

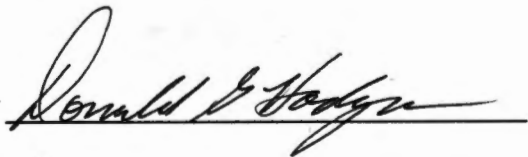
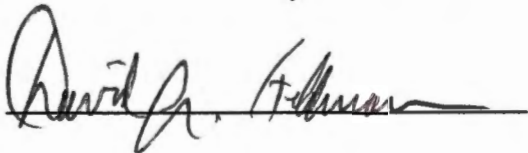
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I am submitting herewith a thesis written by Denise Keele entitled "Managing Collaborative Processes For Natural Resources." I have examined the final paper copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Forestry.

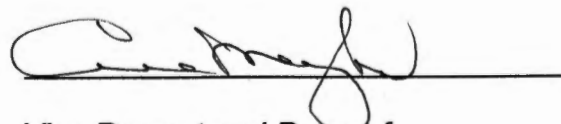
A handwritten signature in black ink, appearing to read "David Ostermeier", written over a horizontal line.

David Ostermeier, Major Professor

We have read this thesis and
recommend its acceptance:

A handwritten signature in black ink, appearing to read "Donald B. Hodges", written over a horizontal line.A handwritten signature in black ink, appearing to read "David J. Hillman", written over a horizontal line.

Acceptance for the Council:

A handwritten signature in black ink, written over a horizontal line.

Vice Provost and Dean of

Graduate Studies

MANAGING COLLABORATIVE PROCESSES FOR NATURAL RESOURCES

A Thesis
Presented for the
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Denise M. Keele
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This thesis is dedicated to David Ostermeier Ph.D., for enriching my life and always believing in me, because without his compassion, support, patience, and enduring professional and personal guidance this work would not have been possible. Thank you for believing in my song, for bringing me along, and for making me strong.

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ABSTRACT

A new style of natural resource decision-making is under development in the United States that has evolved from the approach that dominated the last hundred years. The historical implementation of natural resource policy has been characterized as top down where a highly compartmentalized bureaucratic structure dominated the management of natural resources through policies focused on outputs and guided by scientific management. The historical implementation of natural resource policy frames the resolution of conflicting goals as mutually exclusive, which has led to fierce competition for the power necessary for one goal to dominate over another.

Collaboration and ecosystem management policy approaches were largely born out of the recognition that the historical implementation of natural resource policy has been ineffective at resolving conflict due to the narrow approaches available in the courts and administrative appeals. Collaborative policy processes have been characterized as bottom up, rather than top down, recognizing that no one group is the dominant decision maker in the current reality of a shared power world. Collaborative policy processes are comprehensive in addressing multiple natural resource values and interests, have socially defined goals and objectives, include more voluntary than regulatory policies, and rely on integrated holistic knowledge.

Given the monumental differences between the historical implementation of natural resource policy and the current shift to collaborative policy processes, this change is often referred to as a paradigm shift. The goal of this research

was to more fully understand this new style of decision making, collaboration, through examining the growing literature base and case analysis of participants' experiences in collaboration. Collaborative process principles identified in the literature coupled with participant experiences of those principles in collaborative processes provided lessons learned to help inform our society on how to make the transition from our past adversarial, split the stakes processes and our future with collaborative processes.

The collaborative process principles identified in the literature focused on who was involved and how (process) people were involved in two specific areas of collaboration: how decisions are negotiated, and data and information management. Eleven principles to guide negotiations in collaborative policy processes were identified. Six principles to guide data and information management in collaborative policy processes were identified. Together these principles comprise a template to guide how an effective collaborative process needed to be managed, and provided a lens through which to analyze the cases. This template was compared to real life participant experiences in collaboration and several lessons learned were gleaned from the combination of theory and empirical evidence.

Perhaps the most important lesson learned in this research was the importance of process management. A rigorous application of the principles of the collaborative process was important to provide procedural due process and a legitimate process that was perceived as fair and just to all interests involved. Collaboration required the balancing of tensions of several inherent paradoxes,

and to do this effectively required process management of the collaborative principles.

Involvement shaped real life collaboration, and while participants' perceived inclusive involvement as beneficial, it was no panacea for the complexities of involving the variety of interests engaged in natural resource issues. In real life, a productive role was the true measure of involvement and while this was difficult there were ways, such as the structured use of subgroups, to balance the tensions between inclusive involvement and role efficacy. The involvement of scientists in collaboration must be done carefully because the credibility of scientists in the cases analyzed in this research was compromised.

Collaboration required considerable time and skills, but as we continue to practice collaboration the time it takes may be reduced through the improved skills and relationships of participants. Relationships were improved and trust was built between very divided interests in the majority of the cases analyzed in this research and continued experimentation with collaboration may help to build a foundation that will make future collaborative efforts even more positive and successful. Facilitation can also help participants get through the unfamiliar process of collaboration and help develop the people skills necessary for effective collaborations.

The incentive to participate in collaboration appeared to be largely born from the conflicts created by the historical implementation of natural resource policy. Collaboration may not be so much of a paradigm shift as it is an evolution since it often depends upon a government role of fostering sustainable natural

resource use by establishing standards and targets that result in being the incentive to collaborate. Even though this government role provided the biggest incentive to participate in collaboration, participants in all the cases analyzed in this research recognized the reality of a shared power world. Participants recognized that there were many legitimate and powerful interests that needed to be involved in order to achieve a successful collaboration.

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CHAPTER ONE

INTRODUCTION

Dissatisfaction with the implementation of traditional natural resource policy have led to recent attempts to find new ways to resolve conflict and settle policy disputes. This introduction describes the typical, historical implementation of natural resource policy, the main themes that have been identified as unsatisfactory in these processes, and introduces the concept of collaboration as a process to resolve conflict in natural resource issues.

We are all too familiar with natural resource debates framed as jobs versus the environment, and over the past twenty years increasing numbers of administrative and judicial appeals of public land plans and management decisions have been filed. Similarly, hostile standoffs between the public and agencies indicate that the values some people place on natural resources are in conflict with the institutions that direct resource management. For example, it is not uncommon for the United States Forest Service (USFS) to have more than 100 National Forest Management Plan cases pending (Baldwin, 1997), and the 2001 Sierra Nevada Forest Plan alone was challenged by 276 appeals (USFS). In this adversarial, litigious climate “anybody can stop anything” (Brick et al., 2001), or framed in a different way, we live in a shared power world.

Several authors (Burbridge, 1997; Carpenter and Kennedy, 1988; Cortner and Moote, 1999; Cortner et al., 1996; Crowfoot and Wondolleck, 1990; Dukes, 1996; Kemmis, 1990; Mills, 1990; Peine, 1999; Switzer, 1998; Yafee, 1994) have

described the historical implementation of natural resource policy and the author has combined her understanding of these works in the following sections which characterize many components of the historical, dominator style of policy implementation.

The historical implementation of natural resource policy has been characterized as top-down decision-making where information and policy flow downward through institutions. In general, a highly compartmentalized bureaucratic structure dominates the implementation of policy and management of natural resources through mainly regulatory procedures. These compartmentalized and fragmented agencies reflect the historical implementation philosophy that different natural resources are not related and can be managed independently from the top of the perch. In general this structure was focused on outputs, and a market-dominated approach guided primarily by scientific management.

Social values and institutions are closely linked. Bellah et al. (1992) suggest, "we live through institutions." The dominant bureaucratic structure managing natural resources was created out of recognition of the societal concerns during the Progressive Era that addressed the exploitation of natural resources in terms of waste, destruction, and inefficiency in practices. This philosophy engendered our now familiar agencies such as the United States Forest Service (USFS), United States Fish and Wildlife Service (USFWS), Bureau Of Reclamation (BOR), National Park Service (NPS), and Tennessee Valley Authority (TVA). These institutions fostered a "gospel of efficiency" that

stressed a more planned, efficient and “wise use” approach to the Nation’s natural resources (Hays, 1975). The goal of land management agencies was to use scientific methods to achieve utilitarian ideals of the time. Science was seen as the most important factor in management since resource management was viewed as primarily technical in nature. This emphasis on science and top-down agency control helped give rise to professionalism in natural resource management.

One area of dissatisfaction with the historical implementation of natural resource policy was that the dependence upon science has further complicated decision-making and made information a commodity to be manipulated. Land management institutions and society in general have a penchant for relying on experts to make tough social choices precisely because they are difficult, controversial, and have multiple outcomes. Science can be used to promote or demote a particular goal, which has led to advocacy science and the question of whose science to believe. Also, since knowledge can be crucial in winning the case, secrecy abounds in strategies to keep information within a particular organization. The court system is consumed with trying to interpret environmental policy, reviewing complex environmental impact statements and air standards instead of contemplating the value choices behind statutes.

Another main theme of dissatisfaction with the historical implementation of natural resource policy, dramatized by the attention of government officials, the media, and academia, was the inability of authorities to govern: legislative, judicial, and administrative gridlock. Explanations for this crisis of governance, in

the form of gridlock, include the proliferation of powerful single-interest groups and a resultant paralyzing diffusion of power, overregulation by the growing bureaucracy, a glut of costly and untimely litigation, and an apathetic citizenry (Dukes, 1996).

Public involvement was limited in the historical natural resource agency decision-making model known as 'DAD', which stands for decide, announce, and defend. Some authors (Brick et al., 2001; Dukes, 1996; Kemmis, 1990) recognize that the public may not be simply apathetic. The public may recognize that they have little opportunity to influence policy through traditional process 'DAD' mechanisms, and choose not to participate because they feel their input is not valued. Moreover, to enter the area of natural resource issues is to be adversarial, a paradigm of conflict settlement extended from the judiciary to legislative processes, to administrative procedures, and to the arena of public opinion. In the absence of any collaborative mechanism, the only visible alternative to adversarialism is dis-engagement, an option reluctantly accepted by most citizens.

"Values of the past created the institutions of the present, and changing social values will engender the institutions of the future" (Cortner et al., 1996). Circumstances in the natural world and social values have changed dramatically since the creation of our familiar land management agencies, and our institutions are struggling to meet the new societal demands. Vollman (1996) suggests a "critical step in examining the outputs of an enterprise [institution] is better understanding of what the customers' [output users] inherent problems are. This

requires a deliberate focus on the ways that customers use the products and services.” “[Institutions] need to understand their customers, and then redesign the bundle of goods and services provided to them” (Vollman, 1996). Redesign must include “the expectations that stakeholders have of an [institution]” (Vollman, 1996).

The limited public involvement in historical natural resource policy implementation and agency decision-making had no deliberate focus on the outputs important to user groups. This made the bureaucracy unresponsive to changing public values and the change in outputs the public was expecting agencies to provide. For example, as the environmental movement grew, the public became aware of and concerned about the rate of species extinction and expected agencies to provide the output of managing for threatened and endangered species. As key species that virtually define entire ecosystems, such as the Columbia River Basin Salmon, became threatened with extinction the agencies seemed to stand paralyzed, and in the public view the agency had failed to manage resources according to prevailing values. The lack of attention to the changing needs and expectations of the public has caused the public to perceive natural resource agencies as failures. Vollman (1996) suggests a customer focus is “particularly difficult for [institutions] that have been driven by a technology culture” as have natural resource agencies.

Another main theme of dissatisfaction recognizes the tendency of historical implementation processes to perpetuate and escalate conflict into more and more harmful realms. Historical natural resource decision-making

philosophy viewed conflicting goals as mutually exclusive and promoted discrete decision-making. This philosophy suggests that since humans (economics) and nature are separate, these goals are mutually exclusive. In the typical historical implementation of resource policy, the resolution of two seemingly contradictory goals involves constructing contradictions in the form of a trade-off. Solving the contradiction leads to the dominance of one goal over another. We can either develop economically important natural resources, or save endangered species; we can have clean air but we cannot produce any products with any nasty discharge. The resolution of contradictions in this zero-sum manner has led to fierce competition for the power necessary for one goal to dominate over another. Thus the real problem remains essentially unsolved as power shifts hands and constantly replaces one goal with another. (Cortner and Moote, 1999)

The traditional management of conflict has led to our current adversarial environment where participants see themselves pitted against one another and the only options are to win or lose the game. Lengthy battles over public issues consume resources that may be better directed toward the problem.

During the past two decades many elected officials, administrators of public agencies, citizen advocates, corporate managers, and other participants in contemporary public conflicts have begun a revolution in governance.

Collaborative conservation and ecosystem management approaches were largely born out of the recognition that, in general, historical policy processes are ineffective at resolving conflict due to the narrow approaches available in the courts and administrative appeals, and that these approaches are almost always

divisive in ways that reverberate beyond the immediate issue in dispute, breeding long-standing disputes. Historical policy implementation efforts to overpower opposition, to manipulate administrative procedures, to legislate solutions, or shift political disputes to judicial battlegrounds, are not always feasible in our shared power world. These strategies are characterized as adding to an adversarial climate making it harder for any one group to get their desired results and can be ineffective ways to achieve public good. "Collaboration started with an urge to somehow break gridlock, to move beyond a paralyzing stalemate, to try something new" (Brick et al., 2001). Increasingly, the practical need to gain agreement among divergent interests who have a stake in public decisions, who share limited power, and who have very different goals has led to collaborative decision-making forums.

Several authors (Bauer and Randolph, 2000; Bingham, 1986; Brick et al., 2001; Carpenter and Kennedy, 1988; Cortner and Moote, 1999; Cortner et al., 1996; Crowfoot and Wondolleck, 1990; Dukes, 1996; Fisher et al., 1981; Fisher and Brown, 1989; Kemmis, 1990; Mills, 1990; Peine, 1999; Susskind and Cruikshank, 1987; Switzer, 1998; Ury et al., 1993; Wondolleck and Yafee, 2000) have described the typical ecosystem management approach and its collaborative decision-making component. A review of this literature characterizes ecosystem management and collaboration as bottom-up rather than top-down decision-making, and involves seeking and including input from all affected stakeholders in an inclusive and open process. Ecosystem management relies on integrated holistic knowledge including social, political,

economic, biological, and local knowledge, and this knowledge is shared or collectively gathered. Recognizing the shared power of all parties engaged, no one group or agency acts alone or is the dominant decision-maker concerning natural resources. Collaboration manages conflict productively through the examination of mutual interests and promoting learning circles and cross stakeholder education. Ecosystem management and collaborative conservation are flexible policy approaches, have socially defined goals and objectives, and include more voluntary rather than regulatory policies. Participants view themselves as pitted against the problem and seek win/win solutions through the search for common ground.

The decision-making philosophy behind collaboration does not view contradictions as mutually exclusive trade-offs, but rather as tensions to be balanced. When conflicts are viewed as tensions to be balanced, we can conceive of seemingly contradictory goals being reconciled and simultaneously achieved. (Cortner and Moote, 1999) This approach also recognizes that natural resources are decentralized and interrelated and seeks holistic rather than discrete decision-making. Holistic decision-making includes people as part of nature and as part of the solution rather than historical policy implementation processes which attempted to separate humans from nature through discrete decision-making.

As we continue to live through our institutions, over time, those institutions capture the more dominant values of society, and currently there is institutional change to capture, and catch up to, the prevailing value of ecosystem

management. Eighteen federal agencies recently reported to Congress on their ecosystem management policies and activities, including five major resource management agencies – the U.S. Forest Service, the National Park Service, the Bureau of Land Management, the Natural Resources Conservation Service, and the U.S. Fish and Wildlife Service.

Endangered Species Act

The 1973 Endangered Species Act (ESA) provides a useful example for illustrating the current change to collaborative, ecosystem approaches. The rate of species extinction caught the attention of environmentalists and the public. As public support for environmental values grew, the movement gained the power necessary to be an important player in the historical policy implementation process. Environmental policy, in the form of the ESA, followed the adversarial and regulatory strategies of historical implementation policy processes and won its version in policy when Congress enacted the ESA. The historical paradigm of viewing goals as mutually exclusive is apparent in the wording of the ESA goal to “halt and reverse the trend toward species extinction, whatever the cost.” Thus, the ESA contemplated seemingly mutually exclusive goals, species recovery and economic costs, as a trade-off.

Although lauded for its intent and for what was thought to be an outright win for the environmental movement, the ESA’s track record has been ineffective and the act was plagued with administrative and procedural difficulties which skyrocketed costs (Mann and Plummer, 1995). Much to environmentalists’

dismay, the ESA could not singly solve the problem of species recovery by regulating people to practice conservation.

The ESA, as exemplified in the Northern Spotted Owl controversy in the Pacific Northwest, escalated conflict by framing the debate as private rights versus public rights, and attempts to conserve endangered species on private lands have created a storm of controversy over the ESA and private landowner's rights and responsibilities. In the Northern Spotted Owl controversy, environmental groups were forecasting total victory in their battle to save old growth forests, and timber industry representatives were forecasting economic disaster of the magnitude of a quarter of a million lost jobs. Opponents of owl conservation called for an exemption from the provisions of the ESA, a decision that would for the first time since passage of the ESA elevate economic interests over endangered species concerns. "Polarization was extreme [in the Pacific Northwest], basic values were threatened, and hostility and anxiety boiled out of the normal [historical] processes through which our society manages conflict" (Yafee, 1994). Thus, there was fierce competition for the power necessary for the goals of one group (environmentalists or timber interests) to dominate over another. Also, the problem, endangered species conservation in this case, remained essentially unsolved as power shifted hands, and one goal was constantly replaced with another. The owl conflict illustrated that the power to determine the outcome of American resource and environmental policy controversies is fragmented across a broad set of interests in society, and no single set of interests tends to dominate.

Yet endangered species conservation does not have to be a confrontational, zero-sum game; it can be proactive and positive. In 1982, Congress amended the ESA to allow a limited exception to its general prohibition on take of listed species on private, non-federal land. Section 10(a)(1)(B) of the ESA authorizes states, local governments, and private landowners to apply for Incidental Take Permits for otherwise lawful activities that may harm listed species or their habitats. To obtain a permit, an applicant must submit a Habitat Conservation Plan (HCP) that outlines activities that the applicant will undertake to “minimize and mitigate the impact of the permitted take on the listed species.”

HCPs are not only relatively new, they are a relatively new type of mechanism that can be characterized as flexible, having socially defined goals, integrating scientific and socio-economic perspectives, and utilizing collaborative decision-making. HCPs represent collaborative decision tools in the larger paradigm shift to ecosystem management. The goal of ecosystem management can be defined as “to restore and sustain the health, productivity, and biological diversity of ecosystems and the overall quality of life through a natural resource management approach that is fully integrated with social and economic goals” (Cortner and Moote, 1999). By amending the ESA to include HCPs, Congress affirmed its desire to conserve the Nation’s endangered and threatened species and promote the development of economically important natural resources.

Thus HCPs are a mechanism for integrating the two seemingly contradictory goals of species recovery and economic development of natural resources by constructing the contradiction not as a trade-off, but as tensions to

be balanced. When contradictions are viewed as involving tensions, as in HCPs, we can conceive of seemingly contradictory goals being reconciled and simultaneously achieved. (Cortner and Moote, 1999) The integrating mechanism created in HCPs recognizes that sharing power in decisions is a political reality to resolving the dual goals of habitat conservation and economic vitality. These characteristics of HCP decision-making processes are dramatically different from the mutually exclusive, power dominated, adversarial decision-making that typifies historical policy implementation processes.

The shift from historical, adversarial, policy implementation processes to collaborative mechanisms like HCPs has often been described as a paradigm shift. This may be an appropriate description as the differences between the two paradigms represent a transformation of fundamental assumptions and actions. The major areas of contrast between the typical historical policy implementation process (dominator) and the collaborative policy process are represented in Table One.

Table One. Public Policy Processes

	Historical/Dominator	Collaborative
Attitude/ Relationships	We/They (Adversarial) Gridlock Building Aggressive/defensive	We against our differences (Cooperative) Trust Building Assertive
Role of Government	Protect citizen interests form the misguided intents of others	Bring us together to work toward all interests
Stakeholder Role	Hone adversarial skills and press for my rights	Hone collaborative skills and press for our rights
Focus/Intent	Focus on individual rights Positional Focus Focus on the Past	Focus on individual rights and responsibilities to others Interest Based Focus Focus on the Future
Process	Positional based debate Attack each other View situation from my perspective Use information & standards to advance my position Consider only options which advance my positions	Interest based deliberation Attack differences View situation from multiple perspectives Collaboratively pool information w/ objective standards Invent options for mutual gain
Communication Skills	Seek to be understood Aggressive and defensive debate Guarded, secretive, deceptive	Seek first to understand, then to be understood Deliberative listening and talking promoting tolerance and understanding Open, Honest
Institutions	Narrow functional focus Work independently Closed decision-making	Broad comprehensive focus Work collaboratively/partners Open decision-making

Adapted from Ostermeier, D. Forestry 412 Notes, Spring 1999.

CHAPTER TWO

THE RESEARCH PROJECT

Opportunity Statement

“There is, as usual, much that is wrong with the world” (Dryzek, 1983). However, this need not be construed as an endless list of problems to be solved but rather as a unique opportunity for all people to be involved in visioning and creating our future. This section, usually entitled statement of the problem was changed to an opportunity statement to reflect that sentiment and to identify the need to reframe our problems and our perceptions. An opportunity statement much more accurately reflects the role that HCPs and other collaborative conservation mechanisms can play in addressing the challenges of our contemporary democratic society, for these mechanisms provide us with an opportunity to reconstruct our relationships with each other and with nature.

HCPs provided new mechanisms for reconciling endangered species conservation and habitat protection with land development, a process that might otherwise have been impossible without violating the ESA. Yet, the HCP program was a relatively unused option for the first ten years of its existence (1982-1992). The HCP process was historically viewed as procedurally difficult, costly, plagued with delays, and risky in terms of regulatory assurances. According to the United States Fish and Wildlife Service (FWS), only fourteen (14) incidental take permits were issued by the end of 1992.

However, HCPs have changed dramatically in the last decade as practitioners have become more experienced with collaboration, and as institutions have become more accepting of ecosystem management approaches. These current trends are leading at least some FWS regions to accept and embrace the HCP process. Measures that streamline agency procedures, a focus on large-scale, multi-species HCPs, and new internal policies providing long-term regulatory assurances to applicants, have caused HCPs to “become one of the ESA’s most important and innovative conservation programs” (USFWS). As of April 2002, 379 HCPs have been approved, covering approximately thirty (30) million acres and protecting more than two hundred (200) endangered or threatened species (USFWS).

One of the main improvements that led to increased use of HCPs was the 1996 Habitat Conservation Planning Handbook prepared by the FWS. The Handbook governs HCP development and implementation to ensure that HCPs nationwide meet all the same procedural requirements. However, the Handbook gives little process management guidance regarding how participants should go about achieving the Handbook requirements. The design and management of HCP processes, how they work, have been neglected. Since HCPs are integrated and proactive, they differ dramatically from historical, dominator type decision-making processes, and the challenge is to make these processes work. Due to this change in decision-making, HCP processes have not been adequately studied and are not well understood. In fact, “little attention has been given to HCP process design and management” (Ostermeier et al., 2000).

The use of HCPs increased in the 1990's because the process was improved to address the problems of cost, delays, and risky regulatory assurances. Currently an opportunity exists to learn about the principles governing the development and implementation of effective collaborative processes, and to make effective use of that knowledge and practice. Throughout the United States, citizens and government agencies are struggling with these new processes in terms of how they need to be effectively managed. "Many individuals and organizations continuously engaged in stakeholder processes are expressing a growing need to identify, summarize, and transfer good management practices. This development reflects a need to achieve better results from stakeholder decision-making through improved management of the process" (Yosie and Herbst, 1998).

With no direct guidelines informing participants about managing process issues, it is not surprising that currently participants in different plans deal with management issues very differently. In 1998 the National Center for Environmental Decision-Making Research (NCEDR) interviewed participants from thirty-one (31) different HCPs across the country and found that there was "significant variation in the ways HCPs have been developed," and characteristics of HCPs varied with respect to "who was involved, how decisions were negotiated, how decision-making roles were designed and executed, the type of land use precipitating permit application, whether the permittee was a public or private entity, and the extent of non-Service participation in plan development" (Ostermeier et al., 2000). This flexibility, which allows site-specific

process design, is part of the appeal and success of new decision-making processes.

However, while all collaborations are different, the attention paid to process is important in every case. Decisions are the products of processes, and research has shown that there are many benefits from using a high quality decision process. Process benefits include depolarizing high conflict situations, ensuring comprehensive consideration of relevant factors, ensuring consideration of a wide range of alternatives, leveling the playing field across multiple objectives, maintaining a consistent approach as people change positions, developing consensus and building commitment to action, and facilitating explanation of the decision to internal and external parties (National Research Council, 1999). One other important benefit of a well-structured process is to facilitate learning from past experience, leading to continuous improvement in the decision process. "Decision research has shown that failure to learn from experience and to apply the lessons learned is one of the most pervasive and harmful problems in decision-making" (National Research Council, 1999).

It is natural for people outside the decision sciences to focus on the product or result of a decision as a way to evaluate the quality of the decision; however, decision scientists realize that this is misleading. We could reason flawlessly, only to have a very rare and unfortunate event occur and undermine us. We might be victims of bad luck; decision scientists know not to question the wisdom of the reasoning of the decision-making process in such a case. Another time we could again reason flawlessly and exercise care in the decision process

on a similar problem and we might have better luck. Consequently, decision analysts emphasize the decision process and not the decision product. Even when the outcome of the decision is good, decision scientists worry if the decision process is flawed. Luck may have been the key, next time a flawed process could cost dearly. So, what do decision analysts agree makes a good decision? The best chance for a good decision product lies with a good decision process. (Boothroyd, 1978; Dahrendorf, 1957; Deutsch, 1973; Easton, 1965; Raiffa, 1968 and 1982)

The lack of attention aimed at effectively researching HCP process management and utilizing that knowledge to improve best management practices has resulted in an ineffective use of resources, including stakeholders' and service personnel time. Therefore, analyzing the principles and creating a template to govern the design and management of HCP processes, and gleaning lessons learned from this template are important additions to the ever-growing base of knowledge and practice to improve and make HCP processes more effective.

Objectives

Collaboration was born out of the recognition that typical historical policy implementation processes have been deemed ineffective at solving contemporary environmental conflicts in a shared power world full of contradictions regarding the integration of multiple interests. The future embodies the principles of ecosystem management and collaborative decision-

making. Given this future and integration into management of HCP processes, there is an opportunity to examine these processes in order to better understand the important process management issues of complex, multi-interest, multi-stakeholder processes.

Two major process questions are analyzed in this research: who is involved and how (process management) people are involved. These two 'who and how' questions are considered by examining two important process management issues in HCPs: negotiating HCP contracts and managing scientific and technical information. In order to answer these two questions, this research has the following objectives:

1. To review the literature on collaborative natural resource processes to determine management principles associated with:
 1. Who was involved, and the process of, negotiating natural resource issues.
 2. Who was involved, and the process of, science and technical decision-making.
2. To examine and compare Habitat Conservation Plans with the principles identified in the literature to determine:
 1. Who was involved, and the process of, negotiating HCP contracts.
 2. Who was involved, and the process of, science and technical decision-making.

In addition, and to provide information to improve future process management of negotiation and science issues in collaborative natural resource decision-making processes, a third research objective is:

3. To identify lessons learned from the comparison of process management principles identified in the literature (theory) with experiences in the HCP Cases (empirical).

A conceptual framework of the research objectives is presented in Table Two.

Methodology

To address objective one, literature concerning collaborative natural resource processes was identified and reviewed to establish principles concerning process management of negotiation and science issues. Together these principles create a template to evaluate how an effective collaborative process needs to be managed. In order to capture the breadth and depth of natural resource decision-making issues, literature investigated includes: natural resource policy, environmental dispute resolution, conflict management, collaborative planning, and natural resource processes seeking common ground, collaboration, or consensus.

This review provides a prescriptive analysis in that it deals with what an effective collaborative decision process ought to include and how decisions ought to be made. The assumption of a prescriptive analysis is that if the principles are followed they lead to demonstrably superior results.

Table Two. Conceptual Framework of Research Objectives

	What do we know?		How does real life compare?		What are lessons learned?
Sources of Information	Literature Review		Habitat Conservation Plans		Taking theory and empirical evidence together, lessons learned provide information to help improve future processes.
Process Management Issues	Negotiation	Science	Negotiation	Science	
	Who was involved? What was the process?	Who was involved? What was the process?	Who was involved? What was the process?	Who was involved? What was the process?	

The majority of the literature investigated utilized collaborative case studies to discern principles associated with effective collaborative processes. Some of the literature utilized the themes of dissatisfaction with historical policy implementation processes to hypothesize what principles need to be managed for in a paradigm shift to collaboration. Other authors cited personal experiences with both historical and collaborative paradigms to determine what principles of collaboration need to be managed for. In general, literature from a knowledgeable body of collaborative process practitioners was investigated to discern collaborative process principles. The literature investigated is broad and comprehensive, and this was purposely done to distill broad principles that all the literature investigated agreed were important. Thus throughout the literature review, the principles are presented without much discussion of how various author's reached their conclusions, since the principles were generated from the agreement among collaborative researchers as to their validity. Also, the opposite or antithesis to each principle is not presented in this research because the goal was to describe common principles of how collaboration may need to be managed, not what does not need to be managed for. The review's specific objective was to present information, strategies, and suggestions, in the form of principles, concerning process management of the issues of technical information and negotiation in collaborative processes.

To address objective two, this study utilized data collected in 1998 by the National Center for Environmental Decision-making Research (NCEDR). The NCEDR study interviewed 124 participants from 31 different HCPs. The

interview followed a protocol with five distinct sections: 1) Involvement; 2) Participant Learning; 3) Data and Information Management; 4) Negotiations; and 5) General Objectives and Outcomes. The full NCEDR interview protocol can be found on the Internet at URL: <http://www.ncedr.org/casestudies/protocol.htm>. The full NCEDR methodology is presented in the Appendix.

Information for the primary areas of study in this research, who and by what process, were gathered from four of the five major sections of the interview protocol developed by NCEDR. The involvement section of the NCEDR interview protocol asked participants to describe who was involved, what role participants played, who was directly involved in decision-making, why the level of involvement was selected, were there any underrepresented parties, and an overall comment on the level of involvement. The data and information section of the NCEDR interview protocol asked participants what types of information were used, the process by which information was included, was there a review of the data, how adequate were the data, and if attempts were made to present the data in understandable ways to participants. The negotiation section of the NCEDR interview protocol asked participants to describe how major decisions were negotiated, what worked well, what did not work well, and if working on the plan affected subsequent relationships among participants.

The NCEDR research team compiled case summaries for each HCP, which are the primary source of data for this research. These case summaries were further analyzed to address objective two of this research through key word searching and coding in the software application QSR NUD*IST.

This data is qualitatively rich, containing the stories and experiences of participants involved in collaborative conservation planning. Thus, this data allows a descriptive analysis in that it deals with how decisions are actually made in the real world. The assumption of a descriptive decision analysis is that it assumes that an understanding of actual decision behavior is required to understand how decisions are made, and thus can be used to help prescribe how decisions ought to be made. The measures for objective two were taken from an internal, practitioner perspective. Participants were asked to describe their experiences and their perceptions of various process elements including who was involved and the process of data and information management, and who was involved and the process of negotiation.

For this research, the NCEDR cases were examined and compared with the template of principles identified in the literature. The literature provides a lens through which to analyze the cases. The primary goal of the examination of the NCEDR cases was to see if actual cases did or did not experience the principle, and what participants perceptions of that experience was.

To further aid the examination of the thirty-one NCEDR cases, the cases were divided into categories based on involvement. The following three categories of involvement were used: 1) required involvement, which consists of the applicant, possibly the applicant's consultant/lawyer, and the FWS (or NMFS) service; 2) expanded involvement, which consists of the applicant, the Services, and some other selected interests; and 3) representative involvement, which implies the intent was to have representation of all major interests.

The thirty-one NCEDR cases utilized in this research are listed in Table Three.

The results of the first two objectives will be the basis for identifying lessons learned in the third objective. The empirical, descriptive case knowledge accompanied with the baseline, prescriptive approach developed from the literature will provide an analytical framework from which to identify the main points that people involved in collaborative processes need to be aware of and manage for to improve future processes. In addition, this comparison of prescriptive and descriptive processes will provide lessons learned toward the future improvement of the management of science and negotiation issues in collaborative natural resource decision-making processes.

Table Three. Habitat Conservation Plans

Plan Title	USFWS Region
Arcata Redwood Company's Marbled Murrelet	1
Balcones Canyonlands	2
Clark County	1
El Coronado Ranch	2
Florida Bald Eagle	4
Georgia Statewide	4
Jackson Demonstration State Forest	1
Lantana Development	4
Louisiana Black Bear	4
Maine's Atlantic Salmon	5
Massachusetts Division of Fish and Wildlife	5
North Carolina Sandhills	4
Pender County North Carolina	4
Peregrine Fund's Aplomado Falcon	2
Pleasant Valley	1
Plum Creek	1
Port Blakely Tree Farm	1
Quail Hollow Quarry	1
Red Oak Timber	4
Ribar Timberlands	1
Riverside County Stephen's Kangaroo Rat	1
San Diego Multi Species	1
Spring Mountains	1
Swan Valley	6
Texas Red-Cockaded Woodpecker	3
Tulare County	1
Volusia County	4
Washington Department of Natural Resources	1
Weyerhaeuser Willamette Valley	1
Wilmon Timberlands	4
Wisconsin's Karner Blue Butterfly	3

CHAPTER THREE

LITERATURE REVIEW

To address objective one of this research, literature concerning collaborative natural resource processes were identified and reviewed to establish principles concerning process management of negotiation and data and information. Together these principles create a template to guide how an effective collaborative process needs to be managed. In order to capture the breadth and depth of natural resource decision-making issues, literature investigated includes: natural resource policy, environmental dispute resolution, conflict management, collaborative planning, and natural resource processes seeking common ground, collaboration, or consensus. The review's specific objective was to present information, strategies and suggestions, in the form of process principles, concerning process management of the issues of negotiation, and technical information. First, a brief introduction to the circumstances surrounding natural resource policy is described, and then the collaborative process principles associated with negotiation are discussed. Next, a brief introduction to the circumstances surrounding the use of science in natural resource policy is described, and then the collaborative process principles associated with data and information management are discussed.

Process, Conflict Resolution and Natural Resources

As pressures to exploit natural resources clash with the necessity of protecting environmental quality, disputes about appropriate management become increasingly frequent and difficult to resolve (Maguire and Boiney, 1994). Whether the issue is planning for multiple use of public land, cleaning up offshore oil spills, or rescuing endangered species, these policy disputes exhibit common features that make consensus difficult to achieve without some principles to guide discussion. Policy disputes are often characterized by: 1) limited information and uncertainty about the natural and social processes affecting policy outcome, 2) potential outcomes that may be serious, even irreversible (e.g. species extinction), 3) many parties who are affected by, or can themselves influence, the outcome, 4) parties who value possible outcomes very differently, and 5) the necessity for consensus, since none of the parties is capable of achieving the common goal on its own. (Maguire and Boiney, 1994)

Few choices in natural resource management are made unilaterally. Ostermeier (1996) states that people with disparate interests and values are increasingly seeking to influence decisions affecting natural resources and that these disparate interests and values will continue to precipitate conflicts. This conflict is unavoidable (Dahrendorf, 1957; Deutsch, 1973) and is a normal part of natural resource policy and management. As current and future land management decisions are influenced by a wide variety of stakeholders' agendas, it will become more difficult for a majority to reach a state of agreeable and satisfied acceptance. Therefore it is increasingly important that differences

in preferences (conflicts) be understood and that mechanisms and procedures for describing and handling them be developed and applied. (Schmoldt and Peterson, 2000)

A fundamental fact confronting all societies is that scarcity of valued things prevails, leading to disputes over their allocation (Easton, 1965). In terms of environmental conflicts, the scarcity issue often revolves around land resources and their use (Cobb and Elder, 1983; Deutsch, 1973; Easton, 1965; Kelso, 1963; Ophuls, 1974). Kelso (1963) suggest the basis of the phenomenon is that while "land resources are limited, human wants are limitless." He further contends that land use conflicts arise because people and their real and perceived wants are transient whereas "land is fixed in space and content." Beatley (1994) argues that the "social allocation of land to different uses and activities is fundamentally and inextricably a problem of ethics." Land use decisions have tremendous social and environmental impacts, and "those involved in land use decision-making must realize that ethical judgments are not optional," and a failure to view land use decisions as ethical choices is common "because [land use decisions] are defined in narrow technical, economic, or legal terms" (Beatley, 1994).

There is a distinction here between land ethics, known as stewardship, and the personal ethics, or morality, involved in making land use decisions. "The public official is always torn between acting as a proponent of an interest and acting as an arbiter among competing interests" (Willbern, 1994). Since both "potential and real conflicts of interests are so pervasive [in natural resource decision-making], major efforts are needed to provide a degree of protection

through procedural safeguards" (Willbern, 1994). One of the major efforts needed to provide ethical decision-making suggested by Beatley (1994) and Willbern (1994) is the public acknowledgement of outside interests. Where power is being exercised, arrogance can easily replace humility, convenience of the official can become more important than the convenience of the public, and delay and secrecy can become the norm. A major effort is necessary to provide some degree of protection for the public against the potential arrogance of officials. Thus, one of the central components of public decision-making morality is procedural fairness. "The public process of decision-making may not be a zero sum game, but the difficulty of satisfying all [interests] makes it necessary that the process of arriving at decisions about policy, be a fair one" (Willbern, 1994). If sincere people hold to differing values, there must be institutional arrangements that legitimize public policy discourse, mutual persuasion, and resolution of differences. Policy processes that do not provide equal treatment for all, are usually condemned as unjust and unfair, and a large measure of procedural due process is a moral necessity to make the process of public decision-making legitimate. In sum, ethical problems associated with conflicts of interests over the allocation of natural resource goods and amenities require an equitable and open decision-making process. (Beatley, 1994; Willbern, 1994)

How conflicts of interest are addressed in ethical decision-making processes is of paramount importance. Conflict can be constructive or destructive (Deutsch, 1973), and the determining factor seems to be the process by which these conflicts are resolved (Ostermeier, 1996; Mayers and Bass,

1999). “The key to all successful attempts at policy appears to be the process itself” (Mayers and Bass, 1999). Process and outcome are the attributes that determine the quality of the resolution (Schmoldt and Peterson, 2000). “A good process produces a good outcome” (Susskind and Cruikshank, 1987).

Effective, or constructive, conflict resolution lies at the heart of our democratic ideals and provides the foundation for current trends in natural resource management toward an ecosystem approach which manages conflict through collaborative processes. Collaborative conservation and ecosystem management approaches were largely born out of the recognition that, in general, historical policy implementation processes are ineffective at resolving conflict due to the narrow approaches available in the courts and administrative appeals, and that these approaches are almost always divisive in ways that reverberate beyond the immediate issue in dispute, breeding long-standing disputes. “Collaboration implies a joint decision-making approach to problem resolution where power is shared, and stakeholders take collective responsibility for their actions and subsequent outcomes from those actions” (Gray et al., 2001).

Central ethical considerations, and the ‘how’ of collaborative processes can be encompassed into principles that need to be kept in mind to guide management efforts. Process principles are distinguished from for example, groundrules that primarily address participant behavior and obligations (Dukes and Firehock, 2001). Different processes address these principles through different mechanisms, there is no one right, proven approach. Instead,

collaborative process principles, aimed at constructively resolving conflict, represent ideals to which processes aspire and are guided (Gray et al., 2001).

Collaborative Negotiation Process Principles

Eleven principles to guide an effective collaborative negotiation were identified in the literature. Principles concerning who needs to be involved are:

- ❖ Inclusiveness, participation by all interested or affected parties.
- ❖ A balanced representation of the diversity of those interested or affected parties.
- ❖ Voluntary consent to participate.

Principles concerning the process of negotiation are:

- ❖ Role efficacy, ensuring a meaningful voice for participants.
- ❖ Transparency, open sharing of information about and throughout the process.
- ❖ Focusing on the interests, instead of positions, of participants.
- ❖ Separating the people from the problem through recognition of emotions.
- ❖ Mutual learning where participants educate one another about their realities.
- ❖ Inventing options for mutual gain by recognizing areas of common ground.
- ❖ Establishing objective criteria to judge options by an external standard of fairness.
- ❖ Reaching decisions through consensus.

Inclusive

Inclusiveness, of all diverse affected interests, is a principle regarding who needs to be involved in effective collaborative processes. Gray et al. (2001) define inclusiveness as the “need to proactively engage all interested or affected community groups in the process, regardless of their relative size or influence.”

Using and protecting the natural environment directly involves many societal groups (Crowfoot and Wondolleck, 1990; Wondolleck and Yafee, 2000). With many legitimate objectives, there is no single right person or group that can answer the question of how to manage natural resources. The proliferation of a broad set of interest groups effective at administrative appeals and litigation means that agency decisions rarely endure without the support of all the interested or affected interest groups. (Wondolleck and Yafee, 2000)

There is substantial linkage between public participation processes and public conflict resolution. An important theme intriguing many collaborative practitioners is the role public conflict resolution can play in democracy building and increasing public participation in decision-making. One component of that role is increasing access to government (Dukes, 1996). Carpenter and Kennedy (1988) note the empowerment brought by increased participation, wherein people are offered an opportunity to solve problems by themselves without a helper. Kemmis (1990) speaks of alleviating the deep problem of alienation of the public, who traditionally have been deprived of a channel to their government. Fiorino (2000) describes effective democracy as “citizens share in governing” by

having the opportunity to exercise decision authority or codetermine policy in collaboration with government officials.

Mushak (1993) stresses the complexity of environmental problems in advocating inclusive involvement, and Bohm (1992) cautions that succumbing to the human tendencies to fragment or break up problems ignores their interrelatedness. As Weisbord (1992) suggests, the solution lies in “scanning the whole system, not problem solving in bits and pieces.” By having the whole system of actors involved, the potential for cooperation increases, especially toward mutual goals. A process open to full public participation, as prescribed by democratic theory, is essential to effective collaborative processes (Dukes, 1996).

If, however one only subscribed to democratic theory to provide the answer to who should be involved in collaborative processes, one would be neglecting the reality of a shared power world. While processes need to open to all who may be interested in or affected by outcomes, an effective collaborative process also recognizes and includes those with power over decisions. As Phillips (1994) states, “having the right people present is key to collaborative success.” Crowfoot and Wondolleck (1990) suggest that all “key” or “major” stakeholders should be appropriately represented,” since any who are not present are likely to try to “block or demand changes in any agreement reached.”

Collaborative processes need the direct participation of all parties having the authority to make and implement decisions, in particular the participation of the public agencies with decision-making authority in the conflict (Bingham,

1986). Baburoglu and Garr (1992) also stress the need to include implementers. Susskind and Cruikshank (1987) identify four categories of involvement: those with the necessary standing to claim legal protection, those with sufficient political clout to draw elected and appointed officials into the conflict, those with the power to block implementation of a negotiated agreement, and those with sufficient moral claim to generate public sympathy.

Susskind and Cruikshank (1987) suggest convening groups ought to prepare a detailed "conflict assessment" of who might be a stakeholder as a means of ensuring that they have not left anyone out. However, no matter how carefully a process is designed, it is not uncommon after a process has been convened for the group to realize that it is missing appropriate representation (Carpenter and Kennedy, 1988). Also, in environmental disputes groups frequently get involved at different times, and some interests may not be sufficiently organized or powerful to be called a group and representation must somehow be determined (Bingham, 1986). If some stakeholders simply cannot be present, Wooten and Libby (1992) recommend that their interests and claims still be represented. Bingham (1986) notes that government agencies may stand as surrogates for the public interest. An effective collaborative process provides constant evaluation of involvement and an opportunity to be involved throughout the process (Dukes and Firehock, 2001).

It is always better to include too many participants than too few. There is a logistical advantage, of course, in limiting the number of voices directly involved in negotiations. That advantage, however, is far outweighed by the problems

that arise if someone decides they have been unfairly excluded (Susskind and Cruikshank, 1987). Contrary to what is often assumed, Bingham (1986) found no evidence among her case studies to indicate that a large number of parties in a collaborative process make it more difficult to reach an agreement. However, the process needs to be conducted differently for larger groups with use of committees, subcommittees, and/or working groups which report back to a larger group session that can focus on the most important or still contentious issues (Bingham, 1986).

Voluntary

Voluntary participation is a principle critical to the design of effective collaborative processes. For a collaborative process to be effective, all groups with a stake in the conflict need to be identified and involved, and each affected group must agree voluntarily to participate (Crowfoot and Wondolleck, 1990). Bingham (1986) and Cormick (1982) stress that these processes should always be voluntary and should never be mandated/required, which could indicate a power imbalance and signal the potential for manipulation. Power can only be appropriately managed through truly democratic dialogue where all participants interact as equals and where no one's interests are more important than another's (Emery and Weisbord, 1992).

Diversity

Inclusiveness must address the principle of diversity for the successful resolution of conflict. Conflict will not be resolved if all the different viewpoints are not part of the solution and collaborative processes need to provide for this diversity of social interests. "Collaborative processes require that diverse stakeholders, acting as equals, be given the opportunity to freely exchange opinions, ideas, and points of view" (Weisbord, 1992).

The inclusion of diverse interests necessarily reframes the issue and produces integration and cooperation (Fisher and Brown, 1989). Susskind and Cruikshank (1987) add "durable agreements are most likely to be developed when all conflicting (diverse) parties are at the table." To be legitimately inclusive Susskind and Cruikshank (1987) suggest that legitimacy depends primarily on a high percentage of participation from diverse interests most affected. The measure of legitimacy is not so much in the numbers representing each diverse interest, or the legitimacy of the individual participants, but in the consistency of diverse representation in the overall process.

Dukes and Firehock (2001) extend this point by noting that it is important to equally balance participation of diverse interests and ideas, and that broad representation not only legitimizes the process, but also is a key to bringing broader knowledge bases and innovation to natural resource conflict resolution. Like the "conflict assessment", prepared for recognizing all interests, Carpenter and Kennedy (1988) suggest performing a conflict analysis chart to identify parties and their issues, the key difference here is the identification of interests

so that the analysis can be used to equally balance the participation of diverse interests. “If we cannot responsibly address the range of diversity within our own species, it is likely we cannot value and manage the needs of multiple species and ecosystems” (Gray et al., 2001).

Role Efficacy

Participation must include a meaningful role, representation more than in the physical body. Thus a principle addressing how participants need to be effectively involved in collaborative processes is role efficacy. The essence of this principle is ensuring participants a meaningful role in the process. Role efficacy issues address: the inclusion of participants in process design and rule setting, ensuring participants have influence over the final decisions, and the creation of a safe environment for conflict resolution that recognizes the different needs of various participants.

Contrary to the common image portrayed in movies and late television news broadcasts in which the unshaven bargainers emerge with their settlement in hand after a grueling thirty-six hours of negotiation, principles significant to the structure and effective progress of negotiation occur long before participants begin to discuss options for solutions. This is because the structure of collaborative processes - how the process is designed, how information necessary to decision-making is acquired, and who participates in what capacity in these and later negotiation phases – is critical to the actual progress of the negotiations themselves (Crowfoot and Wondolleck, 1990). For example, rules

governing access to participation in forums strongly influence who speaks what, where, when, why, and how, and who listens. The most powerful rules are those that limit meaningful participation, for example, holding meetings in places, or at times, or at a cost that makes attendance by interested parties difficult (Bryson and Crosby, 1992).

An effective collaborative process ensures effective roles for participants through genuine, active participation in the planning, design, decision-making, implementation and monitoring, and in the generation and analysis of information (Gray et al., 2001). Borrowing from Stephen Covey's work, Dukes and Firehock (2001) describe accessibility as beginning with the end in mind, that is, designing a process together based on participants collective assessment of what needs to be achieved, how success will be determined, who needs to be involved and how, and what information is needed. All participants need to be involved in framing the issue, establishing ground rules for working together, developing goals for the process, agreeing on the agreement process, and establishing group funding (Ury et al., 1993; Fisher et al., 1981; Fisher and Brown, 1989). "A dispute resolution process open to continuous modification by the participants is the approach most likely to be perceived as providing a meaningful role" (Susskind and Cruikshank, 1987).

Collaborative processes are not set in stone; seldom do two of these processes look alike. Hence, it is important for participants in these processes to understand that they have some control over the structure of the process and can mold it to ensure that it fits their needs (Crowfoot and Wondolleck, 1990).

The heart of the collaborative process requires the participants (sometimes with the help of a facilitator) to develop and agree upon a process for discussion and decision-making (Crowfoot and Wondolleck, 1990). Participation in the process and process design of a voluntary collaborative effort are closely linked, since agreement on how a process will be conducted frequently is a prerequisite to the decision by each party about whether to participate (Bingham, 1986).

Role efficacy in the process also means stakeholders have the ability to influence outcomes (Mayers and Bass, 1999). Those who participate in productive roles in a process feel that they “own” the process and its outcome and are therefore more likely to support its implementation (Susskind and Cruikshank, 1987).

Role efficacy also concerns creating a safe environment for participants to become engaged in dialogue and negotiations (Fisher et al., 1981; Ury et al., 1993). Issues may include normalizing conflict to make it acceptable for participants to express concerns/issues. Providing a safe environment where conflict can be viewed as normal makes space for participants to disagree and experiment (Mayers and Bass, 1999). The collaborative process must allow and accept disagreement so that all stakeholders can be heard, and thus have access to and influence over the process (Dukes and Firehock, 2001).

Creating a safe environment with productive roles for participants also involves tailoring the process to match diverse needs and communication styles. Ury et al. (1993) and Fisher et al. (1981) state that if a process was truly accessible and allowed participants to plan the process then that process

inherently was planned to accommodate all the interests included. They do point out some major issues to be considered such as providing a safe and/or neutral meeting place, consideration of all participants in the timeline and schedule of activities, identifying and addressing differences in authority and knowledge, and identifying external constraints on participants. Carpenter and Kennedy (1988) stress the need of processes to recognize varying levels of expertise, different forms of power, different decision-making procedures, and unequal accountability. Other considerations for an effective collaborative process include the cultural manner of decision-making, the language, be it English or non scientific, and the history of the group's experience of inclusion/exclusion. Many collaborative processes use innovative site-specific methods to communicate that each group has a legitimate voice in process. (Gray et al., 2001)

On Using Subgroups

In many circumstances attracting the full range of stakeholder viewpoints to the dialogue may result in a group that is too large to manage effectively without breaking it into subgroups. In order to make a decision in a timely and efficient manner, and adhere to the principles of inclusiveness and role efficacy, most groups decide to have different types/levels of representation. Participants usually organize themselves by defining roles and establishing working committees (Ury et al., 1993; Fisher et al., 1981; Fisher and Brown 1989). All roles remain meaningful with a clear understanding of how input will be reflected in the final decision and all know and accept who will make the final decision.

For example, some participants may be included as a full voting members, directly involved in making decisions, while a resource member, typically someone participating regularly to provide some sort of expertise, would not vote or be involved in reaching consensus. (Dukes and Firehock, 2001)

Several authors have used subgroups effectively, but the participant cross section of these groups may be critical to both output and to the perception of role efficacy. Crowfoot and Wondolleck (1990) stress that subgroups should be used to reduce the number of participants regarding an issue and not to avoid conflict. They also suggest that using smaller, facilitated work groups from the start can be efficient and can result in a strong agreement on an integrated product. Baburoglu and Garr (1992) describe a process that alternated small group activities with whole system activities, where all of the participants met and performed the activities together. They enabled small groups to play ideas off each other by exchanging work. Bingham (1986) suggests that subgroups can be effective for providing concrete ideas or talking points for the larger group and to make rapid progress on important issues. Crowfoot and Wondolleck (1990) and Bingham (1986) agree that subgroup actions should be subject to approval or ratification by the whole group of participants.

As Haugen (1992) explains, since the dialogue is dependent upon the input from participants, "small group composition . . . determines the scope and content of these discussions." Crowfoot and Wondolleck (1990) state that these groups "should be a microcosm of the larger process with balanced representation from the different parties."

Transparency

Transparency is a principle regarding how participants need to be effectively involved in collaborative processes. Transparency reflects the degree of openness and clarity with which information is provided about and throughout the process (Gray et al., 2001). An important component of transparency noted by Susskind and Cruikshank (1987) was that in collaborative processes participants interact face to face, the ultimate of transparency. Collaborative processes strive to restructure how information is communicated by making information open, instead of a commodity to be guarded (Gray et al., 2001). Transparency issues include: understanding the collaborative process, and its alternatives, and open sharing of information throughout the process.

The process itself needs to be clearly and fully understood by all participants. Transparency of the process includes understanding collaborative processes and alternative processes, and knowing how and why other participants are committed to a collaborative process. Several authors (Ury et al., 1993; Fisher et al., 1981; Fisher and Brown, 1989; Dukes, 1996; Susskind and Cruikshank, 1987; Carpenter and Kennedy, 1988) note the importance of providing information to participants about what the collaborative process entails and how it differs from other/traditional policy processes. The authors agree that this understanding is crucial to successful collaboration because participants can fully understand the advantages and disadvantages of all processes and can make an informed, transparent, decision to participate in collaboration. Participants must fully understand and trust the process whereby they interact

with other participants, and they must also be able to calculate the ramifications of various options (Mills, 1990).

Fisher et al. (1981) and Ury et al. (1993) further extend the concept of understanding the collaborative process to include identifying likely results if a participant were to proceed in a non-collaborative process. This non-collaborative result is the participant's Best Alternative To a Negotiated Agreement, or BATNA. Fisher et al. (1981) and Ury et al. (1993) stress this step as crucial to providing participants with the necessary information to decide to collaborate. Through the exploration of alternative processes, and each participant's identification of their own BATNA, collaborative processes facilitate participants' discovery of mutuality/interdependence, a very important issue in natural resource management (Kellert, 1982). If the participant could act unilaterally, they probably would. Participants in collaborative processes have openly chosen that process because they know they cannot act unilaterally.

Once stakeholders are identified their participation hinges upon their perceptions of incentives and disincentives (Crowfoot and Wondolleck, 1990; Bingham, 1986). Making the decision to collaborate in this transparent manner helps to assure participants that everyone there is negotiating in good faith, and participants become more committed members of the collaborative process because they know their options. "Collaborative processes are better, and will be more accepted, only if all the stakeholders are confident they will get more from a negotiated agreement than they would from a unilateral action, or from traditional means for conflict resolution" (Susskind and Cruikshank, 1987). Successful

collaboration requires that the parties have sufficient incentives to reach an agreement, and that all the parties are willing to participate in the process (Bingham, 1986). Transparency, through the clarity of the process and its alternatives, brings all participants to an understanding of the collaborative process. Through that understanding participants decide, and know that other participants decided, to continue to negotiate in good faith.

While role efficacy addresses providing participants a meaningful role in a safe environment; transparency ensures that role will continue through open sharing of information throughout the process. If the process maintains effective communication of information with all participants, each affected group will still have a means of input to decision-making and a means of registering support or nonsupport for any potential agreement (Crowfoot and Wondolleck, 1990). Participants in an effective collaborative process will at any point in the process know who is involved, what is the schedule, who has decision authority, and how participant input will be used (Dukes and Firehock, 2001). Transparency in collaborative processes includes open sharing, making information understandable to all, explaining how all information or input will be used, and this openness is the main block to building trust throughout the process. (Gray et al., 2001; Ury et al., 1993; Fisher et al., 1981; Fisher and Brown, 1989)

Focus on the Interests

Collaborative processes are drastically different than adversarial approaches focused on positions and winning, and a critical component of collaborative negotiations is to break the pattern of fighting and focus participants in a new way (Ury et al., 1993; Fisher et al., 1981). Thus, a principle of effective collaborative negotiation is to focus on the interests of the parties involved. This method is often called interest-based negotiation since it calls for a focus on interests rather than positions. Interests are basic underlying needs that when met will allow a party to accept an agreement.

Positions are the 'lines in the sand' that individuals and groups often draw. Once taken, these positions become difficult to negotiate around and gridlock is a common outcome. For example, many environmental groups in the United States take a position of "no clearcutting" and get stuck there. Accordingly, the underlying interests, such as, biodiversity, water quality and/or soil erosion are often not addressed (Ostermeier, 1996). Positions are often framed as a solution to the problem, leave little room to maneuver, are presented as an or else situation, and treat the symptom. Interests express the real underlying issues, address participant's fears or wishes, address participant's needs, and treat the cause (Fisher et al., 1981).

Positions tend to become realities in themselves separate from the original issues, and positions are a poor foundation on which to build a successful resolution of differences primarily because positions severely limit the range of opportunities for solutions (Carpenter and Kennedy, 1988). Focusing on

interests forces conflicting participants to back off from their stated positions and perform a straightforward task – talking about themselves. When they talk about themselves, they lose their adversarial tone, and their opponents begin to understand why they have the positions they have. People in a dispute may have one position but many interests, and most interests are reasonable and can be described. Efforts to solve problems can be built on the realization that interests are not necessarily in conflict. (Carpenter and Kennedy, 1988)

Encouraging participants to tell their story often helps that participant more fully clarify her interests, and active listening of other participant's perspectives often reveals more common ground between participants interests than expected (Ury et al., 1993; Fisher et al., 1981; Fisher and Brown, 1989). The time invested in exploring underlying interests enables participants to understand the true substance of the problem and the sensitive dynamics of the conflict that will enable participants to more efficiently identify the interests and eventually reach agreements that meet those interests (Carpenter and Kennedy, 1988).

Separate the People from the Problem

A collaborative negotiation process principle that needs to be managed in effective collaborations is separating the people from the problem (Ury et al., 1993; Fisher et al., 1981; Fisher and Brown, 1989). It is natural for people involved in a dispute to assume that they can reach a resolution by finding a technical solution to the substantive problem at issue, but equal attention must be given to human relationships because human feelings are just as real as

scientific data (Carpenter and Kennedy, 1988). The human aspect of negotiation involves recognizing that humans have emotions, deeply held values, and different backgrounds and viewpoints, and they are unpredictable (Ury et al., 1993). An effective collaborative process recognizes and understands emotions, makes emotions explicit, and acknowledges them as legitimate. In collaboration participants deal with people problems directly and try to base their relationship on accurate perceptions, clear communication, appropriate emotions, and a forward looking, purposive outlook (Susskind and Cruikshank, 1987).

People often find it difficult to negotiate with an individual they feel has insulted, ignored, tricked or berated them. Accordingly it becomes important to separate substance from emotion and deal with each separately (Ostermeier, 1996). Every negotiator has an interest in the substance of the matter and in the relationship between the people. It is important to carry out negotiation in a way that will help rather than hinder future relations and future negotiations (Fisher et al., 1981). Dealing with a substantive problem and maintaining a good working relationship need not be conflicting goals if the parties are committed and psychologically prepared to treat each separately on its own legitimate merits. (Dukes and Firehock, 2001)

Separating substance from emotion is very skill dependent – active listening and using “I” statements are part of the skills that are beyond the discussion of the principles of negotiation. A common strategy by professional mediators is to separate the two, outline the substantive issues and deal with the emotional ones to the extent that is required to allow the parties to progress

toward an agreement (Ostermeier, 1996). Overall, separating the people from the problem involves trying to balance reason and emotion; being firm in beliefs but soft on the people; using persuasion not coercion; discussing behaviors (not attitudes) that would like to see change; asking what would I be willing to give up; using active listening and paraphrasing; and putting yourself in the other guy's shoes. (Ury et al., 1993; Fisher et al., 1981; Fisher and Brown, 1989)

Mutual Learning

Another collaborative negotiation process principle stems from the reality of a shared power world and recognizes the important learning benefits gained from hearing diverse interests. This principle is mutual learning, often referred to as learning circles or cross stakeholder education (Dukes, 1996; Gray et al., 2001; Fisher et al., 1981). With the realization that no one organization or institution is in a position to find and implement solutions to environmental problems, and that no single participant holds the key to understanding a particular issue (Bryson and Crosby, 1992), cross stakeholder education was identified as crucial in effective collaborative processes. Borrowing from Stephen Covey, Dukes and Firehock (2001) emphasize the key aspect to mutual learning as to first seek to understand the interests of diverse participants.

Mutual learning relies on the participants educating each other, through describing their perceptions of the problem, identifying and discussing issues, explaining concerns, and listing their assumptions and the sources of information they have used to draw conclusions. The more time the parties invest in

educating each other, the greater chance they will have of developing options and reaching agreements. (Carpenter and Kennedy, 1988) "Collaboration celebrates the beauty of diversity" (Schindler-Rainman and Lippitt, 1992) because participants become a team of experts with "specialized understanding of different facets of a conflict" (Emery and Weisbord, 1992).

Education serves the important function of letting participants describe, many for the first time, their side of the story directly, face to face, to other groups. Education provides an opportunity for individuals to gain information from other sides and to tell others how they see the situation and what affect they think the conflict will have on everyone concerned. Each side gains the satisfaction of knowing that the other side has been exposed to its perception of the situation. (Carpenter and Kennedy, 1988) Dialogue allows for exploration and validation of differences and for the acknowledgement of each other's realities (Weisbord, 1992).

In traditional policy processes where participants are battling for their rights, other's concerns and any areas of common interest are ignored. Through mutual learning, areas of common interest are found and participants have listened and learned about other's interests and what other's can add to the problem definition and solutions. "If people listen to and acknowledge differences," then "they discover and move toward common ground" (Emery and Weisbord, 1992). Through dialogue without "attacking or defending," participants are more likely to discover, learn, support, and assume responsibility for a "reordered world view," and to make "changes in personal and institutional

priorities” (Emery and Weisbord, 1992). Over time we change, our memories change, and our relationships change, focusing on what happened in the past is less important than trying to agree on what the problem is now and what you want to happen in the future (Schmoldt and Peterson, 2000).

Mutual learning implies participants are open and committed to a process of learning with and from one another through ongoing efforts (Gray et al., 2001). Inherent to mutual learning is a respect for diversity and for different ways of knowing, a willingness to meet others on their own terms, and a willingness to respect others’ knowledge even while openly sharing one’s own (Dukes and Firehock, 2001). Theory and practice suggest that such learning best takes place through joint action, such as field work (monitoring, training) and interactive tasks (problem solving, planning, analysis). The active learning process respects community indigenous knowledge by emphasizing opportunities for people to draw on the experiences. Active learning can offer opportunities for new ideas to emerge in both process and outcome. A role change for professionals and scientists is greatest here – moving from technical experts and primary presenters of information to participants who share information, facilitate learning processes, serve as resource people and are learners open to other forms of information. (Gray et al., 2001)

Invent Options for Mutual Gain

Another collaborative process principle responds to a normal human tendency of trying to achieve quick agreement, especially in the presence of adversaries (Ostermeier, 1996). The first possible alternative is often not the best and by focusing on only one or two alternatives, innovative possibilities are often eliminated because they require more time and negotiation (Ostermeier, 1996). The bigger, nastier, and more public the conflict, the greater the pressure is to resolve it quickly, but it is essential to stop and think because moving to a solution without a sound plan can delay progress and jeopardize success (Carpenter and Kennedy, 1988). Thus, inventing options for mutual gain is a principle to guide effective negotiations. "What is needed is a wide ranging exercise in invention" (Susskind and Cruikshank, 1987), and this principle reflects the creativity that participants focused on interests can achieve.

In traditional policy processes where participants are battling for their rights, other's concerns and any areas of common interest are ignored. In an effective collaborative process participants need to be as concerned in meeting other's interests as they are in meeting their own interests (Fisher and Brown, 1989), and resources are committed to identifying an option that diverse interests can live with, rather than forcing a unilateral position on conflicting participants (Carpenter and Kennedy, 1988). Since there is no right answer and there is not a fixed pie, nor a zero sum, participants need to brainstorm and invent options that meet all interests (Ury et al., 1993; Fisher et al., 1981; Fisher and Brown,

1989). Participants are encouraged to view the conflict as a problem to be solved rather than a battle to be won (Carpenter and Kennedy, 1988).

Seeking innovative solutions for mutual gain is skill dependent and often requires facilitation from those in negotiation or from an outside mediator. Innovation also depends on the extent to which those negotiating have begun to build some minimal level of trust (Ostermeier, 1996). While, Susskind and Cruikshank (1987) argue that “trust need not enter the picture”, and collaboration can proceed independently of trust as long as the creation of options for mutual gain, the inventing, is separated from decision-making and commitment to any one expressed option. Carpenter and Kennedy (1988) also stress separating inventing from deciding to help participants move from positions and prevent making a choice too soon; “the goal is to produce the broadest possible selection of alternatives. “ The collaborative policy process approach does not assume there is a single best answer, or even a small number of alternatives, to be found. Instead, it suggests that the range of answers to a specific environmental problem can be wide, and that it is rather the process decision-makers go through that will ultimately determine the kind of decision made. (Chechile and Carlisle, 1991)

Objective Criteria

A common causal element regarding disputes is that people look at the same issue but by using different standards. Since natural resource policy is fundamentally a question of ethics, there may also be different justifications of

what constitutes a natural resource issue that needs to be examined (Beatley, 1994). For example, is erosion a problem, and what seems to be serious erosion to some may not be to others. It therefore becomes important in negotiation for the participants to ask how do we determine what is serious erosion, or whatever the issue. (Ostermeier, 1996) Establishing objective criteria to create an external standard of fairness by which to examine options is thus another collaborative negotiation principle.

In an effective collaborative process, participants frame each issue as a joint search for objective criteria. Possible standards are efficiency, fairness, or scientific merit. (Ury et al., 1993; Fisher et al., 1981; Fisher and Brown, 1989) Such objective criteria may be scientifically determined, however, it is important to take standards from beyond the parties involved, from an objective source (Ostermeier, 1996), and participants should insist that the result be based on some "fair standards independent of the will of either side" (Fisher et al., 1981). "The available scientific data rarely offer a definitive basis by which to justify the choice of one standard over another" (Susskind and Cruikshank, 1987).

Consensus

Decisions made by consensus are necessary for an effective collaborative negotiation. The goal of consensus decision-making is to reach a decision that all parties can accept. The parties reach agreement by gathering information, discussing and analyzing that information, and educating each other of the merits of different information. Not everyone will like the solution equally well or have

an equal commitment to it, but the group recognizes that it has reached the best decision for all parties involved. (Carpenter and Kennedy, 1988)

Collaborative processes require that decisions be based on unanimity. To begin the consensus process, the group reviews the options that passed their objective criteria, and consensus may require combining or synthesizing acceptable options, linking or trading off solutions, or agreeing to drop an issue altogether. (Susskind and Cruikshank, 1987)

Various authors from diverse fields use different phrases, but unanimously agree that decisions must be acceptable to all participants. In environmental dispute resolution, "agreement . . . almost always means unanimous agreement. If . . . just one party did not agree, the parties themselves described that as a failure to reach agreement" (Bingham, 1986). Crowfoot and Wondolleck (1990), Phillips (1994), McKinney (1990), and Selin and Chavez (1995) also refer to consensus decision-making processes. Crowfoot and Wondolleck (1990) describe these decisions as mutual agreements. Selin and Chavez (1995) go on to suggest that consensus decision-making is an essential part of collaboration. Johnson (1991) contends that win/win decisions must be unanimous and based on consensus, or else someone loses. Echoing this belief, Freeman and Frey (1990/1) criticize the use of majority rule as a decision-making tool and maintain that suppression of minority views is inevitable in majority, or voting processes.

In sum, eleven principles to guide a collaborative negotiation were identified in the literature. The principles concerning who needs to be involved are: inclusiveness, participation by all affected interests, a balanced

representation of the diversity of those affected interests, and voluntary consent to participate. Once involvement issues are resolved, participants need to concern themselves with principles of the collaborative negotiation process. The principles identified for the process of negotiation are: role efficacy, ensuring a meaningful voice for participants; transparency, open sharing of information about and throughout the process; focusing on the interests, instead of positions, of participants; separating the people from the problem through recognition of emotions; mutual learning where participants educate one another about their realities; inventing options for mutual gain by recognizing areas of common ground; establishing objective criteria to judge options by an external standard of fairness; and reaching decisions through consensus.

Process, Science and Natural Resources

Natural resource decision-making is becoming increasingly more contentious for land managers, scientists, politicians and the public. The issues are complex and public disputes are increasingly common (Dukes, 1996; Mills and Clark, 2001). The Committee of Scientists (1999) and FEMAT (1993) have identified a number of changes that have increased the complexity of decision-making. These are: 1) Growing demands on and uses of finite land bases by an increasingly diverse public has intensified conflicts, 2) There is less management discretion and delegation of decisions to, and even trust of, professional natural resource managers – in part because today's issues are about different ends than means of management, 3) We understand more about natural systems, how

they are more complex than we thought, and our definition of what to sustain has become broader and more complex, and 4) Responding to conflict on scientific grounds has put scientists in the middle as parties use tools to advance their cause and science is a weapon.

Mills and Clark (2001) echo some of these same concerns and further state the world of integrating science and collaborative decision-making will mean: working on new types of problems under intense public scrutiny, criticism and attack; cross disciplinary science that often bring conflicting scientific ideologies, theories, and methods together; short time frames; different types of processes and products; and often changing questions and direction as process unfolds.

The process of data and information management in collaborative processes are strikingly different from the normal course of science. Mills and Clark (2001) state that routine research studies are generally driven by questions of importance to research scientists requiring basic and applied research and are often conducted to fill gaps in knowledge, providing policy spin offs. In contrast, collaborative process applications of science are often broad in scale, conditions are not controlled as in research, and collaborative management efforts often spin off new areas for research (Buck et al., 2001). Routine studies are usually completed in a relatively calm atmosphere where there are critics, but they are generally constructive allies in the scientific process who understand the "language of science" (Mills and Clark, 2001). Results of routine studies generally are not circulated or published until they have been subjected to quality

control checks usually accomplished through rigorous peer review, which is the hallmark of the scientific process (Adler et al., 2001). Time delays are of little consequence relative to assurances of the quality of the scientific findings.

Collaborative policy applications, on the other hand, are often rushed with little time to do new formal studies, and scientific work during collaborative processes is often restricted to the synthesis of available information (Noss et al., 1997). Review is often hurried and frequently includes people with non-technical backgrounds, a situation troubling to some scientists (Mills and Clark, 2001). In collaborative decision-making process situations, research scientists must operate outside the box of routine research to be successful. As a social choice process, natural resource decision-making is “dangerous territory” to the scientist and requires “doing business in new and uncomfortable ways” (Mills and Clark, 2001).

Many of the obstacles to integrating scientific information into collaborative processes stem from a deep seeded lack of trust between communities and scientists, and between different types of scientists. Israel et al. (1998) cited a lack of trust and respect as the most frequently mentioned challenge to conducting effective science within collaborations. Community mistrust is fed by a history of research projects from which they saw few direct benefits and about which they were not often even given the results. Nyden (1992) described the historical relationship between researchers and communities as fitful and added that:

In some cases . . . [researchers and communities] . . . have emerged from research projects embracing each other's and complementing each other's contribution . . . in other cases cooperative research enterprises have deteriorated into bitter conflict . . . each party accuses the other side of a failure to keep up its end of the bargain . . . [each claims] . . . the other is insensitive to their needs.

(Nyden, 1992)

Scientists who have collaborated with communities have found that it takes more time than expected because of the need to build trust and to develop satisfactory decision-making mechanisms (Stephan and Scherberger, 2000). Increasing knowledge and increasing participation do not by themselves automatically tell us how to act or how to make good decisions. Participation and science together often produce irreducible discord and confusion. Jasanoff (1996) suggests that trust and community are equally necessary if we are to come to grips with environmental problems of alarming complexity. "Building institutions that foster knowledge and trust, participation and community, is one of the greatest challenges confronting today's human societies" (Jasanoff, 1996).

Collaborative Data and Information Management Process Principles

Six principles to guide effective data and information management in collaborative processes were identified in the literature. The principles concerning who need to be involved in data and information management are:

- ❖ A science – policymaker interface, participants and scientists both need to be involved.
- ❖ Diversity, in the range of knowledge and expertise brought to bear on the problem.

Merging scientists and policymakers understanding of data and information can prove to be difficult and many process principles need to be managed for to ensure that science is utilized effectively. The principles regarding the process of data and information management are:

- ❖ Interwoven, experts and participants collaboratively define and seek the information they need.
- ❖ Objectivity, the credibility of research needs to be separate from negotiations and evaluated by an outside source.
- ❖ Integrated knowledge, all the ways of knowing, not just technical, need to be included for holistic management.
- ❖ Collaborative processes must deal explicitly with the uncertainty that exists in all environmental problems and solutions.

Scientist – Policymaker Interface

A scientist - policymaker interface is a principle regarding who needs to be involved in data and information management in effective collaborative processes. “Sound environmental decision-making is dependent on an effective interface between scientists and policymakers” (Adler et al., 2001). The input received from policymakers, citizens, scientists and all participants in effective

collaborative processes is based on mutuality, that is, scientists need policymakers and policymakers need scientists to perform effective collaboration.

The past century has been characterized as the century of science (Lubchenco, 1998). From the traditional policy perspective, expert scientific roles were of paramount importance. The decisions affecting the environment were thought of as necessarily very technical, requiring substantial investment in scientific training and knowledge. "Ensuring that policy decisions did not suffer from seriously flawed scientific conclusions required that policy decisions be made by scientific experts" (Chechile and Carlisle, 1991). Decisions at all stages of the policymaking process were to be made by the people who know the most about the technical side of the environment. Expert based rational analysis should identify which problems in society are severe enough to warrant government interaction, and analysis should lie out the alternatives that can be implemented. This approach has been widely criticized, largely for its elitism, where relatively few people need to be involved and make the decision (Dukes, 1996; Cortner and Moote, 1999; Chechile and Carlisle, 1991).

Increasingly, communities are insisting on a role in environmental research (Stephan and Scherberle, 2000). For more than two centuries, we in the United States have tirelessly cultivated the notion that government decisions are best when they are open to many voices, no matter how technical the subject matter being considered. A commitment to broad public participation remains a core principle of U.S. environmentalism. Most recently the environmental justice movement has supported the belief that "autocratic government produces ill-

considered decisions, with little chance of public satisfaction, even when decisions are made in the name of expertise” (Jasanoff, 1996).

“Environmental disputes are rarely caused by scientific or technical information per se” (Adler et al., 2001), and the “available scientific data rarely offer a definitive basis by which to justify the choice of one option over another” (Carpenter and Kennedy, 1988). In environmental conflicts, scientific and technical issues are embedded in a political context where value choices are at play. These underlying values are the ultimate arbiters of political decision-making, even when a plethora of scientific information is available, and substituting scientific and technical information cannot finesse value choices (Adler et al., 2001).

With the recognition that we live under a democratic political system in which tough value choices must be made, citizen involvement is inevitable. Citizens are legitimate actors in any policy decisions in which they choose to participate. Proponents of collaborative processes believe that purely rational analytic methods will in any case never give us indisputably best answers, the only legitimate answers are those derived through a process that incorporates the public will (Chechile and Carlisle, 1991; Jasanoff, 1996; Buck et al., 2001). As Charles Lindblom (1980) has stated it:

. . . if we imagine a situation without politics, one wholly dependent on analysis, we must assume that for any given problem, analysts will come to the same conclusion. They could arrive at agreement only if none of them made any mistake of fact or logic, for if they made mistakes they

would diverge in their policy conclusions . . . In short, analytical policy [decision] making is inevitably limited – and must allow room for politics. . . (Lindblom, 1980)

Lindblom's purpose in making this argument is to prescribe ways that expert opinion can be incorporated into policymaking without the expectation that analysis will be determinative. Operating in complex human occupied ecosystems necessarily brings in different and multiple stakeholders with changing values and frames of reference (Buck et al., 2001; Cortner and Moote, 1999).

A characteristic of environmental disputes is the importance of technical information in understanding the nature of a problem and in finding alternatives to a conflict (Carpenter and Kennedy, 1988). Although it is clear that science alone is not the solution, it is equally clear that science – “with an explicit recognition of the complex relationships among science, values, and power” – must be part of the solution (Buck et al., 2001). Adler et al. (2001) states that technical information can more fully inform the value choices that need to be made. Some authors (Mills and Clark, 2001; Lubchenco, 1998) argue that research scientists have an obligation to resolve natural resource issues, and believe that scientific information can aid understanding and resolution of policy issues (Committee of Scientists, 1999). Others contend that research scientists are poorly suited to contribute meaningfully to policy formulation, especially in controversial issues (Collingridge and Reeve, 1986), and bringing scientists in to play fundamental roles in collaborative processes may be “troublesome or uncomfortable to some”

(Noss et al., 1997). Both points are really valid, and the fact is that research scientists are being asked, even demanded, to play an increasingly prominent role in policy development and implementation through engaging in collaborative decision-making (Committee of Scientists, 1999).

Research scientists must be involved carefully because working within the science-policy interface is inherently an exercise in politics and is far different from the conduct of routine research (Mills and Clark, 2001). Nevertheless, when scientists participate in the conservation planning process constructively and objectively they can “add tremendously to the public credibility and legal defensibility of the plan, minimize controversy over the outcome, and can enhance the ability of a plan to meet its conservation objectives” (Noss et al., 1997).

Natural resource decision-making is no longer the exclusive domain of bureaucrats and scientists; citizen involvement and participation has become mainstream. Thus, a science and policymaker interface is a main principle regarding who needs to be involved in data and information management in effective collaborative processes.

Diverse Scientific Input

When policymakers look to science to improve their decisions, the question becomes who, which scientists, need to be involved. A main principle regarding who needs to be involved from the scientific community is diversity (This is not to be confused with stakeholders, who represent different social

interests). Goldstein (2000) defines diverse scientific involvement as “individuals that are drawn from different technical specialties and institutions maximizing the range of experience and work practices brought to bear on technical issues.” Adler et al. (2001) states that effective collaborative processes, “insure that a mixture of types of scientists appropriate to the case are involved,” and that “a mixture of disciplines, experience and perspectives will be useful to the search for resolution.”

As this suggests, the ecological knowledge of academic researchers and environmental activists not only represent a different perceptions of the natural world, but also a different intersection between the natural world and human interests. Academic specialists test the mettle of their knowledge claims in the crucible of peer review, while experts affiliated with non-governmental organizations (NGOs) often adopt a perspective more in tune with the precautionary principle (to err on the side of conservation) in their willingness to require a greater burden of proof to support technical claims (Schrader-Frechette, 1996). In turn, regulatory scientists evaluate claims by criteria that are better attuned to the lack of community and personal trust in the legalistic, adversarial field of regulation, as well as the need to reach conclusions without the luxury of time, controlled experiments, and well defined disciplinary theory (Mills and Clark, 2001). Instead of peer review, regulatory scientists rely on formal standards and statistical measures, and turn to legal standards and political guidance to achieve closure when knowledge is contested. (Jasanoff, 1987; Porter, 1995)

Scientific claims that are tested by a group with this broader range of knowledge and accompanying technical standards are likely to withstand scrutiny by the multitude of communities evaluating collaborative process outcomes. From a conservation perspective, they will probably be better claims, since a good collaborative decision should be “functional in the place based world of local environmentalists, the regulatory world of the agencies, and the scientific world of the disciplinary specialist” (Goldstein, 2000).

Diversity also means including social scientists. While biophysical and life science experts tend to be more obviously related to environmental issues, social scientists will often “bring rigor to the analysis of cultural and social impacts and to some of the more qualitative and subjective aspects of decision-making” (Adler et al., 2001). “Social scientific input has particular value for what may tend to be seen as biophysical science deliberations” (Freudenburg, 2002). Most of the people we call natural resource managers “actually do very little managing of natural resources” instead, what many of them actually try to manage most of the time “are the behaviors of the one species that few resource managers have ever studied, namely *Homo sapiens*” (Freudenburg, 2002). The majority of natural resource management involves restrictions on the behaviors of humans, as in the nature or rate of human harvest. These human management strategies “will be successful or not depending largely on the human and organizational variables, such as how reasonable and enforceable the restrictions prove to be – a subject that cries for greater social science input” (Freudenburg, 2002). As Adler et al. (2001) notes, social scientists are often in a unique position to help clarify the

ways in which biophysical as well as social science expertise is likely to be used within the policy process.

Interwoven

A principle concerning how the scientist – policymaker interface needs to be structured in effective collaborations is “interwoven.” Goldstein (2000) defines interwoven as “scientific experts frequently engage in direct or mediated interaction with stakeholders on a broad range of technical issues, including data acquisition, data interpretation, generation of plan alternatives, and monitoring.” Sound environmental decision-making is dependent upon an “effective interface between scientists and policy makers based on reliable and timely translation of information and views between the two communities” (Adler et al., 2001). The highest ideals of an interwoven science –policy interface include “cooperative inquiry, shared scientific and technical support, and equal access to all critical information” (Adler et al., 2001). The interwoven principle is frequently cited as a collaborative inquiry (Susskind and Cruikshank, 1987; Mills and Clark, 2001; Carpenter and Kennedy, 1988; Adler et al., 2001), and the terms are interchangeable throughout much of this section.

In the abstract, infusing high quality information into an environmental conflict and having it serve as a foundation for decision-making should be a straightforward matter. One asks the right questions, obtains data through rigorous and accepted methods, analyzes and interprets the data in ways that

are logical, and then submits the findings to peer review. Unfortunately, information rarely threads into solutions in such a direct way.

More often, “information gathering is done by warring experts as part of an adversarial and contentious process tinged with suggestions of actual or implied litigation” (Adler et al., 2001). This often leads to the dismal process of advocacy science, in which “disputing parties use experts to undercut each other’s claims” (Susskind and Cruikshank, 1987). As a result, productive lines of communication are often severed, and useful information is obscured (Carpenter and Kennedy, 1988). Instead of being examined and resolved, legitimate scientific and technical differences are exaggerated, as each side attempts to bolster its position by attacking the validity of the information provided by others (Susskind and Cruikshank, 1987). Often, “disagreements on key points remain unresolved and uncertainties that can undermine the future stability of an agreement are left unaddressed” (Adler et al., 2001).

In other cases, vital information is an afterthought to the economics and politics of deal making (Carpenter and Kennedy, 1988). Alternatively, vast amounts of money may be spent on irrelevant or unusable research in information collection (Noss et al., 1997). Both of these situations can be remedied by more thoughtful interaction between scientists and policymakers.

The essence of the science - policymaker interface comes down to building trust. Trust and acceptance that all the “essential components of the system and the interactions of those components are represented in the scientific information” (Argent et al., 1999), and that the scientific information “fairly

represents the way that the systems works, offers the level of detail required by the policymakers, and is the best achievable with present understanding” (Baskerville, 1997).

A paradox exists in that collaborative process participants desire the best available science from the best of the experts, yet at the same time, participants have extreme difficulty trusting the expert’s opinion, especially when there are competing claims as in advocacy science. Trust tends to diminish when parties perceive that the science has been generated from a particular point of view or with a particular outcome in mind (Adler et al., 2001).

The answer to this paradox lies in interwoven collaboration between scientists and policymakers. Policymakers are entitled to have the lid of the black box of science opened for them, and illuminated, if they so choose. In collaborative processes, “parties have a right to understand the science that informs their choices rather than being asked to trust experts” (Adler et al., 2001). Jointly usable information requires trust in information and the methods by which it is produced. “Trust can often be built if the questions asked and the methods employed in information gathering are jointly negotiated” (Adler et al., 2001). Information, technical resources, and the inquiry process should therefore be explicit items of party negotiation (Adler et al., 2001).

Research scientists and policymakers must become comfortable with one another and “co-labor to develop appropriate goals, expectations and rules of engagement” (Mills and Clark, 2001). They must develop a “working approach that accommodates the best technical evidence – no matter which side that

evidence supports" (Susskind and Cruikshank, 1987). When each side brings its own set of facts and figures into the discussion, all sides must agree on a common database before solutions can be developed (Carpenter and Kennedy, 1988).

Since, "neither the scientist nor the policy maker can effectively define the problems in the absence of the other" (Mills and Clark, 2001), collaborative problem framing involving both scientists and policymakers, is necessary to "determine what is to be done, by whom, and for what purpose." The search for a wise solution of differences requires an interwoven science and policy community that undertakes a collaborative quest for knowledge. Together, scientists and participants "must identify what do we know and what don't we know relevant to this conflict" (Susskind and Cruikshank, 1987).

Proponents of interwoven community-scientist research collaborations suggest that this research is more relevant and the results more likely to be used because communities are involved (Stephan and Scherberle, 2000). In addition, supporters cite improvements in research design and data collection methods as a result of community participation (Goldstein, 2000).

Open modeling is an example of an interwoven approach to using scientific information in natural resource collaborations. One way of bridging the scientist-policymaker gap in environmental model construction is to include policy makers and managers (as potential users) with researchers (as model formulators) together in an open, adaptive design approach. Involving users in model construction increases the likelihood that the modeling will deal with

problems relevant to users (Guariso and Werthner, 1989), that the resultant model will fit the institutional context and decision-making processes of the users (Bosch et al., 1996), and that the final model will be adopted and used (Keen, 1980).

An open modeling process includes managers and policy makers in model formulation (Guariso and Werthner, 1989). In doing this, potential users gain ownership of the model, and can also participate in model building through inclusion of their own system observations and insights (Holling, 1978, Grayson et al., 1994). In developing integrated models for environmental management, where there are many management questions and many system components, an open modeling process allows all parties to gain a clear picture of the technical details, assumptions, guesses, and limitations of the resulting model. While this approach may result in a model that is technically less detailed than were the task undertaken by researchers alone, if the objective is to get a wide group of people up to speed to a point where they can make informed decisions, then the loss of detail is balanced by the likelihood of the model actually being used. (Bosch et al., 1996; Keen, 1980) The open modeling process can be used as an adequate descriptor for an interwoven process that involves policy makers, managers, and researchers in an exploration and exposition of the assumptions and limitations of the selected model components.

Tension is both expected and necessary for success. Tension between research scientists and decision-makers is the manifestation of two different perspectives, both of which are needed. The strength of the interaction “comes

from acknowledging and embracing the diverse perspectives that both bring” (Mills and Clark, 2001). Experts and lay people often talk past each other, and an interwoven approach helps to “build bridges between scientists and non scientists by helping each to understand the other’s perspectives, values and ways of knowing” (Adler et al., 2001). In sum, an interwoven scientist – policymaker interface draws experts from diverse specialties and backgrounds, interweaves them into every stage of plan negotiation and maintains them as a consistent presence from the time a collaboration is organized to the moment when the resolution is reached and beyond.

Maintaining Scientific Objectivity

If the science – policymaker interface is not done thoughtfully, “both research scientists and decision-makers, and the work they do, can be placed in jeopardy” (Mills and Clark, 2001). Working within a scientist-policymaker interface presents several challenges to the scientific community, the main concern being safeguarding the objectivity of the scientific community. A principle that needs to be managed in effective collaborative decision-making is maintaining scientific objectivity. There are two components to scientific objectivity. The first deals with the objectivity of the individual scientists involved in an interwoven, collaborative inquiry, with policymakers. Although, it is desirable to involve scientists in an interwoven manner, some separation between the scientists and the process of making decisions is necessary. The second component of objectivity deals with the credibility of the science used by

individual experts within a collaborative process. There is a need to manage for some type of objective review of the science findings and/or conclusions.

Noss et al. (1997) note that the process of including scientists in collaborative decision-making is equally important as the science used. "The independence of individual scientists is essential to successful efforts at integrating science into policy" (Noss et al., 1997). Separating science from the politics and negotiation over other nonscientific factors involved in planning is important to maintain scientific objectivity (Noss et al., 1997). Scientists must remain independent from the final decision to maintain credibility. "When research scientists advocate a particular outcome or position, they place their credibility as an impartial scientist at risk" (Mills and Clark, 2001).

Research and scientific findings and perspectives are only one set of factors for policymakers to consider. Research scientists can certainly help focus the debate, but science cannot, should not, and does not make the decision. "Science informs the decision rather than directing any particular outcome" (Mills and Clark, 2001). Thus, policymakers make the final decisions, and scientists are usually not formal decision-making participants (Carpenter and Kennedy, 1988).

To structurally address this Noss et al., (1997) suggest establishing the scientists or group of experts as a separate entity from the stakeholders negotiating the plan and to draw the line clearly for participants between the science group task of providing expertise and information and the role of negotiators in advocating specific strategies. Technical advisory committee style

involves a broad range of experts interwoven throughout plan preparation (Goldstein, 2000).

Disputes about control and power relationships are inevitable, especially in the formulation of technical advisory groups, and should be dealt with directly. It is important to determine “what activities fall within the domains of science and decision-making because there are different rules for behavior and legitimacy in each” (Mills and Clark, 2001). The “boundaries between science and policy must be clear, but permeable” (interwoven) for successful interaction between policy makers and scientists (Mills and Clark, 2001).

The scientist – policymaker interface accomplishes agreed upon objectives by taking on distinct and separable roles. They act separately together, so that expertise can still be valued outside the context of decision-making. One of the main principles of ecosystem management approaches and collaborative decision-making processes is to seek balance between the tensions of seemingly contradictory interests. Much the same, the process of including scientists and policymakers in collaborative decision-making seeks to balance the tensions between an interwoven, collaborative scientific inquiry, and the need for scientists to remain separate from decision-making to remain objective, or impartial.

Science, when properly balanced between the principles of interwoven and objective, is neutral to differing values and can help facilitate productive discussion among different and competing interests. “Discussion of the science underlying decisions can help create a forum within which otherwise polarized

interests may engage in productive dialogue” (Jasanoff, 1996). Scientific information can help focus discussion on choices and their consequences rather than on dogmatic or polarized positions, and enlighten policymakers about the range of available choices (Jasanoff, 1996).

In some instances the role of the “expert” and the role of “stakeholder” may be synonymous. Stakeholder scientists may rightfully want and need to claim a place at the table; however, in these circumstances the impartiality of their advice may become an issue (Adler et al., 2001). Whether research scientists should advocate a position and/or whether they can do so without compromising their role as an impartial provider of information is hotly debated (Hammond and Adelman, 1976; Weiss, 1991). The issue is not whether research scientists have personal values; it is whether they should espouse a personal opinion as a scientist about what they think is a good and bad resource management solution.

Some believe that research scientists cannot avoid being advocates (Shannon et al., 1996). Others feel that scientists should function as advocates because of their special expertise (Meffe and Viederman, 1995), to fulfill their ethical responsibilities (McCoy, 1992) and to successfully test their hypotheses (Latour, 1987). Others insist that research scientists not advocate policy positions (Lackey, 1999; Mills, 2000). In spite of these divergent perspectives most authors explicitly recognize the importance of the scientist’s credibility and the need to protect it. Thus, objectivity remains the core scientific principle and striking a balance between an interwoven scientist-policymaker interface and the

need for scientists to remain separate from negotiations and decision-making is essential to effective collaborative processes.

To further trust in scientific findings and to help ensure that objective, defensible science is used in collaborative processes, there is a need to manage for some type of outside expert or peer review. Human nature leads us all to form judgments about the relative merits of one position or another (Clark et al., 1998; Meffe and Viederman, 1995; Shannon et al., 1996), and individual scientific objectivity is often easier said than done. Scientists often believe their work to be value free and their methods to be observable and replicable truths. However, “all science is based on assumptions, and these assumptions are affected by culture, perspective, prior experience and other influences” (Adler et al., 2001).

Since science is never really neutral, “detailed, technical data essential to the progress of a negotiation needs to be delivered by the parties to an acceptable, technically qualified third party for review” (Carpenter and Kennedy, 1988). Peer review is a powerful tool for party driven evaluations of contending scientific claims, and is an important quality of scientific research that keeps the process credible and effective. Smallwood et al., (1999) advocate requiring the type of independent review used by academic scientists. They contend that such a review would help ensure that decisions are based on use of the appropriate scientific standards, thereby qualifying the supporting data as scientific and the best available, no matter how limited the data. Jasanoff (1996) supports academic type peer review and states, “intensive peer review is usually possible

within even the tightest time frames and should be a minimum requirement.” If the academic peer review process is slower than pragmatism will tolerate, then independent scientific review can be obtained in different ways (Smallwood et al., 1999). Jasanoff (1996), Mills and Clark (2001) and Smallwood et al. (1999) all agree that “science findings should be published in outlets that are subjected to the same review and approval as any other paper”, and “they should not be subject to approval by policy officials.” An open, peer reviewed, science process assures the independence of scientists and reinforces the objectivity of scientific input into collaborative processes.

Integrated and Holistic Knowledge

A principle of effective collaborative data and information management is to integrate all the different ways of knowing, and to provide a holistic, or systems, orientation to decision-making. “The breadth, depth, and diversity of the scientific specialties involved in successful environmental decision-making make interdisciplinary and multidisciplinary approaches essential” (Chechile and Carlisle, 1991). The use of integrated knowledge is also specified in the National Environmental Policy Act (NEPA) of 1975 which states that “all agencies of the federal government shall utilize a systematic, interdisciplinary approach which will ensure the integrated use of natural and social sciences and the environmental design acts in planning and in decision-making which may have an impact on man’s environment.”

Actions follow on decisions, and a decision is a choice among forecasts. It is rare that a manager making a decision chooses to implement a forecast for a bad future. Thus in a failed decision, it is common that the decision-maker chose a best forecast that was not functionally coherent; implementing the action of that forecast, therefore, could not create the putative future (Raiffa, 1968).

A forecast that does not include all the relevant variables will not be functionally coherent, and it is common that failure of such a decision results in damage to the system without benefit of learning by the manager (Baskerville, 1997). A common theme in recent natural resource issues has been the difficulty of including the relevant variables of economics and ecology together to result in a functionally coherent decision. "As a society we seem to converge on pathological gridlock with respect to linking economics and ecology in decision-making" (Baskerville, 1997). Ecological evaluation too frequently assumes that there are no costs to be borne in an ecological action. On the other hand the purely economic approach to decision-making assumes ecology away by merely maximizing net present value as measured in dollars, subject, when necessary to constraint for environmental protection. Likewise, "what is economically rational may be politically irrational" (Miller, 1993). Thus, these different knowledge bases must be integrated to produce functionally coherent decisions.

While most decisions require a wide range of knowledge, the complexities of environmental problems are especially noteworthy for the extraordinary range of inputs required to produce an informed decision. Environmental problems involve "physical, chemical, biological, technological, economic, psychological,

ethical, legal, and political factors” (Chechile and Carlisle, 1991). Several authors (Chechile and Carlisle, 1991; Jasanoff, 1996; Miller, 1993; Adler et al., 2001) note that participants bring different kinds of knowledge to the table including: traditional, cultural, local, and remembered knowledge, all of which have a place at the table in environmental conflict resolution. Omission of any of these factors is “likely to oversimplify the problem and the render the decision process incomplete and unrealistic” (Chechile and Carlisle, 1991). Without integration of all the necessary environmental knowledge in a collaborative process, a forecast (decision option) is not functionally coherent, and there is no basis for testing the forecast of the decision with respect to dynamics of the system.

Boothroyd (1978) defined management as articulate intervention, with the crucial element being reflection before action. The reflection is on how the subject system is structured, how it functions, and how it is likely to respond to intervention. Although written from different perspectives, Boothroyd’s reflection before action is similar to the role of forecasts in informing a decision (Raiffa, 1968) and to the idea of adaptive management as advanced by Holling (1978).

When one reflects on how the environmental system is structured, and how it functions, complex interdependencies are revealed. In the past, many environmental policies have been ineffective and/or inefficient because they failed to account for connections between the many natural and human elements of ecosystems (Cortner and Moote, 1999). For example, the ESA in its original form prohibited cost considerations in species recovery efforts; a blatant

separation between people and nature that proved limiting to the goals of species recovery. Traditional, primarily analytical approaches have “resulted in unnecessarily narrow problem conception and the adoption of a limited range of solutions” (Miller, 1993). This criticism stems from the tendency of analytical science to value reductionism- seeking to understand the system by looking only at the units and their reactions with one another. Environmental disputes often deal with systems where the whole is different than the sum of the parts, and the “study of isolated parts tells you little about how they might be reintegrated into some meaningful whole” (Miller, 1993). “Reductionism is prone to inducing error, where problems cannot be logically traced to faults in any particular element or the relationships between elements” (Adler et al., 2001).

By itself, analytical scientific and technical knowledge is neither a be-all nor end all in environmental conflicts. Decision-making based only on analytical science has failed in the past because it is functionally incoherent, does not take all the ways of knowing into account, and because it does not take into account what we now know about how environmental systems are structured and how they function. “We have been ignorant of the complex interdependencies that occur in nature, and only slowly have come to identify and appreciate these dependencies” (Chechile and Carlisle, 1991).

To overcome such failures, collaborative processes need to “take a holistic approach to protecting the environment that considers both human and natural needs” (Cortner and Moote, 1999). The collaborative approach recognizes that the decision-makers must act as “economic”, “political”, and

“ecological” woman (Miller, 1993). Environmental decisions require a multidisciplinary understanding (Chechile and Carlisle, 1991), and “decision frameworks that ignore this essential point are of limited value” (Miller, 1993). Biophysical and socioeconomic domains have more in common than conventional disciplinary boundaries suggest, and collaborative processes seek to connect these realms for the sake of biodiversity conservation and for meeting human needs (Buck et al., 2001).

Holistic science has been characterized as “systems thinking” (Cortner and Moote, 1999), and as the “search for a broader integrated picture of problems and solutions” (Jasanoff, 1996). The most crucial feature of all the definitions of holistic science seems to be a willingness to suspend the constraints of analytical thought and to place more emphasis on intuition, professional judgment, and imagination (Cortner and Moote, 1999; Jasanoff, 1996; Miller, 1993). As Miller (1993) states, “holistic thinking breaks problems open, exposing conventional wisdom to imaginative shocks.”

Some of the confusion and complexity of environmental conflict is directly attributable to the way “information is organized, interpreted, communicated, and differentially judged to be useful” (Adler et al., 2001). Government agencies, community groups, environmental advocates, academics, and businesses each approach the gathering and explication of data in their own way and with their own needs in mind. Moreover, different disciplines and professions implicitly value or devalue scientific information according to their training and the rules of their professional culture (Adler et al., 2001). The traditional means of grappling

with this complexity tends to rely on adversarial legal and scientific truth seeking. Collaborative processes deal with this confusion by integrating all the information together, and producing a unified understanding of the system as a whole.

Collaborative approaches offer excellent forums for managing the tensions, crosscurrents, and data clashes in environmental conflicts. Organized properly, these processes can provide a powerful complement to the formal structures of governance and a promising set of tools for decision-makers. Adler et al. (2001)

Collaborating to produce integrated knowledge bases that paint a broadly conceptualized, holistic picture, however, is not for the feint of heart. "Conflicts over information, data, ideas, and knowledge are an inevitable and integral part of most collaborative processes" (Adler et al., 2001). The basic guideline is to concentrate on the basic differences of interpretation, rather than on disputed facts or precedents, which conceal or distract attention from conflicting interests (Susskind and Cruikshank, 1987). All information (regardless of whether it is scientific, technical, traditional, cultural, local, or remembered in nature) is subject to questions about validity, accuracy, authenticity, and reliability (Adler et al., 2001). Rather than engaging in a test of will, contending interests must examine the merits of all the arguments and evidence being put forward, including their own (Susskind and Cruikshank, 1987). Every type of knowledge has "standards of quality that can be examined, debated, or shaped", and thus the "issues of what is examined, how it is examined, who examines it, and when it is examined are negotiable" (Adler et al., 2001). Since no academic discipline has a monopoly on environmental decision-making, "the examination and resolution of

scientific information requires an integrated effort from many disciplines” (Chechile and Carlisle, 1991). The integrated holistic science produce in collaboration should be “functional in the place-based world of local environmentalists, the regulatory world of the agencies, and the scientific world of the disciplinary specialist” (Goldstein, 2000).

Holistic information produced through the integration of all types of environmental knowledge, “can be used constructively and help to make the real underlying interests the focus of negotiations” (Jasanoff, 1996). Since trust has been built through integration, and everyone has agreed on the science being used, scientific data and knowledge can form the building blocks necessary to ground consensus-seeking deliberations (Jasanoff, 1996). An integrated system model that will allow comparison of the effects (physical, social, economic) of suggested actions, and various combinations of actions, provides a tool not only for option analysis, but also for redirecting debate from a finger pointing approach to constructive dialogue, thereby facilitating progress toward management consensus (Holling, 1978; Heathcote, 1998).

Deal Explicitly with Uncertainty

However great our information and knowledge base is, no matter how integrated and holistic, our understanding of environmental, social, and economic reality remains incomplete. “We will never know everything we need to know to make perfect decisions, particularly when the decisions concern predictions of the impacts” (Adler et al., 2001). In environmental conflicts, risks and

uncertainties cannot be ignored. Therefore, a principle regarding how data and information is effectively managed is to clarify and make risks and uncertainties explicit.

Traditional natural resource management, scientific management, vaunted environmental stability and resource permanence as management goals.

“Uncertainty, disorder, and unpredictability were anathemas; scientific management had little appreciation of chaos or the dynamic uncertainties of nature” (Buck et al., 2001). This was reflected in the compartmentalized, segmented bureaucratic structure of natural resource agencies. In scientific management, “planning was deemed successful if its prescriptions worked in perpetuity”, and “failures were unwanted feedback more apt to engender denial than adaptive management” (Smallwood et al., 1999).

As governments, nongovernmental organizations, citizens, and others have become more engaged in conservation efforts, the limitations of our knowledge for conservation management have become more evident (Buck et al., 2001). Mechanistic, linear projections fail to predict the future of natural systems. They can underestimate the immense recuperative power of such systems in the same way that they overlook inherent vulnerabilities that can cause quick collapse (Buck et al., 2001). There have been many previous efforts to make the world fit mechanistic understandings of relationships of cause and effect. But such a clockwork (“Newtonian”) world view has been strongly challenged by other branches of (more modern) science that encourage more

holistic understanding and draw on the insights coming from chaos and complexity theories (such as Capra, 1982; Stacey, 1993; Uphoff, 1992).

Within the collaborative process “clarification of uncertainty and risk is essential”, and “leads to better understanding of degree of confidence in scientific conclusions” (Mills and Clark, 2001). There is a need for collaborative processes to clearly identify the assumptions and limitations of scientific models to make better decisions and also to nurture trust through the open examination of uncertainty. A role exists in collaborative processes for integrated models to clarify potential outcomes of alternative management actions, to identify where uncertainties in knowledge and information lie, and to ascertain the degree to which these uncertainties alter outcome prediction. (Guariso and Werthner, 1989; Heathcote, 1998). One such process, dubbed “white box” modeling (Bonnicksen, 1985) involves a clear presentation of all the technical details, assumptions, guesses, and limitations in the models used.

The white box modeling process clearly exposes lack of data and understanding, this was seen as an advantage by some and as a drawback by others (Bonnicksen, 1985). The acknowledgement of lack of detailed understanding of some natural systems can be challenging to researchers, but can be turned into a strength for the process by involving all players in the formulation of the best guess representation of a system component (Mills and Clark, 2001). “It is the responsibility of the scientist to state the likely variability in outcomes; it is the role of the decision-maker to judge the degree of acceptable risk” (Mills and Clark, 2001).

The greater the level of scientific or technical uncertainty about significant outcomes or impacts associated with proposed actions, the more future research is warranted, either as part of the collaborative process or as part of the agreements that are being made (Buck et al., 2001). In turn, the greater the uncertainty, the more “adaptive and heuristic” the resulting agreement should be (Adler et al., 2001).

Most environmental decisions have unintended consequences. “For every action, law, policy, or program adopted to manage a conflict, not matter how well intended, there is a real risk of unintended consequences” (Adler et al., 2001). Since nature remains full of surprises, “we expect that efforts to conserve nature must themselves be based on an understanding of complexity and interrelatedness, with multiple objectives being served” (Buck et al., 2001). The conjunction of needing to proceed in flexible ways, not simply implementing preconceived plans, and in a more participatory manner, enlisting not just the cooperation but also the knowledge of stakeholders, has led to the formulation of the concepts and principles of adaptive management.

Adaptive resource management is an approach to management that acknowledges uncertainty and the need to know (Holling, 1978; Walters, 1997). Adaptive resource management is not an excuse to follow a trial and error or wait and see approach, it is a rigorous, structured process designed to incorporate learning about the managed resources through management actions that enable hypothesis testing (Smallwood et al., 1999). Adler et al. (2001) defined adaptive collaborative approaches as an “agreement that seeks to incorporate

mechanisms that build in future information with resolutions protean enough to be altered in the face of compelling new evidence.”

In real world contexts of resource management, decisions will be made. Those decisions will respond to legal and other pressures imposed on managers – not on the amount of information available – meaning that decisions will virtually always be made on the basis of less than perfect knowledge (Freudenburg, 2002). While knowledge needs to be continuously validated, we should not conclude that our knowledge is always or necessarily inadequate; it is possible to have useful and valid knowledge, and scientific efforts to develop universalizable principles are still important. However, we should be appropriately modest about our knowledge and recognize its limits, remaining good observers and not being blinded by preconceptions. “If we can appreciate that our knowledge is imperfect and incomplete, not just because of our own intellectual limitations but because the world is changing, we are better prepared for acting realistically and effectively toward the world as it is, not as we have preconceived it” (Buck et al., 2001).

A complex and changing world of diverse interests and stakeholders leaves little room for simple answers and prescriptions. In nature great sensitivity and tremendous resilience coexist, which makes its nurture and preservation more difficult and less certain than when systems are simpler and more predictable. Holling (1995) suggests that when faced with a fundamental loss of certitude and an action seems more prone to costs than benefits, it is tempting to retreat to unsupported ideology, rigid beliefs, or to tightly circumscribed action.

The alternative, he suggests, is to seek new understanding, often through reflective action.

Adaptive collaborative management is a strategy that proceeds in a learning process mode rather than according to a universal a priori blueprint, considers errors, mistakes, and failures not in normative terms but as normal occurrences resulting from policy experiments, and utilizes a variety of methods to generate knowledge that keeps pace with ecosystem change resulting naturally or from expanding human activity (Smallwood et al., 1999). Adaptive management implies that we live in open systems, not closed ones, that knowledge needs to be continuously validated and revalidated, and the world continues to contain many surprises (Buck et al., 2001). An appreciation of open systems makes cause and effect relations more complex, so that steering and guiding are more appropriate words to describe the process of management than are controlling and regulating (Korten, 1980). "Collaborative planning is a meaningful process if it is indicative and purposive, and based on a learning process," (Korten, 1980) rather than an attempt to determine the future unilaterally.

Adaptive management keys into the basic wisdom of evolutionary biology: there are no evolutionary mistakes, only experiments. Certainly ecosystem management will be served, as Lee (1993) states, by viewing failure as the opportunity to begin again with better knowledge. The implication here is that a strategy to effectively resolve uncertainty and the conflicts over different interpretations of future impacts is adaptive management.

In sum, six principles regarding data and information management were identified in the literature. The main principles concerning who need to be involved in data and information management are: a science – policymaker interface, participants and scientists both need to be involved; and diversity, in the range of knowledge and expertise brought to bear on the problem. Merging scientists and policymakers understanding of data and information can prove to be difficult and many process principles need to be managed for to ensure that science is utilized effectively. The main process principles regarding the process of data and information management are: interwoven, experts and participants collaboratively define and seek the information they need; objectivity, the credibility of research needs to be separate from negotiations and evaluated by an outside source; integrated knowledge, all the ways of knowing, not just technical, need to be included for holistic management; and finally collaborative processes must deal explicitly with the uncertainty that exists in all environmental problems and solutions.

CHAPTER FOUR

HABITAT CONSERVATION PLANS

Reviewing the Data Source

The NCEDR case summaries were the data source examined in this research, and these summaries were developed from interviews with participants in thirty-one (31) HCP cases. For this research, the NCEDR cases were examined and compared with the principles identified in the literature. The primary goal of the examination of the NCEDR cases was to understand how actual cases experienced principles found in the literature.

To further aid the examination of the 31 NCEDR cases, they were divided into categories based on involvement. One of the first issues to face any conservation planning process is to determine what interests will be represented in decision-making. Based on the examination of the literature, who was involved was a key issue in collaboration that affects how participants interact with each other. Since involvement was the key collaborative process issue, it was the variable used to group cases for a more meaningful analysis. The following three categories of involvement are used to categorize the NCEDR cases: 1) required involvement, which consists of the applicant, possibly the applicant's consultant/lawyer, and the Services; 2) expanded involvement, which consists of the applicant, the Services, and some other selected interests; and 3) representative involvement, which implies the intent was to have representation of all major interests.

Ten (10) of the thirty-one (31) NCEDR cases intended to involve all of the major interests, and these ten public permittee cases comprised the representative involvement block of the cases. The cases included: Wisconsin Karner Blue Butterfly; Louisiana Black Bear; North Carolina Sandhills; Maine Atlantic Salmon; Georgia Statewide; Clark County; San Diego Multi- Species; Balcones Canyonlands; Pleasant Valley; and Tulare County.

Eleven (11) of the thirty-one (31) NCEDR cases represented the required involvement of an applicant and the Services plus some other selected interests. These 11 cases comprised the expanded involvement category. Five of these cases had a public permittee including: Texas, Spring Mountains, Volusia County, Massachusetts, and Riverside County. Six of these cases had a private permittee including: Florida, Arcata, Port Blakely, Plum Creek, Quail Hollow, and El Coronado.

Ten (10) of the thirty-one (31) NCEDR cases comprised the required involvement category, which consists of the applicant, possibly the applicant's consultant/lawyer, and the Services. In the three of these cases the permittee was a public entity, including: Jackson, Washington, and Swan Valley. In the other seven cases in this section a private entity was the permittee, including: Lantana, Ribar, Weyerhaeuser, Peregrine, Pender County, Red Oak, and Wilmon.

These categories of involvement and the corresponding cases are listed in Table Four.

Table Four. NCEDR Cases by Involvement Category and Public or Private Permittee.

INVOLVEMENT CATEGORY	PUBLIC PERMITTEE	PRIVATE PERMITTEE
REQUIRED (Applicant/consultant and Service)	*Jackson State Forest *Washington DNR *Swan Valley CCA	*Lantana Development *Ribar *Weyerhaeuser Willamette Valley *Peregrine Fund Aplomado Falcon *Pender County NC *Red Oak Timber *Wilmon Timberlands
EXPANDED (required plus some other selected interests)	*Texas Red Cockaded Woodpecker SH *Spring Mountains *Volusia County FL *Massachusetts Fish & Wildlife *Riverside County Stephens Kangaroo Rat	*Florida Bald Eagle *Arcata Redwood Marbled Murrelet *Port Blakely Tree Farm *Plum Creek Timberlands *Quail Hollow Quarry *El Coronado Ranch
REPRESENTATIVE (intent to have representation of all major interests)	*Wisconsin Karner Blue Butterfly *Georgia Statewide *Louisiana Black Bear *North Carolina Sandhills *Maine Atlantic Salmon *Clark County NV *Pleasant Valley CA *San Diego Multi Species *Tulare County CA *Balcones Canyonlands	

The following discussion examines the NCEDR cases, organized by level of involvement, regarding the principles identified in the literature. For each principle, NCEDR cases with representative involvement are discussed first, followed by cases with expanded involvement, and finally cases with required involvement are discussed. Principles regarding negotiation included: inclusiveness, diversity, voluntary, accessibility, transparency, mutual learning, focus on interests, separate the people from the problem, invent options for mutual gain, objective criteria, and consensus. Principles regarding data and information management included: scientist policymaker interface, interwoven, diversity, objectivity, integrated and holistic knowledge, and deal explicitly with uncertainty.

Collaborative Negotiation Process Principles

Inclusive

Inclusiveness, of all diverse affected interests, was a main principle regarding who needs to be involved in collaborative processes. Gray et al. (2001) defined inclusiveness as engaging all interested or affected groups in the process. Several researchers recognized a linkage between public participation and democracy building and presented an ideal where “citizens share in governing” (Fiorino, 2000).

Representative Involvement Cases

All ten cases in the representative participation category exhibited the principle of inclusiveness. Interviewees indicated a concern to have representative involvement. In these plans it was common for interviewees to indicate that they intended to include representatives from all interests.

Participants most often defined inclusiveness as representation from all affected or interested parties, reflecting the literature definition of inclusiveness. In these plans, “anybody interested could participate as much as they wanted to,” and “this level of involvement was chosen because the group wanted inclusion.” A good example of the extent of representation in these plans was in the Wisconsin case where one forest product interest involved did not own land in the affected region, but the company depended on wood fiber acquired from areas within the conservation zones. In two cases (Tulare County and Wisconsin) representation was specifically defined, in part, as those parties for whom a conservation plan would have economic impacts. This can be considered as an affected interest as defined in the literature.

According to the literature inclusiveness extends to consider powerful interests and indicates that participants with the authority to make and implement decisions should be involved in collaborative processes. Three cases (San Diego, Pleasant Valley, and Balcones Canyonlands) experienced the power issue as described in the literature. In San Diego participants expressed regret that the Environmental Protection Agency and the Army Corps of Engineer were

not involved since their presence may have allowed the process to incorporate Section 404 of the Clean Water Act that affects developments impacting wetlands. In the Balcones Canyonlands case attempts were made to include those with sufficient power over the plan. Governmental support in the Balcones Canyonlands case came from the mayor, a county judge, and the local Representative to the U.S. Congress. However, even with the involvement of an elected official, a major obstacle, according to some participants in the Balcones Canyonlands plan, was the Texas state legislature since it is a powerful decision-making body and had a great deal of influence over the process. The Pleasant Valley case (failed) was affected by an election and turnover in the County Board of Supervisors. The Board had initially supported the plan, but after the election Board members were less supportive of the process. The County Board decided to discontinue collecting impact fees, which was the main source of funding for the plan. Clearly, the involvement of those with the necessary power to implement decisions was necessary for an effective collaboration.

Three cases (Clark County, Balcones Canyonlands, and Pleasant Valley) experienced a power issue that was not specifically mentioned in the literature. The main issue of concern in these cases was a representation issue, that is, a concern that representatives of organizations should have the power to make and accept decisions. In Clark County one interviewee stressed the significance of having total support from the management level as being effective. It was important for this participant to feel that he and others were representing "management's position" and that the various representatives involved had

“clout in that way.” In two cases (Balcones Canyonlands and Pleasant Valley) interviewees felt that several members of the decision group were not empowered to make decisions for their respective organizations and that the need to confer with superiors increased the amount of time required to reach consensus. While not specifically addressed in this research’s literature review, as Phillips (1994) states, “having the right people present is key to collaborative success.” The right people in these cases were to have representatives with sufficient power within their organizations involved in the process.

The “right people” referred to in the literature may also be defined as those who have the ability, or character, to collaborate. Throughout the representative involvement cases, participation was sometimes limited to interests or groups who were perceived as cooperative or willing to reach an agreement. In four of the ten representative involvement cases (Maine, Georgia, North Carolina, and Balcones Canyonlands) participants mentioned that hostile or non-collaborative groups were actively avoided. Hostile groups were avoided because participants felt these groups would primarily be obstructionists and not willing to work toward compromise solutions. The Maine plan later faced litigation from two environmental groups that were not involved in the process because they were perceived as hostile.

Prior research indicated that no matter how carefully a process is designed it is not uncommon after a process has been convened for the group to realize it is missing appropriate representation. Participants in eight of the ten plans in the representative involvement category (Wisconsin, Louisiana, North

Carolina, Maine, Clark County, San Diego, Balcones Canyonlands, and Tulare County) indicated that some interests felt left out or underrepresented. The interests most often identified as underrepresented were environmental (Wisconsin, Maine, Clark County, San Diego, Balcones Canyonlands), and private property/multiple users (Louisiana, North Carolina, Clark County, San Diego, Balcones Canyonlands, Tulare County). Researchers predicted democracy building through increased access to government thereby reducing alienation, and expected public participation to empower the public. However in the cases, private landowner interests were one of the groups who felt the most excluded or underrepresented. To the extent this was correct, citizens may not be sharing in governance as much as the researchers suggests an inclusive process should facilitate.

Even though all of these cases were inclusive in involvement, participants were still concerned about outside groups trying to affect the outcome of the process. Participants were "worried" that interests that felt underrepresented may still be "lying in the weeds" ready to oppose the final plan. In three cases (Maine, Balcones Canyonlands, Clark County), underrepresented interests did try to oppose the plan through other means. The Maine case faced (later unsuccessful) litigation from two environmental groups that were not involved in the process because they were perceived, by process conveners, as hostile to negotiations. Private landowners affected by the Balcones Canyonlands plan took their concerns to the Texas legislature and instigated an unsuccessful attack on the plan. In Clark County a multiple use interest (livestock/ranching) felt their

concerns would not be adequately addressed through negotiations and removed themselves from the process early on. These interests chose (unsuccessfully) to pursue litigation against the federal government, regarding restrictions on their public grazing allotments.

In any public process someone is likely to feel left out or underrepresented, but as one participant stated it is “no more than usual.” A quote from the Clark County case seems to sum up the feelings of participants regarding the level of involvement and dealing with underrepresented interests. While inclusive involvement was not a panacea, this level of involvement “minimized the likelihood of sabotage, while maximizing the likelihood of success.”

According to the literature representation must somehow be determined for unorganized interests, or for stakeholders that cannot (will not) be present. The Balcones Canyonlands case experienced frustration with attempts to somehow represent the large, unorganized private landowner interest and a participant suggested that in future efforts, an advocate should be hired to represent this group. Participants in the Clark County case hired an attorney to represent private landowner interests that felt underrepresented and eventually dropped out of the process.

Further points from the literature described an effective process as one with constant evaluation of involvement. This facet of involvement was exemplified in the North Carolina case where the Environmental Defense Fund (EDF) started attending open monthly meetings meant for outside comment.

Through evaluation of the impact of their involvement, EDF eventually became a full decision-making member.

Participants in all ten of the representative involvement cases specifically offered positive comments about and identified a number of benefits of inclusive participation. However, participants also recognized that there were challenges associated with this level of involvement. Interviewees agree that inclusiveness was a strength as well as a weakness of the process.

The most frequently noted benefits of broad participation were that it produced “a better product,” contributed to “buy-in” to the plan among participants and non-participants, and fostered a “sense of ownership” among the participants. Some participants added that having diverse interests at the table could build a base of support for the plan and decrease conflict among stakeholders (Maine, Georgia, Wisconsin, Clark County). One participant noted that having an inclusive process added credibility and increased the efficiency of the process by spreading the burden of the required effort. The most common reasons cited for selecting an inclusive process was so “all concerns could be laid out and addressed”, and to achieve a “truly democratic process.”

Information from the literature supports these benefits, as Weisbord (1992) suggests, the solution lies in “scanning the whole system”, and by having the whole system involved, the potential for cooperation increases. Democratic theory as identified by researchers also supports processes open to full participation as effective collaborations.

The negative aspects of broad participation, as participants in representative involvement cases described them, related to the effect that a larger group of people has on the efficiency of the process. Participants described the San Diego process as “unwieldy”, and the Louisiana process was described as “cumbersome.” Time and regular participation were specifically mentioned as a negative aspect of inclusive involvement in six of the ten cases in this section (Wisconsin, Maine, Georgia, North Carolina, Balcones Canyonlands, and Clark County). Several participants felt that a drawback to inclusive involvement was the fact that a large number of participants increased the time and frustration of developing the plan. As one participant stated, “there were too many people going off on tangents,” which resulted in delays, and even standstills, in plan development. While Bingham (1986) found no evidence that a large numbers of parties makes it more difficult to reach agreement, these cases indicate that inclusive involvement lengthened the time and compromised the efficiency, making it more difficult to get to the point of agreement.

Overwhelmingly participants in representative (inclusive) involvement cases felt that the negative aspects of inclusion were far outweighed by participants’ perceptions of the development of a plan that was “good for everyone and the species.” Despite the complexity of inclusive involvement, interviewees felt the cumbersome process of involving so many voices was precisely what made the process work. Most participants felt that inclusive involvement was necessary to support the plan, and the process of involving the “full spectrum of interests” was “arduous but fair.” According to the literature

there is logistical advantage in limiting the number of voices, but this advantage is far outweighed by the problems that arise if someone decides they have been unfairly excluded.

The problems that arose in the cases when a group felt left out or underrepresented were experienced in three cases (Maine, Clark County, Balcones Canyonlands) in the form of lawsuits mentioned earlier. All three of the lawsuits were unsuccessful. While we cannot know, it may be possible that even though these groups felt excluded and sued, the inclusive nature of the cases was broad enough to solicit support strong enough to render the lawsuits unsuccessful.

Expanded Involvement Cases

The eleven expanded involvement cases exhibited the principle of inclusiveness. These cases were inclusive in that they sought input from interested or affected parties in plan development. However, these cases were not as inclusive as the representative involvement cases. The expanded involvement cases level of involvement was summed up well by one participant who stated, “[the plan] did fairly well in having proposed measures exposed to a sufficient range of affected and interested parties.” In the expanded cases involvement was viewed as “a bit of a balancing act.” Participants in expanded involvement cases indicated the process of developing a plan required striking a balance between required and representative levels of involvement. This balance included finding an organizational structure for involvement that allowed

participants to capture the perceived advantages of smaller group decision-making combined with the benefits of getting input from a wide range of interests.

Participants in expanded involvement cases described “optimizing” participation, or reaching a “critical mass” of people. This “critical mass” group included necessary participants but remained small enough to be manageable. The group of necessary people was variously defined as including all interests (even potentially conflicting interests), the people who will be affected, and the sufficient range of knowledgeable people with necessary expertise. Those who discussed this optimal balance all asserted that it should include more than required participation (more than the applicant and services). The goal of this optimally sized participation was to limit the number of participants to a manageable size without sacrificing access to knowledge and expertise and without excluding interests. A related concept suggested by a smaller set of participants was scaling the participation to the “nature” of the plan. Those who espoused this idea offer the “size of the area affected” and the “complexity” of the plan as appropriate considerations when deciding upon the scope of participation in the plan. Participants in the expanded cases were “torn between getting the job done and the democratic process.”

According to the literature inclusiveness extends to consider powerful interests and indicates that participants with the authority to make and implement decisions should be involved in collaborative processes. All eleven of the expanded involvement cases recognized that powerful interests must participate for the process to work. The main difference between representative

involvement and expanded involvement cases revolved around this power issue. In the representative involvement cases, those with the necessary power were seen as crucial to plan development along with many other interests that may not have been powerful. In the expanded involvement cases, powerful interests were not only an extended consideration of involvement; they were the definition of inclusiveness. In the expanded involvement cases, participation was focused on and mainly limited to those with power over decisions. In these cases the level of involvement was often chosen to reflect who was needed to complete the plan, as most participants realized they could not meet their goals alone. The bulk of participants in these cases were state and federal agencies and relevant landowners. In the expanded cases participants are often referred to as the “relevant land use regulators”, or those with “legal standing for managing conservation.” For example, Native American involvement was often sought in these cases because the Services have a legal responsibility to represent Native Americans.

The somewhat more limited participation in expanded involvement cases to those legally responsible led to some parties feeling underrepresented. Several participants noted, “preservationists wanted to be at the table.” Environmental groups in seven of the eleven expanded involvement cases felt underrepresented (Texas, Massachusetts, Riverside, Volusia, Arcata, Port Blakely, and Plum Creek). However, most participants in these cases felt the Services represented environmental interests. Landowners and the general public felt underrepresented in three cases (Texas, Volusia, and Riverside).

Native American interests felt underrepresented in two cases (Port Blakely, and Plum Creek). State agencies felt underrepresented in two cases (Plum Creek and Florida). In the Riverside case several parties spanning the gamut of interests felt underrepresented. Prior research indicated that problems could arise if someone decides they have been unfairly excluded. These problems were experienced in one case (Riverside) where several parties that felt underrepresented sued the decision makers at different points in the process.

The “right people” referred to in the literature may be defined as those who have the ability, or character, to collaborate. One case (Riverside) experienced this issue. Some participants felt the process did not work well because the people involved were not collaborative or consensus oriented; they were more “entrenched” type of people.

Participants in every expanded involvement case specifically offered positive comments about and identified a number of benefits of expanded participation. However, participants also recognized that there were challenges associated with this level of involvement. Interviewees agreed that inclusive (expanded) involvement was a strength as well as a weakness of the process. The most frequently noted benefits of expanded participation were that it produced “a better product,” contributed to “buy-in” to the plan among participants and non-participants, fostered a “sense of ownership” among the participants, and helped to spread the burden of plan development.

The negative aspects of expanded involvement relate to the effect that a larger group of people has on the efficiency of the process. Time specifically

mentioned as negative factor in all eleven expanded cases. Participants in these cases unanimously felt that a larger group would slow down the process and chose expanded involvement to improve efficiency and manageability. However, the main dissatisfaction with the process as cited by participants was still the amount of time required to negotiate an HCP contract.

Overwhelmingly, participants felt the positives of expanded involvement outweighed the negatives. While most participants felt the diverse interests represented added to the duration of the planning process, they also felt that the input from those groups was necessary for “building a better product”, and that as much as possible “those affected by [the plan] should be involved in the plan.” Despite time considerations, input from stakeholders provided “invaluable insights into the impacts of the permit on the public”, and everyone felt “more comfortable” with the final product. Most participants in these plans felt that it was “better to get them [stakeholders] involved earlier in the process.”

Participant perceptions of expanded and representative involvement were basically the same. Overall the perceived benefits of inclusiveness such as, “building a better product,” outweighed negative perceptions of the time it took to incorporate all the diverse and affected parties.

Required Involvement Cases

The ten required involvement cases did not exhibit the principle of inclusiveness as seen in the broad representation in representative and expanded involvement cases. However, the participants in required involvement

cases viewed their processes as inclusive to the extent that was necessary.

Several participants stated, “we involved whom we thought was needed.”

Participants in these cases often defined necessary involvement as “all those who had a vested interest in the forest.” These participants defined this “vested interest” as only those parties who would be signing an HCP contract, thus only the applicant and the Services are involved.

Similar to the expanded involvement cases, participants in required involvement cases suggested scaling the participation to the “nature” of the plan. Those who espoused this idea offered the “size of the area affected” and the “complexity” of the plan as appropriate considerations when deciding upon the level of participation in the plan. Also, similar to the expanded cases, the level of involvement was chosen so as to “expedite” the process and conclude negotiation in the “most cost effective and timely way.” One participant stated, “we were charged with building a product” and there was concern that increased involvement would “delay or derail the process.”

Several participants indicated that the permittee in any HCP process may limit involvement as it sees fit, and that the services cannot mandate participation. Five of the seven private permittee required involvement cases (Ribar, Pender, Red Oak, Wilmon, Lantana) believed a “small process” was necessary for a “small parcel of land for a single private landowner.” In general these private permittees “felt this was a private matter that did not concern the public,” and “any larger of a process would have been totally unmanageable and unaffordable to landowners.”

Similar to the expanded cases, participants in required involvement cases were those with the power necessary to implement the agreement. For example, in the Washington case, the state agency was a trust manager and as such they felt they could not relinquish decision-making authority to outside groups. This trust had responsibilities to Native Americans and they were consulted throughout the Washington case. An interesting example of the use of political power was experienced in the Pender County case. The applicant in this case realized penalties would occur because he had endangered species on his land, and he felt he had no choice but to clear-cut the property, and encouraged his neighbors to clear-cut their property. These moves were made to attract political attention to the plight of landowners under the ESA and this case was the “original germ” for the safe harbor policy. The political climate created by the permittee was cited as an obstacle to negotiations by the Services, and the permittee indicated he did this “so that the FWS would want to get rid of him.”

Participants in four of the ten required involvement cases (Jackson, Washington, Weyerhaeuser, Swan Valley) indicated some parties felt left out or underrepresented. Since two of these cases (Jackson, Swan Valley) addressed conservation on public lands, outside interests “felt they should have a say.” Interviewees from these cases indicated that the Services represented the public interest. In three cases (Jackson, Washington, Weyerhaeuser) some interviewees expressed that the “more extreme” environmental groups felt left out, and “wanted a seat at the table.”

An effective collaborative process, according to the literature, provides an opportunity for constant evaluation of involvement since it is not uncommon after a process has been convened for the group to realize that it is missing appropriate representation. This issue was experienced in one case (Peregrine) where a state agency was not initially involved. Participants in this case felt the lack of involvement of the state agency was an oversight, so the process participants brought them up to speed and the state agency was included as a full participant after that.

Researchers described involving the “right people” and this concept can be extended to those with the ability, or character, to collaborate. The three public permittee required involvement cases (Jackson, Washington, Swan Valley) actively avoided groups perceived as hostile to the collaborative process. In the Jackson case, environmental groups questioned the objectives of the state forest and participants were concerned that their participation would carry an agenda that was inconsistent with the objectives of an HCP. In the Washington case, as a matter of precaution against legal action, the state agency did not include outside interests in actual negotiations and the public was intentionally excluded. In the Swan Valley case the participants that were involved felt they had a commitment to the process, and so they were the “correct players.” The public and environmental groups were intentionally excluded, because the process conveners did not want to open the process to parties with no interest in building consensus or supporting the process. The Swan Valley case faced later litigation.

In all three levels of involvement experienced in the cases, groups that were perceived as hostile to collaboration were actively avoided. While it is appropriate to involve the “right people” that have the ability to reach an agreement, researchers suggested that participants and potential participants needed to discover if they are the “right people” for themselves. Whether or not a particular participant should be involved in collaboration was an issue included in points made under the principle of transparency. A component of transparency was that participants understand the collaborative process and its alternatives, and that each participant works out her best alternative to a negotiated agreement. Through this process participants decide whether collaboration can work for them and if they want to negotiate in good faith with others. This process as discussed in the principle of transparency in the literature review, helps decide who the “right people” are, rather than assuming who the “right people” are before convening a process.

Participants in required involvement cases identified a number of benefits of such an approach. The “flip side” of concerns about representative participation was that limiting participation appealed to a number of interviewees. That is, many applicants in these cases would not have undertaken an HCP if an expanded, or representative level of involvement, was required. These applicants felt more comfortable with a required level of involvement. Participants advocated that required participation facilitates a more efficient process. Participants attributed the efficiency and manageability of required participation processes to the small number of people with whom they must deal,

to the absence of middlemen, and to a “shared language.” Participants in required involvement processes also commented that limiting the participants allowed those involved to quickly become familiar with each other’s objectives and modes of interaction which in turn promoted honest, frank discussion and increased the applicant’s comfort level. If participation is to be expanded for cases with private permittees, private landowners will have to see it as “relevant” or “required.”

Participants identified a few negative aspects of required involvement, some of which they were experiencing and some of which they believed could occur. There was wide recognition that when groups or interests were not involved in a process they can “distrust” it and be “unhappy” with its product (the plan). In three cases (Jackson, Washington, Weyerhaeuser) participants expressed fears that limiting the role of the public left the plan open to future criticism. “Even though more involvement would have been cumbersome, it would have resulted in more public support.” Another interviewee felt that if the public does not feel involved in a process, they will be “automatically critical” and it is important to at least keep them informed. In one case (Swan Valley) general threats of litigation and legal constraints appeared to have greatly shaped decision-making. The Swan Valley case faced later litigation. Another shortcoming of required involvement stated by participants was that the process failed to access and take advantage of expertise and information held by potential participants, e.g., states, tribes, and local citizens.

Similar to the expanded cases, limited involvement was chosen to expedite the process. However, in both the expanded and required involvement cases the length of permit approval time was cited as a negative in the process. Nine of the ten required involvement cases (Ribar, Pender, Red Oak, Wilmon, Lantana, Jackson, Washington, Swan valley, Weyerhaeuser) indicated that time was an obstacle, and the process took too long. Most of the participants in the required involvement cases felt the bureaucracy within the Services was the main factor in lengthening permit approval time.

Voluntary

The literature review identified voluntary participation as a principle to effective collaboration. HCPs are a voluntary mechanism, and all of the cases were entered into voluntarily. However, in three cases (Volusia, Quail Hollow, Pender County) litigation directed the HCP, and the process was somewhat defined by the agreements made in court. For example, in the Pender County case the parties were instructed to try an HCP, and in the Quail Hollow case participation and conservation methods were mandated in a stipulation agreement.

Several interviewees stressed the sense of ownership that was created through voluntary participation. Throughout the cases, local buy-in and support for plans were mentioned as outcomes that would not have occurred if the process were primarily one imposed on a state or private landowner. Participants widely agreed that a clear benefit of a voluntary process was a

“general buy-in for all involved – all people . . . support the end product.” One participant provided an image of the various participants, after five years of hard negotiations and compromise, linking arms and presenting the completed document to the country for approval saying, “this is our plan.”

Diversity

Information from the literature described a process that provided for the diversity of social interests as an effective collaborative process.

Representative Involvement Cases

While some cases with representative participation exhibited greater diversity in participants than others, all ten of the cases experienced diverse representation within their inclusiveness. Diversity was apparent in the range of interests involved in each of the representative involvement NCEDR cases. Parties included were different for the specifics of each plan but in general participants included: state and federal agencies, forest industries, utility companies, local and national environmental organizations, university faculty, agriculture interests, Native American interests, recreation groups, multiple users (miners, ranchers), building and development interests, cities, counties, and consultants. Four cases, Wisconsin, Maine, Georgia, and Clark County specifically referred to diversity in participant comments and they are discussed below.

The Wisconsin case attempted to recruit someone from every possible landowner and user group. The goal of recruiting a comprehensive (diverse)

group was to best facilitate the development of a conservation strategy that could meet the needs of diverse interests and facilitate more partners joining the group.

In the Georgia case an interviewee noted that the inclusion of diverse groups and interests on the steering committee (such as agricultural and environmental interests) was designed to gain broad-based input upfront, rather than leaving out parties that would “voice dissatisfaction at the end and stop the process.” The aim was to bring diverse interests to the table early on and take everyone through the process together, so that critics and potential critics would be satisfied.

In two cases, Maine and Clark County, there was some contention over the diversity of environmental interests involved. In Maine, one participant noted that some environmental groups felt they should have been included on the task force, and that the conservation group that was involved was not a “bona fide” environmental group, but was more representative of sporting interests. Similarly, in Clark County, although the Nature Conservancy played an integral role in this HCP, a participant felt that as an organization they are often viewed by other environmentalists as being too moderate or conservative, thus pulling the entire process “to the right.” Conversely, some participants from the Clark County case said there was too much environmental focus in the plan. One interviewee mentioned that while the multiple users (ORV users, miners, and ranchers) were “laypeople”, the other “forty” participants were professionals that “leaned green.” Clearly, diversity is in the eye of the beholder.

Expanded Involvement Cases

While some cases with expanded involvement exhibited greater diversity in participants than others, participants in all eleven of the cases strove to achieve diverse, and conflicting, representation within their inclusive nature. Diversity was apparent in the range of interests involved in each of the expanded involvement NCEDR cases. Parties included were different for the specifics of each plan, but in general participants included: state and federal agencies, local and national environmental organizations, multiple use groups, forest industries, university faculty, recreation groups, city officials, county officials, consultants, and two cases involved Native American interests. While the range of diverse interests in expanded involvement cases was similar to the representative cases, the difference was that the expanded cases included less diverse interests in terms of actual numbers of interests that participated in each case. According to the literature consistent diverse representation was more important than the actual numbers of diverse interests participating.

Required Involvement Cases

The required involvement cases did not exhibit the principle of diversity. In these cases the applicant, either a private landowner or a state agency and the Services were the only interests involved.

Role Efficacy

The literature review defined the essence of role efficacy as ensuring participants a meaningful voice in the process, and that productive roles in the process meant participants have the ability to influence outcomes (Mayers and Bass, 1999).

Representative Involvement Cases

The role efficacy issues that participants experienced in the ten representative involvement cases included whether the participants influenced final decisions, were involved in process design, external constraints on the process of participation (time), creating a safe environment, the extent of outside or public comment, and the use of subgroups.

Participants in all of the representative cases influenced the final decisions. Four plans (Wisconsin, Georgia, Clark County, and Balcones Canyonlands) explicitly mentioned the involvement of members throughout the process and their substantive inputs into the final document. This was also true for the Maine case, but while the task force had influence over the plan, the governor ultimately decided whether to accept the plan.

A productive role in the process includes participants to some extent in process design (Fisher et al., 1981). Only two cases, Balcones Canyonlands and Clark County, explicitly mentioned participants' involvement in the design of the process. Clark County participants "pioneered" their process from scratch, and both Clark County and Balcones Canyonlands indicated that participant

creation of process guidelines or groundrules was extremely helpful throughout the process.

The most powerful rules governing access to participation are those that limit participation through holding meetings in places, or at times, or at a cost that makes attendance by interested parties difficult (Bryson and Crosby, 1992). In three cases (Wisconsin, Georgia, and Clark County) participants concluded that timing of meetings, or travel distances may have precluded people from becoming involved in the process. In the San Diego case the participants did not describe external constraints on themselves, but indicated the scheduled public comment period they created during their working hours may have been intimidating to the public. When public meetings were held at night and on weekends they were much better received.

In general, participants in the ten representative involvement cases created a safe environment. The general sentiment can be summed in a quote from a participant in the Wisconsin case who stated, "everyone became comfortable with their place in the structure," and became "satisfied they were being heard." Only one case, Balcones Canyonlands, explicitly mentioned creating a safe environment through the seating arrangements. Three cases (Maine, Georgia, Clark County) hired a facilitator, which can be considered a tactic for creating a safe environment for managing conflict. The facilitator was well received in all these cases as being the "neutral that could calm down contentious debate and refocus participants." Information from the literature suggests it is often difficult for participants to manage the process because they

are so heavily invested in it. Thus, many authors suggested the role of a facilitator is to perform the critical role of process management.

Several plans (Georgia, Balcones, Wisconsin, North Carolina, Maine) incorporated outside or public involvement beyond the requirements of NEPA, and considered this input as affecting the final plan. The San Diego case included mechanisms for soliciting public comment, but the method for incorporating this input was not made explicit, leaving much of the public wondering if their voices were heard. Also, while Clark County participants did not mention public meetings, any member of the public could have been involved and all the meetings were open.

On Using Subgroups

In many circumstances attracting the full range of stakeholder viewpoints to the dialogue may result in a group too large to manage effectively without breaking into subgroups. In order to make a decision in a timely and efficient manner, and adhere to the principles of inclusiveness and role efficacy, researchers suggest that groups should decide to have different types/levels of participation. Participants in seven of the ten representative involvement cases (Louisiana, Maine, Georgia, Clark County, Balcones, Pleasant Valley, and Tulare County) created subgroups as a mechanism to manage inclusiveness and role efficacy issues. Subgroups were “overwhelmingly received” as the answer to creating a balance between involvement and manageability of the process. Also, subgroups were seen as a way to garner substantial input from all participants, as “many more voices had the time to dialogue with each other than would have

been the case in one large meeting.” Only one participant in the Georgia plan stated that subgroups did not work well, and this was due to people in the groups not showing up and not contributing.

Expanded Involvement Cases

In the eleven expanded involvement cases a comparable influence over outcomes was limited to a small group of primary decision-makers who received input from various stakeholders. This process was most often described as a “tiered approach” or “shuttle diplomacy”. The cases primary decision makers were the applicants and those with the power necessary to implement decisions. In the five public permittee expanded involvement cases (Texas, Spring Mountains, Volusia, Massachusetts, Riverside) the applicant was a state agency or county and other primary decision makers included the Services, other federal and state agencies, and city governments. In the six private permittee expanded involvement cases (Florida, Arcata, Port Blakely, Plum Creek, Quail Hollow, El Coronado) the applicant was a private landowner managing the property for multiple use, and other primary decision makers included the Services, federal and state agencies, and county governments. Other participants who were included in plan development did not have decision-making authority and their input was incorporated in a variety of ways in order to keep the decision-making group small while still incorporating a diversity of concerns.

In three cases (Texas, Riverside, Plum Creek) a subgroup structure was selected for the involvement of other stakeholders who were not decision-makers. While some participants felt the involvement of non decision-makers

helped shape the plan, conversely several participants felt they had no voice in crafting the plan. Several non decision-makers were “skeptically satisfied” with the plan, and would have been more satisfied if they were confident that provisions they had agreed to were included in the final plan. As the role of non-decision makers was advisory only, the decision-makers were not required to act on recommendations, only consider them.

In six cases (Massachusetts, Volusia, Spring Mountain, Port Blakely, Quail Hollow, Florida) there was no formal committee of interested and affected stakeholders to provide input. Instead, input from other stakeholders was solicited through scheduled open meetings or on a one on one basis. These methods usually consisted of several discussions with various groups and individuals interested in conservation and people concerned with how conservation affected their interests. The goal in these cases was to proactively solicit stakeholder involvement to provide expertise and solicit recommendations in accordance with local interests. Some participants thought the process of incorporating input produced substantive changes in the plan while others said only minor changes were made. However, most non decision-makers saw these “supplemental meetings” as little more than progress reports, and felt they had little to no meaningful opportunity for input. Several non decision-makers felt this process was an “illusion of public input.” While decision-makers asserted that interested parties could “always at least voice their opinion.”

In the other two cases in the expanded involvement category (Arcata, El Coronado) participants indicated that federal and state agencies involvement in

the plan development was sufficient and did not seek any other stakeholder involvement. Participants in these two cases felt the agencies represented the public and environmental or tribal interests. In these cases strongly worded letters and other public comment periods were seen as means by which the public and environmental interests influenced the Services and thus the process. Participants indicated other stakeholder input was not substantive, but did introduce important considerations, creative ideas, and “helped pull the plan together.”

While these plans were inclusive in involving the affected and interested parties, the eleven expanded cases limited participants’ roles in decision-making. Whereas in the representative involvement cases all participants involved had a comparable influence over decisions, only a select few made the decisions in the expanded involvement cases while attempting to incorporate a diversity of views.

One case (Texas) experienced the creation of a safe environment through the use of facilitation. The success of the process was largely attributed to the facilitator who “kept the process moving, was trusted by participants to allow all voices to be heard, and did not impose personal values on the process.”

One case (Massachusetts) experienced role efficacy issues related to scheduling. In this case the state agency seemed to want total control, and the schedule commitment demonstrated their control. They set an ambitious deadline and stayed on schedule even though the Services were unable to attend important meetings due to the government shutdown in the winter of 1995/96. The state biologist in this case was confident he knew what was right

for the species and the user groups, and was determined to balance the interests as he saw them.

Four of the eleven expanded involvement cases (Riverside, Arcata, Plum Creek, Florida) incorporated some outside involvement or public review process beyond that required by NEPA. In these cases open meetings besides those prescribed were held and individuals could always attend decision-maker meetings. Some changes were made as a result of this input, but very little of this input was substantive.

Required Involvement Cases

In the ten required involvement cases those involved were the primary decision makers with influence over all decisions for the plan.

In two cases (Swan Valley, Weyerhaeuser) a facilitator was brought in to reach decision on particularly contentious issues. In the Wilmon case, participants indicated that a facilitator would have been helpful in the beginning of the process to help participants focus.

In three cases (Washington, Peregrine, Weyerhaeuser) outside input beyond the required NEPA process was solicited. Numerous public meetings were held in these cases to incorporate more interests, and the Peregrine case conducted an extensive outreach program to explain details and management implications to landowners. While "all relevant comments were carefully considered," there appeared to be no substantive changes to the plans as a result of this input. The public and environmental groups felt the plan was already a "done deal" before their input was sought.

Participants in the other required involvement cases considered the requisite NEPA public scoping process as sufficient for outside involvement. Participants felt this process allowed “ the most widespread involvement at a point in the process in which the parties involved could answer questions.” One private applicant felt there should not have even been a public comment period and a “deal between a private citizen and the federal government should not be altered by anyone other than those two parties.” No substantial changes were made to plans as a result of public comment, except in the Pender County case where a national environmental organization objected to a component of the plan and as a result some items were renegotiated. The Services expressed serious concerns about the lack of public outreach and the absence of tribal and environmental involvement in most of the required involvement cases.

Transparency

Transparency of a collaborative process reflects the degree of openness and clarity with which information is provided throughout the process (Gray et.al 2001). Transparency issues go beyond just open sharing of information, and include understanding the collaborative process and its alternatives. Participants in a transparent process will at any point in the process know who is involved and what role each participant will play.

Representative Involvement Cases

All ten representative involvement cases exhibited a transparent processes where participants interacted face to face, knew what was going on,

who was doing what, and how decisions were being made. There was a “continuous review of plans” by decision makers and other interested parties. Overall, in these cases open sharing of information was achieved, however the role of the FWS was, overall, not well understood.

In Georgia and Balcones Canyonlands, while information in and about the process was initially transparent this seemed to break down over time. One obstacle to transparency included the sheer number of participants and the difficulties involved in routing information to all participants. Participants’ felt that early on, the groups worked very well and there was a good flow of information and ample opportunity to participate. At some point, however, this process broke down, “possibly as a function of time.” Some interviewees felt their earlier decisions about transparency issues were forgotten and negotiations eventually became a “free for all.” One participant asserted that establishing rules and roles early is a good idea, but added, “you have to stick to them.”

Louisiana and San Diego also were transparent, but still experienced secrecy issues. In Louisiana, one participant had a negative experience with secrecy related to information that was known but undisclosed by another participant. In the San Diego case some interviewees indicated that the process was not such a collaborative negotiation as it was portrayed in the media, and one participant expressed frustration with the “behind the scenes” decisions that made the working group process appear to be “window dressing.” Nearly all participants acknowledged that “behind the scenes” and “closed door” meetings occurred for some of the more delicate decisions. These decisions were

reported back to the larger group, but participants in the San Diego case seemed to feel uneasy with the secrecy.

Several cases (Wisconsin, North Carolina, Tulare, Pleasant Valley and Balcones Canyonlands) included some type of outreach to inform participants and the community at large about the process. In these cases “if you were interested in the plan then you could get information.” Informational mechanisms included public meetings, mailing lists, newsletters, local newspaper coverage, and information inserted into power bills, and these methods were “used more as a mechanism for outreach communication and education as to what the group was doing.”

However, in Balcones Canyonlands and Pleasant Valley, cases that included transparent information outreach mechanisms, participants felt the outreach efforts were not successful and/or inadequate. In the Balcones Canyonlands case, participants believed the lack of a successful outreach campaign allowed mistrust to form within the community, which fueled attacks that came from the Texas State Legislature. In the Pleasant Valley case (failed) several interviewees said the decision-makers should have made a greater outreach effort to educate organizations, political entities, and the public about the benefits of having an HCP. As one participant indicated, “the failure to convey the plan’s benefits in a timely fashion and let them sink in – allowing people to get angry early in the process - was a huge negative. Airing these issues and opposition earlier in the process could have avoided the flaming fireball at the end.”

Participants in several cases had comments on the transparency of the FWS role. Overall, the role of FWS was not transparent and not well understood. Only one case, Maine, experienced a transparent, well understood, and accepted FWS role. The interviewees in the Maine case responded that the Services provided guidance “right along” and “throughout the process.” Participants described the role of the Service representatives as providing important feedback on what they were expecting and “unofficial responses” as to how plan components would be perceived.

In four cases (North Carolina, Georgia, Clark County, Balcones Canyonlands) the FWS served an advisory role that was frustrating for participants. Some interviewees were frustrated by the reluctance of the FWS to provide direction at the start of the process, although they believed this was somewhat intentional because the FWS did not want to determine the process. Most participants experienced frustration with the “hands off” approach but realized FWS was intentionally doing this. Several participants also noted that the FWS staff was learning an unfamiliar and complicated process on its own. Participants in Clark County and Balcones Canyonlands noted that as time passed, FWS became more open and clear about their expectations from the process.

In the two failed cases, Pleasant Valley and Tulare County, participant perceptions of the FWS role were unclear and unpleasant. In the Pleasant Valley case, a participant said that FWS did not provide them with examples of other plans or provide clear ideas of what they were expecting. Another

participant added that, “you don’t get feedback [from FWS] until you submit what you think is the final document.” Participants felt there was information that the agencies did not want them to know and FWS kept their views “close to the lapel.” During the review process FWS continually sent back drafts and this process was viewed as “offensive in the extreme.” In the Tulare County case, all non-agency participants interviewed expressed difficulty communicating with the FWS representative regarding the potential acceptability of measures being proposed for inclusion in the HCP. Decision-makers were also unsure of the roles of state and federal wildlife agencies as enforcers of the ESA and as participants in the HCP process. One wildlife agency representative felt that their organizations ability to participate depended on the stakeholders providing them with a draft document, whereas the stakeholders felt that they needed input from the wildlife agencies in order to develop a draft.

Overall, in these cases open sharing of information was achieved, however the role of the FWS was overall not well understood.

Another transparency issue involves understanding collaborative processes and their alternatives. Prior research indicated participants’ perceptions of their incentives and disincentives to participate are important. In a collaborative process transparency includes an understanding of all participants incentives to participate, and an evaluation of incentives to participate in alternative processes. In many cases, understanding incentives to participate were crucial transparency issues. The incentive to participate in most HCPs came from the federal listing of a species. However, three of the ten

representative involvement cases (Louisiana, Maine, San Diego) were aimed at proactively addressing expected conflicts due to the proposed listing of a species. Participants in these cases hoped to avoid an “environmental train wreck.”

Three cases (Wisconsin, North Carolina, Georgia) specifically provided incentives for private landowners to participate in the conservation plan. In Wisconsin the section 4d rule of the ESA was applied because participants believed the 4d rule aids in providing incentives. (The 4d rule excludes forest management activities from “take” as long as these practices do not put wildlife denning sites at risk.) North Carolina and Georgia both provided “safe harbor” incentives for private landowners to participate that encourages voluntary conservation and provides protection from future liability under the ESA.

The collaborative process must be clearly understood by participants and Fisher et al. (1981) and Ury et al. (1993) extended this concept to understanding what the likely results would be if a participant were to proceed in a non-collaborative process. This is referred to as a participants’ Best Alternative To a Negotiated Agreement (BATNA). The most important (dis)incentive, in these cases, appears to be understanding the HCP process under the ESA and what value alternative options may have. Three cases (Wisconsin, Pleasant Valley, Tulare County) experienced disincentives to participation due to the political climate surrounding the ESA. In Wisconsin, several participants noted that those who thought that the ESA would be changed or thrown out, used stalling techniques. In both of the failed cases, Pleasant Valley and Tulare County, the

general political climate at the time provided a disincentive to participate. All interviewees in these two cases felt that knowledge of the ESA, as well as policies involved in HCPs were important for participants to participate successfully. Most participants indicated that they were affected by expectations of imminent policy changes in the ESA. For example, during the planning process, safe harbor programs and the “no surprises” policy were created and became more commonly incorporated into HCPs. Opponents of the plans felt that changes in Congress would result in a weakened ESA, and therefore HCPs would not be necessary. Perceptions of potential changes in how the ESA would be implemented created a climate of uncertainty among the participants that made planning difficult. Though the decision-makers expressed that proactive planning was necessary to avoid problems in the future, the participants were unsure of what benefits or drawbacks a regional HCP would offer, relative to the status quo. In these two failed cases, the participants could not fully understand and trust the process, and they could not calculate the ramifications of various options as the information from the literature suggested. In both of the two failed cases, participants had an unclear BATNA due to the uncertainty surrounding the ESA that resulted in participants leaving the process and not reaching any agreement.

Expanded Involvement Cases

Open information about the collaborative process and understanding incentives to participation was important in the eleven expanded involvement cases. As one participant stated, “you don’t just spend 43\$ million on a rat

because you feel like it.” All eleven of the expanded involvement cases cited the listing of species under the “hammer of the ESA” as the incentive to collaborate, with the exception of the Spring Mountain case where the incentive to participate was proactive in order to preclude listing and establish interagency cooperation in an ecosystem approach. In two cases (Volusia, Quail Hollow) prior litigation led to participation in the HCP process.

In two cases (Texas, Massachusetts) the incentive for the plan was to engage private landowners in conservation. In these cases there was a preference for “a single applicant for a large geographic area instead of several small applicants.” In these cases the applicant then approves sub-permittees under the original HCP contract.

Three cases (Texas, Spring Mountain, Volusia) included some type of outreach to inform participants and the community at large about the process through a variety of mechanisms (e.g. mailing lists). Volusia County provided a good example of openness and sharing the process with the public through an “untold number of media interviews,” and the decision-makers then took the “show on the road” to various local municipalities. As a result this plan was well received by the general public, businesses, and cities throughout the County.

Participants in several cases experienced frustration with expectations of the Services role. One issue experienced in five of the expanded involvement cases (Riverside, Arcata, Port Blakely, Plum Creek, Florida) was the “hands off” approach taken by the Services. While some individuals appreciated the Services “hands off” approach, others felt the FWS “stymied their efforts to

become educated.” Several interviewees noted the Services lacked experience with developing HCPs at the time, and credited the agency with improving over time. (Several of these offices are now known for their expertise in HCP planning) The “hands off” approach for plan development taken by the Services was described as a “back and forth,” or “iterative” process. Participants felt the Services requests were not clearly specifying what was desired each time the plan was sent back. The process was described as, the Services request, the applicant provides, then the Services “change their mind and ask for something else.”

Another issue experienced in five of the expanded involvement cases (Texas, Arcata, Port Blakely, Quail Hollow, El Coronado) was the lack of participant understanding of the Services bureaucracy, and confusion regarding the channels and process of plan approval within the Services. Participants were unfamiliar with the Services bureaucracy and unclear of the channels of approval. Participants experienced a vacillating level of involvement and authority; who to contact and the extent of the Services representation was not always clear. Participants in these cases are frustrated with the Services bureaucracy, and expressed the need for one regional contact they could work with continually or at least more coordination within the Services. One participant claimed it was “unconscionable” to require a permit, when the Services do not have adequate staff or an understandable process for doing so. Both of these issues were more common in private applicant cases, with only two of the five

public cases (Texas and Riverside) experiencing transparency issues with the role of the Services.

Overall participants in the expanded cases appeared to have experienced a transparent process where participants seemed to know what was going on, who was doing what, and how decisions were being made in. However, in one case (Massachusetts) participants indicated there was inadequate dissemination of information to the interests groups whose input was requested. Also, two cases (Riverside and Volusia) experienced problems with secrecy. In the Riverside case, one interviewee felt the FWS was keeping information from the process. The FWS was reluctant to release species distribution maps due to concern over potential harm to the species. This led to a filing of a Freedom of Information Act request. In the Volusia County case, local volunteers held most of the biological data and the decision-makers believed they never received all the available information.

Required Involvement Cases

In the three public permittee required involvement cases (Jackson, Washington, Swan Valley) the incentive for initiating an HCP was to create a proactive ecosystem approach to conservation, and the plan was used as a mechanism to show how “agencies can work together for the common good.”

In all of the private required involvement cases, except the Peregrine case, the incentive to pursue an HCP was “fear of the ESA,” and so as to not run “afoul of the law.”

In one case (Peregrine) the incentive for initiating an HCP was to engage private landowners in conservation. This case was unique in that a conservation group took out the permit in an effort to enroll landowners in protecting the species.

In one case (Pender County) litigation initiated the HCP process. The landowner in this case still believed he could have won his case in court, but viewed an HCP as a cheaper alternative to the lawsuit.

Several cases indicated the role of the FWS was unclear and not well understood, and that the bureaucracy of the Services was confusing. Five private permittee required involvement cases (Weyerhaeuser, Red Oak, Wilmon, Lantana, Ribar) experienced what was described as the “bring me a rock” syndrome. The services taking a “hands off” approach not wanting to dictate the plan to the applicants, ask for “a rock.” The applicants not knowing what size, shape, or type of rock to bring, scratch their heads and finally decide on a particular rock, whereby the Services remain dissatisfied and ask for another rock. This iterative process was described as “very bureaucratic, nitpicky,” and “administratively bulky.”

In all three of the public expanded involvement cases (Washington, Swan Valley, Jackson) the Services were described as providing “valuable” guidance throughout the process. Since public agencies were the permittee they were probably more used to bureaucracy and delays associated with plan approval.

Only one case (Peregrine) conducted an extensive outreach program to explain details of the plan and management implications to landowners.

Focus on Interests

A critical component of collaborative negotiations identified in the literature was to break the pattern of fighting and focus participants on their underlying interests instead of negotiating positional 'lines in the sand'.

Representative Involvement Cases

No explicit negotiation methods were used in the ten representative involvement cases. Four cases (Georgia, Clark County, Balcones Canyonlands, Tulare County) alluded to the concept of focus on interests.

The strongest examples of focusing on interests occurred in the Georgia and Clark County cases. In the Georgia case a focus on interests was mentioned as critical in the formation of statewide coalitions across interests. During this plan participants more clearly defined their interests and others who held those interests leading to the formulation of these coalitions. More clearly defined interests were noted in the literature review as an outcome of focusing on interests. In Clark County the facilitator helped participants to focus on interests. At times, he removed individuals from the group situation and spoke with them individually to help lead them to a less entrenched position. Overall the facilitator was able to prompt greater flexibility and focus participants to "get to the real issues." Participants agreed that this HCP provided a forum "for people to get away from rhetoric to real values."

Balcones Canyonlands and Tulare County participants had difficulty focusing on multiple interests. In the Balcones Canyonlands case, early on, participants were considering ideas in a remote and innocuous way, but the tone

became more “adversarial when the plan neared reality and participants began to foresee potential effects of the plan.” Participants indicated that positional bargaining was the major obstacle to the negotiation process. In the Tulare County case, interviewees felt that philosophical differences were the major stumbling block to negotiations, and unresolved differences in the goals (positions) of various parties kept negotiations from going smoothly.

Expanded Involvement Cases

No explicit negotiation methods were used in the eleven expanded involvement cases. Four cases experienced this principle. In two cases (Riverside and Plum Creek) interviewees indicated that positional bargaining was one of the biggest obstacles to negotiations and that over time participants became more entrenched in their positions. In two cases (Port Blakely and Florida) there was a concerted effort to move away from positional bargaining toward an outcome (interest) based bargaining.

Required Involvement Cases

No explicit negotiation methods were used in the ten required involvement cases. One case (Jackson) experienced this principle. In this case participants agreed, “each party represented their own interests well.”

Separate the People from the Problem and Mutual Learning

Since the participant interviews were not conducted to address the collaborative principles identified in this research’s literature review, it is difficult to apply principles found in the literature to some cases. Mutual learning and

separating people from the problem were so closely related in participant responses that they were combined in this analysis as one principle. Separating the people from the problem recognizes the human aspect of negotiations and involves active listening, using “I” statements and respecting others’ emotions and values. Mutual learning recognizes the important learning benefits gained from hearing diverse interests. Mutual learning relies on the participants educating each other through describing their perceptions of the problem. The concept is based on seeking first to understand, and aids participants understanding of each others interests and why they hold those interests. Through mutual learning participants relationships are often improved, and common ground can often be more easily identified. Being able to separate people from the problem is almost a prerequisite for being able to truly hear another’s perspective and thus these two principles could not be separated in the analysis of the NCEDR cases.

Representative Involvement Cases

In eight of the ten representative involvement cases (Wisconsin, Louisiana, North Carolina, Maine, Georgia, Clark County, San Diego, Pleasant Valley) participants confirmed that they were able to overcome barriers between very divided interests, improve trust between participants, and improve relationships between participants. All participants in these cases indicated that the tone of negotiations improved through time as participants began to learn about each other and understand others’ viewpoints. All participants in these cases agreed that working on the plan positively affected the relationships

among participants. As a result of interacting with other participants new positive relationships were formed between people who had traditionally called each other “the enemy.” This establishment of personal relationships that broke down stereotypes led one participant to state, “ten years ago the people I would have paid to have terminated, I’ll now have in my backyard for a barbecue.”

Participants in the Tulare County case (failed) had difficulty achieving mutual learning and separating the people from the problem. Participants in this case described the negotiations as “hostile”, “difficult”, “contentious”, and “worsening over time.”

Participants in five of the ten representative involvement cases (Louisiana, North Carolina, Clark County, San Diego, Balcones Canyonlands) indicated a dedication to ethical behavior as a positive factor leading to effective negotiations. In these processes there was the general sentiment that all people were treated equally, and that the process was inherently fair. Several personality traits were identified to be helpful, such as, patience, tolerance, and a sense of humor. A participant in the Pleasant Valley case, which did not experience a dedication to ethical behavior, indicated that these “people skills” are the most important knowledge for participants in collaborative processes. She added that legal or biological information “can be more easily learned” than these “people skills.”

Expanded Involvement Cases

In six of the eleven expanded involvement cases (Texas, Massachusetts, Spring Mountain, Arcata, Port Blakely, Plum Creek) participants indicated that

they were able to overcome barriers between very divided interests, improve trust between participants, and improve relationships between participants. In the beginning the tone of negotiations were negative but as participants began to learn about one another the process became more positive. Participants were not very flexible in the beginning “due to a lack of mutual trust”, but things improved as participants “test[ed] the waters” and eventually were able to “deal with and understand each other.” Participants felt a need to “stick to their guns” but also “respect each other’s views,” and the ability “to listen and to have thick skin was a necessity.”

In the Quail Hollow case the initial lawsuit was “fresh in [participants] mind” and negatively affected participants’ ability to trust one another and build relationships. Participants were eventually able to overcome past animosity and negotiate in a “polite” and “civil” manner, however participants indicated that relationships were not improved.

The Texas case seemed to confirm the common belief that if relationships can be built between those with shared power, their future engagements with each other will be more and more positive and successful because they have built the necessary trust and respect. In the Texas case many participants had worked together on natural resource conflicts in the past and already knew, “respected,” and “trusted” each other. As one participant stated, “when you build a network like that, it improves any negotiating process.”

Participants in three cases (Riverside, Volusia, El Coronado) had difficulty with mutual learning and separating the people from the problem. In the

Riverside case several participants indicated the negotiations became increasingly contentious throughout the process. In Volusia, the stakeholder input was conducted in a one on one interview fashion, and participants indicated “regret” over this process and felt that a disadvantage to the process was the “stakeholders interviewed did not get to hear other’s points of view.” All of the participants thought this was necessary for a better process so that everyone understands all the issues and can see how alternatives are balanced otherwise “you pay for it later.” This community remains polarized, with opposing interests collecting information to revoke the permit. The Volusia case seemed to confirm the importance of mutual learning as described in the literature. The El Coronado applicant felt that “no one ever got my point of view.” This participant wanted to do something to help species and to serve as an example to other multiple users that one could work with the federal government. He wanted understanding and recognition for the good he was trying to do. He felt like the Services never got this and that they “dropped the ball” on an opportunity to provide good relations between multiple users and the HCP process. What should have been a “slam dunk” case in terms of negotiation was a drug out lengthy process, which confirmed, “every fear [the applicant] ever had.” Relationships were definitely not improved in this case, in fact, the applicant strongly recommends to his peers to not work with the Services.

Required Involvement Cases

In the three public permittee required involvement cases (Jackson, Washington, Swan Valley) the decision makers were all “agency people” and

they viewed each other as peers from the outset of the process, which seemed to build automatic respect and trust. Negotiations were characterized as “a group of professionals working together” who “thought the same way and used the same language.” Relationships have become “more comfortable with time,” and there was the sentiment that “all parties listened and there was a spirit of cooperation.”

In all of the private permittee required involvement cases participants indicated they were able to overcome barriers between very divided interests, improve trust between participants, and improve relationships between participants. As one participant stated, “I have more respect for the work of the Services, appreciate the point of view of the [species], and can now appreciate the view of the environmental community too.” Several participants cited the “critical need for trust between landowners and the federal government” as necessary for an effective collaborative process. Another benefit gained from these often opposing interests sitting down together was an overall reduction of fear of the ESA and HCP processes.

The Peregrine case seemed to confirm the common belief that if relationships can be built between those with shared power, their future engagements with each other will be more and more positive and successful because they have built the necessary trust and respect. In the Peregrine case many participants knew each other and felt the amiable planning process was “aided by the teamwork that has grown from other collaborations.”

Invent Options for Mutual Gain

Inventing options for mutual gain suggests there are wide ranges of answers to any one environmental conflict, and in effective collaborative processes participants need to be as concerned in meeting others' interests as they are in meeting their own interests. Thus options are invented that meet all interests, or in other words, mutual gain is achieved. Technically it can be stated that with exception of the two failed cases, all of the cases invented options for mutual gain because they completed a plan that, in participants' perceptions, met two seemingly mutually exclusive goals of conservation and development. However, even though the cases did invent some way to meet all interests, the process of inventing options was not explicit and not specifically addressed in participant interviews. There is no information to inform whether participants managed to build enough trust to get to inventing options for mutual gain, or if they did or did not separate inventing options from decision-making as the information from the literature recommends.

Representative Involvement Cases

Participants in six of the ten representative involvement cases (Wisconsin, Louisiana, North Carolina, Maine, Georgia, Clark County) experienced what one interviewee called an "oneness of purpose" in negotiating HCP contracts. This "oneness of purpose" can be translated as "everyone was working for everyone, toward the goal of an acceptable plan," or as another participant stated, "everyone became focused on the same goal." Thus, it seems participants came to realize that meeting other's interests was as important as meeting their

own. Participants may not have had the same reasons for wanting the process to work, but they all wanted a plan that could be approved. Clark County was the only case that participants specifically mentioned finding common ground, or areas of mutual gain. As one participant stated, “compromises between [interests] were easier than I would have thought.”

Expanded Involvement Cases

Participants in the expanded involvement cases agreed “while not all of the participants got everything they initially desired, the final plan was workable for all represented interests.” One case (Riverside) did not achieve a level where options for mutual gain were easily identified. In this case it was reported that participants behaved less as individuals seeking solutions and more as representatives of their group, “focused on protecting their interests, and “we were not looking out for each other.”

Required Involvement Cases

Two required involvement cases (Ribar, Pender County) alluded to the concept of inventing options for mutual gain. In the Ribar case participants indicated that the applicant (private landowner) was already employing acceptable conservation management practices and there was not much to negotiate since the landowner and the Services already shared “the same conservation goals.” The Pender County case served as the “original germ” for safe harbor policy under the ESA. This concept extends regulatory assurances to landowners for practicing voluntary conservation measures and can be viewed as inventing an option for mutual gain since landowners want assurances and

the Services desire conservation. "If the safe harbor concept had not been initiated here then the landowner would have cut all his timber and eliminated [species] habitat."

Objective Criteria

Establishing objective criteria to create an external standard of fairness by which to examine options was identified as a collaborative negotiation principle. Participants should insist that decisions be based on some "fair standards independent of the will of either side" (Fisher et al., 1981).

Representative Involvement Cases

Two cases, Wisconsin and Clark County, of the ten representative involvement cases were reported to have established criteria to judge decisions. In the Wisconsin case recommendations had to meet three criteria: they had to be "do-able, cost effective, and scientifically sound." In Clark County, financial analyses were completed which compared costs of alternative ecological models.

Expanded Involvement Cases

No evidence was found to support any experiences with setting objective criteria in order to make decisions in the eleven expanded involvement cases.

Required Involvement Cases

No evidence was found to support any experiences with setting objective criteria in order to make decisions in the ten required involvement cases.

Consensus

Consensus decision-making was identified as a collaborative negotiation principle from the literature. Consensus was described as reaching an agreement all parties could accept.

Representative Involvement Cases

Although a couple of cases (Wisconsin and Georgia) had voting rights for participants, consensus was sought whenever possible and few votes were taken. All of the representative involvement cases, with exception of the two failed cases that never got to this point in negotiations, made decisions through consensus. Participants agreed that a consensus-based process was selected because it was the “most likely, if not the only, path to deal proactively with problems.” Although participants acknowledged that such a process was cumbersome and time consuming, they felt it resulted in a plan that all interested parties could support, having had a voice in crafting it. The information from the literature supported participants’ sentiments of consensus decision-making and researchers indicated that win/win decisions must be unanimous and based on consensus, or else someone loses.

Expanded Involvement Cases

All decisions in the eleven expanded involvement cases were based on consensus among the primary decision makers. However, parties that were involved but did not have a role in decision-making did not reach consensus, nor was this a goal in all except the Texas case. In the Texas case a formal

committee was used for input from non-decision makers and this group sought consensus on the recommendations they gave to the decision makers.

Required Involvement Cases

All decisions in the ten required involvement cases were based on consensus among the primary decision makers.

Collaborative Data and Information Management Principles

Scientist-Policymaker Interface

When specific conflicts emerge in natural resources, policy makers look to science and technical experts to help improve their decisions. While including policy makers and scientists together in decision making is an issue of hot debate in the literature, participants in the NCEDR cases seem to have taken this interaction as a given.

In all of the cases, scientists and policymakers interfaced to make decisions.

Diverse Scientific Input

A second principle regarding who needs to be involved in effective collaborations was diversity. That is, the scientists who inform decision-making are “individuals that are drawn from different technical specialties and institutions” (Gray et.al 2001). There was no clear information in the interviews, or case summaries to indicate the level of diversity in participating scientists.

The representative and expanded involvement cases appeared to have diversity in scientists because participating scientists from state and federal agencies, universities, environmental organizations, and tribal organizations were involved. There was no explicit mention of the involvement of social scientists as researchers suggests, but we cannot know the extent of others', such as social scientists involvement because this issue was not addressed in the interview protocol.

In the required cases only the applicant, who was either a private landowner or a state agency, and the Services were involved in data and information management. We cannot know how diverse the expertise within these private operations or agencies were.

Interwoven

The interwoven principle was defined as "scientific experts frequently engage in direct or mediated interaction with participants on a broad range of technical issues" (Goldstein, 2000). Together, scientists and participants must identify what do we know and what don't we know relevant to this conflict.

Representative Involvement Cases

While scientists and policymakers were both involved in decision-making in all ten of the representative involvement cases, whether this interaction was structured as interwoven was not explicit in the information from the cases. It appeared that this interaction was a given and the structure of this interaction was random, and not discussed in most of the cases. Three cases (North

Carolina, Georgia, Clark County) did allude to the interwoven approach. In the North Carolina case there was not an interwoven approach since discussions among participants, without scientist involvement, determined what data and information would be used in the plan. In the Georgia case there was more of an interwoven approach in that decision-makers also served on technical committees. Participants in the Clark County case appeared to have tried to achieve an interwoven decision-making approach. Initially the technical advisory committee was limited to scientists, but the sentiment that “some voices were not being adequately represented” led to these meetings being open to the whole committee and public. The opening of the interaction between scientists and policymakers was viewed as an imperfect solution to the problem; “interest groups still felt alienated and biologists felt that efficiency had been greatly compromised.” According to the literature, tension between scientists and policymakers is both expected and necessary for success.

Although participants in most of the cases did not experience an interwoven, collaborative inquiry approach, several participants cited the educational techniques used by scientists as something that worked well. This can be considered a component of the interwoven approach since scientists are interacting with the decision makers to inform their choices. Prior research indicated that policymakers are entitled to have the lid of the black box of science opened for them, and illuminated if they so choose. In collaborative processes, “parties have a right to understand the science that informs their choices rather than being asked to trust experts” (Adler et al., 2001). However, this was only

one side of the type of interwoven approach as described in the literature review since the educational components of these cases still follow the traditional model of the expert telling the public what is the best approach. Researchers did support this type of participant education by scientists, but stressed that scientific experts also need to be educated on what is important to policymakers.

Four of the ten representative involvement cases (Louisiana, Georgia, Maine, North Carolina, Clark County, Balcones Canyonlands) experienced positive educational presentations by the scientific community. These presentations made an effort to make the data understandable to participants and the public, and these "attempts were wildly successful." Only the San Diego case experienced negative educational presentations by the scientific community. Information in this case was described as "complex" and "confusing" and the link between policy decisions and scientific data was unclear. Members of the public were upset that the raw data were rarely or never available for comment, and that only policy decisions were up for comment.

Expanded Involvement Cases

The interwoven principle was a very different concept in the expanded involvement cases than in the representative cases. In the representative involvement cases there was a clear distinction between a scientist and a policy maker, it was just difficult to understand how these groups interacted. In all eleven expanded involvement cases the primary decision makers were also the primary data compilers, and made all decisions concerning the use of data and information. This involved state agencies (public cases) and private multiple use

companies (private cases) as the applicant and the primary data source. These cases can be considered interwoven since the decision makers were the scientists and vice versa. The only evidence of non-decision makers being involved in data decisions was in the Plum Creek case. In this case the determination of the data to be collected and how this information was used was decided collaboratively between the primary decision makers and the second tier participants who were Native Americans and a state agency.

Several expanded involvement cases followed the traditional approach of scientists educating the public and non decision-making participants. According to the literature, this is part of an interwoven approach that helps to understand the science driving the policy, but it is one-sided in that it does not recognize that science may have something to learn from policy. Participants in nine of the eleven expanded involvement cases (Plum Creek, Quail Hollow, Texas, Massachusetts, Riverside, Spring Mountains, Volusia, Port Blakely, Florida) reported that great efforts were made to make the data understandable to participants. The plans were summarized in “plain English,” and a variety of tools were used in “successful” attempts at educating the public and non decision-makers.

Required Involvement Cases

Similar to the expanded involvement cases, in the ten required involvement cases, the decision makers were the primary data compilers and made all decisions regarding what data was needed and how it would be used. However, the three public permittee required involvement cases (Jackson,

Washington, Swan Valley) did have some separation between scientific information and policymaking and this was done in accordance with an interwoven approach. These cases split decisions into two levels, technical and managerial, within the state agency that was the applicant. Technical teams would negotiate a plan on scientific grounds, report their findings to the larger group, and then decisions were finalized at the management level to incorporate political concerns. Participants welcomed this separation in that it allowed the “technical people to hammer out the deal without worrying about policy all along the way.” This structure was closest to what the information from the literature described as interwoven, even though the scientists and decision-makers are part of the same agency.

In all of the private permittee required involvement cases, except the Weyerhaeuser case, the decision makers and the scientists were the same group and this can be considered an interwoven approach. In the Weyerhaeuser case a science team was composed that involved other outside scientists who all collaborated on data collection and compilation. This science group was somewhat separate from the decision makers, although decision makers also served on the science team. The findings of the science group were then incorporated into the larger decisions that were made. Of the private permittee expanded cases, the Weyerhaeuser case most closely resembled an interwoven approach as information from the literature described.

Maintaining Scientific Objectivity

Working within decision-making groups presents several challenges to the scientific community, the main concern being safeguarding the objectivity of the scientific community. Although it is desirable to involve scientists in an interwoven approach, some separation between the scientists and the process of making decisions is necessary. To structurally address this researchers suggest establishing the scientists as a separate entity from the stakeholders, and to draw the line clearly between the scientist groups' task of providing expertise and information and the role of negotiators in advocating specific strategies. The credibility of the science used was also an important issue to maintaining scientific objectivity. Prior research indicates there is a need to manage for some type of outside or objective review of the science findings and/or conclusions.

Representative Involvement Cases

Participants in seven of the ten representative involvement cases (Wisconsin, Louisiana, Georgia, Maine, Clark County, Balcones Canyonlands, Pleasant Valley) established a separate technical group within the process, and the Tulare County case used a consulting firm to obtain data and information. In North Carolina there was no separate group, and participants negotiated science along with decisions. Some participants in the San Diego case expressed regret that a technical advisory committee was not established to evaluate decisions the group made. In all seven of the cases that established a separate technical group, clear lines were drawn to indicate the responsibilities of the technical group. In these cases the findings of the technical group were presented to the

whole group, and the policymakers maintained final decision authority over the use of science in negotiations. Most often the technical groups were “charged” or “responsible” for collecting, compiling, and interpreting data for the policymakers. The technical groups would then present their findings to the larger group, and the participants then made the final decisions regarding data and information. The use and structure of technical groups as exemplified in the cases was strongly supported by prior research.

Participants in four of the ten representative involvement cases (Wisconsin, North Carolina, Georgia, Balcones Canyonlands) sent scientific information for outside review. While this was not the structured process of formal peer review, these cases did attempt to get an objective, outside opinion of the data and information used in the plan. Four cases (Louisiana, Maine, Clark County, San Diego) relied on an internal review process. Participants in these cases appear to be extremely confident in the scientists participating in the plan and deferred to their best professional judgment, although the participants reviewed the data. Several participants cited the diversity of their own technical groups as sufficient for an internal review of data and information. In the two failed cases, Pleasant Valley and Tulare County, the review process was unclear. Some participants indicated only an internal review, and others thought there was also an independent review.

Expanded Involvement Cases

In the eleven expanded involvement cases the a priori interwoven nature of the decision makers as the scientists may have worked well for that principle,

but all these cases violated some measure of objectivity as defined by researchers in the literature. At some point the scientists need to be separate from the actual process of decision making which was not the case.

Some type of outside review was thus possibly even more important in these cases. Two cases (Texas and Spring Mountain) formed a group of technical experts that reviewed draft documents to make sure it was “in synch” with the needs of the species. However, the decision makers hired these experts and this process may not qualify as an objective, outside review.

Participants in three cases (Massachusetts, Volusia, Arcata) performed an internal review and incorporated some outside review process. While participants in the Massachusetts and Arcata cases mainly employed an internal review, there was a formal review process on one population model in the Massachusetts case, and an external review by an objective science lab in the Arcata process. The Volusia case was also mainly an internal review, however, participants did try a formal peer review process. According to the literature peer review was possible even in the tightest time frames, however this process was constrained by time limitations that precluded thorough review. This outside review was extremely important in resolving a data adequacy issue. Most of the data had been collected by volunteers in the Volusia case and there was some question over its’ validity. The review process in which top species experts participated resolved this by confirming the validity of the data was “very good.”

Participants in five cases (Riverside, Florida, Port Blakely, Plum Creek, El Coronado) relied on an internal review of the data.

Required Involvement Cases

Participants in the three public permittee required involvement cases established a separate technical group within their respective agencies to “hammer out” the scientific details of the plans. These cases split decisions into two levels, technical and managerial, within the state agency that was the applicant. Technical teams negotiated a plan on scientific grounds, reported their findings to the larger group, and then decisions were finalized at the management level to incorporate political concerns. The use and structure of technical groups as exemplified in these cases was strongly supported by researchers.

Participants in one private permittee required involvement case (Weyerhaeuser) established a separated science group whose findings were incorporated into the larger decisions being made in the plan.

In the three public permittee required involvement cases (Jackson, Washington, Swan Valley) an internal review of the data was performed and these reviews were deemed “high quality” by participants because the state agencies involved had a “wide breadth and depth of expertise” and were seen as “very knowledgeable.”

Participants in one private permittee required involvement case (Weyerhaeuser) performed an extensive external review of the scientific findings. Two different independent science organizations reviewed the data, and some substantive changes were made as a result of this review. All of the other private

permittee required involvement cases performed only an internal review of the data.

Integrated Holistic Knowledge

A decision that does not include all the relevant variables will not be functionally coherent, and the complexities of environmental decision making require an extraordinary range of inputs to produce an informed, functionally coherent decision. Prior research indicates that effective collaborative processes integrate all the ways of knowing and produce a holistic understanding of the system as a whole.

Representative Involvement Cases

A range of knowledge usually consisting of biological, economic, and social/political was utilized in all ten representative involvement cases. Biological information was the primary data source in all cases. However, several processes were likened to a “three legged chair resting on economics, politics, and biology”, and most participants described their plan as more of “a socioeconomic and political beast” than a scientific one. Baskerville (1997) noted, “as a society we seem to converge on pathological gridlock with respect to linking economics and ecology in decision-making.” These cases acknowledged and included both economics and ecology in decision-making. However, researchers suggest a three-legged chair can still fall over, and thus the cases did not completely reflect all the types of knowledge suggested in information from the literature.

According to interviewees “there were always differences of opinion” regarding data, but these differences were most often resolved by finding common denominators. Prior research predicted conflicts over integrated information, and also the outcome of conflicts being resolved by airing these differences rather than engaging in a test of will.

According to the literature participants’ traditional, cultural, local, and remembered knowledge have a place at the table in environmental conflict resolution. This information was not included in the majority of the cases. Only the Maine case involved local expertise, and to participants’ surprise their involvement raised issues the data teams had not considered. In this case local solutions were generated using local expertise. Both the Wisconsin case and the North Carolina case researched and used information about landowner practices in the area. However, in both cases landowners had to be persuaded to let scientists involved in the HCP gather data on their lands, and getting landowner knowledge was described as “difficult.” As researchers suggest, common people can speak intelligently for themselves and about their land management practices. According to the literature these cases made the mistake of relying on the expert mentality. Instead of sending an expert to collect what they think is pertinent information from a landowner, researchers indicated the landowner needed to be involved and speak for herself. The information from the literature on our past and recent history suggest a major distrust of experts by lay people, so it is not surprising the cases found it “difficult” to go on private land and collect data.

Some of the confusion and complexity of environmental conflicts are directly attributable to the way information is organized, interpreted, communicated, and differentially judged to be useful (Adler et al., 2001). The Maine case experienced this and described frustration with integrated information from various institutions. A large amount of time was spent discerning the various knowledge bases, where overlap occurred, and where differences existed. As the process progressed, the institutions involved were able to move past bureaucratic constraints and focus on developing solutions.

Expanded Involvement Cases

A range of knowledge usually consisting of biological, economic, and social/political was utilized in the eleven expanded involvement cases. Several interviewees pointed out that the federal and state agency decision-makers involved outside entities in order to “present the whole picture,” and because they realized that they “could not do this alone.” For example in the Florida case the state agency wanted all the information it could get, and gathered information from locals, engineers, experts and other knowledgeable agencies. One participant indicated that state and federal agencies “try to stay out of the economic game, but clearly economics were a major part of the applicant’s goals.” These cases acknowledged and included both economics and ecology in decision-making. However, researchers suggested a much wider range of knowledge needed to be included, and these cases do not completely reflect all the types of knowledge the information in the literature suggested. The balance between political and biological needs and the “blending” of the two were, as

researchers predicted, a source of frustration for participants. All participants agreed that at some level political considerations weighed in over biological ones.

In one case (Massachusetts) there was not an effort to bring in other scientists, or other knowledge bases such as local expertise, although many sources of previously existing data were consulted. In this case the state biologist had worked on conflicts concerning the species over the past years, and he was confident he knew what was right for the species and for the various user groups. He was determined to balance the interests as he saw them.

Required Involvement Cases

In the ten required involvement cases, biological and economic data were the primary sources of knowledge consulted. Differences of opinion were resolved by negotiations described as “a blending of expertise to solve a perceived problem.” Several participants noted differences of opinion were usually a “misinterpretation issue that needed to be clarified.”

Participants in one case (Washington) sought tribal “knowledge of watersheds and expertise in hydrology and geomorphology,” and involved another state agency that provided more “local expertise” for the area. This case also included what participants described as “lightweight socioeconomic” information.

Deal Explicitly with Uncertainty

However great our information and knowledge base is, no matter how integrated or holistic, our understanding of environmental, social, and economic reality remains incomplete. A principle regarding data and information management was to clarify and make uncertainty and risk explicit. The greater the uncertainty, the more “adaptive and heuristic” the resulting agreement should be (Adler et al., 2001). Adaptive management is a strategy that proceeds in a learning process mode as information becomes available.

Representative Involvement Cases

Interviewees in all ten of the representative involvement cases responded that they felt the data was adequate for making decisions. However, participants in all the cases except North Carolina acknowledged significant “data gaps” and that “there was still a lot that was not known.” In general participants indicated that data gaps were due to the fact that required information was not yet known to science, rather than due to a failure to include it in the plan. Although several parties in all the cases wanted to collect more information, considering the time and resource constraints in the cases this was viewed as impractical. The North Carolina case was the exception to the rule as participants expressed very high levels of confidence in the data. Many participants in the North Carolina case indicated that there might have been more data on the species of concern than on any other threatened or endangered species in the U.S. In general, the understanding of the participants that they did not know it all can be viewed as explicitly dealing with uncertainty. Several participants in all these cases

recognized uncertainty, it was discussed, and then participants agreed to proceed with the “best information available at the time.”

Two cases, Clark County and Wisconsin, where the lack of “hard data” was greatest participants adopted an adaptive management strategy. In both cases, participants will modify their conservation strategies as science demonstrates a need for change. In the Clark County case, participants also viewed adaptive management as an approach that could reconcile the differing time scales of research and decision-making. The adaptive management approach in these cases was consistent with points from the literature.

Expanded Involvement Cases

Interviewees in all eleven of the expanded involvement cases responded that they felt the data was adequate for making decisions. All participants agreed “you can never have enough data,” and most participants acknowledged shortcomings. Although several parties in all the cases wanted to collect more information, considering the time and resource constraints in the cases this was viewed as impractical. Several participants in all these cases recognized uncertainty, it was discussed, and then participants agreed to proceed with the “best information available at the time.”

In one case (Massachusetts) uncertainty was not recognized, and “data adequacy was not an issue.” Since the agency biologist who compiled the data was the primary decision maker for the plan, it was not surprising he found his own data “unquestionable,” and “complete.”

Participants in one case (Riverside) reported considerable differences of opinion over data interpretation. Environmental interests felt the models used did not effectively protect the species. Others felt the models used were overly conservative. Apparently the ambiguity that often characterizes ecological data was a cause of dissatisfaction for parties advocating for both greater and lesser protection of the species.

Participants in several cases (Plum Creek, Port Blakely, Volusia, Spring Mountains) faced with the ambiguity that often characterizes ecological data, chose to incorporate adaptive management strategies. As one participant stated, "more information would have given greater certainty for the species for which very little was known; therefore this plan was made to be an adaptive plan." Another benefit of adaptive management cited by participants was that differences of opinion over the data were resolved through the role of adaptive management.

In the Arcata case even when information was as good as could be expected, participants felt they were "usually guessing." The lack of data was compensated by "overly" conservation measures, a strategy that errs on the side of conservation.

In the Quail Hollow case, adaptive management was not incorporated but one participant expressed frustration with the lack of available data on the costs of managing preserved areas. This was the first HCP for the species, and the interviewee wondered why issues of cost could not be revisited in a few years

when there was more certainty. He felt requiring the permittee to make long-term projections in the face of complete uncertainty was “absurd.”

Required Involvement Cases

Participants in the six of the ten required involvement cases (Lantana, Ribar, Weyerhaeuser, Pender County, Red Oak, Wilmon) responded the data were adequate, but acknowledged the very nature of ecological data required “leaps of faith.” Thus uncertainty was recognized and dealt with as researchers suggested.

In four cases (Jackson, Washington, Swan Valley, Peregrine) the data were not always adequate or complete, and “achieving scientific certainty was extremely difficult.” Participants in these four cases resolved inadequate data issues, and differences of opinion through instilling adaptive management. Adaptive management was seen as an essential tool in these four plans as a constructive way around limited data. Prior research indicates the more uncertain the information is the more an adaptive approach is necessary.

CHAPTER FIVE

LESSONS LEARNED

A new style of natural resource decision-making is under development in the United States that has evolved from the approach that dominated the last hundred years of conservation activities. The historical implementation of natural resource policy has been characterized as top down where a highly compartmentalized bureaucratic structure dominated the management of natural resources through policies focused on outputs and guided by scientific management. The resolution of conflicts in the form of trade-offs, or split the stakes decision-making, in the implementation of policy has led to fierce competition for the power necessary for one goal to dominate over another, and this competition tended to perpetuate and escalate conflict over natural resource issues into more and more harmful realms. For example, the controversy over the Northern Spotted Owl in the Pacific Northwest fragmented communities through a classic win/lose debate that pitted species conservation against the use of economically important timber resources.

Collaborative conservation and ecosystem management approaches were largely born out of the recognition that, in general, the traditional implementation of policy was ineffective at resolving conflict due to the narrow approaches available in the courts and administrative appeals. In addition, these approaches are almost always divisive in ways that reverberate beyond the immediate issue in dispute, breeding long-standing disputes. "Collaboration started with an urge

to somehow break the gridlock to move beyond paralyzing stalemate, to try something new” (Brick et al., 2001). Collaborative policy processes have been characterized as bottom up, rather than top down, recognizing that no one group is the dominant decision-maker in the current shared power world. Collaborative policy processes are comprehensive in addressing multiple natural resource values and interests, have socially defined goals and objectives, include more voluntary rather than regulatory policies, and rely on integrated holistic knowledge that acknowledges everything is connected and that science is only one knowledge base. Given the monumental differences between traditional and collaborative policy processes, this urge to try something new in the form of collaboration can be viewed as a paradigm shift in natural resource decision-making. “Values of the past created the institutions of the present, and changing social values will engender the institutions of the future” (Cortner et al., 1996).

The goal of this research was to more fully understand this new style of decision-making, collaboration, through examining the growing literature base and case analysis of participants’ experiences in collaboration. Collaborative process principles identified in the literature coupled with participant experiences in collaborative processes can provide lessons learned to help inform our society on how to make the transition from our past adversarial, split the stakes processes and our future with collaborative processes. This chapter explores the lessons learned from the principles as identified in the literature and experienced in the cases to help guide the current paradigm shift to collaboration.

- ❖ Involvement shapes collaboration, and while inclusive involvement was beneficial, it was no panacea for the complexities of involving the variety of interests engaged in natural resource issues.

There are many different types of collaborative relationships, and there is no one right way to promote collaboration. The principles identified in the literature provide a guide to what important process issues need to be managed in effective collaborative processes. However, these principles are by no means exhaustive, and may not be experienced in all real world applications of collaboration. The cases analyzed in this research showed a large amount of variation in how HCPs were developed. The issue of who is meaningfully involved in the process of developing an HCP was the most important element affecting case diversity. Plans with representative involvement practiced more of the literature principles, fewer principles identified in the literature were practiced in the expanded cases, and the required cases often did not experience many of the literature principles. The flexible approaches available in collaboration and HCPs, allowing for site-specific design, may be part of the appeal of collaboration. However, the literature principles were on the whole much more prevalent in representative and expanded involvement cases, suggesting that these cases are more in tune with the principles associated with collaborative planning.

The level of involvement varied among public and private permittees. Of the 13 private permittee cases, none had representative involvement, 6 had expanded involvement, and 7 involved only the applicant and Service

representatives. For public permittee cases, 15 of the 18 were either representative or expanded involvement while the remaining 3 involved the Service and permittee only. For private applicants to engage in more inclusive involvement they will have to see it as “relevant” or “required.”

Participants in the representative and expanded involvement cases supported the principle of inclusiveness, defined in the literature as the “need to proactively engage all interested or affected groups in the process” (Gray et.al 2001). Participants in representative and expanded involvement cases were unsure about choosing a level of involvement at first, and indicated a struggle between being responsive to multiple constituencies and a perception that smaller groups would yield greater efficiency. However, participants in the representative and expanded involvement cases explicitly worked through the issue of involvement and the struggle was apparently worthwhile, as participants indicated that the benefits of inclusive involvement outweighed the associated problems. Despite the complexity of inclusive involvement, interviewees felt the cumbersome process of involving so many voices was precisely what made the process work.

The benefits of an inclusive process, as cited by participants, included fostering a “sense of ownership” among participants, decreasing conflict among stakeholders, spreading the burden of plan development, and achieving a “truly democratic process’ where “all concerns could be laid out and addressed.” Product benefits of inclusive involvement, as cited by participants, were better conservation activities, a “better product”, and “buy-in” of the plan among

participants and non-participants. This suggests that the required involvement cases are missing out on a great deal of benefits provided through inclusive involvement. Although more inclusive levels of participation are not “required,” this certainly suggests that inclusive involvement in private cases may be a “relevant” issue and provide potential benefits.

All of the cases struggled with the issue of involvement and participants provided many different rationales for choosing the level of involvement in each case. This suggests that involvement is a difficult issue in every case and the first challenge that all collaboration needs to address. Involvement will shape the process, it is not a black and white issue, and will need to be decided at the onset since different interests will be necessary for different collaborations. The importance of involvement in the HCP cases suggests needed attention and focus on process management in collaboration. Participants described the process of deciding involvement as being “torn between getting the job done and having a democratic process,” and as a “bit of a balancing act.” However, the literature and the cases conclude that a process that is inclusive produces considerable benefits.

Groups felt left out or underrepresented throughout the HCP cases. This suggests a paradox in that no matter how inclusive a particular collaboration, some group or individual will always feel left out. Environmentalists were the most common group to report feeling left out, followed by private landowners and the public at large. In a few cases state agencies and tribal interests felt underrepresented. Several HCP participants noted that someone always feels

left out in a public process. Several participants noted that environmental and tribal groups routinely state they are underrepresented in the HCP process. While all interests may never be able in reality to be involved, a key concept to balance this tension over participation in the representative and expanded cases was to reach a level of involvement that “maximized success, and minimized sabotage.”

The representative and expanded involvement cases were more likely to have interests state they felt left out or underrepresented. This may reflect the sentiment suggested by HCP participants that someone always feels left out in public policy processes. In these cases the door to involvement was opened, and anybody who did not feel they made it inside may have expected more of an opportunity to be involved since the process was structured as inclusive. Since inclusiveness was a goal of the process, there may have been an inherent right perceived by many groups that felt they should have been more involved and this may explain why so many groups did feel left out of what were inclusive processes. On the flip side, in the required involvement cases inclusiveness was not a goal of the process, so there was less of a chance of being involved at all, and fewer cases experienced groups that felt underrepresented. If a process is inclusive it appears to get people’s hopes up for their involvement and they are more discouraged if they feel left out of a process that was meant to be inclusive than if they are left out of a process that was designed for required involvement.

- ❖ In real life, a productive role is the true measure of involvement and while this was difficult there were ways, such as the structured use of subgroups, to balance the tensions between inclusive involvement and manageability of the process.

Role efficacy, participants performing a meaningful and productive role, was an important issue that demanded attention in the cases. In all of the HCP cases, participants struggled with who should have a role in decision-making, and the cases exhibited great variety in how they dealt with participants' roles in decision-making. The importance of the clear designation of roles was also evidenced in HCP participants' perceptions of the Services role.

In the representative involvement cases all involved participants had a productive role in decision-making, and subgroups were “overwhelmingly received” as the way to balance the tensions between inclusive involvement and role efficacy. The representative involvement cases were more likely to limit participation to groups perceived as cooperative or capable of collaboration. The active avoidance of groups perceived as hostile to the process denied these groups a role in decision-making. One case faced later litigation from two environmental groups that were denied access to the process, and two other cases faced litigation from private landowners (mining, ranching interests) who felt underrepresented in the process. Since the participants in the representative involvement cases did have a role in decision-making, the reason some interests still felt underrepresented in eight of the ten cases is probably related to the previous discussion about the expectations of an inclusive process. This could

also be a diversity issue. We cannot know the extent of the number of participants representing an interest in the representative plans, and it may be that environmental and landowner groups had less seats at the table than other interests leading to their perception of underrepresentation.

Many of the parties who felt underrepresented were involved in the expanded involvement cases and their feelings of being underrepresented appear to have more to do with achieving a productive role in decision-making rather than simply involvement. In these cases a meaningful role in decision-making was limited to a small group of primary decision-makers who received input from various stakeholders. Several participants who did not have a role in decision-making were “skeptically satisfied” with the plan, and would have been more satisfied if they were confident that provisions they had agreed to were included in the final plan. Most non decision-makers came to view their input as an “illusion of public input,” or “window dressing” since they felt they had little to no opportunity for meaningful input. These non decision-makers indicated distrust with the process and were unhappy with the results. Seven of the eleven expanded involvement cases had participants state they felt underrepresented, and it appears that involvement without a productive role was not really involvement to those participants who eventually felt left out. Subgroups were used effectively to help balance input and role efficacy in three of the expanded involvement cases. While many more people were able to shape the process and provide input through the use of subgroups in three expanded involvement cases, these participants did not have a role in decision-making. Environmental

groups most often felt left out, and several participants in both the expanded and required involvement cases felt that the Services represented environmental interests.

In the representative involvement cases role efficacy was a tough issue that was worked out through the use of subgroups. This struggle appears to have been worthwhile as all those involved felt they had a productive voice that fostered a “sense of ownership” of the plan. The expanded cases limited roles in decision-making and many involved interests were unhappy with the final plan. The representative cases show that inclusiveness and role efficacy issues can be met within the process if they are managed for through the structured use of subgroups.

The designation of clear roles proved to be one of the most pervasive issues across all the cases. Eighteen cases experienced a lack of clarity and understanding with respect to the role of the Services. The Services role was most often described as a “hands off” approach or the “bring me a rock” syndrome, and this served to frustrate participants. The Services play a paradoxical role in HCPs in that they are the plan approver and yet they are also “just another party.” The hands off approach taken by the Services is probably due to this paradox, since the Services did not want to dictate the process they would be approving. Although many participants understood the Services position, the unclear nature of what was expected from the Services at every turn in the plan was viewed as “offensive in the extreme.” Since so many participants

commented on the unclear role of the Services as a negative factor in developing HCPs, this suggests that this role needs to be made clearer to participants.

- ❖ Collaboration requires considerable time and skills, but as we continue to practice collaboration the time it takes may be reduced through the improved skills and relationships of participants.

The most frequently noted drawback to collaboration as cited by participants in the HCP process was the time it took to produce a plan. The length of time collaboration took was noted as the main negative factor of collaboration in all the cases analyzed, no matter what level of involvement was chosen. It is interesting to note that while many of the expanded and required involvement cases limited involvement in order to “expedite” the process, the length of permit approval time was still cited as the main negative of the collaborative process. Since the benefits of inclusive involvement were cited by participants as outweighing the effect a large group has on the efficiency of a process, this suggests that all cases might as well involve all the affected and interested parties.

The traditional implementation process is a known entity, but in collaboration participants are not sure what to expect. It is a kind of awkward dance that none of us knows the steps to. The dancing lessons provided in this research, and the continued experimentation with collaboration will help to more clearly define the collaborative process and over time the length of the process

may become shorter. However, it will take time and effort to build the trust that is necessary between participants in effective collaborations.

The “people skills” associated with mutual learning and separating the people from the problem were important considerations in achieving these two principles. These two principles are very skill dependent. The two failed cases in this research failed to achieve mutual learning and separating the people from the problem. A participant in one of these failed cases indicated that “people skills” are the most important knowledge for participants in collaborative processes, and that the legal and biological information participants also needed were “more easily learned” than these “people skills.” This suggests that education on collaborative communication skills may provide important benefits for future processes.

The issue of people skills was most often defined in the cases as getting the “right people” involved. The right people were most often defined as those with the ability, or character, to collaborate. Several personality traits such as patience, tolerance, and a sense of humor were identified to be helpful and described these “right people.” Groups perceived as hostile to the process of collaboration were intentionally avoided in some cases. This issue reinforces the extremely skill dependent nature of collaboration, and suggests a need to provide more education on the skills necessary to collaboration – since it is our future. However, this may also suggest that process conveners need to give people a chance to show that they are the “right people.” The possibly more “entrenched” type of people that were avoided in these cases may be the exact people

process conveners need to involve in the process in order to reduce conflict and to reduce the negative influence (lawsuits) of these groups from outside of the process. The information from the literature suggested that all potential participants need to be involved, or at least invited to the process at the onset. Then the issue of participation is more clearly defined under the principle of transparency where participants themselves decide if the collaborative process will work for them. The point is, no one but these groups should be deciding if they are the “right people” for a collaboration and an effective process gives everyone the chance to be involved. None of the cases experienced the facet of learning about the collaborative process and its alternatives as part of the principle of transparency. This suggests that in the future, processes can do a better job of involving the “right people” by providing education about the collaborative process and allowing participants to decide if it is in their best interests to collaborate.

- ❖ Facilitation can help participants get through the unfamiliar process of collaboration and help manage the people skills necessary for effective collaborations.

Facilitation of the process may be necessary to create a safe environment and a more productive role for participants in collaborative processes. The struggles that participants experienced in the cases over the issues of involvement, role efficacy, and collaborative skills were probably more difficult because they were participants in the process. That is, it is difficult for

participants to manage a process because they are so heavily invested in it. In the six cases that used facilitation, the facilitator performed the critical role of process management and this role was well received.

- ❖ Trust and social capital can be built between very divided interests through the principles of mutual learning and separating the people from the problem.

The analysis of the cases provided considerable hope that the more we experience collaboration the better the process will become over time because participants can build trust and improve working relationships. Trust was built between very divided interests in a majority of the cases. The representative and expanded involvement cases were much more prolific in participants and thus even more trust was built between a variety of interests. Trust was built through the principles of mutual learning and separating the people from the problem. Once participants heard and understood other's viewpoints, stereotypes were broken down and negotiations were able to proceed in an "amicable" instead of adversarial manner. In one case participants experienced "regret" that "stakeholders interviewed did not get to hear other's points of view." In this process stakeholders were interviewed one on one and as such no mutual learning took place. All the participants in this case felt a mutual learning type principle was necessary for a better process so that everyone understands all the issues and can see how alternatives are balanced otherwise "you pay for it later."

Relationships were overwhelmingly improved between participants in the cases analyzed in this research. One participant who stated, “ten years ago the people I would have paid to have terminated, I’ll now have in my backyard for a barbecue” summed the nature of the change in relationships among participants best. There is a common belief that if relationships can be built between those with shared power, their future engagements with each other will be more positive and successful because they have built the necessary trust and respect. This was evidenced in two cases where many participants had already worked together in collaborative resolutions to natural resource conflicts and already knew, respected, and trusted each other. The participants in these two cases cited this previous background as contributing to the amiable planning process they experienced. As one participant stated, “when you build a network like that, it improves any negotiating process.” The collaborative efforts analyzed in this research, and the continued experimentation with collaboration around the country are building a foundation to make the transition from traditional policy processes to collaboration, and this foundation of trust among people will continue to improve as we participate in collaboration. Likewise, the collaborative process, and possibly the time it takes to collaborate, will improve as this foundation of trust between divided interests continues to grow through the use of collaborative processes.

- ❖ A regulatory framework and associated targets are important incentives to participation in collaboration. Collaboration may not be so much of a paradigm shift as it is an evolution, since it often depends upon the strict regulatory structure of traditional processes to provide incentives to collaborate.

While none of the cases explicitly provided education on collaboration and its alternatives, nor did participants explicitly work out their BATNA, incentives to participate were recognized as the driving force behind participation in collaboration. As one participant stated, “you don’t spend \$43 million on a rat just because you feel like it.” The incentive to participate in the majority of the cases was to avoid the “hammer of the ESA.” In the two failed cases uncertainty over the ESA, and expectations that imminent changes in the ESA would lead to a weakened policy, provided a disincentive to participate in the collaborative effort. This suggests that the ‘gorilla in the closet’ in the form of the ESA provides a basis for recognizing the shared power between divergent interests and without the “hammer of the ESA” many parties in conflict over natural resources would not have an incentive to collaborate.

- ❖ Shared power is a reality in the sources of information needed for collaboration and for natural resource decision-making in general.

While the “hammer of the ESA” provided the biggest known incentive to participate, participants in all cases recognized the reality of a shared power world. In the representative involvement cases all interests were involved and

perceived as legitimate because participants recognized that they needed to build a base of support for the plan if they were to be successful, and inclusive involvement was viewed as necessary to support the plan. All of the expanded cases recognized that powerful interests must participate for the process to work, and in these cases those with power over land management is the definition of inclusiveness. These cases have expanded participation due to the shared power of several parties managing the resources in conflict, that is, while the primary decision-makers in these cases were all powerful interests, there were enough powerful interests out there to increase the level of involvement to the expanded level. The benefits of “buy in” and producing a “better product” cited by participants in the more inclusive representative and expanded involvement cases recognize the reality of a shared power world where successful plan development and implementation relied upon the involvement of all affected and interested parties. Similar to the expanded involvement cases, participants in required involvement cases are those with the necessary power to implement the agreement. Seven of the ten required cases had a private applicant and in general these private permittees “felt this was a private matter that did not concern the public.” In these cases the extent of shared power is not as great due to the privately owned land, however even small private landowners needed to collaborate with the federal government to legally implement their decisions.

Prior research acknowledged that there is a logistical advantage in limiting the number of voices, but notes that this advantage is far outweighed by the problems that arise if someone decides they have been unfairly excluded.

Problems can arise when groups are excluded because of the reality of a shared power world. Even when groups are excluded from a process, they still have the power to influence the process from the outside. Some of the HCP cases were shaped by the litigious environment brewing around them, and in a couple of cases strongly worded letters to the Services were seen as influencing the process. Five cases experienced later litigation from parties that felt left out of, or underrepresented in the process. Much of the logic behind choosing a more limited level of involvement revolved around “expediting” a process and the belief that more involvement would delay or “derail” a process. The representative involvement cases clearly present an example where more involvement did not “derail” the process, and the experiences in the cases show that non-involvement can also seriously “derail” a process.

Past research revealed that the use of integrated science was necessary for an effective collaborative process, and this is also another example of shared power in the form of many different knowledge holders. Many different organizations and people hold the knowledge necessary for an effective collaboration, whether that information is biological, economic, cultural, social, or political. Participants in the HCP cases, some more than others, recognized these different ways of knowing and their importance in reaching durable, effective agreements. The representative and expanded cases, and those with tribal responsibilities, did a much better job in incorporating all of these ways of knowing although local, or cultural knowledge and social science was the most often lacking in all the cases. All of the cases have broken the classic barrier

between ecology and economics and successfully integrated these two different information sources to produce a plan that continued economic development while being biologically responsible. The cases indicate some success in integrating different ways of knowing and future collaborations need to continue to do a better job of this, most importantly including local knowledge and social science. A couple of cases exemplified the traditional expert mentality. These cases had experts try to persuade private landowners to let them on their land to collect data. That these cases experienced “difficulty” acquiring data from private lands was not surprising given the findings in the literature review. Researchers suggested that common people can speak intelligently for themselves and about their land management, and if information is required from private citizens it is best to involve them in the process and let them speak for themselves.

- ❖ Collaboration requires the balancing of tensions of multiple inherent paradoxes.

Recognizing the inherent paradoxes in natural resource policy making, and framing these paradoxes as tensions to be balanced in collaborative processes was an important lesson learned in this research, and dramatically different from the historical construction of paradoxes as trade-offs. Paradoxes are the way of the world, and collaborative processes seek to deal more effectively with the conflict produced by paradoxes. All of the cases except for the two failed cases were able to balance the tensions between ecology and economics and create a plan that met the needs of both. This may be the

biggest step toward our collaborative future that will require more of the balancing of tensions as evidenced in these cases.

Another paradox evidenced in the cases and the literature review was that participants want the best science, but then they don't trust it. The interwoven approach between scientists and policymakers appears to help balance the tension of this paradox. The interwoven approach helps build trust between scientists and policy makers because all participants knew what was going on and how data and information issues were being decided. Prior studies also suggested that participants have the right to have the black lid of science opened for them, and become educated and informed on the science involved instead of being asked to trust experts. This education occurred in the majority of the cases. However, the interwoven approach described in the literature review suggested scientists have much to learn from policymakers, and none of the cases seem to have made this reach to the next step.

The interwoven role of scientists in these cases and as described by researchers in the literature review presents another paradox. Participants were usually happy to let the technically gifted "hammer out" the details, while at the same time they wanted to know what the scientists were up to. The role of the scientist was like a separate but equal philosophy, which is inherently a contradiction. The scientists' role, especially in the representative involvement cases was seen as invaluable, and their input necessary, but participants at some point did not want scientists to make the decisions. Seven out of the ten representative cases used the technical committee structure suggested by prior

research to manage objective scientific input while decision-making control was still vested with the participants.

- ❖ The credibility of scientists in real life collaborations is compromised and can be addressed through the principle of objectivity in future collaborations.

The representative cases did a much better job at protecting the credibility of the scientists involved through the use of technical committees with clear but permeable (interwoven) lines between scientists and policymakers than did the expanded and required cases. In the expanded and required involvement cases the primary decision-makers are the primary scientists, and this violated some measure of objectivity as identified in prior research. The expanded cases did do a better job than the required cases since many of the involved agencies split their personnel into technical and managerial teams. However, in both the expanded and required involvement cases those involved in decision-making and as scientists were from the same agency/company and all these participants probably had very similar cultural and professional world views.

Outside review of scientific information as suggested by researchers in the literature review was lacking throughout the cases. The representative cases did the best job of separating the science from decision-making, and using integrated scientific committees; four of these cases also sent their plans out for some type of review. In the expanded and required involvement cases, where some measure of objectivity was already compromised by having decision-makers and

scientists play one role, thus making an outside review of the plan possibly even more important, only five expanded cases and one required case sent their plans out for some type of external review.

This suggests that the objectivity of scientists was compromised in these cases, and future collaborations need to be more aware of the delicate position of scientists and the need to protect their credibility.

- ❖ One of the best known methods to dealing with uncertainty in collaborative processes was the utilization of adaptive management.

Prior research indicated that effective collaborative processes must deal with and accept uncertainty, and the cases struggled with this principle.

Participants always wanted “more data,” but at some point had to deal with “the best information available at the time.” Several plans related uncertainty to integrated knowledge, citing that they wanted to get as much information as they could from various groups and that more knowledge from these different sources helped to reduce uncertainty.

Only ten of the cases used the best philosophy available to deal with uncertainty – adaptive management. Adaptive management was heralded in these cases as a way to deal with the lack of “hard data,” as an approach that could reconcile the differing time scales of routine research and decision-making, and as a way to resolve differences in opinions and conflicts in perceptions of future impacts of actions. As more collaboration occurs in the future and

involves more participants, adaptive management may be one of the keys to dealing with uncertainty and managing conflicting scientific input.

- ❖ Process is important, and direct attention needs to be given to the principles identified in this research in order to add rigor to the collaborative process.

All of the previous lessons learned have one theme in common, the importance of a rigorous process for collaboration. The literature review in this research provides a template for important collaborative process considerations, and hopefully this template will serve as a start to the necessary discussion of how to accomplish a rigorous collaborative process. While all collaborations are different, the attention paid to process is important in every case. Decisions are the products of processes, and research has shown that there are many benefits from using a high quality decision process. Decision analysts repeatedly emphasize the decision process and not the decision product. The current movement toward collaboration represents a dramatic shift in the process of decision-making from our past adversarial, split the stakes decision processes.

Rigor in collaborative processes is important for all interests. "The public process of decision-making may not be a zero sum game, but the difficulty of satisfying all [interests] makes it necessary that the process of arriving at decisions about policy, be a fair one" (Willbern, 1994). If sincere people hold to differing values, there must be institutional arrangements that legitimize public policy discourse, mutual persuasion, and resolution of differences. Policy

processes that do not provide equal treatment for all are usually condemned as unjust and unfair, and a large measure of procedural due process is a moral necessity to make the process of public decision-making legitimate. For example, many interests felt underrepresented in the HCP process. One reason they may have felt underrepresented was simply that they did not get the policy results they desired. A rigorous collaborative process that is perceived as fair could help control for the feelings of being underrepresented stated by many interests. If the collaborative process can be viewed as legitimate then the outcome will be viewed as legitimate.

Several of the lessons learned described above can be controlled for through rigor and trust in the process, and some examples are discussed below.

The importance of involvement in the HCP cases suggests needed attention and focus on process management regarding involvement issues in collaboration. While in reality all interests may never be able to be involved, a key concept in balancing this tension in the representative and expanded cases was to reach a level of involvement that “maximized success, and minimized sabotage.” The representative cases provide an example where inclusiveness and role efficacy issues can be met within the process if they are managed for through the structured use of subgroups.

The issue of involving the “right people” can also be controlled for through rigor in process. HCP participants often described the “right people” as those with the ability or character to collaborate and cited personal traits such as patience, tolerance and understanding as helpful in effective collaborative

processes. While we cannot make people more tolerant, understanding or patient, participant behavior can be managed through a rigorous application of process principles such as mutual learning and separating the people from the problem to enforce a process that is equitable for all interests involved. In future processes, facilitation of a more rigorous process that adheres to these principles may be necessary. The participants are often too invested in the outcome of the process to sufficiently manage the process and the importance of facilitation in process rigor was evidenced in the six cases that used a facilitator. The facilitator in these cases performed the critical role of process management and this role was well received.

None of the HCP cases experienced the facet of learning about the collaborative process and its alternatives as part of the principle of transparency. This suggests that in the future, processes can do a better job of involving the “right people” through rigor in process by adhering to the principle of transparency and letting participants decide if they are the right people.

The rigorous application of the designation of clear and productive roles through the principle of role efficacy could also help to improve future collaborative processes. The unclear role of the Services was a pervasive issue throughout the HCP cases that frustrated participants. This issue can be controlled for through a more rigorous process that adheres to the principles of role efficacy and transparency.

The paradoxes evidenced in collaboration can be controlled for through a more rigorous process. For example, the lack of trust between scientists and

policymakers is reduced through adherence to the interwoven principle that allows for interaction and communication between scientists and policymakers. The whole process is about balancing tensions and the process principles provide a guide to a way to legitimately structure paradoxes and their resolution.

Scientific objectivity was compromised in many of the HCP cases, and again this can be controlled for through rigorous application of the process principle of maintaining scientific objectivity. For example the representative involvement cases did a better job of protecting their scientists credibility through management of the process in the structure of technical committees.

No explicit negotiation methods were used in the HCP cases and an obvious area of improvement for future processes is to pay attention to the principles of negotiation identified in the literature. Process is important and without structured negotiations there is no process in real life collaborations. Rigor in the process of negotiations can be achieved through adherence to the principles of focusing on interests, inventing options for mutual gain, and searching for objective criteria.

Summary of Lessons Learned

The major lessons learned in this research are:

- ❖ Involvement shapes collaboration, and while inclusive involvement was beneficial, it was no panacea for the complexities of involving the variety of interests engaged in natural resource issues.

- ❖ In real life, a productive role is the true measure of involvement and while this was difficult there were ways, such as the structured use of subgroups, to balance the tensions between inclusive involvement and manageability of the process.
- ❖ Collaboration requires considerable time and skills, but as we continue to practice collaboration the time it takes may be reduced through the improved skills and relationships of participants.
- ❖ Facilitation can help participants get through the unfamiliar process of collaboration and help manage the people skills necessary for effective collaborations.
- ❖ Trust and social capital can be built between very divided interests through the principles of mutual learning and separating the people from the problem.
- ❖ A regulatory framework and associated targets are important incentives to participation in collaboration. Collaboration may not be so much of a paradigm shift as it is an evolution, since it often depends upon the strict regulatory structure of traditional processes to provide incentives to collaborate.
- ❖ Shared power is a reality in the sources of information needed for collaboration and for natural resource decision-making in general.
- ❖ Collaboration requires the balancing of tensions of multiple inherent paradoxes.

- ❖ The credibility of scientists in real life collaborations is compromised and can be addressed through the principle of objectivity in future collaborations.
- ❖ One of the best known methods to dealing with uncertainty in collaborative processes was the utilization of adaptive management.
- ❖ Process is important, and direct attention needs to be given to the principles identified in this research in order to add rigor to the collaborative process.

Future Research Needs

The literature review in this research provides a template for important collaborative process considerations, and hopefully this template will serve as a start to the necessary discussion of how to accomplish a rigorous collaborative process. The collaborative principles identified in this research are by no means exhaustive or complete. Further research needs include the identification of other process principles that may need to be managed for in effective collaborative processes and further clarification and understanding of the principles identified in this research.

This research examined only one real life type of collaboration in the form of HCPs. Many other collaborative processes exist and more research needs to be done in comparing the different types of collaboration found in the real world to each other and to the template of principles of collaboration identified in this research. For example, the U.S. Forest Service practices collaboration in its

Forest Monitoring Project, which is committed to ascertaining and achieving goals related to forest sustainability. The Chicago Rivers Demonstration Project is a collaborative effort to provide a national model for the enhancement of urban waterways. The Trails and Open Space Partnership is a coalition of agencies and organizations working to achieve the vision of a continuous linear trail and open space system on the Mississippi National River and Recreation Area. The Tennessee Valley Authority (TVA) has several collaborative projects including watershed teams, integrated resource management teams, and TVA collaborates with a variety of partners and stakeholders on air quality issues. An examination of these diverse real life collaborations could provide a more complete view of where we are in our shift to collaborative mechanisms and what important lessons we need to know to manage that shift.

Throughout this research the issues of trust, personal character and collaborative skills were identified as barriers to and strengths of the collaborative process. Whether trust is dependent on collaborative skills or collaborative skills are dependent on trust is an interesting question that deserves further research attention. Conflict resolution literature often states that collaboration can proceed in the absence of trust between participants. This may be true if the participants are aptly skilled at collaborative negotiations, and these two areas of trust and skills in collaboration warrant future research.

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APPENDIX

APPENDIX

NCEDR HCP STUDY METHODS

Research Team

The research team consisted of a principal investigator from the University of Tennessee, an NCEDR research associate, and six summer research associates who did the majority of data collection. In addition, advice for the project was provided by an advisory committee, consisting of ten representatives from national environmental organizations, FWS, NMFS, industry, and academia. A private research consultant and the NCEDR director also provided information and advice for the project.

Case Selection

Selecting a sample of Habitat Conservation Plans (HCPs) and similar plans (i.e., safe harbor plans and non-Section 10 plans, such as candidate conservation agreements) was a complex task. At the time this study began (June 1998), there was no central clearinghouse or catalog of approved plans or plans in development. Even if there had been a central database of all existing plans, the rapid evolution of these plans and the policies governing their development complicated sampling. More recent plans have been developed in a very different political climate than older plans, and can be quite different in character. The range of characteristics exhibited by these conservation plans, in size and complexity, is enormous. Arriving at a truly random sample of plans (cases) likely would have resulted in a sample that was not actually

representative of the range of processes present in HCP planning. Therefore, this NCEDR study used a purposive sampling method. Purposive sampling methods have been used in other studies of HCPs (see Table Five).

Table Five. Case Selection Criteria of Three Other Studies of HCPS.

Organization Conducting Study	Case Selection Criteria
National Center for Ecological Analysis and Synthesis (Cite...)	• Chose cases covering one of thirteen “flag” species. • Focused on more recent plans. • Included plans representing diverse planning area sizes, applicant types, and geographical distribution (prioritized in that order).
Defenders of Wildlife (Hood 1998)	• Sought appropriate geographical representation. • Focused on larger plans. • Included a diversity of species and habitat types, giving special emphasis to plans with high media exposure or precedent-setting plans.
University of Michigan/National Wildlife Federation (Aengst et al. 1998)	• Sought appropriate geographical representation. • Selected plans based on approval status, land ownership (public or private), and a “public participation score” developed by the researchers. • “Second-tier” criteria included planning area sizes, applicant types, plan scopes, and controversy levels.

NCEDR criteria for case selection encompassed a plan's inclusion in other research studies, plan characteristics, and the feasibility of successfully carrying out the necessary interviews with plan decision makers.

Assembling a Pool of Cases

As mentioned previously, no comprehensive lists of HCP efforts existed at the inception of this project. The first task of the NCEDR research team was to assemble a pool of plans from which to select cases. The original project proposal for the NCEDR study called for researching fifty cases. Early in the study design, based in part on advice from the project advisory team, this number was reduced to thirty-five in order to make completion of the project more time and cost effective.

Cases used in earlier research studies (i.e., DOW, NCEAS, and UM) provided a good foundation for the process of pooling potential cases. Other potential cases were drawn from the personal experiences of the researchers and from assorted Worldwide Web sites. These efforts yielded a list of cases which were, for the most part, better known and for which plans had already been approved.

NCEDR was also interested in including more recent plans in their study. Searches of the *Federal Register* were conducted, yielding notices for approximately thirty plans available for comment after mid-1997. Included in these plans were "non-Section 10" plans (such as candidate conservation agreements). Regional FWS contacts were contacted to identify "failed" cases.

Selecting Cases

A large portion of the case selection process was handled through a process of elimination.

FWS contacts for “new” cases, listed in the *Federal Register* notices, were telephoned to determine plan characteristics and the feasibility of including these plans in our study. Some cases were eliminated at this point, due to an inability to locate the appropriate FWS staff person, who may have moved to a different region or left the agency.

A matrix was developed, and all potential cases were entered into the appropriate cells. Variables on one axis of this matrix included the level of participation (“limited” or “multi-participant”), type of applicant, and whether the plan required mitigation or long-term management. The other axis categorized the plans in terms of the previous studies in which the case had been included and whether the case was “new,” “failed,” or represented a “non-Section 10” process.

Using this matrix, the team began to remove cases from the list of possibilities. When several cases were found in any single cell of the matrix, overtly redundant cases were often removed. Because one goal of the NCEDR study was to complement the NCEAS study, cases not included in NCEAS were sometimes excluded in favor of those that were. Also wanting to concentrate on more recent processes, plans that were approved prior to the mid-1990s were also excluded.

Through an iterative process, revisiting each of the selection criteria several times, researchers were able to create a manageable list of potential cases. To determine a final list of thirty-five cases, two other criteria were used: proportionate representation of FWS regions and the representation of FWS staff.

HCPs have been much more prevalent in FWS Regions 1 (Pacific) and 4 (Southeast), followed by Region 2 (Southwest) [Note: this is only true if you discount the extensive number of plans for one species in Travis County, Texas, which is found in Region 2]. In selecting a final list of thirty-five cases, NCEDR sought to have a proportionate representation of plans in these regions. The use of HCPs in Regions 3, 5, and 6 has been much less common; however, because there are reasons to believe that the use of HCPs will increase in these regions, the research team also sought to include at least one plan from each of these regions. Fortunately, the list of cases that had emerged during the first phases of selection had resulted in cases that represented these regions in a reasonably proportionate way.

In doing further research on each selected case, it was found that, on occasion, individual Fish and Wildlife staff persons were involved in more than one case. To avoid over-sampling of any individuals and to respect these individuals' workloads, some cases were eliminated such that a FWS biologist would not be interviewed more than three times. This was only a concern in a small number of cases, however, and all but a handful of participants in this study were interviewed only once. The lack of availability of the most appropriate FWS

biologist led to the exclusion of a few cases from the study. Also, some FWS personnel expressed concern over the difficulty of distinguishing between similar cases from several years ago, which led to further elimination of cases.

The remaining thirty-five cases were found to be a well-distributed sample vis-à-vis the selection criteria. Problems associated with conducting interviews led to four cases being dropped from the study, resulting in a sample of thirty-one cases. Later analysis of plan characteristics found the plans to be representative of other categories as well (see Table Six).

Developing Questions

Working throughout early 1998, the study's principal investigator and NCEDR staff developed a document that outlined the HCP study's research focus. By following the four general areas of NCEDR inquiry, the following areas of focus were developed for the NCEDR HCP research: 1) involvement; 2) participant skills and process of learning; 3) role of science, data, and information management; and 4) tradeoff management and negotiation process. Later in the process, a fifth area, focused on "big picture" concerns and process outcomes, was also added.

When the Summer Research Associates arrived at NCEDR in early June, they were provided with this research focus document. Because the associates were coming from a variety of backgrounds—some had a great deal of experience working with HCPs while others had virtually none—this document served as an important common denominator.

Table Six. Characteristics of Plans Selected for NCEDR HCP

Study

Plan Title	Plan Type	Plan Date	US FWS Region	Single- or Multi-species	Permittee type	Primary Cause of Take
Arcata Redwood Company's Marbled Murrelet HCP	HCP	TBD	1	S	Private	Timber Extraction
Balcones Canyonlands Conservation Plan	HCP	1996	2	M	Public	Development
Clark County HCP	HCP	1995	1	S	Public	Development
El Coronado Ranch HCP	HCP	1998	2	M	Private	Other
Florida Bald Eagle HCP	HCP	1996	4	S	Private	Development
Georgia Statewide 'Safe Harbor'	'Safe Harbor'	TBD	4	S	Public	Timber Extraction
Jackson Demonstration State Forest HCP	HCP	TBD	1	M	Public	Timber Extraction
Lantana Development's HCP	HCP	1998	4	S	Private	Development
Louisiana Black Bear Conservation Plan	Non Section 10	TBD	4	S	Both	Timber Extraction
Maine's Atlantic Salmon Conservation Plan	Non Section 10	1997	5	S	Public	Other
Massachusetts Division of Fish and Wildlife HCP	HCP	1996	5	S	Both	Recreation
North Carolina Sandhills 'Safe Harbor'	'Safe Harbor'	1995	4	S	Both	Timber Extraction
Pender County, NC HCP and 'Safe Harbor'	HCP/'Safe Harbor'	1996	4	S	Private	Timber Extraction
The Peregrine Fund's Aplomado Falcon 'Safe Harbor'	'Safe Harbor'	1996	2	S	Private	Agriculture
Pleasant Valley HCP	Failed	1995	1	M	Public	Development
Plum Creek HCP	HCP	1996	1	M	Private	Timber Extraction
Port Blakely Tree Farms' HCP	HCP	1996	1	M	Private	Timber Extraction

Plan Title	Plan Type	Plan Date	US FWS Region	Single- or Multi-species	Permittee type	Primary Cause of Take
Quail Hollow Quarry HCP	HCP	TBD	1	M	Private	Other Resource Extraction
Red Oak Timber HCP	HCP	1995	4	S	Private	Timber Extraction
<i>Ribar Timberlands' HCP</i>	HCP	TBD	1	M	Private	Timber Extraction
Riverside County Stephen's Kangaroo Rat HCP	HCP	1996	1	M	Public	Development
San Diego Multi-species Conservation Plan	HCP	1997	1	M	Public	Development
The Spring Mountains Conservation Agreement	Non Section 10	1998	1	M	Public	Recreation
The Swan Valley Conservation Agreement	Non Section 10	1996	6	S	Both	Agriculture
Texas Red-Cockaded Woodpecker 'Safe Harbor'	'Safe Harbor'	1998	3	S	Public	Timber Extraction
Tulare County HCP	Failed Plan	1998	1	M	Public	Development
Volusia County, FL HCP	HCP	1996	4	M	Public	Recreation
Washington Department of Natural Resources HCP	HCP	1997	1	M	Public	Timber Extraction
Weyerhaeuser's Willamette Valley HCP	HCP	TBD	1	M	Private	Timber Extraction
Wilmon Timberlands HCP	HCP	1997	4	S	Private	Timber Extraction
Wisconsin's Karner Blue Butterfly HCP	HCP	TBD	3	S	Public	Other

The associates also spent a great deal of time during their first few days of work reviewing academic and other literature, as well as sharing their personal experiences with HCPs. Using the research focus document as a springboard, the research team held brainstorming sessions, which resulted in an extensive list of potential research questions. It was during this process that it became clear that a fifth category of focus—looking at “big picture” variables—was necessary. Group discussions helped to refine the focus for each of the five categories.

The research team then set out to create a protocol for telephone interviews that would last from forty-five minutes to an hour in length. Working in pairs or groups of three, members of the research team began to develop an inclusive, yet cogent, set of interview questions for each of the five categories. The resulting lists of questions were distributed to the entire team for comment. Once the questions had been refined, they were reviewed by the team in a group setting. Through an iterative process, attempting to reduce redundancy between and within sections, as well as keeping the duration of interviews under an hour, a draft protocol was developed. Particular emphasis was placed on using straightforward, objective language in the questions and other text. Where appropriate, one to three prompts were also provided for questions.

The draft protocol was tested using mock interviews among the research team and with four (Gooch, Corbett, Hood, Chamberlain) persons with expertise concerning HCP processes, including researchers from other studies and FWS staff not connected to any of the chosen cases. Comments and observations from these tests were used to finalize the protocol. Although the protocol was

reviewed after the first several interviews were conducted, the protocol changed little once the actual interview process began.

The final protocol consisted of introductory information, five question sections with introductions, a brief personal information section, and concluding remarks.

Choosing Participants for Interviews

After selecting the pool of cases to be considered, the appropriate types of interviewees were determined. Depending on the scope of the HCP, from two to six interviewees were selected from each case's "direct participants," in order to capture some of the diversity within these negotiations. For plans in which participation in the negotiation process was relatively narrow in scope, the FWS biologist, a representative of the permittee, and any consultant involved in the process were identified as the appropriate interviewees. For plans that involved a large number of participants in the negotiation process, the FWS biologist, a representative of the permittee, a representative of any consulting firm involved, and representatives of any involved development interests, environmental interests, government agencies, or citizens' groups were all considered potential interviewees. For most cases, first contact was made with the appropriate FWS staff person, who provided the names and telephone numbers of other participants. The main participants in each case were verified by asking each contact to identify the primary negotiators and then cross-checking lists for each case.

After the primary participants were identified, these individuals were contacted to determine their willingness to participate. Each potential interviewee was provided with an information sheet, explaining the purpose of the study and introducing the research center. In some cases, individuals could not be located or were unwilling to participate. Four cases were eliminated from the study due to an inability to successfully interview an adequate number of appropriate participants.

Conducting Interviews

Interviews were scheduled from the end of June through early August 1998. After interviews were scheduled, interviewees were sent an introduction to the topics that would be covered in the interview.

Interviews were conducted by telephone and lasted from twenty-five minutes to two and a half hours (most interviews were completed in forty-five minutes to an hour and fifteen minutes). Due to their schedules or other concerns, complete protocols were given to two interviewees and their responses were provided in writing (these cases were Volusia County's HCP and Lantana Development's HCP). While the research team recognized that this changed the biases inherent to the research method, this effect was not determined to outweigh the benefits of including these participants' responses in the study.

In all but two cases, a single researcher conducted all interviews for the case (exceptions are Riverside County's Stephen's Kangaroo Rat HCP and Ribar Timberland's HCP).

Managing the Data

A total of 124 interviews were conducted. Interview responses were recorded directly on the protocol sheet for each interview. For confidentiality purposes, no names were included on the protocol, but were recorded on a separate cover sheet. Immediately after the completion of an interview, researchers would review their handwritten notes on the protocol, providing further notations and fleshing out information when necessary. Within a week of the interviews, responses were entered into a Microsoft Access database.

Developing Case Summaries

Reports printed from the Access database were used as the basis for writing case summaries. These summaries largely follow the same format as the protocol: who was involved in the planning process; how did training or other guidance help the participants; how were data and information managed; how were decisions negotiated; and how satisfied the participants were with outcomes. Each summary also includes an introductory section containing brief background information about the case and characteristics of the plan.

The researcher who conducted the interviews drafted the summary for each plan. After an internal review and making revisions, the draft summaries were distributed to the appropriate study participants. Drafts were distributed with a sheet of instructions for review, which explained that NCEDR desired their input on any misrepresentations of facts or a lack of appropriate representation for participants' opinions. A two-week deadline for submitting comments was set;

however, in most cases, grace periods were provided to allow the largest number of comments to be submitted. Summaries were revised based on these comments received.

A final internal review process took place before the summaries were finalized. Because the changes based on participant reviews were made by one Research Associate, the revised drafts were distributed to their respective authors to be certain the researchers' impressions, formed during the interview process, were still represented.

Finalized case summaries were posted on the NCEDR site on the Worldwide Web. A letter was mailed to all study participants, announcing the availability of the plan summaries.

Analysis

The complete text of all thirty-one case summaries were entered into a QSR NUD*IST database. This qualitative data management program allows sections of text to be coded and indexed. Each section of text can be coded multiple times. Codes are organized in trees, with each code forming a node that is super- or subordinate to other codes.

Two Research Associates were responsible for coding data and writing internal research reports. They coded all text from the thirty-one case summaries into five large categories: goals, participation, technical, guidance, and negotiation. Subsequent coding occurred from within these categories, and internal research reports were organized by these five broad topics.

Each category was further coded through an iterative process, using the researchers' knowledge of HCP issues, existing literature, and full Research Team brainstorming sessions as guidance. As coding continued, additional categories and relationships emerged for coding. In this way, data was organized and reduced and theory was built throughout the coding process. During this process, a number of tables were constructed to better organize data and help researchers understand relationships.

Internal research reports were constructed by printing reports for individual coding nodes, which allowed researchers to have all applicable text available for notation, reflection, and for use as evidence. Writing of these reports was conducted in one of two ways. Reports concerning guidance and negotiation were constructed by subdividing the topics into sections, with each researcher writing different sections and combining them into one document. Participation, (technical, and goals?) reports were more integrative, with each Research Associate writing on the same topics independently and comparing and merging findings for the final report. When reports were drafted, they were shared with the principal investigator and discussed in meetings. Comments and additional analyses were then integrated into future drafts.

VITA

Denise M. Keele was born in Onawa, IA on May 12, 1974. She was raised in Blencoe, IA until age eight, and then moved to Sioux City, IA. During her senior year of high school Denise moved to Columbia, TN and graduated from Columbia Central High School in 1992. From there, she went to the University of Tennessee, Knoxville and received a B.S. in forestry in 1999 and a M.S. in forestry in 2002.

Denise is currently pursuing her doctorate in forest policy at the State University of New York, College of Environmental Science and Forestry in Syracuse, NY.