil and baleen production dramatically increased, peaking in 1865-1870 with 3,896 bbl. of sperm oil, 2,812 bbl. of whale oil, and 800 lbs. of baleen, before again declining until 1879. Following the decline of whaling beginning shortly after the discovery of petroleum in 1859, it appears the Cooks were able to implement a profitable strategy of plum-pudding whaling in the 1860s as demonstrated by previously discussed trends in vessel selection, operations, and catch. During the 1870s, this strategy was no longer profitable, leading to a smaller fleet and increased voyages up until 1879. This observable response to crisis manifested with the Cook's1879 voyage to the Hatteras Grounds aboard *Seychelle*.

Maritime Social Risk Theory: Productivity

The final contributing factor to the Cook's social risk framework is their productivity. Productivity can be considered the experience or result of previous risk perceptions and behaviors. In turn, it influences future judgements and actions. Prior to 1867, the Cooks did not use a full plum-pudding strategy and would have been influenced by the larger social determination of the time of whaling for longer periods. Following the implementation of shorter

voyages, the Cook's operations boomed. However, once the strategy became less effective with profits decreasing and economic pressures increasing, rather than again switch strategies, the Cooks continued with more frequent voyages, doubling down on plum-pudding whaling. Though this decision may appear irrational given the dropping profits, the framework accounts for the agency of the company in making decisions based on lived experience and influencing pressures. As a result, these combined factors led to the company's eventual bankruptcy and voyage to the Hatteras Grounds as a final attempt for self-preservation.

Evaluation of 1879: *Seychelle*'s Voyage to the Hatteras Grounds

Discussed in Chapters four and five, the bankruptcy and final voyage of E. & E.K. Cook & Co. began in October 1878 with the company owing $570.11 in taxes (*Provincetown Advocate* 1878c:1). By February 1879, the Deputy Sheriff Messenger of Provincetown issued the company a Warrant in Insolvency (*Provincetown Advocate* 1879f:3) and by the end of April 1879, much of their property sold at public auction (*Provincetown Advocate* 1879i:3, 1879l:3). Despite those events, Ebenezer and E.K. Cook personally undertook the company's final fishing and whaling voyage, departing Provincetown on April 24, 1879, for the Hatteras Grounds (*Provincetown Advocate* 1879s:2). Joined by at least five other crew, they arrived at Morehead City on June 26, only to wreck in a hurricane on August 17, having hunted no whales (*Provincetown Advocate* 1879s:2, 1879t:2, 1879w:2). As the final company voyage, *Seychelle*'s 1879 expedition presents as an ultimate analysis of risk for E. & E.K. Cook & Co. given its representation as a typical Cook fishing and whaling schooner and its extended association with the company since 1857.

Maritime Social Risk Interpretations of Seychelle's 1879 Voyage

Given the previous discussions of vessels, operations, and productivity, the social risk theoretical framework for plum-pudding whaling accounts for the Cook's agency, lived experiences, influencing factors, and risk management strategies. As a result, the framework is a reasonable method of assessing the validity the company's final voyage. Step 1 considers the state of the company as they prepared and embarked on a journey to the Hatteras Grounds at the end of April. By this point, much of their assets, including *Seychelle*, had already been sold. Facing critical economic pressures at both an individual and industrial level, the company could have been influenced by extremely limited resources, perceived opportunity in NC, and former experiences of success with plum-pudding strategy.

In preparing for this voyage, the company would have evaluated anticipated normal accidents and dread hazards. Though ambiguous in some respects, having a company headquarters in Beaufort would have provided more management strategies for some normal accidents, assuming the Cooks would have used Beaufort as a known port for repair and resupply during their journey (*Provincetown Advocate* 1879s:2). The dread hazard, however, was either ignored or unknown. Oral histories from the Cook's 1879 expedition to Cape Lookout present as if the company was unfamiliar with the area, asking Shackleford Banks whalers about best local conditions (Stick 1990:185). Traveling to the Hatteras Grounds outside of the local whaling season and during hurricane season assumed a risk of extreme weather and difficult profit. Regardless, this choice demonstrates the overwhelming economic pressure the company was under at the time and the risk it was willing to accept.

Given the accepted risks of normal occupational hazards and poor weather, the company would have implemented risk management strategies to best reduce risk and maximize

opportunity for profit. As discussed previously, it is unclear how E. & E.K. Cook & Co. remained in operation of *Seychelle* following its sale at public auction. Regardless of the vessels available, whether intentional or not, they selected one of the oldest, multi-use schooners in their fleet and the one that had been in their possession the longest. This could have been a strategy based on lesser perceived value due to age or higher perceived value due to reliability and opportunity for both fishing and whaling. In addition, both company owners joined the voyage whether out of lack of available crew or to ensure the presence of skilled whalers and fishers onboard. Regardless, the selection of *Seychelle* and its crew was a distinct risk management strategy on the part of the Cooks.

Despite those actions, *Seychelle* wrecked in the August 1879 hurricane at Cape Lookout. Without logbooks or other documentation from this journey, it is difficult to fully evaluate the event without assuming and invalidating the agency of Ebenezer and E.K. Cook, their company, and their crew. Given that the company ceased operation following that expedition, however, it is safe to assume that this voyage was the final opportunity for self-preservation. With voyage's failure, the Cook's exited the risk framework defeated after multiple cycles while attempting to sustain profits from the whaling industry in its decline.

Due to the eventual failure of the industry, the end of E. & E.K. Cook & Co. was inevitable if it relied on whaling profits. Without overwriting the layman's perspective with modern judgement, perhaps if the company had focused solely on fishing ventures it might have persisted. But in doing so, it may have also met an earlier decline without the substantial whaling profits gained in the 1860s. Regardless, as a case study of plum-pudding whaling and adaptive response to crisis, the history of E. & E.K. Cook & Co. provides considerable context for a little understood or studied field of maritime history.

Significance and Justification

Regardless of positive identification of the wreck of *Seychelle*, since relatively little is known regarding the construction elements of converted whaling schooners, this research undoubtedly shines new light on features of the vessel type through the survey of ships plans and the techniques employed for plum-pudding whaling voyages documented in logbooks and catch reports. More importantly, risk assessment provides evidence of distinct, and calculated strategy in plum-pudding whaling that has long been forgotten or flippantly discredited (Hohman 1928:85; Gurney 2002:20).

The historical narrative of the plum-pudding response to crisis lends itself to interpretation, providing a better understanding of the uses of converted whaling schooners through a reconstructed timeline of E. & E.K. Cook & Co.'s fleet during whaling's decline. Despite previous research undertaken into *Seychelle*'s loss in NC, no in-depth discussion of its use or connection back to the Provincetown plum-pudding strategy were made. As such, this thesis serves as a cornerstone to archaeological and historical knowledge deficits of previous research surrounding *Seychelle* and E. & E.K. Cook & Co., using both to create a comprehensive analysis of Provincetown plum-pudding whaling.

Referred to by Mary Heaton Vorse (1942:14) as "[carrying] in his small person the whole history of the rise and fall of the whaling industry," E.K. Cook and his family of whalers, fishers, and maritime entrepreneurs has provided a fascinating opportunity for social risk analysis of Provincetown's reaction to whaling decline, flanked at either side of the industry's success and downfall. In addition, further study into the Cook family and its support of plum-pudding voyages has better delineated the historical context and definition within the muddled and somewhat nebulous understanding of the practice in present discourse. Until now, despite the

Cooks' local renown as one of Provincetown's greatest whaling families, little research has been undertaken on the extant records and potential remnants of associated company vessels. Recognition and study of these documents and material culture contained in this thesis has provided insight, avenues, and a synthesized foundation for future work developing a vessel archetype or identifying plum-pudding activity in other companies that historic census data and local records cannot.

Conclusion

Primary questions for this study concerned assessing discernable features of plum-pudding schooners, the operations of multi-use vessels within various fisheries, and the behavioral responses of whalers to crisis and risk. The previous chapters provided data, analysis, and discussion on plum-pudding whaling strategy, E. & E.K. Cook & Co., and a framework for evaluating discrete social maritime risk. As a result, the Cook family actions were assessed for validity. Upon first interpretation, the 1879 voyage of *Seychelle* to the Hatteras Grounds seems irrational and reckless when considering local weather and whaling operations. The social risk theory, however, accounts for the economic pressures in the decades preceding 1879, the limitations of plum-pudding whaling strategy, and the agency of the company and its members. Though still a failure, rather than a lapse in judgement, the 1879 voyage was instead a final, valid attempt at self-preservation. As such, this case study speaks to the pressures and dread felt by whalers during the industry's decline and how plum-pudding strategy was one method of attempted mitigation.

The study of plum-pudding whaling is largely ignored outside of popular literature and casual mention in terminology. This thesis has shown it to be a valid whaling strategy, especially when considered with risk. Given its prevalence during periods of limited whaling resources, the

plum-pudding strategy should be considered and named in future studies, rather than viewed as a lower form of schooner whaling. As demonstrated by this research, when coupled with risk theory the plum-pudding strategy was a distinct and deliberate behavioral response of whalers to crisis and economic pressure.

Finally, without a definitive representation in the archaeological record, future work should be devoted to assessing whaling schooner sites for physical characteristics of plum-pudding whaling activities. The development of an associated archetype based on material evidence would further inform the ways in which a plum-pudding schooner might manifest archaeologically. As multi-use vessels, these distinct characteristics might be overlooked as only applicable to the whaling industry unless specific consideration is given to a vessel's potential involvement in historic fisheries. While *Seychelle*'s wreck site may never be positively identified, CALO poses an immense opportunity for archaeological study and reevaluation of formerly identified sites. This reinterpretation of CLS0003 and CLS0006 reopens the search for *Seychelle* and provides an opportunity for reassessing the accuracy of other 'identified' sites within the National Seashore. Overall, this thesis offers a better understanding of the plum-pudding whaling strategy and its influence on risk within the whaling industry of the late nineteenth century. Through the case study of Provincetown's E. & E.K. Cook & Co., it provides a long overdue narrative on this neglected portion of the maritime history for that community.

References

Allen, Everett S.
1973 *Children of the Light: The Rise and Fall of New Bedford Whaling and the Death of the Arctic Fleet*. Little, Brown & Co. Boston, MA.

Allen, Jennifer
2019 Event to Celebrate Promise Land's History. Coastal Review. Newport, NC. https://coastalreview.org/2019/10/event-to-celebrate-promise-lands-history/.

American Lloyd's Register of American and Foreign Shipping Transcript
1859-1883 Digitized by Mystic Seaport Museum. Mystic, CT.

Ashley, Clifford
1926 *The Yankee Whaler*. Houghton Mifflin Co., Boston, MA.

Baker, Abijah
1847 *The Ark, Ships and Shipbuilding, with a Brief History of the Art and a Register of Vessels Built in Medford.* Sermon. Medford, MA.

Barker, George
1916 *Thrilling Adventures of the Whaler Alcyone: Killing man-eating sharks in the Indian Ocean*, *hunting kangaroos in Australia.* George Barker. Peabody, MA.

Basberg, Bjorn L., Jan Erik Ringstad, Einar Wexelsen, and Kommandør Chr. Christensens hvalfangstmuseum, editors.
1993 *Whaling and History: Perspectives on the Evolution of the Industry:* American Whaling. Kommandør Chr. Christensens hvalfangstmuseum. Sandefjord, Norway.

Beck, Ulrich
1992 *Risk Society: Towards a New Modernity.* Mark Ritter (Trans.). Sage Publications. London, UK.

Borrelli, Jeremy Robert
2015 The Bay of Storms and Tavern of the Seas: Risk in the Maritime Cultural Landscape of the Harbor at Cape Town, South Africa. Master's thesis, Department of History, East Carolina University, Greenville, NC.

Bryant, George
1998 Cape Cod Whalers of Color: An Exhibit of Photographs and Artifacts. Exhibit Materials, Provincetown History Project, West Barnstable, MA.

Busch, Briton Cooper
2009 *Whaling Will Never Do for Me: The American Whaleman in the Nineteenth Century*. University Press of Kentucky. Lexington, KY.

Cape Lookout Signal Service Observer
1879 Extract from Daily Journal, August 17 and 18. Core Sound Waterfowl Museum & Heritage Center. Harkers Island, NC.

Chapelle, Howard I.
1973 *The American Fishing Schooners: 1825-1935*. W.W. Norton and Company, Inc. New York, NY.

Clark, Howard A.
1887 Notes on the History of Preparing Fish for Market by Freezing. *Bulletin of the United States Fish Commission For 1887.* Government Printing Office. Washington, D.C.

Dake, Karl
1992 Myths of Nature: Culture and the Social Construction of Risk. *Journal of Social Issues*. 48(4):21-37.

Davis, Lance E., Robert E. Gallman, and Teresa D. Hutchins
1987 *Technology, Productivity, and Profits: British-American Whaling Competition in the North Atlantic, 1816–1842*. Oxford Economic Papers. 39(4):738–759.
1988 The Decline of U.S. Whaling: Was the Stock of Whales Running Out? *The Business History Review* 62(4):569–595.

Davis, Lance E., Robert E. Gallman, and Karin Gleiter
1997 *In Pursuit of Leviathan: Technology, Institutions, Productivity, and Profits in American Whaling*, 1816-1906. University of Chicago Press, Chicago, IL.

Dispatch, The
1876 Cleanup on Core Banks Delayed June 25, 1976:3. *The Dispatch*. Lexington, NC.

Duncan, Bradley G.
2004 Risky Business: An Investigation of the Role of Risk in the Development of the Cultural Seascape of the Gippsland Region of Victoria. *Bulletin of the Australasian Institute for Maritime Archaeology*. 28:11-24.

Earll, R. Edward
1887 North Carolina and its Fisheries. *The Fisheries and Fishery Industries of the United States* (Ed. George Brown Goode). Commission of Fish and Fisheries. Washington, D.C.

East Carolina University (ECU) Program in Maritime History and Underwater Research
1982 Cape Lookout Field School. Ms. on file, Program in Maritime History and Nautical Archaeology, ECU, Greenville.

Franklin Memorial Methodist Church
1962 *Eighty Years Under the Cross*. Franklin Memorial Methodist Church. Morehead City, NC.

Freud, Sigmund
1923 *The Ego and the Id.* J. Strachey et al. (Trans.), The Standard Edition of the Complete Psychological Works of Sigmund Freud, Volume XIX. Hogarth Press. London, UK.

German, Andrew T.
1970 *Down on T Wharf: The Boston Fisheries as Seen Through the Photographs of Henry D. Fisher*. Mystic Seaport Museum, Inc. Mystic, CT.

Gibbs, Martin
2002 Maritime Archaeology and Behaviour During Crisis: A Case Study of the 1629 Wreck of the V.O.C Ship *Batavia* (1629). *Natural Disasters, Catastrophism and Cultural Change* (Ed. J. Grattan and R. Torrence). Routledge. London, UK.

Giddens, Anthony
1984 *The Constitution of Society: Introduction of the Theory of Structuration.* University of California Press. Berkeley, CA.
2014 *Turbulent and Mighty Continent: What Future for Europe?* Polity. Cambridge, UK.

Giddens, Anthony, Christopher Pierson
1998 *Conversations with Anthony Giddens: Making Sense of Modernity*. Stanford University Press. Stanford, CA.

Goode, George B., Joel A. Allen, Tarleton H. Bean, James T. Brown, A.H. Clark, Joseph W. Collins, R.E. Earll, Henry W. Elliot, Ernest Ingersoll, David S. Jordan, Ludwig Kumlien, Marshall McDonald, Frederick Mathes, Barnet Phillips, Richard Rathbun, John A. Ryder, Charles W. Smiley, Silas Stearns, Frederick W. True, William A. Wilcox.
1887 *The Fisheries and Fishery Industries of the United States: History and Methods of the Fisheries*. United States Commission of Fish and Fisheries, Washington, DC.

Gurney, Alan
2002 *The Race to the White Continent: Voyages to the Antarctic*. W.W. Norton & Company. New York, NY.

Hallock, C.
1895 Whaling in Pleasant Waters. *The American Angler* 25(3):89-90.

Hawes, C.B.
1924 *Whaling*. Doubleday, Page & Company, Garden City. New York, NY.

Higgins, J.T.
1927 *The Whaleship Book*. The Rudder Publishing Company. New York, NY.

Hilt, Eric
2006 Incentives in Corporations: Evidence from the American Whaling Industry. *The Journal of Law and Economics*. 31.

Hoadley, R. Bruce
1990 *Identifying Wood: Accurate Results With Simple Tools*. Taunton Press. Newton, CT.

Hohman, Elmo
1928 *The American Whaleman: A Study of Life and Labor in the Whaling Industry*. Longmans, Green and Co. London, UK.

Hopkins, William John
1922 *She Blows! And Sparm at That!* The Riverside Press. Cambridge, MA.

Hyde, A., A.C. Baldwin and W.L. Gage.
1874 *The Frozen Zone and Its Explorers: A Comprehensive Record of Voyages, Travels, Discoveries, Adventures, and Whale Fishing in the Arctic Regions for One Thousand Years.* Colombian Book Company. Hartford, CT.

Jateff, Emily
2007 Hain't Bin Found Yet: The Search for Archaeological Evidence of Shore Whaling at Diamond City. Master's thesis, Department of Archaeology and Maritime Archaeology, Flinders University of South Australia, Adelaide, South Australia.

Jackson, G.
1978 *The British Whaling Trade*. Archon Books. Hamden, CT.

Krahulik, Karen Christel
2005 *Provincetown: From Pilgrim Landing to Gay Resort*. NYU Press. New York, NY.

Kugler, R.C.
1980 *The Whale Oil Trade 1750-1775*. Old Dartmouth Historical Sketch Number 79. Old Dartmouth Historical Society. New Bedford, MA.

Lidz, Victor M. and Talcott Parsons
1972 *Readings on Premodern Societies.* Prentice-Hall, Englewood Cliffs, NJ.

Lightcraft, George (Pseudonym)
1850 *Scraps From the Log Book of George Lightcraft, Who Was More Than Twenty Years a Sailor: An Account of the Whale Fishery, with Many Thrilling Incidents in the Life of the Author*. Detroit, MI.

Lindsay, David Moore
1911 *A Voyage To The Arctic In The Whaler Aurora*. Dana Estes & Company. Boston, MA.

Little, Ruth
2001 *The Historic Architecture of Morehead City, North Carolina's First Coastal Railroad Resort*. Department of Cultural Resources, North Carolina State Historic Preservation Office. Raleigh, NC.

Lowrance, William W.
1976 *Of Acceptable Risk: Science and the Determination of Safety.* William Kaufmann, Los Altos, CA.

Lund, Judith N., Elizabeth A. Josephson, Randall R. Reeves and Tim D. Smith
2021 American Offshore Whaling Voyages: A Database. Mystic Seaport Museum, Inc. and New Bedford Whaling Museum. https://whalinghistory.org.

Macy, O.
1835 *The History of Nantucket*. Hilliard, Gray, And Co. Boston, MA.

Manby, George William
1823 *Journal of a Voyage to Greenland, In the Year 1821.* William Clowes. London, UK.

Marano, Joshua L.
2012 Ship Ashore! The Role of Risk in the Development of the United States Life Saving Service and its Effects on Local Wrecking Patterns Along the North Carolina Coast. Master's thesis, Department of History, East Carolina University, Greenville, NC.

Maritime Transportation Research Board
1976 *Human Error in Merchant Marine Safety*. National Technical Information Service. Washington, D.C.

Melville, Herman
1851 *Moby Dick*. Nelson Double day, Inc. Garden City, NY.

Moment, David
1957 "The Business of Whaling in America in the 1850's." *The Business History Review* 31(3):261-291.

Morris, E. P.
1927 *The* Fore-and-Aft *Rig in America: A Sketch*. Yale University Press. London, UK.

Murphy, L. E.
1983 Shipwrecks as a database for human behavioural studies. *Shipwreck Anthropology* (ed. R. Gould). University of New Mexico Press. Albuquerque, NM.

National Archives Project
1938 *Alphabetical List of Ship Registers, District of Barnstable, Massachusetts (1814-1913)*. Division of Women's and Professional Projects Works Progress Administration and The National Archives. Boston, Massachusetts.

New Bedford Whaling Museum
2021 Life Aboard. Overview of North American Whaling, New Bedford Whaling Museum, New Bedford. <https://www.whalingmuseum.org/learn/research-topics/overview-of-north-american-whaling/life-aboard>.

New-York Marine Register Transcript
1857-1858 Digitized by Mystic Seaport Museum. Mystic, CT.

New-York Tribune
1913 Working the Rich Sperm Oil Mine Off Cape Hatteras, *New-York Tribune* 12 January: 2. New York, NY.

NC UAU
1992 Site CLS0003 Site File. North Carolina Department of Cultural Resources. Kure Beach, NC.

Nordhoff, Charles
1875 Cape Cod, Nantucket, and the Vineyard. *Harper's New Monthly Magazine*. Vol. 11. Harper & Brothers, Publishers. New York, NY.

Olmsted, Francis Allyn
1841 *Incidents of a Whaling Voyage, Etc.* D. Appleton and Co. New York, NY.

Ommanney, F.D.
1971 *Lost Leviathan*. Hutchinson. London, UK.

Parsons, Talcott
1964 Evolutionary universals in society. *American Sociological Review*. Vol. 29.
1966 *Societies: Evolutionary and Comparative Perspectives*. Prentice-Hall, Englewood Cliffs, NJ.
1971 *The System of Modern Societies*. Prentice-Hall, Englewood Cliffs, NJ.

PBS North Carolina
2021 The History of Whaling in America | American Experience | PBS. *The History of Whaling in America*. https://www.pbs.org/wgbh/americanexperience/features/whaling-history-whaling-america/.

Perrow, Charles
1984 *Normal Accidents: Living with High Risk Technologies.* Princeton University Press, Princeton, NJ.
1999 *Normal Accidents: Living with High Risk Technologies* (Revised edition). Princeton University Press, Princeton, NJ.

Poser, Stefan
2009 Speed for a Dated Technology: Rowing Boats and High-Tech in the 19th and 20th Centuries. *Icon*. 15:119-137.

Provincetown Advocate
1869a Provincetown Directory. *Provincetown Advocate* February 16, 1869:3 Provincetown, MA.
1869b The Provincetown Fleet – Agents and Commanders. *Provincetown Advocate* March 31, 1869:1. Provincetown, MA.
1869c The Provincetown Fleet – Agents and Commanders. *Provincetown Advocate* March 31, 1869:2. Provincetown, MA.
1869d Marine List. *Provincetown Advocate* June 9, 1869:3. Provincetown, MA.
1869e Marine List. *Provincetown Advocate* September 8, 1869:3. Provincetown, MA.
1869f Marine List. *Provincetown Advocate* September 8, 1869:3. Provincetown, MA.
1869g Marine List. *Provincetown Advocate* September 29, 1869:3. Provincetown, MA.
1869h Provincetown. *Provincetown Advocate* October 6, 1869:3. Provincetown, MA.
1869i Marine List. *Provincetown Advocate* September 22, 1869:3. Provincetown, MA.
1870a Product of the Fisheries brought into the District of Barnstable for the Year 1869. *Provincetown Advocate* January 19, 1870:3. Provincetown, MA.
1870b Provincetown Directory. *Provincetown Advocate* January 26, 1870:1. Provincetown, MA.
1870c Board of Trade. *Provincetown Advocate* April 27, 1870:2. Provincetown, MA.
1870d Marine News. *Provincetown Advocate* July 13, 1870:2. Provincetown, MA.
1870e Marine News. *Provincetown Advocate* July 27, 1870:2. Provincetown, MA.
1870f No title. *Provincetown Advocate* September 7, 1870:2. Provincetown, MA.
1870g Marine News. *Provincetown Advocate* September 21, 1870:2. Provincetown, MA.
1870h No title. *Provincetown Advocate* September 21, 1870:2. Provincetown, MA.
1870i Notice. *Provincetown Advocate* October 26, 1870:2. Provincetown, MA.
1871a No title. *Provincetown Advocate* January 7, 1871:1. Provincetown, MA.
1871b Massachusetts Fish Inspection for 1870. *Provincetown Advocate* January 25, 1871:2. Provincetown, MA.
1871c Americus. *Provincetown Advocate* April 19, 1871:2. Provincetown, MA.
1871d Marine News. *Provincetown Advocate* September 13, 1871:2. Provincetown, MA.
1871e Annual Meetings. *Provincetown Advocate* March 8, 1871:2. Provincetown, MA.
1871f Supreme Judicial Court. *Provincetown Advocate* May 3, 1871:2. Provincetown, MA.
1871g No title. *Provincetown Advocate* January 25, 1871:2. Provincetown, MA.
1872a No title. *Provincetown Advocate* January 31, 1872:1. Provincetown, MA.
1872b No title. *Provincetown Advocate* September 25, 1872:2. Provincetown, MA.
1872c Provincetown Whaling Fleet for 1872. *Provincetown Advocate* January 17, 1872:2. Provincetown, MA.
1872d Whalers' Report. *Provincetown Advocate* June 26, 1872:2. Provincetown, MA.
1873a Supper of Ulysses Engine Co. *Provincetown Advocate* December 17, 1873:2. Provincetown, MA.
1873b Wanted to go to See. *Provincetown Advocate* April 30, 1873:2. Provincetown, MA.
1873c Arrived and Sailed. *Provincetown Advocate* August 20, 1873:2. Provincetown, MA.
1873d Arrived and Sailed. *Provincetown Advocate* September 17, 1873:2. Provincetown, MA.
1873e Sad Affliction. *Provincetown Advocate* December 3, 1873:2. Provincetown, MA.

1874a Whalers. *Provincetown Advocate* September 16, 1874:2. Provincetown, MA.
1874b Our Public Library. *Provincetown Advocate* February 18, 1874:2. Provincetown, MA.
1874c Whalers. *Provincetown Advocate* February 25, 1876:2. Provincetown, MA.
1874d No title. *Provincetown Advocate* August 12, 1876:2. Provincetown, MA.
1874e The Lost Whale Boats. *Provincetown Advocate* September 9, 1876:2. Provincetown, MA.
1875a A Swordfish in close quarters and Fighting Mackerel Catchers. *Provincetown Advocate* September 29, 1875:2. Provincetown, MA.
1875b No title. *Provincetown Advocate* May 19, 1876:2. Provincetown, MA.
1875c Whalers. *Provincetown Advocate* October 20, 1876:2. Provincetown, MA.
1876a Fish Inspection for 1875. *Provincetown Advocate* February 9, 1876:2. Provincetown, MA.
1876b Firemen's Ins. Association. *Provincetown Advocate* December 13, 1876:2. Provincetown, MA.
1876c The Storm. *Provincetown Advocate* March 22, 1876:2. Provincetown, MA.
1877a Maritime: List of Vessels Owned in the District of Barnstable January 1st, 1877. *Provincetown Advocate* January 24, 1876:1. Provincetown, MA.
1877b Statistics of Navigation and the Fisheries for the District of Barnstable for the year 1870. *Provincetown Advocate* January 24, 1876:2. Provincetown, MA.
1877c Our Bankers. *Provincetown Advocate* June 6, 1876:2. Provincetown, MA.
1877d Whalers. *Provincetown Advocate* September 12, 1876:2. Provincetown, MA.
1877e Whalers. *Provincetown Advocate* October 31, 1876:2. Provincetown, MA.
1877f Whalers. *Provincetown Advocate* November 21, 1876:2. Provincetown, MA.
1877g No title. *Provincetown Advocate* December 13, 1876:2. Provincetown, MA.
1878a On The Beach at Cape Cod. *Provincetown Advocate* December 5, 1878:1. Provincetown, MA.
1878b Firemen's Mutual Life Insurance Association. *Provincetown Advocate* December 12, 1878:2. Provincetown, MA.
1878c Tax Payers of Provincetown. *Provincetown Advocate* October 17, 1878:1. Provincetown, MA.
1878d No title. *Provincetown Advocate* March 14, 1876:2. Provincetown, MA.
1878e Whalers. *Provincetown Advocate* May 16, 1876:2. Provincetown, MA.
1878f Whalers. *Provincetown Advocate* May 23, 1876:2. Provincetown, MA.
1878g No title. *Provincetown Advocate* July 4, 1876:2. Provincetown, MA.
1878h Whalers spoken. *Provincetown Advocate* August 1, 1876:2. Provincetown, MA.
1878i Whalers. *Provincetown Advocate* September 5, 1876:2. Provincetown, MA.
1878j Whalers and Fish and Fishermen. *Provincetown Advocate* September 12, 1876:2. Provincetown, MA.
1879a No title. *Provincetown Advocate* December 4, 1879:2. Provincetown, MA.
1879b Atlantic Mutual Fire & Marine Insurance Co. *Provincetown Advocate* September 28, 1879:3. Provincetown, MA.
1879c Fishermen and Whalers. *Provincetown Advocate* July 31, 1879:2. Provincetown, MA.
1879d No title. *Provincetown Advocate* January 30, 1879:2. Provincetown, MA.
1879e The following is a list of the names of those persons who have been on the board of Selectmen in the town of Provincetown... *Provincetown Advocate* September 18, 1879:2. Provincetown, MA.
1879f Notice. *Provincetown Advocate* February 6, 1879:3. Provincetown, MA.

1879g Assignees' Notice. *Provincetown Advocate* March 20, 1879:3. Provincetown, MA.
1879h Mortgagee's Sale! *Provincetown Advocate* February 27, 1879:3. Provincetown, MA.
1879i Assignees' Sale of Cows, Horses, Carts, Harnesses, &c. *Provincetown Advocate* March 6, 1879:3. Provincetown, MA.
1879j Mortgagee's Sale! *Provincetown Advocate* March 20, 1879:3. Provincetown, MA.
1879k Assignees' Sale of Real Estate and Personal Property! *Provincetown Advocate* March 27, 1879:3. Provincetown, MA.
1879l Mortgagee's Sale. *Provincetown Advocate* April 3, 1879:3. Provincetown, MA.
1879m Sale of Vessel Property. *Provincetown Advocate* April 10, 1879:2. Provincetown, MA.
1879n Sale of Vessels and Real Estate. *Provincetown Advocate* April 17, 1879:2. Provincetown, MA.
1879o Assignees' Sale. *Provincetown Advocate* May 22, 1879:3. Provincetown, MA.
1879p Assignees' Sale. *Provincetown Advocate* November 30, 1879:3. Provincetown, MA.
1879q Our Whaling Fleet. *Provincetown Advocate* January 30, 1879:2. Provincetown, MA.
1879r Whalers. *Provincetown Advocate* February 27, 1879:2. Provincetown, MA.
1879s No title. *Provincetown Advocate* April 24, 1879:2. Provincetown, MA.
1879t Whalers. *Provincetown Advocate* June 26, 1879:2. Provincetown, MA.
1879u Whalers. *Provincetown Advocate* July 3, 1879:2. Provincetown, MA.
1879v Whalers. *Provincetown Advocate* July 10, 1879:2. Provincetown, MA.
1879w Whalers. *Provincetown Advocate* August 21, 1879:2. Provincetown, MA.
1879x No title. *Provincetown Advocate* August 23, 1879. Provincetown, MA.
1879y Whalers. *Provincetown Advocate* September 4, 1879:2. Provincetown, MA.
1879z Whalers. *Provincetown Advocate* December 18, 1879:2. Provincetown, MA.
1880a Mackerel Fishery. *Provincetown Advocate* August 19, 1880:2. Provincetown, MA.
1880b No title. *Provincetown Advocate* March 18,1880:2. Provincetown, MA.
1880c No title. *Provincetown Advocate* September 9, 1880:2. Provincetown, MA.
1880d No title. *Provincetown Advocate* September 16, 1880:2. Provincetown, MA.
1880e Along the Wharves. *Provincetown Advocate* April 29, 1880:2. Provincetown, MA.
1880f No title. *Provincetown Advocate* September 23, 1880:2. Provincetown, MA.
1880g No title. *Provincetown Advocate* April 15, 1880:2. Provincetown, MA.
1880h No title. *Provincetown Advocate* April 29, 1880:2. Provincetown, MA.
1880i About town. *Provincetown Advocate* June 24, 1880:2. Provincetown, MA.
1880j No title. *Provincetown Advocate* August 12, 1880:2. Provincetown, MA.
1880k No title. *Provincetown Advocate* September 9, 1880:2. Provincetown, MA.
1880l Provincetown's Whaling List. *Provincetown Advocate* September 9, 1880:3. Provincetown, MA.
1880m No title. *Provincetown Advocate* September 16, 1880:2. Provincetown, MA.
1880n Provincetown's Whaling List. *Provincetown Advocate* September 23, 1880:3. Provincetown, MA.
1880o Provincetown's Whaling List. *Provincetown Advocate* September 30, 1880:3. Provincetown, MA.
1880p No title. *Provincetown Advocate* October 7, 1880:2. Provincetown, MA.
1880q Provincetown's Whaling List. *Provincetown Advocate* October 14, 1880:3. Provincetown, MA.
1890a Whaling News. *Provincetown Advocate* September 6, 1890:4. Provincetown, MA.
1890b Whalers. *Provincetown Advocate* October 25, 1890:4. Provincetown, MA.

1890c No title. *Provincetown Advocate* October 25, 1890:4. Provincetown, MA.
1899 Local Events of 98. *Provincetown Advocate* January 26, 1899:2. Provincetown, MA.
1917 No title. *Provincetown Advocate* June 28, 1917:2. Provincetown, MA.
1918 No title. *Provincetown Advocate* June 13, 1918:2. Provincetown, MA.
1939 Figurehead Lady Ship Listed. *Provincetown Advocate* January 5, 1939:2. Provincetown, MA.
1945a No title. *Provincetown Advocate* September 27, 1945:2. Provincetown, MA.
1945b No title. *Provincetown Advocate* October 4, 1945:2. Provincetown, MA.
1949a Seventy-five Years Ago, June 17, 1874: Flounders. *Provincetown Advocate* June 16, 1949:2. Provincetown, MA.
1949b The Advocate Was Saying. *Provincetown Advocate* August 11, 1949:4. Provincetown, MA.
1951a Fifty Years Ago, Aug. 29, 1901. *Provincetown Advocate* August 30, 1951:28. Provincetown, MA.
1951b Worth Remembering. *Provincetown Advocate* February 1, 1951:6. Provincetown, MA.
1951c Fifty Years Ago. *Provincetown Advocate* May 3, 1951:7. Provincetown, MA.
1951d Unlucky Schooner Is Sunk By Packet, County Jail Mostly Empty Century Ago. *Provincetown Advocate* December 20, 1951:4. Provincetown, MA.
1951e Captain Jumped Overboard From Ship Starting Many Rumors 100 Years Ago. *Provincetown Advocate* December 27, 1951:6. Provincetown, MA.
1952 Town of Provincetown Office of the Collector of Taxes. *Provincetown Advocate* October 2, 1952:7. Provincetown, MA.
1953 Land Was Bought For St. Peter's Church, Whales Brought Cape Oil, Century Ago. *Provincetown Advocate* May 7, 1953:4. Provincetown, MA.
1959 Fifty Years Ago. *Provincetown Advocate* June 2, 1959:2. Provincetown, MA.
1964 Eighty Years Ago. *Provincetown Advocate* January 7, 1964:3. Provincetown, MA.

Provincetown Banner
1856 Wharves & Whales in Provincetown Harbor. *Provincetown Advocate* July 1, 1856:2 Provincetown, MA.
1860 Fishermen. *Provincetown Banner* June 21, 1860:2. Provincetown, MA.

Rappaport, Roy A.
1971 Ritual, Sanctity, and Cybernetics. *American Anthropologist*. 73(1):59-76.

Raupp, Jason T.
2004 Hook, Line, and Sinker: Historical and Archaeological Investigations of the Snapper Wreck (8SR1001). Master's thesis, Department of History, University of West Florida, Pensacola, FL.
2015 "And So Ends this Day's Work": Industrial Perspectives on Early Nineteenth-century American Whaleships Wrecked in the Northwestern Hawaiian Islands. Doctoral thesis, Department of Archaeology, Flinders University, South Australia.

Record of American and Foreign Shipping Transcript
1871-1900 Digitized by Mystic Seaport Museum. Mystic, CT.

Reeves, Randall R., Jeffrey M. Breiwick, Edward D. Mitchell
1999 "History of Whaling and Estimated Kill of Right Whales, *Balaena glacialis,* in the Northeastern United States, 1620-1924." *Marine Fisheries Review* 61(3):1-36.

Reeves, Randall R.
2020 Overview of Catch History, Historic Abundance and Distribution of Right Whales in the Western North Atlantic and in Cintra Bay, West Africa. *Cetacean Research and Management*. 2:187-192.

Richards, Nathan, Jason T. Raupp, & Jeremy Borrelli
2021 Program in Maritime Studies Summer 2021 Field School Permit Report. East Carolina University. Greenville, NC.

Scammon, C.M.
1874 *The Marine Mammals of the North-western Coast of North America: Together with an Account of the American Whale-fishery.* G.P. Putnam & Sons. New York, NY.

Schiffer, Michael B.
1972 "Archaeological Context and Systemic Context." *American Antiquity* (37):156-65.

Scoresby, Jr., W.
1820 *An Account of the Arctic Regions, With a History and Description of the Northern Whale Fishery.* Archibald Constable and Company. Edinburgh, UK.

Shultz, Charles H.
1999 *The Geology of Pennsylvania*. Pennsylvania Geological Survey. Harrisburg, PA. Pittsburgh Geological Society, Pittsburgh, PA.

Simpson Jr., Marcus B. and Sallie W. Simpson
1988 The Pursuit of Leviathan: A History of Whaling on the North Carolina Coast. *The North Carolina Historical Review* 65(1):1-51.
1990 *Whaling on the North Carolina Coast*. North Carolina Division of Archives and History, Raleigh, North Carolina.

Smith, N.W.P.
1922 *The Provincetown Book*. Creative Media Partners, LLC. https://books.google.com/books?id=hKHLvQEACAAJ.

Smith, Robert C.
1995 Dive Reports on Activities Conducted at the *Olive Thurlow*, 0004CLS by Surface Interval Diving Company. Ms. on file. N.C. UAB. Kure Beach, NC.

Souza, Donna J.
1998 *The Persistence of Sail in the Age of Steam, Underwater Archaeological Evidence from the Dry Tortugas, the Plenum Series in Underwater Archaeology*. Plenum Publishing Corporation. New York, NY.

Spears, John R.
1910 *The Story of the New England Whalers*. The MacMillan Company. New York, NY.

Starbuck, Alexander
1878 *History of the American Whale Fishery from Its Earliest Inception to the Year 1876*. Reprint 1964, Argosty-Antiquarian LTD, New York, NY.

Stick, David
1990 *The Outer Banks of North Carolina, 1854-1958.*UNC Press. Chapel Hill, NC.
n.d. Stories, *Seychelle*. David Stick Papers: PC.5001. Outer Banks History Center. Manteo, NC.

Stoett, Peter J.
1997 *The International Politics of Whaling*. UBC Press. Vancouver, British Columbia, Canada.

Story, Dana A.
1995 *Shipbuilders of Essex: A Chronicle of Yankee Endeavor*. Ten Pound Island. Gloucester, MA.

Thompson, Derek
2012 The Spectacular Rise and Fall of U.S. Whaling: An Innovation Story. *The Atlantic*. February 22. https://www.theatlantic.com/business/archive/2012/02/the-spectacular-rise-and-fall-of-us-whaling-an-innovation-story/253355/.

Tower, W.S.
1907 *A History of the American Whale Fishery*. Publications of the University of Pennsylvania. Philadelphia, PA.

U.S. Census Bureau
1880 United States Federal Census for Carteret County, NC.
1900 United States Federal Census for Barnstable County, MA.

U.S. Department of the Interior
1966 National Historic Preservation Act, 16 U.S.C. §§ 470a *et seq*. U.S. Department of the Interior. Washington, D.C.

U.S. Navy Astronomical Applications Department
2023 Dates of Primary Phases of the Moon. U.S. Navy. Washington, D.C. https://aa.usno.navy.mil/data/MoonPhases.

Vorse, Mary Heaton
1942 *Time and the Town: A Provincetown Chronicle*. Dial Press. New York, NY.

Weekly National Intelligencer
1853 Shore Whaling. *Weekly National Intelligencer* April 30, 1853. Washington, D.C.

Whalemen's Shipping List and Merchants' Transcript (WSL).
1843-1914 New Bedford, MA, weekly. Microfilmed by Opus Publications.

Wilde-Ramsing, Mark
1993 Observations and field sketches of site CLS0003 recorded on July 15, 1993. North Carolina Department of Cultural Resources. Kure Beach, NC.
1994 Say What? The Seashell? No, It's the Seychelle! *Society for American Archaeology: Archaeology and Public Education* 4(3):5,7.
1996 An Account of Survey Activities Conducted at Cape Lookout Bight, October 16-18, 1996. Manuscript, North Carolina Department of Cultural Resources. Kure Beach, NC.

Appendix A. Extraneous and Unidentifiable Cook Schooners

As mentioned in Chapter four, some of the Cook schooners were either excluded from consideration due to lack of available information or irrelevancy. The remaining extent of knowledge on schooners *American Eagle*, *Belle Isle*, *Eugene*, *Mary Greenwood*, *Samuel Lewis*, and *Sarah* has been collected here. The following information has been transcribed from the author's notes and is intended to aid in future, comprehensive study of E. & E.K. Cook & Co.

American Eagle is believed to have been built in Gloucester, MA in 1854. It was sold in its entirety at the Cook's 1879 mortgagee's sale, being listed for the cod and mackerel fisheries (*Provincetown Advocate* 1879m:2). Due to the prevalence of its name, E. & E.K. Cook & Co.'s *American Eagle* schooner has not been positively identified. In June of 1880 it was sold to Josiah Chase (*Provincetown Advocate* 1880i:2)

Belle Isle, also noted *Bellisle*, is believed to have been built in Cohasset, MA in 1838. This vessel is thought to have featured one deck, two masts, a square stern, and a billet head. It was partially owned by Ebenezer Cook and the estate of the late Ephraim Cook and was mastered by Ephraim Cook of E. & E.K. Cook & Co. (National Archives Project 1938:10). According to Alexander Starbuck's (1878:486-487) *History of the American Whale Fishery*, the schooner was operated by Ebenezer and Parker Cook within the whale fishery from 1841-1851, until it was struck by steamship *William Penn* and sunk in 1851, taking four lives. Though largely associated with Ebenezer and Parker Cook, a documented connection between *Belle Isle* and E. & E.K. Cook & Co. has yet to be recovered.

Eugene was built in Medford, MA in 1847. With one deck, two masts, a square stern, and a billet head, it was built of oak and fastened with copper and iron (National Archives Project 1938:34). Ephraim and E.K. Cook are listed as owning 10/96 shares each of the schooner. Though registered in *American Lloyd's Register of American and Foreign Shipping* to a "Crook" from 1864-1868, and 1870, a documented connection to E. & E.K Cook & Co. has yet to be found.

Mary Greenwood is thought to have been built in Essex, MA in 1857, perhaps by James & McKenzie. Little is readily available on the schooner's construction or operational history. According to the *Record of American and Foreign Shipping, Mary Greenwood* was registered as a fisher to E. & E.K. Cook & Co. in 1879, and 1881-1884. In 1879, 7/8 shares of the schooner

were sold at the Cook's mortgagee's sale, with *Mary Greenwood* listed as suitable for cod and mackerel fishing (*Provincetown Advocate* 1879m:2).

Samuel Lewis is thought to have been built in Belfast, ME in 1845. It featured one deck, two masts, a square stern, and a billet head (National Archives Project 1938:93). It is thought to have been Mastered by Ebenezer Cook, but no related registration or catch data is presently available on the schooner.

Sarah is thought to have been built in Scituate, MA in 1841 (National Archives Project 1938:93). It featured one deck, two masts, a square stern, and a billet head. E.K. and Ephraim Cook are each listed as owning 1/12 shares of the schooner. Partly due to the prevalence of its name, no identifiable registration or catch data has been recovered for *Sarah.*

Appendix B. E. & E.K. Cook & Co. Fleet Whaling Voyages

Table 1: Whaling voyage compilation of *Alcyone*. Sourced from Lund et al., *American Offshore Whaling Voyages: A Database* (2021), and Starbuck's *History of the American Whale Fishery* (1878). Whale products denote barrels and pounds.

Voyage	Depart	Port	Agent	Master	Destination	Sperm	Whale
1866-67	1866	Provincetown	E. & E.K. Cook & Co.	William T. Hudson and Foster Brown	Unspecified	160	-
1867-68	1867	Provincetown	E. & E.K. Cook & Co.	Foster Brown	Unspecified	153	133
1868-71	1868	Provincetown	E. & E.K. Cook & Co.	William H. Baldwin	Unspecified	473	-
1872	1872	Provincetown	E. & E.K. Cook & Co.	Seneca G. Ewell	Unspecified	101	236
1873	1873	Provincetown	E. & E.K. Cook & Co.	Seneca G. Ewell	Atlantic	171	158
1874	1874	Provincetown	E. & E.K. Cook & Co.	Joseph Fisher	Atlantic	-	275
1875	1875	Provincetown	E. & E.K. Cook & Co.	Joseph Fisher	Atlantic	20	-
1876-77	1876 (April 20 – Aug 22)	Provincetown	E. & E.K. Cook & Co.	Joseph Fisher	Atlantic, Whaling Grounds 90	460	40
1878-79	1878	Provincetown	E. & E.K. Cook & Co.	Joseph Fisher	Atlantic	170	25

Table 2: Whaling voyage compilation of *Esquimaux*. Sourced from Lund et al., *American Offshore Whaling Voyages: A Database* (2021), and Starbuck's *History of the American Whale Fishery* (1878). Whale products denote barrels and pounds.

Voyage	Depart	Port	Agent	Master	Destination	Sperm	Whale
1843	1843 (Mar 9 – Sep 17)	Provincetown	Unspecified	Ephraim Cook	Atlantic, West Indies	250	-

Table 3: Whaling voyage compilation of *Express*. Sourced from Lund et al., *American Offshore Whaling Voyages: A Database* (2021), and Starbuck's *History of the American Whale Fishery* (1878). Whale products denote barrels and pounds.

Voyage	Depart	Port	Agent	Master	Destination	Sperm	Whale
1878	1878 (Mar 14 – Sep 10)	Provincetown	E. & E.K. Cook & Co.	Richard Smith	Atlantic, Cape Verde, Whaling Grounds 90	25	200

Table 4: Whaling voyage compilation of *Medford*. Sourced from Sourced from Lund et al., *American Offshore Whaling Voyages: A Database* (2021), and Starbuck's *History of the American Whale Fishery* (1878). Whale products denote barrels and pounds.

Voyage	Depart	Port	Agent	Master	Destination	Sperm	Whale
1844	1844	Provincetown	Unspecified	Ephraim Cook	South Atlantic	210	60
1845-46	1845	Provincetown	Parker Cook	Ephraim Cook	Unspecified	230	300
1850-51	1850 (Apr 10 – Jun 26)	Provincetown	Ephraim Cook	William Dyer II	Atlantic, West Indies	154	25

Table 5: Whaling voyage compilation of *Abby H. Brown*. Sourced from Lund et al., *American Offshore Whaling Voyages: A Database* (2021), and Starbuck's *History of the American Whale Fishery* (1878). Whale products denote barrels and pounds.

Voyage	Depart	Port	Agent	Master	Destination	Sperm	Whale	Baleen
1862-63	1862	Provincetown	E. & E.K. Cook & Co.	Benjamin Higgins	Unspecified	190	110	-
1864-65	1864	Provincetown	E. & E.K. Cook	Benjamin Higgins	Unspecified	227	349	1350
1865-66	1865	Provincetown	E. & E.K. Cook	Unknown	Unspecified	-	-	-
1866-67	1866 (Feb 5–July 31)	Provincetown	E. & E.K. Cook	Nehemiah Higgins	West Indies	267	10	-
1867-69	1867	Provincetown	Unspecified	Unspecified	Unspecified	325	80	-

Table 6: Whaling voyage compilation of *E. P. Howard*. Sourced from Lund et al., *American Offshore Whaling Voyages: A Database* (2021), and Starbuck's *History of the American Whale Fishery* (1878). Whale products denote barrels and pounds.

Voyage	Depart	Port	Agent	Master	Destination	Sperm	Whale	Baleen
1866	1866	Provincetown	E. & E.K. Cook & Co.	William P. Hudson	Unspecified	-	64	-

Table 7: Whaling voyage compilation of *Etta G. Fogg*. Sourced from Lund et al., *American Offshore Whaling Voyages: A Database* (2021), and Starbuck's *History of the American Whale Fishery* (1878). Whale products denote barrels and pounds.

Voyage	Depart	Port	Agent	Master	Destination	Sperm	Whale	Baleen
1867	1867	Provincetown	E. & E.K. Cook & Co.	Alexander Thompson	Unspecified	-	-	-

Table 8: Whaling voyage compilation of *E. H. Hatfield*. Sourced from Lund et al., *American Offshore Whaling Voyages: A Database* (2021), and Starbuck's *History of the American Whale Fishery* (1878). Whale products denote barrels and pounds.

Voyage	Depart	Port	Agent	Master	Destination	Sperm	Whale	Baleen
1861-62	1861 (May 9 – May 21)	Provincetown	E. & E.K. Cook & Co.	Ebenezer Cook	North Atlantic	231	239	-
1862-63	1862	Provincetown	E. & E.K. Cook & Co.	Cook	Unspecified	-	-	-
1863-64	1863	Provincetown	E. & E.K. Cook & Co.	Small	Unspecified	408	54	-
1865	1865	Provincetown	E. & E.K. Cook	Xenophen Rich	Unspecified	245	186	800
1865-66	1865	Provincetown	E. & E.K. Cook	Charles Frederick Keith	Unspecified	85	-	-
1867-68	1867 (Jan 22 – Sep 15)	Provincetown	E. & E.K. Cook	Charles Frederick Keith	Atlantic, Cape Verde, West Indies	208	-	-
1869-70	1869	Provincetown	E. & E.K. Cook	Elisha Burch	Unspecified	249	15	-
1872	1872 (Apr 11 – Oct 5)	Provincetown	E. & E.K. Cook	Reuben Freeman	Unspecified	143	-	-
1873	1873 (-Sep 16)	Provincetown	E. & E.K. Cook	Reuben Freeman	Atlantic	137	-	-
1873-74	1873 (Dec 30 – Sep 23)	Provincetown	E. & E.K. Cook	William Kirkconnell	Atlantic	492	-	-
1874-75	1874 (-Sep 7)	Provincetown	E. & E.K. Cook	Frank Cornell	Unspecified	250	-	-
1875-76	1875	Provincetown	E. & E.K. Cook	William Kirkconnell	Unspecified	190	-	-

1876	1876 (Jan 22 – Aug 29)	Provincetown	E. & E.K. Cook	William Kirkconnell	Atlantic, West Indies, Gulf of Mexico, Whaling Grounds 90	23	-	-
1876-78	1876 (Dec – Jun 24)	Provincetown	E. & E.K. Cook	George Cornell	Atlantic, W Indies	-	-	-
1878	1878 (Jul 6 – Sep 18)	Provincetown	E. & E.K. Cook	Nehemiah Higgins	Atlantic, Whaling Grounds 90	-	-	-

Table 9: Whaling voyage compilation of *Sassacus*. Sourced from Lund et al., *American Offshore Whaling Voyages: A Database* (2021), and Starbuck's *History of the American Whale Fishery* (1878). Whale products denote barrels and pounds.

Voyage	Depart	Port	Agent	Master	Destination	Sperm	Whale	Baleen
1864-65	1864	Provincetown	E. & E.K. Cook & Co.	Cook	Unspecified	228	193	-
1865-67	1865	Provincetown	E. & E.K. Cook & Co.	Josiah Ryder	Unspecified	180	45	-
1868-69	1868	Provincetown	E. & E.K. Cook & Co.	Thomas Smith Taylor	Unspecified	410	382	-
1869	1869	Provincetown	E. & E.K. Cook & Co.	Freeman	Unspecified	23	-	-
1869	1869	Provincetown	E. & E.K. Cook & Co.	Whipple A. Leach	Unspecified	23	-	-
1870	1870 (Feb 12 – Aug 31)	Provincetown	E. & E.K. Cook & Co.	Theodore Nickerson	Atlantic, West Indies	65	50	-

Table 10: Whaling voyage compilation of *Mary E. Simmons*. Sourced from Lund et al., *American Offshore Whaling Voyages: A Database* (2021), and Starbuck's *History of the American Whale Fishery* (1878). Whale products denote barrels and pounds.

Voyage	Depart	Port	Agent	Master	Destination	Sperm	Whale	Baleen
1865-66	1865	Provincetown	E. & E.K. Cook & Co.	Thomas Smith Taylor	Unspecified	331	252	-
1866-68	1866 (Aug 16 – May 31)	Provincetown	E. & E.K. Cook & Co.	Andrew Parsons	Desolation Islands	-	809	-
1868-69	1868	Provincetown	E. & E.K. Cook & Co.	Joseph Gelett	Unspecified	138	11	-
1870-71	1870	Provincetown	E. & E.K. Cook & Co.	Thomas Smith Taylor	Atlantic	355	236	-
1871	1871	Provincetown	E. & E.K. Cook & Co.	Thomas Smith Taylor	Unspecified	-	-	-
1872-73	1872	Provincetown	E. & E.K. Cook & Co.	Thomas Smith Taylor	Unspecified	313	406	-
1874	1874	Provincetown	E. & E.K. Cook & Co.	Xenophen Rich	Atlantic	19	266	-
1875	1875	Provincetown	E. & E.K. Cook & Co.	John W. Atkins	Atlantic	-	-	-
1875	1875 (-Sep 26)	Provincetown	E. & E.K. Cook & Co.	Xenophen Rich	Atlantic	245	-	-
1876	1876 (-Sep 16)	Provincetown	E. & E.K. Cook & Co.	Xenophen Rich	North Atlantic	150	200	-

1877	1877 (Nov 1 – Sep 14)	Provincetown	E. & E.K. Cook & Co.	Xenophen Rich	North Atlantic, Whaling Grounds 90	160	300	-
1878	1878 (-Sep 16)	Provincetown	E. & E.K. Cook & Co.	Xenophen Rich	No Atlantic, Whaling Grounds 90	100	250	-

Table 11: Whaling voyage compilation of *Robert Raikes*. Sourced from Lund et al., *American Offshore Whaling Voyages: A Database* (2021), and Starbuck's *History of the American Whale Fishery* (1878). Whale products denote barrels and pounds.

Voyage	Depart	Port	Agent	Master	Destination	Sperm	Whale	Baleen
1849-50	1849	Provincetown	Ephraim Cook	John Swift	Unspecified	110	-	-
1851-52	1851	Provincetown	Ephraim Cook	John Swift	Unspecified	-	8	-

Table 12: Whaling voyage compilation of *Seychelle*. Sourced from Lund et al., *American Offshore Whaling Voyages: A Database* (2021), and Starbuck's *History of the American Whale Fishery* (1878). Whale products denote barrels and pounds.

Voyage	Depart	Port	Agent	Master	Destination	Sperm	Whale
1851	1851 (May 21 – Aug 8)	Provincetown	E. Cook	Ebenezer Parker Cook	North Atlantic	40	20
1878-79	1878	Provincetown	Unspecified	E. Cook	Unspecified	-	-

Table 13: Whaling voyage compilation of *Quickstep*. Sourced from Lund et al., *American Offshore Whaling Voyages: A Database* (2021), and Starbuck's *History of the American Whale Fishery* (1878). Whale products denote barrels and pounds.

Voyage	Depart	Port	Agent	Master	Destination	Sperm	Whale
1861-64	1861 (Jan – Aug)	Provincetown	E. & E.K. Cook & Co.	James M. Cook	Gulf of Mexico	585	195
1864-65	1864	Provincetown	E. & E.K. Cook & Co.	Stephen Ryder	Unspecified	224	198
1865-66	1865	Provincetown	E. & E.K. Cook & Co.	Charles Thompson	Unspecified	80	275
1866-67	1866	Provincetown	E. & E.K. Cook & Co.	Thomas Smith Taylor	Unspecified	200	200
1867	1867	Provincetown	E. & E.K. Cook & Co.	Charles Thompson	Unspecified	173	175
1867-69	1867 (Nov 24 – Aug 28)	Provincetown	E. & E.K. Cook & Co.	Theodore Nickerson	Atlantic, West Indies	173	175
1870	1870	Provincetown	E. & E.K. Cook & Co.	Joseph Gelett	Atlantic	21	180
1871-72	1871	Provincetown	E. & E.K. Cook & Co.	Elisha Burch	Unspecified	301	6
1873-74	1873	Provincetown	E. & E.K. Cook & Co.	Elisha Burch	Atlantic	238	22
1875	1875 (-Sep 24)	Provincetown	E. & E.K. Cook & Co.	Benjamin Higgins	Atlantic	160	-
1875-76	1875 (Dec 18 – Sep 20)	Provincetown	E. & E.K. Cook & Co.	Benjamin Higgins	Atlantic, West Indies, Gulf of Mexico	75	15
1876-77	1876 (Nov 11 - Aug 12)	Provincetown	E. & E.K. Cook & Co.	Henry Mandly	Atlantic	450	-
1877-78	1877 (Nov 12 – Sep 21)	Provincetown	E. & E.K. Cook & Co.	Henry Mandly	Atlantic, Whaling Grounds 90	240	130
1878	1878	Provincetown	E. & E.K. Cook & Co.	Henry Mandly	Unspecified	-	-