

HUMBOLDT BAY INITIATIVE: A CASE STUDY OF THE APPLICABILITY OF
ECOSYSTEM-BASED MANAGEMENT FOR COLLABORATIVE RESOURCE
MANAGEMENT

HUMBOLDT STATE UNIVERSITY

By

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ABSTRACT

Humboldt Bay Initiative: A Case Study of the Applicability of Ecosystem-Based Management for Collaborative Resource Management

Katherine D. Glover

This research explores the collaborative potential of Ecosystem-Based Management through a case study of the Humboldt Bay Initiative. Understanding the collaborative elements of an Ecosystem-Based Management (EBM) process is important in light of the international, national and regional adoption of a more holistic perspective in natural resource management. This research also stems from a need to identify evaluative methods that will help determine the usefulness of EBM in collaborative community-based initiatives. This research employed a qualitative analysis with participants of the Humboldt Bay Initiative, an EBM program located in northern California. Participants of the Humboldt Bay Initiative identify process barriers to the group's success, such as low process transparency and a need for greater organizational development. Participants also celebrate the group's successes, such as a desire for close partnership with the larger Humboldt community and a group vision for a healthy and sustainable Humboldt ecosystem. This research concludes by offering the Humboldt Bay Initiative process strategies that will aid the group's progress from planning to implementation by incorporating process building elements like community capacity and

re-engaging with strategic planning. Additionally, this research identifies gaps in the conceptual understanding of the collaborative elements of EBM and offers theoretical concepts to support the holistic perspective of EBM as a natural resource management strategy.

DEDICATION

In loving memory of Durward W. Kettells

and

In honor of

Margaret J. Kettells

John R. Glover

Rosemarie Glover

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I am thrilled to present the final piece of my culminating studies for Humboldt State University's Environment and Community Graduate Program. The process that is concluding with this study has been an education beyond the classroom. I had the extreme pleasure to work with a group of people that walk their talk when it comes to collaboration. Without the participants of the Humboldt Bay Initiative, who patiently and genuinely shared their time, knowledge and resources with me, this research would not have happened. It is with much gratitude that I thank everyone who participated in this study. Particularly, Susan Schlosser who supported my idea from its inception and Becky Price-Hall who has been through this process before me and offered her guidance.

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May this research be helpful in supporting more collaborative action to create healthy ecosystems for us now and future generations. Thank you.

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I. INTRODUCTION TO THE HUMBOLDT BAY INITIATIVE

In this case study, I investigate the relationship between a group of people and their ‘place’ as they work to balance sustainability between natural and social systems. I seek to understand how the theoretical collaborative framework of Ecosystem Based Management (EBM) works in application through the Humboldt Bay Initiative (HBI). HBI is the creation of a group of people in Humboldt County, California, working to network resources to improve local natural and social issues. Ecosystem-Based Management is a theoretical framework HBI has adopted to incorporate interdisciplinary knowledge with holistic problem solving. HBI is one of six groups on the West Coast identifying EBM as their ideological framework, making HBI a model for other local groups wishing to adopt elements of ecosystem-based management into their organizational process. HBI participants’ collaborative efforts through HBI could engender a broader, more holistic, understanding of natural resource management. HBI is a case study for “think globally, act locally”.

The Humboldt Bay watershed is an ecologically, socially and economically unique system located 90 miles south of Oregon and 275 miles north of San Francisco. The watershed encompasses 225 square miles of rivers, sloughs, marshes and temperate forests flourishing adjacent the Pacific Ocean. Humboldt Bay is the second largest estuary in California, 25 square miles at high tide (HBI 2008). Approximately 80,000 people residing within the Humboldt Bay watershed depend on a healthily functioning system (HBI 2008). Natural resources within this region are under federal, state, local

and private jurisdictions and are utilized for conservation, industrial, residential, extractive, commercial, agricultural and other uses. Maintaining a high quality of life in the Humboldt Bay watershed requires a balance of economic, social and ecological conditions. The remoteness of the region, the historical and present day resource extraction-based economy, combined with large areas of state and federal resource jurisdiction distinguishes Humboldt from other Californian coastal communities. There is a desire within this coastal community to collaboratively build a sustainable future through the inclusion of diverse knowledge and resources.

The Humboldt Bay Initiative is a local response to area issues. The initiative seeks to collaboratively identify ways to balance social, ecological and economic needs. An effort to share information across regulatory boundaries, HBI grew from local planning endeavors.¹ In 2006 a group of people working in separate planning processes received a grant from the California Coastal Conservancy to create an Advisory Team (the beginnings of HBI) that would engage in a broader way of thinking about natural resource management through ecosystem-based management.

¹ The Science & Technology Alliance for North Coast Estuaries – *Restoration Strategy for Humboldt Bay*, Humboldt Bay Watershed Advisory Committee – *Humboldt Bay Watershed Salmon & Steelhead Conservation Plan*, Humboldt Bay Harbor Recreation and Conservation District – *Humboldt Bay Management Plan*, and The Humboldt County General Plan Update. Please Refer to Appendix 1 for a more detailed timeline for the development of the Humboldt Bay Initiative found in the HBI Strategic Plan 2009.

Ecosystem-Based Management, as a process, has been supported by larger initiatives encouraging groups like HBI to begin their locally focused work.² The basis of EBM is to holistically include humans into society's understanding of a healthy ecosystem. Making humans a part of the system broadens traditional perspectives of natural resource management. Including humans in management strategies increases the complexity of planning processes and requires incorporating different ways of understanding local resources. To accomplish this, HBI invited interdisciplinary experts from academia, federal and state agencies, and local industries to engage with local economic, social and ecological facets of Humboldt Bay watershed.

The Humboldt region, as a coastal community, faces issues comparable to those being dealt with in other regions across the United States and internationally. Similarly, HBI is working through similar issues shared by other local initiatives. For example, most action-oriented organizations are often single-issue focused and reactionary. Our western culture has adopted an attitude that does not readily share information or resources which keeps organizations at odds. One goal of EBM is to replace single issue thinking with broader picture, holistic thinking that is also collaborative in order to improve local issues. As one of the first established EBM programs, HBI is becoming a

² Joint Ocean Commission Initiative and the California Ocean Protection Council. Continued support for EBM application with the signing of the West Coast Governors' Agreement on Ocean Health (2006) and the White House Council on Environmental Quality: Interim Report of the Interagency Ocean Policy Task Force (2009).

model for other communities wanting to adopt a more collaborative mode of local problem solving.

HBI is not the only planning effort on the west coast that has adopted EBM. HBI is part of the West Coast Ecosystem Based Management Network, created as a result of the West Coast Governors' Agreement on Ocean Health between California, Oregon and Washington. Presently there are six programs participating in the network, which provides support, resources and an arena in which to share ideas and information. The West Coast Ecosystem Based Management Network views West Coast communities as one part of a larger coastal ecosystem, supporting collaborative planning processes. Although HBI is focused on one West Coast community in Northern California, the group's efforts have the ability to influence a much larger systematic way of decision making and reshaping how society perceives its relationship with natural systems.

I became involved with HBI fall of 2008. I attended monthly public meetings as a graduate student of Humboldt State University and facilitator for the Institute for the Study of Alternative Dispute Resolution (ISADR). Remaining an observer to the process for several months, I was invited to attend HBI's strategic planning workshop in January of 2009. Able to offer my recording skills, I aided in discussions throughout the week-long process. During this event I identified my master's research topic and commenced on this three year journey. Through collaborative discussions with HBI members, we determined that I would investigate EBM's theoretical framework as a collaborative management strategy. HBI is a case study determining the applicability of EBM as a

collaborative process. HBI has been supportive, patient and eager to see the results of my work, which I am more than happy to share.

This study may help other groups avoid process roadblocks and adopt the positive attributes of EBM into their own planning processes. Because EBM incorporates collaborative efforts to improve environmental problems, it is another step forward in Western natural resource management. Through incorporating human communities as part of natural ecosystem and embracing collaborative processes to solve complex problems, EBM represents another step towards creating a more socially and environmentally just world for future generations.

II. APPLYING ECOSYSTEM-BASED MANAGEMENT TO REGIONAL ECOSYSTEMS

Getting to Ecosystem-Based Management

The environmental movement continues to evolve with increased social awareness of society's role in complex environmental issues. The movement has progressed from preservationist ideology in the early 1900s to conservationist ideals in the mid-1900s. In the 1980's ecosystem management developed as an issue within environmental discourse and ecosystem-based management is increasingly discussed today. Each shift has occurred at a point when society redefines our relationship to our natural world resulting in changing views about our ability to manage nature to meet social, economic and ecological needs. The turn of the twentieth century and Post World War II brought increased industrial production in the United States resulting in the over-exploitation of natural resources. Additionally, the political desire for Western expansion caused economic conflict between the social needs for use and preservation of natural resources (McKinnery and Harmon 2004). In the 1970's degradation of natural resources resulted in social concern for the environment and generated key environmental legislation.

Politically, the United States enacted the Endangered Species Act and the National Environmental Protection Act (NEPA). NEPA has been dramatically important in shaping our view of natural resources today because it was the first federally mandated document to force natural resource managers and planners to take environmental impacts

into project management consideration (Brunner et. al 2002). Through this process, NEPA forces federal agencies to be more transparent by including public involvement in federal agency decision making. However, because NEPA did not define the parameters for public inclusion, there has not been consistency between agencies. Inconsistency has resulted in public mistrust of the government and environmental group's filling court rooms in resistance to government action. Brunner and Colburn explain that public inclusion remained superficial after the passage of NEPA. In practice, meetings functioned more as a process meant to forestall future litigation than a serious attempt to meaningfully engage the public in agency decision making (2002). Following the implementation of NEPA, other federal environmental statutes aiming to legally protect the United States' natural resources were created in addition to new administrative agencies, such as the United States Environmental Protection Agency (Bass et al. 2001). Although the development of federal legislation was an effort to incorporate the public into federal environmental processes, interest group pluralism encouraged a "winner take all mentality" causing a high rate of court litigation. The result was legislative "gridlock" between opposing stakeholders and government initiative (Brunner et. al 2002). Collaboration among federal agencies and interest groups emerged as a way to work through polarization (Weber 2003).

In the mid 1990's scientists and natural resource planners began developing ecosystem management in an effort to dissipate legislative gridlock. The objective of ecosystem management was to support sustainable ecosystems based on elements of

systems theory. By focusing on system connectivity versus fragmented species specific discussions, a broader understanding of similar needs across species began to emerge. The intent of ecosystem management programs was to inform science-based decision making in policy development (Slocombe 1998) using a holistic philosophy to protect ecosystem integrity within the socio-political and scientific systems (Grumbine 1994).

The resulting shift in the environmental movement was to utilize science-based information in natural resource management decision making which led to taking the public back out of natural resource planning and defeating the initial goal of NEPA. McKinney and Harmon (2004) suggest that there should be concerns with relying on strictly science-based management. When the line between science and policy is unclear, the result can be overall mistrust, or failure, to gain citizen participation in a public planning process which surfaces power issues and undermines credibility. In a conversation between scientific knowledge versus local knowledge of a natural resource; if the scientific knowledge is held to be more credible based on the value of scientific source then local participation is more likely to back out of the conversation because they are not feeling heard. If there is no public participation, the process cannot be considered a public process.

Ecosystem-Based Management as Community-Based Collaboration

Ecosystem-Based Management (EBM) is theoretically similar to ecosystem management because it encourages the use of scientific data collection to inform policy

decision making. However, in application, EBM is different from ecosystem management because EBM includes human communities as a part of a healthy functioning ecosystem and focuses managing strategies on human activities rather than controlling natural resources. Additionally, the EBM process is driven by collaborative effort (Slocombe 1998). EBM theory supports a scientific description of an ecosystem as a complex, energy driven community of organisms that tends towards shared evolutionary trends (Dickinson 1998). EBM defines community as including both natural and human systems residing in the same space (McLeod 2005). Further, EBM theorizes community as an encompassing entity acknowledging the complexities of understanding who and what makes a place. The result of acknowledging the complexities of defining “place” results in a more complex collaborative process. Theoretically, EBM is an inclusive, collaborative process that strives to equally value science and local knowledge so that community-based initiatives can make balanced decisions concerning natural resources.

Community-based initiatives have laid the foundation for EBM. These initiatives, particularly on the West Coast, have focused on local issues and begun to grow in popularity with the development of ecosystem management (McKinney and Harmon 2004; Weber 2003). Borrowing from ecosystem management’s use of science to inform policy decision making, local initiatives also began to include the use of local knowledge for informing local natural resource decision making. Brunner and Colburn (2002) explain that community members were able to engage in place-based/issue-based initiatives to solve immediate problems. The experiences may not have solved differences

between community members and planners but the inclusive processes were a start to heal past wounds associated with place-based issues. Ecosystem management theory asks community groups to focus on action-based decisions to manage natural resources (Slocombe 1998).

Ecosystem-Based Management is a place-based effort to provide community-based initiatives with a theoretical framework to successfully plan for sustainable natural resources through the management of human impact. The Scientific Consensus Statement on Marine Ecosystem-Based Management (2005) states:

The term “ecosystem management” implies that it is possible to control and manage an entire ecosystem. In view of the fact that humans cannot control ocean currents or most animals within a marine ecosystem; it is scientifically more accurate to speak of “ecosystem-based management” and “ecosystem approach to management”. Ecosystem-based management focuses on managing human activities, rather than deliberately manipulating or managing entire ecosystems. (6)

Society is again redefining our relationship to natural systems. EBM suggests the focus is not management to control natural systems, but instead to manage social systems within the larger ecosystem. As EBM functions within systems theory the idea is that by positively managing for an environmentally conscious society, natural systems should benefit. In response to benefitting from increased social awareness, natural systems should respond by benefitting social systems through increased natural resource sustainability. As Edward Weber suggests, community based initiatives are beneficial to healthy natural systems by Bringing Society Back In (2003).

Theoretically, EBM should provide a positive feedback loop for human communities. If human activities are managed to benefit sustainable natural resources, the resources should provide increased ecosystem services that benefit human communities (McLeod 2005). A successful feedback loop includes an EBM group of diverse communities and their different ways of knowing. Through different perspectives EBM groups will be able to identify systemic issues within natural and social systems creating a positive feedback loop. Identifying the issues will clarify roles within the group for EBM participants as well as identify other local interests that will need to be involved to improve the issues. Collaborative efforts, local governing structures, governmental and non-governmental agencies, academic institutions, traditional ecological knowledge, environmental advocates, industries, the public at large and/or other site specific intellectual resources, provide critical bodies of knowledge for successful EBM strategies to improve local resource issues (McLeod 2005). The shift from environmental management to Ecosystem-Based Management focuses on changing how we view management. The “West Coast Governors’ Agreement on Ocean Health Action Plan” defines EBM in the following statement (May 2009):

Ecosystem-Based Management (EBM) is a process that integrates ecological, social, and economic goals, recognizes humans as key components of the ecosystem, and considers ecological boundaries while acknowledging political borders. Further, an EBM approach assesses cumulative impacts from various sources and strives to balance conflicting issues. It accounts for complexity and uncertainty of natural processes and social systems, incorporating adaptive policies in the face of uncertainties ... EBM requires multiple stakeholders to help define problems, incorporate scientific, social, and economic understanding, set goals and find solutions (53-54).

Table 1, Goals of Ecosystem-Based Management, outlines the primary goals of EBM as explained by Karen McLeod (2005).

Table 1: Goals of Ecosystem-Based Management

Goals of Ecosystem-Based Management
1. To emphasize the protection of ecosystem structure, functioning and key processes.
2. To be place-based, by focusing on a specific ecosystem and the range of activities affecting it.
3. To explicitly account for the interconnectedness within systems, recognizing the importance of interactions between many target species or key services and other non-target species.
4. To acknowledge the interconnectedness among systems, such as between air, land, and sea.
5. To integrate ecological, social, economic, and institutional perspectives, recognizing their strong interdependences.

Reference: McLeod, K. et al. "Scientific Consensus Statement on Marine Ecosystem-Based Management"

Ecosystem-Based Management incorporates human communities as a part of a healthy, functioning ecosystem. By combining the efforts of diverse interests groups focusing on sustainable environmental and anthropocentric needs, collaboration of resources can benefit current and future generations (McLeod 2005). The ability to implement EBM strategies as a collaborative process within communities will be a

determining indicator to determine how well EBM will function to sustain a complex ecosystem.

EBM is a community-based framework that government agencies are increasingly supporting. Agencies' commitment to working through local issues motivates new decision making processes to move away from traditional top-down approaches to community-based collaboration (Singleton 2002). Collaborative processes can develop into outlets for direct democracy and civic participation through decentralization of power and stakeholder accountability (Wondolleck and Yaffee 2000). Weber suggests that the holistic approach to problem solving allows for "result-oriented management" and on-going decision making processes (2005). Whether the process is called ecosystem-based management, co-management, watershed councils, community forests, sustainable community building or urban forestry partnership, they all have one concept in common: working together as a community to better their place (Brick et. al 2001). Benefits of collaboration include: community building, trust building, active/shared learning, commitment to management, shared ownership, and creating a sense of place. These benefits are the reason why organizations are advocating and promoting collaborative processes across the country (Wondolleck and Yaffee 2000).

Unpacking Key Concepts

Ecosystem-Based Management is the latest iteration of a series of natural resource management strategies. Building on the ideology of science-based decision making and

policy formation, EBM incorporates a community-initiative framework to address more encompassing issues at social, economic and ecological levels. EBM's management strategy focuses on managing human systems within their natural place to improve the quality of life for the larger ecosystem. This holistic approach encourages collaborative efforts to identify problems and determine best management practices. EBM is a government-supported strategy to encourage grassroots initiatives' leadership and participation in local decision making processes.

The idea of community has a variety of connotations. For purposes of this study, community is viewed as the daily interactions of people where a sense of belonging is established and individuals' identities and understandings of meaning overlap (Low 2003). This definition is supported by Marshall's understanding that community is "a network of relationships among individuals, families, groups that binds them in mutually supportive and dependent construct" (2001, 193). Community can transcend geographic space to be inclusive of ideologies, shared ways of living, and world perspectives. Multiple communities can share the same space but do not have to, and rarely do, share the same perspectives. Differing perspectives can result in conflict which can create community bonds through resistance as groups work against or towards one another (Susskind 1999). Community-based initiatives use problem solving methods to facilitate breaking down barriers of miscommunication and differing perspectives.

Ecosystem-Based Management's anthropocentric focus is significant because unlike other management strategies working to manipulate natural resources, EBM works

to manage human activities by encouraging sustainable working lands, waters and resources for future generations (McLeod 2005 and 2009, SeaWeb 2008, Halpern et al 2009). Depending on a collaborative group's values, sustainability can encompass a variety of meanings from maintaining current conditions to controlled growth or improvement. EBM defines sustainability as, "delivery of goods and services in perpetuity" (Dean-Moore and Russell 2009: 330) but communities applying EBM theories will redefine this understanding to fit the vision of their ecosystem's future. Chan et al. state that, "Community-based conservation research offers insights into promotion of conservation from the bottom up. But we can only expect such projects to yield sustainable gains for biodiversity if the gains for people are linked and are themselves sustainable" (2007: 62-63). Sustainability as discussed in this study focuses on the interdependent relationship of healthy systems contributing to and relying on the health of one another to flourish.

An ecological definition of ecosystem has shifted away from being species specific to a more systematic understanding of complex interactions between biotic and abiotic elements that function as different habitats contained within an ecosystem (Dickinson 1998). Although it is important to understand how species function separately from one another, a shift to systems ecology stresses the importance of understanding how species interact and function in relation to one another (Schmitz 2007). Causal relationships within systems can be identified within ecological research

frameworks thereby permitting more holistic solutions to issues of environmental degradation.

Characteristics of Ecosystem-Based Management

A core characteristic of EBM is the relationship of human needs and a healthy ecosystem. Rosenberg and Sandifer support the West Coast Governor's Agreement on Ocean Health when stating the goals of EBM are "sustainable ecosystem services and resilient ecosystems" (2009:13). Conceptually, ecosystem services are a way of placing an economic value on ecological resources. Historically, our understanding of ecosystem services has emphasized direct use natural resources (i.e. extractive, recreational and public health). However, an economic perspective of ecosystem services within the EBM framework places value on ecological knowledge as a method of considering nature (Wainger and Boyd 2009).³ Karen McLeod suggests ecosystem services are the "fundamental ecological processes that sustain ecosystem functioning (e.g., nutrient cycling and photosynthesis), and underlie all other services that are directly used by people" (2009:6). Those defining the EBM framework suggest that if human activities are managed in order to support functioning ecosystems then human communities may continue to depend on the services systems provide.

³ For greater detail on the conceptual development of ecosystem services please refer to Lisa A. Wainger and James W. Boyd (2009), Chapter 6: "Valuing Ecosystem Services" in Ecosystem Based Management for the Oceans. Edited by Karen McLeod and Heather Leslie, Island Press; 92-111.

Two core characteristics of EBM are resilient science and adaptive management. Resilient science is the lens through which EBM perceives an ecosystem. Adaptive management is EBM's method for managing the perceived ecosystem. These concepts give flexibility to the collaborative process. From strategic planning to evaluation, EBM observes through resilient science and takes action via adaptive management as a precaution, or in reaction, to systematic changes such as: natural forces, policy changes, social issues and/or shifts in process dynamics. Karen McLeod defines resiliency as, "... the extent to which a system can maintain its structure, function, and identity in the face of disturbance..." (2009: 8). McLeod notes that resilient science recognizes that systems are constantly changing due to shifts in social and natural variables. Resilient science is an effort to maintain robust, functioning systems by accounting for variable fluctuation. Leslie and Kinzig contextualize systematic threshold of resilience by providing the example of fishing for the maximum yield in fisheries management (2009). Fishing for a population's maximum yield can be a detriment to the larger system because the short sighted goal of single species management does not consider the long term goals of natural or social systems.

Leslie and Kinzig suggest there are seven key elements to understanding resilient science (2009). First, environmental decision making is informed by understanding the interdependency of human and ecological systems. Second, neither social nor ecological systems are static. Third, once modified, these systems may never return to their original state; therefore decisions should not assume the original condition as their management

goal. Fourth, due to the changing nature of systems, we should acknowledge uncertainty. Therefore, the goal should be to maintain the ability to have options rather than focus on maximizing the limitations of natural resources. Commodities change with social demand and ecological availability. Fifth, natural resource planning processes should direct their focus away from species-specific or issue-specific problem solving to engage with broader systematic characteristics such as diversity disturbance regimes, and interactions. Sixth is the need to recognize and accept that resiliency cannot be maintained at all scales at all times. Therefore it is necessary to make space in the management process for unknown variables and systemic weakness. Finally, the seventh key element asserts the importance of evaluating management efforts and of learning from the process itself. Theoretically, resilient science makes space for incorporating larger systematic functions to create a broader management lens.

Applying resilient science in project management requires adaptive management. Edward P. Weber defines adaptive management as a process that remains responsive to changes in dynamic systems (2003). He states that, “ideally, adaptive management increases responsiveness to ecosystem problems by promoting the value of continual innovation and adaptation in response to changing conditions, problems and degree of success (or failure) enjoyed by solutions” (2003:196). Adaptive management consists of four stages: planning, implementation, monitoring and evaluation. Adaptive management asks the collaborative group to reflect on each stage before entering the next stage. Take for example the case of a group working to eradicate an invasive aquatic

plant from a recreationally active waterway. If during the planning stage an ecological change (i.e. water level, wind speed, temperature) renders an eradication technique no longer safe for the eradication crew, other species or surrounding residents, then it is important to be able to stop the project and alter the planned procedure. Or, for example, if during project implementation there is community resistance to a removal technique (i.e. use of herbicide, fire, etc.) the project can be stopped to address public concerns. Adaptive management implemented during the monitoring stage of this hypothetical project allows managers observing negative impacts to respond in a manner that reduces harm. Thus, incorporating resilience science into an adaptive management plan enables necessary adjustments throughout all four stages.

Important to resilient science and adaptive management is allowing the group time to be reflexive before starting the next step, and certainly to evaluate the project as a whole before starting to plan for the next project. Muñoz – Erikson, et al. suggest that it is difficult to determine the effectiveness of a collaborative efforts in natural and social communities because the processes are rarely evaluated (2007). Success in collaborative processes is not a one size fits all determination. Even if a process is successful, it may take several generations to determine the level of success. Adaptive management supports social networking, positive relationship building, and increased understanding of different perspectives of the problem. The value in making space to discuss the outcomes of one project should result in strengthening the outcomes of the next project.

Elements of Collaboration

There is no recipe for a successful collaborative organization. Even well planned organizations fail without the right combination of participant dedication, group momentum and shared resources. Through readings on collaborative processes, I have found the following variables to be necessary for a successful process: inclusivity, transparency, public outreach and education, public participation opportunities, connections to local governance and participant accountability (Weber 2003, Wondelleck and Yaffee 2000, Brunner 2002). EBM embraces the positive results of a collaborative process, such as larger community commitment, increased local autonomy in decision making, increased information sharing and a better informed community. To realize these idealistic outcomes, we must first understand the importance of each collaborative element to the process.

The ability of a group to be inclusive is the most important factor in its ability to collaborate (Weber 2003). If a person/group is not invited to be a part of the group, their voice cannot be heard and therefore they have no say in a decision making process that potentially impacts their interests. The power hierarchy in traditional decision making processes has been 'business as usual', top-down collaborative processes (Singleton 2002). Edward Weber suggests the necessity of community involvement in decision-making processes concerning natural resources (2003). A community is able to identify healthy ecosystems in their place and can identify the connections between different ecosystems. Weber explains that the process of identifying healthy ecosystem indicators

involves group field trips to the natural systems being discussed. Activities connecting people directly to their place through stories and shared experiences makes space to share diverse knowledge, ground truth assumptions and create a shared vision of what a healthy ecosystem looks like. Ultimately, the process of creating health indicators and identifying causality of health risks is constructed by the people who are present and the interests that they represent. What may be perceived as a health risk to an ecosystem, i.e. the timber industry, may also be perceived as an economic foundation sustaining a community of people. Through a collaborative process, stakeholders can share information and begin building trust. However, the consequence of not inviting everyone into this process is creating a wedge of distrust between those invited and those not invited to be involved in the process. Inclusive processes create solutions that promote resource integrity and minimize resistance because people feel heard.

Although EBM is not necessarily a consensus-based process, as a collaborative process it permits the sharing of diverse interests on the same issue, resource or place.

Lawrence Susskind defines interest as the following:

Interests are what each participant in a group process seeks to achieve. Interests are not the same as position or demands. Demands and positions are what people say they must have, but interests are underlying reasons, needs, or values that explain why they take the positions they do. Interests can change in light of new information or a deeper understanding of a problem. They often reflect deeply held beliefs. (1999:6)

For example, when I began attending HBI meetings as a community member my interest was to understand how groups are managing the Humboldt Bay watershed and to

understand the principles of Ecosystem-Based Management. Through information sharing, group participation and understanding my role in the group, I began to see a connection between my being a graduate student and HBI's desire to conduct research. My interests shifted from being only interested in what was going on in my community to include undertaking thesis research with the group. Everyone attending HBI meetings comes for different reasons but the result is that the public feels that they are invited to a safe space to share information about local natural and social resources. EBM is an opportunity to communicate across agencies, local government and the broader community. "Building bridges between agencies, organizations, and individuals in environmental management is not an end to itself. Rather it's a means to several ends: building understanding, building support, and building capacity... Programs are more likely to be implemented successfully if they are supported and owned by affected groups" (Wondelleck and Yaffee 2000: 23). Collaboration between government agencies, community organizations and institutions can cause suspicion in communities that have experienced traditional inclusion techniques like public comment sessions (i.e. NEPA) in decision making processes. Public comment sessions tend to keep the public as observers to the process. Larger groups may ask for public input but may have little flexibility to change the process in a way that will beneficially include public thoughts into the future projects.

Process transparency supports collaboratives' efforts to be inclusive by being open with documentation and explaining how the group makes decisions. Collaborative

group participants should be able to clearly state the collaborative's vision, mission and goals as well as describe the process and resources used to determine those process elements. The more open a group can be the less room others have to doubt the collaborative's intention. If a group is thought to be an exclusive club, those not involved may mistrust and fear its decisions. For a community group with limited resources any negative attention can be detrimental to their ability to function. Maintaining adequate levels of transparency can be accomplished through outreach, education and activities that necessitate public inclusion. These are all methods of creating community ownership in a collaborative process.

Outreach and education depend on clear communication. Leaning on the resourcefulness of collaborative participants to get the word out to their own constituents and taking the next step to creatively share resources shows the commitment of group participants to the community. Communities benefit from increased awareness developed by collaborative efforts on issues associated with local natural environments, management challenges and/or missions of the agencies involved in local issues (Wondelleck and Yaffee 2000). Outreach can be in the form of pamphlets, instructional field trips, hosting a speaker series, running weekly articles in local media sources, organizing festivals and/or attending other organization's activities. The most important objective of outreach is to make sure information shared about the collaborative is true. It is important that collaboratives realize that they have as much to learn from the

communities that the group is working to serve as they have to educate the community. Remaining open to possibility can only strengthen the mission of a collaborative.

EBM highly encourages the participation of local governing structures in collaborative processes. Inclusion of local policy making entities is an interdependent relationship. Creating this relationship, the collaborative gains a level of legitimacy necessary to make decisions that impact local ecosystems. The government representative has a direct connection to community concerns, ideas and resources to make informed policy decisions. Inclusion of local government in an EBM process is supported at a state level, as evidenced by the West Coast Governors' Agreement on Ocean Health (2006). The agreement indicates a necessity for communities to care for their local environments to succeed in creating a healthy western coastline. Local government involvement in EBM is also supported at a federal level by President Obama's White House Council on Environmental Quality *Interim Report of the Interagency Ocean Policy Task Force* (September 2009).⁴ Additionally, EBM, as a management strategy, is supported at an international level. The United Nations

⁴ The report states that after a series of public meetings where, "A valuable and wide diversity of interests were represented, and several key themes emerged. While not exhaustive, these include:

- Support for adopting ecosystem-based management as a guiding principle, acknowledging regional differences, and practicing adaptive management;
- Support for embracing science-based decision-making and investing in ecosystem-based science, research, and ocean observations, including comprehensive research on the linkages among ecosystem health, human health, economic opportunity, national and homeland security, social justice and environmental change, including climate change;
- Desire for improved coordination and collaboration across Federal, State, tribal, and local governments, and regional governance structures and for improved transparency and public participation, while avoiding new layers of bureaucracy and unnecessary costs;
- Support improving education about the ocean, our coasts, and the Great Lakes; support for ensuring that policies are adequately funded; and Support for joining the 1982 United Nations Convention in the Law of the Sea" (4-5).

Environment Programme (2006) supports EBM as a process to facilitate local solutions in the Millennium Ecosystem Health Assessment. The assessment recognizes that ecosystems' sustainable health are essential to sustainable human health. Therefore, to solve encumbering issues like poverty and hunger top down process management is not successful. Instead, focusing on community capacity building and encouraging local management for community needs will be more successful to fight large problematic issues. The U.N. recognizes EBM as a management strategy that can be utilized to facilitate broader thinking about large public health issues due to its collaborative nature, public inclusiveness, and dedication to transparency and public education. EBM is an opportunity for regions to make autonomous decisions that will connect issues on a larger scale, encompassing "Think Globally, Act Locally". The idea is not to govern through EBM but to legitimize EBM with the inclusion of local governments as a conduit to make better policy decisions.

Accountability brings this discussion of elements necessary for a successful collaborative process full circle. While understanding ecosystem complexity, stakeholders learn how their actions impact ecosystems' health and thus their responsibility for maintaining healthy systems. The process of understanding an individual's role in the system is a conceptual link in creating stakeholder accountability. Accordingly, long term management solutions can be produced for natural and human communities that become a part of the ecosystem's shared history. Developing a shared history is important. Understanding the full diversity of perspectives, allows a group to

move forward through trial and error constructing a long-lasting and reflexive relationship. Accountability is directly linked to adaptive management (Weber 2003). For adaptive management to be successful, stakeholder commitments must be upheld for the general success of the collaborative. Without the personal/stakeholder accountability participants are making empty promises to the community which takes away from the collaborative's communal legitimacy. However, before an organization can become accountable as a collaborative participant, the organization has to be included in the process.

Reflexivity as part of the collaborative process

Ecosystem-Based Management as a collaborative process is becoming more widely supported by government entities and academic institutions. EBM is recent enough that evaluation criteria to determine its effectiveness as a natural resource management strategy or as a collaborative process have not yet been published. However, Muñoz-Erickson, et al. do attempt to incorporate a holistic perspective into evaluating EBM (2007). Researchers observe that evaluations relating to the effectiveness of collaborative processes are mostly concerned with the process. They do not measure the ecological or social outcomes that are the process objectives. Therefore they suggest creating a process evaluation separate from an evaluation of the outcomes of the process. Defining ecosystem health as dependent on social values for natural conditions; Munoz-Erickson, et al find that social values can be scientifically measured to

improve overall ecosystem health (2007). Therefore ecosystem health utilizes a theoretical and methodological framework for monitoring ecosystem indicators. The researchers suggest utilizing the interdisciplinary holistic ecosystem health indicator (HEHI), developed by the Center for Sustainable Development Studies (SCDS), to study the ecological, social and interactive indicators within collaborative processes (ibid 2007). The HEHI approach has not been utilized in this way before, but did prove to be a successful way to evaluate a study implemented by SCDS for an economic development initiative in Costa Rica (ibid 2007). The process researchers are suggesting is built into EBM's adaptive management and resilience science conceptual framework. Each collaborative process is unique in its process. However, developing an evaluative method to gauge the ecological and social effectiveness of the process could be extremely useful in motivating more communities to adopt Ecosystem-Based Management programs.

Muñoz-Erickson, et al. (2007) evaluates the overall impact of Ecosystem-Based Management whereas the focus of my study is the process itself. For the purpose of this study I will borrow collaborative elements of inclusivity, public outreach and education, public participation opportunities, connections to local governance, and participant accountability to review EBM as a process. To evaluate a process an organization does not have to wait until the completion of a project, as HBI is an on-going process. Taking time to be reflexive connects how the process is doing in relation to EBM's characteristic adaptive management. The term evaluation tends to have negative connotations as being critical of hard work. Therefore, terms such as being reflexive, recognizing challenges

and celebrating successes will be utilized as part of this study. An outcome of this research for EBM programs may be to create a reflexive culture within collaborative processes which may aid groups in checking in on how effectively collaborative strategies are supporting groups' vision and goals. This case study is a narrative of one group's progress as it explores the applicability of Ecosystem-Based Management's collaborative framework.

III. CREATING COLLABORATIVE RESEARCH

HBI meetings are attended by an array of local participants primarily interested in implementing science-based projects that support HBI's goals of sustainable natural and social communities. When I joined the group fall of 2008, HBI was highly motivated to move forward with maintaining and improving a healthy Humboldt region ecosystem using EBM. I like being a part of a proactive group of people interested in a similar vision of Humboldt's ecological and social future. A majority of HBI's participants work with local ecological issues professionally and are able to share their knowledge and perspective with the group. HBI continues to balance their ecological perspective with more social elements as the group continues to develop. As a student of social science, I was encouraged to continue attending information sharing meetings.

Collaboration and how to foster it are themes of this study. Networking informative resources, knowledge and people to work towards a larger goal motivates collaboration and has inspired the inception, focus, and potential application of my research. Having grown up by the Chesapeake Bay, I have witnessed bitter fighting across state jurisdictions over the loss of fishing communities and the public's demand for cheap seafood, where solutions are scarce and the health of the Chesapeake continues to decline. I was drawn to Humboldt State University in part due to its proximity to Humboldt Bay. As a working waterfront, I wanted to learn how the community was caring for their bay as a sustainable ecological and economic source for the community. I spent a year identifying groups working on Humboldt Bay related issues that were open

to the public. I was invited by a colleague, in September 2008, to join her at a public meeting of the Humboldt Bay Program, now Humboldt Bay Initiative. I feverishly scoured the internet for any information about the organization and found nothing. So I blindly walked into my first of many monthly HBI meetings.

Sitting around a large rectangular table in the conference room of a state agency building, I nervously introduced myself to a group of largely mid-career professionals. The agenda invited participants to update the group on projects happening at work that might impact other local projects. Participants also discussed the upcoming strategic planning workshop. Working on event logistics and creating an invite list, the group was looking forward to a successful event that would propel HBI forward by creating group goals and local projects.

In January of 2009, HBI engaged in a week long strategic planning workshop funded by a Coastal Conservancy grant. I contributed to the workshop by recording information and supporting third party facilitation methods. At the conclusion of this fast paced, vague process, I wondered what HBI had actually gained from their strategic planning efforts. In March of 2009 I presented my idea to complete a process evaluation for HBI to aid the group in understanding how HBI developed, how the group is doing now, determine where the group wants to go and to offer suggestions for how to get there. I proposed that to understand the group as a whole I would individually interview the participants invited to the strategic planning workshop. While the group immediately supported my conceptual idea to qualitatively explore HBI, there was hesitation as to how

beneficial the study would be to the development of the group. There is no guarantee that this study will be useful, but it will gather information that the group can look to as a historical point of reference. Participants can utilize this information in their planning efforts and offer this study to other groups looking to HBI as a starting point for their own community-based initiative. We further discussed the usefulness of qualitative research as a mixed methods approach that can enrich quantitative data. I described the potential benefits that could be gained from this shared project, such as enhanced group reflexivity (i.e. engaging with barriers to success) that may lead to future funding opportunities and the ability to show other groups the applicability of Ecosystem-Based Management. And so, I began a two year journey to understand the theoretical framework of Ecosystem-Based Management and the social, ecological and governmental networks that manage Humboldt Bay's natural resources.

My exploratory research has been informed by elements of grounded theory and participatory action research (PAR). Grounded theory is an inductive way to conduct research that allowed me to freely engage with HBI participants without preconceived assumptions. While my process-focused questions remained the same with each of my 36 interviews, I was able to present questions in ways that make sense in conversational flow. For example, I could change the order of questioning, amount of time I take with each question and even allow space for our conversation to drift to an area of expertise comfortable for the participant. I coded these open dialogues for themes and began to understand the group from individual points of view.

Grounded theory also led me to incorporate participatory action research into my study. Participatory action research refutes the scientific inquiry established for quantitative methods and positivist epistemology. Participatory research strives for equity between the researcher and the participant, thereby breaking down the subject/object dichotomy. The beneficiaries of the research process are community members, as well as the “expert” researcher. Collaboration is essential to successfully completing participatory action research. The objective of this epistemology is to empower the community and foster social and/or political action. Strand, et al. proposes three goals of community-campus partnerships, “compelling information to engage policymakers, credibility in the eyes of decision makers, and higher levels of civic efficiency and competence” (2003: 25). John Gaventa supports participatory action research by suggesting the goals of the methodology are: creation of knowledge, development of consensus, community empowerment and mobilization for action (1991).

A qualitative understanding of HBI’s primarily science-based management approach is appropriate for several reasons. From a process facilitator’s perspective, before gathering a group to collaborate, it is customary to individually interview each participant to understand each person’s world. As Max Weber describes, world view consists of how we each understand our society as it relates to our own positionality within power structures, relationships to authority and our own perceived levels of agency in decision making process (Allan 2001). As a researcher, understanding participants’ world views enriches their responses about their perceived connection to

HBI as a collaborative entity. Qualitative research in process can help educate the group about the benefits of being reflexive. This study is an opportunity to be mindful about who is included in decision making processes and determine the ability of HBI to work together to achieve goals. Just as each study participant is equally central to my understanding of HBI, the collaborative research process should help strengthen the group's resolve to achieve shared goals. The outcome of my qualitative study can strengthen HBI's commitment to equally including social science in understanding the Humboldt ecosystem and then further encourage other groups to incorporate social science within the West Coast EBM Network. In this way, HBI can be a true interdisciplinary model for EBM programs.

People should be included in research as equal participants within PAR methodology. For a successful community-campus partnership, Strand, et al. lays out ten principles, some of which include: "share a common worldview, agree about goals and strategies, have trust and mutual respect, share power, understand and empathize with each other and adopt long-range social change perspective" (2003: 29). To continually assess my connections to these principles I kept a journal to document how my role as researcher influenced my research process. I noted if and how my views about collaboration or EBM changed as the study developed and observed how those changes affected the partnership between my study and HBI.

Full participation of HBI members is critical to making this study a PAR piece. I had the original idea for completing a group collaboration evaluation but it was HBI that

accepted, supported and helped me to understand what needed to be gained from this research. The goal is to focus on what motivates this group to volunteer their energy, determine a group vision, identify what is going well from a process standpoint, and recognize barriers to progress. I developed questions with members of the group to begin getting at process-oriented themes. I then invited all HBI participants to join the study. All information that I present in the next section has developed directly from my work with HBI participants. At the conclusion of the interview process I gave a preliminary results presentation and received phenomenal feedback from HBI members that has been incorporated into the discussion section of this study. Originally I planned for HBI participants to comment on this work before the completion of the thesis. However, due to time constraints, I omitted what would have been a very useful step in my collaborative research. Nevertheless, completed work will be presented to HBI so that the group can use the information as it is most helpful to their progress. I will make further comment on the potential usefulness of the study in later sections.

Participants interviewed for my study were invited to attend the Humboldt Bay Initiative strategic planning workshop held January 2009. In total, I contacted 75 participants via e-mail and telephone to be interviewed as a part of my evaluation. Over an 11 month period I conducted 36 interviews: 32 face-to-face and 4 via telephone due to distance constraints. The duration of each interview varied between a half an hour to three and a half hours, averaging around one hour in length. I met with each participant individually, at a time and location most convenient to their busy schedules. Mainly I

went to participant's work places, several personal homes, and coffee shops. Participants signed consent forms allowing me to publish their names and workplace affiliations as they correspond to their responses in my written study. I respect the privacy of those who chose not to have their names documented and am grateful that I am able to utilize their responses for this analysis.

Initially I intended to identify participants as active and non-active members depending on their attendance at monthly HBI meetings. I wanted to ensure that I was asking questions that would best engage individuals' understanding of Ecosystem-Based Management. Through the patience of my interviewees, I found that the participants' meeting attendance did not influence their knowledge of Ecosystem-Based Management or their opinion of its application. Accordingly, I used the same interview schedule for all 36 interviews. I found that utilizing the same interview instrument would have greater significance in the analytical stage of my study. (Please refer to Appendix A to review the interview schedule.)

The intent of my questions was to evaluate the applicability of Ecosystem-Based Management's theoretical framework in the specific case of the Humboldt Bay Initiative. The interview schedule had three sections. The first focused on understanding participants' professional backgrounds as they relate to their understanding of Ecosystem-Based Management. The second section addressed perceptions of the theoretical framework of EBM and the third involved elucidating perceptions of the

Humboldt Bay Initiative. Each interview ended with questions engaging with participants' world-view through their sense of place in the Humboldt Bay ecosystem.

Interview responses have been inductively analyzed for common themes. Focusing on responses to the second set of questions, perceptions of Ecosystem-Based Management as a theoretical framework, I look at how the professional background of who is responding influences their perception of HBI's vision. Prior to the workshop, HBI participants wrote vision and mission statements. However the effectiveness of these statements was not discussed with new HBI attendees at the strategic planning workshop. Additionally, the HBI process of inviting participants into the group, and them keeping them, was ignored. Through the interviews I will offer the group my insight to these missed steps from participant responses to spur future discussions about the vision and mission statements and participants' roles within HBI. I also analyzed how the group is doing applying theoretical EBM fundamentals through basic collaborative elements: inclusivity, transparency, outreach and education, public participation, connection to local governance and participant accountability. Coding for these themes helps to identify process successes and barriers in a manner that supports the Humboldt Bay EBM Initiative's goal of creating sustainable natural and social communities.

In addition to interviewing, my research has been informed by other opportunistic experiences with applied Ecosystem-Based Management. I attended the Humboldt Bay Symposium, a three day information sharing workshop hosted by the Humboldt Bay

Harbor District. From this experience I first learned of HBI and began meeting people in my community working with issues directly related to the health of the Humboldt region. In March of 2009 I was fortunate to attend the Chesapeake Research Consortium's Regional Ecosystem-Based Management Conference in Baltimore, Maryland. Gaining knowledge of lessons learned and hearing how EBM is being implemented internationally, nationally, and regionally helped to focus my research question and identify topics that might be useful to the group and would advance general understanding of the EBM framework from a social science perspective. Additionally, along with several HBI colleagues, I attended the second annual West Coast EBM Network workshop October 2009 in Port Orford, Oregon. Representatives from 5 active EBM programs (Ventura, Elk Horn Slough, San Luis Obispo Science and Ecosystem Alliance, Port Orford Ocean Resource Team and Humboldt Bay Initiative) updated the network about projects and progress along with organizational challenges related to funding, gaining local support and other process issues. Together the network members discussed how to move forward as independent organizations and simultaneously gain recognition and resources as a functioning network of programs affecting policy and management decisions across state jurisdictions. At this conference I learned more about the development of the West Coast EBM Network as a three state agreement for the benefit of coastal ecosystems. From these experiences I learned that EBM is much larger than HBI as the inclusive concept is being adopted as a process ideology internationally.

After our first introduction at the Humboldt Bay Symposium, I met Leesa Cobb, executive director of the Port Orford Ocean Resource Team again at the EBM Network conference. She invited me to join the Port Orford Ocean Resource Team as a social science intern spring of 2010. This was an invaluable opportunity to experience what 10 years of hard EBM work had accomplished. I could see more clearly the potential for HBI with its comparatively greater access to government agency resources, larger population base and community capacity. Lessons learned during this internship were professionally and personally profound. Currently I am volunteering with the West Coast EBM Network to develop an internship program for students to gain similar professional experience. Combined, all of these experiences informed the focus, meaning and presentation of my research.

IV. WHAT I LEARNED ABOUT THE HUMBOLDT BAY INITIATIVE FROM INTERVIEWS

Creation of Humboldt Bay Initiative

Why Ecosystem Based Management ?

Compared to other regions in California, Humboldt County is economically impoverished but ecologically rich. Social survival in the region has been dependent on thriving natural resources. An extractive economy boomed during European American settlement with the export of “red gold” by the logging industry and thriving fisheries. Advancements in technology and demand for resources resulted in the over extraction of natural resources causing the near extinction of both the logging and fishing industries resulting in a depressed economy. Any decline in industry decreases the jobs available to Humboldt residents. Participant 6 says, “It is important to maintain a healthy watershed for social and economic health. Humboldt County is experiencing obvious economic depression leading to brain drain which leads to crime. This is directly related to the outfall from natural resource extraction leaving. If there are no job opportunities people can’t stay here”. Humboldt County’s total population is 134,623 (U.S. Census Bureau, 2010). The unemployment rate in Humboldt County is 11.3% (U.S. Bureau of Labor Statistics, December 2010) with an average income of \$17, 203 (U.S. Census Bureau, 1999). The largest employing entities in Humboldt County are Humboldt State University and state and federal government agencies. These are the people who make

HBI. The people who work to maintain ecological health are also interested in improving social and economic conditions in Humboldt County. HBI's desire to balance ecological, social and economic needs of the community makes EBM a suitable conceptual model to adopt.

In 2003 there were several separate planning processes occurring in Humboldt County that were not actively sharing information: Science & Technology Alliance for North Coast Estuaries *Restoration Strategy for Humboldt Bay*; Humboldt Bay Watershed Advisory Committee *Humboldt Bay Watershed Salmon & Steelhead Conservation Plan*; Humboldt Bay Harbor Recreation and Conservation District *Humboldt Bay Management Plan*, and the Humboldt County General Plan Update. During this time ecosystem-based management was gaining popularity nationally and internationally as a progressive, collaborative natural resource management strategy. HBI has developed in reaction to the separate planning processes by adopting an EBM framework that could function as an umbrella process for future planning. Most notably, HBI did not grow from required legislation or as a result of litigation. HBI participants willingly volunteer time, knowledge, energy, and resources for information sharing. A shared history based on trust gives HBI a great advantage when working to create an enduring collaborative process. The main reasons that participants say HBI has been organized are: an effort to bring planning processes together to fill in the gaps, funding, that EBM is a new way of looking at management, and joint-information sharing for research. However, 6

participants remain unsure why HBI was created. Participant 36 explains the foundation building of HBI:

EBM grew from a couple planning processes: the Humboldt Bay Watershed Advisory Council, the Salmon and Steelhead Strategy and some other. EBM was a way to leverage funding into the process. Those planning processes got started about the time of the Northwest Forest Commission. ... The estuary needs an updated Humboldt Bay management Plan with EPA [Environmental Protection Agency] and Coastal Conservancy funding. Jeff Robinson was working at the University of Michigan and in Europe who are emerging leaders of EBM convergence for where management is going. EBM supports understanding interagency information. Before we got going there was about 2 years on front planning. We were looking at the national estuary program and the NARE program, as conduits for sharing research, information, funding and monitoring. EBM is Ocean Protection Council and nationally directed. They are dealing with coastal management issues of scale and time. Policy is required for there to be a high success rate with EBM.

Participant 36 went onto describe why Humboldt County is low on the state's funding list. First is the county's distance from Sacramento, and second is that Humboldt County encompasses neither large cities nor an area of big business agriculture. This political reality leaves state agencies fighting for crumbs left over in California's budget crisis. Humboldt organizations have to be innovative to get resources to this region and EBM could be one way of doing that. Participant 15 agrees saying, "There was a need for a collaborative group. There have been other iterations, watershed groups, SAQR, PCSV. We wanted to give Humboldt County a better voice in gaining state resources. Grants and other opportunities needed context so as not to be overlooked." Additionally, Participant 7 explains, "EBM really got started 12 years ago. Restoration funding was piecemeal with no prioritization or reason why. There was no roadmap or planning of

how to make decisions.” Twelve participants agree that HBI was created in an effort to connect different planning processes in the Humboldt region. Participant 32 says:

HBI started with a group of restoration coordination projects. This is a small community, we have to be more efficient. The same people working on the Humboldt Bay Management plan were the same working on the Steelhead Plan. Everyone knows each other and shares common values. Let’s get all of the information in one place and find funding for HBI. It’s been all about timing and opportunity. We have a shared history of community and collaboration with social capital. Primarily it’s women working together, which may say something. There is no power hierarchy.

Participant 2 describes the social networking that has gotten HBI to this point.

Before HBI I was working on 6 to 8 different projects in 2 counties. We wanted to pull in all of these people and get them to talk to one another and use EBM as a catalyst. EBM brought everyone together to work together. People wanted to gather, but it’s not easy to sustain EBM. It takes time, support, and program development. EBM is easy to start because of the working network but you have to make sure everyone is getting something out of it. It was easy to start because I had been working with them for over 15 years. A lot of people had been following this EBM movement. Science and Technology Alliance (2003) was looking at a holistic approach to restoration around the Bay. There is no training to start an EBM program but there are lots of documents and references to read.

HBI creates space for sharing information and resources. Participant 24 explains:

A dozen individuals corresponded and worked together to build EBM. We discussed a better way to research Humboldt Bay and began to organize meetings. Here we shared projects, information needs, plans, monitoring, where there's funding, and shared feedback on what everyone’s doing. We talked about how projects affect each other. My desire is to do this more and bring in more entities and improve the management of Humboldt Bay. The Harbor District, Jeff Robinson, Mark Wheately, and Susan Schlosser figured out how to create an organization

that coincided with ocean reports of EBM and found Coastal Conservancy funding to initiate the process.

The Humboldt Bay Initiative has been created to get people working on similar issues talking with one another. The idea is to create a space for information and resource sharing not to oppose planning processes already in motion. HBI is thought to be an arena where these planning processes could meet to more efficiently conduct their research, create and implement their planning strategies. As the Humboldt region ranks low on the California budget, HBI can act as a funding agent that is able to identify and accept funding for local projects that benefit the Humboldt region. The idea of the group was not push out industries already supporting local economies but to involve industry in the process to increase local benefits and continue a rich history of working landscapes. For HBI to be legitimized there must be local government recognition through policy decision making but EBM in itself is not a regulatory body. HBI participants believe that there is a need in Humboldt County for an umbrella group like HBI that supports issue specific projects that work together through an EBM process.

Participants Gather Because They Want To

Three primary reasons participants stated for volunteering their time to HBI are: to give back to the community, that EBM is a new direction for natural resource management, and because of professional affiliation. Participants stating their intentions for joining HBI have been to give back to the community say:

Well, for three reasons. One, life in Humboldt Bay is fascinating. The environment here is relatively pristine on west coast and in California. But we do have a threatened healthy ecosystem. So the idea is prevention against harming the ecosystem but still be able to use it. Number two, education is becoming more exclusive. HBI is an opportunity to give back to the community. And third HBI is a pragmatic to get students involved and potential opportunities for funding research. (Participant 28)

Participating in HBI is an opportunity for our company to re-engage as a new group of people. HBI is the right choice for what EBM wants to do but there is no higher policy vision. So hopefully, the group will get away from project orientation and over to policy regulation. Heads of companies and agencies should have been at the workshop or working folks. (Participant 12)

I've long had an interest in Humboldt County. I thought I could help. (Participant 19)

Other participants identified that EBM is the current direction of management and they wanted to be a part of developing the process.

I can see the group becoming integrators and HBI an umbrella program for restoration, outreach, research and assessment. I want to be a part of a bigger picture and find ways that HBI can influence other decision making entities and create incentives for volunteering efforts. EBM is the heart of the Coastal Program and should be a major participant in making it happen. This is a way to be different from other coastal programs. (Participant 33)

I was invited as a citizen and a colleague. My position within the groups is of a terrestrial and non-marine view. Together with marine focused perspectives we can look at the connectivity between what's going on in the bay and outside of the water to make greater impact on the whole system. (Participant 18)

I recognized the need, opportunity and hope for this process. EBM is focusing on what more people have to do on more of a small and large scale. It's a way of life. Believing in the value of ecosystems then implementing those beliefs through your lifestyle. (Participant 14)

Additionally, participants also stated that attending HBI has become a part of their professional responsibilities and participation in the group has been part of their professional development.

I got involved through the dredging project with the coastal commission. Environmental documents for the project have a 5 year approval period. Army Corps of Engineers has become involved to incorporate local knowledge and resources into their planning. I am able to work and live here and am more easily accessible as part of the agreement. (Participant 29)

I was invited to participate as a non-profit representative. I have experience with government regulation and agency science. HBI needs more environmental advocacy perspective. (Participant 22)

I am involved through my business. I follow what goes on around the Bay. Water quality is most important to the success of our business so it's important to follow watershed activities. I attend meeting and follow e-mails as an observer. (Participant 11)

Susan asked me to join as soon as I started working for the Harbor District. The Harbor District needs to be involved because it's the group that oversees all Bay related areas. We have public trust management of the Bay. (Participant 3)

Humboldt Bay Initiative defines Ecosystem Based Management

A small group of individuals, the core team, began laying the groundwork for what they hoped would be a much larger collaborative process, Participant 31 says, "The intent was to make Humboldt Bay a case study to figure out EBM". The core team began by teaching themselves the theoretical framework of EBM. The team then sought to share this knowledge with others to create greater interest in collaboration. Table 2:

Learning the Theory of EBM, illustrates how EBM participants learned about ecosystem-based management concepts.

Table 2: Learning the Theory of EBM

Number of Participants	Method of Gaining Information
16	Through HBI participation
14	Self-taught through e-mailed material from Susan Schlosser or other on-line resources
4	Presentations facilitated by Susan Schlosser
2	Do not understand the basis of EBM

HBI participants largely followed the literature when asked to define the EBM in the context of HBI. Participant 36, with vast experience working with government agencies, community groups, local politics, and previous experience collaborating in federally funded efforts says:

EBM is integration resource management working with the social/cultural interface and economic interface. Humboldt State University taught this way of thinking when I was in school. [EBM] is not new, but a way to approach these ideas. A multi-disciplinary view is more real world. You are always working with everyone to make projects happen. It's a real world approach.

Supporting the conceptually holistic multi-disciplinary framework of EBM,

Participant 27 explains:

EBM is a type of management that includes all aspects of the ecosystem including humans. It is an adaptive approach. It incorporates ecological, social and economic systems. EBM looks at how an ecosystem responds to these systems. Management is no longer for single

species, EBM increases common sense, creating a change in agencies' perspectives.

Participant 27 notes that EBM's definition of ecosystem includes humans as part of a healthy ecosystem. Participant 4 highlights EBM's anthropocentric focus saying:

EBM is an effort to address environmental management looking at human and natural environments in management systems. We are focusing on natural interactions with human elements and reducing those human impacts.

Similarly, Participant 25, who has experience facilitating collaborative process, teaching collaborative skills and ecological background, "We can't manage an ecosystem but we can manage ourselves. There are ecological constraints and services. EBM is working towards sustainability through science." Several participants also recognized EBM as being a long term management strategy that encourages broader thinking.

Having a background in facilitating collaborative work, Participant 5 says:

EBM is a style of natural resource management where the planning is attempting to deal with the whole ecosystem not just parts. As a stakeholder/collaborator process it is not taken on by one group as a lead agency and not specific to a political jurisdiction. Looking at the entire ecosystem region makes the process relevant to more parties in the Humboldt area. EBM looks at the long term, cumulative effects of actions. Balance social and environmental goals to maximize benefits, benefits the social community and economy.

Participant 20, a scientist for an agency says:

EBM is a long term idea, looking at a whole ecosystem not single species or a single site, but considering the big picture. The management component of people puts ideology into practice. Understanding the jurisdictions, mandates, policies and procedures within one ecosystem and

see how they can work together. Science is an ecological understanding and gets agencies working together.

HBI participants' perceptions of EBM positively correlate with definitions of EBM identified in the literature. Focusing on the principle of holistic collaboration and the need for broader thinking in problem solving processes, participants see information sharing as a benefit of the EBM process. Through information sharing local organizations can share resources in order to reduce redundancy and create more timely results. HBI participants also recognize the balance between social, ecological and economic needs supported by EBM. Therefore, HBI participants have a clear understanding of what EBM is and what they would like to get from the conceptual framework.

Is Ecosystem-Based Management a New Idea?

Ecosystem-Based Management has been growing as a planning strategy for the past decade, but is it really a new way of understanding natural resource management?

Table 3: HBI Participant responses to EBM as a new Natural Resource Management Strategy

# of Participants	Participant Responses
26	Yes, EBM is a new concept
5	No, elements of EBM have been developing but now this way of thinking has a name
2	Yes and No, that EBM is a new management strategy
1	Unsure

Folks suggesting that EBM is a new strategy for natural resource management focused on different aspects of the theory. A majority of participants identifying EBM as a new concept suggest that the ideological shift is where the process is focused on managing for human impacts on ecosystems instead of managing the natural system itself. Participant 32 says:

EBM focuses on managing people's behaviors. Strategies are usually a result of agency's [jurisdiction]. Including people into this system demonstrates that science has been important not people. Now we are aware that there is a need for social science. We have to engage the county plan. We don't want to be separate and try to impose a strategy. We will need to be more efficient to work with the community and government.

Some participants focused more on the broader scope of management activities that makes EBM a new management strategy. Participant 3 says:

Fisheries and fire ecology are evolving toward EBM. The EBM philosophy is folding into existing establishments, into existing laws and

protocols, and science and management is recognizing that a single species focus doesn't work.

Other participants like 17 and 1 were more concerned about the incorporation of “good science” into decision-making and collaborative processes in order to have a space to share information.

EBM employs systems thinking and principles. This affects this, which effects that. ... It could be unique if we are able to apply the body of knowledge to say the forest service working with a community in Oregon. (Participant 17)

EBM is different. Most projects that I have worked on have been pure or applied science. EBM is focused to be applied science driven to understand the ecosystem. To understand how things we do and don't do impact the ecosystem and what that means for management guidelines. This [experience] has been very educational. (Participant 1)

Participant 7 shared her perspective from a more applied standpoint. That EBM has a feeling of being less confining because there are no legislative mandates to incorporate people, science and industry into a management process.

Traditionally regulators and science are separate entities. EBM gets people affected involved. A large collaboration is less structured but more rewarding. It really has a different feeling from other processes. You just wing it and learn as you go, it feels organic. Other processes are more reactive but restrictive. EBM is more flexible.

However, some participants feel that EBM is a new “buzzword” for a common sense way of managing systems. They tend to think that the name may be new but the ideas have been around in natural management strategies for a while. Participant 8, who leads a local non-profit organization says:

Looking at the whole system is not new. It's landscape, plan-based management. Not being species specific it's looking at system interactions which is more intuitive [than looking at single species management]. ... There is not much of a difference from other good strategies. EBM manages for the whole system which is good resource management. EBM just has more buzzword words like "adaptive management."

Focusing the streamlining of resource management by government entities

Participant 12 compares the adoption of an EBM process to a template system like "Turbo Tax". In a template system blanks are filled in with region specific information making for a more standardized resolution to local issues. She suggests that this kind of process is not conducive to inviting public participation beyond the parameters of the template. She says:

Federal needs are not conducive to public participation. There are always core and periphery players. Large environmental groups are too messy. They want laws that are cut and dry. Competing processes with EBM such as Nature Conservancy's project evaluation strategy are "projects" oriented. ... Why do collaboratives work? We need to understand why collaboration at a local level. Maybe collaboration [HBI] will work best with a rigorously regulated area like the North Coast. What does EBM add and what can it do for the region? Does it work because of the regulatory role? Where's your perspective? Federal, state, or local?

Participant 14 agrees that the idea of EBM is not new but has now been named:

Natural resource management is laden with acronyms. There's been an evolution in thinking but the concept has been around. It hasn't been well received or put into place. The challenge is that the primary focus is natural resource management has been issues driven. EBM's focus is community based, humans and critters together impacting each other. This is EBM's potential strength.... The concept of human inclusion has been in other strategies but EBM is more holistic and human inclusive. There is a tendency to compartmentalize. For example, the issue of

climate change, the biggest issue, is how to deal with it or else a fatalistic approach keeps people out of solutions and adaptability.

Similarly looking at the progression of resource management development Participant 2 states:

EBM has been in wildlife fisheries and forestry in literature since the 1920's. It's all been very theoretical and not applied before EBM. I attended a coastal zone meeting in Portland in 2006 that was all about software available for EBM. Now there is the West Coast EBM Network.

Participant 18 does not see EBM as a new strategy but thinks it's a way to be more collaborative across issues, saying, "It's not really different, but it helps to reaffirm people to broaden their views. To consider all factors that will affect the Bay, all-encompassing and less specialized".

By trying to connect participants' understanding of ecosystem-based management's theoretical framework with how participants view EBM as a different or new natural resource management strategy, I found there to be no correlation between their opinions. Understanding the theoretical framework did not automatically result in viewing EBM as a new management strategy; nor did having less of a theoretical understanding result in thinking that EBM has been around in management strategies. What I do find interesting is how agreeable participants are towards including human into the idea of a functioning ecosystem. This illustrates a shift in how we view our natural environment. Also notable, is participant agreement about collaborating. Across the board of professional affiliations, participants are suggesting that traditional management perspectives that separate agencies, businesses and the public while working towards different ecosystem goals has not been an effective practice. Participants recognize the

positive benefits of sharing information and aligning planning strategies. Speculation about the effectiveness of EBM being a place for this level of collaboration has also been a common theme. It was at this point in the interview that I asked participants to transition to focus more directly on the collaborative effectiveness of EBM.

Thoughts on Collaboration: Theory in Application

In 2008 the core team felt HBI was ready to begin inviting more participation from the broader community to HBI meetings. HBI has adopted the EBM framework into its process however the literature does not provide process tips to support a collaborative meeting. Therefore, borrowing from known elements of collaboration: inclusivity, transparency, opportunities for public inclusion, connection to local governance and participant accountability, this study seeks to evaluate EBM as an applicable process that supports collaboration for HBI.

Inclusivity

Getting the right people to the table can be the most challenging aspect of creating a collaborative group. The right people are those with decision making capacity, knowledge, access to resources, and/or a larger network of people. To be inclusive means not leaving anyone out who could be potentially impacted by decisions made by the group. The importance of being inclusive is to create a welcoming, safe atmosphere

to make decisions. When HBI's core team was deciding who should be there, they had to define who would be considered a stakeholder in HBI's process. Susan Schlosser, a founding core team member and Marine Advisor for the California Sea Grant Extension Program, has been facilitating meetings until her yearlong sabbatical that began spring of 2009. She has diligently led the group through the process of bringing new people to meetings through presentations, responding to queries and word of mouth. All group participants hold Susan in very high regard.

Stakeholder is a frequently used term when discussing people involved in collaboration efforts and is found repeatedly in ecosystem-based management literature. I consider the term stakeholder to be a vague and loaded word and therefore asked study participants to help me unpack the widely used term. My goal is to define what being a stakeholder means to participants so that individuals unfamiliar with HBI can determine their relationship to HBI. Participant 15 explains, "Stakeholders are organizations or individuals with an interest in a resource whether it's recreation, extractive, passive, or a nature lover. Interest is not always use based but heritage based." Similarly Participant 18 says, "A stakeholder has a direct interest and might be directly affected by policy due to their interest." More specifically to the EBM process Participant 16 says,

A stakeholder is anybody that has an explicit or implicit interest in the ecosystem and an interest that is impacted by EBM components. If people are reliant for income or enjoyment or may not be utilizing the resource daily but has an interest in protecting pieces of the ecosystem. This might be an economic interest like real estate or just going to the beach. A stakeholder attends meetings or stays self-informed through on-line

interface, whichever is effective for one with interest and energy to continue to see follow through.

In reference to HBI, Participant 20 states, “A stakeholder is any person who has an interest in the management of an ecosystem. Every person living here understands the importance of its quality but not everyone realizes their stake in living in a quality ecosystem.”

Being a stakeholder in a process like Humboldt Bay Initiative takes reflection on the part of the individual, or organization, to recognize their connection to the process. What does the individual have to gain or contribute by being a part of the process or what could be lost by not being a part of the process? A stakeholder aligns her or his values with the goals and rules of engagement of the process in order to determine their role in future outcomes of the group. However, the term stakeholder remains ambiguous, taking away from the human process of people gathering to discuss life changing issues. Stakeholder also implies that someone has a greater stake in the success of a process which implies unequal power distribution within the collaboration. The nature of collaboration is to equalize power relationships so that everyone is heard and held to the same levels of accountability. Therefore, I have chosen to replace the term stakeholder with participant. HBI may or may not choose to adopt participant into their collaborative language. Though switching out one term for another may not change the meaning of an individual’s role, hopefully the use of the word ‘participant’ is more welcoming and suggests a higher level of engagement than ‘stakeholder.’ Changing the term does not automatically equalize power but if the meaning behind the word is meant to show

greater respect no matter your affiliation to the group then the group gives the term it's meaning to be shared by participants. If you consider yourself a part of the collaborative then you are a participant. Inclusivity is most important to an open process for participants to be heard and exchange ideas.

EBM theory highly values an inclusive process as gathering the greatest amount of knowledge and creating shared resources. HBI participants recognize the importance of being inclusive but also identify constraining factors limiting HBI's ability to be inclusive. Participant 10 says, "Yes, that's the whole theory, to have everyone involved. The current EBM theory is still evolving, no EBM program is complete. Whenever new issues arise there is need for new stakeholder involvement". Participant 25 explains, "If the group is functioning well, [EBM] can't work without it. Identify who needs to be there, what each participant might bring to the group, constraints that would keep individuals away and deal with those constraints whether it be payment to attend meetings, meeting times, or having double meetings". Additionally, Participant 2 says, "Conceptually yes. That is the underlying theory of EBM, to bring together interested people. In practice it's hard to do that and get everybody. That is an ongoing need. The general definition is to be inclusive of humans in EBM and to bring in all interested parties".

Everyone said that full inclusivity is ideal but a majority acknowledged difficulties with bringing more people to the table both in actually getting people there

and what do to with them when they are there. Several participants provided me with recommendations to increase collaborative inclusivity.

Absolutely, yes. Diversity is getting broad input from a broad range of stakeholders. Susan led the charge to bring in people who are involved in what we are considering in Humboldt Bay that might impact people upstream. We need to partner with people upstream and need to understand their relationship in the watershed. Recognize that Humboldt Bay is not just the Bay it is the salt water coming in and fresh water going out. (Participant 1)

Participant 1 suggests the value of partnering with organization upstream as a method of understanding the connectivity of the Humboldt Bay ecosystem. Participant 18, who works with the county's farmers and ranchers confirms the value of building such relationships.

Yes, I have been to meetings and there have been a wide variety of folks and different angles. It is neat to be in a group with an oyster farmer and share common concepts. (Participant 18)

Participant 33 suggests that bringing in more participants will engage new parts of the community to be involved with HBI will in turn strengthen the development of HBI as a process and an organization. Participant 30 speaks to the potential challenge of HBI gaining local support if the group is unable to be legitimized by local governing structures.

That is what is intended and what we should be doing. Why? Because [being inclusive] is the only way to do it. People have to be involved to understand the challenges, build trust and buy in and together produce a stewardship project. HBI invites groups of people and is bringing in more stakeholder groups and connecting landowners. HSU needs to be more involved. Individuals are involved but not the university, that's the way of

doing business, doing collateral duty. How to make people work in the EBM mindset? Through the development of understanding. Become part of how we do things, theoretical and applied to help the greater whole, a feedback loop. (Participant 33)

Yes, it has to be when you are managing an ecosystem with many different areas of interest. Ranchers with land, fisheries biologist and coho recovery, city zoning and owning open space area. HBI won't be able to implement policy changes without city, county, state laws incorporated. All decisions must be allowed through the general plan and permitting processes. Involve stakeholder group. Research needs to be folded into local and state agencies. (Participant 30)

Participant 28 suggests that HBI was motivated to become more inclusive due to funding requirements. Not being a part of an organization from its inception can make joining later in the process a daunting experience even if you already know most of the people attending the group. Part of being inclusive is maintaining a welcoming atmosphere that feels safe and non-judgmental to newcomers.

Yes, HBI invited a larger group during strategic planning. During that time several efforts were made to get more people. HBI began science heavy. ... Funding called for greater participant grouping. (Participant 28)

Ideally yes, but implementation of concepts is what the core group makes of it. Susan has worked hard to get the word out and to be inclusive. HBI has been rolling along and I was invited mid process and felt unwelcome. If you are waiting for an invitation then you are not self-informing, EBM is not a priority. Exposure to EBM is good but [HBI] being a volunteer group it is difficult to commit. ... HBI will only be as good as the community participation. HBI must remain communicative to talk about thoughts, ideas and concerns. (Participant 14)

Other participants suggest that HBI is not being as inclusive as the group claims itself to be. Although, none of the research participants hint that an

organization or individual has been purposely left off the invite list there are comments suggesting that the group does little to accommodate new comers through strategies like varying meeting times, places or mentoring new comers into the group.

Not really. At first I thought yes. There was representation of agencies and species. But there are a lot of interests missing. Like HUMCAN - Food security should be related to ecosystem health. EMB looks like it cares about socio-economics but the group doesn't deal with this aspect. (Participant 17)

The group could do more. I thought it was awkward and embarrassing to show up at a core group meeting not sure of my place within the group, it felt exclusive being part of the non-core group. The meeting at the aquatic-center had a scientist feel. [The strategic planning workshop] was not as integrated as advertised. There are good intentions of people but it's hard to join. (Participant 8)

For participant 36, collaboration is about having the right attitude and recognizing the need for collaboration to work through complex issues. Participant 36 says,

Yes and no. Everyone comes with cultural baggage, a comfort level and a level of being receptive to new ideas. For me personally, EBM is a natural fit. More people makes the process more difficult and its unavoidable, that's the nature of the issue. The Coastal Management Act effected local levels. Picking the low hanging fruit is done, issues like land use are still nuts to be cracked. Sea level rise is more complex and there is a need for greater diversity. We need the right people for [HBI] to work collaboratively, articulate, listen, integrate. You have to have the right attitude. The group needs to work through the process of creating real ownership.

HBI participants continue trying to engage new partnerships within the watershed.

To be successful, HBI will need to identify why organizations should be interested in

issues that HBI cares about and be able to give new participants a role, purpose and take-home objective, based on shared goals. Although partnerships may develop differently for varied organizations, HBI's goals should remain flexible enough that new participants can identify with their purpose. However, being able to identify with the purpose of a goal does not always mean that organizational interests will align perfectly.

In theory, EBM should be an arena for airing differences and sharing perspectives while making plans that incorporate everyone's needs. Gathering diverse points of view is an opportunity to resolve differences and create understanding among participants. However, most participants agree that HBI is not the space to resolve differences of opinion only to share them. Participant 32 says, "The EBM framework is for inclusion not mediation. Decision elements that are involved force us to consider other points of view beyond the agency agenda by understanding others' missions, and to look at redundancy and share resources. We can connect needs". However, not everyone agrees that differences of opinion are able to be openly shared at HBI meetings. Participant 27 says, "I think it [EBM] considers all points of view and attempts to incorporate them. Participants are able to hear all opinions but no one opinion is considered the best. There is no consensus building at this point. Right now we are educating ourselves and fact finding. Differences are encouraged but ignored". Whether participants feel open to sharing differences of opinion or not, a majority of HBI participants agree that HBI meetings are not the space to resolve conflicts. Participant 24 says, "This is not part of the process and shouldn't be the setting. HBI should be a place for data gathering,

scientific information, and establish how ecology is functioning”. A majority of participants agree that HBI is a space to increase communication and clarify misconceived understandings of group participants. However, this is clearly a theoretical point of EBM that is not functioning in the application of HBI because largely participants do not desire this meeting space to be used to resolve conflict.

Participants are not looking to HBI to be a census building process but part of being inclusive opens the group to new ways of thinking that may challenge the group’s goals. If the process is able to make room for discussions of differences the result should be stronger relationships between participants resulting in greater accountability to shared goals. Effective facilitation of HBI meetings should help to guide the group through these conversations that may span several meetings after an issue has been identified. As one participant says, EBM can make space for these discussions so that the group can openly focus on shared goals. As HBI develops a more inclusive culture the collaborative may become stronger.

Transparency

One way to reduce group conflict is to keep the collaborative process open. Maintaining transparency takes effort by the group through a diverse collection of outreach methods. Participant 2 says,

We have a core team that develops draft agendas, another dedicated group to get the agenda out to the whole group so everyone knows where we are going. People always know up front where we are going. We have a website. People call me all the time and other team members. This is

our strongest way of showing transparency. We're pretty upfront about what's going on and what's next and you can add to it, ask it [the agenda] to be changed and people do.

Participants were questioned about their understanding of how EBM contributes to a transparent process. Instead of describing their thoughts on this abstract idea most participants contextualized their response by speaking about how HBI is doing as a transparent process. HBI is not yet conducting collaborative projects because the group continues to struggle with organizational development. Getting a group together that is able to effectively capture resources to sustain the process is a large struggle in organizational development. The transparent obtaining and use of resources is another struggle. It is critical to remain transparent during the organizational development stage to reduce public suspicion of exclusivity or suggest that the group is working against the effort of specific interests. Agreeing with Participant 2 concerning publicized meetings, Participant 29 says, "Meeting notes are open for editing and coming to meetings is an open invitation. The group is organized. We know when everything is happening to be able to incorporate it into work schedule". Agreeing with Participant 29, Participant 14 suggests that if you want to be involved there is space for you, "If you want to be involved you can be, get in on the current project. Out of 1 -10, EBM gets a 6.5 on outreach, it's good and it works. If you have an interest in the process there are opportunities to get involved. It's a choice not to make it a priority". Therefore, participants suggest that if you know about the program then you have the choice to become as involved with the group as you would like to be.

However, not everyone agrees that HBI's process is transparent. Participant 17 says, "There is open dialogue, use of facilitation, ground rules, recording tools, and documents and papers about participation available. But open meetings that are not being publicized". Participant 26 says, "There is a website but only those involved know how to use it". Participant 11 says that information is there but the usefulness of keeping people updated gets lost if there is too much information being sent out.

Access is there. Leaders, Susan and Dave, actively want to provide information. A lot of information. It takes work and time to get through all of it. To be part of the process you have to make it your responsibility but that's not new. It's a traditionalist perspective like used by the county. They get public input then the core group goes ahead and plans. HBI should work on developing an objective to accomplish consolidating plans.

Participants raised the issue of accessibility within the HBI process. Folks suggest that even if you are a part of the group, being involved in the decision making process is difficult. Participant 5 explains,

All documents developed by the group are available on-line or via request. Anyone can go back and look at what has been said and contact the group. We have open meetings where people can find out more and all are pre-planned with schedules, agendas and contact information for who to call. However, I think that the decision making process needs to be more clear and better documented. Like, who is a part of the decision making and what is the scope of their authority?

Not all of the research participants are sure how HBI originated.

Misunderstandings about why HBI formed are a result of what some participants feel is an untransparent process that has left those members creating their own negative reasons for HBI's purpose. Participant 31 and 15 say,

We started with frameworks and jumped in as a group figuring it out. The first meetings were more closed. The notes are all public, information is public, meetings are open to the public. The strategic planning workshop was only event that was by invitation only but it could have been publicized. This is all still developing. (Participant 31)

Facilitation has been for planning purposes. There are problems with transparency. HBI was not so transparent the first or second year which caused difficulty for those not included to know what's going on, gave them an exclusive feeling. Web-site development has resolved some of those issues. People say HBI has been an open process the whole time but I only heard about it a year in which caused me to back out of process. (Participant 15)

Participant 5 illuminates the reality of creating a collaborative effort.

“Realistically an effort has to start somewhere. There was a small group that started out less collaborative and then it develops into being more collaborative. HBI does have a ways to go to open up their process to being more transparent. I think that participants recognize this as an issue within the group and that they will find greater community support when they are able to do so.”

Please refer to Appendix C for a list of outreach methods currently employed by HBI and suggestions made by participants for future outreach. I found that the closer the participant works relative to the core team the more transparent the participant believes the process to be. Also participants who have worked with agency processes in the past think that HBI is effectively utilizing transparent outreach techniques. Participants who see transparency as a challenge for HBI view themselves as peripheral HBI participants and not as informed on decision making processes. Folks who have been involved with other grassroots led collaborative efforts have also identified gaps in HBI's transparency.

Participants suggest that the process is lacking an accessible, central information sharing media (i.e. a website), accessible meeting times and are concerned about whether HBI can fully describe the organization's decision making process procedures. These hindrances to transparency can slow HBI's process down by creating a need for repairing HBI's image. However, the steps HBI needs to take to increase process transparency are large, expensive or beyond repair. I am unable to make any conclusions about the effect EBM has on HBI's process transparency as participants spoke very little to their theoretical understanding of EBM's framework in this aspect. I will state however, that EBM finds process transparency necessary but offers few outreach suggestions beyond traditional outlets that would improve process transparency in the case of HBI.

Opportunities for Public Inclusion

HBI's outreach efforts have effectively developed interest among local individuals representing academic institutions and state and federal agencies in the region. There are however no HBI participants who represent the public interest or otherwise attend without organizational affiliation. To consider HBI a public process, members of the general public need to be actively present at meetings. Participant 36 says,

In theory all meetings are open to the public. The public process is hard. Each person has an understood part of the process. The nature of public process will exclude some people from joining. For example, dairy farmers should be there but why is EBM worth their time? HBI should work towards tailoring a sub-setting understanding for how to include new people. Everyone should be involved in the part of most interest to them.

Public participation in HBI's process demonstrates larger community support of HBI as a local organization. Some research participants suggest that HBI offers the public a full spectrum of participation opportunities while others feel that there is limited opportunity for public inclusion. HBI members do acknowledge that the time, location and the ability to attend during paid working hours does impact who is attending meetings. Participant 16 explains the EBM theory of public inclusion:

Each initiative varies widely. The level of public engagement is determined by the scale and defining who is the public ... All residents are invited to participate but not all are aware of the process or are interested. Not everyone can be at public meetings. The website has contact information if people are interested or have questions. Port Orford, has a small population, public involvement is gathered through word of mouth. The annual water festival is spread through informal ways like chatting and formally by being on public record. The key is the level of effort and the most effective way of getting heard in the core and larger community.

Participant 1 speaks about how HBI is providing opportunities for public inclusion:

The vision is to make sure that there is exposure to activities. Do not make EBM a secret but get the word out. Connecting with the community on a regular basis and make sure there is always room for public comment. Some valuable outreach methods for how it could happen are open forums, well advertized town meetings/workshops, opportunities for public comment. Susan facilitated similar workshops to the board of supervisors and other groups that are not specifically involved. We should do more of those if there is funding. There is a need for public input, to share major threats, to get the vision of stakeholders for how to move forward. EBM is a community effort even if money is going to one institute, we need buy in from the community. We need to understand how to change personal actions. Instead of regulatory actions let's see voluntary actions. Using the iron hammer is not the right way to change activities. Engage people, do not be oppressive for long term success.

Only a few participants suggest that there is ample opportunity for public inclusion.

Everyone is invited to group meetings. They can be part of a subcommittee at any level. We need to outreach to different people. We need to know the groups we want, find the key persons, and then involve them how they want to be involved. (Participant 10)

By coming to meetings and being directly involved in workgroups. Come to meeting and give suggestions. There is an on-line survey on the website. People can come to meetings and see what we are up to and then serve as an advisor/mentor. We welcome that too. You could be on larger team, on a work group, or both, come to meetings, call or send an e-mail for more information. Invite HBI to come to your meetings if you want to find out more. (Participant 2)

A larger portion of participants suggest that there is limited opportunity for public inclusion in HBI. Their responses suggest the three following themes: joining HBI is difficult without an organizational affiliation, the HBI process is time intensive with little outcome, and there is a barrier between those being paid to attend HBI meetings and those who are not. Participant 5 has been a highly active member of HBI and a great supporter of the group's collaborative effort. However, this participant has been voluntarily attending meetings without a professional affiliation and has found this to be a barrier because the group is unsure what skills and resources they may be able to bring to the group and the participant does not feel as qualified to be there. None of these feelings suggest that HBI welcomes public inclusion. Participant 14 says,

If you were in from the beginning there is as much opportunity as you want to take. It's more difficult to get involved now. The group's at a decision point, where to go now? HBI could drift apart without forward momentum. We need to continue outreach efforts. We also need to solidify near and long term goals; print those in the north coast journal. Maybe take a phased approach. Going to groups, have a booth at the

county fair, but that may be difficult because you need a background to explain who's there, who needs to be there and prioritize outreach. We could create presentations about where we are now, where we were, and where we are going.

HBI does try to keep participants highly informed about projects, workshops and lectures being given in the area that may be of interest. There are e-mails that contain agendas, meeting minutes and other process oriented information. At the meetings, a lot of information is shared. As will any collaborative process trying to increase organizational development there is a lot of foundation that must be laid. However, participants that have been trying to do this groundwork are beginning to experience "burn out" after years of work with little outcome. This is not atypical for a collaborative process but can devastate a collaborative's momentum by creating group negativity for the organization's future or by causing "doers" to leave the process for a more developed organization.

Who is able to afford time for 3 hours during a workday to discuss so little? The average citizen does not have that ability. EBM is time restrictive and labor intensive for little output. Forests Forever uses citizen science for local knowledge. They spend time getting oral histories and build a community, jargon free. Stay away from bureaucracy. (Participant 34)

Time and financial ability to attend are restrictive factors in getting people involved. Traditional phone calls, mail, e-mails, and getting people to show up is not working. Evening meetings are difficult too. People are busy and it's hard to get people to the table and then get people comfortable to speak. (Participant 21)

Finally, the meeting times create a financial barrier between participants. Having the meetings mid-day during the work week limits public participation. For people to

leave their place of work either they must be self-employed or their employer must support their engagement with HBI and the people who attend are technically being paid for their time with HBI. This raises the question, is participation within HBI voluntary if some participants are being paid for their time while others are not? Also, are the people who are being “paid” to attend meetings then doing more work for the group. This may seem like a discussion of technicalities but the responses do matter to people who are and are not involved with HBI. Creating this layer of transparency will also help the public to determine which parts of the HBI process they are best prepared to be a part of.

There are open meetings but they’re during the day. Other people have jobs. Managers won't come unless they’re getting paid. Would they show up to an evening meeting? (Participant 8)

The main objective to public inclusion is to avoid the perspective of Participant 35, “Besides the strategic planning meeting, I have no idea what’s going on. It’s a world all its own”.

Connection to Local Governance

EBM emphasizes the importance of partnership between collaborative efforts and local decision-making entities. Participant 28 says, “Good science gets ignored without outreach and governance. We need governance, federal, state, local and private. Prior approaches have failed because they are too limited in scope”. Within the framework, participants with a shared body of information and resources can help to inform positive policy decisions benefitting local natural and social systems. Similarly,

local governing entities can inform the group about needs within the community.

Participant 16 and 36 respond to the theory of getting local governance involved in EBM initiatives.

Participant 16:

Connecting with local governing entities is a critical piece making sure representatives are fully involved. The initiative is concerned with local perspectives and knowledge. The next step is to figure out a way to use the resources at hand, ground-truthing. Who needs to be at meetings? Are people familiar with the topics with a stake in the outcome? Are people willing and able to see the process through? Who has the time? We can identify ways that the EBM component is mandated within an agency. The more we learn from each other creates greater efficiency. Agencies are split and it's rare to pursue a full scale project and go beyond legal mandate. There are finite budgets and staff making it hard to pull off.

Participant 36:

Participation by local government representation helps inform the decision making processes. We've been able to broaden the discussion. Local government entities are still responsible for plans being in compliance outside boundary areas. There can be expansive integration of the issue at hand.

HBI has strong state and federal agency representation but respondents suggest that individuals participating may not be in professional capacities and able to make local change. Participant 20 says, "EBM connects by inviting representatives from local government to attend meetings and hopefully then they disperse information. The role of the group is coordination which means that participants need to buy in. The people attending meetings cannot impact change but they can take information back to their organizations to initiate change". Participant 11 disagrees. This participant suggests that

agency representatives' hands are tied because each agency has their own agenda.

“Agencies and the right people have been invited to process and are all participating. It must be frustrating as a planner and staff person to have the same ideas for change but may not have the ability to make changes that the group wants to see. It all takes time and money but it may not happen”. HBI participants represent a different set of interests but work to find common interests that will work into their representing organization's plan.

Respondents suggest that involving more city and county focused representation in HBI planning may be more important to HBI's capacity to engage in local change than working at state and federal levels. Their reasoning is that state and federal agencies have more complex hierarchical decision making processes. The larger an organization's hierarchy of decision making, the slower the communication of ideas that will lead to change. Participant 7 says, “Susan went to meetings with county supervisors and to the Harbor District trying to keep local governing officials involved. Keeping local people in the loop goes back to issues of transparency. Working together at an agency level is difficult because they're not influenced by local governance therefore it's hard to make change”. Participants 30 and 33 also speak to this point saying,

[HBI engages with local governing structures] by inviting members from the EBM project into other planning groups, and by EBM including local representatives from government. HBI needs to keep representatives engaged as the process grows. Work is being done for research but there have to be results that will change business from day to day. Make information available and show how it changes projects around the bay. How to utilize information? It needs to be implementable and given legitimacy by local government. ... HBI is a process with all agencies on

board to change regulations across jurisdictional boundaries for the good of the ecosystem. The focuses are different across agencies because of different permitting processes and everyone needs to be more on the same page. (Participant 30)

Local governance has been a part of HBI from the start. Having everyone there is how this is going to work. We can share information. What is the flow chart of existing policy and regulations? Where do permits come from? Together we can look at fragmented plans and fill in the gaps and figure out where there are connections, it's like making a political roadmap. We'll keep communication flowing and research what works and what doesn't. All levels of resource agencies have to buy into EBM to better meet public need by making connections between agency processes. Think then act. (Participant 33)

HBI grew from other local planning processes. However, those planning processes, such as the Humboldt County General Plan, are continuing to develop. Some respondents suggest that HBI could better engage with local governing structures by more closely partnering with other planning processes that have already established this connection. One participant says that inviting local government representation into the group would maintain HBI's status as a non-regulatory group. Participant 1 says, "HBI should not be governed by an agency and it shouldn't become a regulatory entity. It's an NGO so it should provide consultation and provide information. HBI should include local governance. Engage them at the table because this is a community effort and government is a part of the community. HBI can represent pragmatics and vision of the government". Participant 2 says that HBI is not the only organization adopting an EBM framework into their decision making process. As more organizations adopt a more holistic perspective of functioning ecosystems, EBM will become an easier decision

making framework because more participants will share similar values. Participant 2 says:

We've done quite a lot. We are fortunate to have 2 elected people from the Harbor District and a city council member. Through them, and other team members, we have been able to give presentations to local city council. They have invited us back so that is an on-going connection. Our strongest connection is with the Harbor District. They have taken on the EBM concept in their management of Humboldt Bay. There are advisors that are on HBI taking that EBM approach to their management. County planners have talked about using the concept in General plan discussions and are interested in our strategic plan ideas. Maybe they have been discussed but I don't know how that has played out. Harbor District took an EMB approach in their management plan and been involved from the beginning in the core team. It's been great to be so interconnected.

Like Participant 2, Participant 5 thinks the HBI should have the capacity to make legitimate comments on other local planning processes.

The group made presentations to elected officials, city and county. And extended invitations to planning staff, resource managers, and economic developers to be part of the larger planning effort. Adjusting regulation takes input at a local, city and county level to improve unintended or adverse consequences. For the Humboldt General Plan we can make suggestions to change ordinances to be more ecosystem friendly. State regulations are more difficult to incorporate public input. State officials receive information but don't attend EBM meetings. EBM is a nested, local effort at a watershed level joining with other efforts matching state and west coast level planning. (Participant 5)

Different from other participant suggestions about engagement with local governance, Participant 12 envisions HBI as an umbrella regulatory organization governing local resources.

Connections to governance are how to move forward. HBI needs policy level commitments. The level of funding will dictate projects but opportunity to expand is not happening. HBI needs to figure out its policy goals. At the strategic planning only the water board sent a leader able to

see and digest the need for change. There needs to be policy leaders at table. Change science goals to regulatory goals. What's the social goal? It should be policy. HBI is swimming upstream without the regulators and going bottom-up. (Participant 12)

EBM's framework strongly encourages partnership between the collaborative and local governing structures. The benefit of information sharing is to engage more informed governing officials, resource managers and planners into creating plans that align to benefit the ecosystem. The theory is idealistic but has real potential to improve local issues. EBM literature has limited recommendations to create such a beneficial relationship. Gaining local government legitimacy is a struggle for collaborative local initiatives but HBI has been giving presentations and continues to invite local government into the group. When given a more defined role within the group, I think local governing structures will be receptive to HBI's vision.

Participant Accountability

Accountability encompasses responsibility, commitment, acknowledgement, and growth. Collaboration requires accountability, but the process of becoming accountable requires time for trust building between group participants and an ability to let go of legacy issues to move forward with a fresh start. Accountability also increases personal attachment to the successful completion of shared goals and sense of shared accomplishment. For HBI to be successful the process must stress the importance

of participant accountability and make room for its development through building partnerships.

The issue of accountability was the most difficult collaborative element to discuss during the interview process. Participants' understandings of accountability largely stemmed from their professional perspective. For example Participant 29 says, "Small groups are most accountable. People can choose their level of responsibility dealing with legacy issues". Whereas Participant 5 says:

As people sit together they are building trust. Meeting together allows for understanding EBM goals. Agency individuals realize problems within their own agency and are willing to discuss areas that need changing. Most people attending meetings are not top decision makers within the agencies so representatives present can bring information back to the agency but can't directly affect change.

Overall, participants think that individuals are accountable to themselves at HBI meetings. Participant 24 says, "Accountability is not necessary. It's the duty of a representative or individual to take information back to your organization. Your participation is your accountability". Participant 16 suggests that without participant accountability EBM is not being implemented. "If there is transparency and buy in, it should lead to accountability... Discouraging accountability will result in EBM not working well. We need a clear vision of goals down the line". So then the issue of accountability may be determining the difference between individual responsibility and the responsibilities of represented organizations. An example of individual responsibility to the group is if an individual commits to drafting a grant proposal.

However, if an individual is committed to actively attend meetings during business hours that is an example of organization accountability. Respondents suggest that as a HBI participants invest more energy into the process she/he becomes more connected to the success of the process, thereby increasing personal accountability.

By participating in the process and through information sharing. Together the group is creating rules and decision making. When you are investing time and energy into the process it gives you a stake in the outcome. (Participant 25)

EBM encourages [accountability] but we can do more. People doing facilitation need to be more willing to ask for help. I know everyone works but helping out more with the process could strengthen people's commitment with invested interest of time. (Participant 14)

I like to think everyone is ethical. There is accountability because working groups are small and there is accountability by their size. If you don't do your part people will know. We haven't made great strides and haven't done a project to hang our hat on. Primarily through this integrated holistic approach that recognizes many human and ecological activities keeping to our goals will keep us accountable. (Participant 2)

There are also respondents that disagree with EBM's ability to keep HBI's members accountable. Three themes arose from participant responses. Participants believe that HBI has low participant accountability because of agency hierarchy, the lack of ability to determine responsibility for legacy issues or the process itself not holding participants accountable. As previously noted, the logistics of large organizational hierarchies slows the flow of communication. Government agencies with large hierarchies also tend to follow their agency state or federally focused mission. Trying to focus on the greater good of the large entity leaves less time to focus on localized issues.

Therefore, agencies have a hard time committing time or resources to local collaborative initiatives like HBI.

EBM encourages accountability its but not effective in doing anything with it. Agency folks have lots to say but the hierarchy of agencies make it difficult to commit to anything. We can work together to make policies work but every agency has an agenda. People are there for positive change and to move forward. Honesty is your accountability. (Participant 31)

HBI has the opportunity to model EBM thinking so that larger, or more traditionally organized, agencies can realize the benefit of adopting holistic decision making. Accountability is impacted by the perception of group participants. Participants may not trust the future accountability of an individual representing an organization that has made past decisions that are not considered desirable by other participants in the group. This point of conflict is a time to share information, discuss impacts from the previous decision making processes and build trusting relationships through shared accountability.

Accountability is not just for agencies, it's the marina, historical land use. Some issues are perception issues, who perceives the problem? This is what is dictating legality, environmental and social costs. Accountability is an issue in the current EBM [HBI]. There are well intended people but no directive and no resources saying it will happen. Maybe it's not accountability but enforceability. (Participant 36)

As a voluntary process, HBI focuses on getting together action oriented people for the betterment of the Humboldt Bay ecosystem. Largely, participants' passion for HBI is fueled by their passion for their place, Humboldt, and the work they are already doing in their place. However, being present does not equate to

fully engaging in the process. Respondents suggest the EBM process itself keeps participants from needing to be accountable.

EBM is voluntary participation. All meetings are during work hours which leads to low participation. If there are people who aren't getting paid to be there then there is low accountability. EBM is an interesting management philosophy. It encourages other people to be there but accountability may take away from attendance. (Participant 6)

There is no accountability. It's hard with management plans not finishing objectives. Planning documents go back to planning. The group should do an assessment for meeting objectives and evaluate the plan. It takes time to evaluate and a commitment to the plan but it's a common business practice. ... It takes money to evaluate but it might create ownership of EBM to implement the plan. (Participant 11)

Accountability to HBI's process is low. Participants can make personal commitments to the group that are held by their word but there is little to no participant organization commitment to HBI. Organizations are able to support representatives by allowing participants time to attend meetings where participants are able to exchange information. However, participants have no authority granted to them by their organizations to makes changes to their organizations' plans or commit their organizations to HBI projects. Therefore, the work completed by participants is accomplished through personal accountability to see the HBI process move forward, however, represented organizations have no accountability in HBI's process.

Summary of the applicability of collaborative elements

EBM has internalized the collaborative elements of inclusivity, transparency, opportunities for public inclusion, connection to local governance and participant accountability into the natural management theory. Generally, participants agree that yes EBM has adopted these elements into their collaborative strategy. EBM literature supports groups utilizing EBM to focus on the collaborative aspect of group decision making. However, most participants also agree that there is a difference between theory and application. Although EBM literature supports collaborative decision making there are few strategies proposed to engage in stronger collaborative group building. In part this is due to there being a limited number of groups engaging specifically with EBM. Therefore, the groups that are, including HBI, are considered models for future EBM oriented programs.

Overall, participants were able to determine how HBI is doing with these collaborative elements as a result of EBM guidance. Respondents determine that EBM supports the idea of inclusivity increasing the benefits of collaborative decision making. HBI participants also determine that HBI is making an effort to be inclusive of interests within the Humboldt Bay watershed. Efforts are challenged by misunderstandings in the community about the purpose of HBI and/or understanding EBM as a management strategy. Increasing the degree of inclusivity is also hindered by current meeting times and location which might help to invite new participation. Therefore, participants largely

agree that HBI is making a good effort at being inclusive but could make process changes that would increase the group's interest diversity.

Increasing process transparency reduces misunderstandings about the vision of a collaborative initiative. As a process, participants largely agree that yes EBM theoretically supports a transparent process however the applicability of transparency is problematic. There was limited process transparency at the beginning of HBI's creation which turned off a few respondents. HBI is using traditional methods of opening up the process to participants already involved in HBI. The group has made efforts to present the EBM to other local resource agencies but has had limited success opening the process to the general public. The result has been negatively influencing the capacity HBI has for engaging with public opportunities. While the interest is there among those peripherally involved with HBI to become more involved and to bring a large network of participants to the program the opportunities have not been made available. This is largely due to the fact that HBI has not reached the process' implementation phase. When the group is ready to initiate project there should be positive public reaction. Participants agree EBM theory supports high inclusion of public support by creating opportunities and also agrees that those opportunities will increase as HBI moves through the process.

Gaining legitimacy through support of local governing structures is one way to speed up process progress. Participants had the least to say about this collaborative elements relationship with EBM theory. In application, participants agree that including local government in the HBI process has great value to the group. There

was disagreement about the role local governance should take within the process. Largely, participants envision HBI as a non-regulatory group which will have greater impact on informing local decision makers with their planning efforts. Likewise, local decision makers can then inform HBI on what is happening in those planning process that will impact HBI projects. Including local government as an equal group participant is the relationship described in EBM literature. However, there are respondents who feel that HBI could have greater local impact by inviting a larger government agency, such as NOAA, to take over the HBI process. Other participants see this idea as a conflict of interest and an idea that would take away from the local autonomy embraced by HBI. The role of local government in HBI's process needs to be addressed as a highly debated issue among respondents.

Participant accountability is another collaborative element HBI participants will need to resolve. Respondents are generally unsure of EBM's stance on participant accountability. Accountability standards may differ as they relate to individuals present at meetings and the organizations they represent. A good process exercise for HBI would be to define accountability through defining what it means to be a HBI participant. Creating the standard allows HBI the ability to keep equitable accountability among group participants and increase the utilization of participating organizations' resources. HBI is doing well to apply the collaborative elements that are most accessibly understood in the EBM theoretical framework; inclusivity, transparency and public opportunity. Process elements that not as clearly addressed in EBM literature,

connection with local governing structures and accountability are collaborative elements that HBI is finding the most challenging. Looking to other local collaborative initiatives to get beyond these barriers will be useful to the HBI process.

How is the Humboldt Bay Initiative Doing?

HBI participants identified process elements that are going well for the group and barriers to success challenging the group's progress. Participants also defined their vision of success for HBI and the larger Humboldt ecosystem. Creating a group vision is a common development tool utilized during a strategic planning to help unite a group.

Barriers to Success

During interviews, respondents described their future visions of the Humboldt Bay watershed. They also described the role that they think HBI has in supporting that vision. However, few participants were able to describe to me HBI's group vision. Without a clear group vision participants were not able to go to the next step and describe their role in making that vision a reality. Instead participants responded by suggesting what HBI needed to continue as a functioning entity. Respondents' suggestions fell into one of the following 5 themes (listed by respondent priority): strategic planning workshop, organizational development, funding, community momentum and current participant accountability.

Strategic Planning Workshop

HBI received grant funding from the Packard Foundation to engage in organizational strategic planning. The Packard Foundation stipulated that HBI hire Foundations of Success, a third party facilitation group. San Luis Obispo Science and Ecosystem Alliance (SLOSEA), another member of the West Coast Ecosystem-Based Management Network, also contracted Foundations of Success to complete their strategic planning workshop with their Packard Foundation grant.

The strategic planning workshop was a five day, forty hour process. Seventy-five representatives of diverse interests within the Humboldt Bay watershed were invited to attend.⁵ Participants set out to create a regional base of information by identifying local needs, resource “threats,” and local resources of Humboldt Bay watershed. Forty-three people of the invited seventy-five were able attend at least one day of the workshop. Participants who were not able to attend the strategic planning workshop, and some who were, noted that the workshop was planned during daytime business hours in the middle of crabbing season. Participants also noted that there was a general lack of information and/or understanding of ecosystem-based management, the mission of HBI, or the purpose for the workshop.

Strategic planning should result in the creation of well-defined deliverables that will direct the group’s focus while supporting trust building among participants. Largely, participants suggest that they did not leave the workshop with a set

⁵ Please refer to Appendix D for a complete listing of all organizations invited to the HBI Strategic Planning Workshop.

of objectives to share with their representative organizations or feel that the collaborative had moved forward as a more cohesive group. There was considerable preparation made by HBI members and hard work completed by those who attended the workshop. The fast paced strategic planning workshop included group discussions about local resources utilizing conceptual mapping software created by Foundations of Success, called Miradi. Based on a conservation planning tool developed by the Nature Conservancy, volunteers from HBI recorded information into a software interface that resembles Microsoft PowerPoint, Excel and Word. While the recorder was keeping notes another HBI volunteer facilitated discussions about perceived “threats” to the Humboldt Bay watershed such as: invasive species, climate change, sedimentation, and other resource use issues. Participant 34 says, “Miradi is more about the software program than the plan. The funder [Packard] forced HBI to use Foundations of Success. They [HBI participants] either thought the program was neat or a waste of time”. Recorders were trained to use the technology the first day of the workshop creating a technological barrier for the group. The software took into account ecological and economic facets of resource planning. HBI participants tried to explain to facilitators that EBM as a management strategy also included social barriers as being equally as important and desired to have these incorporated into the planning system. The facilitators responded that social welfare is assumed within the Miradi program so there was no need to specifically address social issues such as cultural awareness, social equity and so on.

Though the potential usefulness for organizing thoughts was clear, this software became a technological hindrance to the group. Participant 17 said,

The software was a big hurdle and barrier at the strategic planning workshop. The facilitators needed to train people on the mechanics of how systems thinking works. It's hard to figure out all of these big concepts and technical issues as we went, we did it, but it inhibited progress... As a facilitator, Miradi made me feel like a deer in the headlights. All the focusing on the technical support took us away from discussions. We needed talk time and just talking. It was painful and embarrassing. It was a stumbling block that didn't need to be. Time was a must and a limiting resource during this process.

As a recorder using the software, I recognized a building skepticism for the usefulness of Miradi which grew into a sense of distrust towards HBI by invited participants not as familiar with HBI. I overheard side conversations concerning participants' roles in this workshop, misunderstandings about the purpose for gathering and what the funding implications of this process would be. Participant 19 says, "Strategic planning utilized the last man standing strategy, continuing to discuss items until consensus is met or acquiescence of the parties involved. For example, in the strategic planning group we categorized issues and there were conflicting issues (i.e. erosion and ex-urban development) but the conversation's end went to whoever pushed the hardest." Generally, strategic planning should allow space to discuss different points of view. The result should be better shared understanding with everyone feeling heard. These discussions help to group to move forward with the planning process more cohesively. However, the strategic planning workshop in January 2009 served to motivate those HBI participants already involved in the process and confuse "periphery"

workshop participants trying to understand the value of HBI. Participant 19 goes onto say, “Trying to understand vocabulary and the framework of EBM was not clear. For example, the term ‘threat’, it’s a two edged sword applied to industry giving a negative connotation with the activity. It may not have been intended but the comment was ignored as wasting time where discussion could have happened. Next time HBI should try to get a framework laid out more clearly before playing the game [Miradi]. Were we learning the process or creating a plan?” Participant 12 also reflects on the strategic planning effort saying,

Humboldt Redwood Company is a major landowner in the watershed so it was important that we participate in the collaborative strategic planning process. I felt like an observer to a process that everyone knew more than I did. It felt like an exercise. They had good diversity but many people were not there. New people did not have any time to contribute to conversations. I needed to feel like part of the group. Perhaps a pre-meeting to explain what HBI and EBM are and then expand those conversations at the process. Even to explain that this is all new territory for everyone. There were uneven relationships at the workshop. We needed a handhold of understand how to play the game and how to be helpful. We also needed a product to take home. What was the objective? What do we want to accomplish? How can people interact? Was strategic planning learning how to do EBM? Regulation is activity based. A more productive way of doing the strategic planning could be having smaller meetings that are more focused, a time to get leaders talking. Much was left undone and much dialogue never happened. There was not enough time to get to the basics. To even express goals in ways that are not anti-management, such as "working forests". It was a friendly environment, but we created no goals of substance. I felt heard and that my perspective was understood. But as always, whoever is there gets to write the future, synthesize working goals but these are part of one big process. The interest of people shows in the proposed research but it’s not collaborative. EBM as a funding mechanism is a benefit to the community.

Effective “facilitation is the impartial management of meetings designed to enable participants to focus on substantive issues and goals” (Elliott 1999). The goal of HBI’s strategic planning was to create a plan that would bring new participants into the group to form future goals and strategies that would best plan for the region’s future natural, social and economic health. Participant 12 suggests, “I’d like to see some home grown talent guide the facilitation of this project. Someone who has a local context would have been beneficial because she or he would have taken the time to figure out what was happening. There was a low tendency to hit important local issues at the meeting.” Outcomes of strategic planning that I would consider successful are getting the ideas of HBI out to a larger interested population and beginning conversations about envisioning the future of Humboldt Bay Watershed as a functioning ecosystem. However, two years and \$40,000 worth of unproductive facilitation later, the group has not made progress toward the original goal of gathering for constructive strategic planning.

The strategic planning workshop was one of the deliverable objectives made by the original Packard Foundation grant to help the group move forward. Completing a strategic planning effort was also a required process measure in order to apply for a project implementation grant funded by the Packard Foundation. HBI applied for the second grant and due to poor timing economically in the country’s recession and other unknown reasons, HBI did not receive the grant to support a collaborative sedimentation project. Not receiving the grant fund for project implementation was setback for the group. As a result HBI lost momentum and attitudes became more negative as to the

future success of HBI. The group saw a reduction in participant commitment through a lower attendance rate at monthly meetings.

Organizational Development

So far HBI has been able to maintain a dedicated group of participants using communication resources available and through voluntary efforts. However, this structure is not sustainable for collaborative growth. HBI participants begin to join meetings through of mouth. However, without a method to mentor new members into the group and there being no defined roles for participants there are few responsibilities for new participants that keeps them feeling like a part of the process. New participants also have a difficult time understanding HBI's group objectives to be able to take information back to their representative organization to match up interests. Without a group vision, group objectives or deliverables, or a providing a purpose to new organizations, keeping new participants coming to meetings is going to be difficult.

I hope that HBI can move forward so that people can see the change happen. Let's get the Humboldt Bay Institute set up. Having a physical place to meet will give people a sense of place where people can come together. We need a "Susan" to lead the group. Hire two or three people where EBM is their job to keep communication flowing and keep momentum within group. That means that we need to be well funded to create a structure that hammers away at issues. (Participant 33)

Within HBI we should create a group that pursues a non-profit status of HBI to accumulate funds to accomplish the strategic plan. I don't know if we should get that funding through HSU or government agencies already involved with HBI. HBI is an initiative not institute. We need an office with coordinator position; a physical structure with an office and staff keeping the group moving forward together. HBI could gain from an

independent structure by drawing in more stakeholders and not being associated with this agency or that one. (Participant 20)

While this research was being actively conducted, May 2009 – May 2010, HBI had an ad-hoc organizational process. Susan Schlosser, who had been facilitating the group since its inception, took sabbatical through her position with California Sea Grant. During this year she also took time off from leading the group. In her place Debbie Marshall of California Sea Grant continued to communicate upcoming meetings, create an agenda and produce meeting minutes at the conclusion of meetings. Becky Price-Hall took over facilitation responsibilities. Monthly meetings continued to be primarily an information sharing space. Some meetings were better attended than others and monthly meetings became bi-monthly meetings. Sub-committees that formed as a result of the strategic planning efforts were no longer active. I do not know if the core team continued to meet in addition to monthly meetings or not. There was no progress during this time towards becoming a more cohesive entity.

At the time I left Humboldt County, May 2010, HBI participants were discussing the possibility of becoming a non-profit organization. I believe that since that time HBI has acquired a non-profit status and facilitation has been taken over again by Susan. Comments made in this research reflect the responses I received during May 2009 – May 2010.

Funding

Identifying funding sources during an economic recession can be challenging. The Coastal Conservancy and Packard Foundation have supported the establishment of HBI. The group has worked through a strategic planning process and moved forward with creating a sedimentation project proposal. However HBI did not receive funding to move forward with the project, nor has any additional funding come available since this initial startup grant. Identifying and applying for funding is a full-time job that participants voluntarily conduct. However, putting in the effort without receiving the desired outcome has decreased the motivation to continue to volunteer time for this necessary step in project execution. Study participants said:

The future of HBI depends on funding. I hope that the group will continue to develop proposals for priority issues and that there will be some "champions" that take on the studies and the process will continue through feedback from those studies. I think that without funding it will be difficult to keep the group from disbanding. HBI will have to make management decisions to identify funding because it is feedback mechanism for a group to pursue projects then be able to apply to other sources. (Participant 27)

Ideally, any institutionalized group needs funding ... The future of HBI depends on motivation if there is no money it's difficult to see results. Implementation is still a question of ability to do research. I fear that HBI could all be just an idea on a shelf. (Participant 21)

The future is unknown. HBI has the commitment by people but there is a need for funding. Work needs to transfer to money. We worked hard on the sediment proposal and on the strategic planning but saw no financial backing to support the implementation of either project. HBI will either fall back to a fragmented group or become a new process without proper funding. (Participant 28)

Restoration plans and studies going on are dysfunctional, we need action. Time is restrictive but HBI could be a central funding recipient. Grant cycles are short term focused but HBI needs a long term perspective. The Humboldt Bay Institute as a physical institute could promote science and outreach, an aquarium and education. We need to more science to be engaged in decision making while there is a decrease in research for research's sake. We need to think in ways that benefit the environment. (Participant 22)

Community Momentum

Participants also identified a need to increase community momentum for HBI to be a lasting member of Humboldt County organizations. This challenge is directly related to increasing public outreach and increasing public opportunities for inclusion. Humboldt County is rich with community capacity to support local issues. Gaining community support is HBI's greatest issue. Engaging the community is another full time job in addition to identifying funding resources. Having community buy-in may be more beneficial to the group than chasing after funding sources. There is a wide body of knowledge residing in Humboldt County as well as gifted and willing support to help project through implementation. Figuring out how to get the community, folks not already involved in HBI, engaged in watershed issues will encourage positive group recognition, increase community communication and decrease local suspicion of the group's intention which can be priceless in a small community.

I hope HBI makes it but they have to get the community on the same page. There are solid restoration plans in place for all of the watershed

and the Bay itself. The question for the community will be how to keep that bay dredged for boats and keep rockfish alive? (Participant 34)

Being realistic, it's not going to happen without community momentum. But I would like to see it happen. I need to participate more, the community needs to participate more. To work HBI must have policy input and participation, get a high level of folks to commit as a group. Get the newspaper involved and the website more accessible to gain more community 'umph'. It will lead to more funding. Fundamentals that make organizations work are: vision, mission, by-laws, get a bigger picture then work on details for how to participate. Set up the organization's structure to enable people to figure out where they fit. Create a policy committee, an administration, and science committees. Then, define roles and responsibilities for the 3 groups. Offering many different ways to be a part of the group will maintain participation by interest-based groups. (Participant 12)

Increasing Current Participant Accountability

Finally, new interest in HBI is beneficial to the organizations growth but engaging the people that are already attending HBI meetings is just as important to the longevity of the collaborative. Keeping participants in the group through the creation of objections on a workable timeline will make participants accountable to meeting the group's goals.

The best case scenario, is keeping people involved. Involved, interested and aware, benefiting interests, raising a tide so that we get recognized due to success. HBI will have to find staff, resources and funding to support the effort. (Participant 16)

HBI requires some funding but not everyone gets money to do things in EBM. Not everything takes money to do, that's the management and oversight piece. HBI needs an infrastructure to pull this together to maintain commitment. But there are pieces that could happen. Agency representation will meet on a regular basis to work on these things and get information out to people. The future all depends on who is running this, on the long term vision and commitment. For success need to have enough funding to have director and support staff. (Participant 1)

HBI participants should be encouraged to incorporate EBM fundamentals into their work and share information that is learned during HBI meetings with their professional organizations. Home organizations that are expecting updates from HBI's progress and that understand their role in seeing that progress through will have greater accountability. Participants are noticing that HBI is stagnating. It's harder to commit energy to a group where participants are unsure of its durability. The commitment of participants to the future of HBI creates the organizations capacity to make local change.

The direction HBI takes will be dictated by where funding comes from. The need for funding may be the driver for where to go from here. The governance [organizational structure] piece will also be a driver. HBI could work out MOUs with participating agencies or structure the decision making of the group dictating how to work through the maze of management [at the agency level]. Locally understand the lines of authority within each agency and define the principles of participation with an MOU. There would be recognition at each level, county, regional, state, and federal agreeing to support HBI's work. (Participant 36)

HBI will continue to be there. One question is who will lead the group in the future? The group needs to be driven locally by resource managers. What is the perception of HBI? Is there a need to be perceived as needing outside influence, which is all funding related. (Participant 25)

I hope for full funding to implement strategies within 3-5 years. That the group will be able to start up wide program and not be a binder on the shelf. This effort would be better with a coordinated approach. If the HBI does not get funded then hopefully the strategies, goals, and objectives will be implemented through individual agencies. Each entity can clarify their goals and make steps to meeting those goals. (Participant 4)

Visions for the Future of Humboldt Bay Initiative

To understand why the region is important to participants I wanted to understand their vision of their place and how HBI fits into that vision. Interpreting their visions of a healthy Humboldt Bay watershed I borrowed from the EBM's triple bottom line: social, economic and ecological elements. Identifying combinations of these three elements I separated people's responses to understand what people want to see in their Humboldt Bay watershed. Of the 36 respondents, 14 incorporated ecological and social elements into their vision for the future of Humboldt Bay.

Ecologically speaking, the watershed functions with native species and working landscapes, not much different from today. Socio-politically, people are involved in the decision making processes for land and water uses. Residents know their private property rights and responsibilities, which is a matter of access. The decision process should involve planning tools to live in the watershed with non-destructive values. (Participant 25)

We have a healthy watershed. We've already dealt with the big issues. The Clean Water Act cleaned up the big problem like dumping toxins directly into the water. But now that we have already picked the low hanging fruit what we have to do now has little impact but big expense. Road systems have the most impact on water quality. We need to keep researching these kinds of issues for science-based decision making, monitoring, evaluating. Constructive decision making and repeating the process is expensive. Private property owners should bear the expense. (Participant 11)

Healthy fisheries! Salmon runs in the fall and spring in rivers with clean gravel riverbeds. There would be reduced or eliminated noxious weeds and the water is safe to drink and swim in. There would be unpolluted soils and air quality would be premium. I'd like to see healthy forests with tress of ages, types and stands. People would be using the trails and recreate in the watershed out of the car. This would be a place to come together as a community. And there would continue to be productive agricultural lands. (Participant 17)

One that does not have pollution, sustainable working landscapes but not overused, there is diverse plant and animal species, and a social system that can enjoy the watershed. Balance between ecological and social systems. (Participant 27)

Although participants agree social and ecological elements need to be considered equally. There does need to be discussion about how to incorporate these elements and work with issues, to manage or not to manage.

I'd like to see managed systems and all land uses managed for something with good habitat. Manage for specific species better, there are areas in need of habitat restoration like the Elk River Valley and Dunes areas. It's hard to get agreement on what lands should be managed for. What acreage do we need more of? wetlands, agriculture and refuge? The loss of saltmarsh has been the largest amount of habitat lost in the watershed. Land has been dyked in former tidelands, we need to remove dykes in areas that were historically saltmarshes. (Participant 19)

The watershed can adapt to change. It can't be restored back to European establishment, 1850's. Fish and deer are all part of a highly functioning process. I'd like to see a strong economy supporting healthy cities. Where's the restoration baseline? EBM is looking at restoration and where levies are located and agricultural production. How do all of these systems impact each other? The group is then connecting natural systems and economic systems. Where's the balance in jurisdiction cooperation? (Participant 30)

Reduce impairments to water quality, habitat and species quality. The watershed should have healthy use and enjoyment by people. Historical and accumulative factors should be considered in planning process. There would be programs to promote restoration with a goal of regulatory process in appropriate management. (Participant 9)

All of the components are already there. The natural processes are healthy. Social systems are functional. Though we could focus on using energy more efficiently and wisely and consider gravity, kinetic sources and ourselves as sources of energy. We still have to learn how to work within our systems instead of trying to control them. Stop fighting natural forces. (Participant 32)

Summary of Results

The Humboldt Bay Initiative has worked hard to apply an EBM framework to their collaborative efforts. The core group has developed from being an idea to increase communication between management plans to inviting in a larger group of members that support holistic understanding of Humboldt as a functioning ecosystem and willing to share their perspective with other organizations. HBI is learning what EBM strategies are useful to the group's progress. Participants are defining EBM as it will apply to the needs of the Humboldt Bay watershed. The group will need to create a vision for HBI and the Humboldt Bay watershed to fully understand the role of HBI in the watershed. As a process, the group understands and invites collaborative effort. However, they have not yet identified the tools to engage in a process that will transcend the group from a planning to an implementation stage.

Working together through challenges will involve increasing community outreach, group transparency and connecting with local governing structure. Increasing efforts on these collaborative elements will thereby increase HBI's efforts to be inclusive. Embracing success through public outreach can increase group morale and lead the group into their vision for the future as they develop a strong organizational structure and invite local governing entities to the table. Participants of this research have openly shared their thoughts on the applicability of EBM through the case study of HBI and foresee a positive future for the Humboldt Bay watershed.

V. NEXT STEPS: COMMUNITY CAPACITY, STRATEGIC PLANNING, AND ORGANIZATIONAL DEVELOPMENT

The Humboldt Bay Initiative is collaboratively developing an organizational process. Collaborative work is an investment of time and energy to create a long lasting, productive future. This section will begin by offering my own suggestions to the theoretical framework of Ecosystem-Based Management. Using the scientific principles of EBM, resilient science and adaptive management, I utilize these concepts to reframe how we think about the collaborative process and group building strategies. I will then shift the focus from a theoretical discussion of EBM to the framework's applicability within HBI. I will illustrate how applying group building concepts can help HBI to transcend barriers to success. Following will be a discussion of process points HBI can utilize to increase their collaborative effectiveness, such as, identifying community capacity, creating a group vision, mission and developing deliverable objectives. I will conclude by offering potential strategies for developing an organizational structure that will stabilize HBI's process so that the group can implement their strategic plan and accomplish HBI's goals. HBI's collaborative success will positively impact the growth of EBM as a natural resource management strategy. Work beginning with local initiative has a greater community support than larger government initiatives. By considering the theoretical capabilities and implications of EBM, local initiatives can enhance the effectiveness of its use.

Reframing Ecosystem-Based Management Concepts

Conceptually, resilient science and adaptive management are core ecological principles of ecosystem-based management theory. Resilient science is the product of effective adaptive management for natural resources. My contribution to the body of EBM knowledge is to reframe these natural science concepts into rethinking about collaborative functionality. I begin by shifting the terminology; resilient science as resilient collaboratives and adaptive management as adaptive collaborative process development.

Resilient science is a comprehensive understanding of ecosystem fluctuations. The concept suggests a broad view perspective over the longevity of natural systems anticipating unexpected change by keeping understandings of how those systems function malleable to the needs of the system. Just as natural systems are impacted by political, social, economic, industrial, and ecological changes; collaborative groups are vulnerable to changes in these forces. Therefore, working groups need to be resilient collaboratives. What some natural science groups refer to as “ecological threats” to the success of a system we can parallel social “barriers to success” to collaborative organizational development. For example, resilient science suggests that natural resource managers consider species and habitat diversity an ecological management characteristic rather than species specific methods. Resilient collaboratives would “manage” for levels of participant inclusivity. So the idea that increased biodiversity in natural systems results in greater resiliency would hold true for collaborative efforts as well. The more inclusive

support the group is able to gain the more resilient the group will be to internal and external changes. As HBI's priorities shift, internal change will occur in participation and resources. Group values will have to shift to remain relevant to group members and to continue receiving community support.

Resilient collaboration, similar to resilient science, recognizes that changes in a system can be abrupt and sometimes irreversible. Collaborative groups experience the impacts of changes in funding, resources, facilitation, social variables, and any other number of changes that shift the decision making of the group. Reaction to change should come from proactive management strategies previously decided by the group. Proactive decision making assumes that that the group has discussed the group's response in the event of change. For example, the group will apply for grant funding. If the group receives funding the project will be implemented if the group does not receive funding the plan will be revised to improve the issue using local resources or the plan will remain on the shelf until funding is identified. Proactively planning the directions of the group will help the group to avoid making reactionary decision that will not ultimately support the group's long term goals. The ability to work through change by following a pre-set plan allows the group temporal space between the changing event and collaborative discussions changing the path of the group. Resilient collaboratives will have process ability to work through political, ecological, social and economic changes through constructive planning and reflexivity as part of the collaborative's culture.

Adaptive collaboration process development focuses on building the management strategies that keep collaborative groups resilient against internal and external changes. Adaptive management from EBM's framework identifies the structural program of resource management as: planning, implementation, monitoring and evaluation. Adaptive management in a collaborative setting would consider collaborative elements discussed in this study (i.e. inclusivity, transparency, opportunities for public inclusion, connection to local governance and participant accountability) as an interconnected set of characteristics that together build a cohesive, resilient management plan for an adaptive collaboration process development. Using adaptive collaboration process development, the group would determine their current resiliency on a collaborative level by evaluating/measuring the effectiveness of each collaborative element. Then determine how the group wants to modify their efforts to effectively increase their collaborative resiliency for the long term longevity.

The strategy formed from these discussions is the adaptive piece of collaboration process development. Group planning results in greater group stability through time and change. The greater a group's stability the more flexibility they will enjoy during plan implementation. Adaptive collaboration process development is proactive in that the group is prepared for change and strong enough to encourage group agency in the decision making process. For example, the group determines their value for process transparency. The group then evaluates their actual level of process transparency. Then determining the difference between valued transparency and actual transparency the

group can begin developing strategies to increase or maintain their level of process transparency. Then implementing strategies to increase transparency is impacted by their targeted audiences' responses to their effort. The group can then choose to make changes to their plan that will better attain their goal of process transparency. For example, paper flyers in an environmentally conscious community may not be the most effective outreach tool if there is a negative reaction by your target audience. Adaptive collaboration process development keeps groups creative, fresh and resilient to reach their goals.

The idea of resilient collaboratives and adaptive collaboration process development has been a result of reading through EBM literature and identifying the needs of HBI to move through process-related barriers to success. HBI has the ability to take what the group needs from EBM and modify the concepts into workable strategies. Rich in resources and networks, HBI needs strong process building that will free up participants to work on natural and social resource issues. The more stable their collaborative process the less time HBI will need to focus on collaborative planning and structure issues. These collaboration-focused concepts could also be adapted into the theoretical EBM framework to provide application tools for new local, EBM initiatives.

Strategic Planning

Humboldt Bay Initiative has worked through one strategic planning effort in January 2008 as described in the previous section. Upon evaluation of responses and the

lack of group progress, I do not think HBI benefitted from their strategic planning efforts. The group engaged in a time intensive process that resulted in more meaningful ends for the facilitators (Foundations of Success) than HBI. Further, although the expected results for HBI, to gain more funding from Packard Foundation did not come to fruition, there were several lessons learned from the strategic planning process. First, top priority to ensuring a productive process is choosing the right facilitator to lead HBI in the strategic planning process. The facilitator should be knowledgeable of the Humboldt region. The area has a unique social and natural resource history, level of isolation, impaired access to resources, and a unique economic structure. The facilitator should be familiar with ecosystem-based management. EBM's holistic understanding ecosystems is different from traditional resource management strategies. This means that there will be diverse participation. Therefore, a facilitator should be able to support inclusion of knowledge and participant strengths. The group may find that a person or group of people with these skills already participate within the West Coast EBM Network. The first step to having a successful planning experience is to choose the appropriate leadership.

The second step to prepare for a productive planning workshop will be to ensure that participants invited to the planning effort come prepared for the meeting. "Prepared" means that each participant will understand EBM principles and why HBI has chosen EBM as a theoretical framework. Participants should also arrive at the workshop understanding their role within the HBI group or at least why they have been invited to the workshop. Each participant should independently recognize how their interests align

with HBI's goals. Therefore, be able to knowledgably engage in the planning process. Workshop scheduling should consider who's interests should be present during planning to maximize participation. Dedicating a forty hour work week to the planning process is unrealistic to engage all of the interests the HBI would like to have present for this process (i.e. fishing, agriculture, public). The agenda should be planned to include time for personal introductions and informal discussions which build trust and can inform the direction of productive dialogue. The group should spend time discussing the importance of HBI and why it is different from other efforts.

EBM is conceptually complicated due to its use of theoretical terminology. If EBM is to be at the core of HBI then the group must spend time discussing which EBM principles are important to the group's vision before improving issues within of the Humboldt Bay ecosystem. Together participants will need to redefine a working vision statement, mission statement and set deliverable goals which reflect the group's shared values. These statements will be group accomplishments that participants can share with affiliated organizations to engage in discussions about their partnership with HBI. Working together through these process elements helps the group to determine shared social, ecological and economic values.

Community Capacity

Strategic planning workshops are also excellent venues to begin recording a group's community capacity. Community capacity consists of skills, knowledge and

social capital shared by individuals in a group that when combined create dynamic array of resources that the group can draw from to creatively address issues within the Humboldt Bay watershed. Everyone working with HBI has a diverse academic, professional and experiential background to share but need the space to connect their resources of social capital and personal interest to the goals of HBI. Identifying participants' resources (i.e. financial, social networks, technical skills) and networking their resources together is valuable times of economic hardship. HBI would benefit from taking an inventory of members' abilities. This inventory is a measurement of the group's community capacity. EBM literature does not address the importance of community capacity where the idea thrives in collaborative local initiative literature. HBI and EBM as a framework would greatly benefit from incorporating community capacity into their process frameworks. Knowing participants' strengths to draw from is at the heart of collaboration.

HBI has strong community capacity. Participants must learn how to access the group's resources. There were participants present at the strategic planning workshop that have organized successful local watershed councils, organized state-wide watershed programs and been pivotal members of agency-community collaborative efforts. HBI has grown from past experience in natural resource management, planning and community initiative. A strategic planning workshop would be an excellent venue for taking inventory of HBI's community capacity. The process of building community capacity is an opportunity for self-reflection and an opportunity to share those accomplishments with

the collaborative as shared resources. Through identifying all of the roles each participant plays in a larger society creates the story of how and why participants volunteering their energy with HBI. Sharing personal motivation energizes the group. For example, one participant may be a biologist for a state agency, who is also a mother of two who enjoys painting in her spare time. There is a lot of important information in three roles as educated professional, parent and art enthusiast. What the group learns is that this participant has a post-secondary education with a source of social networks academically and professionally. She has access to school aged children with social networks which could benefit HBI's start to a citizen science programs by having access to schools. Additionally, the group hears that she is an artist with a different set of social networks that may care about the beauty of landscapes that may inspire their art. Perhaps that could lead to creating community murals involving public interests. All of these roles are connected through one person. Each participant's variety of role they play in their community accesses different resources that could support HBI's vision to benefit the watershed.

Another ice breaking exercise used in facilitation meetings is to identify what participants can do with their heads, hands and heart; what intellectual knowledge participants share; what each is able to do and what motivates participants to share what they know. The same biologist, painting mother could say that she specializes in submerged aquatic vegetation but has worked with hazardous materials removal as her first job and managed a café while she was in school. While at the café job she learned

how to cook for large quantities of people, then at the next she learn how to safely remediate materials. As a conservation ecologist she has a project that needs a large group of people to remove invasive grasses and transplant native species. HBI is a network of people that could help her to organize the labor for her project. Her motivation is the love of her family and the place that she has chosen to raise them. Her work at HBI is to ensure they can enjoy their place as an adult. This example shows that taking inventory takes time but participants learn about the dynamic people they are working with to improve their shared space.

Strategic planning sessions should be a safe arena to discuss group challenges, celebrate successes and identify holistic systematic needs of the Humboldt Bay watershed in relation to its surrounding areas. The group can move forward together. When this process is completed correctly the results will greatly inform HBI's organizational development, strengthening its hold in the community by refreshing the commitment of current HBI participants and bringing in new energy.

Currently the general energy in the group is deflated. While members are highly committed to HBI's progress, there is shared disappointment that the process has not been able to move forward. HBI participants remain hopeful for the future and supportive of the group's efforts. They believe in the necessity for HBI's purpose and in the potential to benefit the Humboldt community. Folks are also experiencing personal stress that spills over into their ability to help HBI function.

Participant 34 says:

There is a dark cloud these days caused by policies out of our control. Mandated furloughs and reduced funding are slowing everyone down. State employees are all slowed down and overworked. We have to deal with bad attitudes because the Marine Life Protection Act is coming. That process is inventing an environment by creating an invariant model without thought for the livelihoods dependent on resources here. MPLA is being done to us not through participation.

A majority of HBI participants' occupations are funded by California State Government. Those who are not directly experiencing state forced furloughs with increased workloads and reduced pay are experiencing similar stresses of living in an economically depressed region, working with limited resources and increased responsibility. Decreased professional stability impacts personal security for their family which means participants have less time to volunteer in community activities. However, HBI participants really want this local, collaborative initiative effort to be successful. This means that HBI needs a "win", a group generated success, to boost morale and rejuvenate participants' dedication to HBI's work.

Recommendations for Restructuring HBI Meetings

Another method to revitalize HBI participants may be to consider restructuring meetings. The advisory team, the larger group, has been engaging in monthly meetings to share information while the smaller core team meets more frequently to deal with administrative issues. Sub-committees devoted to topic-specific issues (i.e. invasive species, sedimentation, etc...) schedule their own meetings. Participants seem to largely

appreciate this process organization but feel that for the amount of time spent there has been low productivity.

My suggestion for the Humboldt Bay Initiative is to continue what the group is doing with some adjustments. First, continue sharing information about research, resources, event and other planning strategies. HBI participants found social networking through shared interests to be HBI's greatest attribute. Second, continue encouraging and educating the community to join HBI's process. Using information gained from completing a community capacity exercise participants will find who in the group has access to other groups that may feel hesitant to become involved with HBI. Allow potential participants to become involved in interest specific committees and then draw them into larger advisory meeting. Their suggestions could guide outreach activities because as an outsider to the advisory group they will know how to meet the interests of a broader community.

Third, increase efforts to encourage greater participant inclusivity. HBI can identify neutral meeting locations that would be welcoming to new participants. Asking a group of people who are suspicious of HBI's intentions to enter a government building, University building, or large community institution space may feel threatening. One idea is to change the location of the monthly meeting so that participants host the group in their place (i.e. timber land, at the docks, on the refuge, at the marsh, on a farm, etc...) These are informal fieldtrips that allow the host to share their perspective on the issues being discussed while also holding the information-sharing portion of the meeting.

Fieldtrips encourage people to get outside and share a place-based learning experience together.

Fourth, HBI would benefit from holding a bi-monthly or quarterly “executive meeting”. HBI participants would invite their supervisors, regional directors, or decision making persons in their organizations to attend a summary meeting. This opportunity gives participants a place to showcase their hard work. At this meeting HBI participants will have an opportunity to outline their progress and goals for the future. The supervisors will be able network to resolve issues with agency policies, streamlining permitting processes, allocation of resources, and other barriers to progress. Participants are teaching their colleagues about the application of EBM by shifting how organizations view ecosystem connectivity and organization collaboration.

Fifth, HBI participants should continue to celebrate their successes. Through group reflection HBI can celebrate successes of the organization, of individuals’ efforts with HBI and in the community, and the successes of the larger Humboldt community. While celebrating successes the group is making time to enjoy the group’s progress and be reflexive of the process that brought success. The group can focus on how the group is doing collaboratively, how the group is doing to maintain its vision and achieving goals. These discussions will keep HBI on track and build a strong unity among members. Checking in will also increase participant ownership of HBI’s outcomes thereby increasing participant commitment to implementing HBI’s plans. Commitment to shared success is motivation to remain accountable to your peers. Participants who

continue going to meetings continue to be invested in the future of HBI. However, keeping participants at the table will be one of the most difficult tasks for HBI to overcome.

Organizational Structure

HBI's organizational process has developed from traditional meeting strategies. HBI will need to decide on a more formalized organizational structure to gain legitimacy within the broader community, local governing structuring and prospective funding entities. I have developed three potential organizational structures that may aid HBI in maintaining this level of legitimacy. Identifying stable sources of funding was noted by study participants as one of the largest detriments to HBI's future success. Therefore, to meet this challenge I have identified three process models for HBI to use as a platform for discussion. While the source of initial funding is unclear, I would highly recommend that HBI hire a small administrative staff dedicated to facilitating network communication, information sharing, group organization and actively connecting the group's goals with needed resources. This necessary group of people will remain constant throughout the description of the three organizational structures.

1. HBI would obtain a non-profit 501c3 status.⁶ As a non-profit this group can become the funding agent for collaborative projects. This structure has benefitted many collaborative groups by offering diverse grant opportunities.

⁶ Since my presentation of organizational development to HBI (May 28, 2010), participants had already been working towards obtaining non-profit status previous to my recommendation. Please refer

2. Encourage the other groups within the West Coast EBM Implementers Network to support the coordination effort to act as the funding agent instead of competing for the same funding sources. At the annual EBM conference the groups would determine the budget and funding allocation. This structure will serve to share not only funding resources but information-sharing, social resources, support the growth of new EBM initiatives and network-wide initiatives such as an internship program. Additionally, each group continues to focus on place-based goals maintaining local governance.
3. Encourage a federal agency to act as an umbrella leader supporting local movement by providing funding and resources. This structure may induce conflict between the collaborative elements, specially inclusion, public outreach, and connection to local governance but may be the most comfortable for the group.

I did not determine the initial or long term costs for each of these organizational models. However, these descriptions are offered as suggestions to encourage conversations about the development of HBI. There are pros and cons to each proposed model. Based on the group's shared values, HBI would have to determine which scenario would work best for the group's needs with their available resources.

On May 28, 2010, at a monthly HBI advisory team meeting, I presented my preliminary findings and suggestions to a group of Humboldt Bay Initiative participants. A majority of people attending the meeting had participated in my study. We were able to engage with the information I shared and I think began the foundations for some very interesting discussions. We discussed mapping community resources, developing new strategies to encourage participation, and tactics for moving HBI forward. HBI has been ready to have these conversations.

to Appendix E for meeting minutes of my informal presentation and group discussion of initial study findings.

From a process facilitator's prospective; HBI has the foundations for a long lasting local initiative. Participants will need to solidify how they want HBI to function and for what purpose. Strategic planning efforts will help the group to write a vision statement, mission statement and shared goals for the future. Determining these process elements will make the group more accessible to broader participation. Identifying HBI's community capacity will support HBI's collaborative vision. Strategic planning for HBI should include visioning activities, creating a mission statement, identifying shared goals and creating a meaningful timeline. I would also recommend the group develop a tool or plan to create reflexive discussions concerning HBI's effort to remain collaborative. Reflection can be easily overlooked during times of planning and project implementation. As exciting events unfold for HBI I think that there will be a continued commitment to collaboration based on the enthusiasm of study participants.

VI. BUILDING THE FUTURE OF HUMBOLDT BAY INITIATIVE

Humboldt Bay Initiative continues to develop by the efforts of participants' collaborating through EBM principles. Participants benefit from a shared value of networking resources to holistically improve the Humboldt Bay ecosystem. The focus of this study is to determine the applicability of EBM as a collaborative process. By working with HBI as a case study for EBM in application, I am able to offer my perspective of EBM's applicability for HBI's collaborative process. I am able to shape my perspective through the responses of 36 gracious research participants. From this research, HBI may be able to shape collaborative elements and EBM principles into a process that will help the group to overcome group challenges. EBM as a framework may be able to address the collaborative process more directly with ideas like Adaptive Collaborative Process Development to better support the development and longevity of EBM programs. EBM as a natural resource management strategy has the potential to become a resilient management strategy if the collaborative process can be more clearly outlined and defined. Working with HBI specifically I have identified process barriers keeping the group from moving forward and recommended steps that I think could help HBI to work through their current challenges. These challenges are comparable to other EBM groups and locally issue-based initiatives.

From our work together I have discovered more questions about EBM to be addressed in future research. This research process has also taught me a great deal about myself as a growing social scientist and my work with collaborative organizations. I

think that EBM has great potential for inspiring local initiatives. I think that the work HBI participants have been giving to their own EBM process will help other initiatives in the future.

In the future, Humboldt Bay Initiative will be able to share with other groups their experience through lessons learned. After HBI overcomes their process obstacles and moves forward to achieve their goals, HBI can share their experience with groups new to the West Coast EBM Network and across the nation. Participants will be able to reach out to other groups through publishing papers, presenting at conferences and on the ground venues. As HBI develops a clear process, the group could share with others how the process of focusing on collaborative elements strengthens the whole of the initiative. Facing process issues of inclusivity, transparency, public inclusion, connection to local government, and participant accountability are long term process challenges for most sustainable collaboratives. HBI has the opportunity to focus in on these collaborative elements to improve their own process. Ultimately, as a healthily functioning collaborative, HBI participants will be able to achieve their goals. HBI will also be able to share their strategic planning experience. Whether HBI chooses to try another planning workshop or not, the experience of connecting HBI with a larger community through process building has created relationships that will shape HBI's vision. Another lesson learned that HBI can share with others deals with identifying funding sources. Hopefully HBI will stabilize their financial status and be able to describe how the group was able to persevere without funding. While funding has not been available, HBI has

the opportunity to focus on the group's community capacity by identifying participants' shared resources and abilities. The group will continue to have more to share with other local initiatives when they begin implementing projects and working towards the group vision.

Positive intention, motivation and dedication are evident among HBI participants. However, the process itself has been slowing the group's transition from planning to implementation, resulting in decreased commitment from participants. My original intention for this research was to create a rubric to help evaluate other collaborative process of other similar organizations, such as growing EBM programs. I would use this rubric to help identify other groups' successful process strategies. However, such ambition went far beyond the scope of my thesis work. I do believe that understanding lessons learned by other groups would significantly help HBI not to "reinvent the wheel" or feel so alone on their path towards becoming a successful collaborative. Additionally, understanding lessons learned from other groups can help HBI avoid new barriers that will come up as they move forward through their process. I would recommend that HBI research other groups, contact them and bring them to Humboldt to speak with the group

to gain other perspectives. I would also recommend that group members read through specific literature that has been the base of my theoretical understanding of collaboration.⁷

EBM could become a nation-wide trend among local environmental initiatives if the movement can provide successful process models. Having a network that puts groups into communication with other groups that share similar characteristics would greatly benefit the EBM movement. An EBM principle is to share information. Therefore, groups should be encouraged to remain transparent. If HBI were looked to as a model for other local initiative that opportunity may open up Humboldt County to new resources. This would strengthen HBI's process and ability to accomplish goals through more supportive local recognition.

There is research potential within Ecosystem-Based Management. An interesting study would be to compare the processes of the six West Coast EBM Network Programs. By comparing the demographic information in relation to ecological resources a researcher can identify how these elements have helped to inform the collaborative process of each location. The study would include a summary of the groups' process timelines and an evaluation of their ability to achieve group goals and their ability to

⁷ Weber, E. P. 2003. *Bringing Society Back In: Grassroots Ecosystem Management, Accountability, and Sustainable Communities*. Cambridge, MA: MIT Press.

Wondolleck, J. M., and S.L. Yaffee. 2000. *Making collaboration work: Lessons from innovations in natural resource management*. Washington DC: Island Press.

remain a collaborative process. I think that such a study would help the groups of West Coast EBM Network to work together instead of continuing as 6 individual processes. The more the West Coast EBM Network builds the greater the amount of recognition groups will receive for their efforts. Another interesting study would be to conduct a case study focusing on the implications of an individual's positionality within HBI and their perspective of the group. I found there to be an interesting variance of perspectives between people who identified themselves as being part of the core HBI group and those who identified themselves as periphery participants. Periphery participants were able to vocalize what they would need from HBI to feel more included in the process; however, they do not consider themselves a member of HBI for a variety of different reasons. This may be a topic the group chooses to explore further or encourages another social science oriented person to consider. Hopefully, this work will inspire many more questions for future research or act as baseline information for the group to grow. As further research studies the implication of EBM in an applied setting, I would encourage EBM practitioners to continue looking at how theoretical fundamentals transcend traditional perspectives of the intersection between social and natural systems. As social sciences are increasingly more accepted into natural resource management there will be greater need for more holistic theoretical frameworks like EBM.

I have experienced my own challenges within this research. Applied research takes a different skill base than embarking on theoretical research. While I read my fair share of literature through this culminating experience, it was my ability to work with

people that taught me the most. Becoming a part of a group takes time. Through going to meetings, working with the group and becoming genuinely passionate about HBI's work, I was building trust, creating networks and figuring out my role within HBI.

Interviewing participants was my favorite part of the research process. I was insecure of my interviewing abilities meeting with each participant. I was nervous not knowing what the person thought of my study. I did know that each participant was courageous enough to offer their time and thoughts through no one really understood what I was going to do with their responses. With each interview I was energized by participants' openness to sharing their histories, opinions and thoughts for the future. I was exhausted and excited after each interview. I would run back to my car and jot down notes about what the participant said and make connections with previous interviews. I felt like such a part of the group as I started getting more involved in my research and people would ask me about the information I was collecting. Another highlight was the opportunity to share with the group some initial findings. It was an opportunity to discuss challenges and make recommendations with HBI and for me to better describe these findings.

Delving into the findings was tedious and rewarding. I took weeks to transcribe interviews then identify themes throughout participants' responses. I hope that I have provided HBI with a look into their collaborative process and the usefulness of EBM as their theoretical framework. However, the future ability of the group to meet their goals will be reassurance that this case study was helpful to HBI. Working with HBI has been a wonderful experience for which I will always be grateful. I learned the importance of

working collaboratively through gaining experience. I hope to continue growing professionally and academically as a collaborative member of my community.

The benefits of collaboration should not be overshadowed by the challenges. Working together to solve problems makes sense. As social beings it is in our nature to share knowledge, resources and kindness with the people living in our community. Today we are faced with a social paradigm that has taken us away from community action and mutual dependency to define ourselves as self-sufficient individuals. A social construction, individualism, is one of collaboration's largest barriers. The process of learning how to be collaborative member of a group, or society, is realizing that without the ability to depend on our different communities our "self-reliance" would not be possible. Collaborative organizations, like the Humboldt Bay Initiative, are gathering to reclaim local accountability of problems and solutions for the health of the place their member in habit. The connection between healthy communities, healthy environments and healthy economies has become increasingly evident through the growth of theories like ecosystem-base management. Wonderful potential for problem-solving relies on the community capacity to come together and consider ecosystems as holistic, living systems sustaining everyday life. The framework of ecosystem-based management will continue to evolve as more local initiatives adopt this way of viewing the environment. Collaborative effort is the cornerstone of ecosystem-based management.

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APPENDIX A

Interview Schedule: Participants of the Humboldt Bay Initiative

1. How long you worked in Humboldt County?
2. What kind of work have you done in the past?
3. Please tell me about your work in natural resource management.
4. What do you know about Ecosystem-Based Management?
5. Is EBM different from other natural resource management strategies? If so or if not, how and why?
6. In the following questions I would like to ask for your thoughts as they relate to your understanding of the theory behind ecosystem-based management.
 - a) Do you think that EBM invites the participation of diverse interests/stakeholders? Why or why not? How?
 - b) How does the EBM process resolve differences of opinion and points of view between participants?
 - c.) What process measures does EBM take to support transparency in project planning and conducting?
 - d.) What sort of opportunities are there for public involvement in EBM?
 - e.) What process measures does EBM take to engage with local governing structures?
 - f.) Do you think that EBM encourages participant accountability? Why or why not? How?
7. Why was the Humboldt EBM Program created? What is the program's purpose?
8. Do you feel that the Humboldt Bay EBM Program is important? Why? For whom?

APPENDIX A, continued

9. How and why did you become involved in the Humboldt Bay EBM Program?
10. What do you feel you most contribute to the Humboldt Bay EBM Program?
11. Are you getting from the EBM program what you thought you would get? If yes, how? If no, what would you like to be gaining from your participation with EBM?
12. How has your participation in the EBM program benefited and challenged your organization?
13. Who benefits from the success of the Humboldt Bay EBM program?
14. When will you know that the EBM program has been successful?
15. What do you think is the future of the Humboldt Bay EBM program in the Humboldt Bay watershed?
16. Will you continue to work with Humboldt Bay EBM program in the future? If so, what do you think your role will be? If not, why? What will be the role of your organization?
17. What would you change, if anything, about the current EBM program process?
18. What elements both enhance and inhibit the productivity of the EBM process?
19. Are there any other organizations, agencies or individuals that are not already participating in the program that you think would positively contribute and benefit from the Humboldt Bay EBM Program?
20. What do you think a healthy watershed look like?
21. Do you think it is important to maintain the health of the Humboldt Bay watershed? Why?
22. Do have any personal stories relating to the Humboldt Bay watershed that you would be willing to share with me?
23. Is there anything we missed or that you would like to talk more about?

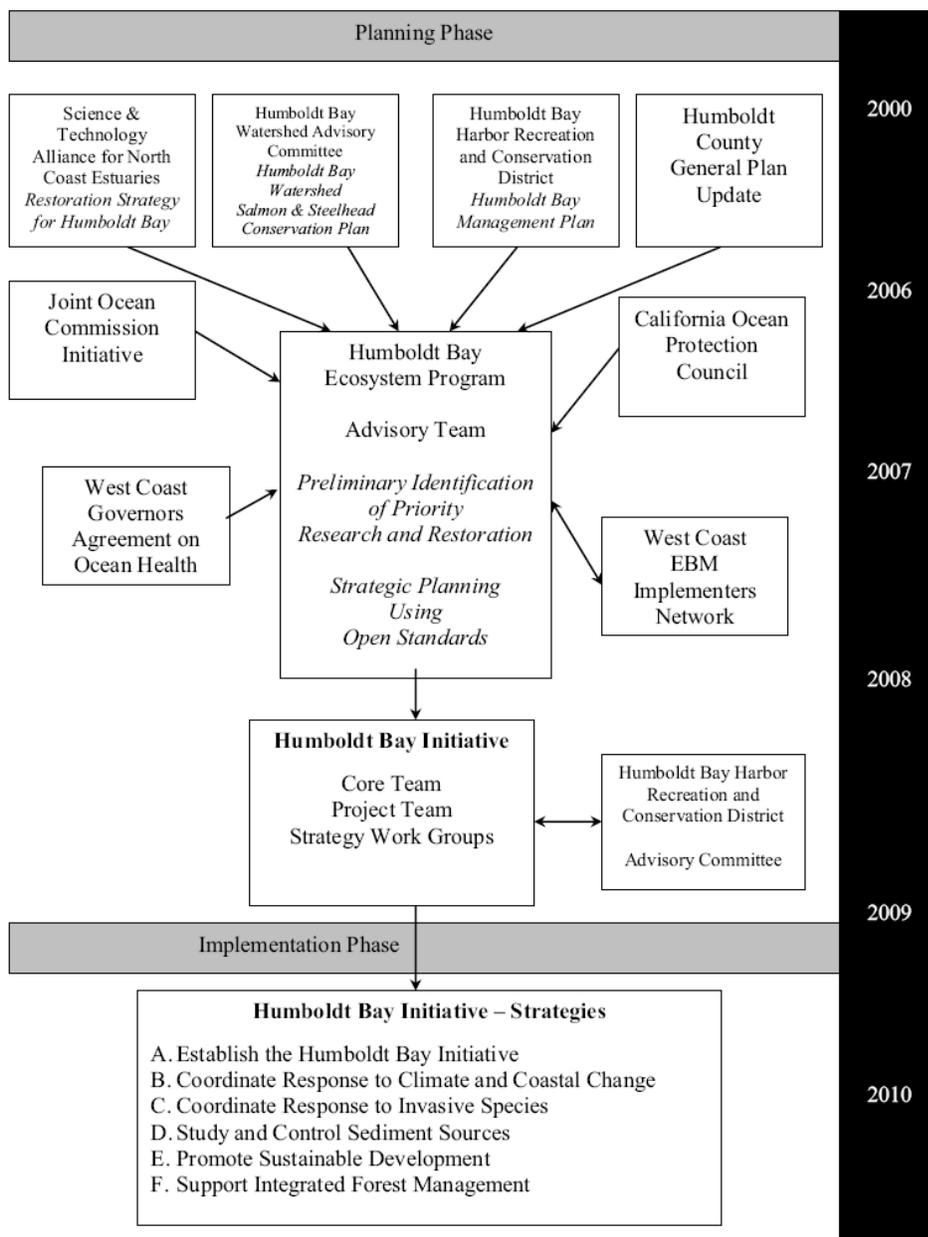
APPENDIX A, continued

24. Do you have any questions, suggestions, or comments about my research that you would like to include at this time?
25. Do you mind if I contact you in the future with any follow up questions?

APPENDIX B

Evolution of the Humboldt Bay Initiative

Figure 1. Evolution of the Humboldt Bay Initiative.



APPENDIX C

Current and Suggested HBI Outreach Methods

Current outreach methods:

- All meetings are open, anyone may attend
- All draft agendas, plans, meeting minutes, and HBI documents are available on-line
- Website (need a password to enter and be invited to use collaborative tools but once you are in it is useful)
- Susan Schlosser's contact information was available on the website
- Greatest outreach impact – Susan Schlosser's presentations: Pacific Joint Venture, Humboldt County Supervisors, Central and Northern California Ocean observing System (CENCOOS), North Coast GIS Users group (NCUG), Humboldt County Farm Bureau, City of Trinidad, City of Eureka, and the Ocean Protection Council. (HBI 2008, 11) - Continue this outreach
- Radio interviews in 2008
- Two local newspapers printed articles and photos
- Interviewed by Channel 3 July 2008
- Word of Mouth
- Humboldt Bay Symposium

Suggestions for future outreach.

- Frequent interviews on KHSU
- Print frequent articles in the Time Standard
- Connect with public schools (K-12)
- Citizen Science
- Publicize the web-site
- Create less theoretical content, make outreach less academic
- Identify community leaders to be champions for HBI
- Site field trips of participants place of interest (business, jurisdiction, research site)
- A monthly newsletter that condenses what's new in EBM, HBI and print dates for upcoming events. Put this on the web-site and having a mailing list
- Plan a workshop around discovering community value

APPENDIX D

Organizations invited to HBI's Strategic Planning Workshop

Agriculture	Institute for the Study of Alternative Dispute Resolution
Bureau of Land Management	Jacoby Creek Land Trust
California Coastal Commission	Jeff Anderson & Associates
California Coastal Conservancy	Mariculture and Shellfish Growers
California Department of Fish and Game	McBain and Trush
California Resources Agency	NOAA Coastal Services Center
California State Congressman	NOAA Fisheries
California State Senator	North Coast Regional Water Quality Control Board
California Waterfowl Association	North Coast Small Business Development Center
City of Arcata	Northern Hydrology
City of Eureka	Pacific Coast Joint Venture
City of Trinidad	Pacific Gas and Electric
Coast Seafoods	Planwest Partners
Commercial Fishing	Redwood Community Action Agency
Community Members	United States Army Corps of Engineers
College of the Redwoods	United States Fish and Wildlife Service
Farm Bureau	United States Forest Service
Friends of the Dunes	University of California Cooperative Extension
H.T. Harvey & Associates	University of California Sea Grant Program
Humboldt Bay Harbor, Recreation and Conservation District	West Coast Ecosystem-Based Management Implementers Network
Humboldt Baykeeper	Wiyot Tribe
Humboldt Bay Stewards	
Humboldt County Association of Governments	
Humboldt County Office of Education	
Humboldt County Planning Department	
Humboldt County Public Works	
Humboldt Redwoods Company	
Humboldt State University	

APPENDIX D, continued

All participants from the above list were also invited to participate in my study. From the above the list, the table below includes all who did volunteer to participate in this research, their professional affiliation and area of expertise. Five additional participants have requested anonymity and are not listed below

Participant	Professional Affiliation	Expertise
Jeff Anderson	Jeff Anderson and Associates	Hydrology, Sediment Dynamics, Restoration, Engineering
Diane Ashton	National Oceanic and Atmospheric Administration	Fisheries, Habitat, Dredging, Regulatory Requirements
Joél Benegar	Army Corps of Engineers	Environmental Planner, Watershed Restoration
Alan Bower	University of California Cooperative Extension	Agriculture, Aleutian Goose, Natural Resources
Greg Crawford	Humboldt State University	Physical Oceanography, Wave Energy, Suspended Sediment
Greg Dale	Coast Seafoods	Shellfish Culture, Fisheries, Bay Ecology
Annie Eicher	California Sea Grant	Plant Ecology, Wetland Ecology, Habitat Restoration
Yvonne Everett	Humboldt State University	Natural Resource Planning, Conflict Resolution
Paula Golightly	United States Fish and Wildlife Service	Wildlife Biology, Habitat Restoration, Restoration Ecology
John Hansen	West Coast Ecosystem Based Management Implementers Network	Program Coordinator, Marine Policy
Tom Hofweber	Humboldt County Planning Department	Planning and Land Use
Aaron Hohl	Humboldt State University	Forestry
Jen Kalt	Humboldt Baykeeper	Water Quality, Advocacy Experience, Water System Contamination
Sharon Kramer	HT Harvey and Associates	Marine Fisheries, Marine Ecology
Debbie Marshall	California Sea Grant	Forestry, Applied Research, Marine Species Research

Eric Nelson	United States Fish and Wildlife Service, Humboldt Bay NWR	Birds, Refuge Management, Ecology
Christy Prescott	United States Forest Service	Conflict Resolution
Becky Price-Hall	City of Trinidad	Social Science, Public Education & Involvement, Program Development & Evaluation
Kirsten Ramey	California Department of Fish and Game	Bay and Estuary Ecology
Rollin Richmond	Humboldt State University, President	Genetics, Administration, Community Relations
Ted Romo	California Waterfowl Association	Waterfowl hunting heritage
Hank Seeman	Humboldt County Public Works	Engineer, Restoration, Hydrology
Susan Schlosser	California Sea Grant	Eelgrass, Juvenile Fish Recruitment, Program Organization, Bay Ecology, HBI Facilitation
Frank Shaughnessy	Humboldt State University	Phycology, Marine Ecology, Eelgrass
Lisa Shikany	City of Eureka	Environmental and Regulatory Requirements, Land Use and Planning, Permitting
Kate Sullivan	Humboldt Redwood Company	Forestry, Watershed Water Quality
Carol Vander Meer	Friends of the Dunes	Director, Naturalist, Interpretation
Adam Wagschal	Humboldt Bay Harbor Recreation and Conservation District	Fisheries, Geographic Information Systems
Elizabeth Watson	Humboldt State University	Conflict Resolution, Facilitating Collaborative Processes, Sociologist
Mark Wheetly	California Department of Fish and Game	Watershed Planning, Former Elected official
Tiffany Wilson	Planwest Partners	Social and Cultural Resources

APPENDIX E

Who Is Missing?

Who is present at HBI meetings effects the conversations. Like Participant 26 says, “If you are not there you don't have a voice.” Whose voice gets heard, whose interests are included or excluded makes the issue of inclusivity important. HBI can improve outreach efforts to get people there for greater transparency and to broaden ownership of goals. So I asked my research participants “who is missing?”

Participant 5:

We need a better understanding of economic development. We need to understand why they should be there. Their ideas may make good connections between plans. We need industry. People who have contributed have made large contributions, particularly at the strategic planning workshop. I think some people may have surprised other HBI members at how useful their comments were and their ability to move decisions along within their businesses. ... All groups should be invited but not at every stage, besides industry. We are not pushing any members to be impacted by group decisions but to get people interested in EBM to bring information. In a regulation people can comment to change. But we're working with theory. But it's so generalized it's hard to see the relationship between participants. How can we title the group in way to bring in other groups? We should be getting past terminology. HBI is getting away from ecosystems. We should phase invitation of who needs to be there as the process grows.

Industry

Commercial Fishing: Fisheries, Fisherman's Association, Humboldt Bay Fisherman's Marketing, Trinidad Pacific Federation of Fishing Association
Agriculture: Farmers/Food Markers, Farmers Market, Dairy, Ranching, Goat, Sheep, Crop, Bulb, Food Systems, Cattlemen's Association

APPENDIX E, continued

Logging/Timber Industry

Shellfish Growers: Oyster farmers

Economic development/business community

Developers: Coast Development

Transportation: Green wheels, Trails, Greenway, Cal-Trans

Utilities: Sewage Plants, Power Plants

Tourism

General Business: Short haul tug boats, Humboats, Unions

Prosperity Community Economic Development

Community leadership

Public/citizenry

Elected officials: Jurisdictional government – 1

Native American Representation: Wiyot Tribe, 7th Generation Fund

Champion networks with social capital: Rotary, Kiwanis

Community Groups

Local NGO's and non-profits: Environmental advocacy groups, Trout Unlimited, Buckeye Conservancy, Stevedores, RCAA, Wildlands Conservancy, EPIC, North Coast Land Trust, Planet Green

Head of county agencies:

HCOG

Resource Conservation District

Pacific Joint Venture

Recreation: Recreational Boaters, Sea Kayak Club, Surfers, Bay users

Pacific Watershed Associates

APPENDIX E, continued

Agencies

Local Public agencies: Humboldt County Agriculture Development, Humboldt County Recreational Department

Farm Bureau

Timber Harvest within CA Fish and Game

Forest Service

Army Corps of Engineers

Head of Regional and State Agencies

Local Experts

More Humboldt State University and College of the Redwoods people: Wildlife Biology, Biology, Hard Sciences, Forestry

Citizen science: Public Schools (kids and teachers)

Archeologists

Public Health: Sustainable food systems, Anti-toxics, Hospitals

Land Management: Restoration, Levies, Land Managers, Consultants, Private

Land Owner groups, Sediment Experts, Erosion Experts, Planning Firms

Watershed Representation

APPENDIX F

HBI May 2010 Meeting Notes

**Humboldt Bay Initiative
Meeting Notes, May 28, 2010
BLM Conference Room, Arcata, CA**

Katie Glover, HSU Environment and Community Graduate Program, thesis update:
“Humboldt Bay Initiative: Ecosystem-Based Management as a Collaborative Process for Natural Resource Management”

- Initial project: How is the Humboldt Bay Initiative functioning as a collaborative process?
- Narrowed scope to: How does the theory of ecosystem-based management work in application for the Humboldt Bay Initiative?
- Contacted 75 people involved in Humboldt Bay EBM Program; conducted 36 interviews
 - Asked questions regarding the individual’s relationship to the project and group; their ideas on the theory of EBM and the group’s progress
- Information from interviews
 - Group vision based on individual responses
 - Positive elements: energy of group, meeting schedule
 - Challenging elements: expand group to include different stakeholders (could have topic focused meetings to draw different people)
 - Needs of the respondents: define the role of individual’s participation and how it relates to the group as a whole; develop future goals and plan for moving forward
 - Collaborative elements: theoretical understanding of natural resource management in an applied setting (inclusivity-current participants with addition of other groups; transparency-public meetings, web site, available documents; public outreach local governance-inform policy/ decision makers; accountability-ownership of outcome)
 - Adaptive Management as it relates to collaborative process building
 - Understanding resilient science as resilient collaboration
- Next steps:
 - Community Capacity: funding is a major obstacle; pursue resources unrelated to money – organizations with a strong volunteer base
 - Reframe the efforts for strategic planning: redefine vision and mission of group, establish goals; review strategic plan strategies, connect current efforts to strategies
 - Identify a neutral space to encourage greater participation
 - Continue sharing information
 - Continue encouraging and educating people not currently involved
 - Celebrate the successes of HBI
 - Need for a greater commitment and ownership of the outcomes
 - Continue to be reflexive

Discussion:

- Define vision and goals: narrow the scope of strategic plan strategies; two-day planning workshop - invite contentious people to broaden ideas regarding bureaucracy and EBM process; focus on the strong science base and encourage additional participation
- Focus groups – subcommittees related to particular issues: current portions of strategies that are being worked on include climate change and sediment modeling
- Adaptive management: develop process of collaborative ability in relation to adaptive governance

APPENDIX F, continued

- Neutral meeting space to maximize participation: change meeting location to encourage new participants; topic-specific meetings that will draw different people
- Flow chart connecting key leaders, policies and general population; visual of economic and political relationships to understand barriers
 - GIS in social science – connection between resources; layers showing resources and uses; interrelationship between science and economy
 - Asset mapping – community aspect assets; start with list of people working on different resources, then identify gaps; connect the physical, biological and socio-economic pieces
- Build trust, strengthen connection to group
- Connecting different people to existing group, set goals; communicate progress to date and direction; revise mission statement – one sentence

Three potential organizational models – need fiscal administrative capacity:

- Regional non-profit - HBI as the fiscal agent
 - Local non-profit connected to funding through West Coast EBM network
 - Have control of funding for projects
 - Develop internship program for assistance, i.e. outreach, education
 - Model program for EBM implementation; structure – multiple agencies cost share funding for implementation, administrative development
- Regional non-profit - West Coast EBM as fiscal agent
- Adopted in a larger federal/state agency with an allocated budget

APPENDIX G

Best Practices: Steps to improve Collaborative Elements of Ecosystem-Based Management

Ecosystem-Based Management literature states that collaboration is necessary for a successful EBM process. My research suggests that the necessary collaborative elements are inclusivity, transparency, opportunities for public inclusion, connection to local governance, and participant accountability. Although as a natural resources management strategy EBM literature states that these collaborative components are necessary, the literature offers limited suggestions to aid EBM programs in incorporating these components into their collaborative strategy. Below I offer my definition of these collaborative elements and suggestions for groups to incorporate these elements into their EBM process.

Inclusivity – Getting the ‘right’ people to the table. The ‘right’ people are those with decision making capacity, knowledge and access to resources, probable litigators, and other relevant networks of people. To be an inclusive collaborative, it is important not to leave anyone out who may be impacted by decisions made by the group.

- Vary the time and locations of meetings. Be mindful of various professional time constraints and that not everyone can be ‘on the clock’ while attending the meeting.
- Holding the meetings in diverse locations introduces the groups to different parts of their community.
- Additionally, although the meeting facilitator may remain constant, meeting hosts can vary which allows group participants to show their perspective of their shared place. These shared experiences increase trust and knowledge which strengthen all collaborative processes.
- Ask others who they think should be included.

Transparency – Keeping the collaborative decision making process open.

- Catalogue the group’s community capacity. Take inventory of the social capital that is gained from the group of people who are gathering.
- Making meeting notes easily available by posting on an open web site.
- Be open and forthcoming about sources of revenue and funders
- Post membership with contact information

APPENDIX G, continued

Opportunities for Public Inclusion – Making space for the inclusion of individuals without organization affiliation. This voice should be actively present at meetings and/or planned activities.

- Engage in organizational strategic planning. Make space to create vision and mission statements, making the end result public. Then hold a public meeting to get feedback. This can be a space to air out any misunderstanding there may be in the larger community about the intentions of the collaborative. Opposition to group objectives can force the collaborative to be reflexive about why certain values and goals are important to the group and encourage the development of a stronger set of shared goals that everyone feels a part of.
- Make the effort to draw in comments, if not full participation, from local businesses.
- Make the effort to draw in comments, if not full participation from elected officials.
- Create a “media policy,” outlining who speaks for the collaborative. Consider inviting key local media folks to become involved, thus creating a positive local “media presence.”

Connection to Local Governance – Partnership between collaborative efforts and local decision-making entities which increases collaborative legitimacy enabling the group to constructively engage with a meaningful decision-making process.

- EBM is a non-regulatory process that engages with local governing structures to support the inclusion of scientific knowledge in policy making decisions. Therefore, physically going to these governing entities to share in a series of discussions concerning the alignment of goals between those of the EBM program and the policy making entity is a strong start to building those partnerships.
- Identifying specific issues areas where decisions can be made and moved to an implementation stage through identified policy changes or permitting processes can be the most relevant to local governing entities. This is a difficult partnership to cultivate but absolutely necessary for collaborative group to be informed about and address local ecosystem issues.
- Try to develop a regularized reporting mechanism so that public officials understand what is going on with the collaborative at any given time. Quarterly reports submitted to governance groups work well.
- Provide “instant consultation services” for officials when an issue arises where the collaborative has expertise.

APPENDIX G, continued

Participant Accountability – Encompasses responsibility, commitment, acknowledgement and personal growth. Creating accountability is a process of trust building and owning responsibility.

- The groups should participate in a group exercise that defines what it means to be a group participant. When participants understand their role they can hold themselves accountable to maintaining their role as part of the group. Likewise, with equitable standards the group can help to keep participants accountable.
- The group should determine the difference between accountability of the individual participant and the accountability of participants' organization affiliation. Then determine if individuals should be held to the same accountable standards as that of their organizations.
- The collaborative needs to early on create “ground rules” for membership and review them as a group when new members come on board.

This is a brief overview of suggestions I offer in my graduate research which was the result of a culmination of responses I received from Humboldt Bay Initiative participants. My research in its entirety will be available electronically on Humboldt Bay Initiative's website as well as Humboldt State University's website. Should you have any questions, concerns or wish to engage in further discussion of these suggestions please feel free to contact me at:

Katie Glover
Kdglover23@gmail.com

Please refer to Appendix H: Humboldt Bay Initiative Update and Accomplishments – January through November 2011, for an update of my case study group.

APPENDIX H

Humboldt Bay Initiative

Update and Accomplishments – January through November 2011

DRAFT – HBI will discuss the accomplishments at our meeting on December 9, 2011 and update it through calendar year 2011

The Humboldt Bay Initiative (HBI) is a diverse, multidisciplinary team formed in 2007. HBI completed a formal strategic planning process in 2009. Six priority ecosystem-based management (EBM) strategies were developed based on identification of “EBM targets” and threats to those targets. Two strategies have been implemented: Strategy A: Establish the Humboldt Bay Initiative and Strategy B: Coordinated Response to Coastal and Climate Change. The remaining four strategies are in various planning phases or not yet active. Meeting notes, documents and other project information is available at: <http://ca-sgep.ucsd.edu/focus-areas/healthy-coastal-marine-ecosystems/humboldt-bay-ebm>.

Strategy A: Establish the Humboldt Bay Initiative

The Humboldt Bay Initiative will organize initially as a non-profit organization or as an institute at HSU. HBI will develop stable funding while continuing to coordinate the ongoing EBM effort, and implement HBI strategies by taking on the specific roles that are not feasible or appropriate for existing entities and partners in the project area.

1. A non-profit entity has been organized and is still in the initial stages:
 - a. Non-profit work group: Biology Department, HSU (F. Shaughnessy), HT Harvey & Associates (S. Kramer), Northern Hydrology (J. Anderson), CalTrout (D. Mierau), California Sea Grant (S. Schlosser), City of Trinidad (R. Price-Hall).
 - b. The Coastal Ecosystems Institute of Northern California (CEINC) was formed to provide a vehicle to seek and receive grant and other funding for locally prioritized watershed and bay ecosystem related projects and to administer projects of the ad-hoc Humboldt Bay Initiative.
 - c. The purpose of CEINC is
 - i. To develop, integrate, and disseminate scientific information about coastal ecosystems

- ii. To advance communication, collaboration, and activities that enhance ecosystem health
- iii. To promote ecosystem-based management
- d. The CEINC Board of Directors is currently developing initial projects and proposals which are based on priorities identified in *Humboldt Bay Initiative Strategic Plan: Adaptive Management in a Changing World*. These include:
 - i. State of Humboldt Bay Report
 - ii. Sea level rise and management of marine resources and habitats
 - iii. Present and future patterns of suspended sediment, aquatic light and productivity in Humboldt Bay
 - iv. Responses of targeted estuarine indicators to management actions and climate change
 - v. An accessible model demonstrating ecological functions in Humboldt Bay
 - vi. Developing the socioeconomic information to inform habitat and resource decisions in and around Humboldt Bay
 - vii. Report on appropriate governance structures and institutional arrangements for Humboldt Bay region ecosystem based management
 - viii. Local data and information portal

Strategy B: Coordinated Response to Coastal and Climate Change

HBI will synthesize and provide the most recent information needed for understanding the impact of climate variability and change on biological and physical properties of the ecosystem, and the implications for infrastructure and human activities.

2. Humboldt Bay Sea Level Rise Synthesis and Community Planning: characterize existing data sets relevant to sea level rise adaptation and planning, summarize data set location and access, and describe modeling tools available.
 - a. Project Team: USFWS Coastal Program (P. Golightly), Pacific Watershed Associates (W. Gilkerson), California Sea Grant (S. Schlosser)
 - b. Project Timeline and funding: Sept. 2010 to Sept. 2012, USFWS Coastal Program
 - c. Project Deliverables
 - i. Three stakeholder workshops to identify data sets
 - ii. EXCEL spread sheet and report describing data sets: themes, location, and availability - **AVAILABLE NOW!** (sschlosser@ucsd.edu)
 - iii. Workshop to present results – Nov. 10, 2011
 - iv. Final Report incorporating workshop input.

3. Building Local Capacity for Climate Adaptation Planning: Incorporating the Use of Tools into Local Planning Processes – This demonstration project will scope local management issues, develop management question, identify geospatial tools to analyze and evaluate the management issues. The project will use some of the data sets from the Humboldt Bay Sea Level Rise Synthesis and Community Planning project. The concept is to familiarize the Humboldt Bay Initiative Project Team and others with using tools for analysis of complex questions
 - a. Project Team: Ecosystem-based Management Tools Network (J. Rozum, P. Crist, I. Varley, S. Carr), Humboldt Bay National Wildlife Refuge (E. Nelson, K. Griggs), West Coast EBM Network (J. Hansen), California Sea Grant (S. Schlosser)
 - b. Project Timeline and funding: March 2011 to March 2012, Keith Campbell Foundation for the Environment, California Sea Grant
 - c. Project Deliverables:
 - i. A toolkit workflow that supports climate adaptation from data and science information to outputs for local planning.
 - ii. Identification of appropriate tools for the local community to use in climate change adaptation planning
 - iii. Workshop with training and demonstration of the toolkit
 - iv. EXAMPLE: EBM Tool question and analysis
 1. Threat: Sea level rise over the next fifty years presents a threat to physical infrastructure surrounding Humboldt Bay.
 2. Mechanism: Sea level rise will increase the mean tide level in Humboldt Bay, which poses an inundation risk. This can occur in highest high tides, and in other tides with storm surge and associated high flows in tributaries.
 3. Scoping: A model that captures critical tide stages, with components to address contributing high flow events, is required to assess where, and under what conditions, inundation is a risk.
4. Humboldt Bay Initiative - Climate Change Symposium – September 29, 2011
 - a. Presentations about global and local climate effects with implications for climate change adaptation
 - i. Geology is Destiny – Michael J. Furness, U. S. Forest Service
 - ii. California’s Vulnerability to Climate Change –Dan Cayan, Scripps Institute of Oceanography, University of California San Diego
 - iii. Visualizing sea-level rise and potential impacts to coastal wetlands of California – Monique Myers, California Sea Grant

Strategy C: Coordinated Response to Invasive Species

In order to facilitate an invasive species early detection, rapid response strategy, HBI will promote development of a regional database that integrates the best available scientific information on current and potential invasive species, and control methods.

5. No current activities, see partner activities below.
6. Activities planned for 2012: Through the Trinidad to Humboldt Bay Watershed Coordinator Grant from the Department of Conservation, B. Price-Hall and C. Benson will work with the Humboldt Bay and Mad River stakeholders and HBI partners to continue efforts to:
 - a. Establish a framework for coordinating development, integration and exchange of invasive species information
 - b. To identify aquatic and terrestrial invasive plant and animal species of concern
 - c. Promote a coordinated approach to invasive species management in riverine reaches

Strategy D. Study and Control of Sediment

Complete a sediment study in freshwater, estuarine and bay habitats and develop a sediment circulation model for Humboldt Bay to provide key information needed by scientists, managers, and others in the community.

7. Several proposals have been developed and submitted but none have been funded to date.
 - a. Work Group: Northern Hydrology (J. Anderson), Biology Department, HSU (F. Shaughnessy), California Sea Grant (S. Schlosser), RWQCB (A. White), DFG (V. Frey)
 - b. Study effects of turbidity and sediment on Humboldt Bay ecological functions and physical processes
 - c. Study present and future patterns of suspended sediment, aquatic light and productivity in Humboldt Bay

Strategy E. Promote Sustainable Development

Reduce the impacts of roads and development on water quality and the ecosystem through promotion of water quality best management practices, including low impact development (LID) and protection of streams, wetlands and open space.

8. Work with agencies, watershed groups, and other partnerships to improve water quality through implementation of pollution reduction strategies and best management practices

- a. Work Group: City of Trinidad (B. Price-Hall), City of Arcata (Julie Neander), City of Eureka (Miles Slattery), Humboldt Baykeeper (Jen Kalt) and members of the North Coast Stormwater Coalition (NCSC)
- b. Storm Water education and outreach targeted for residents and businesses
- c. Promote use of LID technologies to improve water quality and storm water management

Strategy F. Support Integrated Forest Management

Assist with coordination of long term forest management planning, developing community supported forest goals and facilitating refinement of the regulatory process to meet the needs of agencies, the timber industry and the community.

9. No activity by HBI on this strategy.

Humboldt Bay Initiative - Related Projects with some HBI involvement or participation

This list is not comprehensive – please let us know if you would like to submit a project.

10. Humboldt Bay National Wildlife Refuge Sea Level Rise Modeling: A Bottom-up approach to evaluating sea-level rise effects at the parcel scale. Project will develop baseline data to understand impact of rising sea level for local management and to detect changes into the future from climate change.
 - a. Project Team
 - i. Leaders: J. Takekawa, I. Woo, K. Thorne – USGS, Western Ecological Research Center, San Francisco Bay Field Station.
 - ii. Collaborators: A. Pickart, E. Nelson, K. Griggs, P. Golightly, N. Athern, D. Van Dyke – USFWS, Humboldt Bay Area
 - b. Project Timeline - Aug. 2011 to Sept 2012
 - c. Project Deliverables
 - i. High resolution Digital Elevation Models of selected marshes in the Humboldt Bay National Wildlife Refuge
 1. Salmon Creek Unit
 2. Lanphere Dunes Unit
 3. Table Bluff Unit
 4. Annual water inundation and salinity patterns
 5. Detailed GIS vegetation maps showing community structure
 6. Wildlife species presence and abundance summary

11. Humboldt Bay Vertical Reference System Work Group: The project will provide an accurate measurement of sea level and terrestrial elevation. An accurate elevation data set is essential to all sea level rise forecasting, estuarine restoration planning, and hazard preparation.
 - a. Project Team: Cascadia GeoScience (J. Patton, T. Leroy, T. Williams, J. Stallman), Pacific Watershed Associates (W. Gilkerson), Northern Hydrology (J. Anderson), Oregon State Univeristy (R. Weldon), California Sea Grant (S. Schlosser), USFWS Coastal Program (P. Golightly), CalTRANS (D. Campbell), Humboldt State University (M.Hemphill-Haley, F. Shaughnessy)
 - b. Project timeline and funding: Sept.2012 to Sept 2018, North Pacific Landscape Conservation Cooperative
 - c. Deliverables
 - i. Foundational data and information for rising sea level forecasts, scenarios and models
 - ii. Precise tidal benchmark locations will be provide to the NOAA Geodetic Survey via their “blue book” process.
 - iii. Precise sea level estimates from tide gauge data
 - iv. Data available on Central and Northern California Ocean Observing System data portal
 - v. Estimates of ongoing tectonic deformation

12. Humboldt Bay Shoreline Habitat Inventory and Mapping: shoreline assessment to establish natural limits of tide water inundation at current sea level and evaluation of shoreline response to expected rising sea level for 2050 and 2100.
 - a. Project Team: Trinity Associates (A. Laird), McBain and Trush
 - b. Project Timeline: Nov. 2010 to June 2012
 - c. Project Deliverables
 - i. Delineation of natural and artificial shoreline area and location
 - ii. Detailed tidal habitat mapping adjacent to shoreline
 - iii. Detailed report with shoreline assessment and GIS analysis

13. Invasive Species