ABSTRACT

Title of Dissertation:	INTEGRATING ENVIRONMENTAL JUSTICE AND SOCIAL-ECOLOGICAL RESILIENCE FOR SUCCESSFUL ADAPTATION TO CLIMATE CHANGE: LESSONS FROM AFRICAN AMERICAN COMMUNITIES ON THE EASTERN SHORE OF THE CHESAPEAKE BAY
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This research concerns the conceptual and empirical relationship between environmental justice and social-ecological resilience as it relates to climate change vulnerability and adaptation. Two primary questions guided this work. First, what is the level of resilience and adaptive capacity for social-ecological systems that are characterized by environmental injustice in the face of climate change? And second, what is the role of an environmental justice approach in developing adaptation policies that will promote social-ecological resilience? These questions were investigated in three African American communities that are particularly vulnerable to flooding from sea-level rise on the Eastern Shore of the Chesapeake Bay.

Using qualitative and quantitative methods, I found that in all three communities, religious faith and the church, rootedness in the landscape, and race relations were highly

salient to community experience. The degree to which these common aspects of the communities have imparted adaptive capacity has changed over time. Importantly, a given social-ecological factor does not have the same effect on vulnerability in all communities; however, in all communities political isolation decreases adaptive capacity and increases vulnerability. This political isolation is at least partly due to procedural injustice, which occurs for a number of interrelated reasons.

This research further revealed that while all stakeholders (policymakers, environmentalists, and African American community members) generally agree that justice needs to be increased on the Eastern Shore, stakeholder groups disagree about what a justice approach to adaptation would look like. When brought together at a workshop, however, these stakeholders were able to identify numerous challenges and opportunities for increasing justice.

Resilience was assessed by the presence of four resilience factors: living with uncertainty, nurturing diversity, combining different types of knowledge, and creating opportunities for self-organization. Overall, these communities seem to have low resilience; however, there is potential for resilience to increase. Finally, I argue that the use of resilience theory for environmental justice communities is limited by the great breadth and depth of knowledge required to evaluate the state of the social-ecological system, the complexities of simultaneously promoting resilience at both the regional and local scale, and the lack of attention to issues of justice.

INTEGRATING ENVIRONMENTAL JUSTICE AND SOCIAL-ECOLOGICAL
RESILIENCE FOR SUCCESSFUL ADAPTATION TO CLIMATE CHANGE:
LESSONS FROM AFRICAN AMERICAN COMMUNITIES ON THE EASTERN
SHORE OF THE CHESAPEAKE BAY

by

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Foreword

Most of the content of Chapter 4 was taken from an article which I co-authored with Michael Paolisso and which was published in the journal *Nature Climate Change* under the title "Cultural knowledge and local vulnerability in African American communities" (2015). My contributions to that co-authored work were as follows: I collaborated with Michael in designing the research. I conducted the fieldwork. Michael and I worked together to carry out the analysis. I wrote the text and made the figures for the article and Michael contributed to the text.

Dedication

I dedicate this dissertation to my wonderful parents, Ken and Doris Miller.

Acknowledgements

There are many people to thank for their support and contributions to this work. First I would like to thank all the individuals who participated in my research: the African American communities throughout the Eastern Shore, and especially those in St. Michaels, Dorchester County, and Crisfield; the environmental scholars and managers working on the Eastern Shore; and the local, regional, and state-level policymakers. Certain individuals played a large role in facilitating my communication with study participants. In particular, I would like to thank Keith Cornish, Joyce Harrod, Emanuel Johnson, Zoe Johnson, James Lane, Gary Moore, and Joanne Slacum. I could not have conducted this research without their support.

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refine my research topic, worked with me on my EPA STAR Fellowship application, enlisted me to work on the NOAA project, connected me with his key contacts on the Eastern Shore, helped run workshops, and taught me the various methodologies employed in this dissertation research. I am especially thankful for his diligent work with me on the many revisions of the manuscript we ultimately had published in *Nature Climate Change*. While I know many graduate students find their dissertation research and writing to be a cumbersome, stressful experience, my journey toward a Ph.D. has been energizing and enjoyable. For that I credit Michael.

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Chapter 1: Research Problem and Setting

Statement of the Research Problem

This dissertation primarily concerns the human struggle to constructively respond to environmental changes. Anthropogenic climate change is a substantial driver of environmental change today, precipitating intense and rapid changes in ecosystems worldwide (IPCC 2014). Regardless of mitigation measures taken to reduce the rate and magnitude of climate change impacts in the future, adaptation – actions undertaken to reduce the negative consequences of those impacts – will be necessary. There are many different ways to adapt to climate change impacts (Thornton and Manasfi 2010), but adaptation options are limited by previous adaptation decisions and the availability of resources. Given that adaptation options are constrained, the development of climate change adaptation policies and programs at all levels will require trade-offs (Paavola 2008). Determining how best to allocate limited adaptation resources between present and future needs, social and environmental goals, and among geographic areas, communities, and individuals is a daunting problem.

The problem of adaptation resource allocation is further complicated by issues of justice. Little debate remains that climate change is an environmental justice issue. Disadvantaged communities from the Pacific Islands to the Eastern Shore of the Chesapeake Bay have contributed least to global greenhouse gas emissions but are highly vulnerable to the consequences of climate change (Fiske et al. 2014, IPCC 2014, Samson et al. 2011). While a great deal of international attention has been focused on facilitating

adaptation for nation-states that have been identified as most vulnerable to climate change impacts (Brooks, Adger, and Kelly 2005, Füssel 2010b), the existence of vulnerable populations within developed countries as well as the disparity of vulnerability within developing countries receive less attention (Harris 2010). Unfortunately, efforts toward equity among nations will not necessarily address the needs of those most vulnerable communities and individuals who live within both developing and developed countries (Ayers 2011). That is, because it is the social groups and individuals within nation-states that suffer from injustice and not nation-states themselves (Adger 2001), ensuring that each nation-state receives a fair share of adaptation support will not guarantee that the needs of vulnerable individuals and communities within each country will be addressed (Harris 2010).

Increasingly, policymakers and managers in the United States and elsewhere have been looking to the concept of social-ecological system resilience as a framework for defining successful adaptation to climate change (Béné et al. 2012). The concept of social-ecological resilience is a useful framework for adaptation planning because it holistically considers the interconnections between social and environmental factors and strives to modify those connections and factors in such a way that the ability of the system to persist when confronted with a variety of expected and unexpected disturbances will be maximized (Walker and Salt 2006). Though ascertaining whether or not a system has maximized its ability to persist is difficult, if not impossible, such a framework should nevertheless encourage adaptation responses that benefit the social-ecological system overall, including provisions for environmental conservation and enhanced adaptive capacity of human systems. Importantly, however, undesirable

systems can also be highly resilient (Walker and Salt 2012) and the adoption of adaptation strategies to support the resilience of the present system may serve to perpetuate rather than ameliorate the injustices inherent in that system (e.g. Bohle, Etzold, and Keck 2009).

This dissertation discusses the conceptual and empirical relationship between environmental justice and social-ecological resilience as it relates to climate change vulnerability and adaptation. Two primary questions guided this work. First, what is the level of resilience and adaptive capacity for social-ecological systems that are characterized by environmental injustice in the face of climate change? And second, what is the role of an environmental justice approach in developing adaptation policies that will promote social-ecological resilience? These questions were investigated on Maryland's Eastern Shore, where a number of communities have experienced environmental injustice and the social-ecological system is particularly vulnerable to flooding from sea-level rise (Johnson 2000, Cole 2008).

Research Setting

The Eastern Shore of the Chesapeake Bay is the fourth largest region vulnerable to sea-level rise along the Atlantic and Gulf Coasts of the United States (Titus and Richman 2001). While sea-level in this region has risen about 30 centimeters over the last century (Titus and Strange 2008), it is predicted to rise another 110 centimeters this century (Boesch et al. 2013), causing the bay shores along the central portion of the Eastern Shore to retreat by more than five to ten kilometers (Titus and Richman 2001)., Nine Eastern Shore islands were abandoned by their resident populations between about 1910 and 1930 because of land lost to erosion and sea-level rise (Kearney and Stevenson

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1991) and many more Eastern Shore coastal communities are at risk of inundation and forced relocation in the coming years (Nuckols et al. 2010). Recognizing the threat, the State of Maryland created the Maryland Commission on Climate Change (MCCC) to develop a comprehensive mitigation and adaptation strategy (see MCCC 2008b, 2015, 2010). This strategy includes plans for addressing sea-level rise and corresponding flooding and storm surges while also "building societal, economic, and ecological resilience" (MCCC 2010, 1).

Many Eastern Shore communities and individuals are vulnerable to rising seas; however, social injustices (e.g. income inequality, residential segregation, and more limited education and employment opportunities) in conjunction with the environmental injustices inherent in climate change (i.e. communities least responsible for greenhouse gas emissions have fewer resources for adaptation and less power to influence adaptation decision-making – see Chapter 2) make African American communities particularly vulnerable to flooding from sea-level rise (Andersen 1998, Mohai, Pellow, and Roberts 2009, CBCF 2004, Hoerner and Robinson 2008). While many rural African American communities have been coping with periodic flooding for generations, the projected increase in the frequency and magnitude of flooding poses a more difficult challenge for these resource poor communities. Many of these communities were settled by freed slaves after the Civil War. They are small and dispersed — often invisible to visitors (Paolisso et al. 2012). Because of the Eastern Shore's low topography and prevalence of water bodies, these communities are located close to wetland systems. Over the last century, the members of these communities have relied primarily on local resources for their livelihoods, working in commercial fisheries or agriculture (Wennersten 1992,

Anderson 1998). Many of these communities are resource poor. The close proximity of these communities to wetland systems and their dependence on local resources make them particularly vulnerable to the impacts of climate change. Limited economic, social, and political resources among these rural communities constrain options for adapting to sea-level rise. With tight social bonds and deep ties to the land, these communities possess a wide range of knowledge on their social-ecological systems. Nonetheless, their geographic and political isolation suggests that they may be cut off from forms of government adaptation assistance.

Research Outcomes

The outcomes of this research are both theoretical and applied. First, it enhances vulnerability theory by examining how dimensions of vulnerability – including risk, sensitivity, and adaptive capacity – relate and are actualized in the local setting. Use of cognitive and ethnographic methods revealed that non-quantifiable factors greatly influence local-level vulnerability to flooding, and that a given social-ecological factor can substantially differ in the way in which it affects local vulnerability. Second, this research contributes to environmental justice theory by evaluating its implications for vulnerability and adaptation to climate change. The results of a questionnaire and multi-stakeholder workshop revealed the challenges associated with issues of justice: while there was widespread agreement that environmental injustice existed and should be addressed in planning for climate change adaptation, opinions as to how injustices should be addressed varied widely. Third, this research advances resilience theory by exploring its potential for integration with concepts of vulnerability, justice, and adaptation within the context of climate change. This research suggests that the usefulness of resilience

theory for climate change adaptation is hampered by 1) the great breadth and depth of knowledge required to evaluate the state of the social-ecological system, 2) the complexities of simultaneously promoting resilience at both the regional and local scale, and 3) the lack of attention to issues of justice. Finally, the applied outcome of this research is guidance for local communities and local and State government agencies for the development of effective climate change adaptation that incorporates the current needs of environmental justice communities within its planning for the long-term resilience of the social-ecological system.

Dissertation Overview

This dissertation is organized into three main parts and a conclusion. Chapter 2 continues the introduction by explaining the conceptual framework and methods used in this research. It contains definitions for terms such as resilience, vulnerability, and adaptation and clarifies their relationship to one another in this research. Chapter 2 also provides an overview of the methods utilized throughout the research.

Chapters 3, 4, and 5 address the first research question by examining the adaptive capacity of the African American communities. Chapter 3 draws on participant observation and semi-structured interviews to give a cultural portrait of the study communities and position them within their social-ecological systems. Chapter 4 looks specifically at vulnerability to sea-level rise and, drawing on the results of cognitive methods, demonstrates both that social-ecological factors differ in how they affect community vulnerability and that social and political isolation decrease communities' adaptive capacity. Chapter 5 expands on the idea of political isolation by describing the causes of procedural injustice as revealed from analysis of semi-structured interviews.

Chapters 6 and 7 pertain to the second research question by examining the role of an environmental justice approach in adaptation planning. Chapter 6 reports on the results of a questionnaire designed to compare the relative importance of justice among two stakeholder groups: policymakers and environmentalists and African American church communities. It also discusses how these stakeholder groups envision an environmental justice approach to adaptation. Chapter 7 describes the outcomes of a multi-stakeholder workshop and the opportunities and challenges for increasing environmental justice in Maryland adaptation planning going forward.

Finally, Chapter 8 concludes the dissertation by summarizing and synthesizing the main findings of the research. It ends with some final thoughts on the role of resilience theory and its utility for environmental justice communities.

Chapter 2: Theoretical Foundations, Conceptual Framework, and Overview of Methods

Introduction

The research questions that guided this work incorporate five substantial concepts: resilience, social-ecological systems, vulnerability, adaptation, and environmental justice. In this chapter I introduce and define each of these concepts and then describe how I brought them together in a single conceptual framework. I then describe how this research contributes to environmental anthropology and provide an overview of the methods that were used throughout this research.

Resilience and Social-Ecological Systems

The Origin of Resilience Theory

Resilience as a scientific concept emerged in the field of ecology in the 1970s as an alternative to the equilibrium-based model that was then prominently used by natural resource managers. C. S. Holling argued in his seminal paper, *Resilience and Stability of Ecological Systems* (1973), that the equilibrium-based models of ecological systems (see Lotka 1925, Volterra 1926, Leslie 1948, Rosenzweig and MacArthur 1963, Nicholson 1933, Nicholson and Bailey 1935, Ricker 1954, Botsford, Castilla, and Peterson 1997) were problematic in three ways. Specifically, the equilibrium-based model assumed a single point of equilibrium, treated ecological systems as deterministic, and treated time

and space as homogenous; while in reality, ecological systems have multiple points of equilibrium, may be profoundly affected by random events, and are characterized by considerable temporal and spatial heterogeneity (Holling 1973). The equilibrium-based model's failure to incorporate these aspects of ecological systems led resource managers to expect that a given population could be maintained for generations if harvests were kept at the level at which the population was able to replace all harvested individuals. In reality, a random event, such as a temporary change in climate, could shift the population from one point of equilibrium to another, with the result that the prescribed harvest levels may be inappropriate and perhaps detrimental for the sustainability of that population.

Given these problems in using equilibrium-based models for resource management, Holling argued that the focus should be shifted to the conditions necessary for populations to persist. Instead of focusing on system equilibrium and stability, Holling, drawing on Slobodkin (1964), argued that flexibility was a more important system characteristic, writing that

> … evolution is like a game, but a distinctive one in which the only payoff is to stay in the game. Therefore, a major strategy selected is not one maximizing either efficiency or a particular reward, but one which allows persistence by maintaining flexibility above all else (Holling 1973, 18).

Thus, Holling argued that resilience – "a measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables" (Holling 1973, 14) – was a superior framework for studying and managing ecosystems than an equilibrium framework.

<u>Social-Ecological Systems</u>

Though Holling introduced resilience as a framework for considering ecosystems within the natural sciences, the concept was soon applied to consider linked systems of nature and human society – social-ecological systems – which share many of the same properties (Berkes, Colding, and Folke 2002b, Berkes, Folke, and Colding 1998). Drawing on Holling's (1973) work, scholars have described these linked systems as complex adaptive systems (see Lansing 2003), which are characterized by independent and interacting components, a selection process which acts on the components to shape local interactions, the continual introduction of novelty and variation through the evolution of old components and the introduction of new components, and self-organization of system patterns and processes (Levin 1998). As a result of these characteristics, social-ecological systems – much like the natural resource systems Holling described – do not change in predictable ways, and shocks or disturbances can push the system over a threshold into a new regime, where components and processes are entirely different (Walker and Salt 2006).

Contrary to the equilibrium-based model, social-ecological systems are not static systems tending toward one point of equilibrium, but rather are dynamic and move through regular adaptive cycles of organization, collapse, and renewal (Berkes, Colding, and Folke 2002a). Four phases make up an adaptive cycle: 1) rapid growth, which is characterized by quick system development as people and other species exploit new opportunities and make use of every possible ecological and social niche; 2) conservation, which is characterized by the storage of energy and capital as materials accumulate; 3) release, which begins when a disturbance that exceeds the system's

resilience breaks apart the system's web of interactions; and 4) reorganization, which is characterized by invention, experimentation, reassortment, and novelty as the system shifts to a new identity (Berkes, Colding, and Folke 2002a, Walker and Salt 2006).

The adaptive cycle was originally employed as a heuristic to understand how ecosystems respond to change (Holling 1986), but is also generally applicable to social systems and coupled social-ecological systems (Gunderson and Holling 2002b). For social systems, the rapid growth phase is characterized by political winners repurposing resources and restructuring processes and policies until reaching the conservation phase, which is characterized by tight organization and control, the accumulation of capital (e.g. money, skills, experience), and the preclusion of policy alternatives. If an internal or external disturbance exceeds the system's resilience, it will enter the release phase where the political regime loses control and capital is freed and made available for use in the reorganization phase, where people can use those resources in innovative ways until a political winner emerges and the cycle begins again with the rapid growth phase (Holling and Gunderson 2002). Empirically testing the adaptive cycle heuristic in human systems is difficult; however, scholars have been able to identify the adaptive phases of human systems in various case studies (e.g. Daedlow, Beckmann, and Arlinghaus 2011, Pelling and Manuel-Navarrete 2011).

Adaptive cycles are hierarchically nested and operate over many scales of time and space. Changes at smaller scales generally happen more quickly, while changes at larger scales are generally slower. Connections across these scales allow adaptive processes at one level to influence the rate of change at another. Panarchy is the term

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used to describe these linked adaptive cycles and their mutual influences across spatial and temporal scales (Gunderson and Holling 2002a).

Panarchy serves as both a creative and conservative force within the social-ecological system (Holling 2001). Successful innovations at smaller scales may be spread to larger scales to create a new system identity. For example, an individual tree that has a genetic mutation that provides resistance to disease will produce a greater number of viable seeds such that, over time, the local area and broader region will see a greater number of this type of tree. A social example would be the transformation of government that begins with small grassroots movements. These creative forces are balanced, however, by conservative forces at larger spatial and temporal scales. Following a disturbance (such as a plant disease or political unrest), the system at smaller scales may "recover" its previous characteristics and processes from the social and ecological "memory" (e.g. seedbanks, structures of government, traditional ecological knowledge, etc.) that is stored at larger scales (Colten and Sumpter 2009, Berkes, Colding, and Folke 2002a). The point is that "each level [of the social-ecological system] operates at its own pace, protected by slower, larger levels but invigorated by faster, smaller cycles" (Berkes, Colding, and Folke 2002a, 19).

Holling's definition of resilience focuses on the amount of disturbance that an ecosystem can withstand while maintaining its self-organized processes and structures. Within the context of panarchy, resilience of a social-ecological system is the amount of disturbance a system can absorb before transitioning from the conservation phase to the release phase. Walker and Salt (2006) have suggested that it is also useful to distinguish between "specified resilience" and "general resilience." Specified resilience is the

resilience of particular system component to a particular disturbance (e.g. forest to drought). Optimizing specified resilience comes at the cost of reducing general resilience, which is the capacity of an entire system to stay in the same regime when faced with unforeseen disturbances. Thus, general resilience of a desirable social-ecological system is arguably the goal managers should aim for so that, in adapting to flooding, for example, vulnerability to other climate change impacts, such as drought, is not increased. In practice, however, it is quite difficult to increase resilience to all known, let alone unknown, disturbances now and into the future. Fortunately, resilience scholars have identified some key characteristics of resilient social-ecological systems.

Characteristics of Resilient Social-Ecological Systems

The multidimensional and dynamic nature of resilience makes it difficult to operationalize and measure; however, some key characteristics of resilient systems have been identified. Levin (1999) describes three such characteristics with ecological systems in mind. First, a resilient system must have both functional and response diversity, where functional diversity refers to the range of functional groups a system depends on (e.g. trees, grasses, bottom-feeders, etc.) and response diversity refers to the range of different response types that exist within each functional group (e.g. some trees may burn in a fire, while others survive). Second, a resilient system must have modularity such that subgroups within a system are tightly linked internally, but loosely linked to each other. Lastly, a resilient system must have tight feedbacks such that the consequences of a change in one part of the system are felt and responded to throughout the system. Though Levin (1999) was working with ecological systems, these three characteristics have also been found to be important for the general resilience of social-ecological systems

(Walker and Salt 2006). For example, social-ecological systems in water scarce regions can be made more resilient when a variety of water supplies and demand reduction techniques are utilized (functional diversity), sources of surface water are not all subject to drought at the same time (response diversity), connections between water system jurisdictions are able to be severed to prevent a local emergency from causing a widespread system failure (modularity), and water systems are controlled locally so that unique situations can be quickly recognized and addressed (tight feedbacks) (Holway 2009).

While Levin's work was based in ecology, two other major scholarly efforts have focused specifically on identifying and understanding characteristics of resilient social-ecological systems. The first was a pair of books by Fikret Berkes, Carl Folke, and Johan Colding: *Linking Social and Ecological Systems: Management Practices and Social Mechanisms for Building Resilience* (1998) and *Navigating Social-Ecological Systems: Building Resilience for Complexity and Change* (2002b). The first volume provides ethnography and analysis of local and regional resource management systems to identify and discuss social mechanisms for building resilience. The second volume builds on the first and, by synthesizing case studies, identifies four characteristics necessary for adaptation strategies to promote social-ecological system resilience: living with uncertainty, nurturing diversity, combining different types of knowledge, and creating opportunities for self-organization. These characteristics are similar to those identified by Levin; however Folke et al. clarify their relevance to linked social-ecological systems by elaborating on how they would be manifested socially (2002). I will return to these four characteristics later in the dissertation.

The second major scholarly effort was by Brian Walker and David Salt, who attempt to make resilience theory more accessible to managers and practitioners. In their two books on resilience, *Resilience Thinking: Sustaining Ecosystems and People in a Changing World* (2006), and *Resilience Practice: Building Capacity to Absorb Disturbance and Maintain Function* (2012), Walker and Salt enumerate additional characteristics of resilient systems. Echoing Levin (1999), they emphasize the importance of diversity, modularity, and tight feedbacks. In addition, they argue that a resilient system will embrace ecological variability, acknowledge slow variables (such as the gradual accumulation of silt that would eventually cause an aquatic ecosystem to reach a tipping point), increase social capital, encourage innovation, allow for redundant governance, value ecosystem services, promote fairness and equity, and acknowledge human dependence on the biosphere. Walker and Salt also identify processes that diminish resilience, including efficiency-based management, decision-making by centralized government, and globalization (Walker and Salt 2006).

While the work of Berkes et al. (1998, 2002b) and Walker and Salt (2006, 2012) has moved the field of social-ecological system resilience forward, it is worth mentioning here that of those five authors, none of them have formal training in the social sciences. Berkes, Colding, and Folke all work in the field of natural resources and the environment. Walker was educated as a plant ecologist and David Salt works as a popular science writer. Granted, all of these authors have extensive experience in interdisciplinary resilience research: Berkes also worked in community-based resource management, Colding and Folke worked at the Beijer International Institute of Ecological Economics, Walker has served as the science program director of the Resilience Alliance – a research

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organization that explores the dynamics of social-ecological system – and Salt has much experience in communicating science to non-scientific audiences. Nevertheless, for key insights on the social aspects of resilience theory I turn now to the contributions from social scientists.

Contributions from the Social Sciences

In the social sciences, resilience theory has been used to understand the factors that allow communities to persist and thrive in the face of rapid disasters (e.g. earthquakes and hurricanes) and gradual stressors (e.g. climate change and globalization) (see Green 2009, Cutter et al. 2008, Nuttall 2009, Oliver-Smith 2013). While affirming the value of assessing resilience within the framework of an integrated social-ecological system, social scientists have understandably focused on what makes human communities resilient within these systems. This alternate focus has allowed social scientists to highlight the inherent differences in ecological and social systems and identify problems in the way in which the social-ecological resilience literature is treating the social domain.

Inherent Differences in Ecological and Social Systems

Inherent differences exist between social and ecological systems such that simply applying an ecological resilience framework to social systems is erroneous (Adger 2000). Redman and Kinzig (2003) highlight three important differences that necessitate a rethinking of resilience as applied to social-ecological systems. First, human systems are less predictable than ecological systems; while a species of oak may respond similarly to a flood across its distribution, human communities will respond very differently

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depending on their accumulated cultural knowledge and experience, structural position, and access to power. Thus, explanation of the dynamics of social systems requires historical and cultural context that defies simplification or generalization.

The importance of historical and cultural context is related to the second major difference, which is that while the ecological mode of response to a system change is through natural selection and genetic inheritance, social systems respond by observation, decision-making, and adoption of new behaviors and social structures (Redman and Kinzig 2003). This means that while ecological systems respond to system changes as they occur, their adaptation is constrained by the mechanics of natural selection and genetic inheritance such that the most advantageous evolutionary characteristics of ecosystem species lags behind the changing environmental conditions. In contrast, social systems may not be responding to the present realities of their system, but rather to perceived and remembered system characteristics. Thus there can be a significant lag between environmental change and response of social systems; however, once a response begins it can progress rapidly as new behaviors and strategies are not dependent on genetic changes. In other words, the feedbacks between environmental change and ecological systems are tighter than those between environmental change and the social system; however, once alerted to the change, the social system is able to respond more quickly (Redman and Kinzig 2003).

A third difference Redman and Kinzig (2003) identify is that the respective units of information in ecological and social systems do not always follow the same rules when being transferred in panarchy. In social systems, information from higher scales is passed down in the form of laws, decrees, or other forms of coercion and cooperation, while

information passed up from lower scales may not even reach higher scales because it is degraded or eliminated before it reaches the top. For example, the President of the United States can only read a miniscule fraction of the letters and emails he or she receives and must rely on aides to synthesize and summarize the content of the rest. That means that selection of information in social systems does not always originate from the grassroots level, but rather can occur at the highest levels in the form of changes to ensure continuation of the current system at that level. For example, Escobar (1995) has demonstrated how development policies of the industrialized nations of North America and Europe have served as mechanisms to control the Third World and perpetuate the hegemony that First World nations enjoy. In contrast, ecological systems only experience selection of information at the level of the individual (i.e. those with genes well-suited to their environment will survive to produce greater numbers of offspring), with no selection for the functioning of the ecosystem at a higher level (Redman and Kinzig 2003).

These differences in the ability to generalize about system dynamics, the mechanisms by which information is used to adapt to change, and the level at which selection of information occurs require a highly nuanced approach to applying resilience theory to social-ecological systems. This contrasts with the application of resilience in ecological systems, where species have more consistent and predictable responses to given stressors. Given these three inherent differences between social and ecological systems, it is important not to assume that the same characteristics which contribute to ecological resilience will also support social-ecological resilience. Social systems play by

different rules, and as such may have different, and perhaps opposing, characteristics important for resilience.

Critiques of the Resilience Literature's Treatment of the Social

Despite the important differences between ecological and social systems, much of the resilience literature has overlooked the unique attributes of social systems, resulting in a weakly theorized social arena within social-ecological theory (Fabinyi, Evans, and Foale 2014). A key characteristic of social-ecological system resilience thinking is that nature-culture dualism is discarded in favor of an emphasis on humans as an intrinsic part of nature (Fabinyi, Evans, and Foale 2014). While the dualistic view that externalizes nature has been roundly criticized (e.g. Cronon 1996), incorporating culture within nature poses some challenges for the ways in which socio-cultural aspects of humanity are treated – especially when approached with a theory based in ecology, as is resilience theory. Fabinyi et al. (2014) draw on lessons learned from social anthropology and political ecology to present three key criticisms of the way in which the social realm is treated in the resilience literature.

First, they argue that the social-ecological resilience literature minimizes the role of non-environmental motivators for human behavior. They point out that social-ecological resilience scholars have been very interested in documenting local environmental knowledge (or lack of) with the assumption that such knowledge significantly affects impacts on the local environment. Fabinyi et al. (2014) argue that this perspective reflects the functionalist approach of early ecological anthropology (e.g. Rappaport 1968) and ignores the abundance of examples of cultural institutions and practices (such as the protection of sacred groves) that emerged as a result of socio-

cultural needs such as maintaining the socio-political status quo, appeasing spirits, and minimizing conflict (see Neiland, Madakan, and Béné 2005, Glaesel 1997, Chouin 2002). While local environmental knowledge certainly plays a role in motivating behaviors in relation to the environment, overemphasizing its importance risks overlooking other relevant socio-cultural motivators of environmental behavior.

Second, Fabinyi et al. (2014) criticize the resilience literature for failing to incorporate social diversity and power. They point out that social analysis within the resilience literature is often done at the level of the institution or community such that human agency and relationships between individuals within groups are lost. This results in an emphasis on homogenization and consensus rather than heterogeneity and dissent (see Hatt 2013) and ignores social stratification according to gender, race, or income that affect how environmental change and management are experienced by different people. Focusing on the level of the institution also masks the importance of power disparity. Fabinyi et al. (2014) argue that when resource users are not involved in the institution in question, the problem is expressed as a lack of compliance and ineffective management, rather than evidence of injustice and inequality.

Finally, Fabinyi et al. (2014) criticize the resilience literature for focusing on resilience as a positive system attribute. While key publications (Berkes, Colding, and Folke 2002b, Walker and Salt 2006, 2012) specify that resilience is a value-neutral concept, the majority of resilience literature focuses on resilience as a desirable system characteristic. Fabinyi et al. (2014) point out that resilience studies could also examine the role of resilience in cycles of poverty and structural inequality. This would be important, they argue, in social-ecological systems where the tension between resource

exploitation and conservation may have very different consequences for those with power and money, and those without. For example, Coulthard (2012) points out that adaptation for enhanced resilience could be detrimental to people's well-being, and Crane (2010) suggests that ecological resilience might come at the cost of socio-cultural resilience for people whose livelihoods and beliefs are changed by ecological management. Yet examination of such trade-offs – and who gets to make the decisions – is noticeably lacking from the resilience literature.

In light of the critiques discussed above, some social scientists are skeptical of the utility of social-ecological system resilience for understanding social systems, some are quite optimistic, and some pragmatically argue that, though flawed, the current popularity and relevance of resilience theory to policymaking necessitates social scientists' engagement with the concept so as to improve its application to the social aspects of the system (Redman and Kinzig 2003, Abel, Cumming, and Anderies 2006, Davidson 2010). Though social scientists have engaged with resilience theory relatively recently, they have a long history in examining human and social capacity to respond to environmental change. This work has extensively utilized theories of vulnerability and adaptation, which I will discuss next.

Vulnerability

Causal Structures

In its most general sense, vulnerability can be defined as susceptibility to damage or harm from a disturbance (Nelson, Adger, and Brown 2007); however, many different definitions for vulnerability exist in the research literature. These various definitions arise

from different conceptual frameworks for the causal structure of vulnerability (Cutter et al. 2008). The overall trend in the evolution of vulnerability theory has been to continuously broaden the concept to include risks, sensitivities, and adaptive capacities that arise from physical, social, economic, environmental, and institutional conditions (Birkmann 2007). One of the earliest frameworks for vulnerability developed from research on risks, hazards, and biophysical approaches to understanding susceptibility to natural disasters (Eakin and Luers 2006). This framework, which was prominent in the 1940s to the 1970s (White and Haas 1975), defines vulnerability as a function of risk of exposure to a stressor, where risk is measured by the characteristics (e.g. frequency, duration, and magnitude) and probability of exposure to some type of biophysical disturbance (e.g. climate change impacts such as flooding) (Davis, Heyman, and Krumpe 1991).

In the 1970s attention was refocused on the social, economic, and political drivers of vulnerability (O'Keefe, Westgate, and Wisner 1976). Drawing on the intellectual lineages of political ecology and political economy (Eakin and Luers 2006), a new vulnerability framework was developed that treats risk of exposure to external hazards as a given and defines vulnerability as the inherent socio-political circumstances that increase susceptibility to physical harm (Wisner et al. 2004, Cutter et al. 2008). Vulnerability in this framework is composed of sensitivity and adaptive capacity, where sensitivity is the degree to which individuals and communities will be impacted by a hazard, and is determined by social, political, cultural, and economic structures and conditions (e.g. political systems, economic systems, demographics, etc.) (Kuznar 2001), and adaptive capacity is the ability of individuals and communities to recover, learn, and

change in response to a disturbance such that negative impacts are decreased (Lebel et al. 2006).

A third causal framework for vulnerability integrates the previous two, defining vulnerability as a function of both the risk of exposure to a stressor and the social sensitivity and adaptive capacity of the system (Adger 2006, IPCC 2007, Turner et al. 2003). This framework stems from the work on resilience in ecology and sees vulnerability as a dynamic property of a system in which society is continually interacting with the biophysical environment (Eakin and Luers 2006). First formulated by Susan Cutter (1996), this vulnerability framework was used in the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report (IPCC 2007) and has been employed by many scholars wishing to consider the vulnerability of integrated social-ecological systems (Eakin and Luers 2006).

Finally, the IPCC Fifth Assessment Report reframes vulnerability as a component of risk, rather than subsuming risk under vulnerability as the previous report had done (IPCC 2014). In this framework, risk of climate-related impacts is the focus and is considered to be a function of the system's vulnerability, exposure, and hazard where vulnerability includes sensitivity and adaptive capacity; exposure is the presence of people, ecosystems, and things of value in places that could be impacted; and the hazard is the potential occurrence of a physical event that could cause damage or harm. Despite the IPCC adopting this new vulnerability framework, in this dissertation I will utilize the definition from the fourth IPCC framework – vulnerability composed of risk, sensitivity, and adaptive capacity – because it is more compatible with social-ecological resilience theory.

Understanding vulnerability's link to resilience is challenging because of the difficulty in understanding how panarchy influences the vulnerability of a locality (Cutter et al. 2008). Scholars conceive of the relationship between vulnerability and resilience differently. While some consider vulnerability to be a loose antonym of resilience (Adger 2000), others conceive of resilience falling within an overall vulnerability structure, with resilience as a part of adaptive capacity (Adger 2006, Folke 2006) or adaptive capacity as a part of resilience (Gallopin 2006, Turner et al. 2003). A third conceptualization proposes that vulnerability and resilience overlap such that they are neither mutually inclusive nor mutually exclusive (Cutter et al. 2008). From my review of the literature, I understand vulnerability to refer to the inherent qualities of a system that allow for potential harm to occur in the first place, while resilience refers to both the inherent qualities that allow the system to absorb and cope with stressors, and the post-stressor adaptive processes that facilitate the ability of the system to learn, adapt, and change (Cutter et al. 2008). Given this understanding of the distinction between the two concepts, in my research I found it most useful to consider resilience to be primarily one of the factors affecting adaptive capacity within the social-ecological system.

Adaptation

Adaptation is an older concept than either resilience or vulnerability and was famously used by Darwin to explain the origins of diverse life forms. In the social sciences, the use of the term adaptation is at least as old as cultural ecology (e.g. Steward 2006[1955]). Ecological anthropologists recognize four levels of adaptation, ranging from genetic or evolutionary adaptation to behavioral and social adaptation. In the

literature on the human dimensions of environmental change, however, adaptation most often refers to responses at the level of individual behavior or structural social change. At this level, adaptation can be defined as the decision-making process and set of actions undertaken in response to external circumstances that may entail incremental system adjustments or deliberate (or inadvertent) system transformation to maintain the capacity to deal with current or future predicted change (Young et al. 2006, Nelson, Adger, and Brown 2007). Eight different processes comprise this type of adaptation – mobility, exchange, rationing, pooling, diversification, intensification, innovation, and revitalization (Thornton and Manasfi 2010) – and environmental anthropologists study the socio-cultural factors that may make the use of some adaptation processes more likely than others in response to environmental change (e.g. Vásquez-León 2009, Thornton and Manasfi 2010). In discussions of adaptation, four central themes are present in the climate change literature: 1) adaptation is multiscalar, with adaptive responses ultimately set in local contexts; 2) socioeconomic inequalities relevant for adaptive capacity are found at national and local scales; 3) ecological and social stresses are interrelated; and 4) successful adaptation requires inclusion and participation of local communities (Nelson, West, and Finan 2009).

Contributions from Anthropology

Climate change anthropologists have been at the forefront in the study of adaptation among local peoples worldwide (Fiske et al. 2014). This body of work includes research on institutional barriers to local adaptation (Green 2009); social, cultural, and economic factors contributing to local adaptive capacity (Paolisso et al. 2012, Vásquez-León 2009); appropriate scales of governance (Tsing, Brosius, and Zerner

1999, Nuttall et al. 2004, Lazrus 2009); and inclusion of local knowledge in adaptation planning (Kofinas 2002, Liebow 1995, Bolin 2009, Krupnik and Jolly 2002). From this work have come important insights on adaptation, including critiques about the utility of adaptation as an uncritically examined dimension of climate change policy.

Oliver-Smith (2013) and Cutter et al. (2008) have written on the need to expand concepts of adaptation to recognize the feedbacks from adaptation itself. In evolutionary biology adaptation happens in reference to changes in the biophysical environment; however, human environments include not only biophysical elements, but also social and cultural systems and institutions. These social systems and institutions are part of the human adaptation toolkit, but at the same time are a part of the environment to which humans must adapt.

Oliver-Smith (2013) is also critical of adaptation when it is used to maintain an unjust status quo. Pointing out that climate change policy has largely disregarded the ways in which vulnerability is systematically imposed by unequal distribution of resources and risk, Oliver-Smith suggests that in adapting to climate change impacts people may partly be adapting to the structural inequalities imposed by society. He argues that adaptation in climate change policy is being framed in such a way as to preserve the unequal status quo rather than to reform it such that people have more equitable access to resources and security. Oliver-Smith recommends that climate policy expand its focus from adaptation to biophysical changes to also addressing the social inequalities that make people vulnerable to those impacts in the first place.

Finally, Orlove (2009) examined adaptation as a linguistic element and narrative frame. Orlove acknowledges that the term adaptation has its advantages: it has a more

positive connotation than "limitations," conveys more long-term change than "adjustment," and it is more focused a term than "response." Despite these advantages, however, Orlove has some reservations about adaptation discourse and its place as a key element in climate change policy. He agrees with Oliver-Smith that the discourse of adaptation does not always capture the full range of impacts of climate change. Specifically, Orlove (2009) is critical of how the adaptation discourse ignores the profound sense of loss that accompanies the loss of culture, local environments, and communities. Orlove also suggests that adaptation discourse has created a funding mechanism that may benefit intermediary organizations more than local people.

Relation to Vulnerability and Resilience

Both vulnerability and resilience, by focusing on the ability of a system to respond to stressors, necessarily relate to adaptation. Adaptation is related to vulnerability in that the capacity a system component has to adapt to a disturbance helps to determine the component's level of vulnerability. The higher the adaptive capacity of the component, the lower its vulnerability will be. Thus, adaptation is considered imperative for the survival of a vulnerable system component following a disturbance. Adaptation is related to resilience in that resilient systems are able to successfully adapt to disturbances, and adaptations themselves may serve to increase or decrease system resilience. Adaptation, vulnerability, and resilience are similar in that they are all employed in the study of environmental change and can be used at various spatial and temporal scales to describe the capacities of individuals or whole systems, whether environmental, societal, or socio-ecological (Young et al. 2006). Adaptation differs from the others, however, in that it concerns human responses environmental change, while vulnerability and

resilience describe the state of the system itself and whether or not adaptation is necessary (Young et al. 2006).

Nelson et al. (2007) suggest how adaptation might be considered within a resilience framework. Because a resilience framework acknowledges that change will occur, systems need to be managed for flexibility rather than stability. Thus, using a resilience framework requires focusing on the relationships between system components and the effect of processes on the system. An adaptation framework, in contrast, is generally (but not always) focused on stabilizing a system to withstand a particular disturbance. In other words, standard adaptation approaches result in adaptive responses that deal effectively with anticipated risks, while an adaptive approach within the resilience framework would emphasize managing the capacity of the system to cope with unanticipated future change. High adaptedness to anticipated risks can actually undermine system resilience in three ways: adaptedness in one part of a system may decrease it in another; excessive adaptedness in preparation for one type of stressor may make the system vulnerable to other types of stressors; and increasing efficiency as part of an adaptive response leads to a decrease in response diversity, and a corresponding decrease in overall resilience to unforeseen disturbances (Nelson, Adger, and Brown 2007). Thus, Nelson et al. argue that "defining adaptation success simply in terms of the effectiveness of reducing risk is clearly not sufficient" (2007, 407); a trade-off exists between managing the level of risk to current system stressors and maintaining flexibility to cope with future system changes. As with all trade-offs, there will be winners and losers. This brings us to the issue of justice.

Environmental Justice

All public policy decisions have both distributive and procedural justice implications. Distributive justice concerns the distribution of all benefits and costs, while procedural justice concerns the fair inclusion of all stakeholders in decision-making and planning processes (Paavola and Adger 2006). The two are not independent of each other; if an individual or group cannot participate in decision-making processes, distributive injustices can be aggravated (Paavola and Adger 2006). Despite the importance of procedural justice, distributive justice is often erroneously pursued without consideration of procedural justice. This is especially problematic because people differ in their views of distributive justice, and what might be considered fair distribution of resources by one person may be considered horribly unfair by another person.

Approaches to Distributive Justice

A variety of opinions exist as to the most fair way to allocate resources and costs. Three general approaches are market distribution, equitable distribution, and compensatory distribution. A market-based conception of distributive justice is rooted in the idea of entitlement and purports that justice is realized when those who have more money have greater access to benefits. In equitable distribution, all members of society have the same degree of access to benefits and equally bear burdens, regardless of their relative contributions to society (Byrne 2010). Finally, compensatory distribution redistributes benefits to those who are most vulnerable.

Market-based mechanisms of distribution dominate in policies and programs, especially as related to climate change (Paavola 2008). This approach to distributive justice is based in neo-liberal economics and rational choice theory, and assumes that individuals

will have more money (and benefits) because they have earned it by working harder or being more creative and innovative in their entrepreneurial endeavors than those with less money. However, Paavola (2008) argues that neo-liberal economics and rational choice theory rely on faulty assumptions about human motivation, knowledge, and cognitive capacity. As applied specifically to climate change, market solutions will result in profit for corporations while failing to address actual environmental problems and exacerbating inequalities in global resources (Dorsey 2007). These outcomes, while detrimental to vulnerable peoples, are favorable for trans-national corporations, and they have therefore actively pushed market mechanisms in public relations campaigns and lobbying efforts. Acknowledging the imperfections of the market – that knowledge of the physical world is limited by cognitive capacity and that people do not always act in their own self-interest – provides justification for the application of social justice considerations to resource use decisions, rather than allowing all resources to be allocated by market mechanisms (Paavola 2008).

Equitable distribution has been shown to be a favorable option if the higher performing individual knows and likes the lower performing individual. In a number of social psychology studies, researchers have found that individuals who perform better at a task relative to their partners, but who like their partners, favor equal allocation of earnings between them (see Mikula 1980). In general, however, equitable distribution is viewed by the public in the United States as unfair and even unjust. Studies by Konow (1996) and Schokkaert and Capeau (1991) indicate that individuals frequently prefer unequal allocations of resources and consider equal distribution to be fair only when the variables that the individual considers relevant for fairness are also equal across individuals (Konow

2003). Compensatory distribution, where benefits are redistributed to those who are most vulnerable, is even less popular, though Rawls (1999) argues that this approach to distributive justice would be favored by individuals before entering an imaginary world where their ethnicity, social status, and gender were hidden from them.

Deciding which distributive justice theory is most appropriate for a given situation cannot be determined by objective analysis, but rather is a moral issue that must be negotiated among individuals who will have competing values and interests (Paavola 2008). This negotiation is in itself a justice issue, in that a fair decision about how costs and benefits will be distributed can only be made if the process of decision-making is inclusive of all voices. Paavola and Adger write that

> Procedural justice fosters legitimacy because it assures those whose interests are not endorsed by a particular decision that their interests have been considered and that they have a chance to count in other decisions. Procedural justice also enables affected parties to express their dissent or consent and to maintain their dignity (2006, 601-602).

Thus, procedural justice – ensuring that all individuals and groups are represented in the decision-making process – is crucially important for reconciling competing values and interests in order to determine the most just way to distribute costs and benefits in a given situation.

Forms of Procedural Justice

Just as there are multiple approaches to distributive justice, procedural justice can also take different forms. Aylett (2010) critically examines conceptions of procedural justice and distinguishes between Habermasian and Foucauldian participation in decision-making

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processes. Habermasian participation is based on the theory that a deliberative process allows individuals to debate and shape shared values, thereby leading to consensus on the best way to distribute costs and benefits. Habermas suggests that those at the bottom of capitalist society can see through the ideology (1975), and that the masked inequalities of a capitalistic system can be overcome by enhancing democratic communication (1984-87). Specifically, Habermas proposed the implementation of an ideal speech situation that would allow all participants equal opportunity to have a voice (1984-87). This ideal speech situation would require that all potential participants 1) have equal opportunity to initiate and perpetuate discourse; 2) are honest and sincere to themselves and others; 3) have equal chance to regulate the flow of discourse by allowing or forbidding arguments or setting norms for appropriate justifications; and 4) be willing to subject their interpretations to consideration and criticism (Kemp 1988).

This deliberative approach, which is widely favored by technocratic institutions, is beneficial in that it generally encourages the traditionally excluded to make their needs known. It may also benefit participants by helping them to gain skills, understanding, and organizing capabilities to engage more effectively with the state and decision-making processes in the future. However, Aylett (2010) cautions that Habermasian participation may not always embody true procedural justice. In many cases Habermas' ideal speech situation is not truly realized, which allows so-called consensus-based processes to result in the perpetuation and amplification of inequality by giving the already powerful new venues for exerting their power. For example, such a process may produce new inequalities by burdening local residents or community groups with the responsibility of delivering services, or may be used to increase the efficiency with which predetermined projects are

implemented, without empowering residents to question the projects or the neoliberal doctrines in which they are rooted.

An alternative form of procedural justice is that described by Foucault (1981, 1986, 1991). Foucauldian participation is rooted in conflict and is characterized by a continuous grassroots struggle to identify and resist injustice and the underlying logics of oppressive value systems (Aylett 2010). Power inequality affects not only who gets to participate in decision-making, but also the ways in which they may participate and the outcomes that result (Hajer 2005). Thus, when power disparities exist the only effective recourse for those without power to be heard is to engage in continuous grassroots conflict outside of the codified decision-making structures and mechanisms.

Foucauldian participation characterized the American Civil Rights movement of the 1950s and 60s and the Environmental Justice movement of the 1980s and 90s. As shown by the success of these movements, Foucaldian participation is beneficial in that it demands attention by disrupting or circumventing the usual modes of discussion and decision-making and thereby raises the concerns and desires of those who, because of power disparity, are not heard in Habermasian participation. While this type of participation is crucial for maintaining the struggle for more transformative change, Aylett cautions that "focusing solely on conflict ignores the ability of stable state-managed structures to balance out the often cyclical and uneven nature of community-based mobilization" (2010, 104). Thus, Aylett (2010) argues that meaningful participation in decision-making processes requires both centralized consensus-driven systems of participation and participation by confrontational grassroots movements.

The Environmental Justice Movement

Procedural and distributive justice theories became relevant to issues of environmental pollution with the emergence of the environmental justice movement in the early 1980s (Byrne 2010). Rooted in the civil rights movement of the 1950s and 1960s, the environmental justice movement is characterized by Foucauldian participation. Specifically, the movement employs grassroots organization and protest to draw public attention to the unjust distribution of environmental harms – particularly the disproportionate exposure of people of color and/or low income to environmental contamination – and to pressure government and policymakers to address environmental justice issues (Byrne 2010). Environmental justice groups often employ multiple conceptions of distributive justice and apply justice principles to individuals, groups, or communities as the need arises (Schlosberg 2007). Despite the use of a variety of justice paradigms, the central goal of the environmental justice movement is equitable justice – that all peoples and communities be equally protected from environmental harms (Mohai, Pellow, and Roberts 2009).

Many identify the protests in Warren County, North Carolina in the fall of 1982 as the birth of the environmental justice movement (e.g. Agyeman 2008, Mohai, Pellow, and Roberts 2009, Byrne 2010). Since that time, grassroots community resistance has arisen around the country in response to unequal enforcement of environmental law, differential exposure to pollution, faulty assumptions in calculating and managing environmental risk, discrimination in land use and zoning, delayed and inadequate governmental response after disasters, and exclusionary practices that prevent some groups from participating in decision-making processes (Bullard and Johnson 2000, Bullard 2008). These environmental

justice activists argue that all people have the right to information about exposure to environmental harms, participation in hearings, and compensation for harms experienced. In addition, environmental justice activists have fought to guarantee that minority and low income communities will be protected from environmental degradation, that negative health impacts will be prevented, that the burden of proof lie on the polluters, and that negative impacts are addressed with remedial action and resources (Cutter 1995).

Though many poor and minority communities still face environmental injustice on a daily basis, the environmental justice movement has been successful in demanding acknowledgement of their plight and remedial action from the federal government. In 1993 the Environmental Protection Agency (EPA) formed the National Environmental Justice Advisory Council, and in 1994 President Bill Clinton signed Executive Order 12989 requiring federal agencies to take environmental justice into account prior to rulemaking (Byrne 2010, US EPA 2012, Mohai, Pellow, and Roberts 2009). In addition, the environmental justice movement has inspired a number of empirical studies examining the relationship between the distribution of pollution and people of color and/or low income. In a review of such studies, Bullard and Johnson report that

> [R]ace has been found to be independent of class in the distribution of air pollution, contaminated fish consumption, location of municipal landfills and incinerators, abandoned toxic waste dumps, cleanup of Superfund sites, and lead poisoning in children (2000, 562).

Thus, even when social class is held constant, studies have found that people of color experience elevated environmental public health risks (Stretesky and Hogan 1998, Lavelle and Coyle 1992).

The validity of such findings has been questioned by some (e.g. Cutter 1995), who wonder how much of environmental justice policy (e.g. President Clinton's executive order) is based on empirical evidence of discrimination, and how much is the result of political pressure from activist groups. In fact, an article by Anderton et al. (1994) countered previous studies in arguing that there was no significant correlation between race and the siting of waste treatment, storage, and disposal facilities. Yet the methods used by Anderton et al. have been critiqued, and subsequent empirical and ethnographic studies have countered their findings (e.g. Mohai, Pellow, and Roberts 2009, Checker 2005, Bullard 2008).

Though the environmental justice movement was initially associated with people of color, it now includes all who are deprived of environmental rights, including the poor, women, and children (Agyeman, Bullard, and Evans 2002). In addition, environmental justice advocates have increasingly turned their attention to people of color and/or low income suffering from environmental injustice around the world. One of the greatest areas of global environmental injustice is climate change (Dawson 2010).

Climate Justice

Climate change is an environmental justice issue for at least three reasons. First, not everyone is equally responsible for causing climate change, yet, because of the diffusion of greenhouse gases in the atmosphere, people will be impacted by climate change around the world regardless of the degree to which they contributed to the problem (Harris 2010). In general, people of color (CBCF 2004; Hoerner and Robinson 2008; Samson, et al. 2011),

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people of low income (Fussel 2010; Rabinowitz 2012; Roberts and Parks 2007), and women (Terry 2009) are less responsible for greenhouse gas emissions.

Internationally, poorer nations have generally contributed little to climate change (Füssel 2010a). Furthermore, countries with populations predominantly of color have contributed less to global emissions than those countries that have predominantly Caucasian populations (Hoerner and Robinson 2008). The United States is responsible for a substantially disproportionate share of global emissions. While China passed the United States as the world's biggest greenhouse gas emitter in 2006 (Vidal and Adam 2007), China's greenhouse gas emissions per capita remain lower than those of the United States and many European countries (CDIAC 2011). With only 4 percent of the world's population, the United States has contributed over 20 percent of global greenhouse gas emissions (Roberts and Parks 2007). To put this in perspective, the total emissions of the United States is 17 times that of the entire continent of Africa, while the United States' population is only about 41 percent of Africa's population (Hoerner and Robinson 2008). The United States' disproportionate contribution to climate change also holds true when considering per capita or historical emissions (Roberts and Parks 2007). The same pattern appears for other predominantly Caucasian countries. Excluding the United States, the rest of the "West" has a total population just slightly larger than that of Africa, yet emits 23 times the amount of greenhouse gases (Hoerner and Robinson 2008).

Responsibility for emissions is also disproportionate within countries, again differing by race, class, and gender. In the United States, African Americans are less responsible for climate change, both historically and at present. In total emissions, African Americans generate 14 percent less carbon than Caucasian households directly, and 36

percent less indirectly (CBCF 2004). Per capita, African Americans emit 20 percent less

carbon than non-Hispanic Caucasians (Hoerner and Robinson 2008), and 18 percent less

than all other Americans (CBCF 2004). Furthermore, African Americans living in rural

areas have the lowest carbon footprint of any other group in the United States, emitting 23

percent less carbon than the national average (CBCF 2004). These differences are largely

due to differences in consumption patterns, which in turn may be linked to income (CBCF

2004). Differences in emissions according to income level have also been documented in

Israel, where Rabinowitz (2012) found that individuals in the top income decile had per

capita emissions approximately 25 times higher than those in the lowest decile. Finally,

Terry (2009) has demonstrated that around the world women have contributed less to

anthropogenic climate change than men.

The second reason climate change is an environmental justice issue is because some

are more vulnerable to climate change impacts than others (Adger, Paavola, and Huq 2006).

In general, communities that have had access to fewer environmental resources while being

exposed to greater environmental pollution and degradation will be more vulnerable to the

impacts of climate change and face greater challenges in adapting to those changes. Many

studies have shown that those who have benefitted the least from the industries that have

increased the concentration of greenhouse gases in the atmosphere are projected to suffer

most from climate change impacts (Mohai, Pellow, and Roberts 2009). Within all countries,

women will likely bear a disproportionate amount of the burdens associated with climate

change impacts because of their relatively limited access to resources and the socio-

culturally prescribed limitations on women's occupations, physical mobility, and decision-

making at the household and community levels (Terry 2009). For example, rural women in

developing countries are often dependent on natural resources for their livelihoods, responsible for collecting water and fuel, and conduct the majority of the farming; it is predicted that climate change will make all of these tasks more challenging (Terry 2009).

In addition, countries with populations predominantly of color or ethnicities that incorporate people with a wide range of skin colors (including those in Central America, central South America, the Arabian Peninsula, Southeast Asia, and much of Africa) are predicted to experience strongly negative climate impacts such as decreases in regional food production and increases in the number of floods and droughts (Cline 2007, Samson et al. 2011, Huq et al. 2004). In contrast, the United States and other predominantly Caucasian countries, which are responsible for a disproportionate amount of emissions, will not experience these negative effects of climate change to the same extent as many countries that have contributed far less to global emissions (Miranda et al. 2011, Adger, Paavola, and Huq 2006).

Within the United States, those groups that already experience environmental injustice, including the poor and disadvantaged populations of color, will be especially burdened by climate change impacts (Adger, Paavola, and Huq 2006, Wilson et al. 2010). The American Lung Association reports that 80 percent of Latinos and 71 percent of African Americans live in areas that fail to meet US Environmental Protection Agency (EPA) air quality standards (Shepard and Corbin-Mark 2009). In addition, Maryland census tracts with the greatest proportion of African Americans are three times more likely to have a high risk for cancer related to air pollution than those census tracts with the lowest proportion of African Americans (Hoerner and Robinson 2008). Throughout the United States, African Americans are at greater risk to developing cardiopulmonary disease or

dying in heat waves as a result of climate change (CBCF 2004, Wilson et al. 2010). In addition, because the six states with the highest African American population are within the Atlantic hurricane corridor, African Americans are more exposed to the climate-change-induced impacts of hurricanes and tropical storms (Hoerner and Robinson 2008). Finally, historic and current economic disparity and racial discrimination also put African Americans at greater risk of facing housing and insurance inequalities, food insecurity, unemployment, and economic hardship related to energy price increases as the impacts of climate change begin to affect social and structural aspects of social-ecological systems (Hoerner and Robinson 2008).

The third way climate change is an environmental justice issue is because those individuals who are most vulnerable to climate change impacts are often excluded from participation in the decision-making processes that will determine policies to mitigate or adapt to climate change (Harris 2010, Paavola and Adger 2006). Issues of procedural justice related to climate change are relevant at both the international and local level. Internationally, those countries that are more vulnerable to climate change have less power in international climate conferences. For example, while the United States brought 99 formal delegates to the United Nations Framework Convention on Climate Change 6th Conference of the Parties, some developing countries only had three or fewer delegates (Roberts and Parks 2007). Because these international meetings often have multiple sessions occurring simultaneously, having fewer delegates means that these countries cannot be represented at all sessions, or read, process, and comment on all negotiating drafts. On a more local level, different knowledge types (i.e. traditional ecological knowledge) or worldviews can result in the participatory exclusion of stakeholders (e.g. Green 2009).

Being excluded from decision-making processes – whether intentionally or unintentionally, locally or internationally – is highly problematic because policies to address climate change may generate large benefits or costs for vulnerable communities, depending on how they are crafted (CBCF 2004).

Though most of the discussion of justice in the international climate regime is focused on mitigation in terms of emissions rights and responsibility (Adger 2004), the Paris Agreement that resulted from the 21st session of the United Nations Framework Convention on Climate Change (UNFCCC) Conference of Parties (COP) noted that the concept of climate justice is important to some countries when taking action to address climate change (UNFCCC 2015). The distributive and procedural justice implications of adaptation to climate change include determining responsibility for climate change impacts, the amount of assistance to be provided to vulnerable countries, the distribution of assistance measures between countries and among possible adaptation programs, and the appropriate level at which to make adaptation planning decisions (Paavola and Adger 2006). Some argue that degree of vulnerability should be the basis for the distribution of adaptation assistance (e.g. Moser et al. 2008); however, even if all countries could heartily agree to the importance of climate justice (rather than just some), there would still be considerable difficulty in coming to a consensus on how vulnerability should be measured (Paavola 2008).

Nevertheless, applying an environmental justice framework to climate change mitigation and adaptation has the potential to direct attention to holistic approaches and the integrity of local communities and their ability to persist in the face of climate change (Stallworthy 2009). In a paper on international climate mitigation policy, Byrne et al. (1998) argue that socio-economic and environmental inequality must both be addressed by

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developed countries in order to encourage participation of developing countries in mitigation efforts. The need for such a holistic approach brings us back to the theory of social-ecological resilience.

Environmental Justice and Resilience

In this chapter I have already described how environmental injustices increase vulnerability to climate change impacts and how differential vulnerability to climate impacts is itself an environmental justice issue. I also discussed the relationship between environmental justice and adaptation; namely, that those who experience injustices, whether socio-economic or environmental, will have a more difficult time successfully adapting to climate change impacts. In this section I will focus on the relationship between environmental justice and resilience theory.

The key connection between justice and resilience is sustainability – thoughtful use of resources such that the present human needs may be met without compromising the ability of future generations to meet their own needs (definition adapted from Brundtland 1987). Resilience theory is ultimately concerned with the persistence, or sustainability, of the social-ecological system (Nelson, Adger, and Brown 2007). Forbes argues that environmental justice is important for social-ecological system sustainability because, "by definition, environmental and social problems are strongly linked in … social-ecological systems" (2008, 204).

Julian Agyeman (2005) has developed an approach to environmental justice – "just sustainability" – that addresses issues of social justice while incorporating considerations of environmental sustainability. Agyeman (2005) argues that the environmental justice and environmental sustainability paradigms have areas of overlap that raise potential for

collaboration and cooperation, and that neither environmental justice nor environmental sustainability can be achieved without the other. Agyeman understands environmental justice to be dependent on environmental sustainability by recognizing that the planet's resources and capacity to absorb waste are limited. Sustainable use of resources is thus necessary to ensure that there are enough environmental goods to share among all peoples in the present as well as the future (Agyeman, Bullard, and Evans 2003). This is a view widely shared by ecological economists (e.g. Daly and Farley 2004).

Likewise, an increasing number of empirical studies are showing that environmental sustainability is dependent on social equality. Torras and Boyce (1998) demonstrated that greater power inequality was strongly correlated with greater pollution. This is true because as power disparities decrease, those who bear the costs of pollution are more able to influence environmental policy. While increasing per capita income can be accompanied by decreases in environmental degradation (Grossman and Krueger 1995), Torras and Boyce (1998) showed that corresponding increases in power equality play an important role in this relationship. Lacking increases in equality, high income levels beyond a certain point can actually increase environmental degradation (Torras and Boyce 1998). This correlation between equality and environmental quality has been found to be true globally, between countries (Torras and Boyce 1998), nationally, between the US states (Boyce et al. 1999), and at even a finer scale, between California counties (Morello-Frosch 1997). Thus across the board, empirical studies have found that regions with greater inequality have greater environmental degradation. Boyce writes

>All else equal, wider political and economic inequalities tend to result in higher levels of environmental harm. For this reason, efforts

to safeguard the natural environment must go hand-in-hand with

efforts to achieve more equitable distributions of power and wealth

in human societies (2008, 267).

Therefore, environmental justice, by decreasing environmental harm, may increase the

sustainability and bolster the resilience of a desirable social-ecological system.

Conceptual Framework

To simultaneously consider social-ecological resilience, vulnerability, adaptation,

and environmental justice, it was necessary for me to integrate all of these concepts into

one framework. Figure 1 shows this framework, which I will discuss in reference to the

disturbance of sea-level rise.

Within the social-ecological system, vulnerability to flooding from sea-level rise

is composed of the risk of exposure to flooding, sensitivity to flooding, and the capacity

to adapt so as to minimize damages. The resilience of the social-ecological system is one

factor that affects the adaptive capacity. Importantly, the presence of resilience may

enhance adaptive capacity (if, for example, it allows the system to easily return to a

desirable state) or diminish adaptive capacity (if, for example, an unfavorable system of

poverty were highly resilient). Environmental justice – including considerations of both

procedural and distributive justice – affects vulnerability. In this research I primarily

focused on how environmental justice affects sensitivity and adaptive capacity (see

Chapters 4, 5, and 6); however, it is important to acknowledge that environmental justice

also affects risk (Oliver-Smith 2013). I briefly discuss the relationship between

environmental justice and risk in Chapter 3. Finally, adaptive capacity determines the

adaptation options available to respond to flooding from sea-level rise. The adaptations

enacted will either maintain the current social-ecological system identity or shift the

system into an alternative system identity.

Figure 2.1 Conceptual Framework
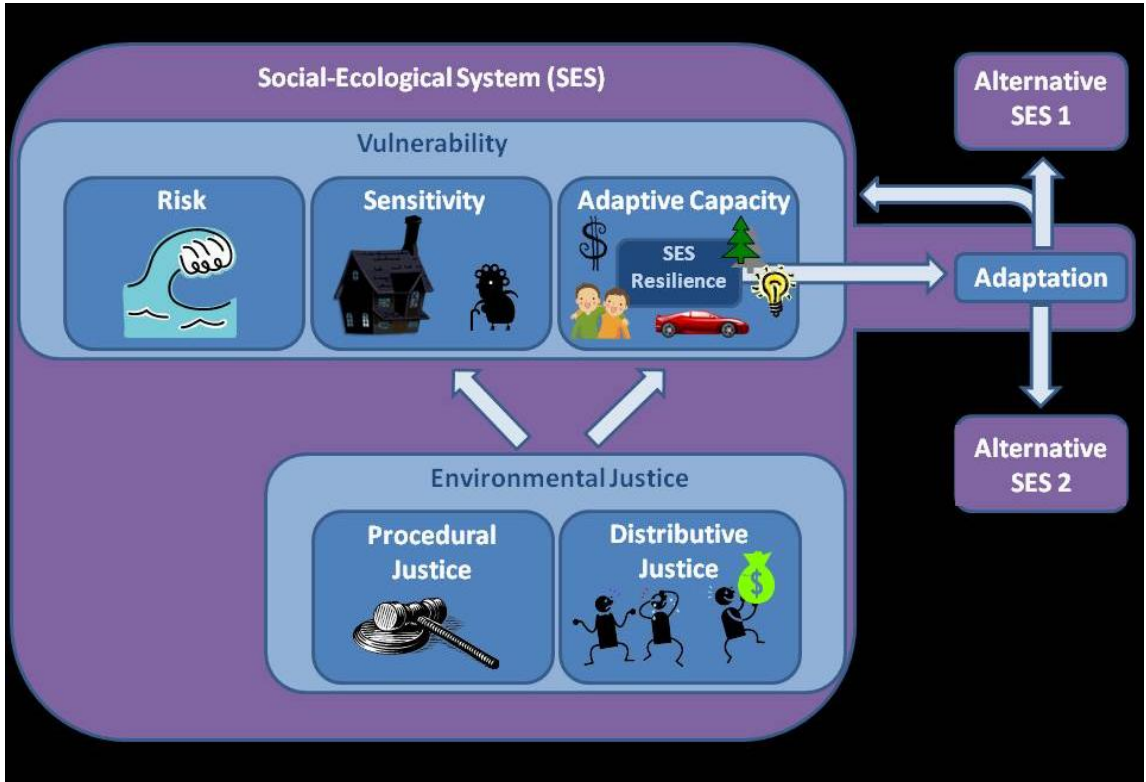
Contribution to Environmental Anthropology

Anthropology has a long history of exploring the interaction between culture and

the environment. Approaches to this pursuit have been many and varied, including

cultural ecology, which focuses on identifying creative cultural responses in response to

environmental limits on the means of subsistence (e.g. Steward 1955); ethnobiology,

which examines traditional ecological knowledge (e.g. Kuznar 2002, Conklin 1957);

ecological anthropology, which borrows from ecology and systems theory to examine the

relationship between human behavior and the stability of a given ecosystem (e.g. Rappaport 1968); and political ecology, which considers the role of power in human-environment relations (e.g. Brosius 1999). This dissertation does not fit neatly into any one of these sub-genres of environmental anthropology, but rather draws on and integrates several approaches.

First, this research continues in the vein of ecological anthropology by employing social-ecological system resilience theory as a framework for considering the relationship between rural African American communities and their broader social and ecological environment. Specifically, this approach shares with ecological anthropology the adoption of a concept from ecology, a focus on humans within a single system, concern with the flow of energy, matter, and information, and an interest in system stability (Townsend 2009). Also, like ecological anthropology, resilience theory is primarily concerned with human behavior rather than culture; to examine cultural knowledge of the social-ecological system, I drew on ethnobiology.

Of all the approaches of environmental anthropology, ethnobiology emphasizes culture the most. By using cognitive approaches to elicit traditional or local knowledge of the environment, ethnobiology demonstrates the importance and relevance of experience-based knowledge for environmental management (e.g. Krupnik and Jolly 2002). Drawing on ethnobiology, I utilized cognitive methods to elicit local cultural knowledge on climate change, and, by connecting this knowledge with a scientific vulnerability framework, demonstrated that these communities possess important information that can complement the scientifically-generated knowledge which is currently being used in adaptation planning.

Finally, this research draws on political ecology in its consideration of issues of environmental justice. Insofar as environmental injustices are related to issues of power disparity, a political ecology approach is useful for examining the mechanisms by which some perspectives are privileged over others (Milton 1993). In this dissertation, I explored the relative exclusion of African American perspectives from adaptation planning by examining the processes and conditions that cause widespread procedural injustice. I also drew on political ecology in my final critical examination and assessment of resilience theory and its utility for environmental justice communities (see Chapter 8).

By integrating approaches from several sub-genres of environmental anthropology, I was able to conduct research that speaks to a prominent framework among climate adaptation and disaster readiness practitioners while still incorporating an examination of cultural knowledge and an analysis of power disparity. The results of this integrated research approach is a holistic examination of African American communities on the Eastern Shore that reveals their position within their social-ecological system, highlights the importance and relevance of their local cultural knowledge on climate change, and outlines the challenges that they face as a result of environmental injustices.

Overview of Methods

To explore the concepts discussed above, I utilized a variety of qualitative and quantitative methods in this research. The methods will be discussed in more detail in later chapters; here, I present an overview of the methods to show how the various phases of research built upon each other.

My research objective during the fall of 2012 was to identify the location of environmental justice communities on the Eastern Shore and to understand broadly how these communities may be vulnerable to climate change, particularly flooding from sea-level rise. A previous project (see Paolisso et al. 2012), identified rural African American communities as environmental justice communities, and an interview with an area United Methodist District Superintendent suggested that these communities are largely centered around local United Methodist churches. To select specific communities on which to focus this study I used ArcGIS to map the location of United Methodist Churches with a predominantly African American congregation. I then overlaid that map with the "Sea Level Rise Inundation" dataset – a derivative of high-resolution topographic data (LiDAR) that the State of Maryland acquired in cooperation with federal and local agencies to identify areas vulnerable to flooding (Center for Geographic Information Sciences 2007). Examining church locations in relation to the spatial inundation data allowed me to approximate the church communities' relative risk to flooding from climate change. After mapping these churches and their relative risk of flooding, I spent three months doing exploratory ethnographic fieldwork among the church communities that would be inundated with five feet of sea-level rise or less. (The most recent projections for Maryland predict a sea-level rise of 2.1 to 5.7 feet by 2100 (Boesch et al. 2013).) Participant observation and informal interviews during these community visits helped identify a variety of social and environmental vulnerability factors, including racial issues, economic struggles, demographic changes, cultural loss, proximity to coast, loss of land, and pollution. Based on the information collected during this exploratory

phase, I finally selected three African American church communities to focus on: St.

Michaels in Talbot County, the small settlements of Smithville, Aireys, Fork Neck, and

Liners Road in Dorchester County, and Crisfield in Somerset County. (See Chapter 3 for

more discussion of the methods and results of this exploratory phase.)

Phase 2: Community Workshops (Spring, 2013)

In the spring of 2013 I organized a workshop in each of the focus communities.

The research objectives of these workshops was to 1) elicit cultural knowledge on climate

change, 2) better understand the ways in which the communities are vulnerable to the

impacts of climate change in general and sea-level rise in particular, and 3) understand

what resources (social, physical, economic, cultural, etc.) the communities have that will

allow them to respond to climate change in general and sea-level rise in particular.

To meet these research objectives, the workshops consisted of three activities.

The first activity was a pile-sorting exercise, where participants were asked to

individually sort climate change terms into piles according to what terms they thought

were most similar to each other. (These pile sorts were later analyzed using

multidimensional scaling and cluster analysis. See Chapter 4.) The second activity was a

presentation on the three components of vulnerability (risk, sensitivity, and adaptive

capacity), and general adaptation strategies. This presentation also included maps

showing participants how their area may be flooded by sea-level rise. The presentation

was followed by the third activity, which was to have the participants work in small

groups to discuss 1) ways in which their community is vulnerable to sea-level rise and

flooding, and 2) what resources they had for adaptation. These discussions were

facilitated by worksheets with questions to prompt discussion on these topics. Each group

had one person take notes on the worksheet. In addition, an audio recorder recorded conversations at each group. The workshops yielded results on cultural knowledge, vulnerability, and adaptation for these communities in regard to climate change, sea-level rise, and flooding. (See Chapter 4 for analysis and discussion of the results from these workshops.)

Phase 3: Semi-Structured Interviews (Summer and Fall, 2013)

My overall research objectives during the summer and fall of 2013 were to 1) follow up on some of the key findings on vulnerability and adaptation that came out of the three community workshops, and 2) begin to understand how individuals working in policy or environmental conservation on the Eastern Shore thought about climate change vulnerability and adaptation. Toward that goal, I prepared to interview African Americans in our study communities, Eastern Shore policymakers, and Eastern Shore environmentalists. I used the information I had gained at the spring workshops to develop ten interview questions. More specifically, I designed these interview questions to address six objectives, which were to understand 1) what the individual views as important for the future of the social-ecological system; 2) what would help maintain important aspects of the present social-ecological system; 3) what threatens the important aspects of the present social-ecological system; 4) whether factors for social-ecological system resilience were present; 5) to what extent distributive justice related to flooding and recovery exists; and 6) to what extent procedural justice related to adaptation to flooding exists. In addition, interviews with African American community members included questions to help me in my interpretation of the multi-dimensional scale (MDS)

plots, which were outcomes of the spring workshops. (See Chapters 3, 4, and 5 for

discussion of the semi-structured interview analysis and results.)

Phase 4: Questionnaire (Spring, 2014)

Having collected rich data on vulnerability, adaptation, justice, and resilience

from the semi-structured interviews, the objective for the spring of 2014 was to determine

to what extent the views and opinions expressed by interviewees were shared more

broadly among African Americans, policymakers, and environmentalists on the Eastern

Shore. Toward that goal I developed two questionnaires: one to be distributed by postal

mail to African American church communities, and one to be emailed to policymakers

and environmentalists. For the purposes of sharing information at the upcoming multi-

stakeholder workshop, I compared the questionnaire responses of African American

church members with the responses from policymakers and environmentalists. I used

cultural consensus, which is a quantitative method that allows me to look at whether there

is overall agreement within a given group on what the "correct" answer to a given

statement is, to see whether there was overall agreement within and between African

American respondents and policy and environment respondents. (See Chapter 6 for more

details on questionnaire development, distribution, response, and analysis.)

Phase 5: Multi-Stakeholder Workshop (Summer, 2014)

In the summer of 2014 I organized a multi-stakeholder workshop to 1) share the

questionnaire and general research findings with representatives from each of the three

stakeholder groups (policymakers, environmentalists, and African American community

members); and 2) enact procedural justice by creating a space for African American

community representatives to discuss sea-level rise vulnerability and adaptation with policymakers and environmentalists. The workshop included a time during which a representatives from each of the three stakeholder groups (policymaker, environmentalist, and African American community member) spoke for about 10 minutes about what climate justice meant to them in their work or community, a presentation of the main research findings, and small group discussions of the obstacles and opportunities for increasing justice related to flooding and climate change adaptation on the Eastern Shore. The types of data collected at the workshop included 1) notes taken by the facilitators; 2) audio recordings; 3) responses to keypad polling questions; and 4) flip-chart pages with answers to the small-group discussion questions. This data was synthesized and compiled into two reports on the workshop outcomes – one for African American church communities, and one for policymakers and environmentalists. (See Chapter 7 for further discussion of the multi-stakeholder workshop content and outcomes.)

Chapter 3: A Portrait of African American Communities within their Social-Ecological Systems

Introduction

This chapter begins to address the first research question – what is the level of resilience and adaptive capacity for social-ecological systems that are characterized by environmental injustice in the face of climate change? – by examining the relationship of the African American communities on the Eastern Shore to their broader social-ecological system. I first introduce Maryland's Eastern Shore as a social-ecological system, highlighting the region's geology, landscape, economy, and African American history. I also give a brief history of the development of Methodism as a central part of African American community life on the Eastern Shore. I conclude this section with a description of the recent changes and challenges facing the Eastern Shore and the key political players who will help to shape the region's future.

The second part of this chapter provides a cultural portrait of the selected study communities. I first describe how study communities were identified and selected, then give a brief introduction to each of the focus communities: St. Michaels, Dorchester County, and Crisfield. While each study community differs in its position within its social-ecological system, three common themes emerged. That is, in all study communities, religious faith and the church, rootedness in the landscape, and race relations were highly salient to community experience.

The final section of this chapter discusses social-ecological system resilience factors. Specifically, I report on the presence of the first two factors identified by Folke et al. (2002) – living with uncertainty and nurturing diversity – among the study communities on the Eastern Shore.

Maryland's Eastern Shore: A Social-Ecological System

The Land

Maryland's Eastern Shore is part of the Delmarva Peninsula, a stretch of land bordered by the Chesapeake Bay to the west and the Atlantic Ocean and Delaware Bay to the east. Taking the Chesapeake and Delaware Canal as the northern border, the Delmarva Peninsula is about 180 miles long and comprised of about 5,450 square miles, including 9 Maryland counties, 2 Virginia counties, and nearly all of Delaware (Delmarva USA 2015). The Delmarva Peninsula was formed between periods of glaciation in the last 2 million years; as sea levels rose between glacial periods, ocean currents deposited sand, gravel, and silt at the mouths of the Susquehanna and Delaware Rivers, forming spits that gradually lengthened (Oertel and Foyle 1995, Hobbs III 2004). Because of the way it was formed, the Delmarva Peninsula soils are poorly consolidated and prone to erosion (Yarbro et al. 1983). The Peninsula is also very low-lying; the entire peninsula, with the exception of a 102 foot point at the northernmost end, is less than 100 feet above sea-level. Most of Delmarva's interior ranges from about 40 to 80 feet above sea-level. These uplands are bordered by wide lowlands, which are separated from the Chesapeake Bay and Atlantic ocean by wetlands (Owens and Denny 1979).

A number of surveys of wetland acreage on Maryland's Eastern Shore have been conducted since the turn of the 20th century, the most recent of which was conducted by

the U.S. Fish and Wildlife Service National Wetlands Inventory in the early to mid-1980s (MDE 2015). According to this survey, wetlands occupied about 16 percent (455,301 acres) of the land area on Maryland's Eastern Shore at the end of the 20th century (Tiner and Burke 1995). Of this wetland acreage, about 49% is classified as estuarine (i.e. salt and brackish) and about 51% as palustrine (i.e. tidal or non-tidal freshwater marshes). A small proportion of the Eastern Shore wetlands – less than 2,500 acres – are classified as riverine (i.e. rivers), lacustrine (i.e. lakes), or marine (i.e. open saltwater habitat and high-energy shores) wetlands (Table 3.1) (Tiner and Burke 1995). Of the land not classified as wetlands, most is agricultural (about 46%) and forested (about 39%) with a relatively small proportion (about 14%) classified as developed (Table 3.2).

Table 3.1 Wetland Acreage According to Class on Maryland's Eastern Shore

County	Estuarine Wetland Acreage	Palustrine Wetland Acreage	Riverine, Lacustrine, Marine Wetland Acreage	1981-1982 Total Acreage
Caroline	2,121	28,027	366	30,514
Cecil	2,184	6,646	188	9,018
Dorchester	100,529	68,259	380	169,168
Kent	3,706	11,570	37	15,313
Queen Annes	8,453	24,040	18	32,511
Somerset	62,408	19,155	0	81,563
Talbot	9,781	9,993	193	19,967
Wicomico	14,277	23,141	343	37,761
Worcester	18,954	39,603	929	59,486
TOTAL	**222,413**	**230,434**	**2,454**	**455,301**

Table adapted from Tiner and Burke (1995).

Table 3.2 Non-Wetland Acreage According to Land Use on Maryland's Eastern Shore

County	Developed Acreage	Agricultural Acreage	Forested Acreage	Extractive, Barren, or Bare Acreage	Total Acreage
Caroline	26,490	115,748	59,122	209	**201,569**
Cecil	52,066	85,625	81,325	955	**219,971**
Dorchester	23,154	114,886	126,705	228	**264,973**
Kent	15,673	116,313	41,997	49	**174,032**
Queen Annes	30,142	143,057	60,873	0	**234,072**
Somerset	18,773	49,693	82,822	128	**151,416**
Talbot	30,654	95,662	49,513	489	**176,318**
Wicomico	46,057	78,838	100,926	300	**226,121**
Worcester	32,759	92,373	155,021	2,958	**283,111**
TOTAL	**275,768**	**892,195**	**758,304**	**5,316**	**1,931,583**

Data from Maryland Department of Planning land use calculations (2010).

The ecosystem of the Eastern Shore is complex and interconnected, with multiple types of habitat. The Chesapeake Bay itself provides open and shallow water habitat, as well as reefs. These habitats are characterized by submerged aquatic vegetation, blue crabs, and oysters. In even shallower water is an emergent marsh habitat, characterized by grasses and sedges that root at or above the high water mark but emerge above the water to flower. Further inland are forested wetlands, which are dry during the bulk of the growing season but flooded for much of the rest of the year. Forested wetlands are habitat to trees that do not mind being wet for half the year, such as swamp white oak, green ash, red maple, and loblolly pine. Forested wetlands also provide habitat to salamanders and wood ducks. Two habitat types exist on the highest and driest land on the Eastern Shore: forested uplands and agricultural lands. Forested uplands have been decreasing, but can still be found in some places, such as northern Talbot County. Forested uplands seldom flood and are home to white oaks, beech, and loblolly pine. Agricultural lands – much of

which were created by draining wetlands – provide habitat for insects and birds and, when properly managed, help to reduce soil erosion. Together, these five general habitat types create a rich and diverse ecosystem.

<u>The Economy</u>

The economy on the Eastern Shore has been shaped by the diverse natural resources available for exploitation since the arrival of the first Indian groups more than 10,000 years ago (Rountree and Davidson 1997). When explorer Captain John Smith arrived on the Eastern Shore in 1608 he found Indian groups – including the Accomac and Occohannocks – living in camps and permanent settlements along the waterways. These Indians farmed, hunted, fished, and foraged (Rountree and Davidson 1997).

When Europeans settled the Eastern Shore in the early 17th century, most made a living on family plantations of 250 acres or less (Radoff 1971). These earliest European settlers focused on tobacco production; however, by the mid-eighteenth century diversified agriculture had spread throughout the Eastern Shore. Wheat and corn replaced tobacco production such that by 1750 they composed at least 25% of the Eastern Shore's export income (Clemens 1975). The arrival of the railroad in the mid-nineteenth century sparked another agricultural transition from grain to truck crops such as peaches, strawberries, and tomatoes. Today corn, soybeans, and poultry are the primary products of Eastern Shore farmers.

In addition to agriculture, the maritime industries of shipbuilding and seafood harvesting and processing have been important to the economy of the Eastern Shore (Jones 1966). Rockfish (*Morone saxatilis*), blue crabs (*Callinectes sapidus*), and oysters (*Crassostrea virginica*) are the main catch in the Chesapeake Bay. Oyster harvesting was

particularly prominent in the mid-1800s. With the industrial revolution and improved

food preservation and transport technology the oysters were exported to feed many. By

the 1880s, the Chesapeake Bay supplied nearly half the world's demand for oysters. In

1884, 15 million bushels of oysters were harvested from the Bay and seafood packing

houses employed hundreds, both Anglo- and African American. By the end of the 1800s

the Bay oyster population was depleted to a point from which it has not yet recovered

(Wennersten 1981). Nevertheless, seafood processing – including catching, cleaning,

preparing, packing, and shipping – remains important to the economy of many rural

villages on the Eastern Shore (Cole 2008).

Completion of the Bay Bridge in 1952 connected the Eastern Shore to the

Western Shore and population centers such as Washington, D.C., ending the rural

isolation the Eastern Shore residents had enjoyed but bringing with it new opportunities.

Specifically, the Bay Bridge opened the Eastern Shore to tourism and an influx of

retirees, both of which have fostered the development of a service economy (Eastern

Shore Economic Development Taskforce 2000).

<u>African American History</u>

Maryland's Eastern Shore has had a complicated history in regard to its African

American population. While Maryland became the first American colony to formally

establish the institution of slavery in 1663, it was also an early home to many free blacks,

the first of which settled in Somerset County on the Eastern Shore in 1666 and whose

descendents never experienced slavery (McConnell 1971). The number of free blacks on

the Eastern Shore continued to grow throughout the time of slavery. These free blacks

accumulated more property over the years, though their landholdings were quite small

compared to the white population (Table 3.3). The per capita value of free blacks'

property was at least an order of magnitude smaller than that of whites (Wright 1921).

The white settlers and their descendants on the Eastern Shore held diverse views

on slavery; although the prevailing sentiment was pro-slavery, early anti-slavery

attitudes, especially from the Quakers, helped contribute to the emergence of a small but

important body of free blacks during Maryland's seminal years (McConnell 1971).

Though the experience of slavery on the Eastern Shore was often described as mild in

comparison with slavery in the Deep South, by the end of the 17th century Maryland had

adopted a harsh slave code and the Eastern Shore was the setting for some of the most

famous and audacious slave escapes (Marks 1998, McConnell 1971). Notably, Harriet

Tubman and Frederick Douglas were both born on the Eastern Shore, in Dorchester

County and Talbot County, respectively. When the Civil War broke out, many blacks

were still enslaved on the Eastern Shore, even as Maryland sent large numbers of soldiers

– both white and black – to fight for the Union (Marks 1998).

Slavery was not outlawed in Maryland until after the Civil War, on November 1,

1864. Following emancipation, newly freed blacks on the Eastern Shore were faced with

the problem of earning a living without having the land, tools, or training to do so. In

addition, they faced persistent racism which denied them their full rights of citizenship,

perpetuated an oppressive system of labor, solidified racial segregation, and brought

about new forms of racial violence (Andersen 1998, McConnell 1971). This historic

racial disparity persists to this day in the form of income inequality, different career

opportunities for Anglo and African Americans, and residential segregation (Andersen

1998). The fact that many of the rural African American communities today are in close

proximity to water bodies and are at high risk of flooding from sea-level rise is directly

related to historic settlement patterns during times of intense racial discrimination.

Despite the hardships faced by African Americans, their communities persisted and, in

many ways, thrived. Key to their perseverance was the local church. Historically, African

American communities on the Eastern Shore have been organized around Methodist

churches.

Table 3.3 Property Assessed to African Americans on the Eastern Shore

| County | 1793 | | 1832-33 | | 1852-53 | | 1860 | | % Property owned by African Americans |
	Number of Landholders	Total Assessed Value	Number of Landholders	Total Assessed Value	Number of Landholders	Total Assessed Value	Number of Landholders	Total Assessed Value	
Caroline			65	$6,100.00	185	$53,308.00	184	$59,291.00	2.88%
Cecil			32	$3,031.00	133	$42,367.00	145	$37,411.00	0.48%
Dorchester					178	$53,859.16			1.04%*
Kent			76	$7,731.00	228	$58,326.00	283	$70,702.00	1.42%
Queen Annes	2	$143.19	96	$4,827.00	237	$66,015.00	215	$65,227.00	1.22%
Somerset	13	$1,333.33†	88	$12,655.00	201	$54,757.00	205	$57,298.00	1.07%
Talbot	18	$1,766.30	56	$3,550.05	169	$31,364.00	184	$36,133.00	0.69%
Wicomico‡									
Worcester	5	$761.66†							
TOTAL	**38**	**$1,909.49**	**413**	**$37,894.05**	**1,331**	**$359,996.16**	**1,216**	**$326,062.00**	**7.76%**

Table adapted from Wright 1971. *Based on 1852 assessment. †Based on 1798 assessment. ‡Wicomico County was established in 1867.

Methodism

Methodism began as a renewal movement of the Church of England led by John and Charles Wesley in 1738. By about 1760 Methodism existed in the Maryland and Virginia colonies as a lay movement; Methodist preachers were not yet in the American colonies, but followers of Methodism nonetheless began to organize themselves into a body of believers. Though biographical details are not recorded, church records acknowledge that African Americans were active participants in the development of Methodism in Maryland at this early stage. In 1784 a conference of Methodist preachers – probably including two African Americans – was held in Baltimore. It was at this conference that the Methodist movement in the colonies officially became The Methodist Episcopal Church in America (United Methodist Church 2013). Soon after, in 1797, the first black Methodist society was organized (McConnell 1971, Rollo 1972). By the end of the 18th century many enslaved Africans on the Eastern Shore had embraced Methodism (David 2007). (The conversion of enslaved Africans by white Methodist missionaries was perhaps successful because of the hopeful message that all Christians were equal in the eyes of God and the encouragement to worship in ways that many slaves found adaptable to African styles and rhythms (Maffly-Kipp 2001).)

On the Eastern Shore, there was a single Methodist organizational body – the "charge conference" – to manage official functions for both white and black congregations until 1864 (Jason 2014). Though whites and blacks were not treated equally by the conference, the organization was considered progressive at the time because it encompassed both the white and black Methodist churches and the ordination of their leaders. While the 1784 Conference of Methodist preachers had condemned

slavery as contrary to God's golden rule, the issue remained contentious (McConnell 1971). Addressing the issue of slavery was generally avoided by the Methodist Episcopal Church until a heated debate at the General Conference in 1844 resulted in a split between the anti-slavery churches in the north and the pro-slavery churches of the south. The latter group separated from the churches in the north to become the Methodist Episcopal Church South (United Methodist Church 2013).

Despite its anti-slavery sentiment, the Methodist Episcopal Church did not treat their African American church leaders as equals. African American Methodist churches were subject to supervision and unfair treatment by the white Methodist churches. For example, black preachers were not allowed to be ordained as full deacons and elders to serve the local churches (Coleman 2015). Desiring greater autonomy, the dozen black Methodist churches in Maryland along with those in Virginia and Washington petitioned the General Methodist Conference for permission to organize their own conference (McConnell 1971). After repeated denials, their request was finally granted in 1864 and the Delaware Annual Conference, which included churches on Maryland's Eastern Shore, became the first African American Methodist Conference. A second African American conference, the Washington Conference, was also formed soon after. With greater independence, the leaders of African American Methodist churches began to seek education and self-improvement for their congregations and to provide social and spiritual support to the African American communities on the Eastern Shore through World War I and the Great Depression (Coleman 2015).

In 1939, the Methodist Episcopal Church agreed to reunite with the Methodist Episcopal Church South to become the Methodist Church (Rollo 1972). The new

Methodist Church was to be reorganized into regional conferences; however, to placate the southern churches, all African American churches were to be in one, separate conference – the Central Jurisdiction. While African American church leaders had favored having their own conferences following the Civil War, the majority of them voted against segregation of the conferences in 1939 (Coleman 2015). Unfortunately, segregation prevailed and the Central Jurisdiction was not abolished until the Methodist Church merged with the Evangelical United Brethren to form the United Methodist Church in 1968 (United Methodist Church 2013).

The treatment of African Americans by the larger Methodist Church organization has not always been exemplary; however, the importance and centrality of the local Methodist churches to their African American communities cannot be denied. In the words of historian Roland C. McConnell:

> The role of the black church and its minister cannot be overemphasized for the influence he exerted on the black community. He was found in the forefront of almost every worthwhile project and program for the elevation of the race (1971, 424).

As will be discussed later in this chapter, the local churches continue to be substantially important to the African American communities on the Eastern Shore and will likely be crucial for the perseverance of the communities through the challenges to come.

Recent Changes and Challenges

Since the completion of the Bay Bridge in 1952, the Eastern Shore has experienced a number of changes that pose challenges for the rural communities – both

white and black – that wish to maintain their cultural heritage and lifestyle. Oyster harvests have declined to historic lows due to the combined effects of overharvesting, pollution, disease, habitat degradation, and ineffective regulation (NRC 2004). Rockfish catch also temporarily plummeted in the 1970s and 1980s (Richards and Rago 1999), and blue crab populations have been fluctuating, partly in response to declines in submerged aquatic vegetation, which allows crabs to hide from predators when young or mating (Lipcius and Stockhausen 2002, Orth and Moore 1983). The decline in seafood harvest combined with economic pressures to move jobs overseas and the competitive price of imported seafood has caused many of the seafood processing houses on the Eastern Shore to close (Strain 2012, Brainard 2012). Lacking economic opportunity, many of the historical seafood towns have seen outmigration of those of working age. At the same time, the last several decades have seen an influx of visiting tourists and retirees moving into the area.

For communities on the Eastern Shore, navigation of the changing social and economic dynamics is further complicated by climate change and sea-level rise. Maryland is likely to see about 1 meter of sea-level rise by the year 2100 (Boesch et al. 2013). Sea-level rise poses a threat both to wetland systems and human communities. The vulnerability of wetlands to sea-level rise largely depends on human actions. Where adjacent land is undeveloped and free of bulkheads or dikes, wetlands may migrate inland as the rising sea inundates lands that were formerly dry. This migration of wetlands would inundate farmland, as well as residential yards and homes in low-lying areas. If these lands are protected from inundation, however, wetlands will disappear under the rising water, having no accessible land on which to migrate (Titus 2000). In this second

scenario, farmland and residential property would be protected from inundation, but the loss of wetlands would be detrimental. Wetlands benefit Eastern Shore communities by providing fish and wildlife habitat, space for recreation, and contributions to local economies. In addition, tidal wetlands help to safeguard coastal communities by filtering water, decreasing shoreline erosion, and buffering against floods. In the state of Maryland, the benefits of coastal wetlands for storm protection have been estimated at more than $30.8 million (Costanza et al. 2008). In addition to being affected by wetland loss, Eastern Shore communities will be directly affected by sea-level rise in the form of increased magnitude and frequency of flooding and storm surges (ESLC 2015). As areas become permanently inundated, many families may be forced to abandon their homes and relocate.

Political Actors

Recognizing the threat of climate change, Maryland has developed a comprehensive mitigation and adaptation strategy that includes plans for addressing sea-level rise and corresponding flooding and storm surges (MCCC 2008a). In 2007, Governor Martin O'Malley signed Executive Order 01.01.2007.07 to establish the Maryland Commission on Climate Change. In 2008, the Commission presented its climate action plan, which described how climate change will affect Maryland's citizens and natural resources, what Maryland can do to reduce greenhouse gas emissions, and what Maryland can do to adapt to climate change (MCCC 2008a). The following year Maryland passed the Greenhouse Gas Emissions Reduction Act, which requires the State to reduce greenhouse gas emissions by 25% (using 2006 as a baseline) by 2020. The Commission also provided a report to update the Governor and General Assembly on

Maryland's progress in 2009 and 2010 (MCCC 2009, 2010), released phase two of its comprehensive strategy in 2011 (MCCC 2010), and, most recently, updated the plan to enact the Greenhouse Gas Emissions Reduction Act (MCCC 2015).

The Maryland Commission on Climate Change benefitted from the input from environmentalist organizations and area ecologists. It did not, however, employ a process which solicited input or feedback from the communities most vulnerable to the impact of sea-level rise. Indeed, in four climate change response meetings I attended during the course of my fieldwork – a national conference on disaster preparedness (in January, 2013), a Maryland Governor's meeting on greenhouse gas reduction (in September, 2013), a meeting of the Maryland Climate Communication Consortium on climate change education (in October, 2013), and a meeting of regional scholars and non-profit organizations working together to protect marshes from climate change (in April, 2014) – I was both impressed by how well policymakers were working together with environmental conservation organizations and ecologists, as well as disappointed at the lack of representation of those most vulnerable to climate change and sea-level rise impacts.

Introduction to Study Communities

Identification and Selection of Focus Communities

My research objective during the fall of 2012 was to identify the location of environmental justice communities and to understand broadly how these communities may be vulnerable to climate change, particularly flooding from sea-level rise. In regard to climate change and its impacts, I define environmental justice communities as those that are less responsible for causing climate change yet face a greater level of

vulnerability to its impacts. African Americans living in rural areas have the lowest carbon footprint of any other group in the United States, emitting 23% less than the national average (CBCF 2004). Furthermore, a previous project (Paolisso et al. 2012), conducted from 2009 – 2010, identified rural African American communities on Maryland's Eastern Shore as vulnerable to the impacts of climate change – particularly flooding from sea-level rise. This project suggested that these communities have been centered around local United Methodist churches both historically and at present. An interview with an area United Methodist District Superintendent confirmed this connection. Thus, I began identifying potential study communities by mapping African American United Methodist churches using ArcGIS software (ESRI 2011). By consulting the online UMC directory and talking with the UMC Easton District Superintendent I identified and located 90 African American UMC churches on Maryland's Eastern Shore. A GIS layer from the Maryland Department Natural Resources (Center for Geographic Information Sciences at Towson University 2007) that shows areas likely to be inundated by different sea-level rise scenarios was used to approximate the church communities' relative risk to flooding from sea-level rise (Figure 3.1).

Once identified, I made visits to many of these church communities along Maryland's Eastern Shore. Participant observation and informal interviews during these visits helped identify a variety of social and environmental vulnerability factors, including racial issues, economic struggles, demographic changes, cultural loss, proximity to coast, loss of land, and pollution. This initial data collection informed my selection of three African American communities for the remainder of my study.

This study focuses on the African American community in the town of St. Michaels; the community composed of the settlements of Smithville, Aireys, Fork Neck, and Liner's Road in Dorchester County; and the African American community in Crisfield (see Table 3.4). The three communities that comprise this study have much in common. In addition to sharing a risk of flooding from sea-level rise and a high social vulnerability rating as measured by SoVI (National Oceanic and Atmospheric Association (NOAA) 2014a), the study communities share similar social histories that include slavery, sacrifice to obtain property during times of marginalization, work in seafood processing, recent outmigration and unemployment due to lack of jobs, and the importance of the local African American churches in community life in both the past and present. Despite these similarities, these communities also differ in nuanced but important ways (see Chapter 4).

Figure 3.1 African American Communities at Risk to Sea-Level Rise on Maryland's Eastern Shore
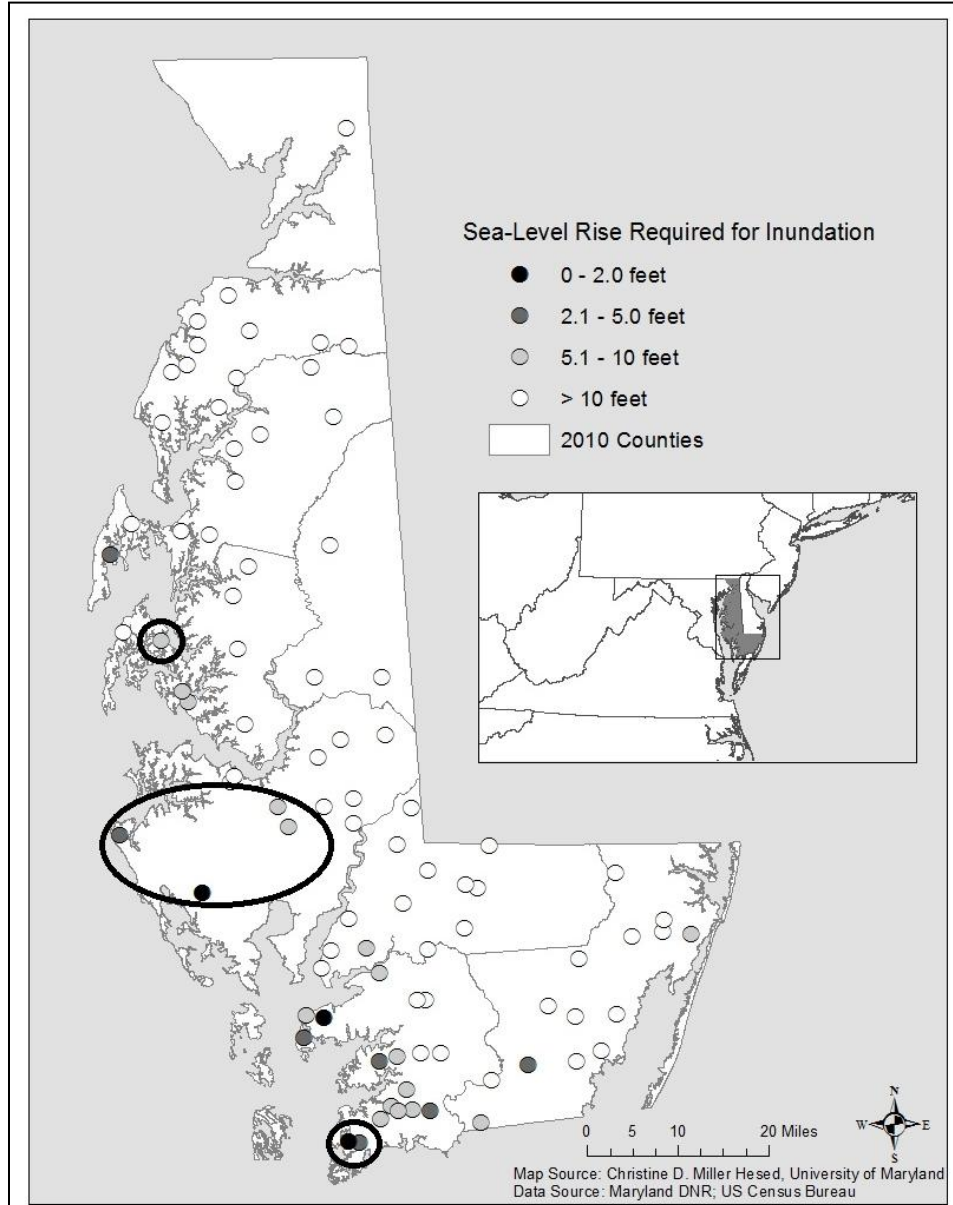
Historically and at present, African American communities on the Eastern Shore have been centered around local United Methodist churches. To approximate the risk of these communities to sea-level rise, United Methodist Churches (UMCs) on Maryland's Eastern Shore with a predominantly African American membership are mapped and color-coded according to the amount of sea-level rise required for the church building to be inundated. Focal study communities are circled in black. From north to south these communities are St. Michaels, Dorchester County, and Crisfield.

Table 3.4 Demographic Information for Study Communities as Compared to County, State, and National Data

Geographies	Total Population*	% African American*^	% African Americans Below Poverty Level[+][^]
United States	308,745,583	13.6	25.2
Maryland	5,773,552	30.9	13.2
Talbot County	37,782	13.6	14.9
St. Michaels	1,029	28.4	35.6
Dorchester County	32,618	28.9	25.3
Smithville, Aireys, Fork Neck, and Liner's Road	~40	~100	~55
Somerset County	26,470	43.4	34.4
Crisfield	2,726	38.1	62.8

*Source: U.S. Census, 2010: Profile of General Population and Housing Characteristics: Demographic Profile Data (DP-1).
^Race alone or in combination with one or more races.
+Source: 2006-2010 American Community Survey Selected Population Tables, Selected Economic Characteristics (DP03).
Note: Census values for Smithville, Aireys, Fork Neck, and Liner's Road are unavailable. Estimates made based on ethnographic research.

These communities were ultimately selected for study because they are all vulnerable to flooding – measured as high by NOAA and SoVI (National Oceanic and Atmospheric Association (NOAA) 2014a) – but are situated differently within their social-ecological systems.

St. Michaels

The town of St. Michaels is located on a narrow neck of land in Talbot County (Figure 3.1). Though only about 2% percent (6.6 square miles) of Talbot County is within 1 meter above spring high water, the county, which has approximately 600 miles of shoreline, will be subject to increased storm surges and erosion from wave action, which already causes annual losses of up to 16 feet in western parts of the county (Nuckols et al.

2010). The town of St. Michaels is also at risk of being cut off from the main peninsula by flooding, as only one road connects the town to the rest of the Eastern Shore.

The population of Talbot County has grown from nearly 34,000 in 2000 to nearly 38,000 in 2010 (US Census Bureau 2000, 2010b). Much of this population growth has come from an influx of retirees to the county. The percent of residents age 65 and older has risen from about 20% in 2000 to about 24% in 2010, compared to about 13% nationally (US Census Bureau 2000, 2010b). Approximately 14% of the county is African American. In St. Michaels, which is located along a narrow neck of land next to the Miles River, about 28% of the approximately 1,000 residents are African American (US Census Bureau 2010b). In 2010, the per capita income in Talbot County was about $38,000 and the median household income was about $63,000. In St. Michaels, 2010 per capita income was about $30,000 and median household income was about $44,000. The percentage of all people living below the poverty level in Talbot County was about 6%, with about 4% of Anglo-Americans living below poverty and about 15% of African Americans living below poverty. In St. Michaels, about 16% of all people live below poverty, with about 11% of Anglo-Americans and 36% of African Americans living below poverty. The unemployment rate in Talbot County in 2010 was about 6% compared to nearly 13% in St. Michaels (US Census Bureau 2010a).

The town of St. Michaels was founded in 1677. Africans immigrated to the region as indentured servants as early as 1634, and by 1639 slavery had begun to take root, though it was not until 1664 that slavery became part of Maryland law. By 1700, enslaved blacks began to replace white indentured laborers in the region (Demczuk 2008). In St. Michaels, slaves worked on tobacco plantations or in the shipyards. By the

1800s, there was a sizeable free black population on the Eastern Shore. Talbot County had one of the highest free black populations during the years of slavery (HSTC 2013), and free blacks were living in St. Michaels as early as 1849 (Marks 1999). After Maryland outlawed slavery in 1864, the vast majority of blacks in St. Michaels worked as watermen or in the seafood and tomato packing houses (Tyler 1999). The black-owned Coulbourne and Jewett Seafood Packing Company opened in St. Michaels in 1900 (Camper 1999b). It was one of the Eastern Shore's most successful minority-owned businesses and employed more than 100 crab pickers during the summer. Founder Frederick Jewett is credited with conceiving the crab meat grading system –back fin, claw, lump – that is still in use in the industry today. By the mid-1960s overharvesting of seafood and stricter government regulations led to the closing of the African American-owned Coulbourne and Jewett Seafood Packing Company (Robinson and Jodlbauer 2011). The Chesapeake Bay Maritime Museum now stands where the packing house once did (Robinson and Jodlbauer 2011).

Whites and blacks were largely segregated in St. Michaels until 1963 when the first integrated school opened (Cobbs 1999). The seafood industry continued to decline in 1972 after Hurricane Agnes virtually wiped out the soft clam population. During the 1980s St. Michaels transitioned into a tourist destination. Although the St. Michael's tourism industry is currently thriving, most African Americans in St. Michaels are not benefitting from this industry; rather, they struggle to keep up with continual increases in the cost of living. Furthermore, where there was once a thriving and largely self-sufficient African American community just on Fremont Street, one block west of Talbot Street, there is now a white-owned coffee shop, library, and post-office. A current

African American resident recalls a number of businesses that used to be owned by blacks in St. Michaels, including five restaurants, three restaurants and bars, four barber shops, two shoe repair shops, two auto repair shops, a grocery store, three truck farming vegetable stands, three taxi services, two coal and wood yards, five beauticians, two boat, auto, and mower services, one seafood industry, one painter, one junk dealer, and three trash removal services. New zoning and tax requirements have made the cost of running these businesses prohibitive for African Americans in St. Michaels, and many have sold their property and moved elsewhere in search of jobs and more affordable housing (Camper 1999a). Many of those that remain are on a fixed income, and without new job opportunities and affordable housing, the African American community in St. Michaels will likely decline.

The spiritual and communal center for the African American community in St. Michaels, in the past and today, is Union United Methodist Church (UMC). The church is located at the corner of Fremont Street and Railroad Avenue – a part of town less attractive than the main tourist drag. The church building, however, is perhaps in the best condition of all the African American churches I visited on the Eastern Shore. The church began in 1852, while slavery was still in existence, with the construction of Long's Chapel. This was a building where blacks – both slave and free – could worship and learn together (Camper 1999c). The chapel was owned by the Trustees of Sardis Chapel, a local white congregation. When, in 1864, the Delaware Conference became the first African American conference in the Methodist church, ownership of Long's Chapel was transferred to that conference. In 1865 it was renamed Union Methodist Church. A new building was constructed in 1868 and relocated on a larger lot on the same street in 1895

(Tyler 1999). Today, Union UMC has between 40 and 50 active members who live in St. Michaels and the surrounding communities. Though some racial tensions still exist in St. Michaels, the church is actively involved in community-wide events. Notably, Union UMC has participated in the Christmas in St. Michaels festival for the past 25 years and was instrumental in starting a community garden.

Dorchester County

The second study community is comprised of the African American settlements of Smithville, Aireys, Fork Neck, and Liner's Road in Dorchester County. Dorchester County is almost entirely bordered by water, with the Chesapeake Bay along the western border, the Choptank River along the northern border, and the Nanticoke River along the southeastern border (Figure 3.1). Dorchester County has been identified as the Maryland county most susceptible to sea-level rise (Titus and Richman 2001). Much of Dorchester County has a very low elevation. With more than 160 square miles of tidal wetland, and 93.6 square miles within a meter of spring high water, nearly half of the county will be inundated by sea-level rise by 2100 (Nuckols et al. 2010). This inundation will have significant impacts on both the local communities and ecosystems (Cole 2008). Already the study communities are experiencing standing water on roads and yards at high tide.

The population of Dorchester County has grown very little since 2000, remaining between 32,000 and 33,000 (US Census Bureau 2000, 2010b). Approximately 29% of the county is African American (US Census Bureau 2010b). In 2010, the per capita income for Dorchester County was about $25,000 and the median household income was about $45,000. The percent of people living below the poverty level in Dorchester County was about 13%, with about 9% of Anglo-Americans living below poverty and 25% of African

Americans living below poverty. The unemployment rate in Dorchester County in 2010 was about 11% (US Census Bureau 2010a). Census values are unavailable for the historic African American settlements of Smithville, Aireys, Fork Neck, and Liner's Road; however, I estimate that together these settlements have a population of about 40, of which all are African American and about 55% are below the poverty line.

The first time I visited Smithville it was a Sunday, and my husband, 3-month-old-daughter and I were going to meet the community by attending church at New Revived UMC. On the drive from Cambridge to Smithville we passed a church building with boarded windows that was sitting up on blocks. We also saw homes that were dilapidated and grown over with vegetation. Water levels were visibly high in the ditches and marshes along the road – something we had not seen in Talbot County. We arrived at the church 45 minutes early so drove past the church heading east on Smithville Road. A small collection of houses was near the church. Some appeared to be inhabited, while others were clearly abandoned. As we drove further, we saw more houses. A few looked like they belonged to people with money, but most evidenced poverty. At one of the houses near the church there were a lot of toys in the yard, suggesting children; however, we saw no children (or even young adults) while we were in Smithville. Signs indicate that the homes are adjacent to the Blackwater National Wildlife Refuge.

Relatively little is known about the history of Smithville, Aireys, Fork Neck, and Liner's Road. All four communities are located in rural southern Dorchester County – south of Cambridge and US Route 50 – and are in close proximity to the wetlands of present-day Blackwater National Wildlife Refuge. (Specifically, Aireys and Fork Neck are within 5 miles of the Refuge, with Aireys northeast of the Refuge and Fork Neck east

of the Refuge. Liner's Road is two miles south of the Refuge and Smithville is located a few thousand feet to the east of the bridge to Taylors Island along Smithville Road, which serves as part of the southern border of the Refuge.) A land deed indicates that Smithville was established around 1886 and was the home of several different African American families that had been freed several years after the Emancipation Proclamation. A Methodist Church was established in Smithville the following year. From the community establishment until the early 1920s, residents likely worked in the community and at a saw mill that operated near the church. In the 1930s, residents worked as watermen, on local farms, or doing housework. As transportation became more readily available, residents would travel to Madison, Church Creek, Cambridge, and other nearby communities to work in the tomato canning and seafood processing factories.

While specific historical information for the African American communities at Aireys, Fork Neck, and Liner's Road has not been found, their establishment and economy was likely quite similar to that of Smithville. Like Smithville, these settlements are too small to even be designated as villages, and have therefore never had a local government. Rather, in all four communities the local church has served as both the spiritual and organizational center. Each community has its own United Methodist Church (UMC): New Revived UMC is in Smithville, Christ UMC is in Aireys, Waters UMC is in Fork Neck, and John Wesley UMC is in Liner's Road. Despite each settlement having its own place of worship, these four communities are socially and culturally united by their practice of regularly gathering together for worship and fellowship and by familial bonds. For example, the pastor of John Wesley, Waters, and Christ UMCs is the son and brother of members of the Smithville church. Because of

these ties and my ethnographic understanding of their cultural similarity I consider these settlements to be one, somewhat dispersed, community.

Today these communities are much diminished from their once vibrant past. Many residents have now left these four communities for continued schooling or to find suitable employment. While these communities may have had hundreds of residents in the 1960s, today the number of year-round residents is significantly reduced. Many community members now live in the nearby city of Cambridge, which is only 6 miles from Aireys, 13 miles from Fork Neck, 15 miles from Smithville, and 19 miles from Liner's Road. Local and nearby community members (most of whom live in Cambridge, but also some who live as far as 30 miles away) gather at the churches in Smithville, Aireys, Fork Neck, and Liner's Road each Sunday, and those who have more permanently left the area regularly return for the annual homecoming service, continue to own property in the area, participate in local decision-making at the family and community levels, and provide some monetary contributions. This community engagement and financial support from those who have left to find employment is particularly crucial for the maintenance of the local cultural heritage the continuation of the church congregations, which are quite elderly. For example, of the 20-30 regular attendees at New Revived UMC, only five are employed while the rest are retired or semi-retired.

Crisfield

The third African American community is in Crisfield in Somerset County, Maryland (Figure 3.1). Somerset County is predominantly rural; however, about 41% of its population lives within 1,000 feet of the shoreline, making them vulnerable to

flooding from to sea-level rise (Nuckols et al. 2010). The town of Crisfield, which was literally built on piles of oyster shells dumped in the Tangier Sound (Wennersten 1981), is particularly vulnerable to flooding from both storm surges and gradual inundation as sea-level rises.

The population of Somerset County has grown from just under 25,000 in 2000 to over 26,000 in 2010 (US Census Bureau 2000, 2010b). Of the three counties in this study, Somerset County has the highest percentage of African American residents: approximately 43%. Crisfield, which is located on the Tangier Sound and is the southernmost town in Maryland, has a population just under 3,000, of which about 38% is African American (US Census Bureau 2010b). In 2010 the per capita income in Somerset County was just under $17,000 and the median household income was around $42,000. In Crisfield, 2010 per capita income was about $30,000 and median household income was under $44,000. The percentage of all people living below the poverty level in Somerset County was about 19%, with about 12% of Anglo-Americans living below poverty and about 34% of African Americans living below poverty. In Crisfield, about 31% of all people live below poverty, with about 16% of Anglo-Americans and 63% of African Americans living below poverty. The unemployment rate in Somerset County in 2010 was about 8% with a rate of 9% in Crisfield (US Census Bureau 2010a).

I first visited Crisfield one month after Hurricane Sandy flooded the town in October of 2012. I had scheduled an interview with the United Methodist Church Conference Disaster Relief Coordinator, but he had to postpone our meeting to train a new group of volunteers. Hungry, my family and I drove to the Crisfield Main Street. Our Garmin GPS had located a "Sweet Shop" there, but when we got there we found it

closed. Empty. It was no longer in existence, as was most of Main Street. In fact, the only thing in the downtown of Crisfield that seemed to still be open was a Subway sandwich shop. So we went there. As we ordered I noticed a "No Loitering" sign posted. There had also been "No Loitering" signs posted along Main Street. A loitering problem suggests widespread unemployment, a lack of community gathering places, or perhaps a desire to keep people from congregating.

The city of Crisfield was originally known as Annemessex after the Native Americans that lived there. One of the first European settlers in the area was Benjamin Summers, who arrived in 1666. Somers Cove was established as a fishing village soon after Summers and others settled in the area. Residents of Somers Cove worked the water catching oysters, crabs, and fish. In 1866 Somers Cove and Annemessex were joined and renamed in honor of John W. Crisfield, a prominent slave-owner who secured the financing to bring the railroad to the area in 1867 (Rhodes 2006, 2007). Because of its proximity to the oyster beds of Tangier Sound and a new railroad, Crisfield was the perfect location for mass oyster harvesting, packing, and selling. Seafood packing houses in Crisfield employed hundreds, both white and black (Wennersten 1981). The oyster boom caused Crisfield to grow exponentially for several decades, both in oyster sales and physical size. It was during this time that prospectors would often buy underwater lots, build them up with oyster shells, and then build a seafood packing house on top, which is why much of Crisfield's present downtown actually sits on a bed of oyster shells. By the 1930s Crisfield was known as the "Seafood Capital of the U.S.A." and by World War II was known as the "Seafood Capital of the World" (Wennersten 1981, Wilson 1973, Rhodes 2006). In the 1950s light manufacturing began to rival seafood processing in

Crisfield with the opening of a Mrs. Paul's Kitchens for seafood, sweet potato, and onion processing; the manufacture of Carvel Hall cutlery; and the manufacture of paintbrushes at the Rubberset Company (Rhodes 2006).

Crisfield's prosperous beginnings were not to last, however. In the 1970s the seafood industry began to decline and the late 80s and early 90s saw the shutdown of both Mrs. Paul's Kitchens and the Carvel Hall line. Crisfield has been in a difficult economic situation ever since. Though some hoped that the development of waterside condominiums in 2002 would bring tourists and retirees to boost the economy, these condos largely sit empty (Rhodes 2006). Meredith Ramsay has written at length about the failure of Crisfield (and Somerset County) to improve its economy (2013). When Crisfield was granted 5 million dollars in Community Development Block Grant monies in 1987, the plan was to use the money to develop a thriving downtown to attract tourists. By 1991 all the money had been distributed and all Crisfield had to show for it was a parking lot and a bathroom. Ramsay argues that this lack of economic development was a result of history, culture, and social relations. Specifically, she describes how the local population rejected the development of a growth economy, which, while possibly bringing increased material wealth, would have changed their local social system and relegated the locals to a lower status in comparison with the wealthy tourists (2013).

While at one time African Americans could find employment in seafood packing houses and other local industries, the sharp decline in oyster harvests and closing of most other local industries has resulted in economic difficulties. Crisfield's African American community elders describe how their parents went as far away as Baltimore to earn money to send back to their family, and younger people in the community have doubts

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about whether they will be able to remain in the area. These economic hardships are exacerbated by tense race relations.

While Somerset County and Crisfield had slavery, there was also a sizeable population of free Africans. Three years after the institution of slavery was established in Maryland, the first free African family settled in Somerset County. This family, the Johnsons, had many descendents who never experienced slavery (McConnell 1971). Nevertheless, life was not easy for African Americans – whether slave or free. Crisfield has had a good share of racial violence. For example, in 1907, a mob in Crisfield lynched a black man, James Reed, thought to have killed the Chief of Police. Later that night the mob dug his body back up to further abuse it and then ran through the African American neighborhood, pulling people from their homes and beating them indiscriminately. The mob also threatened death for several black men if they did not leave town immediately. Notably, there was no investigation into the lynching of James Reed, nor any interference or comment from the State regarding the incident (MSA 2015).

In the late 1930s, when seafood packing houses reduced wages from 35 cents per gallon to 25 cents per gallon, workers – predominantly African American women – went on strike (Special Correspondent 1938). In response, a white mob terrorized the African Americans in Crisfield, forcing entry into their homes in one neighborhood in search for the strike leader. The mob then overturned and burned the car of the white C.I.O Union leader in front of Shiloh Methodist Episcopal Church – an African American church where strikers had held meetings (Special Correspondent 1938). Though the strikers ultimately won (Unknown Reporter 1938), State police had to be brought in to guard the

town during the seven week strike because of fears of lynchings (Special Correspondent 1938).

Ramsay argues that this history of racial oppression today continues in a new form (2013). That is, she purports that the white elite today maintain their position as a higher caste by utilizing "system blacks," or African Americans granted positions of leadership because they have indicated that they will not upset the status quo. Thus, Ramsay argues that African Americans in Crisfield are discouraged from pursuing their policy agenda by the belief that their efforts will be futile and a fear that pushing for change will bring worse repercussions to the African American community (2013).

As in the other two study communities, the local church has been critically important to the African American community in Crisfield. Because Crisfield has a larger population, the African American community attends several different churches in the area. Shiloh UMC (formerly Shiloh Methodist Episcopal mentioned above as the location of the strikers' meetings) is in one of the historic black neighborhoods in Crisfield. Union Asbury UMC is just outside of Crisfield in African American settlement of Freemantown (renamed Freedomtown by the County) in Lawsonia. Crisfield also has an African American Baptist church – Enon Baptist Church of Deliverance – a non-denominational church called House of Refuge Outreach Ministries, and an African Methodist Episcopal (AME) Church – St. Paul's. The Baptist church is an anomaly in the area, as is the AME Church – there are only four AME congregations on Maryland's Eastern Shore. The House of Refuge Outreach Ministries is very new, established in Crisfield in 2009.

Despite the differences in denomination, these African American churches in the Crisfield area are connected by social and familial ties, much like the churches in

Dorchester County. For example, one of the founding members of the House of Refuge Outreach Ministries spent his childhood attending Shiloh UMC with his mother half of the time, and attending Enon Baptist Church of Deliverance with another family when his mother was working out of town. And a current pastor at St. Paul AME grew up in Freemantown attending Union Asbury UMC. Thus the African American congregations in the Crisfield area remain connected, even across denominations. As in other communities, the churches have fewer attendees than in the past as a result of outmigration and an aging population. In addition, Union Asbury UMC in Freemantown closed during the course of my fieldwork.

Common Themes in Study Communities

On March 9, 2013, I attended the annual Harriet Tubman Day Banquet in Cambridge as part of my fieldwork. The banquet took place in a building at Sailwinds Park and attendance was impressive. Approximately 30 round tables, each seating 8 people, had been set up and there were very few empty seats. Most of those in attendance were African American; including myself, I counted only 15 Anglo Americans in the building. At one table I recognized several people from New Revived UMC. At $50 a plate, the presence of these individuals who have little disposable income emphasized to me the importance of this event for local African Americans. Through the course of the evening, I got the impression that approximately half of those in attendance were Eastern Shore natives, while the rest had come on a bus tour from elsewhere.

The banquet was opened with the reading of Psalm 34 and a prayer. Then there was a video from Senator Mikulski arguing for and promising to support the establishment of the Harriet Tubman Underground Railroad State Park. The video was

followed by another prayer, a welcome, and a musical presentation by the Marcus Shelby Quintet from San Francisco, and a blessing of the food.

The meal was a buffet of beef and gravy, ham, green beans, carrots, beets, and rolls. While we were eating, I visited with the folks at my table. They were curious about my research and I, in turn, was curious to hear their views on climate change. I asked a native of Salisbury whether people are talking about climate change. She said no, but that people are very aware and concerned that they can no longer predict the weather.

When we were all fed and watered, several people spoke about Harriet Tubman. Speakers emphasized her strength and determination in the face of intense challenges. They also emphasized her connection to the area, describing how she worked as a slave catching muskrats in the cold water of the marshes that are now Blackwater National Wildlife Refuge. Working with her father doing man's heavy labor and observing her mother in the art of healing, Harriet learned how to survive in the outdoors. Speakers also emphasized their personal connection to the area, indicating their pride at knowing and belonging in the same landscape that Harriet knew so well. The program was concluded with all those in attendance standing to sing the hymn *Lift Every Voice and Sing*, which acknowledges God's presence in leading people through the hardships of the past to the promise of liberty now and in the future.

As I reflected back on this evening toward the end of my fieldwork, I realized that those themes I came to recognize as important in all of my study communities were also present that night at the Harriet Tubman Banquet. That is, first of all, to African Americans communities on the Eastern Shore, Christian faith shapes their interpretations of events and is central to their daily lived experiences. Second, having struggled through

intense persecution and survived (and, to some extent, thrived), the study communities are all deeply rooted in their present location and environment. Finally, race continues to be an important factor in shaping reality for these communities.

Importance of Faith and the Church

Faith

A banner on the wall of the New Revived UMC sanctuary prominently displays the seventh verse of the fifth chapter of 2nd Corinthians: "For we walk by faith, not by sight." The African Americans of St. Michaels, Dorchester County, and Crisfield are people of faith. Again and again in my interviews I heard people express their conviction that God is in control:

> If you're a believer, believing in [God] just a little bit, you know
>
> that God has everything under control, regardless of how it works
>
> out.

Many also expressed their gratitude that God brought them and their ancestors through the struggles of the past and their belief that God will also bring them through the unknown challenges of the future:

> We never know from one day to the other what's going to happen.
>
> But I just got faith and believe that God's going to take me through
>
> whatever I need to go through.

Though many community members acknowledge that humans are responsible for causing climate change, they nevertheless believe that God is ultimately in control of the situation and, despite the best climate models and weather-predicting technology, God can still surprise us by changing the weather according to God's will:

It's crazy, sitting here trying to figure out what's going to happen,

because He's in charge of this. And whatever people might think -

- they can have all the technology they want and think it ain't

going to rain tomorrow, if He says it's going to rain, it's going to

rain.

The belief that God is in control is a source of comfort to community members. Interviewees expressed that God may not always respond to prayers the way that they want, but nevertheless trust that God will provide for them:

[During a flood], I really don't worry about [material] things,

because I know if the Lord blessed me one time with something,

he can bless me again.

Counter to my expectations, however, community members' strong faith that God will provide does not necessarily result in complacency toward preparing for the impacts of climate change. While a couple individuals indicated that they were not going to worry about flood preparation because they believed God would care for them, I more often heard community members express the importance of utilizing the resources God provides to prepare for the flooding that they know is coming:

But it's what God wants, you know. And we learn to pray and

believe that, you know, God is going to work things out for us. …

We know [flooding] is to happen, and the best thing for us to do is

prepare for it.

Thus this faith that God is in control appears to be adaptive for these communities. While it calms fears about impending flooding, in most cases it does not lead to inaction in

preparing for flooding. Rather, community members are on the lookout for the resources that God has made available for them to prepare for and respond to flooding that occurs. For example, when one of the study congregations was to be assigned a new pastor, a parishioner told me that he wanted to ask that pastor, "Are you coming here to save souls or are you coming here to save bodies and souls?" The parishioner felt quite strongly that the new pastor needed to be able to attend to the congregation's earthly needs as well as their spirituality.

The Church

While individual faith provides comfort and strength to individual believers, it is really the community of faith – the church – that serves as the center of the African American communities. This is true even for individuals who do not attend the church regularly or at all because, in addition to nourishing individual faith, the church serves as the social center, provides for the needs of its community members, serves as a bridge between its members and the white community, and facilitates the sharing of information.

While the local churches continue to play an important role in the social lives of the study communities, in the past they essentially formed the whole of it. In addition to Sunday services, church buildings were used for social gatherings and community meetings. When I asked a woman in Crisfield what sort of activities she liked to do as a child, she responded:

> Activities? Back then, it wasn't too much. We did church
> activities. … They was fun, because it was other young children
> with us right there in the community. We had even children clear
> from Marion come. And we had a choir of 130, or something like

that. … And, you know, it was just like one great big family, but

everybody had to go home to their own house. … We had a good

time in church.

The church's continued importance as a social gathering place is evident in the number of

special services the churches hold each year. In addition to regular Sunday services, each

church also hosts an annual services for Homecoming, Women's Day, Men's Day,

Children's Day, and Usher's Day. At these special services, many of which take place on

a Sunday afternoon following a church meal, delegations from other area African

American churches are in attendance such that the numbers in the pews may double or,

on Homecoming Sunday, may even triple. Thus, such special services and events help to

maintain social ties between communities as well as within them.

The church is also important for meeting the material needs of the community

members. I noted that, unlike church potlucks I grew up with, the church lunches I

attended in the study communities were provided by the church (and prepared by a few of

the women). The food was served cafeteria-style and then, after everyone had eaten,

women boxed up whatever food was left to be sent home with whoever wanted it for

dinner, or brought to the homes of others who were unable to attend. This gracious

provisioning of food likely is of great assistance to aging and unemployed community

members that are on a fixed income.

In addition to occasional meals, the church also serves the material needs of the

community in a number of other ways. For example, Union UMC in St. Michaels helps to

support an area food bank and pays the rent, electric, or medicine bills up to twice a year

for those who call requesting assistance. The churches also serve as shelters during

hurricanes, and if a storm damages a church community, other churches will often send them aid. For example, Union UMC sent boxes of supplies to Crisfield after Hurricane Sandy hit in 2012, and members of New Revived UMC remember receiving bleach and other recovery supplies from other congregations after their church was flooded by Hurricane Isabel in 2003.

The church's role in caring for the material as well as the spiritual needs of the community is valued among the parishioners. In interviews, parishioners in two of the three study communities even expressed frustration with those pastors that are concerned only with saving souls. One commented, "I can read the Bible by myself," and exclaimed that he wanted a pastor who was concerned with bodies as well as souls. Another interviewee asked with exasperation, "When are we going to study life here on earth? When are we going to teach our community what we do in the time of [struggles]?"

As discussed above, these communities, as well as African Americans all along the Eastern Shore, have struggled over the generations. Within the context of racial struggle, perhaps one of the most important roles of the African American churches is that they serve as bridges between the African American and Anglo American communities. In St. Michaels, the churches – Union UMC, a white UMC, and a white Episcopal church – are leading a concentrated effort to get the races to work together in the community. The pastor of Union UMC is highly involved in this work and, among other things, helped start a community garden that has brought together some of the African American community with some of the wealthy Anglo Americans in the area. In Dorchester County, one of the study community pastors both began and is a current board member for three service organizations: Habitat for Humanity, Young Life, and the Boys

& Girls Club. In addition, he is a board member for the Good Shepherd Association and the Harriet Tubman Organization. When I asked how it was that he got involved in so many community organizations in Cambridge he responded:

> I don't really know. I guess you just kind of get involved and most of the time I was like a go-to person that -- as far as a contact person, you know, a liaison between the African American community and whichever group -- whether it was young people or whoever.

Serving as a bridge between the white and black communities also makes the church a good source of information. Since the African American communities are so connected to their local churches, information that is shared at the church has a better chance of reaching the entire community than information communicated by any other means. Though relatively little information about climate change has yet to be passed through the churches, parishioners repeatedly expressed their desire to better understand the climate-related challenges ahead. A parishioner in Crisfield put it eloquently:

> Our African American congregations that are still surviving and still existing, they want to do so with the benefit of all the resources and all of the understandings about climate change that they can pull in and utilize and share. They don't want to exist in a vacuum outside, in their own little community settings. They realize that the world is too global for that now. That information has proliferated even more and we can see and understand some of the vagaries of nature and how certain climatic events happen.

They want to bring those things into their congregational and spiritual centers and be able to digest it and disseminate it and implement it.

By nourishing faith, providing for social and material needs, acting as a bridge between the white and black communities, and serving as a means of communicating information, the church is vital to community adaptive capacity; unfortunately, these churches are also vulnerable. Most of the small African American churches on the Eastern Shore are struggling to stay open. Outmigration means that many of the congregations are aging and have limited income with which to support the church. A member of New Revived in Dorchester County confessed:

My [twenty-something] daughter, I guess she's the youngest member of the church. … Sometimes I'll be sitting in [church] and I take a look around and I think how many people in here have a job? They're on fixed incomes, they're retired. We average on a Sunday morning, 20 [people]. … Five work.

This example characterizes many of the rural churches on the Eastern Shore.

The ability for local churches to remain open is partly dependent on the benevolence of the larger denomination. In the United Methodist Church denomination, each congregation pays an annual apportionment to their district conference to support outreach, administration, education, ecumenical, and advocacy activities of the denomination. The apportionment amount is calculated for each church based on a number of factors such as membership and total church giving, and ranges from $14 to $5,135 among all United Methodist Churches on Maryland's Eastern Shore, with the

average apportionment at $477. Despite the relatively small amount of many apportionments, many United Methodist Churches on the Eastern Shore are unable to pay the entire amount owed. In 2013, 17 of 127 churches in the Easton district and 48 of 127 churches in the Salisbury district were unable to pay their full apportionment.

Theoretically, when a local church can no longer pay their apportionment they will be put on "limited service." A church placed on limited service no longer needs to pay their apportionment or a pastor salary, as they no longer have a pastor. The remaining members of the church are transferred to a nearby United Methodist Church for worship and church involvement. The limited service church is only used for weddings, funerals, or other such special occasions, as well as one or two special services a year with the offering to go for the upkeep of the building. Being placed on limited service allows for the possibility of a population shift bringing people into the area, in which case the church would return to "full service;" however, on the Eastern Shore it is rare that limited service churches are able to find the membership and finances to justify returning the church to full service again. Thus, most limited service churches are eventually closed and the property sold or preserved as a historical site.

The district supervisors, however, try to work with the local churches in making the decision as to whether and when the church should be placed on limited service or closed. Given the relatively high number of churches unable to pay their full apportionments, the number of churches placed on limited service over the years seems relatively small. Between 1972 and 2009, only 18 Easton district churches and 12 Salisbury district churches have been placed on limited service (many later closing for good). Yet the high number of churches unable to pay their apportionments is evidence

that small churches are indeed struggling to remain open, and loss of a church is an especially big blow to an African American community on the Eastern Shore.

In 2013, Union Asbury in Freemantown (outside Crisfield) was placed on limited service. A member explained:

> The church basically closed because the economy is bad. We didn't have a whole lot of members left and the people weren't tithing. And we didn't have a whole lot of people supporting fund-raisers. … The church is part of the United Methodist Conference and we would have to pay dues to them monthly and it was becoming harder and harder to pay them and their pastor and all the other regular bills, utilities and everything. So it got to the point of the conference couldn't help us do that and membership steadily decreased and the church just ended up closing.

While members of this church may attend other churches in the area, the closing of their church has been a blow to their local sense of identity, as well as their adaptive capacity. The closing is also upsetting to other African American churches in the Crisfield area, as all of them are struggling. An interviewee in Crisfield explained:

> It's difficult for the black churches to survive with an economy that's tottering, the seafood industry has collapsed, and was a traditional mainstay where people could work, the remaining manufacturers that's here -- which is only one, which is Sherwin Williams -- they can't employ everybody.

Closings have also occurred in Dorchester County. A married couple at New

Revived UMC recalled all the African American churches that had been closed in

Dorchester County during their lifetime, describing it as a "bubble sucking inward." This

simile is an apt description of what they have experienced. For example, New Revived

UMC is the result of the merger of 3 churches – Christ Rock, St. Paul, and Jefferson

UMCs – and the interviewees thought it likely that New Revived would close altogether

within five years. The couple recalled that seven of the African American churches in the

area were put on limited service in the 70s and 80s – Gum Swamp, Church Creek, Little

Zion, Wesley, Bazzel, and two churches in Taylor's Island charge. Of those seven, many

have closed, and two are completely gone. The husband recalled:

> One as torn down because, like I said, the membership left and
>
> they sold the property and the other one was -- the building was
>
> still sitting there and some arsonists went in there and finished it
>
> off. Some kids went in there playing, I guess, and burned it down.

The sense of loss that these closings imparted is evident in the interviewee's expressed

desire to see a museum opened that would tell the story of each church and memorialize

their importance to the area. Responses to a questionnaire (see Chapter 6 for more on

questionnaire methods and results) distributed to 24 African American churches on the

Eastern Shore further emphasize the significance of a church closing for these

communities. The questionnaire asked how the closing of the local church would impact

spiritual support, access to help in times of need, access to information, and the sense of

history and heritage, community, and identity. The majority of respondents indicated that

the closing of the local church would result in high loss for each of these categories (Figure 3.2).

Figure 3.2 Impact of African American Church Closing
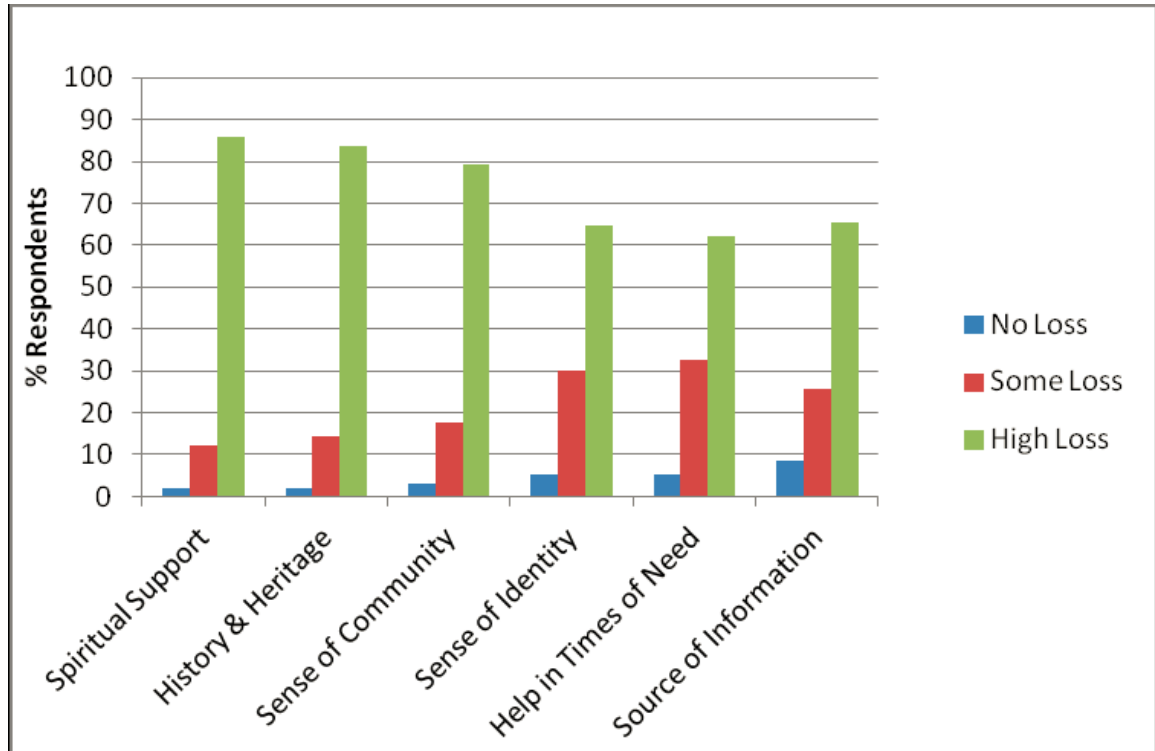
Because the local churches are so important for the well-being of these African American communities, their vitality is essential for enhancing the adaptive capacity of the communities as they deal with the challenges of climate change and sea-level rise. Lamentably, many of the church buildings themselves are also highly vulnerable to flooding from permanent inundation or storm surges. Responses to a questionnaire distributed to 24 African American churches indicate that 44% are very concerned about their church flooding, and an additional 29% of respondents are somewhat concerned. This concern is well-founded; of the 24 churches to which the questionnaire was

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distributed, 3 churches will be flooded with 2 feet of sea-level rise, 9 with 2-5 feet of sea-level rise, and the remaining 12 with 5-10 feet of sea-level rise.

From an outsider's perspective, it is easy to say, "Well, obviously these communities need to relocate." Indeed, I have heard that stated bluntly at several different gatherings of policymakers. What these experts fail to understand, however, is that these people are deeply connected to their local landscape.

Rootedness in the Landscape

The African American study communities are rooted in their landscape in a way somewhat reminiscent of other place-based societies (see Basso 1996). Most of them have lived the vast majority of their lives in the same place and have ancestors who lived as slaves or free blacks in the area as far back as the Civil War and earlier. For nearly all African American community members I talked with, permanent relocation is not an acceptable solution to the challenge of sea-level rise and flooding; they are committed to remaining in their familiar landscape. This attachment to their landscape is partly related to their connection to the local church, but also to the natural environment that has sustained them and to the local history of struggle and achievement.

Ties to the Local Church

Above I discussed at length the importance of individual faith and the church to the study communities' well-being and adaptive capacity. Here I will just emphasize that such church benefits are not fully realized from any church, but from *your* church. That is, the church that is located in the community in which you were raised, and/or where your extended family attends, and/or where your past and personal strengths and

weaknesses are known to the congregation, and/or where you know everyone else's business. When African American church members were surveyed regarding how many years they have attended their current church, responses ranged from 3 to 90 years, with a median of 50 years. Furthermore, the majority (62%) of survey respondents reported that half or more of their local friends and family attended their church (Figure 3.3).

Being attached to the local church also means living your life in close proximity to the church. In the questionnaire, I inquired whether church members owned property, and if so, how close it was to the church building. While nearly 38% of respondents do not own property, of those who do, the majority (62%) own property within 5 miles of the church. Even more striking, nearly one third of respondents with property (29%) own property within a quarter mile of their church (Figure 3.4). An interviewee in Crisfield described why living so close to the church was important:

> [Families living so that] church is within walking distance makes communities and neighborhoods intact. It gives them vitality. But when you're telling people, you're going to have to travel now to this other [church], a lot of older people don't have that transportation and a lot of them don't always feel in their bodies to get up and travel.

Historically the number of people living within walking distance of the church would have been even higher; economic hardship has resulted in outmigration to towns and cities with more opportunities.

Figure 3.3 The Number of Local Friends and Family that Attend the Respondent's Church
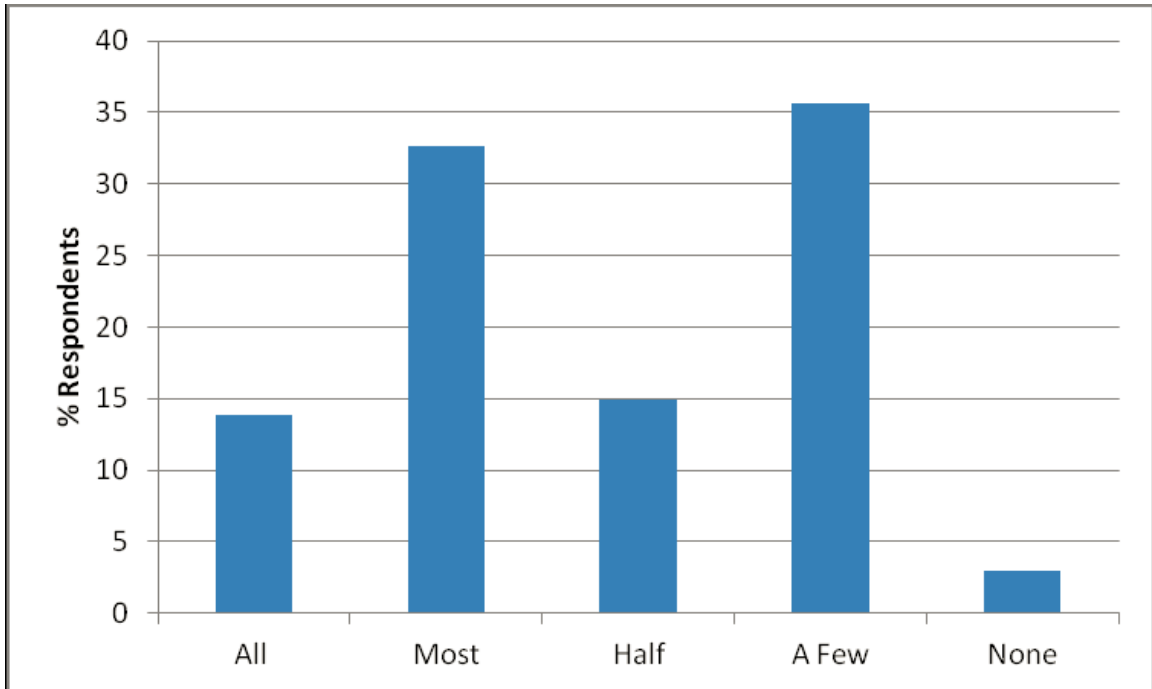
Figure 3.4 Proximity of property to church building
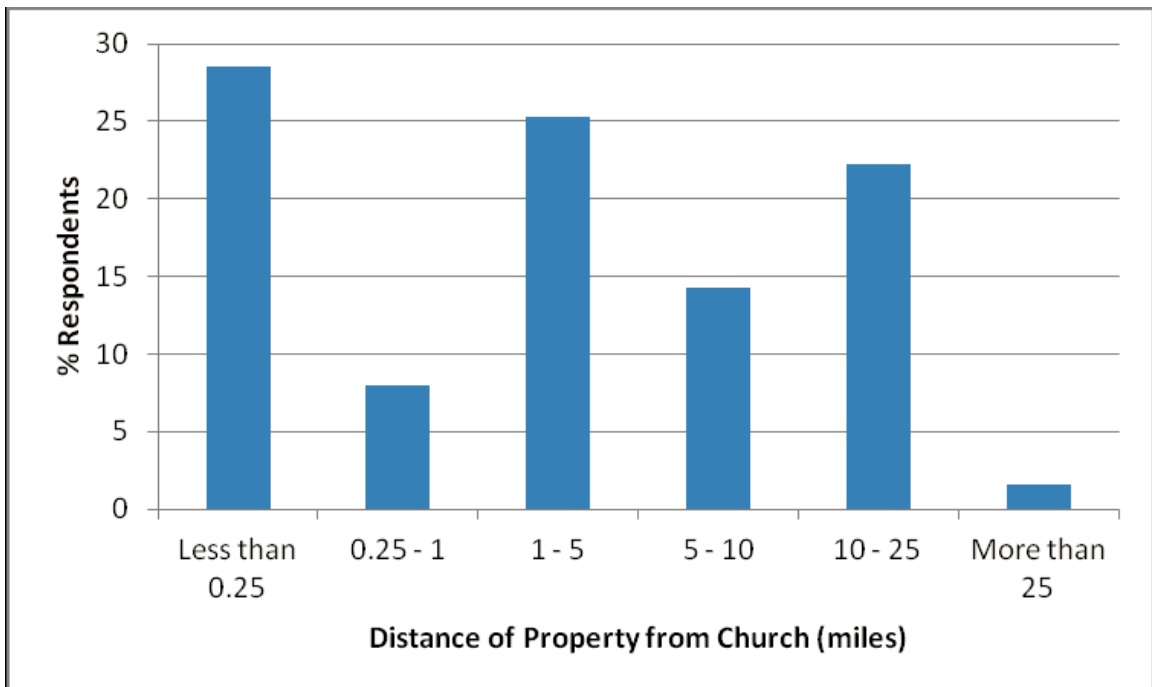
These statistics help to make sense of the response I received when I asked how important it was for the church to remain in its current location: the vast majority (83%) said that it was very important, while a few (15%) said it was somewhat important and a tiny minority (2%) responded that the location was not important at all. This strong response indicating the undesirability of moving the church building emphasizes again the centrality of the church to the local community, but also the importance of the local natural landscape in which their history and heritage are rooted.

Knowledge of the Local Natural Environment

As I interviewed a couple in Dorchester County, they would pause in their responses from time to time to listen and point out different bird and amphibian calls to me. In Crisfield, an interviewee told me how folks could predict the weather by observing how the birds were behaving on the line. In St. Michaels, interviewees lamented that waterfront areas that used to be publicly accessible were now private so that they could no longer enjoy prime fishing and swimming spots. In these communities, which have historically been dependent on the natural environment for their economic activities (e.g. seafood processing), the natural environment is both known and appreciated. Here I describe the importance of community knowledge and familiarity with their landscape.

The saliency of the natural environment to the study communities is apparent in their acute awareness of environmental changes over their lifetime and their ability to articulate environmental challenges and goals for the future. Living in close proximity to water bodies – the Miles River in St. Michaels, the wetlands of Blackwater National Wildlife Refuge in Dorchester County, and the Tangier Sound in Crisfield – the study communities have daily interaction with their local ecosystems and have witnessed

changes in their surroundings over time. Many commented on an increase in flood frequency and magnitude. In Dorchester County, an elderly couple who have lived most of their lives near New Revived UMC reported that flood waters had never reached as far as their yard until Hurricane Isabel hit in 2003. In Crisfield, a study participant recalled looking out the window during Hurricane Sandy in 2010 and deciding to request evacuation assistance:

> I said [to the rescue staff on the phone], "You all need to come and get us because right now we're like Noah's Ark. We look out, all we see is water." I said, "It's never been like that before."

Even watermen in Crisfield noted that the flooding from Hurricane Sandy was the worst they had ever seen, with water coming farther inland than anyone could remember it coming before. And it's not just floodwaters that are coming further inland; shorelines and wetlands are moving inland too. In Dorchester County, a study participant recalled having to walk a long way to get to the marsh as a girl, while now it is right behind the church. Similarly, an interviewee in Crisfield noted that she now sees standing water in yards when the tide comes up, but never saw such a thing when she was a girl. And while St. Michaels gets the least flooding of the three communities, members of Union UMC have noted that the soil in their area does not drain well and flooding from heavy rains is more widespread than it used to be.

The study communities are also aware of declining seafood populations and the challenges of getting those stocks to recover. A study participant in St. Michaels recalled how the seafood got scarce in Miles River and the seafood processing plants in the area began to close. An interviewee in Dorchester County commented on the blue crab

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population declining because of pollution in the Bay. He also discussed the proposal to introduce an Asian species of oyster to boost oyster harvest in the Bay, as well as the fears that doing so would cause further harm to the native oyster population.

Members of the study communities also noted changes in the weather. In St. Michaels and Dorchester County, individuals commented on how they used to have really cold winters with hard freezes. A woman in St. Michaels recalled how people used to walk across Miles River to the community on the other side, but that the River hasn't frozen hard enough to cross for nearly twenty-five years. Conversely, an interviewee in Crisfield shared that people were talking about how unusual it was for August to be so pleasantly cool. They all remember blistering Augusts growing up, and find the need for a jacket in August to be somewhat unsettling.

The cultural knowledge about the local natural environment not only demonstrates the importance of that environment to the community, but also is of practical value in adapting to sea-level rise going forward. Community members have a collective memory about how the community coped with flooding in the past. Interviewees described how the church would help facilitate the pooling and sharing of resources to those with greater need. Interviewees also talked about how they learned what to do during and after a flood from parents and grandparents. A few generations ago, these communities were politically and physically isolated from the rest of the Eastern Shore, yet by working together were able to successfully cope with the flooding that came their way. An interviewee in Crisfield described how cultural knowledge of the local environment has been crucial for survival:

Many hurricanes have come through here. … But folks came to each other's rescue and they were each other's comfort and support. And it didn't have anything to do with the churches, it had to do with the ability of understanding their environment from their knowledge and experience. And also what resources that they could utilize to negotiate those type of disaster conditions. That's where your strategy to weather the storm comes from. … My chance of surviving is better here, based on the resources that are already in the community, than it is going [to be] somewhere that it is unfamiliar to me. Flood or no flood.

As the Crisfield man describes, many community members fear the unknown. That is, they would rather face familiar storms and flooding in their environment than face unfamiliar challenges in a new location in which they have no experience in accessing adaption resources. The communities' survival in the past has been possible because of their dependence on each other within the community and their knowledge of local resources.

Location of History and Heritage

The third tie African American communities have to their local landscape is the fact that it was the stage on which their history and heritage were played out, and is therefore closely tied to their identity. For many African Americans, the Eastern Shore is special because it was the home of famous runaway slave and Underground Railroad conductor Harriet Tubman, as well as former slave, statesman, and orator Frederick Douglas. For the African American study communities, identity is even more closely

linked with the Eastern Shore. In all three communities, interviewees talked about the sacrifices made by their parents and previous generations in acquiring land and property. For example, I frequently heard stories of interviewees being raised by grandparents or neighbors so that their parents could find work in Baltimore. Awareness of the hardships their parents and ancestors endured fosters a great appreciation for their successes. In all three communities, I met individuals who still lived on the same plot of land as their ancestors. Often the building had been replaced, perhaps multiple times over the generations. When I asked a man in St. Michaels why he had not sold his house – which stood in a prime area for downtown tourism development – he explained, "Well, if you sell your home place, then St. Michaels is no longer your home." After interviewing individuals in their ancestral homes in all three communities, it became clear that living on the same land was important for valuing the sacrifices that were made to obtain it.

With the economic decline, outmigration, the possibility of church closures, and the threat of flooding from sea-level rise, it seems that there is perhaps little to entice people to remain in these communities, and that permanent relocation would be preferable on all fronts. On the contrary, however, by and large community members still feel drawn to their social and natural landscape. When asked about the possibility of permanent relocation for the African American community, an interviewee in Crisfield exclaimed:

> They've got to stay here. This is where their homes are, this is where they grew up, this is what's most familiar to them, whether dangers or not dangers. Storm or no storm. They just take their chances here. They feel they have a better chance here of surviving

a hurricane than being somewhere else. They at least know the community. They've had some experience with it. Their ancestors have survived with meager resources. Or sometimes with no resources. They can find a family member to go to and live with if they don't have a home of their own, somebody is going to take them in. But if they go somewhere else, nobody is going to take them in. They're rootless. They're homeless. And they have no identity there. Nobody knows them by name, nobody knows where they come from, nobody knows who their family members are. So we are much better positioned to deal with climate change, both positively and negatively, right here where we are. Retreat is not an option. No, it's not an option. It's best to rebuild and prepare for the worst scenario, than evacuate or retreat. Because you have too much at stake here. Your cultural identity and your traditions are at stake when people are forced to leave or requested to leave and to abandon ship because of flooding.

Unfortunately, this cultural loss the interviewee describes is not something often discussed or considered when the impacts of climate change are presented.

The Complicated Reality of Race Relations

Race relations continue to be complicated on the Eastern Shore and the shape the experiences of African American community members in profound ways. As I conducted my fieldwork, I noticed that the further south I was the more strained race relations seemed. This was most evident when I was conducting interviews. For example, when I

was interviewing Anglo Americans in St. Michaels, they hardly batted an eye when I explained the environmental justice aspects of my research, and were quite forthright in telling me of past and present racial injustices in the area. In contrast, Anglo Americans I interviewed in the Crisfield area got noticeably uncomfortable when I explained my research questions, and often claimed racial injustices were all in the past.

This north to south continuum in the ease with which race relations were discussed was also present with African American interviewees. African Americans in St. Michaels spoke with me rather candidly about the way race relations have changed over time. While they readily acknowledged that racial tensions existed in the past and still do to some degree today, some interviewees also had positive remembrances of interactions with white neighbors as children. One elderly woman reflected on growing up in St. Michaels:

> I have always lived next door to a white person. Now, on each end of this street were white people there and they were always nice to us. Like one lady used to always save the Sunday funny papers for us. We would go there on Mondays and she would have -- and if she wasn't home, the paper would be out for us. And she would either give us some candy or something would be with it. This is when we were young.

I did not hear such positive stories in Dorchester County, though I got the impression that black and white folks generally got along alright. At the same time, African American community members in Dorchester County spoke fairly openly about the realities of being black. For example, a woman at New Revived UMC told me that she had

discouraged her granddaughter from studying business in college because she was "first of all a woman, but also black." Some community members even brought up the race riots that occurred in Cambridge in 1967, speaking openly about the event until someone let slip that an alleged rioter was a cousin, at which point those present noticeably became somewhat uncomfortable as if still worried that such association could bring consequences even 46 years later.

Interviews with African Americans in Crisfield made it clear that race relations had been quite terrible in Somerset County, and, though improved, continue to be worse than one might hope. The reality of the current oppression that the African Americans in Crisfield face was evident in the fact that many interviewees would speak in whispers when I asked about area race relations. In the midst of whispered comments on racial injustices, one interviewee explained:

> See, we have people in Crisfield, we know all of this, but we, you
>
> know, a lot of us keep our mouth shut-shut, hush-hush, because
>
> what's the use of talking about it? They'll come for you. … Years
>
> ago, I dare not even open my mouth to you about this.

In contrast to the childhood remembrance shared in St. Michaels, a Crisfield woman recalled that when her sister was tutoring a white high school classmate at her home, the tutee's father always insisted that she drink from a paper cup while his daughter drank from a glass. The woman confessed:

> [Racism is] more an issue here than -- I want to say everywhere
>
> else. Seems like I can go anywhere else and I can see that it's not

an issue nowhere. But here, it's an issue. They -- they cover it up,

but you know it's an issue.

While the more southerly places may be progressing more slowly, race relations have improved all along the Eastern Shore over the years. This change in race relations is overall considered to be positive; however, the change also had a downside for the African American communities. Namely, with desegregation came the closing of many black-owned businesses as the African American community was eager to try out their new freedom at the white-owned businesses. In St. Michaels, Union UMC, in need of an increased membership, is considering whether they should make intentional efforts to become a multi-racial congregation. While such an effort could be highly beneficial for furthering the improvement of area race relations, African American church members worry that their church history would be forgotten and their identity lost. From Crisfield to St. Michaels, the reality of race relations is complicated.

Resilience

As discussed in Chapter 2, scholars have proposed quite a number of factors to look at as indicators of resilience. In my research, I decided to focus on the four resilience factors as laid out by Folke et al. (2002): living with uncertainty, nurturing diversity, combining different types of knowledge, and creating opportunities for self-organization. Using these factors as opposed to others' (e.g. Walker and Salt 2012) was preferential because they are more conducive to considering the social aspects of resilience, were derived from careful consideration of a variety of social-ecological system case studies, and are fewer in number (four rather than eleven factors). In this section, I continue the examination of the study communities' vulnerability and adaptive capacity within their

broader social-ecological system by assessing the overall presence of the four resilience factors.

I only asked about one resilience factor directly in the interviews. That is, to estimate respondents' comfort in living with uncertainty, I asked how not knowing exactly how the area will be affected by flooding affects the way they prepare for future flooding. This was done because, while I believed I could acquire a good understanding of the other three factors from general interview questions and my fieldwork overall, I was not sure I would understand attitudes toward uncertainty unless I asked directly. Interviews were audio-recorded, transcribed, and systematically coded using Atlas.ti 6.2. I utilized a hybrid coding approach, whereby I coded both deductively (using codes I developed prior to reviewing the transcripts) and inductively (creating new codes as important concepts emerged from the data). This approach allowed me to simultaneously evaluate the validity of the conceptual framework I had developed from the fieldwork so far while also remaining open to new concepts and understandings that could emerge from the data.

Living with Uncertainty

Living with uncertainty is important for resilience because change is a natural part of social-ecological systems (Gunderson 2002). Actions and policies aimed at removing or minimizing change will instead cause a more widespread crisis (Folke, Colding, and Berkes 2002). A classic example is forest fire suppression: when fires are not allowed to burn, dead wood accumulates in tree canopies and on the ground so that when a fire eventually occurs the blaze is hotter and causes far greater damage than would more frequent, low-intensity fires. Similarly, suppressing change in social institutions or

organizations can decrease their flexibility and ability to creatively and effectively respond to new situations (e.g. Trosper 2002). Thus, resilience will be greater if the social-ecological system regularly responds to small changes so that, when a crisis does occur, the system will be able to respond with the benefit of experience. In addition, resilience can be increased if, rather than trying to avoid disturbance, individuals and organizations plan for unexpected changes by spreading risk through diversification of resources and activities (Folke, Colding, and Berkes 2002).

Though an abundance of scientific data demonstrates that sea-level will rise causing inundation of low-lying areas on the Eastern Shore, quite a bit of uncertainty remains concerning exactly when areas will be inundated and how high the waters will rise (Boesch et al. 2013). The uncertainties related to climate change impacts are further complicated by uncertainties related to demographic, economic, and policy changes on the Eastern Shore. In talking with members of the African American communities, I sought to understand how this high degree of uncertainty affected the way in which they prepare for flooding from sea-level rise.

There were a variety of responses to my question about how uncertainty affects the way interviewees prepare for flooding. From my initial analysis of the responses, it seemed that most people responded to uncertainty with inaction. That is, if it is unknown exactly when and how high flood waters will come, it is better to just not worry about it. A closer examination of the context within which these responses were given revealed that answer to be more nuanced, however.

First, respondents were not actually reporting that uncertainty prompts them to do nothing to prepare for future flooding, but rather, assuming that the usual flood

precautions and preparations had already been made, were saying that there was little else that could be done so worrying would not help. One interviewee made an analogy to the uncertainty and risk involved in driving:

> It's like when you get in your car and you go down the highway, you've done all the preparation you can do, you went to school to learn how to drive, keep your car in good working order, you know, you feel confident about yourself, you're well rested and you're behind the wheel and you're paying attention, just like you were always taught to drive, right? No distractions. And that's all you can do, you can't worry about what the other driver has done, you know. How they've prepared and how their situated, you can't worry about that. So the same thing applies to the flooding. You can't worry about what is going to happen.

Another respondent replied that in times of uncertainty people just wait and see, but immediately followed that with:

> Just still have your lights there, your flashlights, your candles, and your boots. Because the tide comes up regularly, you know, anyway, especially in the fall of the year.

What these quotes illustrate is that these community members are already in the habit of dealing with the uncertainty of flooding. They have a suite of standard precautions and preparations that they depend on for periodic flooding. Presented with the possibility of more permanent inundation from sea-level rise, community members are at a loss as to what further action they could take, and so plan to "try not to worry" and "wait and see."

For those outside the community, "wait and see" may seem like a poor response to the projected rise in sea-level. Policymakers would generally recommend eventual permanent relocation for those located in areas that will be inundated; however, from the community members' perspective, "wait and see" is a reasonable response for two main reasons. First, in many ways the prospect of relocating holds more uncertainty than that of remaining and coping with increased flooding. As described above, these communities are rooted in their landscape and their long-time experience in their current flood-prone settings improves their ability to respond effectively to the next flood. In contrast, relocating to a new area where they do not have familiarity with the local people, resources, or potential threats could perhaps make them even more vulnerable to some other impact than they are to flooding now. Should a crisis occur in a new setting, they would not have the experience needed to make an effective response likely.

The second reason "wait and see" is a reasonable response is because, for many of the community members, it is their only option because of financial constraints. Many community members own their homes outright, and do not relish the prospect of adding rent or mortgage payments to their monthly expenses. Many interviewees brought up the possibility of raising their homes or protecting the area with a dike, but again financing is an issue. Most of the community members cannot afford to do major renovation on their homes, and it is highly unlikely that any government or non-governmental agency would finance the construction of a dike or other flood barrier in these rural areas. But one can always hope. And so these community members prepare as best they are able and "wait and see."

Though perhaps an artifact of their financial constraints, the African American study communities appear to live with uncertainty in a way that is in line with resilience. Flooding has been a fairly regular occurrence, especially in Dorchester County and Crisfield. Having experienced regular flooding events in the past, these communities will be better able to respond with experience when the next flood comes. Furthermore, community members seem to have a pragmatic view of change. As one woman in Dorchester County put it:

> I'm always ready for change. And I think change is good. When you stay the same, sometimes you sort of die. You've got to have life, with life you keep moving on. But to stay in one place is not being realistic.

This woman's attitude about change is informed by a history that includes not only periodic flooding, but also the regional decline of seafood catch and processing and the complicated social transition of integration. She and her family members have had to adapt to these changes by finding new employment opportunities and carefully navigating a new social order. These experiences are common among members of the African American study communities. Facing these challenges, in addition to those of flooding, has made these communities relatively comfortable living with uncertainty. Though hardship has fostered this trait, it should serve to make them more resilient in the face of sea-level rise.

Nurturing Diversity

Diversity is important for resilience because it improves the ability of a system to persist in the face of change. During the reorganization and rapid growth phases of the

adaptive cycle (see Chapter 2), ecological and social diversity are crucial for providing the framework within which the system copes with disturbance (Folke, Colding, and Berkes 2002). Resilience scholars note two forms of diversity: functional diversity and response diversity. Functional diversity pertains to the different roles of species within an ecosystem or individuals within a society. For example, some species might slow erosion while others fix nitrogen, just as some people might serve as teachers while others work as engineers. High functional diversity means that many different types of ecological and social services (in a general sense) are being provided. Response diversity refers to the different species or types of people or social institutions within a given functional group. These different types will have a variety of responses to a given perturbation. For example, a disease may wipe out the red oak on the Eastern Shore, but other tree species important for erosion control and bird habitat would survive. Similarly, community colleges and private colleges will have different responses to a perturbation, such as local outmigration, and individuals respond differently to changing circumstances. Response diversity is especially critical for system resilience (Walker and Salt 2012) and thus I focus on it here.

In general, I found that response diversity was relatively low at the local level. As is so often the case in small towns and rural areas, in the study communities my sense was that conformity was valued over diversity. As was described above, the Eastern Shore existed in relative isolation until the building of the Bay Bridge in 1952. Partially as a result of this isolation, Eastern Shore communities have a strong sense of heritage, and often value the way that things have always been done over the new-fangled ideas that newcomers to the area may bring.

This preference for conformity over diversity is also apparent in the continued separation of the races on the Eastern Shore. Though racial integration took place in the 1950s, in many ways the Eastern Shore remains segregated. The churches are a good example of this. While the United Methodist Church officially abolished the separate conference for African American congregations in 1963, individual congregations on the Eastern Shore remain segregated.

A third indication that response diversity is relatively low at the local level is the aging demographics. As was discussed above, all three study communities have experienced substantial outmigration of young families and those of working age. Many of the elderly folks that remain have limited income and limited mobility and are therefore particularly limited in their options for responding to a perturbation such as flooding.

While some degree of response diversity exists in every community because individuals will vary in their response to change, in the case of the three study communities, I judge response diversity to be relatively low based on the low diversity of the population as a whole. That is, the study communities are composed largely of elderly African American individuals who have lived in their home community for nearly all their lives. Of course, there are notable exceptions; three of the workshop participants at the Crisfield workshop (see Chapter 4) were less than 45 years old. And one of my key informants in St. Michaels moved to the community (from Prince George's County, Maryland) after retiring. These examples are notable, however, because they are so unusual. Thus, overall response diversity is relatively low because individuals overwhelmingly share a common heritage and history and are limited in their available

responses by the confines of elderly age and meager resources. Furthermore, it is unlikely response diversity will increase in the foreseeable future.

Combining Knowledge Types and Creating Opportunities for Self-Organization

The combining of knowledge types and the creation of opportunities for self-organization both are notably lacking in the study communities. In addition to the racial separation described above, there is also a gap between the study communities and those with technical expertise. Both the study communities and the technocrats could benefit from an exchange of ideas and information. These ideas are explored further in Chapter 7.

Chapter 4: Community Vulnerability to Sea-Level Rise

Introduction

This chapter continues addressing the first research question – what is the level of resilience and adaptive capacity for social-ecological systems that are characterized by environmental injustice in the face of climate change? – by analyzing the vulnerability of the study communities to sea-level rise.[1] I begin this chapter by making the argument that a cultural approach to vulnerability assessment is needed to supplement the limited (though undoubtedly useful) quantitative approaches commonly employed. I then describe how a variety of cognitive and ethnographic methods were integrated in order to systematically elicit local cultural knowledge on climate change and connect it with a scientific vulnerability framework. The results of this mixed-method approach are then presented and discussed. The results of this study show that 1) a given social-ecological factor can substantially differ in the way in which it affects local vulnerability, even among communities with similar demographics and climate-related risks, and 2) social and political isolation inhibits access to sources of adaptive capacity, thereby exacerbating local vulnerability. These results show that employing methods for analyzing cultural knowledge can yield new insights to complement those generated by quantitative vulnerability indices.

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[1] This chapter consists of material previously published as "Cultural Knowledge and Local Vulnerability in African American Communities" in *Nature Climate Change* in 2015. Michael Paolisso was the co-author of this paper. See the Foreword for more information on my specific contributions to the article.

Justification for a Cultural Approach to Vulnerability Assessment

Because resources available for adaptation to climate change impacts are limited (IPCC 2014), a great deal of attention has been focused on identifying regions and groups that are most vulnerable to climate change impacts (Samson et al. 2011, Brooks, Adger, and Kelly 2005). While there are different approaches to studying vulnerability (see Chapter 2), three concepts are central: the risk of exposure to a disturbance, the sensitivity of the system to that disturbance, and the capacity of the system to adapt to the disturbance in such a way that the negative effects will be limited (Adger 2006).

Much effort has been focused on quantifying climate change impacts through the development of vulnerability indices (Ahsan and Warner 2014, South Pacific Applied Geoscience Commission and United Nations Environment Programme 2005, Cardona 2005, Brooks, Adger, and Kelly 2005, Adger et al. 2004, Lummen and Yamada 2014). Typically, these indices measure vulnerability by aggregating already existing demographic data – such as income and race – with spatial data on risk of exposure to a given climate change impact. For example, the Social Vulnerability Index (SoVI) that is being used by the United States National Oceanic and Atmospheric Administration (NOAA) to consider social vulnerability to flooding in coastal areas is a metric based on 30 socioeconomic variables drawn from national data sets, primarily the United States Census (Cutter, Boruff, and Shirley 2003, Cutter and Morath 2013, National Oceanic and Atmospheric Association (NOAA) 2014b). Indices such as these are useful for facilitating general comparisons of the differential vulnerability between geographic units of various scales; however, their general reliance on available datasets limits the selection of input variables and makes it difficult to capture subtle and complex aspects of

vulnerability that are crucial for coping and survival (Eakin and Luers 2006, Birkmann 2007, Cutter et al. 2009).

A more integrated approach that includes qualitative data is required to more fully understand these subtle and complex dimensions of local vulnerability (Eakin and Luers 2006, Cutter 2003, Birkmann 2007, Furman et al. 2014). Specifically, community attributes such as social networks, trust in the government, institutional capacity, access to resources, and disaster readiness are difficult to quantify yet may strongly influence communities' susceptibility to loss and ability to adapt (Cutter et al. 2009). The form and dynamics of these community attributes are significantly influenced by historical experiences and shared cultural knowledge and values. Thus, tapping into local cultural knowledge – the shared cognitive frameworks and explicit beliefs and values that shape perceptions and influence behavior – can reveal the ways in which both quantifiable and non-quantifiable dimensions of vulnerability relate and are actualized in the local setting.

Cultural knowledge is comprised of systems of beliefs and values that are shared by a group. These systems consist of both explicit statements about topics as well as underlying schemas, which are made up of implicit and tacit understandings that serve as frameworks for cognitive organization of knowledge (Holland and Quinn 1987, D'Andrade 1995, Paolisso 2007). Cultural knowledge is created by a group's shared experiences over time and the application of language and cognition to produce explanations of phenomena and associated meanings and values (Holland and Quinn 1987). Cultural knowledge is not static or homogenous, but rather dynamic and adaptive and includes variation that can be patterned and driven by social, economic and ecological variables. Thus, cultural knowledge is not synonymous with culture, but rather

is one component of a group's culture *writ large*; it is a group's shared ideational system (D'Andrade 1995). As such, cultural knowledge helps support group identity and directly influences behavior and decision-making. Applied to environmental issues, cultural knowledge is comprised of the explicit and implicit beliefs and values that a social group applies to understand nature and ecology (Cronon 1996). All social groups (e.g., environmentalists, farmers, scientists, and African American church communities) apply their cultural knowledge to understand and value environmental changes, including climate change, which in turn affects how they respond to those changes.

There has been very little study of local vulnerability using systematic and formal qualitative research methods (Roncoli, Crane, and Orlove 2009, Fiske et al. 2014). Here I present the results of an integration of qualitative and quantitative methods to elicit cultural knowledge on climate change and vulnerability and connect it with a scientific vulnerability framework. Specifically, I use methods from cognitive and environmental anthropology to examine the content and structure of shared beliefs about climate change in the African American study communities.

I find that, in general, the communities' cultural knowledge about climate change is consistent with the scientific framework for vulnerability that includes risks, sensitivities, and adaptive capacities; however, despite sharing similar demographics and social histories, the communities differed in what social-ecological factors comprised each vulnerability category. I further find that these communities consider sensitivities to be primarily within the community and adaptive capacities primarily external to the community. These results show that 1) a given social-ecological factor can greatly differ in the way in which it affects local vulnerability, even among communities with nearly

identical demographics and climate-related risks, and 2) local vulnerability is compounded by social and political isolation that inhibits access to sources of adaptive capacity. This demonstrates how methods for systematically analyzing cultural knowledge provide a useful approach for comparing the nuances of local vulnerability and generating new insights to complement understandings of vulnerability as produced by quantitative indices.

Methods

To elicit cultural knowledge about climate change I employed the cognitive and psychometric methods of free listing, pile sorting, multidimensional scaling (MDS), and cluster analysis (Bernard 2006, Kruskal and Wish 1978, Weller and Romney 1988, Shaffer and Naiene 2011). Together with ethnographic data, these methods allow me to visualize the content and structure of cultural knowledge about climate change. Specifically, I had individuals in each community sort terms related to climate change into piles, aggregated those piles, and then used MDS to visualize the relationships between the terms. I used ethnographic data, especially interviews with key informants, to identify the meaning of word clusters and the cognitive dimensions that govern the overall distribution of data in the MDS plots (Figures 4.1–3) and subsequently employed Johnson's hierarchical cluster analysis (Figures 4.4–6) to mathematically define word clusters in the MDS plots (Johnson 1967).

Generating Terms for Pile-Sorting

To define these communities' cultural domain of climate change, I organized a workshop in each of the three study communities. Prior to the workshop, pile sort terms

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were selected from a free-listing exercise that was done at the United Methodist Churches in Smithville and Bellevue in 2009 and 2010. At that time, African American workshop participants were asked to list the words that came to mind when they thought of "climate change" (Paolisso et al. 2012). The two church groups came up with a total of 91 terms.

Because of the great extent to which the Smithville and Bellevue congregations are similar to my current study congregations – many of the participants were involved in both studies, others are related to those in the first study or know their families well, and all study communities share similar social histories and economic struggles – using these previously elicited terms was justified. Additional steps were taken, however, to ensure the validity of the terms for pile-sorting by current study communities. This entailed reducing the list of 91 terms, many of which were cognates, to 30 key terms (Table 4.1) that represented the core cognitive sub-domains that had been identified among my three study communities during seven months of ethnographic fieldwork. Specifically, terms were included in the final list of 30 if they

1) were relevant to the Eastern Shore of Maryland (for example, the terms "flooding" and "storms" met this criterion, while the terms "volcanic ash" and "genocide" did not);

2) represented a more general concept as opposed to more specific one (for example, the terms "emergency" and "illness" met this criterion, while the terms "rescue vehicle" and "doctors" did not); and/or

3) were known to be of significance to my study communities based on the ethnographic work done for the seven months prior to the workshops (for example, the terms "isolation" and "aging" were words that came up repeatedly in

informal interviews, and thus met this criterion, while the terms "criminal

activity" and "loss of habitat" never came up and thus did not meet this criterion).

Finally, in a couple cases a term was changed to a similar word that would be more easily

understood by all participants. Specifically, the word "illness" replaced the terms

"depression" and "stress" and the word "roads" replaced the term "infrastructure."

One term that was expected but which did not emerge among the 91 terms

generated by Smithville and Bellevue congregations in 2009 and 2010 was race.

Reflection after longer term involvement with these communities suggests that study

participants were not comfortable bringing up the issue of race with Anglo American

researchers during the preliminary workshops. (Later, as I built rapport with the African

American church communities, study participants became more candid about the role that

race plays in their vulnerability.)

Table 4.1 Selected Climate Change Terms for Pile-Sorting by Workshop Participants

1. storms	11. floods	21. aging
2. politics	12. fish kill	22. pollution
3. diseases	13. melting ice	23. relocating
4. water	14. knowledge	24. poverty
5. communication	15. isolation	25. food
6. forest fires	16. temperature	26. God
7. federal government	17. emergency	27. erosion
8. family members	18. self preservation	28. fear
9. roads	19. drought	29. shelters
10. jobs	20. rising tides	30. illness

<u>Sampling Strategy</u>

Given the exploratory and ethnographic nature of the research, I used a purposive sampling strategy to produce a nonprobabilistic sample of key informants within and across the study communities (Guest 2015). I began by identifying key informants in each of my study communities who were knowledgeable of the range of views and values on climate change within their community, and who were also capable of conveying that information to us and garnering the participation of other community members in my study. Working with these key informants and the African American churches in each community, I invited all African Americans within each community to participate in a community workshop. (The church is central to these African American communities, with the vast majority attending church regularly. Those few who do not attend regularly remain connected to the church through close ties to church-attending family and friends.) The number of participants at each community workshop varied (see below); however, comparison of the responses to questions at the workshops with those responses generated by interviews before and after the workshop indicates that I had sufficient attendance at all workshops to ensure community views were well-represented. Specifically, I conducted 46 interviews with 34 different African American community members (some community members were interviewed more than once to clarify responses) until ethnographic analysis of the content suggested that I had reached thematic saturation, with no significant new information appearing in the later interviews.

<u>Data Collection</u>

At the workshops, each participant was given an envelope that contained each of the 30 pile-sort terms on an individual slip of paper. Participants worked independently to

sort their terms into piles in such a way that, while thinking about climate change, terms that were more similar would be in a pile together, while terms that were less similar would be in separate piles. Each individual has a different amount of knowledge about climate change and its relationship to their community – this is part of the heterogeneity within all communities – and no two individuals sorted the terms in exactly the same way. In total 65 individual pile sorts were conducted: 35 in Dorchester County, 12 in Crisfield, and 18 in St. Michaels. Among my informants were 25 men and 40 women (11 men and 24 women in Dorchester County; 7 men and 5 women in Crisfield; 7 men and 11 women in St. Michaels). The average age of my informants was 65 years (67 years in Dorchester County; 49 years in Crisfield; 71 years in St. Michaels).

Cultural Domain Analysis

The pile sort data produces a two-dimensional matrix of item-by-item proximities for each participant. The cells of the matrices contain a 1 or 0, indicating whether the individual paired the terms or not. These matrices can be aggregated. In aggregate, the cells indicate the percentage of times that each pair of terms was placed together in a pile by all informants. While individual proximity data shows the structure of a cognitive domain, aggregating the data shows the structure of a cultural domain (i.e. shared cognitive information that forms a conceptual frame or model).

I used Anthropac 4.98 to calculate the aggregate proximity matrices from the pile sort data (Borgatti 1996b). I used multidimensional scaling (MDS) to visualize the patterns of relationships among the sorted terms. MDS arranges the terms in N dimensions such that the distance between the points corresponds as closely as possible to their similarity to each other as captured by pile sorting (Kruskal and Wish 1978,

Bernard, Ryan, and Borgatti 2010). Visually, the more similar two points are to each other, the closer they will be in the spatial representation, while greater dissimilarity will result in terms being farther apart. In the case of my climate change words, the closer two words are in the spatial plotting, the more similar workshop participant thought the words were.

It takes N-1 dimensions to plot the terms perfectly; however it is not possible to analyze a 29-dimension plot – 2 dimensions is preferred. With fewer dimensions the algorithm has to make compromises on where to place terms in relation to others. The goodness of fit for items in an MDS plot is measured in terms of stress. A 30-object matrix scaled in 2 dimensions with a stress of 0.33 has a 1% chance of having no structure (Sturrock and Rocha 2000). When plotted in 2 dimensions, all three of my MDS plots (Figures 4.1–3) had a stress level less than 0.15 (0.149 in Dorchester County and Crisfield; 0.135 in St. Michaels), indicating a good fit of the data and a low probability (less than 0.5%) that the structure is merely random.

Figure 4.1 Multidimensional scaling (MDS) plot for Dorchester County
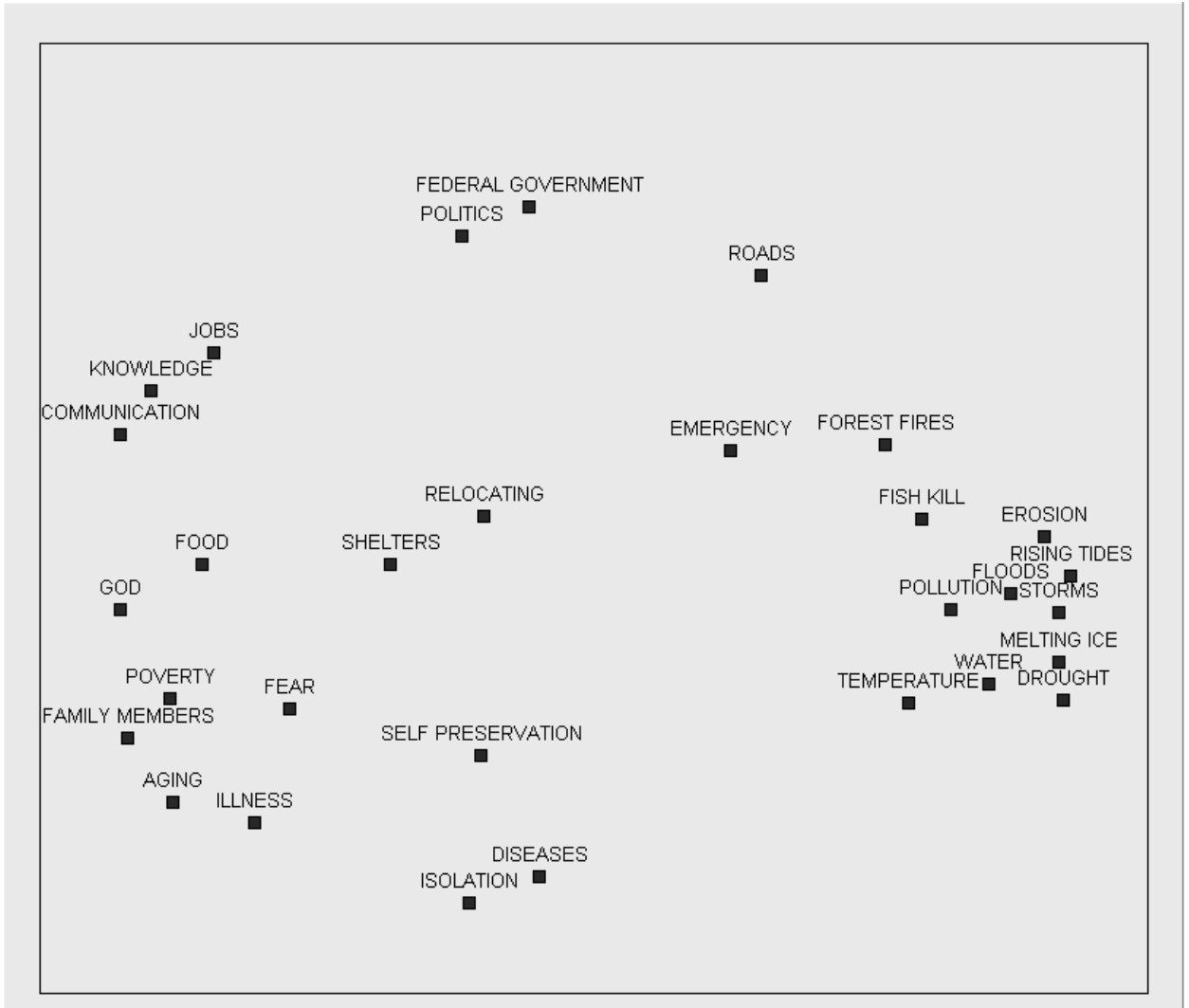
Figure created using UCINET 6 (Borgatti, Everett, and Freeman 2002).

Figure 4.2 Multidimensional scaling (MDS) plot for Crisfield
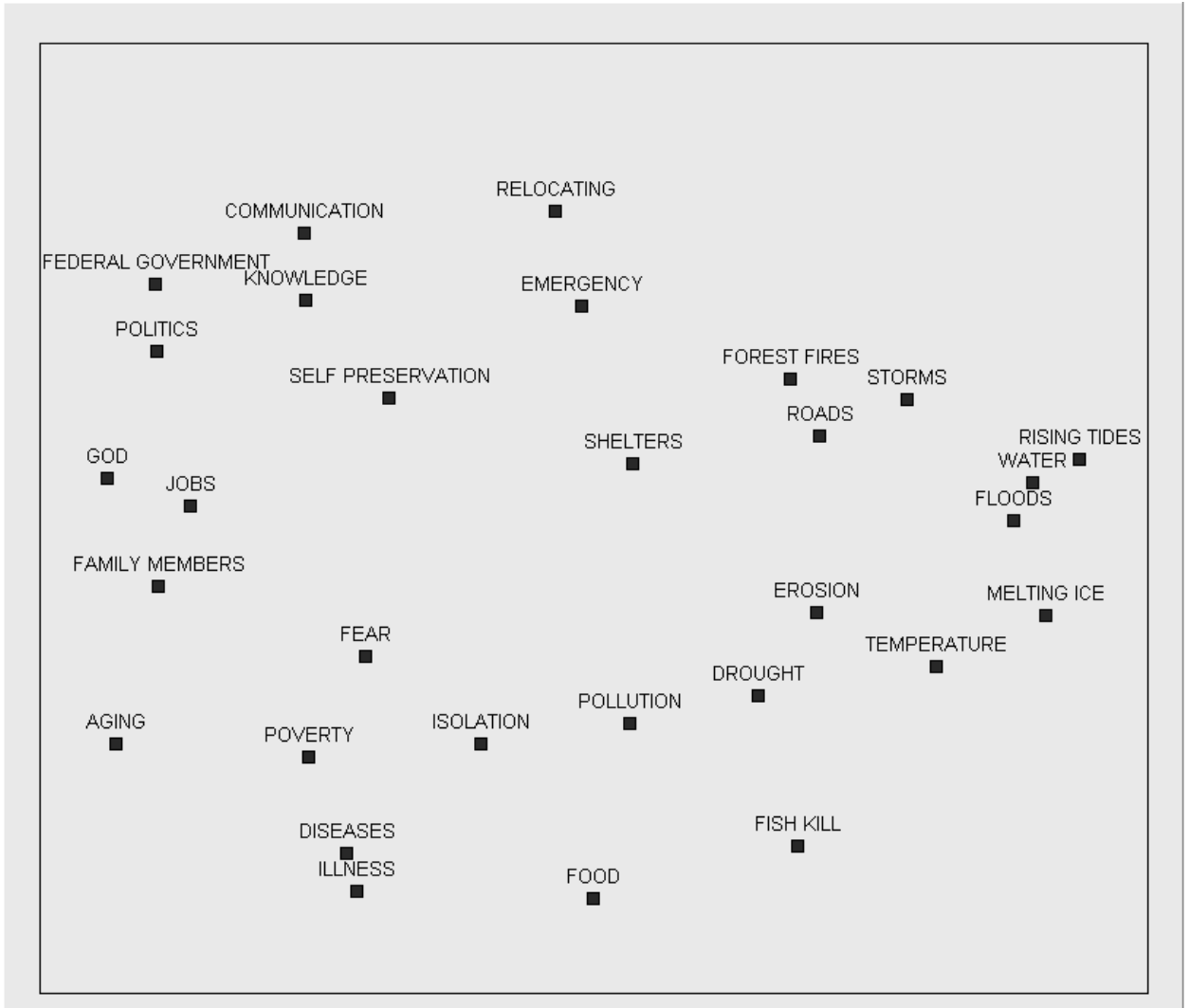
Figure created using UCINET 6 (Borgatti, Everett, and Freeman 2002).

Figure 4.3 Multidimensional scaling (MDS) plot for St. Michaels
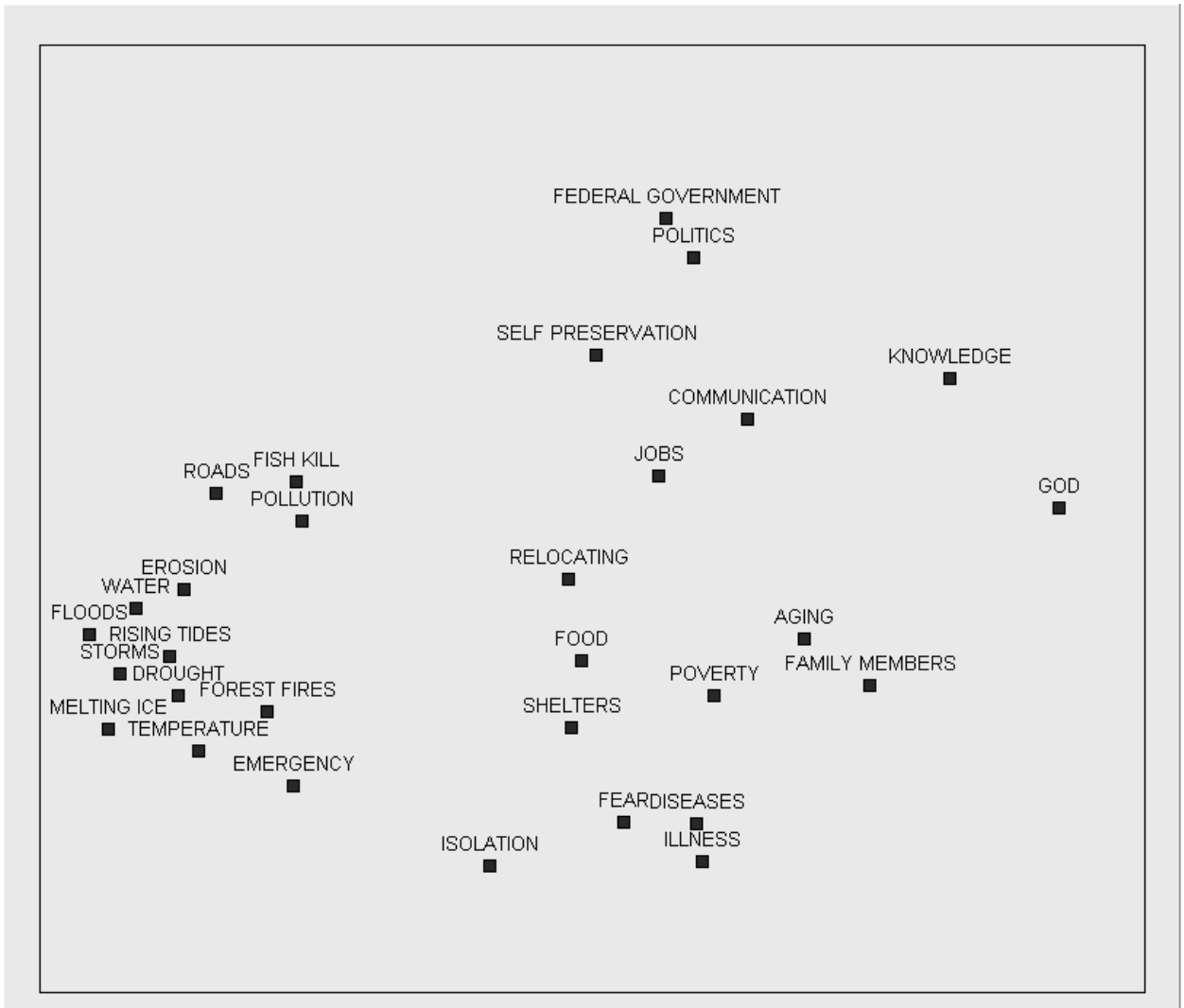
Figure created using UCINET 6 (Borgatti, Everett, and Freeman 2002).

Inter-community variation was statistically assessed using Quadratic Assignment Procedure (QAP) to measure the similarity between community MDS plots. QAP computes the correlation between two square matrices and determines the likelihood that the observed correlation is larger than expected under random permutation (Borgatti 1996a).

Analysis of MDS plots includes both 1) identifying and evaluating the meaning associated with close clusters of terms, and 2) explaining the hidden cognitive dimensions that underlie the overall distribution of the terms. My analysis of the MDS plots and their meaning rests on two years of ethnographic study and more than thirty interviews with community members. When I began interpretation of the MDS plots, I did not apply the categories of risk, sensitivity, and adaptive capacity. No mention of these categories or quantitative vulnerability indices was made to study participants. Rather, I used cluster analysis (described below) to mathematically define (i.e. utilizing systematic treatment of magnitudes as expressed by numbers) close clusters of words within each MDS plot in order to limit my own biases in my interpretation of the results. Cluster analysis alone, however, does not indicate what level of segregation (e.g. three clusters versus six clusters of terms) is meaningful. Thus, interview and ethnographic data were crucial for choosing a level of clustering (in my case, three groups for Dorchester County and Crisfield, and four groups for St. Michaels) that was consistent with the way interviewees discussed the relationships between terms in the MDS plots.

Because I wanted to ensure that my analysis was primarily rooted in local cultural understandings of climate change, I did not conduct any cluster analyses until after I had discussed the results of the MDS plots (Figures 4.1–3) with community members. I conducted sixteen follow-up interviews with workshop participants (5 in Dorchester County, 6 in Crisfield, and 5 in St. Michaels). Interviewees were selected to maximize the diversity of views and depth of community knowledge represented. Building off insights gained at the community workshops, interviews included ten questions to better understand community challenges and opportunities, both in relation to sea-level rise and

more generally. I also specifically discussed the results of the MDS plots (Figures 4.1–3) with community members. I began this part of the interview by ensuring that interviewees understood how to read the MDS plot (i.e. that terms closer together in the plot had been put in the same pile more often by community members than terms that were far apart). I then asked a set of integrated open-ended questions that ranged from general to more specific. These interviews were audio-recorded, transcribed, and systematically coded using Atlas.ti 6.2. I utilized a hybrid coding approach, whereby I coded both deductively (using codes I developed prior to reviewing the transcripts) and inductively (creating new codes as important concepts emerged from the data). This approach allowed me to simultaneously evaluate the validity of the conceptual framework I had developed from the community workshops and prior ethnographic research while also remaining open to new concepts and understandings that could emerge from the data.

To illustrate how my interview and ethnographic data were employed, I here present some examples of interview responses and how they helped to inform my MDS analysis. (To protect confidentiality, pseudonyms are given for interviewees.)

Identification of Clusters

Discussions of the MDS plots often prompted interviewees to comment on the clusters they saw in the data (Table 4.2). In these quotes interviewees not only identified words they viewed as belonging together, but also began to explain the relationship between certain terms. For example, in the 2nd quote for the risk cluster (Table 4.2), Ira Stone of Crisfield indicates the connections between certain terms – rising tides, water, floods, roads, shelters, erosion, melting ice, temperature, pollution, and water – and also

begins to define those terms in relation to the others by commenting on how they can

cause loss of life or cause someone to become stranded. In other words, he is describing

how these social-ecological factors impact the community.

Table 4.2 Examples of how interviewees described the groups of terms that stood out to them as they examined the MDS plot for their community (Figures 4.1–3). I include in this table a single quote from each community for each of the clusters that were ultimately identified: risk, sensitivity, and adaptive capacity.

Cluster	Example Quotes
Risk	1. Because of the temperature and other things that I saw from the storms and stuff like that [points to the right side of Figure SI-1], that what changes tide, it changes the flood area and all of that stuff. (Dorothy Ames, Dorchester County) 2. This rising tides, water and floods affects roads and shelters, I see why they're in close proximity, because you can lose it all. … You can actually lose your life if you don't have a way of getting out of a place where rising tides, water and floods are coming if you need to get out. … Erosion affects how we grow food, how much land we can live on, just like melting ice can inundate and take over through water melt. And it changes the temperatures in the environments, in the atmosphere. I can understand those relationships there, as well as drought, those four being in close proximity. … Pollution sometimes is a result of erosions, because erosion can put a lot of stuff in your water. (Ira Stone, Crisfield) 3. So storms, rising tides, floods, water would be related and, consequently, if there's enough water running through the farmer's fields, that would create some erosion. … Washing silt and stuff into the Bay. And if silt goes into the Bay, it would affect the seafood. … And rising tides and floods sometimes cover the roads. (Royce Armstrong, St. Michaels)
Sensitivity	1. The majority of the people there were elderly… and a lot of times elderly people, they are sick… And then they're kind of like isolated in a sense, because they're so far down… They live in the country. (Priscilla Walker, Dorchester County) 2. It could be community health. You need shelter, you need food, you need your family. You're certainly concerned about poverty, aging, fear, illness, diseases, isolation. (Ira Stone, Crisfield) 3. Far as aging people, I guess they'd feel sort of isolated. And I guess there's some fear involved in that… Family members – aging and family members, you know, well, people get older, they start losing family members. … Food and poverty would go together, because if people don't have enough money they can't get all the foot they want. (Royce Armstrong, St. Michaels)
Adaptive Capacity	1. God, food, shelter, relocation – see all of those are setting off by [themselves]. Roads. Jobs. Knowledge. Politics. Federal Government. (Frank Perkins, Dorchester County) 2. [God, jobs, and family members] go together right here. … If you know God, you know God's going to bless you with a job. And your family. … That's mainly what people look for here in Crisfield. It's nothing coming to Crisfield… the younger folks are leaving Crisfield. (Ruby Stevens, Crisfield) 3. Federal government and politics, that works together. … Well, I think relocating, that would be jobs. (Paul Henry, St. Michaels)

Assigning Meaning to Clusters and Determining Underlying Organizational Dimensions

As an interview progressed I transitioned from open-ended questions to clarifying questions designed to test my working hypotheses of the meaning behind clusters and the overall distribution of data. For example, following the identification of clusters by interviewees such as those quoted in Table 4.2, I inquired what characteristics those clustered terms had in common and how they related to other clusters on the MDS plot. Many interviewees identified the terms I ultimately labeled as risk to be related to the environment. In contrast, they spoke of the terms I ultimately labeled as sensitivity to be characteristics of their local church community. They also described the terms that I ultimately labeled as adaptive capacity to be things that people need in order to respond to the rest of the terms, especially in an emergency.

These conversations not only helped to clarify the character of each cluster, but also revealed the organizational dimensions underlying the cultural model of climate change as represented by the MDS plots. Identifying the first dimension – social to physical – was relatively straightforward as participants repeatedly spoke in terms of the "environment" at one side of the MDS plot and the "community" or "people" on the other side. The second dimension, which I ultimately defined as local to extra-local, was more difficult to identify. Interviewees used many different ways to talk about the difference between the terms at the top and bottom of their community MDS plot. The first theme that seemed to emerge was that of control. An interviewee in St. Michaels described how the community could not control those terms that I ultimately identified as sensitivity. Others, when presented with this hypothesis, agreed; however an interviewee in Crisfield pointed out that the communities also lacked control over those things

ultimately identified as adaptive capacity. This same individual went on to talk about the difference in familiarity the community had with different terms on the MDS plot. He explained that while the African American community in Crisfield was very familiar with the terms I ultimately characterized as sensitivity and many of the terms I ultimately characterized as risk, they had very little familiarity with those terms I identified as adaptive capacity. This conversation and others that followed with interviewees in Crisfield and the other communities ultimately led me to determine that, though important to my study participants, the concept of control did not fit as an underlying organizational dimension.

I ultimately identified the second dimension of the MDS plots as local to extra-local. Though this dimension was not discussed in precisely those terms by my informants, interview responses and ethnographic data supported the salience of spatial distance to my study communities. For example, conversations about communities' physical isolation, family members' outmigration, and the undesirability of permanent relocation were frequent and intense. When applied to the MDS data, the location of terms along the y axis made ethnographic sense in terms of the degree to which they were "local" or "extra-local." Thus the second dimension was identified.

Johnson's Hierarchical Clustering

Finally, I used Johnson's (1967) hierarchical clustering schemes to mathematically identify clusters within the MDS plots (Figures 4.4–6). This clustering method begins by assuming each item to be in an independent, singleton cluster, and then finds the two most similar and joins them together. I used average-link clustering, which considers the distance between two clusters to be the average distance from any member

of one cluster to any member of the other cluster. This clustering algorithm is repeated until all terms are in one cluster, resulting in a collection of hierarchically nested partitions. Interview data was then used to corroborate and assist with the interpretation of these clusters (Figures 4.7–9).

Figure 4.4 Johnson's hierarchical clustering results for Dorchester County using average-link clustering

```
                                        F
                                        E
                                        D
                                        E
                                        R
                                        A
              F                   R     L                    C         S
              O           M T     I                          O      P  E
              R             E E   S             G    R       M      R  L     F
              E E F P L   M       I             O    E I     M      E  F     A
              S M I O T P         N        P V  L S     S    U K    S  Y     M
              T E S L I E D       G E      O E  O O P H  I   O  R   M     I  I
                R H L N R R   F S     R    L R  C L O E C W  L A L  A  M  E  S L
              F G   U G A O W L T T O R I N    A A V L A L   A  T F B G A N
              I E K T   T U A O O I S O T M J T T E F T T E     T F B G A N
              R N I I I U G T O R D I A I E O I I R O E I D G I E E I S E
              E C L O C R H E D M E O D C N B N O T O R O G O O A R N E S
              S Y L N E E T R S S S N S S T S G N Y D S N E D N R S G S S

              1 1 2 1 1 1   1    2 2       1 2 1 2 2 2  1 2 1 2    2     3
 Level        6 7 2 2 3 6 9 4 1 1 0 7 9 2 7 0 3 5 4 5 9 5 4 6 8 8 8 1 3 0
 ------       - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 0.8857       . . . . . . . . . XXX . . . . . . . . . . . . . . . . . . .
 0.8381       . . . . . . . . . XXXXX . . . . . . . . . . . . . . . . . .
 0.7286       . . . . . . . . XXXXXXX . . . . . . . . . . . . . . . . . .
 0.7143       . . . . . . . . XXXXXXX . . . . . . . . . . . . . . XXX . .
 0.6286       . . . . XXX . XXXXXXX . . . . . . . . . . . . . . . XXX XXX
 0.6000       . . . . XXX . XXXXXXX . . . XXX . . . . . . . . . . XXX XXX
 0.5714       . . . . XXX . XXXXXXXXX . XXX . . . . . . . . . . . XXX XXX
 0.5333       . . . . XXXXX XXXXXXXXX . XXX . . . . . . . . . . . XXX XXX
 0.5143       . . XXX XXXXX XXXXXXXXX . XXX . . . . . . . . . . . XXX XXX
 0.4795       . . XXX XXXXXXXXXXXXXXX . XXX . . . . . . . . . . . XXX XXX
 0.4571       . . XXX XXXXXXXXXXXXXXX . XXX . . . . . . . XXX . . . XXX XXX
 0.4286       . . XXX XXXXXXXXXXXXXXX . XXX . . . . XXX XXX . . . XXX XXX
 0.4254       . . XXX XXXXXXXXXXXXXXX . XXX . . . . XXX XXX . . . XXXXXXX
 0.4190       . . XXX XXXXXXXXXXXXXXX . XXX . . . . XXX XXXXX . . XXXXXXX
 0.3851       . . XXXXXXXXXXXXXXXXXXX . XXX . . . . XXX XXXXX . . XXXXXXX
 0.3429       . . XXXXXXXXXXXXXXXXXXX . XXX . . XXX XXX XXXXX . . XXXXXXX
 0.3175       . . XXXXXXXXXXXXXXXXXXX . XXX . XXX XXX XXXXX . XXXXXXXXX
 0.2857       XXX XXXXXXXXXXXXXXXXXXX . XXXXX . XXX XXX XXXXX . XXXXXXXXX
 0.2746       XXX XXXXXXXXXXXXXXXXXXX . XXXXX . XXX XXX XXXXX XXXXXXXXXX
 0.2743       XXX XXXXXXXXXXXXXXXXXXX . XXXXXX XXX XXX XXXXX XXXXXXXXXX
 0.2635       XXX XXXXXXXXXXXXXXXXXXX . XXXXXX XXXXXXX XXXXX XXXXXXXXXX
 0.2382       XXX XXXXXXXXXXXXXXXXXXX . XXXXXX XXXXXXX XXXXXXXXXXXXXXXX
 0.2119       XXXXXXXXXXXXXXXXXXXXXXX . XXXXXX XXXXXXX XXXXXXXXXXXXXXXX
 0.2056       XXXXXXXXXXXXXXXXXXXXXXX . XXXXXX XXXXXXXXXXXXXXXXXXXXXXXX
 0.1927       XXXXXXXXXXXXXXXXXXXXXXX XXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXX
 0.1653       XXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
 0.0803       XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

Figure created using Anthropac 4.98 (Borgatti 1996b).

Figure 4.5 Johnson's hierarchical clustering results for Crisfield using average-link clustering

```
                                         F
                                   S     E
                                   E     D
                                   L     E
                                   L     R        F
                     R         F      P  C  A        A
           M    R    O      T  R  O  L        M
           E    I    R      E  E  M  G        I
           L    I P  E   E  M  F  S  U  O  K     I
           T    N O  S   M  P  I  E  N  P  V  N  S          D
           I    G L  T   E  D  E  E  S  R  O  I  O    P  I  I
           N  F    L S   R  R  R  R  S  H  E  V  C  C  L  R  W  E     A  A     O  S  L
           G  L  T W U  T  F  R  G  O  A  O  L  A  A  A  I  N  L  M     A  A     V  E  L
            O  I  A T O  I  O  E  U  T  S  K  F  T  T  T  T  M  E  B  J     T  G  F  E  A  N
         I  O  D  T I R  R  A  N  G  U  I  I  O  E  I  I  I  I  E  D  E  O  G  I  I  E  R  S  E
         C  D  E  E O M  E  D  C  H  R  O  L  O  R  O  N  O  C  N  G  R  B  O  O  N  A  T  E  S
         E  S  S  R N S  S  S  Y  T  E  N  L  D  S  N  G  N  S  T  E  S  S  D  N  G  R  Y  S  S

         1  1  2     2            1  1  1  2  1  2  2  1  2        1     1  2  1  2  2  2     3
Level    3  1  0  4  2  1  6  9  7  9  6  7  2  5  9  8  3  5  2  7  4  8  0  6  5  1  8  4  3  0
------   -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -  -
0.8333   .  .  XXX  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  XXX
0.7500   .  XXXXX  .  .  .  .  .  .  .  .  .  .  .  .  .  XXX  .  .  .  .  .  .  .  .  XXX
0.5833   .  XXXXX  .  XXX  .  .  .  .  .  .  .  .  .  XXXXX  .  .  .  .  .  .  .  .  XXXXX
0.5417   XXXXXXX  .  XXX  .  .  .  .  .  .  .  .  .  XXXXX  .  .  .  .  .  .  .  XXXXX
0.5278   XXXXXXX  .  XXXXX  .  .  .  .  .  .  .  .  XXXXX  .  .  .  .  .  .  .  XXXXX
0.5000   XXXXXXX  .  XXXXX  .  .  .  .  XXX  .  .  .  XXXXXXX XXXXX  .  .  .  XXXXX
0.4167   XXXXXXX  .  XXXXXXX  .  XXX XXX  .  .  .  XXXXXXX XXXXX XXX  .  XXXXX
0.3881   XXXXXXX  .  XXXXXXX  .  XXX XXX  .  .  .  XXXXXXXXXXXXX XXX  .  XXXXX
0.3611   XXXXXXX  .  XXXXXXX XXXXX XXX  .  .  .  XXXXXXXXXXXXX XXX  .  XXXXX
0.3542   XXXXXXX  .  XXXXXXX XXXXX XXX  .  .  .  .  XXXXXXXXXXXXX XXX XXXXXXX
0.3333   XXXXXXX  .  XXXXXXX XXXXX XXX  .  XXX XXXXXXXXXXXXX XXX XXXXXXX
0.3333   XXXXXXX  .  XXXXXXX XXXXX XXXXX XXX XXXXXXXXXXXXX XXX XXXXXXX
0.2804   XXXXXXX  .  XXXXXXXXXXXXX XXXXX XXX XXXXXXXXXXXXX XXX XXXXXXX
0.2667   XXXXXXX  .  XXXXXXXXXXXXX XXXXX XXX XXXXXXXXXXXXX XXXXXXXXXXX
0.2272   XXXXXXX XXXXXXXXXXXXXXX XXXXX XXX XXXXXXXXXXXXX XXXXXXXXXXX
0.2070   XXXXXXXXXXXXXXXXXXXXXXX XXXXX XXX XXXXXXXXXXXXX XXXXXXXXXXX
0.1682   XXXXXXXXXXXXXXXXXXXXXXX XXXXX XXXXXXXXXXXXXXXXX XXXXXXXXXXX
0.1619   XXXXXXXXXXXXXXXXXXXXXXX XXXXX XXXXXXXXXXXXXXXXX XXXXXXXXXXX
0.1325   XXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXX
0.1148   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

Figure created using Anthropac 4.98 (Borgatti 1996b).

Figure 4.6 Johnson's hierarchical clustering results for St. Michaels using average-link clustering

```
                                                      F
                                                      E                 S
                                                      D                 E
                                                      E                 L
                                                      R                 F        F
                                                      A                 P        A
        C                                             L                 R        M
        O                       F           T     M         R           E        I
        M                       O           E     E         I     G     S  R     L
        M                       R           M     L         S     O     E  E Y   Y
        U K       F P E E       M           P     T         I     V     R  L            I
        N N       I O S M       E           D I   I         N   P V     O  M       S S   D
        I O       S L T E       E D I       R R N S           E O E     V  C E   P H O   I I
        C W       H L   R       R R N S       F R L R         A A M A   O  E L   S E L   S L
        A L       U F G R A O G T W T L O I N   A A M         V  L A     E L
        T E       K T I E O T U   O A I O S T M J T T B G F E  T T F A N
        I D G I I R N A U G I R T D O I I E O I I E I O R E I E S E
        O G O L O E C D R H C M E E D O C N B O N R N O T R O A E S
        N E D L N S Y S E T E S R S S N S T S N G S G D Y S N R S S

          1 2 1 2     1     1 1 1       2 1 2       1 1 2     2 2 2 2 1 2     3
  Level   5 4 6 2 2 6 7 9 6 9 3 1 4 0 1 7 2 7 0 8 3 8 1 5 4 9 5 8 3 0
  ------  - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
  1.0000  . . . . . . . . . . . . XXX . . . . . . . . . . . . . . . .
  0.9444  . . . . . . . . . . . . XXX . XXX . . . . . . . . . . . . .
  0.8889  . . . . . . . . . . . XXXXX . XXX . . . . . . . . . . . . .
  0.8056  . . . . . . . . . . XXXXXXX . XXX . . . . . . . . . . . . .
  0.7444  . . . . . . . . . XXXXXXXXX . XXX . . . . . . . . . . . . .
  0.7222  . . . . . . . . . XXXXXXXXX . XXX . . . . . . . . . . . XXX
  0.6296  . . . . . . . . . XXXXXXXXXXX XXX . . . . . . . . . . . XXX
  0.6111  . . . . . . . XXX XXXXXXXXXXX XXX . . . XXX . . . . . . XXX
  0.5556  . . . XXX . . . XXX XXXXXXXXXXX XXX . . . XXX . . . . . XXX
  0.5000  . . . XXX . . . XXX XXXXXXXXXXX XXX . . . XXX . XXX . . XXX
  0.4902  . . . XXX . . . XXXXXXXXXXXXXXX XXX . . . XXX . XXX . . XXX
  0.4815  . . . XXX . . . XXXXXXXXXXXXXXX XXX . . . XXXXX XXX . . XXX
  0.4539  . . . XXX . . XXXXXXXXXXXXXXXXX XXX . . . XXXXX XXX . . XXX
  0.4444  XXX . XXX XXX XXXXXXXXXXXXXXXXX XXXXX . . XXXXX XXX XXX XXX
  0.4123  XXX . XXX XXX XXXXXXXXXXXXXXXXX XXXXX . . XXXXXXXX XXX XXX
  0.4012  XXX . XXX XXX XXXXXXXXXXXXXXXXX XXXXX . . XXXXXXXX XXXXXXX
  0.3333  XXX . XXX XXX XXXXXXXXXXXXXXXXX XXXXX XXX XXXXXXXXX XXXXXXX
  0.3257  XXX . XXX XXXXXXXXXXXXXXXXXXXXX XXXXX XXX XXXXXXXXX XXXXXXX
  0.3198  XXX . XXX XXXXXXXXXXXXXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXX
  0.2841  XXX . XXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXX XXXXXXXXX XXXXXXX
  0.2514  XXX . XXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXX XXXXXXXXXXXXXXXXX
  0.2407  XXXXX XXXXXXXXXXXXXXXXXXXXXXXXX XXXXXXXXX XXXXXXXXXXXXXXXXX
  0.2083  XXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
  0.1445  XXXXX XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
  0.0965  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
```

Figure created using Anthropac 4.98 (Borgatti 1996b).

Results

In consultation with study participants, I found that there were three clusters of

terms that remained together in all three communities, while eight terms were placed in

different clusters by different communities (Figures 4.7–9 and Table 4.3). The large

extent to which communities shared cultural knowledge on climate change is supported

by the significantly high correlation (measured by quadratic assignment procedure – see

above) between community MDS plots (mean $r = 0.707$, $p < 0.000$). The three clusters of

terms correspond to the three components of vulnerability as defined by the Fourth

Assessment Report of the Intergovernmental Panel on Climate Change (IPCC 2007).

That is, the green cluster includes words that describe risk or environmental impacts of

climate change and include terms such as temperature, storms, floods, and rising tides.

The red cluster includes terms that relate to the communities' sensitivity to climate

change impacts, such as illness, aging, fear, and poverty. Finally, terms in the blue cluster

are words that the community views as things that would affect their adaptive capacity to

climate change and includes the terms federal government, jobs, and relocating.

Figure 4.7 Dorchester County MDS plot with clusters and organizational dimensions identified
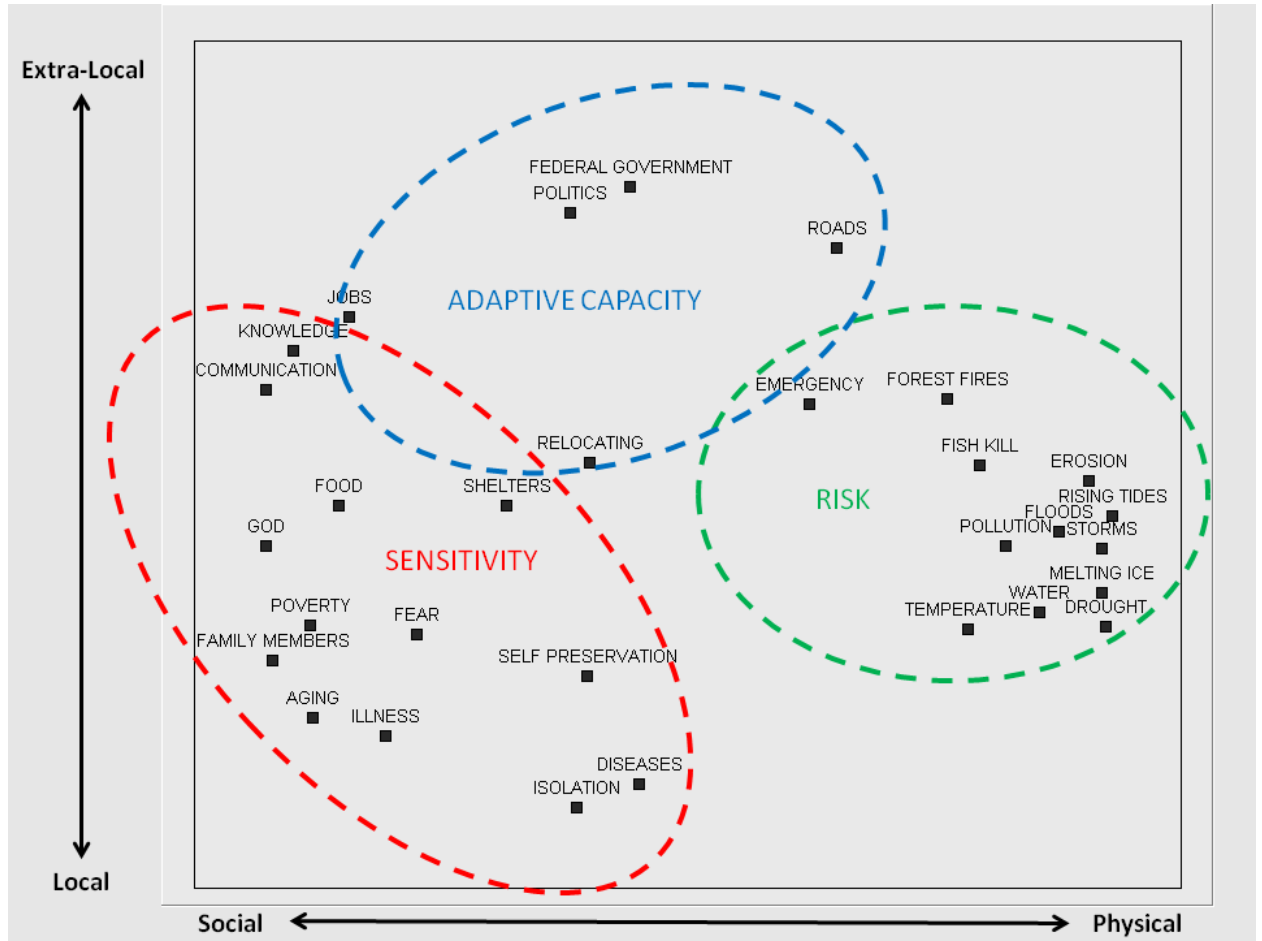
Figure created using UCINET 6 (Borgatti, Everett, and Freeman 2002).

Figure 4.8 Crisfield MDS plot with clusters and organizational dimensions identified
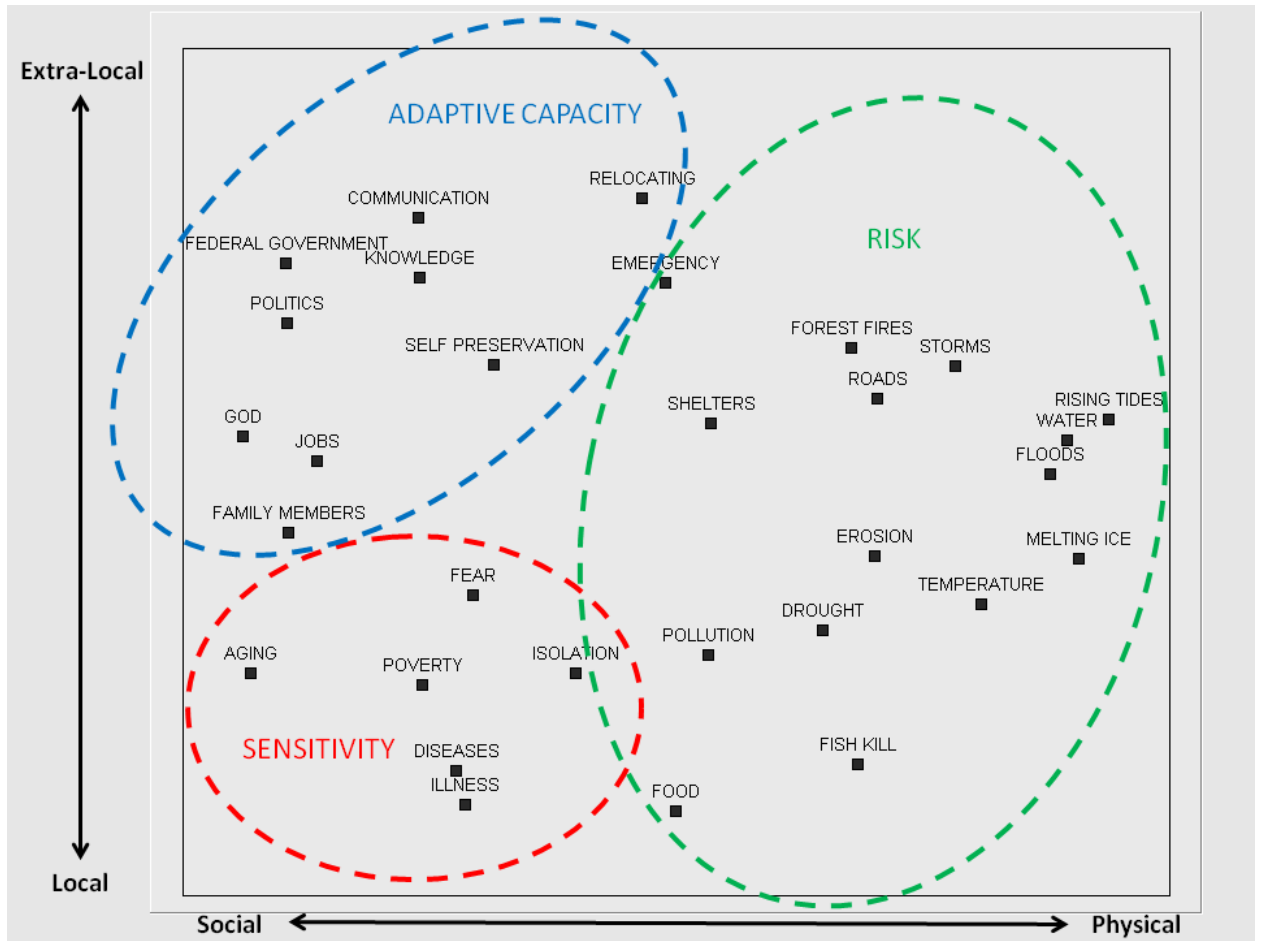
Figure created using UCINET 6 (Borgatti, Everett, and Freeman 2002).

Figure 4.9 St. Michaels MDS plot with clusters and organizational dimensions identified
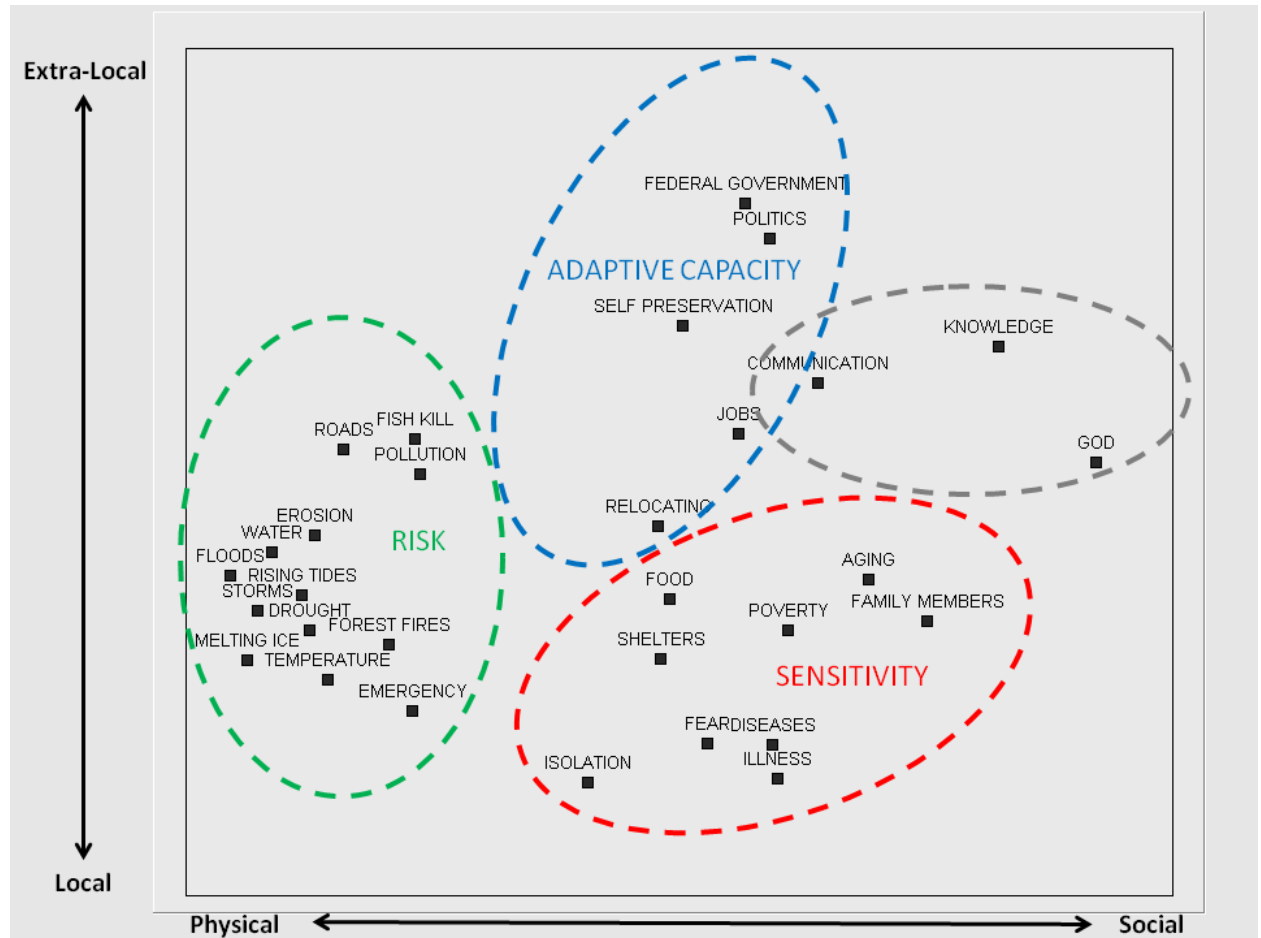
Figure created using UCINET 6 (Borgatti, Everett, and Freeman 2002).

Table 4.3 Free-listing terms as categorized by workshop participants

Risk		Sensitivity		
1. drought		1. aging		
2. emergency		2. diseases		
3. erosion		3. fear		
4. fish kill		4. illness		
5. floods		5. isolation		
6. forest fires		6. poverty		
7. melting ice		**Adaptive Capacity**		
8. pollution				
9. rising tides		1. federal government		
10. storms		2. jobs		
11. temperature		3. politics		
12. water		4. relocating		

Independent Terms		D	C	S
1. communication		S	A	?
2. family members		S	A	S
3. food		S	R	S
4. God		S	A	?
5. knowledge		S	A	?
6. roads		A	R	R
7. self-preservation		S	A	A
8. shelters		S	R	S

Words in the "Risk," "Sensitivity," and "Adaptive Capacity" columns were categorized together by all communities, while the words listed as "independent terms" were categorized differently by St. Michaels (S), Dorchester County (D), and Crisfield (C). Independent terms that were categorized by a community as a risk are marked with "R", terms categorized as a sensitivity with an "S", and terms categorized as adaptive capacity with an "A". Independent terms that were not categorized in any of those three groups by a given community are marked with a "?".

I further found that terms on the MDS plots are organized along a local to extra-local dimension (y axis) and a physical to social dimension (x axis) (Figures 4.7–9 and Figure 4.10). The position of the clusters of terms along the x and y axes reveal that the communities all consider climate change risks to be more physical than social, and to fall toward the middle of the local to extra-local spectrum. The sensitivity and adaptive

capacity clusters both fall on the social end of the x axis, but sensitivity is considered in local terms while adaptive capacity is extra-local.

Figure 4.10 The underlying dimensions of community MDS plots
In all three community MDS plots I found that participants were organizing terms along a social to physical dimension (x axis) and a local to extra-local dimension (y axis). This figure shows how the clusters fall along those two dimensions. (To see the terms within the clusters and individual MDS plots for each community see Figures 4.7–9).
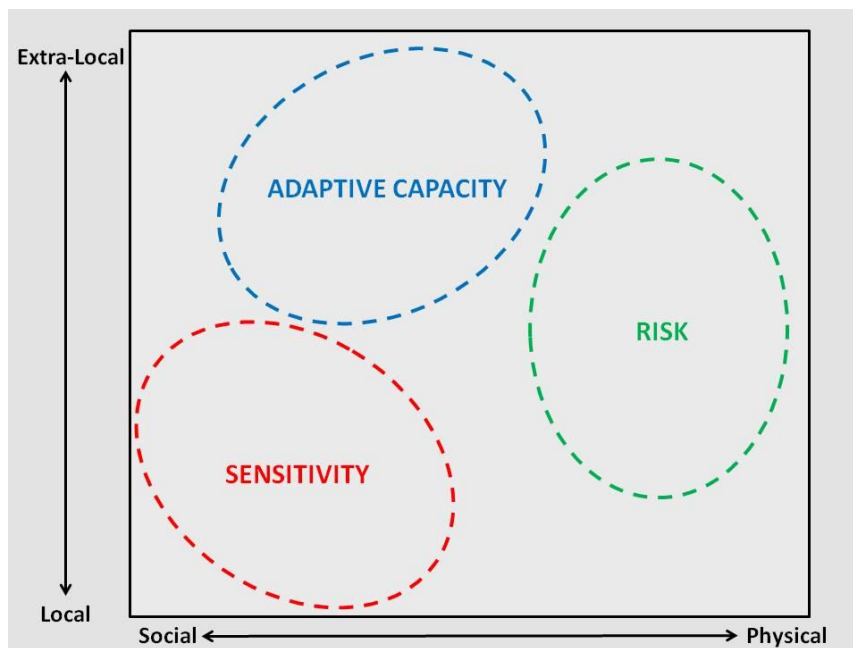
Discussion

<u>Assessing Local Risk</u>

Despite having the same three main clusters, the communities differed in their level of agreement on how terms should be sorted as well as the final categorization of eight of the terms. Crisfield's MDS plot (Figure 4.8) differs the most from the other two (Figures 4.7 and 4.9) with the MDS plots of Dorchester County and St. Michaels having a higher correlation ($r = 0.812$, $p < 0.000$) than Crisfield's plot with either Dorchester

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County ($r = 0.634$, $p < 0.000$) or St. Michaels ($r = 0.675$, $p < 0.000$). While clusters within the St. Michaels and Dorchester County MDS plots are relatively tightly grouped, indicating general agreement among workshop participants, the Crisfield MDS plot has looser clusters, indicating less similarity in the way Crisfield workshop participants sorted their terms. This difference matches my ethnographic data: six months before the workshops, Crisfield experienced extreme flooding from Hurricane Sandy, while the other two communities have not recently experienced significant flooding. Discussions with Crisfield workshop participants suggest that the recent experience of a climate-related event heightened their awareness of the complexity and interconnectedness of components of their social-ecological system, which resulted in more individuals sorting terms that ultimately fell in the risk cluster with terms that ultimately comprised the sensitivity or adaptive capacity clusters. This is evident in Crisfield's MDS plot, where the risk cluster extends farther toward the social end of the x axis.

Crisfield's risk cluster also includes more terms than the other two communities'. Of the three communities, marginalization of African Americans is most overt in Crisfield, and following Hurricane Sandy African American residents talked about how sociopolitical circumstances increased their hardship after the storm. For example, several participants described how streets with a predominant African American population remained flooded for days longer than other streets because the city had failed to maintain floodgates in those areas. Other participants expressed frustration in getting access to food that was sent to the city by emergency response groups, as well as difficulty in finding housing while their homes were being repaired. Road conditions and the availability of food and shelter were not perceived to be a sensitivity internal to the

community, but rather an external perturbation over which they had little control. Accordingly, Crisfield workshop participants grouped the terms roads, food, and shelter with terms in the risk cluster (Figure 4.8).

In contrast, the study communities in Dorchester County and St. Michaels include food and shelter as part of the cluster that corresponds to community sensitivity, indicating that they see the relative availability and condition of these resources less as a possible external impact and more as a part of what continuously characterizes their local community conditions. In considering roads, however, St. Michaels is similar to Crisfield in that roads occurs within the risk cluster, while in Dorchester County roads is found within the adaptive capacity category. In Dorchester County, though some roads already have several inches of water on them during high tide, community residents know alternate routes to get from place to place and using the roads to temporarily relocate is seen as a key adaptive response to climate change impacts. In contrast, there is only one road connecting St. Michaels to the rest of the Eastern Shore, so like the African American community in Crisfield, workshop participants in St. Michaels regard roads as a possible external perturbation and therefore see them as similar to the words that connote risk.

Assessing Local Adaptive Capacity and Sensitivity

Crisfield's MDS plot also differed from the other two by having more terms in the cluster that corresponds to adaptive capacity. While the study communities in St. Michaels and Dorchester County both include five terms in the adaptive capacity cluster, Crisfield includes nine. A key adaptive capacity term for Crisfield study participants is family members. While workshop participants in St. Michaels and Dorchester County

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thought primarily about concern for the well-being of family members during a climate event, resulting in the term's location in the sensitivity cluster, Crisfield residents had relied heavily on immediate and extended family members for assistance during and after Hurricane Sandy. Thus in Crisfield family members were not viewed as a community liability, but as a source of adaptive capacity.

The adaptive capacity cluster for Crisfield also includes God, knowledge, and communication, which captures the importance of their deep faith, place-based knowledge, and social networks of communication during and after Hurricane Sandy. In contrast, workshop participants in Dorchester County grouped these words in the cluster corresponding to sensitivity, suggesting that community members perceive a relative lack of knowledge and access to government officials increases their sensitivity to climate change impacts. Furthermore, the location of God in the sensitivity cluster reflects their fear that their churches, all four of which are located near water bodies or tidal wetlands, will be lost to sea-level rise. Finally, in St. Michaels the terms God, knowledge, and communication were grouped in a fourth, separate cluster. A possible ethnographic accounting for this result is that study participants in St. Michaels perceived these terms to transcend the issue of climate change, with the result that they ended up being most similar only to each other using Johnson's hierarchical cluster analysis.

A final important overall finding from these three MDS plots is that in all communities sensitivities to flooding are thought about as local, while adaptive capacities are extra-local. Some of the workshop participants expressed feeling uncomfortable navigating the techno-bureaucratic world of policymaking and regulation, and thus felt that they were isolated from the resources and expertise that could otherwise help them to

better adapt to flooding from sea-level rise. The social and political isolation experienced by these communities is not something that is readily captured by quantitative vulnerability indices, yet is nevertheless an important contributor to local-level vulnerability.

Notably, race and age both contribute to the social and political isolation that has limited these communities' access to sources of adaptive capacity at the extra-local level. Though race was not a term in the pile-sorting activity, in individual interviews issues of injustice related to race did surface, revealing how historical and cultural legacies of discrimination have simultaneously discouraged African Americans' participation in government decision-making processes and allowed their needs to be overlooked by government officials. My ethnographic data further revealed that race can have differing impacts among seemingly similar communities; while race contributes to the vulnerability of all the study communities, it has impacted Crisfield to a greater degree. The advanced age of many in these communities also contributes to the difficulties they face in accessing resources for adaptation. Government and non-governmental agencies increasingly rely on online systems for dissemination of information and submission of applications for aid. Internet navigation is often more difficult for senior citizens, who have had less practice than those in younger generations. In addition, seniors may experience health problems that make it difficult for them to exert energy in reaching out to agencies that could otherwise enhance their adaptive capacity.

Ethnographic Basis for Conclusions

The interpretations and conclusions drawn from the MDS plots are based on more than two years of ethnographic research that included more than 30 interviews, hundreds

of informal conversations, and many months of participant observation in a wide range of social settings within the study communities. Such ethnographic fieldwork builds rapport and deepens understanding of community and cultural knowledge, thus increasing the reliability and validity of qualitative interpretations (Bernard 2006). Here a few examples of that ethnographic data are given to provide additional context for my interpretations and conclusions.

MDS plots for the three study communities revealed that Crisfield differed the most in its cultural knowledge of climate change and vulnerability. Because study participants in Crisfield were on average younger than those in the other communities (average age of study participants was 71 years in St. Michaels; 67 years in Dorchester County; 49 years in Crisfield;), I initially considered whether age was the primary factor determining the difference in cultural knowledge; however, I found no support for this hypothesis. The issue of age in reference to outmigration and the aging of church communities (a trend common to all study communities) frequently came up in interviews and informal conversations, but there was no significant discussion of differences between older and younger community members. Additionally, across all topics discussed I did not find a notable difference in viewpoint between those of older and younger generations, the one exception being that the youngest participants were more willing to consider permanent relocation than older participants; however, this difference alone was inadequate to explain the Crisfield's MDS result.

Ethnographic data strongly indicated that the primary difference between Crisfield and the other two communities was their recent experience with flooding by Hurricane Sandy. This experience caused the issue of climate change and flooding to be

of immediate concern to African Americans in Crisfield, while the topic was more of a background concern in the other two communities.

One way in which this difference of experience was made evident was in the way Crisfield workshop participants discussed the issue of risk. While participants in the other two communities primarily talked about physical factors such as rising tides, inadequate drainage, and flooding, the conversations about risks among the Crisfield workshop participants also included discussion of social factors such as insurance, availability of food and shelter, the deteriorating condition of the roads, and emergency services. Their recent experience with Hurricane Sandy and their frustrations in trying to recover and adapt made Crisfield participants keenly aware of the complexity and interconnectedness of diverse components within their social-ecological system.

To illustrate this difference, here are examples of the typical responses written on worksheets in response to the question, "Are you at risk to flooding and sea-level rise? If so, please describe how." A group at the Dorchester County workshop wrote, "Yes to flooding. Heavy rain. High tides. Severe storms. Inadequate drainage." In St. Michaels one group wrote, "excessive tide rise" and another wrote, "standing water after heavy rain." In contrast, a group at the Crisfield workshop included comments about the disaster readiness of the county:

> Yes we are at risk: Surrounded by so much water such as ponds, river, lakes. Do not have the proper drainage systems. The county does not prepare for the worst outcome from flooding (ex: Hurricane Sandy).

This discussion of how social and physical factors interact to create risk reflects the broad cluster of terms corresponding to risk on Crisfield's MDS plot.

Another key difference between Crisfield and the other two communities is that racial tensions are most acute in Crisfield. While interviewees in St. Michaels insisted that race relations there had always been cordial – recalling that even as children they would be invited to their white neighbors' for cookies – Crisfield interviewees spoke in guarded but angry terms about the way in which racial injustice had increased their vulnerability to flooding. In regard to the water that was standing in streets where African Americans lived for days longer than other parts of Crisfield, one participant commented, "Let's just say it like it is. [The flood gates were] not done, repaired, in *our* communities. You understand what I mean? In *our* communities."

This frustration with maintenance of infrastructure for the African American community in Crisfield spills over to their concern about getting adequate food and shelter after a flooding event. One African American woman in Crisfield described how African Americans who went to an Anglo American church that was distributing food provided by aid organizations were challenged with the question, "Don't *your* churches have food for you?"

Thus, the results of interviews, informal conversations, and field observations strongly support my overall interpretation of Crisfield's MDS plot. That is, Crisfield's recent experience with flooding and its ongoing struggle against racial injustice have heightened Crisfield study participants' awareness of the complexity and interconnectedness of components of their social-ecological system, leading them to

more often categorize terms from the risk cluster with terms from the sensitivity or adaptive capacity clusters.

Conclusion

I have shown that systematically eliciting cultural knowledge about climate change and connecting it to a scientific framework of vulnerability can yield nuanced insights about local vulnerability. While the qualitative methods I employed are relatively straightforward for identifying similarities and differences in the way communities group social-ecological factors related to climate change, interpretation of these results depended on consultation with community members. The results as presented here do not exactly reflect the understanding of vulnerability to sea-level rise of any one individual, but rather reveal each study community's shared implicit and explicit understanding of vulnerability that influences behavior and decision-making.

I find that the ways in which social-ecological factors affect local vulnerability can differ considerably even among communities classified as having an equally high vulnerability as measured by quantitative indices. While the revealed similarities are useful for suggesting adaptation needs at a more regional level, the differences revealed by the MDS plots allow us to better understand the unique local experiences of vulnerability. Specifically, the different roles that social-ecological factors play in different communities reemphasizes the need for adaptation strategies to be tailored to the local circumstances. Understanding these nuanced differences in local vulnerability is a crucial precursor for policymakers to develop climate adaptation plans that will be flexible enough to meet diverse local needs. The methods employed in this study can be beneficially used toward that goal because they allow for expeditious analysis of the

ways in which both quantifiable and non-quantifiable dimensions of vulnerability relate and are actualized in the local setting.

Finally, my finding that these African American communities feel isolated from sources of adaptive capacity located mostly outside their communities points to the need for policymakers to proactively reach out to these communities and provide them with the information, training, and access to resources from which they could greatly benefit. In essence, this result suggests that enhancing democratic processes and actively engaging underserved communities in grassroots efforts for adaptation planning is key for reducing vulnerability among those who are most vulnerable. Such insights cannot be gained from vulnerability indices alone; a comprehensive understanding of vulnerability requires methodological diversity and an integrative approach that includes perspectives from physical, natural, and social sciences.

Chapter 5: Procedural Justice

Introduction

  This chapter concludes the examination of adaptive capacity and begins an

examination of environmental justice by looking more closely at the issue of political

isolation raised in Chapter 4. Public policy decisions at all levels will facilitate or impede

local climate change adaptation efforts by determining how resources are distributed

(Paavola and Adger 2006), yet many vulnerable individuals and communities are unable

to participate in public decision-making processes. This is especially problematic because

a variety of opinions exist as to the most fair way to allocate resources and costs. Deciding

how to fairly allocate resources in a given situation cannot be determined by objective

analysis, but rather is a moral issue that must be negotiated among individuals that will have

competing values and interests (Paavola 2008). This negotiation is in itself a justice issue, in

that a fair decision about how costs and benefits will be distributed can only be made if the

process of decision-making is inclusive of all voices. Thus, procedural justice – the fair

inclusion of all stakeholders in decision-making and planning processes – is crucially

important for reconciling competing values and interests in order to determine the most fair

way to distribute costs and benefits in a given situation.

  Jürgen Habermas is one of the leading theorists on procedural justice. He

suggested that inequalities can be overcome by enhancing democratic communication

(1984-87), which promotes justice both by encouraging those who are traditionally

excluded to make their needs known, and by allowing marginalized groups to acquire

new skills and capacities for working more effectively with decision-making processes in the future. Toward those goals, Habermas proposed an ideal speech situation which requires that all potential participants 1) be included; 2) have equal opportunity to initiate, perpetuate, and regulate discourse; 3) be honest and sincere to themselves and others; and 4) be free from coercion (2008, 1990, see also Kemp 1988). While these requirements cannot be empirically measured and may only rarely be fully realized, they are useful in providing a guide for evaluating the validity of planning and decision-making processes; if any one of these requirements is obviously violated, the process cannot be considered just.

In this chapter, I present an ethnographic study of procedural justice as experienced by African American communities on Maryland's Eastern Shore. I begin with a brief description of the methods I used to assess procedural justice. I then discuss three prevalent forms of procedural *in*justice experienced by these communities: 1) non-participatory decision-making processes; 2) exclusion of voiced input in decision-making; and 3) processes with language or procedures which do not allow for meaningful participation. Following this discussion, I explore the underlying causes of voluntary exclusion from otherwise participatory processes. I argue that historical and cultural legacies of racism and discrimination serve to discourage African American participation even when it is solicited by policymakers. I conclude with some observations on the relevance of procedural justice for decreasing vulnerability to climate change and suggest that grassroots-based struggle may be necessary to make marginalized voices heard when consensus-based processes do not achieve procedural justice.

Methods

I used ethnographic methods to assess the level of procedural justice afforded these communities. The main source of my data came from 30 semi-structured interviews, of which 15 were with African American community members. I also interviewed 9 individuals involved with local, county, or State-level policymaking, and 5 individuals studying or working on environmental issues on the Eastern Shore. This latter group was included because of the large extent to which the State of Maryland is incorporating strategies to protect natural resources and habitats within their overall adaptation plan for Maryland's Eastern Shore (MCCC 2013). The interview questions were developed following a workshop on climate change vulnerability and adaptation in each of the three study communities. The interview itself covered issues of regional change, resilience, and access to resources, in addition to questions focused specifically on procedural justice (see Table 5.1). While the first procedural justice question was focused specifically on African American involvement in planning for adaptation to sea-level rise and flooding, responses in early interviews revealed that there was very little adaptation planning happening except at the State level. Thus, to be better able to gage procedural justice across all levels of government I followed this specific question with a more general one about the extent to which the African American community was involved in public decision-making on any topic. Though these procedural justice questions yielded the most information for this analysis, responses to the questions on other topics were also important for providing context that helped me to better interpret and understand how procedural justice is experienced (or not) among African Americans on the Eastern Shore.

Following the transcription of all interviews, I used Atlas.ti 6.2 to code the interview responses for statements or comments pertaining to procedural justice. I then printed these coded comments and sorted them into piles such that comments that I found to be most similar would go together in a pile, while different comments would go in separate piles. When I had completed the pile sorting I applied labels to the piles according to the common characteristics within each pile, and then organized these labeled piles spatially into a causal diagram (Figure 5.1).

Table 5.1 Semi-Structured Interview Questions Focused on Procedural Justice

Stakeholder Group	Procedural Justice Question 1	Procedural Justice Question 2
African American Community Members	Have you or members of your church community been part of discussions with policymakers to make decisions about how to prepare for or respond to sea-level rise and flooding?	In your opinion, why isn't there more participation in these discussions with policymakers?
Policymakers	To what extent have African American stakeholders been part of discussions with policymakers to make decisions about how to prepare for or respond to sea-level rise and flooding?	In your opinion, why isn't there more participation from African Americans in these discussions with policymakers?
Environmentalists	To what extent has the African American community been part of discussions with land managers or conservationists to make decisions about how to manage area wetlands and other natural environments?	In your opinion, why isn't the African American community more involved in managing the local environment?

Forms of Procedural Injustice

African American informants in all three study communities were able to identify ways in which members of their communities had been involved in public meetings or policymaking. In St. Michaels, one member of the church serves as a town commissioner, the pastor is actively involved in addressing issues of injustice through various community programs, and a few other members of the congregation attend municipal public meetings on occasion. In Dorchester County, one pastor is highly involved in committees related to providing social services in Cambridge, a couple church members regularly attend the Dorchester County Shoreline Erosion Group, and one congregation has reached out to the County government requesting assistance in protecting their church and cemetery from flooding. In Crisfield, a couple of leaders in the African American community have been actively involved in the Somerset County Long Term Recovery Committee – a group working to help the County recover from the damage caused by Hurricane Sandy – and an African American community leader ran for the office of Crisfield mayor in 2010.

Despite these instances of engagement, nearly all African American informants interviewed acknowledged that overall there is relatively little participation from the African American community in public meetings and decision-making processes. Responses from interviewees working in various levels of government confirmed this report; of the nine respondents in the "policymaker" group, five reported that there was little participation from African Americans and the remainder, while not commenting specifically on the number that participate, spoke of obstacles African Americans faced in participating. Similarly, of the five environmentalists interviewed, two reported that

African Americans were not very involved in environmental planning or activities of any kind, while the remainder were unaware of the degree to which African Americans were engaged.

Taken together, these interview responses suggest that despite notable efforts from a few African American individuals to engage in public policy and decision-making, procedural *in*justice is the norm experience for these communities. This procedural injustice takes at least three main forms: 1) non-participatory decision-making processes; 2) exclusion of voiced input in decision-making; and 3) processes with language or procedures which do not allow for meaningful participation. In addition, I argue that the prevalence of African American community members voluntarily excluding themselves from otherwise participatory processes is also a form of procedural injustice.

Non-Participatory Decision-Making Processes

The first form of procedural injustice is non-participatory decision-making processes, which occur when no opportunity for public participation in decision-making is provided. Interviewees described how decision-making processes are not designed for members of vulnerable African American communities to participate. Referring to the local level, an Anglo American State official commented that "There's not much opportunity for participation because these local governments aren't undertaking a process where they would even be offering an opportunity." That same State official also acknowledged that the State does little better in creating a decision-making process in which vulnerable communities can participate. She said, "State Government looks for

representation from … local government representatives. … We don't bring every voice to the table on every policy that's issued."

Theoretically, local government representatives should be able to adequately represent the needs of vulnerable communities to the State; however, this representation is not sufficient on the Eastern Shore for a couple of reasons. First, many of the most vulnerable communities – whether white, black, or mixed – are so small that they lack a local government. Rather, they must be represented to the State by their county governments, which are often more focused on the needs of the larger towns than the small rural hamlets.

Second, African Americans are insufficiently represented in local and county governments. While Anglo American elected officials could theoretically represent the needs of African American communities, the continued social segregation on the Eastern Shore – as evidenced by segregated housing patterns and the continued segregation within churches – suggests that Anglo American representatives may not be particularly well-informed of the needs of the African American communities. Furthermore, voting districts are often drawn in such a way that the minority vote is diluted. Indeed, in 1992 the National Association for the Advancement of Colored People (NAACP) filed a lawsuit protesting redistricting that divided minority votes among many districts, giving them little voting power (West 1992). This lawsuit did result in some redistricting on the Eastern Shore to allow African Americans to be elected (Myers and Timberg 1994); nevertheless, these representatives are outnumbered and therefore have difficulty in making changes that would benefit local African American communities. On this subject, one African American community member commented that, "Great representation comes

in numbers in some communities. And if you're outnumbered [on the council] there's very little you can get done [for the African American community]." These non-participatory decision-making processes violate Habermas' first rule: that all potential participants be included.

Exclusion of Voiced Input in Decision-Making

The second form of procedural injustice found was when African American community members had an opportunity to participate in decision-making processes, but felt that their voiced opinions were excluded from consideration when decisions were made. One African American community member said with frustration, "People want to be heard, and not only heard but acknowledged." The same informant went on to explain that, "When [the government representatives] don't address [our voiced opinions] at all, that makes you feel ignored, makes you feel like we are a non-entity to these people."

Another member of the African American community described how he ultimately stopped attending meetings because he became so disgusted with the way that leadership obviously did not want to hear about the concerns of African American homeowners but was only interested in hearing from developers. He stated:

> It's scary that sometimes there are these decisions made that are
> lopsided, they're not fully informed decisions, because they have
> not taken the time or the energy to fully consider every viewpoint
> of the stakeholders. And to respect – even if they disagree – what
> that particular stakeholder is bringing to the discussion.

This apparent lack of respect for the views of the African American community members may have various and inter-related causes. For example, while one interviewee

expressed his belief that voices are not truly heard unless there is money behind them, others insinuated that race played a role in the marginalization of their voices. While both money and race certainly do play a role in politics, political experience and connections also affect the degree to which voiced opinions are allowed to influence policy. For example, a state-level policymaker acknowledged that local communities would need to be politically "savvy" to access limited resources. Political savviness requires an understanding of the processes and terminology that are used in policy- and decision-making. This form of procedural injustice violates Habermas' second rule – that all potential participants have equal opportunity to initiate, perpetuate, and regulate discourse – and is related to the third form of procedural injustice discussed in the next section.

Processes with Language or Procedures that Prevent Meaningful Participation

In the third example of participatory injustice, African Americans are invited to participate, but the procedures used do not allow for full, meaningful participation. One obstacle to meaningful participation at meetings is lack of understanding of technical language and processes. An African American town representative admitted that, "When I go to the meeting sometimes, I don't know all the answers when I'm sitting there. There are people who… appear like they're smarter." Unfamiliarity with technical jargon and bureaucratic processes emerged as an obstacle to meaningful participation in decision-making in all three study communities.

Less common but more incriminating are instances where intimidation or other illegal methods are employed to prevent meaningful participation of African American community members. Discussions of this type of procedural injustice only emerged

among interviewees in the Crisfield study community, where race relations are most tense. One Crisfield community member described how African Americans who went to vote were hassled for voter ID and proof of residence. These things were not a legal requirement for voting, but the hassling was enough to keep some people away. An African American community member reported that, "The intimidation was the greatest thing. And it got back out into the community and people said, 'I ain't going up there and vote. I ain't going through that.'"

In addition to intimidation, interviewees in Crisfield spoke of electoral fraud as a common occurrence, and gave two specific examples of when they believed it had occurred. One African American informant shared this story:

> I was one of them [poll] judges [for the 2010 Mayoral race]. And
> [the African American candidate] was winning, but then – now,
> this is where the racists come in. … You could hear [a white poll
> judge] on the phone saying, "If you don't want this nigger to win,
> you better come on down here and vote."... Then I looked up and I
> seen – I said, "Wait a minute, something's going on here." Because
> I know – I've worked with people and I know they've never voted.
> And then I start seeing all these old heads coming out. I said,
> "Now, these people is too old to be out here, on walkers and canes
> and – to be out here voting."

There is speculation that those elderly voters who showed up had already voted absentee and subsequently cast another ballot on voting day. An informant shared, "I had a poll judge tell me, he said, the day of the election, a woman walks in and says, 'Hey, I didn't

have my absentee. I vote absentee and I didn't mail it, but I'm bringing it to you.'"

Commenting on the same Mayoral race, this informant also said:

> They cheated at the election, like they've always done. It was so bad that the Department of Justice came and, you know, we were trying to get it overturned. We didn't, but some things did come out of it. The ethics committee was totally out of whack. It had no structure. And so, I think that [change] happened. An old chairperson of the poll judges eventually got pushed out who wasn't doing her job right. … So, we knew it, and what they were doing, poll judges were – people were having problems going in the curtains, they were resetting the curtain. So, every time you reset the curtain, a vote can be cast. So, if the poll judge is favorable to whatever candidate, right, they can easily reach in there [and cast a vote] when they reset that curtain and that curtain slides open for the next person.

Electoral fraud was also suspected in the election of Somerset County Sheriff that same year. Commenting on the outcome for an African American candidate, an informant said:

> And he didn't win, of course, but they had early voting and, you know, you hear all kind of things. We were told that in the early voting process, he was winning, but when the votes came out, there was no way he was winning – at least they showed it that way. So… we went up to the election board a couple days after the

election and says, "We're here to get information on what we've

got to do to appeal the election." And they had a fit in there that

day. One woman busted out sweating. I mean, they were showing

some form of guilt, like something was wrong. … And they tried

to say, "Well, you know, if the court doesn't come out to your

favor, you got to pay." We knew all of that. But that's just how it

is, what can you do?

These are all clear examples of procedural injustice. Again, while no interviewees

in St. Michaels or Dorchester County raised concerns over this type of illegal activity, the

impact of such tactics in Somerset County were summarized in a report released by the

American Civil Liberties Union (ACLU) of Maryland and the Somerset County NAACP

(2009). Specifically, the report highlighted the striking lack of African Americans in

government positions, whether elected, appointed, or hired, despite African Americans

composing 42% of the population. The report, like the interviewees, links this lack of

representation to the historic and cultural legacies of racial discrimination.

While use of technical language and intimidation violates Habermas' 2nd rule –

that all have equal opportunity to initiate and regulate discourse – and his 3rd rule – that

all be free from coercion, electoral fraud not only violates Habermasian rules but is also

illegal. In both cases where electoral fraud was suspected the African American

community sought an investigation; however, interviewees reported that the efforts were

unsuccessful in getting the fraudulent elections overturned or nullified. Whether through

legal or illegal means, in all of these cases the language or procedures utilized denied

African Americans meaningful participation in public decision-making.

Voluntary Exclusion from Participation

Now we return to voluntary exclusion from public decision-making. In my interviews there were many examples where the African American community was invited to participate in a public meeting, but chose not to. An African American Crisfield native who works in emergency management commented that, "It doesn't matter whether it's a meeting… or an agency is putting something out and saying fill this form out, we need your input for this. But there's no response [from the African American community]."

Similarly, an African American woman in St. Michaels commented on the relative lack of participation from members of her community, saying, "I haven't seen a lot of the Afro-Americans… come out and listen and partake of the meetings."

The first three forms of procedural injustice have clear violations of one or more of Habermas' ideal speech requirements; however, voluntarily choosing not to participate in public policy decision-making does not obviously violate any Habermasian requirement. Nevertheless, examination of the underlying causes of this elected exclusion from otherwise participatory processes reveals that non-participation is the result of more than just political apathy; past and present racial discrimination affects these African Americans' willingness and ability to engage in government processes.

Figure 5.1 illustrates the relationships between the causes and forms of procedural injustice that emerged from my interviews with African American community members. In the figure, dark gray arrows indicate causes of procedural injustice that have past and present racial discrimination at their root, while the white arrow indicates causes of procedural injustice that are independent of racial discrimination. Notably, past and

present racial discrimination causes, whether directly or indirectly, all four forms of procedural injustice that were identified.

Figure 5.1 Forms and Causes of Procedural Injustice Experienced by African Americans
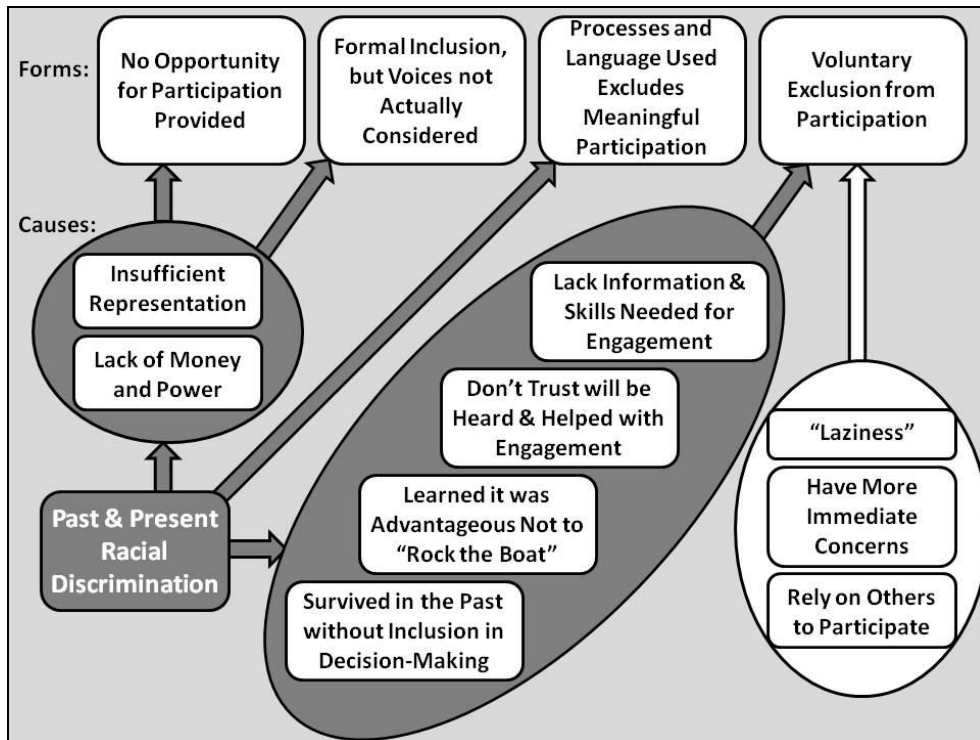
Interviewees offered seven explanations for why African American community members may "choose" not to participate in decision-making processes (Figure 5.1). The first three reasons – laziness, having more pressing issues to attend to at work or at home, and relying on others to attend meetings and keep them informed – are not unique to African Americans, but rather are common reasons why people from many demographic groups may choose not to get directly involved in public meetings. However, the remaining four reasons – experience surviving without participating in the past, hesitance to "rock the boat," belief that the government will not help anyway, and lack of

information and skills required for engagement – can be connected to historic and cultural legacies of inequality and discrimination.

<u>Experience of Survival without Participation in the Past</u>

Many African American interviewees described the past exclusion of African Americans from public decision-making. While some talked about the experience of racial segregation – "during that time it was almost two different societies… you had a black society and the white group" – others pointed out that African American representation in local government was quite recent – "it started, I believe, during the '80s. I believe Mr. Anthony Ward was the first black city councilman."

Other scholars – including John R. Wennersten (1992) and Margaret L. Andersen (1998) – have written at length about the racially oppressive system that was constructed on the Eastern Shore following emancipation. When slavery was abolished, social structures were erected that, rather than transforming the social order into a more just society, perpetuated a system where African Americans experienced continued violence, oppression, and frustration (Andersen 1998). Even in the late 20th century, Cambridge native and the executive vice president for the Maryland NAACP Greg Meekins is quoted in *The New York Times* as saying:

> The Eastern Shore is still one of the more isolated and conservative places you can find and the civil rights revolution still hasn't penetrated every corner. … Discrimination now is more subtle. But it's here, it's here (Ayres 1988).

One community elder in St. Michaels, when asked why she thought more African Americans were not engaged in public decision-making, explained:

There was probably a time when they really weren't welcomed into the decision-making. … And I'm quite sure because, see, not only do you not have any say in your town – there were several things you couldn't even own during the time. Even after slavery you couldn't own – it wasn't up until the forties that the black folks were getting recognition as to what they could own and not own. … In fact, from what I can understand, when slavery was over, there were many men who wanted to buy boats. If they bought a boat, they wouldn't sell them a license. You see what I'm saying? When you are in a situation like that and you keep getting the no, no, no – when it does break loose, you're not interested. … And that's the same thing it's going to be with your policy-making at the town. You have ignored me, so now what are you going to do – whatever you want to do, okay, I can make it. You just go ahead and do what you want to do, I can make it. Unless you really step on my corns, I'm not going to holler ouch. And that's the attitude that they have.

As the St. Michaels community elder described, despite exclusion from participation in decision-making and other injustices these African American communities were able to persist and thrive. They did so largely through self-sufficiency and strong communal ties nurtured by the local churches. One African American woman in Crisfield recalled how her mother served the community: "My Mama raised 22 kids. … Because she never

turned nobody down and she always fed people in the community and made sure that everybody had something to eat."

Though diminished now because of outmigration and an aging population, this informal support system still exists within the African American community today:

> They'll come to me, "Miss Ruby, do you know where I can go and find an apartment or a house or something?" And I come right down here and start looking or I call my sister and say, "Do you know anywhere where I can put somebody up at?" And she'll say, "Wait a minute, let me call and see if it's still vacant." And me and her works together to help people, even when they need food and stuff, you know.

This informal system of mutual aid has also been important in all three African American communities during flooding events. Many African American informants in Crisfield shared stories about seeking refuge in a neighbor's two-story home, calling to check in on an elderly resident, or helping neighbors clean up the damage after Hurricane Sandy. In interviews with these informants, it was clear they felt quite comfortable navigating this informal system. In contrast, when I inquired about assistance they had received from government or insurance agencies, they spoke with frustration and admitted to being unsure about how to access the resources available through those institutions. One African American interviewee explained that, "Some people just rather not even fool with City Hall. If they can get things done theirself, they just go ahead and do it." Many African American community members have memories of surviving and thriving as a community during a time when they were not allowed to participate in public decision-

making, and for many it is easier to continue to rely on family and friends for support rather than to venture into the complicated and unfamiliar territory of policies and regulations.

Hesitance to "Rock the Boat"

An African American woman in St. Michaels explained that a second reason African Americans are choosing not to participate in public decision-making is that, "people just don't like to rock the boat." In the past an African American that spoke up for the needs of the community could potentially face violent repercussions. An African American woman in Crisfield explained to me that, "Years ago… I dare not even open my mouth to you about [procedural justice]. Because they would have questioned you and questioned you until they ran it down to where it came from. Even if they had to abuse you to get it."

Though race relations on the Eastern Shore have definitely improved since the 1960s, there remains a cautious attitude among the African American communities today. When I asked about issues of injustice during the course of interviews, many African American respondents suddenly became conscious of the audio recorder and would speak only in whispers. Some interviewees in Dorchester County hesitantly mentioned the race riots that occurred in Cambridge – the County Seat of Dorchester County – in 1967 (see Levy 2003). Though these riots occurred nearly half a century ago, interviewees spoke of them delicately, as though keen to avoid association. When one informant mentioned his distant relation to one of the riot instigators, his wife quickly hushed him up. An African American woman in Crisfield spoke directly about African Americans' reasons for not being too outspoken:

You know some of the older [white] folks, they still have that –

that racist thing. … It's more an issue here than – I want to say

everywhere else. … They cover it up, but you know it's an issue.

… And sometimes you've got to learn how to shut your mouth up

and get the help that you need. But – that's it. I can't go but so far,

because I'm trying to keep my mouth shut not to say certain things.

… They big wheels, they do anything. If they really want you,

they're going to get you. … See, we have people in Crisfield, we

know all of this, but we, you know, a lot of us keep our mouth

shut-shut, hush-hush because what's the use of talking about it?

They'll come for you.

Notice that, even while she was explaining why African Americans feel they must not be

too outspoken, the informant cut herself off ("But – that's it") and withheld some opinion

or information about keeping quiet to avoid consequences from the Anglo Americans in

power. Thus, despite improved race relations over the years, consequences for "rocking

the boat" are still perceived to be serious enough to deter more outspoken engagement in

public decision-making today.

Belief the Government Will Not Help Anyway

A third reason African Americans are electing not to participate in public

decision-making is that they do not believe that the government will help them even if

they do. As an African American informant in St. Michaels put it, "[African Americans]

feel as though that rules and regulations are made – that [the policymakers] wouldn't

accept their input." An African American informant in Crisfield agreed, saying, "Nobody

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is going to help them at the level that they need it. So they might as well be reactionary."

Unfortunately, African American's lack of trust in the government to help their communities comes from experience. An informant in Dorchester County described her church's efforts to protect their church building from flooding:

> You know, the county people, they – even though it's your property – they have to say what you can and can't do. … And we've contacted the county commissioner down there, and no response. … And we've contacted several people [on the county board] in doing things, but it seems as though nothing happens. We don't know why. … We talked to several of them, they've been down and looked over the property and everything. But nobody seems to want to do anything. I don't know what happens by the time they leave from there and get back to their office. … I don't know whether they're misinformed about something, I don't know. And nobody [from the government has done] follow-up on whatever happened. … It's just like [our inquiry to protect the church from flooding] is just dead.

Though the Dorchester County informant did not bring up the issue of race when describing her community's frustrating encounter with County government, a more outspoken informant in Crisfield made that connection for her community, saying, "A lot of it is the color. … That's dealing with the City Hall, like. They just don't do things right out there, so that puts a damper on some people [from participating in public decision-making]."

Policymakers that I interviewed also spoke of the lack of trust among African American communities that government would be helpful to them. One municipal official said, "[African Americans have] been downtrodden for a long time. … They really don't think anybody cares." Another policymaker put it this way: "Well, just because you've not been enfranchised and, even worse, been discriminated against… you become resigned to the fact that no one is listening and you quit trying." Thus, here again we see that racial discrimination underlies African Americans' voluntary exclusion from public decision-making.

Lack Information and Skills Required for Engagement

A fourth reason African Americans may choose not to participate in public decision-making is because they lack the information and skills required for engagement. While the State has an abundance of resources available to help communities plan for future flooding, to take full advantage of those resources communities need to be able to understand and interpret flood maps, environmental regulations, zoning requirements, and other technical specifications. A State official commented on the lack of this information in rural communities, including those with an African American population:

> We need more people out that are skilled and have the technical assistance and the training and understand the climate change impacts, as well as potential solutions to help these communities one-on-one. [The community members] just can't do it by themselves. They don't know how, they don't have the time, they're not savvy, they don't understand, there's no community leader.

This general lack of information and technical knowledge among the African American communities is compounded by the fact that much of the State's informational resources on flooding and adaptation are posted on the internet – and a lot of the rural areas on the Eastern Shore are not served by the internet.

African American community members may also lack the practice and skills needed to effectively engage in public decision-making. A municipal policymaker commented:

> A portion [of the African American community] don't understand policy, don't understand jumping through hoops to do things. … But the reality is dialogue and give and take, in trying to improve one's lot, you don't jump from the Pillsbury box straight to a loaf of bread. You've got to knead it and work it to get there. And the reality is [that] because of the lack of participation with fruitful results over generations, they're still mired in that "I can't get it done" [attitude]. … I think it's unfair in the fact that I think a lot of the minority population of African Americans we're talking about are uneducated and unskilled in upward mobility.

In their defense, African Americans are less practiced at political negotiating because they have been excluded from participation for so long. An African American elder commented that:

> How [African Americans engage] at the best of their ability depends on how accessible or how much they are allowed to have accessibility to information and to the resources and to people that

know – and being at the table to talk about it and to tell what they

feel about it. … And we know there are difficulties. Some

communities are isolated, some are economically strapped, some

of them are aged, some of them are young, some of them are

marginalized to the point that people are afraid to even make an

attempt to say something that will be meaningful and beneficial.

So here once again racial discrimination has affected African Americans' willingness to

engage in public decision-making. Because they have been excluded in various ways for

generations, African American community members generally lack the information and

skills necessary for effective political engagement and, finding it difficult to effectively

engage, choose not to engage at all.

Additional Effects of Racial Discrimination

Though this discussion of racial discrimination has so far focused on the ways in

which it discourages African Americans from engaging in public decision-making

processes, it is important to also acknowledge that racial discrimination has also affected

the other three forms of procedural injustice (Figure 5.1). The first two forms of

procedural injustice – no opportunity for participation provided and formal inclusion, but

voices not actually considered when making decisions – are related to the fact that

African Americans on the Eastern Shore are insufficiently represented at all levels of

government and generally lack the monetary resources that might otherwise lend them a

greater degree of political power. Interviewees from all three stakeholder groups made

connections between these circumstances and historic and cultural legacies of racism.

Furthermore, as is clear from the discussion of the intimidation and other forms of

electoral fraud discussed above, racial discrimination directly contributes to the use of processes and language to exclude meaningful participation of African Americans.

Conclusion

In this ethnographic study of procedural justice among African American communities on Maryland's Eastern Shore we have seen that these communities face many obstacles to fully engaging in public decision-making processes. While the procedural injustice these communities face takes four main forms and is affected by a wide variety of circumstances, it is clear that past and present racial discrimination contributes significantly to the overall problem. Given that adaptation to climate change is necessary and will be affected by government decisions, it is important that these and other communities most vulnerable to climate change are able to participate in decision-making processes.

In considering procedural justice among African American communities on Maryland's Eastern Shore I have focused on Habermas' deliberative approach to procedural justice. In many cases, and indeed as we have seen among African American communities on the Eastern Shore, Habermas' ideal speech situation is not truly realized, which allows so-called consensus-based processes to result in the perpetuation and amplification of inequality by giving the already powerful new venues for exerting their power. Such processes may produce new inequalities by burdening local residents or community groups with the responsibility of delivering services, or may be used to increase the efficiency with which predetermined projects are implemented, without empowering residents to question the projects or the neoliberal doctrines in which they are rooted.

Increasing procedural justice can help to decrease the vulnerability of under-served communities to climate change impacts. Toward that goal, decision-makers at all levels of government should work to increase African American representation and participation in decision-making. The results from this study of African Americans on the Eastern Shore suggest that such efforts need to include identifying the obstacles to meaningful, equitable, and noncoercive participation in planning and decision-making; making appropriate changes in the structure and process of decision-making; and proactively working to build trusting relationships and end the discriminatory practices and attitudes that discourage African American participation. Until the multiple failures of Habermasian procedural justice processes on the Eastern Shore are rectified, African American community members would be well-served to employ Foucauldian processes – exemplified by the grassroots struggle of the Civil Rights movement (see Chapter 2) – to make their concerns known. Engaging in a grassroots struggle, however, is easier said than done as the historical and cultural legacies of discrimination and racism have largely discouraged the African American community from any action that might "rock the boat."

The issue of justice needs to be central in climate change discourse, whether discussing international or local-level adaptation policy. To date, however, climate justice considerations have largely been overshadowed by capitalist interests and a focus on the rights and responsibilities of nation-states, rather than individuals and local communities. Nevertheless, applying an environmental justice framework to climate change adaptation has the potential to direct attention to holistic approaches and the integrity of local communities and their ability to persist in the face of climate change (Stallworthy 2009).

Given the many and diverse groups of people that are vulnerable to climate change impacts,

continued research into the procedural injustices that these communities face is an important

policy-relevant and applied contribution of climate change anthropologists.

Chapter 6: Stakeholder Perspectives on Environmental Justice

Introduction

This chapter continues the examination of the role of a justice approach to climate change adaptation by reporting on the results of a questionnaire designed to compare the relative importance of justice among two stakeholder groups: policymakers and environmentalists and African American church communities. I first describe the methods of questionnaire development, distribution, and analysis. I then discuss how the patterns of overall consensus between and within the stakeholder groups suggest that there is overall agreement that a greater focus on justice is needed, but that stakeholder groups differ in their views of what that justice approach should look like. The patterns of overall consensus also indicate that, within the stakeholder groups, policymakers and environmentalists have greater consensus on issues of justice and adaptation, while the African American church community respondents were more varied in their responses.

I next compare the modeled cultural consensus responses to the questionnaire for the African American church community respondents and the policymakers and environmentalists. This comparison reveals that while the two groups are in agreement on many issues, they disagree in two major areas: 1) the prioritization of environmental adaptation versus the adaptation of marginalized communities, and 2) the acceptability of permanent relocation as an adaptation strategy for vulnerable African American communities.

Methods

Questionnaire Development

Having collected rich data on vulnerability, adaptation, justice, and resilience

from the workshops and semi-structured interviews, my objective for the spring of 2014

was to determine to what extent the views and opinions expressed by interviewees were

shared more broadly among African Americans, policymakers, and environmentalists on

the Eastern Shore. Toward that goal I developed two questionnaires: one to be distributed

by postal mail to 24 African American church communities, and one to be emailed to 345

policymakers and environmentalists.

The two versions of the questionnaire differed only in the first section. For the

African American church communities, the first section was composed of general

background questions about experiences with flooding, concern about their church, and

demographic information. The version for the policymakers and environmentalists also

asked about experiences with flooding but, rather than questions about church, inquires

more thoroughly about employment and the type of work they are conducting related to

climate change adaptation on the Eastern Shore.

The second part of the survey is identical in both versions and includes 31

statements to which participants stated their level or agreement or disagreement. These

statements were developed after analysis of the semi-structured interviews. My specific

objective for the second part of the questionnaire was to try to understand how important

justice is to the different stakeholder groups and what a justice approach would look like

to them. To develop the 31 agreement/disagreement statements for the questionnaire, I

first reviewed and in some cases summarized all the semi-structured interview quotes

coded as "environmental justice." There were 60 quotes from African Americans, 32

from policymakers, and 13 from the ecologists and land managers. I then categorized

these quotes by main point within each group. This allowed me to see what issues related

to environmental justice were most discussed in each group. Using this information and

my ethnographic understanding of the Eastern Shore, I then developed statements in three

categories: 7 statements pertained to current situation for African Americans and

vulnerability to flooding on the Eastern Shore; 7 statements pertained to the relative

importance of a justice approach; and 16 statements described what a justice approach to

adaptation should look like on the Eastern Shore. I also included 1 statement about the

importance of wetland ecosystems for human well-being.

When writing the 16 statements describing what a justice approach to adaptation

on the Eastern Shore should look like, I wrote 4 each from the perspective of the African

American community, the policymakers, the environmentalists, and my perspective as

the researcher. More specifically, for each of these four stakeholder categories, I wrote a

statement for 1) that group's ideal distribution of flood recovery money, 2) the most

important adaptation strategy, 3) how procedural justice should be improved, and 4) their

ideal vision for the future of the Eastern Shore. (Both questionnaires are included in their

entirety in Appendix A.)

Questionnaire Distribution

The first version of the survey was distributed by postal mail to the African

American churches (all United Methodist except one, which is Baptist) on the Eastern

Shore that will be inundated with 2 feet of sea-level rise (3 churches), 2-5 feet of SLR (9

churches), or 5-10 feet of sea-level rise (12 churches). (One church that would have fallen

in the 2 feet sea-level rise was excluded because they expressed that they would not like to participate in the research.) I wanted to have approximately equal responses from each of the sea-level rise categories, however distribution of churches meant that there were fewer churches in the lower lying areas. I therefore sampled these churches more heavily, sending a total of 60 surveys to the three churches that will be inundated with less than 2 feet of sea-level rise. In addition, I did not want to send fewer than 10 surveys to any one church, so 90 surveys were distributed among churches that will be inundated with 2-5 feet of sea-level rise and 120 among the churches that will be inundated by 5-10 feet of sea-level rise. Thus, a total of 270 surveys were distributed among the African American churches.

I contacted the pastor of each of these churches prior to mailing the questionnaires to enlist their assistance in questionnaire distribution. Packets of questionnaires were then sent to the pastors of churches (on in a few cases, a lay leader) along with a cover letter from their district United Methodist superintendent introducing the project. Each questionnaire had a postage-paid return envelope so that the participants could complete and return the questionnaire at their leisure. In return for their assistance in distributing the surveys, churches received a stipend of $10 for every completed questionnaire returned.

The second version of the survey was created using Qualtrics and emailed to 345 policymakers and environmentalists. More specifically, this group was comprised of 36 individuals who are working in a climate-related environmental research or advocacy organization, 105 government employees (including county, state, and federal employees) whose work pertains to climate adaptation on the Eastern Shore, and 204

elected representatives (including municipal, county, and state-level representatives). The individuals working in environmental organizations and the government employees were identified by requesting names from key informants, tapping into existing networks on climate adaptation, and compiling names of those working in relevant departments in Queen Anne's, Talbot, Dorchester, Somerset, Worchester, and Wicomico Counties. In addition, all elected officials for each of these counties, the municipalities within these counties, and the representatives they send to the Maryland General Assembly were included. The initial email with a link to the survey was followed by several reminder emails over the next several weeks.

Questionnaire Response

Questionnaires were returned by a total of 177 individuals (29% overall response rate). The response rate from the African American churches was 37% (101 questionnaires returned), with 15 out of 24 surveyed church communities returning one or more questionnaires (see Figure 6.1). The response rate from policymakers and environmentalists was 22% (76 questionnaires returned). Of the policymakers and environmentalists who completed the questionnaire, 27% conduct environmental research or work for a non-governmental environmental advocacy organization, 49% are government employees whose work pertains to climate adaptation, and 21% are elected representatives.

Figure 6.1 Surveyed African American Churches at Risk to Sea-Level Rise on Maryland's Eastern Shore

Sea-Level Rise Required for Inundation of Surveyed Churches
- ● 0 - 2.0 feet
- ● 2.1 - 5.0 feet
- ● 5.1 - 10 feet
- ☆ Churches that returned 1 or more surveys
- ▭ 2010 Counties

Map Source: Christine D. Miller Hesed, University of Maryland
Data Source: Maryland DNR; US Census Bureau
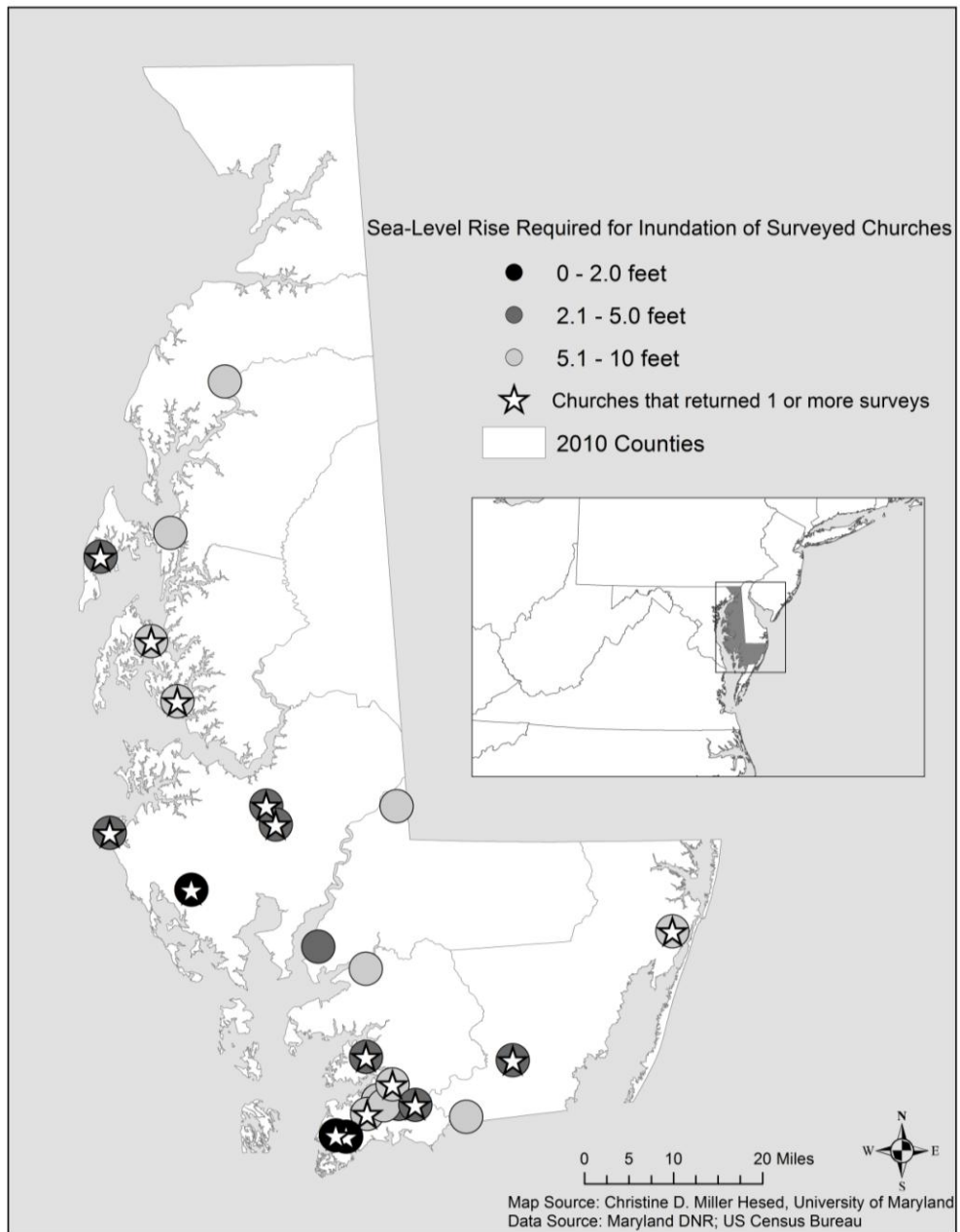
Questionnaire Analysis

For the purposes of this dissertation, I compared the responses of African

American church members (AA) with the combined responses from policymakers and

environmentalists (PE). In addition to analyzing the results with Pearson's chi-squared test, I also used cultural consensus. While Pearson's chi-squared test estimates how likely the observed frequencies in responses are due to chance (as opposed to a pattern), cultural consensus is a quantitative method that measures whether there is overall agreement within a given group on what the "correct" answer to a given statement is. The creators of the cultural consensus model – Romney, Weller, and Batchelder – explain that cultural consensus is "a way of describing and measuring the amount and distribution of cultural knowledge among a group of informants in an objective way" (Romney, Weller, and Batchelder 1986, 313).

The cultural consensus model is based on the assumption that informants share a domain of cultural knowledge. Romney, Weller, and Batchelder provide a criterion for determining whether that assumption has been met. That is, when there is a single pattern of responses present in the data, the ratio of the first and second eigenvalue will be greater than 3:1 (Romney, Weller, and Batchelder 1986, Weller 2007).

In anticipation of a multi-stakeholder workshop at the culmination of my fieldwork, cultural consensus was appealing because it would allow me to examine and quantify patterns of agreement and disagreement on the issue of justice within and across groups. I thus analyzed the 31 statements in the second part of the questionnaire using cultural consensus analysis in Anthropac 4.98.[2]

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[2] Technically, the formal cultural consensus model employed by Anthropac does not accommodate ordinal or transposed data. In practice, however, the difference between the formal and informal models has little impact on the resulting analysis and interpretation. Researchers commonly use the formal cultural consensus model for ordinal data and the results of such analyses have been published in peer-reviewed journals (e.g. Johnson and Griffith 2010, Paolisso 2007). The formal model is preferred because the informal model does not readily provide an answer key or individual competency scores. For comparison, I did run the informal model using SPSS and found that the eigenvalues suggested a similar pattern to what I had found with the formal model.

The cultural consensus model mathematically produces three products: individual competency scores, a score which measures overall domain consensus, and an answer key (Furlow 2003, Romney, Weller, and Batchelder 1986, Romney 1999). The cultural consensus model is derived from two analytic approaches: simple aggregations and reliability analysis (Weller 2007). Simple aggregations allow researchers to estimate the culturally modeled (i.e. "correct") answer to a series of similar questions by simply determining the mean or modal response for each question. Once the modeled answers are determined in this way, reliability analysis is used to estimate the accuracy of individual informants. This is done by first determining the reliability of the set of answers from the number of people and the agreement among them using the following equation:

$$Rel = \frac{n\bar{r}}{[1 + (n - 1)\bar{r}]}$$,

where *Rel* is the reliability coefficient, *n* is the number of individuals being combined, and $\bar{r}$ is the average Pearson correlation coefficient between all pairs of individuals. The square root of the reliability coefficient gives the validity of the estimated answers. Finally, informant accuracy is determined by correlating the response of each informant with the aggregated responses from all other informants (excluding that particular individual's responses from the aggregations) (Weller 2007).

In contrast to simple aggregations and reliability analysis, which first estimate the modeled answers and then estimate an individual's correspondence to those answers, the cultural consensus model estimates individual competencies first and then estimates the answers and the confidence in each answer (Weller 2007). This process is based on the assumption that those individuals who agree most often with the aggregate response are

more likely to give a culturally "correct" answer (Romney, Weller, and Batchelder 1986). When a question is asked, an informant will either know the culturally "correct" answer, or guess. The model assumes that the informant will guess without bias, such that he or she will be equally likely to guess each possible answer.

Once all informants have been questioned, individual cultural competence, or the proportion of items each individual "knows," is estimated from the proportion of identical answers between individuals, and then corrected for guessing. This is accomplished by factoring an agreement matrix containing the corrected covariance coefficients and solving for the unknown competencies of each individual (Weller 2007).

Finally, the answers to individual questions can be determined by weighting the responses of each informant according to their competence score, and then summing the responses. Often, the answer will be the average or modal response; however, weighting the answers according to individual competence allows for the possibility that knowledgeable informants are in the minority. In this way, the cultural consensus model may identify minority responses that are truly the best cultural answer. This is not possible with simple aggregation techniques (Weller 2007).

Cultural consensus analysis was run on three groups: all respondents together (AA & PE), African American church community members only (AA), and policymakers and environmentalists only (PE). For each group, cultural consensus was run on the original, 4-point scale responses (strongly agree, agree, disagree, strongly disagree) as well as responses transposed into a 2-point scale (agree, disagree).

Overall Domain Consensus

Cultural consensus analysis produced a number of interesting results. First, when analyzing the original, 4-point scale responses, consensus was only found within the PE group, as indicated by an eigenvalue ratio greater than 3:1 between the first and second factors (Table 6.1). Using the criterion of a ratio of 3:1 or greater, there is clearly no consensus among all respondents (AA & PE) or within the AA group. However, when responses were transformed into a 2-point scale (agree, disagree), there is ample evidence for overall consensus within all analysis groups.

Table 6.1 Eigenvalue ratios for non-transformed and transformed responses of three groups

ANALYSIS GROUP	EIGENVALUE RATIO
Non-transformed (4-point scale)	
AA & PE	2.204
AA	1.996
PE	3.773
Transformed (2-point scale)	
AA & PE	5.072
AA	8.985
PE	5.594

The lack of consensus on a 4-point scale within the AA group may initially appear to be somewhat surprising since, superficially, the AA group appears to be more homogenous than the PE group. That is, while the vast majority of all respondents in the AA group identified as African American (1% identified as American Indian and 3% identified as other), respondents in the PE group were somewhat more diverse in their race and ethnicity, with 85.5% identifying as Caucasian, 7.9% as African American, 1.3% as American Indian, 1.3% as Hispanic or Latino, and 3.9% as other. Furthermore,

responses to the questionnaire indicated that while 100% of the AA respondents live on the Eastern Shore, only 57% of PE respondents do. Of those that live on the Eastern Shore, the mean number of years PE respondents have resided there is 33, while AA respondents have resided on the Eastern Shore for an average of 56 years. Ethnographic data support the findings of the questionnaire: nearly all of the African American community members interviewed reported having lived the majority of their lives on the Eastern Shore, often having spent only a couple years working elsewhere before returning. In contrast, many of the environmentalists and policymakers I talked with grew up in a different part of Maryland or in a different state, some had moved to the Eastern Shore quite recently, and some did not live on the Eastern Shore at all, though their work pertained to it.

Despite the greater diversity in the race and ethnicity and in the childhood and current residences of the PE group, there is evidence of consensus within this group, while there is no evidence of consensus within the AA group. Moving beyond a superficial consideration of diversity to consider instead the ways in which cultural knowledge on justice and adaptation to climate change are formed in each of these groups, it becomes clear that this result nicely complements the findings presented in Chapter 4. That is, while policymakers and environmentalists are primarily looking to quantitative models of vulnerability to form their ideas and make decisions about adaptation and justice on the Eastern Shore, African American community members are drawing on their accumulated experiential knowledge. As discussed in Chapter 4, the cultural knowledge on climate change differs from community to community because it is based in the unique and nuanced experiences within local social-ecological systems.

Therefore, the results of cultural consensus on the 4-point scale make sense when the superficial diversity of respondents is set aside and the way in which knowledge is formed in each group is considered instead. By and large, the PE group is depending on generalized models to understand the region. Their preference for and dependence on such models became quite apparent in the multi-stakeholder workshop (discussed in Chapter 7); representatives of the PE group repeatedly suggested referring to various top-down, quantitative regional models in order to better understand the problem and possible solutions. Because the PE group is relying on such generalized models, they have shared cultural knowledge on justice and adaptation to climate change on the Eastern Shore and therefore have a cultural consensus on "correct" answers to the 31 statements. In contrast, as discussed in Chapter 4, the cultural knowledge of the African American community members is shaped by their unique experiences of each community within its local social-ecological system. This means that the communities are not all drawing upon a single underlying system of cultural knowledge, which results in responses to the 31 statements that are more varied than the responses from the PE group.

Cultural Consensus within African American Sub-Groups

To explore whether cultural consensus existed among smaller groupings of African American church communities, I divided the 15 church communities that participated in the questionnaire into sub-groups. The results of the MDS analysis presented in Chapter 4 suggested that the communities' positions within their local social-ecological systems shaped their experiences and cultural knowledge on climate change. I wondered, therefore, if smaller groupings of church communities that were close geographically would reveal sub-groupings of African American church

communities with cultural consensus on the 31 statements on justice and adaptation to climate change on the Eastern Shore.

Table 6.2 shows the resulting eigenvalue ratios for various church groupings, and Figure 6.2 shows how those church groupings are related spatially. I found evidence of cultural consensus within only two sub-groups. The first sub-group includes the St. Michaels study community and one other church community, which is also located on a neck of land in nearby Queen Anne's County. The second sub-group includes the Dorchester County study community (which is composed of 4 churches) and one other nearby church community in Oxford. Thus, the seven church communities in the northern half of the study area compose two groups that have differing cultural consensus on justice and adaptation when analyzing the responses on a 4-point scale.

For the remaining 8 church communities, located in the southern half of the study area, there is no evidence for cultural consensus no matter how they are divided into sub-groups. While I did not exhaust all possible combinations in my search for consensus among these 8 southern church communities, I analyzed a sufficient number and variety of groupings to feel comfortable with the conclusion that cultural consensus on justice and adaptation on a 4-point scale simply does not exist among these churches. Notably, the sub-group containing only the two churches in Crisfield (14 and 15) had a lack of consensus surpassed only by the sub-group composed of 13 (which is very near to Crisfield), 14, and 15; and the sub-group composed of church communities 8, 9, and 10, which was an entirely arbitrary grouping.

I suggest that the lack of cultural consensus on justice and adaptation among the southern church communities generally and the Crisfield community specifically is

related to the reality that injustices – especially racial injustices – are more prevalent and prominent on the Lower Eastern Shore than on the Upper Eastern Shore. Despite the greater prevalence of racial injustice in the region, communities and even individuals within those communities may have vastly different experiences in facing racial discrimination, perhaps resulting in little or no consensus on what should be done to address such injustices. Indeed, when I asked about race relations in semi-structured interviews in Crisfield, I found that while some of the African American interviewees shared vivid examples of racial injustices, others seemed to be relatively unaware of racial tensions. For example, one informant shared this story about a relative:

> He was shot and killed by a policeman back in the '50s, I think. Shot in the back [for] running. Nothing was done. He just took off running when they called his name. He wasn't guilty of anything as far as the history goes. Nothing happened. And, of course, because we grew up here, they knew that nothing was going to happen and they knew they couldn't do anything about it. They knew that they could not bring up any charges or try to have any charges. They know it was not in our best interest. … That's the way we come up here. We knew that nothing was going to be done and we knew that we couldn't do anything about it.

In contrast, when I asked another longtime resident of the Crisfield area if she had experienced negative race relations, she replied:

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I mean, at basketball games the whites sat on one side and the

blacks sat on another side. … But that's about it. I mean, that's all

I can remember.

Her husband, a relative newcomer to the area, questioned this accounting, but the woman insisted that though there had not been much social interaction between the races, there had not been bad feelings about the way things were; rather, social segregation was simply accepted. While the second interviewee may not have been entirely open with me, these two quotes and others suggest that African Americans in Crisfield have had varying experiences with local race relations.

Another reason cultural consensus on justice and adaptation may be lacking among the southern church communities generally and the Crisfield community specifically is their recent experience with Hurricane Sandy. The impact of Hurricane Sandy on Crisfield and the surrounding area means that the challenges of adaptation are fresh in everyone's minds, but not everyone would have been directly impacted by flooding. Even those residing in Crisfield would have had different experiences during and after Hurricane Sandy. For example, some residents experienced flooding in their home, while others did not. In addition, some received adequate assistance after the flood, while others were unable to access the resources they needed. While the African American community members in Crisfield certainly possess an accumulated cultural knowledge on adaptation to flooding, such knowledge may currently be eclipsed by the freshness of their diverse experiences with Hurricane Sandy.

Table 6.2 Eigenvalue ratios for non-transformed responses of various sub-groupings of the AA group

Churches Included in Analysis	Number of Respondents	Eigenvalue Ratio
1, 2	8	3.640
3, 4, 5, 6, 7	37	3.213
8, 10, 12	14	2.910
8, 10	9	2.586
11, 12, 13	17	2.362
8, 9, 10, 11, 12,13,14	38	2.245
9, 11, 13, 14	24	1.881
15	18	1.731
9, 11, 13, 14, 15	42	1.570
8, 9, 10, 11, 12, 13, 14, 15	56	1.514
9, 11, 12, 13, 14, 15	47	1.524
14, 15	22	1.460
13, 14, 15	31	1.390
8, 9, 10	17	1.381

Figure 6.2 Locations of African American Churches used in Cultural Consensus Analyses of Non-Transformed Responses Sub-groupings where cultural consensus was found are circled.
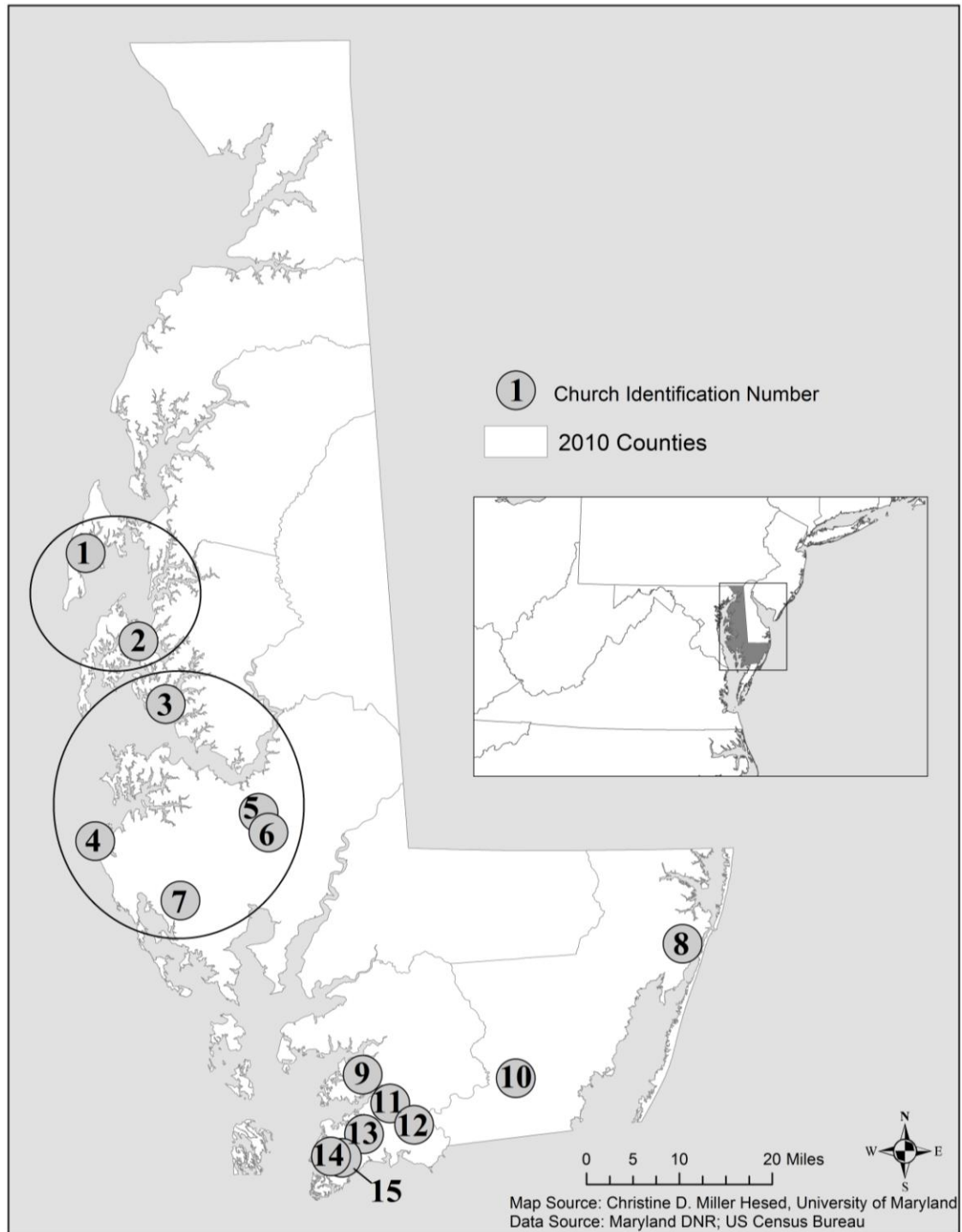
Expanding this discussion into the realms of resilience theory, another reason the lack of consensus on justice and adaptation may exist is because Crisfield, and perhaps the Lower Eastern Shore generally, seems to be shifting from the "release phase" to the "reorganization phase" of the adaptive cycle. The release phase begins when a disturbance that exceeds the system's resilience breaks apart the system's web of interactions. It is followed by reorganization, which is characterized by invention, experimentation, reassortment, and novelty as the system shifts into a new identity (Berkes, Colding, and Folke 2002a, Walker and Salt 2006). It is my impression that Crisfield has not had a high degree of resilience in recent years. Struggling economically and with continuing racial tensions, the community had relatively little adaptive capacity when Hurricane Sandy hit. While it is perhaps too early to know for sure, I suggest that Hurricane Sandy may have exceeded Crisfield's resilience, causing its web of interactions to break apart and forcing it into a new phase of reorganization, experimentation, and novelty as the system shifts to a new identity. The clear lack of evidence of consensus on issues so crucial for African Americans in the region lends support to my impression that the social-ecological system(s) in the Crisfield area are transitioning from the "release" to the "reorganization" phase.

Overall, these results of cultural consensus analysis suggest that the AA and PE stakeholder groups share a generalized system of cultural knowledge about justice and adaptation, but that consensus is lacking within the AA group as well as between stakeholder groups when considering the nuances of these issues. This indicates that while all questionnaire respondents are generally in agreement that injustice exists and that a greater focus on addressing injustice is needed, there is disagreement between the

AA and PE groups and within the AA group on what a greater focus on justice should look like. The specific ways in which AA and PE groups differ will be discussed in the next section.

Comparison of Answer Keys

To explore areas in which the AA and PE groups differ in their views on justice and adaptation, I compared the answer key from the cultural consensus analysis on the transformed data (agree, disagree) for each group. Comparing the transformed data rather than the original data was beneficial because both stakeholder groups had consensus when the data was transformed, and it allowed for clear identification of areas of meaningful difference (i.e. the difference between agreement and disagreement is more important than the difference between agreement and strong agreement). These results are discussed in the next four sections and summarized in Table 6.3.

Statements Pertaining to the Present Situation

There was overall agreement between stakeholder groups on the statements pertaining to the present situation (Table 6.3). The culturally modeled response for the first six of seven statements in this questionnaire section was "agree" for both stakeholder groups. Though this indicates considerable concurrence on the present situation on the Eastern Shore, it is noteworthy that for four of the six statements there was a significant difference between the responses of the stakeholder groups. Significantly more AA respondents agreed that coastal African Americans communities are more vulnerable to the impacts of flooding, that flood regulations and policies are not helping the people who need it most, and that government agencies are more likely to give flood assistance

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to communities with well-connected and influential leaders, while significantly more PE respondents agreed that the State does not have the resources to be able to save all communities from increased flooding and storms that may come with climate change. These differences indicate the prevalence of the culturally modeled view within each stakeholder group and suggest the areas in which each group has relatively more experience, expertise, or interest. Despite these differences in proportion of "correct" answers in each stakeholder group, the overall agreement with the first six statements suggests that common ground for discussing justice and adaptation already exists.

The seventh statement in this questionnaire section – "environmental protection is a higher priority than the well-being of African American communities on the Eastern Shore" – is a clear area of disagreement between stakeholder groups, with "agree" as the culturally modeled response for the AA group, and "disagree" as the culturally modeled response for the PE group. When discussed at the multi-stakeholder workshop (see Chapter 7), it became clear that this statement had hit a nerve. Representatives of the AA group questioned why there are so many people working to protect birds or wetlands from climate change while they watch the water creep across their own yards and into their own homes. Members of the AA group have also been frustrated with the environmental regulations that prevent them from employing simple and inexpensive measures to protect their property from inundation. At the multi-stakeholder workshop (see Chapter 7), a representative from the African American community in Dorchester County spoke up quickly when her breakout group was discussing the main obstacles or challenges to increasing justice related to flooding and climate change adaptation on the Eastern Shore:

Certain laws that say what you can't do challenge us in being able

to do what we need to do to preserve our property. For example,

with wetlands, there are things we can't do to preserve our church

because it is beside wetlands.

A policymaker in this woman's group then inquired whether she was talking about

critical area laws (which protect wildlife habitat and aquatic resources by regulating the

use of land within 1,000 feet of the mean high water line). The woman from Dorchester

County responded:

Exactly. What has happened is the marsh has come in a taken over

part of the property. … It is meaningful that it has been lost

because it was our church property and we weren't allowed to

protect it from the encroaching waters.

Meanwhile, animated conversation with members of the PE group at the multi-

stakeholder workshop revealed that there were at least two different reasons PE

respondents had disagreed with the statement that environmental protection is a higher

priority than the well-being of African American communities on the Eastern Shore.

Some respondents disagreed with the statement simply because their perception was that

environmental protection *was not* a higher priority than the well-being of African

Americans on the Eastern Shore. For others, their disagreement was based in their belief

that the statement probably *should not* be true for various reasons, including political

ones. Members of the PE group also described having difficulty in interpreting the

statement: was the statement meant to represent the general priorities on the Eastern

Shore, or the personal priorities of the individual taking the questionnaire? As the author,

I can clarify that I meant for the statement to represent the general priorities of the Eastern Shore, and I find it interesting that no member of the AA group mentioned difficulty in interpreting that statement. Indeed, if they had interpreted it in the latter way, I would have expected that most would have disagreed with the statement.

While we must be cautious in interpreting the results of a statement that was perhaps unclear to some in one of the stakeholder groups, we cannot ignore the fact that 75% of the AA group agreed that environmental protection is a higher priority than their well-being. Thus, regardless of the intentions of policymakers, it seems clear that a majority of African American respondents feel their well-being is not as highly valued as the natural environment.

Statements Pertaining to the Importance of a Justice Approach

There was overall agreement between stakeholder groups on the statements pertaining to the importance of a justice approach to adaptation. Again, the culturally modeled response was "agree" for six of seven statements for both stakeholder groups. While a significantly greater number of AA respondents agreed with three statements that prioritized justice, it is noteworthy that three statements had no significant difference in response between stakeholder groups. Namely, the groups equally agree that at least 25% of public flood adaptation money should be designated for poor and marginalized communities, that public decision-making processes should be changed in any way necessary to ensure the voices of the poor and marginalized are heard, and that a just flood adaptation plan is preferable to an unjust plan even if it costs significantly more. Again, these concurring perspectives can lay the foundation for collaboration between stakeholder groups.

Again, the one statement where the culturally modeled answer differs has to do with the ranking of the environment in relation to marginalized communities. While 89% of the AA group agreed that the needs of marginalized and poor communities should be prioritized over environmental conservation, 67% of the PE respondents disagreed with that statement. At the multi-stakeholder workshop, some of the PE group members clarified to me that they had disagreed with the statement only because they believed the two should be given equal attention, not because they wanted environmental conservation to be prioritized over the needs of marginalized communities. I sympathize with the PE group's regular struggle to work for environmental protection in a society that is often indifferent to environmental concerns and, being a conservation biologist and anthropologist, I know that you have to constantly defend the importance of your work; however, as people familiar with the policymaking process, they understand that hard choices have to be made. The AA respondents clearly stated that the needs of marginalized communities are their priority, while the majority of the PE group indicated that, for them, environmental conservation should be given at least as much consideration as the needs of marginalized communities.

Table 6.3 Comparison of the Answer Key for the AA and PE Stakeholder Groups

Statements pertaining to the present situation on the Eastern Shore	AA	PE	*p*
1. Income level affects a person's ability to protect their property from flooding.	**A** 93%	**A** 91%	NSD
2. Coastal African American communities are more vulnerable to the impacts of flooding than other communities.	**A** 69%	**A** 53%	<.05
3. Flood regulations and policies are not helping the people who need it the most.	**A** 89%	**A** 60%	<.001
4. The State does not have the resources to be able to save all communities from increased flooding and storms that may come with climate change.	**A** 70%	**A** 91%	.001
5. Government agencies are more likely to give flood assistance to communities with well-connected and influential leaders.	**A** 78%	**A** 57%	.004
6. People are separated by race and income on the Eastern Shore.	**A** 79%	**A** 85%	NSD
7. Environmental protection is a higher priority than the well-being of African American communities on the Eastern Shore.	**A** 75%	**D** 69%	<.001
Statements pertaining to the importance of a justice approach	AA	PE	*p*
8. Fairness is the most important criteria for the distribution of resources for flood preparation and response.	**A** 89%	**A** 73%	.008
9. At least 25% of public flood adaptation money should be designated for marginalized and poor communities.	**A** 77%	**A** 69%	NSD
10. The needs of marginalized and poor communities should be prioritized over environmental conservation.	**A** 89%	**D** 67%	<.001
11. State policies and regulations on climate change adaptation should be subject to approval by and environmental justice commission.	**A** 84%	**A** 49%	<.001
12. The needs of marginalized and poor individuals should be prioritized over tourism development.	**A** 89%	**A** 77%	<.05
13. Public decision-making processes should be changed in any way necessary to ensure the voices of the poor and marginalized are heard.	**A** 92%	**A** 84%	NSD
14. A just flood adaptation plan is preferable to an unjust plan even if it costs significantly more.	**A** 91%	**A** 86%	NSD

Note: The letters in bold indicate the culturally modeled answer for a given statement: **A** = agree, **D** = disagree. The percentages under the bold letters indicate the percent of respondents in that stakeholder group that gave the culturally modeled answer. The *p* column gives the level of significance for the difference between AA and PE responses as calculated using Pearson's chi-squared test. If the *p* value for a statement was greater than .05, there was no significant difference (NSD).

Table 6.3 (continued)

Statements pertaining to what a justice approach should look like	AA	PE	*p*
15. Regardless of their income all individuals who suffered flood damage should receive flood recovery money.	**A** 90%	**A** 56%	<.001
16. Historic African American communities should be provided sufficient adaptation resources so that they do not have to relocate.	**A** 98%	**D** 61%	<.001
17. Policymakers should work with local churches to make sure the voices of the poor and marginalized are considered in decision-making.	**A** 98%	**A** 89%	<.05
18. I would like to see industry and skilled-work that once supported coastal communities return to the Eastern Shore.	**A** 100%	**A** 97%	NSD
19. Government funding should be distributed so that it does the most good for the greatest number of people.	**A** 98%	**A** 93%	NSD
20. Buyouts should be an option for households living in a flood zone.	**A** 76%	**A** 83%	NSD
21. Engagement with local government is the best way for the voices of poor and marginalized community members to be heard.	**A** 88%	**A** 81%	NSD
22. I would like to see tourism continue to grow on the Eastern Shore.	**A** 85%	**A** 88%	NSD
23. Flood recovery money should be distributed in such a way that people living in the flood zone will be motivated to relocate.	**D** 62%	**A** 70%	<.001
24. Environmental regulation should limit what landowners may do to protect their property from flooding.	**D** 68%	**A** 59%	<.001
25. There is already plenty of opportunity for poor and marginalized individuals to participate in flood planning and decision-making.	**D** 75%	**D** 86%	NSD
26. I would like to see tidal marshes maintained on the Eastern Shore.	**A** 86%	**A** 100%	.001
27. Distribution of flood recovery money should be based solely on financial need.	**A** 59%	**D** 70%	<.001
28. Preserving the history and heritage of communities that will be lost to flooding should be a high priority.	**A** 91%	**A** 85%	NSD
29. Justice will be increased if efforts are made to foster community relationships across the race and income-level divide.	**A** 89%	**A** 96%	NSD
30. The Eastern Shore will be more resilient to the impacts of climate change with a diverse economy and citizenry.	**A** 85%	**A** 92%	NSD
Statement pertaining to the importance of wetland ecosystems	**AA**	**PE**	*p*
31. Wetlands are important for the well-being of people on the Eastern Shore.	**A** 68%	**A** 100%	<.001

Note: The letters in bold indicate the culturally modeled answer for a given statement: **A** = agree, **D** = disagree. The percentages under the bold letters indicate the percent of respondents in that stakeholder group that gave the culturally modeled answer. The *p* column gives the level of significance for the difference between AA and PE responses as calculated using Pearson's chi-squared test. If the *p* value for a statement was greater than .05, there was no significant difference (NSD).

Statements Pertaining to what a Justice Approach Should Look Like

There was less agreement between stakeholder groups on what a justice approach to adaptation should look like, with differing culturally modeled answers on a quarter of the 16 statements in this section. Three of these statements related to permanent relocation. 61% of PE respondents disagreed with the statement that historic African American communities should be provided sufficient adaptation resources so that they do not have to relocate, while 98% of AA respondents agreed with the statement. The majority of AA respondents disagree with the statements that flood recovery money should be distributed in such a way that people living in the flood zone will be motivated to relocate, and that environmental regulation should limit what landowners may do to protect their property from flooding, while the majority of PE respondents agreed with both of these statements.

Statement Pertaining to the Importance of Wetland Ecosystems

Finally, both stakeholder groups had a cultural consensus of agreement with the statement that wetlands are important for the well-being of people on the Eastern Shore. It is noteworthy that 100% of PE respondent agreed with this statement, though not entirely surprising. In interviews with environmental academics, land managers, and environmental education programming staff (all of whom were asked to participate in the questionnaire), interviewees discussed the goals for land management toward a particular environmental state, as well as the challenges of reaching those goals. These interviewees primarily categorized the Eastern Shore ecosystems into four types: open water (including submerged aquatic vegetation), emergent marshes, forested wetland, and forested uplands. Of those four, most of the interviewees' focus, both in their work and in

their conversations with me, was on emergent marshes, with a secondary focus on forested wetlands.

When asked what they wanted the natural environment of the Eastern Shore to be like in the future, these environmental informants described their wish for a fully functional ecosystem that would be able to provide habitat for wildlife as well as ecosystem services for people both now and in the future. Much of the focus for adaptation of the environment is on emergent marshes. These marshes have a high ecological value, as an environmental education director explains:

> [T]hat habitat supports a number of species that are pretty unique to the salt marsh. And salt marshes, you know, a number of evening bird species. And then, salt marshes also -- I think 80 percent of commercial fish spend some part of their life cycle in salt marshes.

The ecological value described also has a direct connection to the economic and social value of the ecosystem. In general, environmental informants were aware of the importance of socio-cultural value in determining the objectives in land management. An environmental professor explains:

> [T]he natural system will evolve and adapt. The problem is that it often adapts and evolves in ways that are not really conducive to [the] cultural values that we put on things.

Both of the interviewees quoted above identified ecosystem services, such as storm surge protection and water purification, as well as the cultural importance of emergent wetlands to the Eastern Shore, as an explanation for why land managers need to

help these systems to persist despite sea-level rise. Interviewees identified a number of challenges related to preserving the emergent marshes. Perhaps the greatest challenge these environmentalists are facing is figuring out how ensure that enough land upland of the current wetlands will remain undeveloped so that the wetlands can migrate inland as sea-level rise inundates current wetland areas. Without intervention, these interviewees believe that the wetlands will be lost between sea-level rise on the one hand and development on the other.

African American community members were not asked such a direct question about the environment in semi-structured interviews; rather, I asked them generally what they wanted St. Michaels/Dorchester County/Crisfield to be like in the future. In response to this question, only a few mentioned the environment at all. One interviewee emphasized the role of healthy environmental systems in mitigating storm surges. Another interviewee connected the environment to the local economy:

> I like that environment, too, because that's playing the biggest part
> of all, because that controls the work here and it rules everything, it
> really does.

Many other African American church community members must also like the environment, as 68% of them also agreed with the statement that wetlands are important for the well-being of people on the Eastern Shore; however, most African American church community interviewees chose to talk instead about the need for more employment opportunities or more affordable housing.

Thus, the AA and PE groups, while both perceiving that a greater focus on justice is needed, have different and potentially conflicting visions for the future of the Eastern

Shore. Members of the PE group – especially those focused on environmental conservation – are focused on the prevention of development on strategic wetland-migration lands, while members of the AA group desire development in the establishment of new industries and additional housing. These two visions are not mutually exclusive; with careful zoning and planning both could be achieved. However, these different visions help us to understand why the two stakeholder groups differed so significantly in their agreement to statements about prioritizing environment goals versus the needs of marginalized communities.

Conclusion

By using cultural consensus to analyze the responses to a questionnaire on justice and adaptation, I was able to examine whether overall domain consensus exists and to compare the culturally modeled answers of the African American church communities (AA) and the policymakers and environmentalists (PE). When testing for consensus using the original 4-point scale (strongly agree to strongly disagree) there was no evidence for consensus between all respondents (AA and PE) or within the AA group. Consensus was found among two sub-groupings of church communities in the northern half of the Eastern Shore; however no consensus was found among any tested grouping in the southern half of the Eastern Shore. After transforming the responses to a 2-point scale (agree, disagree), consensus was found between all respondents (AA and PE) and within both stakeholder groups. This analysis of overall consensus suggests that there is overall agreement that a greater focus on justice is needed, but stakeholder groups and members of the AA group disagree on what that focus on justice should look like.

In comparing the culturally modeled responses to statements on justice and adaptation, I found that the two main differences between the AA and PE stakeholder groups relate to whether they prioritize marginalized communities or environmental goals and whether permanent relocation is viewed as an acceptable adaptation option.

Chapter 7: Obstacles and Opportunities for Employing Environmental Justice in the Development of Adaptation Strategies

Introduction

This chapter continues to explore the role of an environmental justice approach in developing adaptation policies that will promote social-ecological resilience. In the last chapter, I discussed how views on justice and adaptation were similar and different within and between stakeholder groups. In this chapter, I discuss the insights gained from a workshop that brought those stakeholder groups together. Specifically, by enacting procedural justice to discuss adaptation, this workshop revealed that current adaptation policies and programs on the Eastern Shore are not adequately addressing the urgent adaptation needs of the African American communities. I present the challenges, opportunities, and differences in perspectives related to adaptation strategies that emerged at this workshop. Together, these findings indicate that two of the factors Folke et al. (2002) identify as important for resilience – combining knowledge types and creating opportunities for self-organization – are lacking in the climate adaptation planning process. I conclude with the argument that the African American church communities on the Eastern Shore, as well as communities vulnerable to climate change throughout the world, would benefit from an inclusive, participatory climate adaptation planning process.

Methods

The primary source of data for this chapter was a multi-stakeholder workshop conducted during the summer of 2014. The semi-structured interview responses informed the content and design of this workshop, which was aimed at including a full range of voices in discussing the environmental justice implications of regional adaptation to climate change and sea-level rise.

The workshop took place on Friday, July 11, 2014 from 9:30am to 3:00pm at the Blackwater National Wildlife Refuge Visitor Center. Twenty-seven people participated in the workshop, including nine representatives of African American church communities, six state policymakers, one federal policymaker, five representatives of environmental organizations, one representative of the regional United Methodist Church, two anthropology graduate students, and three workshop facilitators. Of the 27 workshop participants, 12 were African American and 15 were Anglo American. The objectives for the workshop were to 1) introduce the project and describe key findings on justice and adaptation; 2) create a space for individuals with diverse backgrounds and expertise to discuss justice and adaptation; and 3) develop recommendations for increasing justice as the Eastern Shore prepares for and responds to flooding from sea-level rise.

The workshop began by using keypad polling so that participants could anonymously voice their opinions on a given topic and then see what proportion of the people in the room agreed or disagreed with their response. This was followed by each of the three stakeholder groups (policymaker, environmentalist, and African American community member) defining what climate justice meant to them in their work or community and then a presentation of the main results of the research project. Four small

groups with at least one representative from each stakeholder group then discussed the morning's content in general and answered the following questions: 1) What are the main obstacles or challenges to increasing justice related to flooding and climate change adaptation on the Eastern Shore? 2) What are the main opportunities for increasing justice related to flooding and climate change adaptation on the Eastern Shore? and, 3) What can you do to increase justice for African Americans and all peoples facing flooding on the Eastern Shore? The groups wrote their answers on flip-charts and their conversations were audio-recorded.

Workshop participants identified numerous obstacles to increasing just adaptation to climate change, which fell into seven categories (discussed below). Participants also identified opportunities to overcome those obstacles, which generally fell into four areas: education, engagement, financing, and planning (Table 1). After discussing the identified obstacles and opportunities, I draw attention to four key differences in the perspectives between the policymakers and the African American community members.

Obstacles for Increasing Justice

Lack of Resources in Flood-Prone Communities

Many African American communities at risk to flooding from sea-level rise lack resources to adequately prepare for and recover from a flooding event. For example, the Hazard Mitigation Grant Program (HMGP) – which provides funding for projects that would decrease risk to populations and structures – is based on a cost-benefit analysis such that, all else being equal, a more expensive home would be prioritized for HMGP funding over a more modest home (FEMA 2009, 2015). In addition, while flood preparation and recovery funding is distributed to counties by the State, some of the

representatives of the African American church communities consider the amount distributed to poorer counties like Somerset and Dorchester to be insufficient to meet all the counties' emergency needs. The insufficiency of emergency funding is further exacerbated by failures to distribute funding to affected households in a timely manner.

Lack of Preparedness for Flooding Emergencies

Lack of information about approaching storms and existing emergency plans increases the vulnerability of rural communities to flooding emergencies. Workshop participants discussed disparities in the distribution of information prior to an emergency that resulted in people unaware of a coming storm, or uninformed of plans for evacuation. For example, when Hurricane Andrew swept through Dorchester County in 1992 those who were in the volunteer fire and rescue circles were privy to weather information that many others in the county did not hear until it was too late to make proper preparations. Another obstacle in preparing for flood emergencies is that many parts of the Eastern Shore lack high speed internet. In an age where many rely on internet to disseminate and gain information this is a glaring lack of justice. Any future plans need to take this into consideration.

Lack of Collaboration

Lack of collaboration across different levels of government, NGOs, and across cultures within communities increases the vulnerability of African American communities. Collaboration would allow for more effective use of limited resources. For example, environmental organizations could partner with local governments and churches to consider how flood adaptation strategies might benefit both the natural environment

and human well-being. In addition, communities need to foster stronger connections across cultural and class differences to survive and thrive after an emergency flood event. If strong neighborly relationships are fostered now, the community will be better able to help one another to recover from a disaster in the future (Aldrich 2012).

Lack of Transparency

Lack of transparency in the way resources are distributed hampers the ability of African American communities to successfully apply for disaster funding. African American community members reported the frustration they felt when funding was denied without explanation. In addition, lack of clarity in the process by which variances are granted prevents these communities from increasing their resilience to flooding from sea-level rise with a regulatory exception. In particular, critical "natural area" laws – which protect wildlife habitat and aquatic resources by regulating the use of land within 1,000 feet of the mean high water line – cause hardship for the African American communities living near the Chesapeake Bay. In some cases historic church land is being lost to encroaching wetlands because the community cannot build structures that would impinge on critical habitat to protect their church. While some communities may be eligible for variances, the technical jargon of regulations and uncertainty about who to ask for assistance prevents them from pursuing these opportunities.

Lack of Representation in Government and Non-Governmental Organizations

One of the largest obstacles to increasing justice is the relative lack of representation of African American communities in both government and non-governmental organizations. Lack of diversity in these organizations causes issues of

injustice to be largely invisible, requiring African Americans to advocate for themselves. While some opportunities exist to engage with government (i.e. public meetings, calls for comment, etc.), African American community members face many barriers to the decision-making processes, including lack of knowledge about bureaucratic processes, difficulty understanding technocratic language, and lack of access to elected officials at all levels of government. Rural communities without municipal governments have an especially difficult time navigating political systems. In these communities the local church serves as the community's organizational center; however, government and non-governmental agencies often fail to recognize the importance of the church in representing local needs and perspectives.

Lack of Understanding and Information

When local community members do not understand the seriousness of sea-level rise, increased inundation, and storm surges, they are less likely to be proactive in preparing for an emergency. Jargon and bureaucratic language in government and non-governmental agencies often obfuscates the information for local communities. The subsequent lack of trust in government at all levels further decreases the willingness of local communities to utilize important information.

Lack of Appreciation and Utilization of Community Knowledge and Experience

Because of historic settlement patterns during a time of intense racial discrimination, many African American communities are located in areas that have been subject to flooding for generations. Before federal and state disaster assistance became available, these communities had to rely on the knowledge and skills within the

community to prepare for and recover after a flooding event. The result of this experience is that these communities have accumulated experiential knowledge about how to adapt to flooding. For example, residents of southern Dorchester County, which is dominated by tidal wetlands, know which roads will flood and which will remain dry in various weather and tide conditions; however, government and non-governmental agencies generally fail to utilize community knowledge, which results in less effective distribution of assistance during times of greatest need. This was the case when emergency response agencies sent military trucks to assist in rescue operations after Hurricane Sandy flooded Crisfield and other parts of Somerset County in 2012. Unaware that the rural roads are narrow and bordered on each side by deep drainage trenches, many trucks became trapped or flipped onto their sides when tires encountered the flooded trenches. Had local knowledge been included in emergency response planning these failed rescue efforts could have been avoided.

Opportunities for Increasing Justice

To increase justice and address the obstacles described above, workshop participants came up with 37 specific suggestions. These suggestions generally fell into four categories: education, engagement, financing, and planning (Table 1). While some opportunities can be pursued by all stakeholders, others are most appropriate either for the African American church communities or policymakers to pursue in coordinated but individual fashion. I highlight and discuss in more detail how these two groups can work to increase engagement and education because these two general areas had the most responses and are the most feasible for the community to address in the short term.

Table 7.1. Opportunities for Increasing Justice by Category and Stakeholder Group

Category	Group	Identified Opportunities for Increasing Justice
Education	P	• Teach communities how to utilize resources for flood preparation. • Distribute sea-level rise information & emergency warnings through many forms of media & at already existing community events. • Educate communities about the challenges & opportunities related to permanent relocation. • Provide Community Emergency Response Team (CERT) training. • Share a list of agency contacts who can respond to community concerns. • Clearly communicate the criteria by which resources are distributed. • Train trusted community members as climate champions who can educate the public about sea-level rise. • Use examples & storytelling to make information more accessible & relatable.
	A	• Document & share local, cultural, & experiential knowledge about flooding & community vulnerability with policymakers. • Raise awareness of sea-level rise & environmental injustice through sermons, Sunday school, & at existing food & fellowship opportunities. • Share a list of community leaders & a description of informal community communication channels with emergency responders. • Take pictures to document the effects of a flooding event to share with government officials & other flood-prone communities. • Showcase storm-water management practices at the local churches.
	P & A	• Learn more about distributive & procedural justice as it applies to climate change adaptation. • Educate elected officials about the justice implications of sea-level rise. • Educate youth about the justice implications of sea-level rise.
Engagement	P	• Solicit feedback from communities early in policy-planning processes. • Make regular fieldtrips & attend community events. • Promote inclusion of a more diverse assemblage of people in government & non-governmental organizations.
	A	• Contact government officials & seek information & assistance. • Attend public meetings on climate change & voice your opinions. • Gather local church leaders & elected officials for regular meetings. • Take important concerns to the media. • Vote for candidates who will facilitate flood adaptation. • Organize within & among church communities to build political strength.
	P & A	• Organize workshops bringing together diverse groups around a common goal. • Promote attendance & social bonding by serving refreshments at meetings.
Financing	P	• Compensate those who lose land because of justice issues. • Seek federal funding for flood preparation & response.
	A	• Raise money to develop a community flood disaster fund. • Network with other churches to provide aid in emergencies.
Planning	P	• Prioritize environmental justice considerations in flood planning. • Work with Universities & schools to develop inexpensive technologies to mitigate impact of flooding.
	A	• Collaborate with other flood-prone congregations to develop solutions.
	P & A	• Make repairs to infrastructure prior to a flood event. • Have flood drills. • Create disaster kits.

Groups are: policymakers (P) and African American church communities (A).

<u>Engagement</u>

Workshop participants recognized that both policymakers and African American church communities need to work toward increasing engagement with each other. Greater engagement would benefit both groups by building networks for the transfer of knowledge and increasing mutual trust. A number of specific opportunities for increasing engagement between the two groups were identified. First, participants suggested that regular workshops should be organized by pastors and policymakers to bring diverse groups of people together around a common cause such as flood response. African American community members suggested that serving food would encourage broader participation from the local community and may also create an atmosphere more conducive to informal socializing, which is important for building trust (Oh, Chung, and Labianca 2004, Marschall and Stolle 2004). African American community members also suggested that these workshops include both religious leaders and local elected officials. Because developing trust and communication channels would be as much of a goal of these workshops as finding specific adaptation solutions, having leaders from both communities model dialogue would be important for increasing participants' comfort level.

Second, workshop participants from both groups agreed that people need to know who to contact on a particular issue. Policymakers would benefit from a list of local leaders – including pastors and others who know the community members and their needs well – and African American community members need a list of people willing to listen and help on different issues within the local and state government agencies. While policymakers present at the workshop agreed to serve as advocates for African American

communities within their respective agencies, they indicated that it may not be obvious who to contact within each agency. They proposed to formally designate policymakers within each agency to be responsive to community concerns. African American community members proposed to charge specific individuals within their congregations with reaching out to policymakers.

Third, African American community members suggested that policymakers could informally attend more community-level events – such as potlucks and festivals – and policymakers readily agreed that they would benefit from more fieldtrips. Fourth, policymakers acknowledged the systemic and cultural barriers to political engagement many African Americans on the Eastern Shore have faced. These policymakers could work to educate other elected officials and make government more accessible. African American community members could increase their attendance at public meetings, contact their elected officials to voice their concerns, and vote for leaders that have a plan to address the threat of flooding.

Education

Closely related to the opportunity to increase engagement is education. Policymakers have a wealth of technical and scientific knowledge about climate change, sea-level rise, and flooding for African American church communities. Each of these topics can serve as the focus of a workshop that combines information delivery with social interaction. In addition, policymakers need to better communicate the opportunities and constraints for their agencies to assist with adaptation. Specifically, African American community members requested that explanations of regulations and variances be made available in easy-to-understand, non-technical language. They also requested

that decisions regarding the allocation of resources be made transparent so that they could put together better applications. African American community members also pointed out that the media through which information is shared matters, as many elderly members of the communities do not have internet access, while younger members may rely entirely on social media for emergency updates. Thus, information about how to prepare for a flooding event or storm should be communicated through as many venues as possible, including informal discussions at community events, formal workshops and public meetings, newspaper articles, television and radio bulletins, text alerts, robo-calls, and messages on social media sites.

Importantly, workshop participants acknowledged that education needs to flow both ways. African American church communities have an abundance of experiential knowledge about how climate change and sea-level rise are affecting their environment and community. They also possess generations of accumulated knowledge about strategies for preparing for, coping with, and recovering from a flooding event. For instance, in Crisfield these time-tested strategies include noting changes in bird behavior to predict a coming storm, sending teenagers to alert senior citizens of approaching bad weather, and opening the church as a safe haven for those who live in more flood-prone areas. In addition, African American church communities are tight-knit groups that know what individuals in the area will need special assistance during and after a flooding event. Workshop participants suggested that such local-level knowledge should be written down and incorporated into regional adaptation strategies.

A specific proposal was made for community members and those with technical knowledge to design flood disaster kits that could be distributed to each household.

Working together, a low-cost kit could be designed that would be better than anything either group on their own could come up with. Additionally, the process of working together to design the kit should help build relationships of trust and mutual valuation of the knowledge and expertise each group has to contribute.

A second proposal originated from policymakers and was aimed at addressing the long-term consequences of sea-level rise. This proposal stems from the State's recent experience in offering buyouts to residents of low-lying Smith Island, which was flooded by Hurricane Sandy. Specifically, the State was surprised when Smith Islanders protested the buyouts, claiming that the State was turning its back on them. State policymakers subsequently withdrew the offer of buyouts and have now begun a long-term series of listening and learning sessions with the island community on the subject of community development and sustainability. Policymakers suggested that similar sessions on the topic of relocation could be conducted with African American communities vulnerable to flooding from sea-level rise. While the topic of relocation is not popular among the African American communities, representatives at the workshop hesitantly agreed that such meetings may be helpful, if only to help policymakers understand the unacceptability of relocation and commitment to maintaining communities in their current locale.

Finally, both groups also acknowledged the need to better educate others within their respective groups. Policymakers admitted that while they strive to develop adaptation strategies that will benefit everyone, issues of injustice are not always apparent and they need to do more to raise this concern. They also suggested that encouraging co-workers to attend public events in African American communities would

increase trust and mutual understanding. For their part, African American community members acknowledged the need to increase awareness of climate change and sea-level rise among their communities. They suggested that having a Sunday school series on the issue or even a sermon from the pastor would be a good way to help raise awareness about the risks of flooding and the resources that are available through local and state agencies.

Key Differences in Perspectives between Stakeholder Groups

A central finding was that African American church communities need to reach out to policymakers and policymakers need to commit to an increased engagement with the church communities. Both have important information to share with and learn from each other, and working together can build a more resilient Eastern Shore. Despite overall agreement with these goals, stakeholder groups differed in their perspectives about timescale, vulnerability, environmental conservation, and knowledge.

Timescale

Regional policymakers were focused on long-term adaptation strategies, while African American community members were focused on more immediate concerns. Policymakers are trained to think about overall strategies and how policies will interact with climate projections to affect the region in the long-term. In contrast, African American community members are dealing with a very real and near threat of flooding. Crisfield recently experienced severe flooding from Hurricane Sandy, and the other study communities can see that water is closer to their homes than in the past. For these

individuals, planning for successful adaptation to flooding in the coming months and years is a greater priority than planning for the decades to come.

Vulnerability

A second notable difference in stakeholder group perspectives was that policymakers were much more focused on exposure to climate change impacts, while African American community members had a greater awareness of the factors that contributed to their vulnerability. Policymakers have access to detailed flood maps and social vulnerability indices. While important tools for assessing vulnerability to flooding in the region, the tools cannot fully illustrate the way in which vulnerability is realized and experienced at the most local level. African American community members talked about lack of employment and affordable housing as important factors in their vulnerability to flooding. They also talked about their knowledge of their local community members and resources, explaining that relocation would strip them of a community they depend on and a familiar environment that has supported them for generations.

Environmental Conservation

A third key difference that appeared was that the policymakers present were primarily from agencies that focus on adaptation of the environment (e.g. Maryland Department of Natural Resources (MD DNR)) while the African Americans focused on community. This difference is partly by design – the main efforts by Maryland to address sea-level rise are being orchestrated through MD DNR. Working for an agency that focuses on environmental issues, it made sense that many of the policymakers were used

to thinking about adaptation that focuses on the environment first. African American community members expressed that they also deeply care about their environment, but did not understand why seemingly more effort was being put forth to facilitate adaptation of migratory birds than their communities.

<u>Knowledge</u>

A final key difference that came up throughout the workshop was the type of knowledge most valued by each stakeholder group. Policymakers have a scientific worldview and value knowledge communicated by experts. In contrast, African American community members value the experiential knowledge that comes from people they know and trust within their community.

Perpetuating an Inclusive Discourse on Adaptation for Resilience

The results of the workshop presented here are the first installment on a deliberative discourse (Dryzek and Niemeyer 2010) that will help to define adaptation challenges and appropriate solutions on the Eastern Shore. In the politics of participation early engagement with the deliberative process is key for the inclusion of diverse voices (Ayers 2011). While African American communities on the Eastern Shore have been marginalized in the past, engaging them now in local and regional adaptation planning is an opportunity to make the system more just and more resilient to the impacts of climate change and sea-level rise.

Two of the factors Folke et al. (2002) identify as important for social-ecological system resilience are combining knowledge types and creating opportunities for self-

organization. As the outcomes from the multi-stakeholder workshop reveal, both factors are currently lacking in adaptation efforts on the Eastern Shore.

<u>Combining Knowledge Types</u>

Knowledge of social-ecological systems can be generally categorized into experimental knowledge – scientifically collected synchronic data that can be applied broadly – and experiential knowledge – diachronic information that is specific to a local setting. Combining these two forms of knowledge increases resilience because the information contained in each can complement the other, yielding more accurate and nuanced information on which to base adaptation strategies (Folke, Colding, and Berkes 2002).

Currently, it appears that these two forms of knowledge are not being combined on the Eastern Shore. Specifically, the lack of collaboration between stakeholder groups, the lack of representation of African American study communities in government and non-governmental organizations, the lack of understanding of the scientific projections of climate change and sea-level rise among African American communities, and the lack of appreciation and utilization of community knowledge among policymakers are evidence that various knowledge types are not being combined. African American study communities have to rely mainly on their experiential knowledge, and policymakers are relying almost entirely on scientific and technical knowledge. A regular sharing and exchange of these ways of knowing would increase the resilience in the region.

<u>Creating Opportunities for Self-Organization</u>

Self-organization – the process by which structures and functions spontaneously emerge from the behavior of individual system components – is an inherent part of all complex adaptive systems (Levin 1998). Gunderson and Holling write that:

> Self-organization of ecological systems establishes the arena for evolutionary change. Self-organization of human institutional patterns establishes the arena for future sustainable opportunity (2002a, 396).

Thus, creating opportunities for self-organization in human systems is important for resilience because it allows individuals, communities, and social institutions to take advantage of change to shape the system into something better, while still maintaining enough consistency with the past so that accumulated experiential knowledge remains useful (Folke, Colding, and Berkes 2002).

Seixas et al. (2009; see also Seixas 2006) examined what contributes to community self-organization by assessing the common features of 24 successful community-based conservation and development projects. These projects all shared a common goal of simultaneously conserving their environmental resources and alleviating poverty. They found that these projects generally shared five interlinked traits that allowed them to self-organize to meet their goals. First, local communities were both motivated and committed to the projects. While the projects were initiated at various scales – with broader conservation and development agendas originating from higher scales, and projects to address other concerns (e.g. indigenous rights and culture, disasters, etc.) originating at the local level – ensuring that actors at all scales were both

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motivated (i.e. would benefit from the project in some way) and committed to the project was an important factor behind project success.

A second important factor for success was local community participation in both decision-making and project activities. Seixas et al. (2009) reported that involving local people in a project was challenging, and that in some cases building on existing social institutions (e.g. churches) helped facilitate local involvement.

The third trait that many successful projects had in common was partnerships between institutions at the same political level across geographic regions (horizontal linkages) and/or partnerships across political levels (vertical linkages). They found that horizontal linkages were important for sharing information and lessons learned, while vertical linkages were more important for capacity building (i.e. providing financial support or technical expertise). Importantly, these interactions within and across scales were not in one direction, but an exchange of information in both directions.

The last two common features of these successful projects are funding and capacity building. While some local communities were able to raise funds internally, most projects required some form of outside funding. Additionally, these projects required a phase of capacity building where actors were trained in organization and management (e.g. financial planning) (Seixas, Davy, and Leppan 2009).

Based on the outcomes of the multi-stakeholder workshop, it appears that the traits to promote self-organization toward just adaptation are lacking. First, while the environmental justice communities and policymakers are both motivated and committed, they do not currently share goals. That is, the environmental justice communities are motivated and committed to adapting to sea-level rise in their present location, and the

policymakers are committed to wetland conservation and efficient regional adaptation, which does not prioritize the continuance of flood-prone communities. Importantly, the environmental justice communities also value the environment and the policymakers also value justice. Work must be done, however, to integrate the goals of the two stakeholder groups so that all can be motivated and committed for a common purpose.

Second, local communities are currently excluded from decision-making. Policymakers at all scales need to incorporate local communities in their planning and prioritization to increase resilience.

Third, while policymakers have both horizontal and vertical institutional linkages, environmental justice communities are largely lacking in linkages of both types. While the church structure provides some horizontal linkages to other congregations, the lack of representation of the African American study communities in government and non-governmental agencies indicates that they are not very closely linked to local government agencies or non-governmental organizations. In addition, they are especially lacking in linkages to organizations at higher scales. Such linkages need to be fostered to facilitate self-organization and to improve on the last two traits – funding and capacity building – both of which are needed in the environmental justice communities as evidenced by their aging demographics, lack of scientific and technical understanding, and lack of resources.

The workshop itself served as a first step toward increasing resilience by creating a space in which knowledge types were combined and obstacles and opportunities for increasing self-organization were discussed. Despite this accomplishment, workshop participants and organizers alike recognized that sustaining an exchange of ideas between

policymakers and underserved communities in an ongoing effort to help each other better

address issues of justice and adaptation would require some type of institutional structure.

Incorporating a Participatory Process in Maryland's CoastSmart Program

The State of Maryland has a relatively progressive climate change mitigation and

adaptation program. In 2007 Governor Martin O'Malley signed Executive Order

01.01.2007.07 to establish the Maryland Commission on Climate Change. In 2008 the

Commission presented its climate action plan, which describes how climate change will

affect Maryland's citizens and natural resources, what Maryland can do to reduce

greenhouse gas emissions, and what Maryland can do to adapt to climate change (MCCC

2008a). Specifically, the plan recommends: 1) implementing policies and programs to

reduce the impact of climate change on the existing built environment and limiting future

growth in vulnerable coastal areas; 2) shifting to sustainable economies and avoiding the

financial risk of development in vulnerable coastal areas; 3) enhancing planning to

protect human health and welfare; and 4) protecting and restoring the natural shorelines,

wetlands, and marshes that buffer Maryland's interior (MCCC 2008b).

Maryland's adaptation plans are comprehensive in their treatment of natural

systems as well as coastal communities as each reacts to flooding from sea-level rise. The

key program in facilitating coastal community adaptation is CoastSmart, which provides

financial and technical assistance to local coastal governments seeking to incorporate

coastal management practices into local permitting and building projects and reduce

vulnerability to coastal flooding and sea-level rise.

Despite the effort that the Maryland government is putting toward preparation, the

programs do not adequately address the needs of those who are most vulnerable. One of

the limitations of the CoastSmart program is that it can only provide adaptation guidance and funding through government bodies. This means that many African American communities do not have access to CoastSmart's resources, either because they live in a rural, unincorporated settlement with no formal local government, or because their needs are not represented by their local government officials (who often deny the very existence of climate change and sea-level rise to protect existing property values). These communities also have experiential knowledge that could be useful to policymakers in their work to facilitate effective local-level adaptation strategies. So how do these African American communities access the adaptation resources they so desperately need?

I suggest that Maryland expand the existing CoastSmart program to include not only passing information down to local communities, but also become a facilitator of State-level learning about the adaptation needs of underrepresented coastal communities. Key steps include that the CoastSmart commission create (by hiring or reassigning members) a team designed to engage communities in assessing and planning for adaptation. Members of the team would have training and expertise to collect social data and facilitate participatory decision-making. The team should combine MD DNR technical knowledge with local experiential knowledge to create adaptation strategies specific to local conditions.

The follow-up step is to empower communities to finalize and enact adaptation plans. By providing targeted grants and incentives along with measures for accountability, the State could motivate local governments to expand their decision-making process to include community members with more equitable representation. In addition, governments will have to provide funding for the identified and selected

adaptation strategies. Investment in adaptation is warranted, however, as studies indicate

that efficient adaptation now could substantially reduce the cost of future damages from

sea-level rise (Stern 2007).

Of course, employing a participatory process does not guarantee that the needs of

those most vulnerable to climate change will be adequately addressed. Few et al. (2007)

have highlighted how processes labeled as "participatory" often fail to incorporate the

perspectives of the public – especially those with little social power – in a meaningful

way. Nevertheless, efforts need to be made to enable local equity in identifying

adaptation challenges and solutions and, if these efforts are implemented well, they can

increase distributive justice (Huq and Khan 2006). Ensuring that appropriate people are

included from the start is crucial (Few, Brown, and Tompkins 2007). In addition,

including an external expert in participatory decision-making and collaborative learning

in the process is critical for facilitating meaningful communication between policymakers

and vulnerable communities.

Conclusion

The impact of climate change is already being felt by coastal communities around

the world with rising waters and more severe storms. The coastal African American

communities on Maryland's Eastern Shore are particularly vulnerable to flooding from

sea-level rise and face similar challenges to underserved communities in least-developed

countries around the world. Just as the international community has disenfranchised

many poor communities, problems of environmental justice on the Eastern Shore have

largely gone unaddressed by State policymakers. The common roots of the environmental

injustice include lack of financial resources, historic prejudices, little or no access to

decision-making processes, and incompatible definitions of time, knowledge, environmental conservation, and what it means to be vulnerable.

Injustices also serve to decrease the resilience of the Eastern Shore in two ways. First, by minimizing the combination of community-level and technocratic knowledge, injustices cause the region to miss out on the generation of novel and creative adaptation strategies. Second, injustices have limited the ability of the African American study communities to self-organize in response to climate change and sea-level rise. I argue that a participatory process would facilitate collaboration between African American church communities (and other underserved communities) and policymakers on the Eastern Shore. Such collaboration could serve to increase both the combination of knowledge types and the opportunities for self-organization among underserved communities.

While considerable attention has been paid to the lack of connection between formal institutional structure for disaster preparedness and groups most vulnerable to climate change impacts in developing countries (e.g. Ahammad 2011), much less attention has been paid to similarly disenfranchised populations within developed countries. Perhaps it is time developed nations also pay attention to the needs of the vulnerable within their own boundaries. Incorporating a participatory strategy within already existing agencies and organizations at various political scales in developed countries would serve to facilitate inclusive adaptation planning and thereby decrease both vulnerability and injustice. In addition, extending the use of a participatory framework to all nations could help to focus greater attention on the needs of those most vulnerable to climate change and provide a unifying global process for identifying

challenges, rallying support for reducing fossil fuels, and creating solutions for mitigating

the effects of climate change.

Chapter 8: Conclusion

Introduction

In this concluding chapter, I return to each of my two research questions and summarize the key findings from previous chapters. I then discuss the utility of resilience theory for environmental justice communities. Specifically, I argue that while the framework of social-ecological resilience is helpful in some respects, the use of resilience theory for environmental justice communities is limited by the great breadth and depth of knowledge required to evaluate the state of the social-ecological system, the complexities of simultaneously promoting resilience at both the regional and local scale, and the lack of attention to issues of justice. I then comment on the importance of justice for sustainability and offer some concluding thoughts.

Resilience and Adaptive Capacity in Study Communities

My first research question is: what is the level of resilience and adaptive capacity for communities characterized by environmental injustice in the face of climate change? To answer this question I conducted ethnographic research to position the three African American study communities within their broader social-ecological system, used cognitive methods to elicit cultural information on vulnerability to climate change, analyzed semi-structured interview responses for insights on procedural injustice, and assessed the presence of resilience factors from interview responses and workshop discussions. I found that in all three communities, religious faith and the church,

rootedness in the landscape, and race relations were highly salient to community experience. The degree to which these common aspects of the communities imparted adaptive capacity has changed over time. While the adaptive capacity of the African American communities was high in the past, today they have a relatively low degree of adaptive capacity. Importantly, a given social-ecological factor does not have the same effect on vulnerability – which is partly determined by adaptive capacity – in all communities; however, in all communities current political isolation decreases adaptive capacity and increases vulnerability. This political isolation is at least partly due to procedural injustice, which occurs for a number of interrelated reasons.

Resilience was assessed by the presence of the four factors identified by Folke et al. (2002): living with uncertainty, nurturing diversity, combining different types of knowledge, and creating opportunities for self-organization. Overall, these communities seem to have low resilience; however, there is potential for resilience to increase if greater effort is put toward nurturing diversity, combining knowledge types, and promoting self-organization at both the local (i.e. African American communities) and regional (i.e. Maryland policymakers) level.

Adaptive Capacity: High in Past, Low at Present

Surprisingly, the African American communities in this study all had a relatively high adaptive capacity in the past, despite widespread racial discrimination and little material wealth. Central to this adaptive capacity were the local churches, which served as the social centers, provided for the material needs of their community members, served as a bridge between their members and the white community, and facilitated the sharing of information – including news and reports from government agencies and other

communities, as well as the accumulated knowledge of the local community's experience with their social-ecological system. These churches also fostered in their members a strong faith that God will provide. Importantly, this faith does not necessarily result in complacency toward preparing for the impacts of flooding and climate change, but rather emphasizes the importance of utilizing the resources God provides to prepare for the flooding that they know is coming. Thus the faith that God is in control appears to be adaptive for these communities.

Unfortunately, this adaptive capacity has diminished over time. Changes in the regional economy have caused significant outmigration from the African American communities. While in the past members of the communities might temporarily relocate to earn money to send back to their families, today the outmigration is more long-term, with entire nuclear families relocating and returning to their home community only occasionally. Those that remain in the community are aging and many are on a fixed-income. The churches that have been so important for adaptive capacity in the past are now in danger of being closed, and community members that remain in flood-prone areas may be forced to permanently relocate. Permanent relocation is extremely undesirable among African American community members, who not only view relocation as riskier than sticking it out in the social-ecological environment that they know so well, but also fear that their cultural heritage and community identity – which are closely tied to their landscape – will be lost.

Importantly, though adaptive capacity has decreased in all communities – thereby increasing vulnerability to climate change and flooding – the ways in which social-ecological factors affect local vulnerability differ considerably even though the

communities were classified as having an equally high vulnerability as measured by quantitative indices. This suggests that any adaptation assistance provided by regional policymakers will need to be tailored to the local circumstances. Understanding these nuanced differences in local vulnerability is a crucial precursor for policymakers to develop climate adaptation plans that will be flexible enough to meet diverse local needs.

Unfortunately, these communities all experience political isolation, which makes it unlikely that their particular vulnerabilities and adaptation needs will be adequately addressed by regional policymakers. This political isolation is related to procedural injustice, which was found to be widespread among the African American study communities. Specifically, procedural injustice occurs because of non-participatory decision-making processes, exclusion of voiced input in decision-making, and processes with language or procedures which do not allow for meaningful participation. In addition, historical and cultural legacies of racism and discrimination serve to discourage African American participation even when it is solicited by policymakers. Procedural injustice contributes to political isolation and decreases adaptive capacity. Because adaptation to climate change will ultimately involve trade-offs that cannot be decided objectively, but rather will depend on what is most valued, African American communities, as well as other marginalized communities on the Eastern Shore, must have a voice in that discussion. A grassroots-based movement to raise awareness of climate injustices may be necessary to make African American voices heard if consensus-based processes cannot be modified to allow for meaningful participation.

<u>Resilience: Low Overall with Potential to Increase</u>

Resilience in the three study communities is low overall when assessed by examining the degree to which the four resilience factors identified by Folke et al. (2002) – living with uncertainty, nurturing diversity, combining different types of knowledge, and creating opportunities for self-organization – are present. That is, though all three communities were relatively comfortable living with uncertainty, there was little evidence for the presence of the other three resilience factors.

First, the degree to which diversity is nurtured was considered primarily in terms of response diversity – the various types of people or social institutions within a given functional group (such as manufacturing or education) that will respond differently to a given perturbation (see Chapter 3). Response diversity is especially critical for system resilience (Walker and Salt 2012). While some degree of response diversity exists in every community because individuals will vary in their response to change, in the case of the three study communities, I judge response diversity to be relatively low based on the low diversity of the population as a whole. That is, the study communities are composed largely of elderly, retired or semi-retired African American individuals who have lived in their home community for nearly all of their lives. It is unlikely that response diversity will increase in these communities in the foreseeable future.

Second, these communities have relied predominantly on accumulated experiential knowledge for preparing for, coping with, and recovering from flooding, with relatively little input from those with scientific knowledge. Likewise, at the regional level, policymakers also have relied primarily on scientific knowledge, with very little understanding of experiential knowledge at the local level. Importantly, however, while

the African American community members generally value and trust information gained from experience above that generated by scientific means, they are nonetheless eager to learn more about climate change projections and regional adaptation strategies so that they can incorporate that information to better adapt in their own communities. Likewise, regional policymakers, while perhaps not eager, are starting to see the benefits of tapping into local experiential knowledge. For example, at the end of the multi-stakeholder workshop where representatives of African American church communities shared some of their local knowledge, one of the higher-ranking policymakers shared with the group:

> I think the conversation here is immensely useful, at least for me,
>
> and likely for many people around the room. … I'm so glad I
>
> drove down on a Friday. I almost didn't commit to doing this, and
>
> it's probably the most important thing I've done all month, so
>
> thank you.

Thus, there is potential for these two groups to come together to exchange knowledge more regularly so that they will both be better able to address climate change within their particular arenas of action and thereby increase resilience.

Finally, few opportunities currently exist for self-organization toward just adaptation. The creation of opportunities for self-organization is presently hampered by the lack of motivation and commitment to a common goal, the general exclusion of local communities from decision-making, the lack of horizontal and vertical institutional linkages with the environmental justice communities, and a lack of funding and capacity building in the environmental justice communities.

The multi-stakeholder workshop served as a first step toward increasing resilience by creating a space in which knowledge types were combined and obstacles and opportunities for increasing self-organization were discussed. A key finding of the workshop was that environmental justice communities and policymakers currently are motivated and committed to working on different aspects of climate change adaptation. That is, environmental justice communities are concerned with persisting in their current location, while policymakers are concerned with environmental conservation and efficient regional adaptation. However, because these two groups have overlapping values (i.e. the African American communities also are interested in environmental protection and the policymakers also would like to see just adaptation), there is potential to integrate their respective agendas into a common goal. Following articulation of a common goal, opportunities for self-organization toward that goal can be created by including local communities in decision-making, establishing horizontal and vertical linkages to the communities, and ensuring adequate funding and capacity building are available. Local and regional church structures have great potential for facilitating engagement and communication between government and non-governmental agencies and African American communities.

Environmental Justice and Adaptation Planning

My second research question is: what is the role of an environmental justice approach in developing adaptation policies that will promote social-ecological resilience? I used two approaches to answer this question. First, because people may have very different conceptions of what constitutes environmental justice and may or may not value it highly, I conducted a questionnaire designed to compare the relative importance of

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justice and to ascertain what a justice approach to adaptation might look like to different

stakeholder groups. Cultural consensus was employed to identify areas of agreement and

disagreement on issues of justice within and between stakeholder groups. Second, I

examined the role of an environmental justice approach by organizing a multi-

stakeholder workshop to bring together a full range of voices for discussing the

environmental justice implications of regional adaptation to climate change and sea-level

rise.

Prioritization and Conceptualization of a Justice Approach

I found that the patterns of overall consensus between and within the stakeholder

groups suggest that there is overall agreement that a greater focus on justice is needed,

but that stakeholder groups differ in their views of what that justice approach should look

like. Specifically, the two groups disagree in two major areas: 1) the prioritization of

environmental adaptation versus the adaptation of marginalized communities, and 2) the

acceptability of permanent relocation as an adaptation strategy for vulnerable African

American communities. The patterns of overall consensus also indicate that, within the

stakeholder groups, policymakers and environmentalists have greater consensus on issues

of justice and adaptation, while the African American church community respondents

were more varied in their responses. This difference is related to the way in which

knowledge is formed in each group. Policymakers and environmentalists are largely

dependent on generalized models for understanding the region and thus are quite often in

agreement when considering issues of justice. In contrast, the cultural knowledge of

African American community members is shaped by their unique experiences within

their local social-ecological system, and thus their responses to the justice statements are more varied.

The Role of an Environmental Justice Approach

The multi-stakeholder workshop, by enacting procedural justice to discuss adaptation, generated several important insights. First, the workshop revealed that current adaptation policies and programs on the Eastern Shore are not adequately addressing the urgent adaptation needs of the African American communities. Working together, however, the workshop participants were able to identify challenges and opportunities for increasing justice in adaptation to climate change. Specific obstacles for increasing justice include lack of resources in flood-prone communities, lack of preparedness for flooding emergencies, lack of collaboration, lack of transparency, lack of representation in government and non-governmental organizations, lack of understanding and information, and lack of appreciation and utilization of community knowledge and experience. Numerous opportunities for increasing justice were identified. These opportunities generally fell under four categories: education, engagement, financing, and planning.

A central finding was that African American church communities need to reach out to policymakers and policymakers need to commit to an increased engagement with the church communities. Both have important information to share with and learn from each other, and working together can build a more resilient Eastern Shore. Despite overall agreement with these goals, stakeholder groups differed in their perspectives about timescale, vulnerability, environmental conservation, and knowledge. These differences in perspective may complement each other in a way that increases resilience;

nevertheless, at a practical level they will need to be navigated and negotiated if stakeholders are to work together on adaptation.

Altogether, the outcomes of the workshop suggest that an environmental justice approach to developing adaptation policies would increase the resilience of the environmental justice communities. It remains unclear, however, whether such an approach would improve the resilience of the Eastern Shore overall. The issue of promoting resilience at multiple scales is discussed further below.

Utility of Resilience for Environmental Justice Communities

Despite its current prevalence in the literature and popularity among public officials, I argue that the usefulness of resilience theory is somewhat limited, particularly in its application for environmental justice communities. Certainly, aspects of resilience theory are quite helpful. The heuristic of panarchy, for example, is useful for conceptualizing how the social-ecological system is interconnected across spatial scales and organizational hierarchies. In addition, resilience theory is helpful in promoting flexibility as a key system attribute for adapting to known and unknown disturbances, and many of the traits that have been identified for promoting resilience (e.g. diversity, combining knowledge types, etc.) seem quite positive not only for system persistence, but also for improving human well-being within the systems (see below). Another crucial aspect of resilience theory is its conceptual integration of both social and ecological systems. Of course, there is room for improvement in the conceptualization of the social (i.e. incorporation of non-material aspects of social-ecological systems, as I will briefly discuss below), but all in all, in my estimation, these good qualities of resilience theory make it a highly valuable tool for climate adaptation planning. Nevertheless, its

usefulness for environmental justice communities appears to be limited. Specifically, this research suggests that the use of resilience theory for environmental justice communities is hampered by the great breadth and depth of knowledge required to evaluate the state of the social-ecological system, the complexities of simultaneously promoting resilience at both the regional and local scale, and the lack of attention to issues of justice.

Breadth and Depth of Knowledge Required

Because social-ecological systems are so complex and dynamic, it takes an enormous amount of information to determine how various management or adaptation strategies will affect system resilience. Working to increase resilience is further complicated by the fact that resilience itself is not directly measurable, but is an emergent property of complex systems (Robinson and Berkes 2010). In my dissertation research, I spent two years conducting fieldwork and an additional two years conducting historical research and analyzing my data. Despite four years of intense work, I remain unsure about what specific policies or adaptations are needed to increase resilience on the Eastern Shore. That is not to say that I did not gain useful understanding and insights, as I hope this dissertation has demonstrated, but rather my point here is that the breadth and depth of knowledge required to assess and promote the resilience of the social-ecological system is staggering.

Breadth of knowledge is required because one needs to understand both social and ecological aspects of the system across multiple scales. In that sense, my research was limited in that I focused primarily on social aspects of the system as they related to environmental justice communities at the local to regional level. While I did talk with area ecologists and conservationists to learn about crucial ecosystem structures and

processes on the Eastern Shore, the majority of my time and energy was spent

considering the vulnerabilities, adaptive capacities, and cultural knowledge of the

environmental justice communities. Thus, my analysis does not fully incorporate some of

the issues that are known to be important for the Eastern Shore. For example, the

Chesapeake Bay Program website (http://www.chesapeakebay.net/issues) lists 24 issues

as important for the health of the Chesapeake Bay (see Table 8.1). With the exception of

climate change, my knowledge of these important issues remains superficial.

While understanding the social and ecological aspects of the system is

challenging enough at a local scale, resilience theory also requires an understanding of

how social and ecological components interact across multiple scales. This concept of

panarchy, while helpful in theory, proved to be a challenge to fully incorporate in my

research. As anthropologists and resilience scholars alike know, local communities are

affected by structures and processes at higher scales. While I did scale up my analysis to

include policymakers and environmentalists on the Eastern Shore (a group that included

local, county, and state-level policymakers), I did not explore how structures and

processes at the national or global level were affecting the Eastern Shore. Nor did I

examine closely how structures and processes at the local level were affecting individual

households and people. Had I been able to expand the breadth of my analysis to all

relevant scales (i.e. individual through global) perhaps other important insights on

resilience, adaptation, and environmental justice would have emerged.

Depth of knowledge is also important for assessing and promoting the resilience

of a social-ecological system. For example, suppose the State of Maryland is considering

the construction of a large dike around Crisfield. As part of their consideration, they

would undoubtedly want to understand how the construction of the dike would affect the local and regional economy. Such an analysis would require detailed knowledge of those economies, as well as information from ecologists, who might advise how various seafood stocks in the Bay would be affected by the dike and the process of building it. To predict how the stocks would respond, knowledge about different species lifecycles and natural history would be required. That is, experts with a great depth of knowledge are needed to assess how changes in one part of the system will affect other important system components.

Because social-ecological systems are highly complex, dynamic, and interlinked across scales, a great breadth and depth of knowledge is required to assess and promote system resilience. While this presents a challenge even for policymakers with access to broad networks and many experts, it would be extremely difficult for environmental justice communities themselves to compile all the relevant information for considering resilience. This is not to say that environmental justice communities are lacking in knowledge. As I have shown, the environmental justice communities in this study possess considerable depth of knowledge about their local environments. However, their relative isolation limits their knowledge of processes and structures at higher scales. While in the past knowledge of state, national, or international processes may not have been important for successful local adaptation, in today's increasingly globalized world, such knowledge may mean the difference between failure and success at the local level.

Table 8.1 Issues Identified as Important for Chesapeake Bay Health by the Chesapeake Bay Program

Agriculture	Education	Rivers and Streams
Air Pollution	Forests	Sediment
Bay Grasses	Groundwater	Shad
Blue Crabs	Invasive Species	Stormwater Runoff
Chemical Contaminants	Menhaden	Striped Bass
Climate Change	Nutrients	Wastewater
Conowingo Dam	Oysters	Weather
Development	Population Growth	Wetlands

Promoting Resilience at Multiple Scales

Another hindrance to usefully employing resilience theory for environmental justice communities is the challenge of simultaneously promoting resilience at multiple scales. That is, policies that improve the resilience of the system at a higher scale may sacrifice resilience at lower scales (Adams 1978). For example, from the vantage point of state-level policymakers, it does not make financial sense to rebuild flooded communities that are likely to be permanently inundated by the end of the century. Indeed, in 2013 the State of Maryland proposed using $2 million of $8.6 million in federal storm recovery money to buy out Smith islanders who were interested in moving to the mainland. Since Smith Island is slowly being diminished by erosion, storms, and sea-level rise, investing in repairs is wasteful of limited resources from the State perspective. However, Smith Islanders immediately recognized that buyouts threatened the resilience of their island community. *The Baltimore Sun* reported that many islanders were concerned that buyouts would cause the island to lose enough people that it would no longer be feasible for anyone to live there (Wheeler 2013a). Upset islanders and their sympathizers made such

a public outcry that the Somerset County Board of Commissioners voted not to offer

buyouts with any of the federal recovery money (Wheeler 2013b). Despite the local

opposition, the State ended up using half of the $2 million it had initially proposed for

buyouts, reporting that they had received comments favoring the plan (Wheeler 2013c).

An editorial in *The Baltimore Sun* was written in favor of the buyouts because, in the

author's opinion, the benefits of continuing to rebuild and provide other services to Smith

Island were not great enough to justify the costs (Piette 2013). It does appear that unless

Smith Islanders can raise enough public support, it will only be a matter of time before

the existence of the island community is sacrificed for the resilience of the broader

region. It seems likely that the rural, low-lying communities in Dorchester County will

face a similar fate.

Suppose, however, that resilience was promoted at the level of the local

communities. Would justice and well-being finally abound? Unfortunately, even if

resilience is improved at the local community level, we cannot assume that resilience

would then increase for all households. For example, in a study of the city of Dhaka,

Bohle et al. (2009) revealed how the food system was made to be more resilient by

curtailing the most vulnerable individuals' access to affordable food. Similarly, the town

of St. Michaels has been increasing its resilience at the expense of those most vulnerable.

By working to promote its tourist industry, St. Michaels has simultaneously boosted its

local economy and become a well-known and cherished town on the Eastern Shore.

These factors mean that St. Michaels will very likely receive considerable aid toward

protection from sea-level rise; there would be a public outcry – from the Eastern Shore to

Washington, D.C. and beyond – if it was ever suggested that St. Michaels should be

allowed to disappear under the rising waters. At the same time, the rise of the tourism industry has increased the cost of living in St. Michaels such that many of the African American households have had to relocate. Thus, the promotion of resilience even at a very local level will not necessarily benefit all within the community.

Resilience theory does not, therefore, eliminate the need to consider trade-offs. Rather, it forces the consideration of a perhaps heretofore unconsidered trade-off. That is, choosing which scales at which to promote resilience, and which scales to allow to be transformed into something new. Likely, the scale which wields the most power will ensure its resilience at the expense of lower scales. Thus, resilience theory may serve to justify injustices in some cases.

Lack of Attention to Justice Issues

Resilience theory lacks an explicit focus on justice. Rooted in ecology, the framework aligns well with the idea of "survival of the fittest" and thus does not easily lend itself to considerations of justice. For example, in the animal world predators pick off the sick and weak members of a herd, which, ecologically speaking, is healthy for the system overall. Disposing of weak members of human society, however, would be considered abhorrent; nevertheless, as I have illustrated in the previous section, resilience theory as commonly employed does at least sometimes sacrifice the well-being of some individuals to maintain or increase the resilience of a larger system. Indeed, the adaptation plans for Maryland's Eastern Shore, despite the best of intentions, may also prove to be harmful for the most vulnerable residents. That is, policymakers, concerned with the successful adaptation of the region as a whole into the distant future, are primarily focused on promoting resilience of the economy and the ecological systems that

support that economy (MCCC 2010). Generally, low-lying areas will only be protected from inundation if the cost of doing so is less than the economic benefits provided by the area in question (Nuckols et al. 2010). In other words, developed areas are likely to be protected, while rural areas are not. Because the rural African American communities (as well as other historic communities, such as Smith Island) do not win out in the cost-benefit analysis, they will likely not be protected from inundation.

Maryland's adaptation plans may be deemed good and appropriate by some criteria (e.g. economic measures, ecological measures, resilience of the aspects of the system that are valued by policymakers); however, in their current form they are not just. As my research has revealed, environmental justice communities, while highly interested in successful adaptation to climate change and the fostering resilient communities, have not had an opportunity to participate or be represented in the determination of what aspects of the Eastern Shore should be protected and preserved for the future, and what aspects should change. Had an inclusive visioning process been employed, these environmental justice communities would have had an opportunity to articulate the value of their place-based communities for their cultural heritage, identity, adaptive capacity, and spiritual well-being. Because the value of their place-based communities is largely non-material, in addition to being more inclusive in visioning the future of the Eastern Shore, justice could also be improved by broadening the analysis of costs and benefits to include consideration of non-material aspects of the social-ecological system.

Inclusion in Defining a Desirable System

Resilience itself is not necessarily a desirable quality; plenty of systems many would consider undesirable – such as desert ecosystems and dictatorships – are highly

resilient. Importantly, however, even desert ecosystems and dictatorships are not undesirable to everyone. For the group in power, the dictatorship is quite desirable and therefore should be made to be resilient. An important question in employing resilience theory, therefore, is: who gets to decide what aspects of a system should be maintained with resilience and what system attributes should be transformed into something different? In their book, *Resilience Practice*, Walker and Salt describe how, in an initial step of resilience assessment and planning, stakeholders need to come together to determine what is important about the system:

> The key questions are, What is it about the system that you want to
>
> be resilient? What do people value in, and want out of, the system?
>
> And what are the big issues that concern them? (2012, 41).

All too often these decisions get made exclusively by those with power, such as special interest groups. Even environmentalists, whom many would consider to be working for common good, often neglect to include the voices of marginalized groups until the problem and possible solutions have been defined (Hoerner and Robinson 2008). If justice is to be incorporated into the resilience framework, marginalized groups must be allowed to voice their opinions and concerns early and throughout the process of identifying the important aspects of the social-ecological system, as well as articulate their vulnerabilities and possible adaptations. If environmental justice communities are not able to participate in envisioning the future of the social-ecological system, it is likely that present injustices will continue or even be exacerbated.

Incorporation of Non-Material System Attributes

Scholarship on climate change and social-ecological resilience, while making progress in integrating social and biophysical system attributes, has primarily focused on material aspects of the system, such as biophysical transformations and impacts on economies (Crane 2010, Adger et al. 2009). Such a focus is problematic because it largely excludes non-material aspects of the system – such as ethics, knowledge, and culture – that are also important for human well-being. Indeed, some communities may value the sustenance of a vibrant culture over increases in economic measures. For example, Ramsay (2013) has argued that Crisfield residents chose to forego economic development to preserve their traditional livelihoods and social structure. That is, they valued their cultural heritage over monetary gain. Likewise, *The Baltimore Sun* reported that when buyouts were proposed for Smith Islanders after Hurricane Sandy, an islander waterman commented:

> [A buyout] could help my pocketbook, but it's not going to help
> my peace of mind. I love Smith Island. You can't put a dollar
> value on what it means to me (Wheeler 2013a, 1).

As I described in Chapter 6, surveyed African Americans on the Eastern Shore also indicated their desire to continue living in their historic communities, with 98% agreeing that support should be provided so that they would not have to relocate. Providing the necessary support (e.g. changes to infrastructure, homes, etc.) to allow the African American church communities (and other historic communities) to continue living where they are at present would be costly; however, consideration of non-material losses is

warranted when weighing the costs and benefits of facilitating adaptation-in-place for these communities.

Such non-material losses, such as the involuntary loss of places and culture, have been systematically undervalued by policymakers (Adger et al. 2009). Turner et al. (2008) characterize such losses as "invisible losses." They write:

> Invisible losses are those not widely recognized or accounted for in decisions about resource planning and decision making in resource- and land-use negotiations precisely because they involve considerations that tend to be ignored by managers and scientists or because they are often indirect or cumulative, resulting from a complex, often cumulative series of events, decisions, choices, or policies (Turner et al. 2008, 7).

Invisible losses may include losses in culture, identity, health, self-determination, emotional and psychological well-being, ability to predict natural cycles, knowledge, prosperity, and opportunity (Turner et al. 2008). Such losses can have profound effects on human well-being. Because the goals of a resilient system and that of well-being may be at odds with each other, resilience scholar Sarah Coulthard (2012) has suggested that platforms are needed in which to deliberate these tough choices. She writes:

> Marking these hard choices more visible in governance processes is a step toward empowering people to determine their own balance between being well or being resilient, or the ambitious pursuit of both (Coulthard 2012, 11).

In terms of justice, explicitly including non-material losses and their impact on well-being in deliberations of alternate adaptation plans would help to elevate the needs of environmental justice communities, which often fare poorly when cost-benefit analyses are based only on material aspects of the social-ecological system.

The Importance of Justice for Sustainability

In Chapter 2 I argued that the key connection between justice and resilience is sustainability. While resilience theory is ultimately concerned with the persistence, or sustainability, of the social-ecological system (Nelson, Adger, and Brown 2007), environmental justice is important for sustainability because environmental and social problems are tightly linked in social-ecological systems (Forbes 2008). Given then the mutual dependence of environmental justice and sustainability, Agyeman (2008) suggests that the two paradigms should be merged to create a new paradigm – just sustainability – to emphasize:

> …the need to ensure a better quality of life for all, now and into the
>
> future, in a just and equitable manner, whilst living within the limits
>
> of supporting ecosystems (Agyeman, Bullard, and Evans 2003, 5).

In other words, a just sustainability paradigm would prioritize justice while emphasizing the importance of the environment as a life-support system.

As I have argued above, the use of resilience theory for environmental justice communities is hampered by the great breadth and depth of knowledge required to evaluate the state of the social-ecological system, the complexities of simultaneously promoting resilience at both the regional and local scale, and the lack of attention to issues of justice. In contrast, Agyeman's paradigm of just sustainability prioritizes social

justice, while acknowledging that resources must be used sustainably so that human needs can be met now and into the future. While aspects of resilience theory are quite helpful, given that marginalized communities will be most impacted by climate change, perhaps a justice-focused framework, such as the just sustainability model, could serve to complement social-ecological resilience and help facilitate climate change adaptation to meet the needs of those who are most vulnerable.

Conclusion

The African American communities that were the focus of this study were able to persist and, to some extent, thrive within their local social-ecological systems despite racial oppression, economic hardship, and ecological fluctuations. Unfortunately, these communities that have survived so much may now face the end. For the communities in Dorchester County, permanent inundation of their communities will likely result in forced relocation. The African American community in Crisfield also faces the possibility of forced relocation as a result of the combined forces of flooding and persistently oppressive local politics. For African Americans in St. Michaels, flooding is less of an immediate threat; however, the tourism industry that will likely garner the town State protection from inundation may itself serve to drive African Americans out of St. Michaels with attendant increases in the cost of living. These three communities, positioned differently within their local social-ecological systems, have unique vulnerabilities and adaptive capacities. They all share, however, relative isolation from the decision-makers and processes that will shape the future of the Eastern Shore.

Climate change is a problem that is inextricably linked with issues of values, equity, and social justice; solving that problem will therefore require more than a purely

scientific approach (Ludwig 2001). Policymakers, environmentalists, and African American church communities on the Eastern Shore all recognize that a greater focus on justice is needed; however there is disagreement about what greater justice would look like, which results in uncertainty about how to incorporate justice into regional adaptation planning.

The State of Maryland has employed a social-ecological resilience framework in addressing climate change. This framework is useful; however it is inadequate for addressing issues of justice. If justice is to be increased on the Eastern Shore, and around the world, participatory processes need to be increased in number and in quality. That is, participation of environmental justice community members in decision-making needs to be meaningful and allowed to help shape policy objectives. When procedural justice is truly realized, an increase in distributive justice should follow. Building vertical and horizontal linkages between environmental justice communities, governmental agencies, and non-governmental organizations will facilitate the realization of justice by promoting trust and greater exchange of knowledge and resources. In addition, such linkages will help to promote better understanding of the non-material losses that would accompany the relocation of these communities from their historic lands.

It is certain that change is coming for the African American communities on the Eastern Shore. However, if these communities are allowed to engage in decision-making processes, they may be able to help policymakers envision a future for the Eastern Shore that is more just and more resilient.

Appendix: Questionnaires

Version Distributed via Qualtrics to Policymakers and Environmentalists

Environmental Justice and Climate Change on
Maryland's Eastern Shore Survey

Background: The purpose of this study is to 1) understand how African American communities on the Eastern Shore are vulnerable to coastal flooding due to climate change, 2) identify opportunities for successful adaptation to flooding, and 3) determine how community members, policymakers, and environmentalists think about justice in relation to vulnerability and adaptation. The results of this study will allow the researchers to compare how views on justice vary within and between stakeholder groups. The survey questions are developed from interviews conducted previously and from statements made by interviewees.

Please Read before Beginning Survey
I state that I am over 18 years of age and wish to participate in a program of research being conducted by Dr. Michael Paolisso and Christy Miller Hesed of the University of Maryland, College Park.

I understand that I will be asked to state my agreement or disagreement with statements regarding vulnerability to flooding on the Eastern Shore, the importance of justice, and what adaptation should look like. I will also be asked some background questions about myself. The questions are straightforward and will not take but a few seconds to answer each.

The primary risk associated with this study is the emergence of negative or distressful feelings in identifying climate change impacts to your community or in answering the survey questions. You may speak with any of the researchers listed below to discuss any distress or other issues related to study participation. All responses are confidential. No study participant names or contact information will be revealed in public presentations or publications. Participation in the survey is voluntary and no financial rewards are being offered.

For additional information on this research program and your rights and benefits as a participant, please contact Dr. Michael Paolisso or Christy Miller Hesed, Department of Anthropology, 1111 Woods Hall, University of Maryland, College Park, Maryland 20742-7415, Telephone (301) 405-1433, Email mpaoliss@umd.edu or cmillerh@umd.edu.   If you have questions about your rights as a research subject or wish to report a research-related injury, please contact: Institutional Review Board

Office, University of Maryland, College Park, Maryland 20742; (E-mail)
irb@deans.umd.edu; (Telephone) 301-405-4212. Consent form approved, valid until
March 26, 2015.

1. **I agree to participate in the research project described above.**

_____ Yes

_____ No

The following questions will help us understand differences across various study groups
according to a number of social and demographic characteristics. Please read each
question and respond accordingly.

2. What is your educational background? (Please mark only **ONE** answer.)
   ___ Some high school
   ___ High school graduate or GED
   ___ Some college
   ___ Associate degree
   ___ Bachelor's degree
   ___ Graduate or professional degree

3. Please select the category that BEST describes the character of the work that you
   have primarily done over the last 5 years. (Please mark only **ONE** answer.)
   ____ Scientific or Policy Research
   ____ Decision-making or policy-making
   ____ Program or project implementation

4. Please select the category that BEST describes the type of organization you have
   primarily done work for over the last 5 years. (Please mark only **ONE** answer.)
   ____ Public sector, federal, state, county, or local government
   ____ Academic, College, University, or other Scholarly Research Center
   ____ Non-governmental organization
   ____ Other (please specify) _____

5. Please select the category that BEST describes the geographic scope of the work you
   have primarily done over the last 5 years. (Please mark only **ONE** answer.)
   ____ International
   ____ United States
   ____ State of Maryland
   ____ Eastern Shore of Maryland
   ____ County within Eastern Shore
   ____ Locality within Eastern Shore
   ____ My work does not pertain to Maryland's Eastern Shore

6. Please select the county that your work has primarily been focused on over the last 5 years. (Please mark only **ONE** answer.)

    ____   Caroline
    ____   Cecil
    ____   Dorchester
    ____   Kent
    ____   Queen Anne's
    ____   Somerset
    ____   Talbot
    ____   Wicomico
    ____   Worcester
    ____   None of the above

7. To what extent has your work over the last 5 years focused on the following:

	Great Extent	Some Extent	Not at All
Impacts of climate change on natural systems	____	____	____
Impacts of climate change on human systems	____	____	____
Adaptation of natural systems	____	____	____
Adaptation of human systems	____	____	____
Other (please specify) _____	____	____	____

8. Do you reside on the Eastern Shore of Maryland?
    ___ Yes;   ___ No

9. How did you come to reside on the Eastern Shore of Maryland?
    _____ Born here   _____ Came here

10. How many years have you resided on the Eastern Shore?

    ____ Years

11. In describing your residence on the Eastern Shore, would you say that most of the time you have been here either full time or part time?
    ____ Full time;   _____ Part time

12. How close is your property to water? Is your property: (choose the **ONE** best answer)
    ____ Waterfront
    ____ Water view
    ____ Not close to water

13. How concerned are you about your current home flooding?
    _____Very Concerned   _____Somewhat Concerned   _____Not Concerned

14. Have you experienced difficulty in reaching or leaving your home on the Eastern Shore because of flooding?

    ____ Yes, within the last 3 years

    ____ Yes, but between 3 and 10 years ago

    ____ Yes, but more than 10 years ago

    ____ No, never experienced difficulty

15. Have any of the homes you've lived in on the Eastern Shore ever been flooded?

    ____ Yes, within the last 3 three years

    ____ Yes, but between 3 and 10 years ago

    ____ Yes, but more than 10 years ago

    ____ No, never flooded

16. From which of the following organizations have you received flood assistance? (Please mark **ALL** that apply.)

    ____ Insurance company

    ____ FEMA (Federal Emergency Management Agency)

    ____ MEMA (Maryland Emergency Management Agency)

    ____ Church-based organizations

    ____ Non-religious, non-government organizations (e.g. Red Cross)

    ____ Local church

    ____ I have never received flood assistance

    ____ Other (please specify) _____

17. Do you currently have flood insurance for your home?

    ___ Yes;   ___ No

18. How many meetings on preparing for the impacts of flooding and climate change have you participated in during the last three years?

    ____ None

    ____ 1-2

    ____ 3-5

    ____ More than 5

19. Have you been contacted by anyone about local flood risks and/or ways to prepare for an emergency?

    ___ Yes;   ___ No

20. How willing are you to attend a public meeting on possible climate change impacts such as flooding, storms, and sea-level rise?

_____Very Willing   _____Willing   _____Unwilling   _____Very Unwilling

21. What is your race or ethnicity? (Please mark the **ONE** best answer.)
    ____   American Indian
    ____   Asian
    ____   Black or African American
    ____   Hispanic or Latino
    ____   Caucasian
    ____   Other (please specify) _____

22. What is your gender?
    ____   Male
    ____   Female

23. What is your age in years?

    ____ Years

24. What is the five-digit zip code of your current residence?
    _____

Vulnerability, Justice, & Adaptation Questions

In this section, please tell us how much you agree or disagree with a series of statements about vulnerability, justice, and adaptation. These statements represent points of view we have heard from interviews with individuals on Maryland's Eastern Shore. Please read each statement and choose ONE response that best matches your level of agreement with the statement.

25. Income level affects a person's ability to protect their property from flooding.

    _____Strongly   _____Agree   _____Disagree   _____Strongly
         Agree   Disagree

26. Coastal African American communities are more vulnerable to the impacts of flooding than other communities.

    _____Strongly   _____Agree   _____Disagree   _____Strongly
         Agree   Disagree

27. Flood regulations and policies are not helping the people who need it the most.

    _____Strongly   _____Agree   _____Disagree   _____Strongly
         Agree   Disagree

28. The State does not have the resources to be able to save all communities from increased flooding and storms that may come with climate change.

_____Strongly Agree _____Agree _____Disagree _____Strongly Disagree

29. Government agencies are more likely to give flood assistance to communities with well-connected and influential leaders.

_____Strongly Agree _____Agree _____Disagree _____Strongly Disagree

30. People are separated by race and income on the Eastern Shore.

_____Strongly Agree _____Agree _____Disagree _____Strongly Disagree

31. Environmental protection is a higher priority than the well-being of African American communities on the Eastern Shore.

_____Strongly Agree _____Agree _____Disagree _____Strongly Disagree

32. Fairness is the most important criteria for the distribution of resources for flood preparation and response.

_____Strongly Agree _____Agree _____Disagree _____Strongly Disagree

33. At least 25% of public flood adaptation money should be designated for marginalized and poor communities.

_____Strongly Agree _____Agree _____Disagree _____Strongly Disagree

34. The needs of marginalized and poor communities should be prioritized over environmental conservation.

_____Strongly Agree _____Agree _____Disagree _____Strongly Disagree

35. State policies and regulations on climate change adaptation should be subject to approval by an environmental justice commission.

_____Strongly Agree _____Agree _____Disagree _____Strongly Disagree

36. The needs of marginalized and poor individuals should be prioritized over tourism development.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

37. Public decision-making processes should be changed in any way necessary to ensure the voices of the poor and marginalized are heard.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

38. A just flood adaptation plan is preferable to an unjust plan even if it costs significantly more.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

39. Regardless of their income all individuals who suffered flood damage should receive flood recovery money.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

40. Historic African American communities should be provided sufficient adaptation resources so that they do not have to relocate.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

41. Policymakers should work with local churches to make sure the voices of the poor and marginalized are considered in decision-making.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

42. I would like to see industry and skilled-work that once supported coastal communities return to the Eastern Shore.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

43. Government funding should be distributed so that it does the most good for the greatest number of people.

_____Strongly   _____Agree   _____Disagree   _____Strongly
       Agree   Disagree

44. Buyouts should be an option for households living in a flood zone.

_____Strongly   _____Agree   _____Disagree   _____Strongly
       Agree   Disagree

45. Engagement with local government is the best way for the voices of poor and marginalized community members to be heard.

_____Strongly   _____Agree   _____Disagree   _____Strongly
       Agree   Disagree

46. I would like to see tourism continue to grow on the Eastern Shore.

_____Strongly   _____Agree   _____Disagree   _____Strongly
       Agree   Disagree

47. Flood recovery money should be distributed in such a way that people living in the flood zone will be motivated to relocate.

_____Strongly   _____Agree   _____Disagree   _____Strongly
       Agree   Disagree

48. Environmental regulation should limit what landowners may do to protect their property from flooding.

_____Strongly   _____Agree   _____Disagree   _____Strongly
       Agree   Disagree

49. There is already plenty of opportunity for poor and marginalized individuals to participate in flood planning and decision-making.

_____Strongly   _____Agree   _____Disagree   _____Strongly
       Agree   Disagree

50. I would like to see tidal marshes maintained on the Eastern Shore.

_____Strongly   _____Agree   _____Disagree   _____Strongly
       Agree   Disagree

51. Distribution of flood recovery money should be based solely on financial need.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

52. Preserving the history and heritage of communities that will be lost to flooding should be a high priority.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

53. Justice will be increased if efforts are made to foster community relationships across the race and income-level divide.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

54. The Eastern Shore will be more resilient to the impacts of climate change with a diverse economy and citizenry.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

55. Wetlands are important for the well-being of people on the Eastern Shore.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

PLEASE MAKE SURE BOTH SIDES OF EACH PAGE HAVE BEEN COMPLETED.

THANK YOU!

Environmental Justice and Climate Change on
Maryland's Eastern Shore Survey

Background: The purpose of this study is to 1) understand how African American communities on the Eastern Shore are vulnerable to coastal flooding due to climate change, 2) identify opportunities for successful adaptation to flooding, and 3) determine how community members, policymakers, and environmentalists think about justice in relation to vulnerability and adaptation. The results of this study will allow the researchers to compare how views on justice vary within and between stakeholder groups. The survey questions are developed from interviews conducted previously and from statements made by interviewees.

Please Read before Beginning Survey
I state that I am over 18 years of age and wish to participate in a program of research being conducted by Dr. Michael Paolisso and Christy Miller Hesed of the University of Maryland, College Park.

I understand that I will be asked to state my agreement or disagreement with statements regarding vulnerability to flooding on the Eastern Shore, the importance of justice, and what adaptation should look like. I will also be asked some background questions about myself. The questions are straightforward and will not take but a few seconds to answer each.

The primary risk associated with this study is the emergence of negative or distressful feelings in identifying climate change impacts to your community or in answering the survey questions. You may speak with any of the researchers listed below to discuss any distress or other issues related to study participation. All responses are confidential. No study participant names or contact information will be revealed in public presentations or publications. Participation in the survey is voluntary. To compensate the churches for their assistance in distributing the surveys, we will pay each church $10 for every completed survey that is returned.

For additional information on this research program and your rights and benefits as a participant, please contact Dr. Michael Paolisso or Christy Miller Hesed, Department of Anthropology, 1111 Woods Hall, University of Maryland, College Park, Maryland 20742-7415, Telephone (301) 405-1433, Email mpaoliss@umd.edu or cmillerh@umd.edu.   If you have questions about your rights as a research subject or wish to report a research-related injury, please contact: Institutional Review Board Office, University of Maryland, College Park, Maryland 20742; (E-mail) irb@deans.umd.edu; (Telephone) 301-405-4212. Consent form approved, valid until March 26, 2015.

1. **I agree to participate in the research project described above.**

_____ **Yes**

_____ **No**

Background Questions

The following questions will help us understand differences across various study groups according to a number of social and demographic characteristics. Please read each question and respond accordingly.

2. How many years have you resided on the Eastern Shore?

____ Years

3. How concerned are you about your current home flooding?
_____Very Concerned   _____Somewhat Concerned   _____Not Concerned

4. Have you experienced difficulty in reaching or leaving your home because of flooding?
____ Yes, within the last 3 three years
____ Yes, but between 3 and 10 years ago
____ Yes, but more than 10 years ago
____ No, never experienced difficulty

5. Have any of the homes you've lived in on the Eastern Shore ever been flooded?
____ Yes, within the last 3 three years
____ Yes, but between 3 and 10 years ago
____ Yes, but more than 10 years ago
____ No, never flooded

6. From which of the following organizations have you received flood assistance? (Please mark **ALL** that apply.)
____ Insurance company
____ FEMA (Federal Emergency Management Agency)
____ MEMA (Maryland Emergency Management Agency)
____ Church-based organizations
____ Non-religious, non-government organizations (e.g. Red Cross)
____ Local church
____ I have never received flood assistance
____ Other (please specify) _____

7. Do you currently have flood insurance for your home?
___ Yes;   ___ No

8. How concerned are you about your church flooding?

_____Very Concerned   _____Somewhat Concerned   _____Not Concerned

9. How many years have you been attending your church?

____ Years

10. Do you own property near the church?
____ I do not own property
____ Within ¼ mile
____ Between ¼ mile to 1 mile away
____ Between 1 and 5 miles away
____ Between 5 and 10 miles away
____ Between 10 and 25 miles away
____ More than 25 miles away

11. How many of your local friends and family also attend your church?
____ All of them
____ Most of them
____ Half of them
____ A few of them
____ None of them

12. How would you be impacted if your church had to close? (Please mark whether you believe your church closing would result in a high loss, some loss, or no loss to each of the listed church services.)

	High Loss	Some Loss	No Loss
Sense of community	____	____	____
Help in times of need	____	____	____
Spiritual support	____	____	____
Sense of identity	____	____	____
Community history and heritage	____	____	____
Source of information	____	____	____

13. How important is it that your church remain in its current location?

_____Very Important   _____Somewhat Important   _____Not Important

14. How many meetings on preparing for the impacts of flooding and climate change have you participated in during the last three years?
____ None
____ 1-2
____ 3-5
____ More than 5

15. Have you been contacted by anyone about local flood risks and/or ways to prepare for an emergency?

    ___ Yes;   ___ No

16. How willing are you to attend a public meeting on possible climate change impacts such as flooding, storms, and sea-level rise?

_____Very Willing   _____Willing   _____Unwilling   _____Very Unwilling

17. How willing would you be to attend a meeting at your church on possible climate change impacts such as flooding, storms, and sea-level rise?

_____Very Willing   _____Willing   _____Unwilling   _____Very Unwilling

18. What is your educational background? (Please mark only **ONE** answer.)
    - ___ Some high school
    - ___ High school graduate or GED
    - ___ Some college
    - ___ Associate degree
    - ___ Bachelor's degree
    - ___ Graduate or professional degree

19. Please select the employment category that BEST describes the type of work that you have primarily done over the last 10 years. (Please mark only **ONE** answer.)
    - ____ Agriculture
    - ____ Commercial Fishing
    - ____ Teaching/formal education (K-12)
    - ____ Real Estate, Land Development, Building Construction
    - ____ Professional, Scientific, Research, and Technical Services
    - ____ Environment, Conservation, and Wildlife Organizations
    - ____ Non-profit organizations, religious organizations, community-based organizations
    - ____ Public sector, state or county government
    - ____ Utilities
    - ____ Retired
    - ____ Other (please specify) _____

20. What is your race or ethnicity? (Please mark the **ONE** best answer.)
    - ____ American Indian
    - ____ Asian
    - ____ Black or African American
    - ____ Hispanic or Latino
    - ____ Caucasian
    - ____ Other (please specify) _____

21. What is your gender?
    - ____ Male
    - ____ Female

22. What is your age in years?

_____ Years

23. What is the address of your current residence on the Eastern Shore?

_____

Street Address   *City, State*   *Zip*

Vulnerability, Justice, & Adaptation Questions

In this section, please tell us how much you agree or disagree with a series of statements about vulnerability, justice, and adaptation. These statements represent points of view we have heard from interviews with individuals on Maryland's Eastern Shore. Please read each statement and choose ONE response that best matches your level of agreement with the statement.

24. Income level affects a person's ability to protect their property from flooding.

_____Strongly   _____Agree   _____Disagree   _____Strongly
    Agree   Disagree

25. Coastal African American communities are more vulnerable to the impacts of flooding than other communities.

_____Strongly   _____Agree   _____Disagree   _____Strongly
    Agree   Disagree

26. Flood regulations and policies are not helping the people who need it the most.

_____Strongly   _____Agree   _____Disagree   _____Strongly
    Agree   Disagree

27. The State does not have the resources to be able to save all communities from increased flooding and storms that may come with climate change.

_____Strongly   _____Agree   _____Disagree   _____Strongly
    Agree   Disagree

28. Government agencies are more likely to give flood assistance to communities with well-connected and influential leaders.

_____Strongly   _____Agree   _____Disagree   _____Strongly
    Agree   Disagree

29. People are separated by race and income on the Eastern Shore.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

30. Environmental protection is a higher priority than the well-being of African American communities on the Eastern Shore.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

31. Fairness is the most important criteria for the distribution of resources for flood preparation and response.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

32. At least 25% of public flood adaptation money should be designated for marginalized and poor communities.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

33. The needs of marginalized and poor communities should be prioritized over environmental conservation.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

34. State policies and regulations on climate change adaptation should be subject to approval by an environmental justice commission.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

35. The needs of marginalized and poor individuals should be prioritized over tourism development.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

36. Public decision-making processes should be changed in any way necessary to ensure the voices of the poor and marginalized are heard.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

37. A just flood adaptation plan is preferable to an unjust plan even if it costs significantly more.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

38. Regardless of their income all individuals who suffered flood damage should receive flood recovery money.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

39. Historic African American communities should be provided sufficient adaptation resources so that they do not have to relocate.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

40. Policymakers should work with local churches to make sure the voices of the poor and marginalized are considered in decision-making.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

41. I would like to see industry and skilled-work that once supported coastal communities return to the Eastern Shore.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

42. Government funding should be distributed so that it does the most good for the greatest number of people.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

43. Buyouts should be an option for households living in a flood zone.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

44. Engagement with local government is the best way for the voices of poor and marginalized community members to be heard.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

45. I would like to see tourism continue to grow on the Eastern Shore.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

46. Flood recovery money should be distributed in such a way that people living in the flood zone will be motivated to relocate.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

47. Environmental regulation should limit what landowners may do to protect their property from flooding.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

48. There is already plenty of opportunity for poor and marginalized individuals to participate in flood planning and decision-making.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

49. I would like to see tidal marshes maintained on the Eastern Shore.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

50. Distribution of flood recovery money should be based solely on financial need.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

51. Preserving the history and heritage of communities that will be lost to flooding should be a high priority.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

52. Justice will be increased if efforts are made to foster community relationships across the race and income-level divide.

_____Strongly   _____Agree   _____Disagree   _____Strongly
     Agree   Disagree

53. The Eastern Shore will be more resilient to the impacts of climate change with a diverse economy and citizenry.

_____Strongly Agree   _____Agree   _____Disagree   _____Strongly Disagree

54. Wetlands are important for the well-being of people on the Eastern Shore.

_____Strongly Agree   _____Agree   _____Disagree   _____Strongly Disagree

PLEASE MAKE SURE BOTH SIDES OF EACH PAGE HAVE BEEN COMPLETED.

THANK YOU!

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