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High Time for the "Soft " Sciences to Play Hardball: Incorporating the Social Sciences into South Florida Ecosystem Restoration

by

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The collective field of the social sciences is a relative newcomer in the emerging trend to manage ecosystems in their entirety rather than the conventional resource-by-resource or species-by-species approach. Around the country, ecosystem management task forces have already begun to recognize that this comparatively new and complex type of environmental decision-making needs to be adaptable, elastic, and therefore amenable to change as new information is constantly being furnished. Critical to the adaptive management framework of ecosystem management is the incorporation of social system or human ecosystem information. While environmental managers have been slow to recognize the necessity of social science inclusion, where suspiciousness and mutual distrust has been displayed between natural and social scientists, the tables have finally turned toward the desire for more human ecosystem information. In response to this growing trend, the South Florida Ecosystem Restoration Task Force Working Group was persuaded to form a committee to inquire into how social science information could be used to solve problems and fill information gaps in the management of South Florida's pressing environmental problems. Two and a half years of preparation yielded what was perceived as a highly successful Social Science Symposium with numerous social system recommendation/ project strategies having been produced. Ultimately, a holistic synergy of the natural and social sciences, once fully realized, will result in more effective and successful ecosystem management. In illustrating this possible synthesis, two project forums—Eastward Ho! and the North Fork of the New River—are highlighted as prime candidates for the potential efficacy of the social sciences.

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Foreword

As I had contemplated the nature of this internship report repeatedly in my mind, I initially ran into difficulty with the nature of how it should be constructed. Should it read like a thesis or maybe even a regular research paper? This unquestionably raised my ire as I found the essence of my internship experience would admit to neither of these two formal constructs. Rather, what eluded me was the fact that, given the nature of my activities during my internship period, what I essentially needed to express was the true nature of things. Thus, what I finally realized was that I needed to expound upon that which actually transpired, which of course inevitably includes my own perceptions of not only the work I performed, but of the events, thoughts, ideas, actions, and people surrounding the core or nucleus of my multi-faceted internship experience. It may sound simple in reality, but the realization proved to be more problematic: what I needed to do was describe just that, my internship. This includes the recognizable work I was involved in as well as my own "take" on the whole process—not to mention the ideas and premises underlying this process. In the end, I harbor no reservations for what follows. This report, while not manifesting a true literary stream-of-consciousness, may however still seem to the reader to include too many personal viewpoints interspersed among all the facts and "accepted" or "established" views. It is my belief, nevertheless, that the personal flavor I am imparting to this report reflects the true nature of what must and should be one's own account of one's own internship experience. Anything else I could have written, would likely have been untrue to the format as it must logically be construed. And the rest is, as they say, history.

Introduction: Sporting the Social Science Scenario

Imagine, if you will, the following scenario. It is late fall, the pennant races are in full swing and everything hangs in the balance for a particular team. Lose this game, this fight, this struggle, and all will be seemingly lost. The price for losing, elimination and the knowledge that there may not again be just such a chance to make a real stand, to stave off the tide of perpetual defeatism. This team's managers are understandably apprehensive, sensing that something is missing in the team's lineup that could push them over the top to victory. Nervously, the managers survey their game plan and readily identify the soft spot, untested link, and as yet the unproven part of their arsenal that might or even must be the key to eventual success. With the realization that the battle hinges upon the active participation and perceived merits of a relative newcomer, the team managers breathe a collective sigh and motion for the newly arrived upstart to head to the plate. The managers have only these words of encouragement to this would-be-champion, "It's high time for you to get in the game and play hardball!" With that, the newcomer, the upstart, and the heralded missing link takes up the bat under the heavy weight of not just the managers' expectations, but the whole team's as well.

Just what team is it that may be said to be in such a precarious position? Please look no farther than yourselves and your local neighborhoods and communities, for the team is none other than the collective population of the geographic area known as South Florida. The team managers may be said to be the eclectic assembly of environmental management entities working at the federal, state, and local levels as well as relevant public interest groups. In the team arsenal are the traditionally relied upon natural or "hard" sciences who have proven in the past that they can render aid and be of invaluable

service to every embattled environmental manager. Yet, there has been among those who oversee environmental health a disquieting notion that something has remained missing, a critical player espousing critical knowledge that has not to this point been completely utilized or fully tapped. Therefore, just who is this mystery newcomer, the celebrated missing link upon whom so many hopes and expectations have been placed as in the above metaphorical scenario? This newly arrived player on the scene may be said to be that collective group of sciences, dubbed the "soft" or social sciences, and it is indeed high time for these sciences to jump into the trenches and play the environmental policy version of hardball.

When looked upon through the lens of time, the fate of South Florida's environment is obviously at a critical stage and relative turning point. Pollutants such as phosphorus from farms south of Lake Okeechobee and invading exotic species inhibit and choke off native Everglades flora. Water which once flowed in sheets through South Florida is now arbitrarily delegated through a complete maze of complex water management systems with a seeming myriad of different canals. Many times this leaves South Florida's wetlands either high and dry or flooded, and often this occurs in discordance with the area's natural cycles. Alga blooms occasionally spread like a blanket across Florida Bay and around the nearby Florida Keys. The rapid tide of overpopulation and urban expansion continually exerts pressure to the west of the Dade, Broward, and Palm Beach county metropolitan areas placing a veritable stranglehold on the retreating eastward boundary of the once sprawling Everglades. And the list of threats to what once was a vast entire ecosystem goes on and on as these perils have been well documented in other literature.

First, this report will broadly examine the relatively new concept of ecosystem management and how this abstraction or theory of environmental management plays a central role in addressing the many threats to the well-being of this country's endangered ecosystems and to the current efforts for their restoration, such as the unprecedented movement currently underway in South Florida. As will be discussed, it is all too commonplace that problems in environmental policy making and management are increasingly complex as they have grown more numerous, more interrelated, and more varied than in the past, hence the need has arisen for this more complex and overarching ecosystem approach. Finally, as a way to respond to these complexities inherent in ecosystem management, the term "adaptive" management has come into wide use as a pragmatic philosophy or perception of just how ecosystem management may be implemented.

Second, this report will address what has already been expressed in the opening metaphor: the call for the social sciences to fill the perceived void of knowledge when it comes to ecosystem management and restoration. In the last decade or so when the discussion in scientific circles would center on ecosystem management, many managers having to make difficult decisions and policy choices found that there was an apparent scarcity of necessary sociopolitical and socioeconomic information pertinent to each final policy option. Thus, the traditional biological impetus that pervades ecosystem management has frequently been supplemented with the desire to achieve true adaptive management through an understanding of the social systems that constitute a part of the ecosystem in its entirety, in other words, the human ecosystem component. One only has to view the mandates of the now many ecosystem management task forces around the

country to discern that their guiding principles are replete with references to incorporating social and economic goals into comprehensive environmental oversight. This report, then, will broadly examine those social sciences deemed necessary to fulfill ecosystem management goals while weighing the positive benefits associated with their incorporation as well as highlight the inevitable conflicts between the natural and social scientists that have been apparent throughout the years.

Third, this report will narrow its scope to deliberate on the February 1998 South Florida Social Science Symposium. This symposium was the culmination of the efforts of many individuals representing a number of different agency affiliations and the result of many man-hours in terms of logistical planning and debating about ideological content. What will be made clearer is that this symposium reflects the already stated trend toward finding the appropriate niche for the social sciences in environmental planning, in this case so that they may act as a sort of salve for the current fissures that fragment South Florida ecosystem management policy. Charged with oversight of South Florida ecosystem restoration, the multi-agency South Florida Ecosystem Restoration Task Force (hereinafter SFERTF) and its subsidiary Working Group concluded after an initial period of deliberation that social science might indeed prove beneficial. A Social Science Subgroup of the Working Group's Science Coordination Team was formed to evaluate the espoused efficacy of social science input. Ideally, the useful knowledge gleaned from a formal symposium could be juxtaposed alongside the current natural science assessments evinced in the Army Corps of Engineers' Central and South Florida Project Restudy (C&SF Restudy). After this symposium it will ultimately be determined what garnered social science knowledge may be deemed functionally advantageous so

that in conjunction with the hard science evaluations, a truly comprehensive picture of what the Army Corps' Restudy should encompass as well as fully address may be developed. In discussing the symposium as it progressed through the various stages of development, I will include not only the historical logistics but also the controversies that were rife throughout the planning process.

Finally, I conclude by stressing the all-important synergy between the natural and social sciences needed in future ecosystem management endeavors. In doing so, I illustrate two project forums or arenas in which social science utilization will play a major role in the future. The first project forum is the initiative for revitalizing Southeast Florida's urban corridor, dubbed "Eastward Ho!" and founded by the Governor's Commission for a Sustainable South Florida (hereinafter Governor's Commission). I believe it to be a prime example of how the interdisciplinary nature of the social sciences may play an active and useful role in the ecosystem management of South Florida. Lastly, I will recognize a somewhat obscure river terrain in the heart of urban Fort Lauderdale, known as the North Fork of the New River which was addressed as a major topic area at the February Social Science Symposium. It is my supposition that the North Fork region can profit from not only those social science principles that make Eastward Ho! such a usefully pragmatic plan, but from the entire spectrum of social science disciplines on display at the February Symposium.

The New Era of Ecosystem Management:

I open this report with a discussion of ecosystem management which was brought to my attention immediately upon arriving for my internship duties in the Ecosystem Planning and Compliance Division at Everglades National Park. My previous experience with this type of management had only been cursory in nature. In other words, I knew from my studies in marine affairs that many times ocean systems would be treated and managed as entire ecosystems. A prime example of this are the various marine sanctuaries set up to protect sometimes fairly large unique ocean habitats and their indigenous flora and fauna, whether looking at the kelp forests of the Pacific Northwest or the entire breadth of the Florida Keys National Marine Sanctuary with its extensive chain of coral reefs and plentitude of colorful denizens. Likewise, in studying environmental law and natural resource economics, I witnessed the need for and kind of steady trend toward consideration of ecosystems as a whole unit, as opposed to the dissatisfying conventional species-by-species or resource-by-resource approach. Still, when I encountered the plethora of ecosystem management studies on hand at Everglades National Park, I was simply amazed. I had wanted to believe that this kind of management approach posed as the most logical alternative to the old methods of environmental management, and after much more reading and first-hand experience, I am now thoroughly convinced. At times, lost in reflection of my internship experience, I contemplate the immense scope of the efforts to restore an ecosystem that spans the entire breadth of South Florida, the largest ecosystem restoration project currently being undertaken on the globe.....and I realize my initial amazement remains with me as puissant as it was that very first day at Everglades National Park.

With the advent of ecosystem management and its placement into the environmental manager's repertoire of scientific knowledge and resulting policy options, a whole new door has been opened. Serious attention has been paid to this new theory of environmental management within only last decade, give or take a few years. The practice of this type of management may still be said to be in flux and can only be considered as a complex and rapidly evolving concept.

At this point it would seem necessary to elicit a couple of formal definitions of just what an ecosystem is before ecosystem management is defined. The denotative meaning of the term *ecosystem*, itself, is "the complex of a community and its environment functioning as an ecological unit in nature". The Clinton Administration's Interagency Ecosystem Management Task Force (hereinafter IEMTF), established in 1993 to explore the implications of ecosystem management in eighteen different federal agencies, uses a different definition for the word *ecosystem*. The IEMTF states that an ecosystem "is an interconnected community of living things, including humans, and the physical environment within which they interact" (IEMTF, 1995a). Notice that this definition specifically mentions "humans" as this recognition of the necessity for human inclusion will be repeated continually throughout this report.

Because the definitions of ecosystem management vary somewhat and hence each harbors slightly different shades of meaning, I believe it useful to cite four different formal definitions of the concept. An often cited definition used by Grumbine (1995) is that the management of ecosystems is that which "...integrates scientific knowledge of ecological relationships within a complex sociopolitical and values framework toward the general goal of protecting native ecosystem integrity over the long term". The

Dialogue Group of The Keystone Center--a neutral, nonprofit, public policy and educational organization founded in 1975 with a mission of resolving conflicts and facilitating mutual understanding and education among diverse parties on controversial public policy issues--has its own definition of ecosystem management. This group views ecosystem management as "a collaborative process that strives to reconcile the promotion of economic opportunities and livable communities with the conservation of ecological integrity and biodiversity" (The Keystone Center, 1996). In the final supplemental impact statement on management of habitat for late successional and old growth forest related species within the range of the northern spotted owl, the USDA, the Forest Service, and the United States Department of the Interior, Bureau of Land Management accepted its own definition of ecosystem management. For them ecosystem management is the "use of an ecological approach in land management to sustain diverse, healthy, and productive ecosystems... [It] is applied at various scales to blend long-term societal and environmental values in a dynamic manner that may be adapted as more knowledge is gained through research and experience" (USDA et al., 1994). Lastly, the IEMTF gives its analysis of what ecosystem management should be: "The ecosystem approach is a method for sustaining or restoring natural systems and their functions and values. It is goal driven, and it is based on a collaboratively developed vision of desired future conditions that integrates ecological, economic, and social factors. It is applied within a geographic framework defined primarily by ecosystem boundaries" (IEMTF, 1995a).

All of the above definitions suggest that the road map to successful ecosystem management is being drawn and not followed, and consequently there are many sources of information about the general concept. Of course, each vision recognizes the need to

temper treatment of individual ecosystem units with the best traditional bio-physical knowledge available. Given the circumstances surrounding a particular ecosystem the necessary natural science information will undoubtedly vary. At present, a recent survey found that there are more than 600 of what may truly be considered ecosystem management projects underway in the United States (Yaffee et al., 1996). Again, the natural science knowledge needed for this rather large number of projects is likely to deviate from any standard norm. A case-in-point in this regard is that even the guidelines for proper ecosystem boundary setting varies from one management group to another. Therefore, it is beyond the scope of this report to indulge in any detailed assessment of the conservation biology or the physical components of ecosystem management (around the country and here in South Florida), since they not only differ between each ecosystem, but also because this report is primarily designed to delineate the aspects of social science that underlie ecosystem management.

It is suffice to say that there are two principles that are frequently perceived as being ultimately necessary for successful ecosystem management (other than the obvious need to understand the interacting biological and physical components inherent in conservation): the adaptive management approach and the need to integrate human social systems. Three out of the four definitions of ecosystem management above either state the need for collaborative effort or the need to adapt new knowledge as it is presented. In either case, what is now generally accepted is that ecosystem management should be elastic in its overall approach in dealing with individual problems that arise in any given managed area. In other words, the road map to successful management really is always

being drawn in what constitutes an adaptive management scheme. This concept lies at the heart of the now accepted perception of what ecosystem management should be.

Adaptive management is based on the premise that information about ecological and social systems is, and always will be, imperfect. The IEMTF maintains that adaptive management "is an iterative approach to decision making involving a cycle of planning, implementation, monitoring, research, and subsequent reexamination of management decision based on new information that may alter existing plans and priorities" (IEMTF, 1995b). The decisions made may be viewed as part of a sequential process designed to provide new information which is then used to assess or modify prior decisions if this is ultimately deemed necessary. New knowledge or information concerning ecological (and the case that will be made--for social systems as well) is generated from a process that views each new management decision as an experiment within a series of experiments.

Adaptive management is necessary in light of the aforementioned fact that because ecosystems are complex, that they are inherently changing and unpredictable, so too must their management be just as complex and just as amenable to change. Adaptive management requirements are: 1) proximate integration between natural *and* social scientists as well as with the environmental policy makers in the formulation of what goals and hypotheses are necessary at any given time, 2) well-defined response indicators or endpoints, and 3) monitoring and evaluation in order to delineate or assess the implications of change in the response indicators relative to prior set objectives and goals (Milon et al., 1997). Thus, acknowledgment of any uncertainties in the decision-making process is at the core of the ecosystem approach. Essentially, in its simplest form, adaptive management is a process made up of a series of feedback loops where managers

and policymakers may be provided with the best information on the results of past decisions as well as on present conditions.

In actually implementing the adaptive management approach it must be kept in mind that there is no single conception of any given ecosystem and that there may sometimes be equally valid conceptions of what should be undertaken within any particular ecosystem. As stated previously, boundary disputes are almost always going to be universal with ecosystem management, hence in the adaptive management approach it should be understood that there "is no single way to bound the perimeter of ecosystems, so start with the recognition that boundaries are always arbitrary (in short, there is nothing incongruous about managing ecosystems within preexisting administrative areas)" (Roe, 1996). The IEMTF (1995b) elicits seven key features to implementing adaptive management:

1) Come up with an experimental design for implementation
2) Give an explicit description of the system
3) Establish well-defined goals and objectives
4) Identify critical uncertainties
5) Establish a monitoring and evaluation program
6) Maintain an aggressive approach to learning
7) Keep and adaptable structure (the adaptive management structure itself must inherently be adaptive)

In sum, the adaptive management approach to ecosystem management should have the overarching objective to improve scientific and managerial knowledge of how to implement the ecosystem approach by using an iterative refinement of management strategies that is closely monitored and adjusted if necessary over time.

As ecosystem management in South Florida melds into its sister concept of ecosystem restoration, the adaptive approach will play a central role in how all of the different management agencies address the multitude of differing opinions of what the

South Florida ecosystem should encompass, and what it should look like once restored. The question in South Florida environmental circles is no longer how should we manage and conserve the ecosystem as is. The management outlook is now how should we restore an ecosystem so that it resembles what we think it might have once been in the historical sense. As will be seen, the adaptive management approach is only one of the necessary principles in addressing ecosystem restoration, the other is the human ecosystem principle. Both these principles are inter-related, and the latter as will be demonstrated is now deemed to be critical in the sense that social systems are an integral part of any given ecosystem in its entirety. In essence, the human ecosystem component cannot be divorced from the bio-physical component. Figures 1 and 2 (from Milon et al., 1997) in Appendix A display the South Florida Ecosystem and the adaptive management framework for the natural and social sciences, respectively.

The Advent of Social Science (Enter Stage Left):

Traditionally, there has been skepticism and reluctance toward accepting social science input among environmental managers and natural scientists who for so long have relied much more heavily on biology and ecology. For instance, a water quality assessment or game population estimate is much more likely to enter into resource management decisions than say an employee survey is into an administrative one. Often times the advice from the social sciences "often limits the range of decision alternatives to the manager, by identifying unacceptable consequences, prioritizing choices along scientific rather than political criteria, and creating the need for managers to defend their rationale for not following such delivered advice" (Machlis, 1993). Likewise, natural scientists have relied heavily on the impact measures of humans which basically puts *Homo sapiens* outside the ecosystem as more of a nuisance and trouble-maker rather than an integral part of the ecosystem. When it comes down to it, many natural scientists simply have deemed social science as irrelevant when it comes to environmental management as they typically exclude human behavior from their models.

Conversely, most social scientists have primarily concentrated on the human dimensions of social systems, outside of and immune to biological and ecological reality. Much of this resistance on the part of social scientists comes from the desire to distance themselves from the philosophies of naturalists such as Edward Wilson. Dr. Wilson, author of the now famous 1975 book: *Sociobiology: The New Synthesis*, argues in a new publication, *Consilience: The Unity of Knowledge*, that "human affairs make sense only in light of biology and the other natural sciences... [and contends that] social scientists, philosophers, psychologists, economists, ethicists....have hobbled themselves by

ignoring these fields" (Cowley, 1998). Many social scientists simply refuse to believe assertions that all human behavior is biologically determined and ultimately reducible to the laws of physics. Perhaps understandably, social scientists shy away from applying their fields to environmental science for fear of echoing the once prominent turn-of-the-century philosophy of social Darwinism. For instance, those specialized social science fields that actually have arisen, such as environmental sociology, have been met with skepticism and condescension from many academics well entrenched within the sociological and other social science communities. (Buttel, 1986). In short, besides reacting to notions of social Darwinism, many social scientists try to avoid biological reductionism and environmental determinism.

The traditional academic division of natural versus social science, then, continues to play the game of "intellectual balkanization, seeking advances in territory rather than a more inclusive paradigm truly helpful to resource management professionals" (Machlis et al., 1995). Thus the old, established, mutual distrust that the natural and social scientists have for each other, while having softened somewhat, is still alive and well.

Yet despite the ideological disputes seemingly inherent in this classic division of academic knowledge, there lies the potential for conciliation within the complex scheme of ecosystem management. The very complexity and room for adaptability in ecosystem management that has already been touched upon leaves room for social science inclusion. Certainly, when surveying the guiding principles and the definitions of ecosystem management defined by those who champion this approach, it is evident that human social factors should be implicit. By the very nature of the current conception of ecosystem management, that is its stated propensity for adaptability, it is quite

understandable that many environmental managers and policy makers would acknowledge the need for social system information to fill the perceived void in terms of critical knowledge needed for a *de facto* holistic approach to management. In other words, being adaptable leaves the door open for new ideas and new proposals as to how ecosystem management might best address key conservation and human ecosystem goals.

As the IEMTF stresses the need to keep the adaptive structure of ecosystem management adaptable, so too does it accentuate an aggressive approach to learning. What environmental managers *have* learned, as the evolution of the ecosystem concept continues, is that it is high time to incorporate the best social system information available into the continued efforts to bolster the ecosystem model of management. Gary Machlis, the Visiting Chief Social Scientist for the National Park Service, states that "in the past decade, there has been a growing realization within the conservation movement that biophysical and social systems are inextricably intertwined" (Ibid, 1993). Where there is no current data or knowledge available, and there is a substantial scarcity of relevant social science information available to environmental decision-makers, more social system research is in order. Indeed, the IEMTF (1995b) suggests that "the need for scientific information as a foundation for resource management decisions continues to increase dramatically....The interface between social, economic, physical-biological, and ecological models must be improved".

Since the ecosystem approach has been expanded to include the human element, the explicit goal of the new approach is the concurrent achievement of sustaining ecological systems, human communities, and economic infrastructure (IEMTF, 1995a). Thus the inclusion of people and their economic needs is a fundamental part of the

approach. Resource problems, are in a sense, not just environmental problems but human dilemmas created under a variety of political, social, and economic conditions. Social knowledge can aid the ecosystem approach by helping to provide clear economic and social benefits to the nation by protecting, restoring, and sustaining ecosystems that are critical to the local economies of many regions of the country, including right here in South Florida.

A significant example of the socioeconomic importance of long-term sustainable management of ecological resources and environmental systems as a whole is the fishing industry which contributes more than a $100 billion annually to the nation's economy as well as one and a half million jobs. Along the same lines, the agricultural industry plays a significant socioeconomic role, especially in South Florida, and it behooves environmental managers to pay close attention to this role as it similarly does to focus on the ecological problems of pollution that plague this industry. These are just two examples among many where the application of social science may benefit ecosystem managers.

At this point I believe it necessary to describe just what the human ecosystem concept is and what it should address. According to Dr. Machlis (et al., 1995), the human ecosystem is defined as "a coherent system of biophysical and social factors capable of adaptation and sustainability over time". To be considered a true human ecosystem, a community or region would need to exhibit boundaries, resource flows, social structures, and dynamic continuity. Figure 3 (from Machlis et al., 1995) in Appendix B illustrates the working equilibrium model of the human ecosystem. Depicted are the set of required critical resources that fall into three categories: 1) natural resources, 2) socioeconomic

resources, and 3) cultural resources. The flow and use of the critical resources is regulated by the social system, or what is deemed the set of general social structures that direct much of human behavior. In turn, the social system is divided into three subsystems: 1) social institutions, 2) social cycles, and 3) social order. Finally, the dynamic nature of the human ecosystem is ideally kept in a state of equilibrium by the all-important process of adaptation of resource and social flows that constantly interact. While the process of adaptation may at times be beneficial for some and detrimental to others, it must be kept in mind that there are no value judgements to adaptation here, as the process exists in a non-valued sense where the equilibrium is regarded as ideal (Ibid., 1995).

Ultimately, the marriage of human ecology into ecosystem management should benefit ecosystem managers by improving the overall concept that will now "include the forces driving infinite human desires, along with the more limited possibilities of satisfying those desires with increased natural resource productivity" (Force and Machlis, 1997). Essentially, human variables as both the cause and consequence of system change will need to be joined to the traditional biophysical concerns of all those individuals who deal with ecosystem management: the forester, agriculturist, hydrologist, and park superintendent.

Given the stated importance of human ecosystem information, what ultimately will aid ecosystem managers most is Dr. Machlis' concept of "usable knowledge". That is to say, he acknowledges that the contributions of social science toward environmental management to this date have been only modest, hence social science information needs to be delivered to ecosystem managers in usable format. What constitutes this usable

knowledge format? Dr. Machlis (1993, 1996, et al., 1996) maintains that usable knowledge is that information which is provided at the proper point in the decision-making process, and that which must directly address the manager's needs at a level of detail appropriate to the decision. In utilizing the usable social science information, managers must understand the limitations of the data, the degree to which it can be applied, the certainty (or apparent lack thereof) of successful application, and the relative authority of the authors. For example, in sustaining a partnership between the social and natural sciences in national park management, usable knowledge from the social sciences falls into several categories (Ibid, 1996):

1) Information (i.e. monitoring the data collected on visitors and resource impacts)
2) Insights (i.e. understanding how visitor use impacts resources)
3) Predictions (i.e. forecasts of visitation and which visitor impacts are likely to increase)
4) Solutions (i.e. suggested ways that visitor impacts can be reduced)

However, in a broader scope than just national park management, that is management of entire ecosystems, the more valuable contributions of the social sciences may be classified as **feedback** and **prediction** where the ecosystem manager utilizes these forms of social science information and turn them into their own **assessments** and **mitigation** decisions. The assessments of the ecosystem managers are critical before making any decisions, whether these encompass tourist, resident, or nearby population resource needs. Mitigation of impacts will also be key in the ecosystem managers' repertoire of decisions where useful strategies for dealing with the consequences of decisions are put into action provided that managers heed the predictions provided by social science.

There are six disciplines within the social sciences that truly contribute "usable" knowledge to ecosystem managers. Certainly, social science information imparted to environmental decision-makers is many times interdisciplinary. In fact, there are many multidisciplinary applications that come into play when taking into account social science contributions to ecosystem management, such as land use management, urban planning, comprehensive environmental and legal policy analysis, etc. Still, when stripped down to the primary core social sciences, and disregarding for now any overlapping that occurs, there are six disciplines that require a brief overview. While these disciplines do interact, each focuses upon certain units of study and driving forces pertinent to discerning and comprehending human behavior.

As described in the Social Science Core Group's presentation (1997) to the Science Coordination Team of the South Florida Ecosystem Restoration Task Force (SFERTF), the definitions of these six social sciences and their perceived implications in South Florida Ecosystem restoration are as follows:

Economics: (both macro- and micro-economics) Treats markets, industries, and economies as key units of study; the driving force of change is economic value. As far as ecosystem management, economics is primarily concerned with ways of enabling environmental values to be taken into account in economic activity.

The perceived implications for South Florida Ecosystem restoration are:

1) Assess economic impacts of proposed and ongoing projects
2) Determine cost and benefits of project alternatives
3) Explore the ecosystem's role in local, regional, national, and global economies
4) Provide environmental valuation (contingent valuation)

Geography: Treats regions, landscapes, and other spatial units (governmental, ecological, etc.) as critical; the central concern is the spatial distribution of people and resources (underscoring the emphasis here on human geography).

The perceived implications for South Florida Ecosystem restoration are:

1) Study tourist travel and location patterns
2) Use GIS techniques
3) Assess regional development and human impacts on the built and non-built environments
4) Analyze trends in natural resources usage

Political Science: Focuses on the use of power or influence at many levels, particularly by analyzing relationships of institutional power.

The perceived implications for South Florida Ecosystem restoration are:

1) Examine public participation on environmental issues
2) Poll the public on various issues
3) Examine the roll of local communities and interest groups
4) Improve organizational effectiveness
5) Evaluate public policy and its implementation

Sociology: Treats social groups, organizations, and communities as key units of study, with human behavior as its central concern. Social elements of ecosystem restoration such as social and environmental justice are included in this discipline.

The perceived implications for South Florida Ecosystem restoration are:

1) Examine demographic trends, group behavior and public opinion regarding the environment
2) Measure public concern for the environment
3) Study grassroots and institutionalized environmental movements (including issues of environmental and social justice)

Anthropology: Uses the concept of culture as its key focus. May define culture as "knowledge, thoughts, beliefs and feelings through which people understand the world."

Typically the sub-disciplines of archeology, cultural, environmental, and biological anthropology are utilized in reference to ecosystem management.

The perceived implications for South Florida Ecosystem restoration are:

1) Analyze relationships between peoples' cultures and the ecological consequences of their actions
2) Identify sacred and historically significant sites
3) Design and implement multi-cultural outreach and public engagement projects
4) Document local knowledge or traditional meanings pertaining to the ecosystem

Psychology: Its key unit of study is the individual, emphasizing cognition and communication; the relatively new field of environmental psychology (emerging within the last decade or so) examines the relationships between environments and human behavior.

The perceived implications for South Florida Ecosystem restoration are:

1) Study individual decision making and natural resource usage
2) Use cognitive mapping to examine how people imagine and use the natural and built environment
3) Conduct behavioral modification studies
4) Design projects for enhancing citizen involvement in environmental design, management, and restoration efforts

I perhaps get ahead of myself by enumerating the perceived implications of the six social sciences on South Florida Ecosystem restoration in particular, nevertheless, the above disciplines are those judged to be the most useful by social scientists and environmental managers around the country in terms of imparting usable knowledge into all ecosystem management decisions. The Social Science Core Group's (the people responsible for the final organization of the South Florida Social Science Symposium) presentation to the SFERTF's Science Coordination Team containing the preceding implications is testament to the fact that, as of 1997, the multi-agency Task Force's

Working Group was still waiting to be firmly convinced that the social sciences could play an important role in South Florida Ecosystem restoration. This hesitancy and reluctance to accept social science into the realm of ecosystem management by the SFERTF is understandable, especially since scarce and valuable funds were to be allotted into feeling out just what part these sciences could play in the restoration process. Similarly, as already explained, actual widespread contributions of sustained, usable social science knowledge to ecosystem management, have been "meager" thus far (Machlis, 1993). Thus, while the Social Science Core Group brainstormed, deliberated, debated, and planned a potential social science symposium, the multi-agency Task Force's Working Group held its collective breath....

The 1998 South Florida Social Science Symposium *(It's Preparation, It's Results):*

In reminiscing upon the preparations and the aftermath of the Social Science Symposium, I am reminded of the old adage that "too many cooks spoil the broth", and so it is that I often wondered during my internship if this was to be the case with the planning of the symposium. Aiding in the logistical arrangements of this symposium was outlined from the start as one of my primary internship duties. Just as the general concept of ecosystem management was brought to my immediate attention upon arriving at Everglades National Park, I was likewise given a briefing and a stack of assorted memos and meeting notes concerning the history and current status of the plans for a symposium that would edify the SFERTF's Working Group on the perceived merits of social science. What started out as a small group of people brainstorming the genesis of a "quick-strike" symposium designed to give Working Group members a general overview of social science gradually snowballed into a much more complicated process. This process would eventually involve more people from a variety of different agencies, entail many more meetings, and finally (after much ideological debate) result in a narrower vision of what the final end product or action plan would embody.

In the previous section detailing the advent of social science incorporation into ecosystem management, with good reason I heavily emphasized the works of Dr. Gary Machlis, a renowned social scientist who works in conjunction with the National Park Service. He was a key consultant throughout the symposium planning process and had just published a highly regarded report for the National Park Service: "A Social Science Plan for South Florida National Park Service Units" (Machlis et al., 1996). It is worth noting that Dr. Machlis, himself, grapples time and time again in many of his works with

having to justify the presence of social science in ecosystem management. However, as already noted, other ecosystem management agencies and scientists also engaged in this scientific "soul-searching" and found the unrequited need for social science input.

Tracing back a couple of years before my arrival, in September of 1995, Dr. Machlis had given an initial presentation on the National Park Service initiative to create a social science research plan for the South Florida units of the NPS to members of the Social Science Ad Hoc Committee. This committee had been assembled the previous month at the behest of a few members of the SFERTF's Working Group for the purpose of broadly assessing the need for a social science research plan for the South Florida Ecosystem restoration initiative. (For clarification purposes, Figure 4 in Appendix C illustrates the complete organizational hierarchy under which the final 1998 South Florida Social Science Symposium was held).

In February of 1996 this committee met for the first time and drafted a work plan, goals and objectives, along with a mission statement. This general mission statement, which would never be significantly altered throughout the history of the symposium planning process, still is as follows: "to ensure that social science information is provided and considered in decision-making so that such decisions are made in a more timely, cost effective, and efficient manner" (Social Ad Hoc Committee, 1996). Overall, the committee's duty was defined as working with the NPS to develop a research plan, establishing an atlas of socioeconomic data while recommending the role social sciences should play in the organization of comprehensive ecosystem restoration, and finally determining what oversight would be appropriate. It was decided that an inventory of social science resources should be drafted and a request should be put to the Working

Group to review the Ad Hoc Committee's annual report to identify social science needs, to be followed up with a facilitated discussion. It is important to note, that the inventory of social science resources that was decided upon did not come to fruition until actual planning for an agreed upon final symposium was well under way.

Later in April of the same year a "Workshop on South Florida Ecological Sustainability Criteria" was convened to figure out how to identify characteristics of a sustainable socio-environmental ecosystem and how to measure progress in restoration efforts. A primary recommendation from this assembly was the proposal that changes in the environment should be examined for proactive and reactive interactions with the social system in relation to three standards: efficiency, equity, and quality of life. Nonetheless, this group found that a framework for addressing these issues remained missing and consequently one needed to be developed.

In the following month on May 29, Dr. Machlis presented his (as well as his colleagues') aforementioned finalized South Florida National Park Service social science plan to the Working Group. The effect of this completed plan on the SFERTF's Working Group cannot be emphasized enough. As a continued consultant throughout the symposium planning process, the expertise and knowledge that Dr. Machlis imparted acted as a major catalyst for the establishment of the 1998 Social Science Symposium. The dissemination of "A Social Science Plan for South Florida National Park Service Units" demonstrated what truly could be done as far as utilizing social science in South Florida environmental management. The plan is concrete and details necessary budget figures for various stages of the implementation of individual social science projects within the National Park Service.

In this social science plan, Dr. Machlis (et al., 1996) conveys his conviction that a social science plan "can identify and prioritize research needs, increase the usefulness of research results, and improve the delivery of information, and reduce costs". Spanning Everglades National Park, Big Cypress National Preserve, and Biscayne National Park, the plan has three objectives: 1) identify the needs for National Park Service (NPS) social science research in South Florida, 2) propose a research agenda and specific research projects for the South Florida NPS units, and 3) propose a strategy, schedule and budget for implementing the research. Actual implementation of this research plan in its four phases: organizing for social science, building a research base, diversifying the research, and completing the research program—is said to require an estimated total budget of $546,000 (Ibid., 1996).

Based on the information in this report and a subsequent proposal for a social science conference by Dr. Machlis in a later Working Group meeting in July of 1996, the Social Science Subgroup of the Science Coordination Team was charged with looking into the possibility of making a social science symposium a reality. Thus the influence and works of Dr. Machlis and his colleagues was the starting point from which was launched the full-blown efforts to broaden the scope of social science so that it could be applied to the not just the South Florida national parks, but the entire South Florida Ecosystem.

Another presentation was given to the Working Group in September of 1996, this time by Mark Harwell of the Man and the Biosphere Program (MAB) and a member of the Social Science Steering Committee that would be formed the same day, which outlined the need for 5 significant features in the study of social science and ecosystem

interaction. These features included: 1) a report card to assess progress, 2) a framework for directing progress, 3) a conceptual model describing the linkages, 4) adoption of agreed upon terminology, and 5) selection of endpoints and indicators. When the Working Group adjourned on the same day, an organizational meeting was held by the Social Science Ad Hoc Committee which gave birth to the Social Science Steering Committee. The Steering Committee was given charge of the final oversight of the conference or symposium development process. This new committee was to be made up of individuals from various academic and governmental institutions in South Florida as well as from Washington and other parts of Florida, most of whom were not members of the SFERTF or its Working Group.

This group began the process of developing the agenda and associated conference needs, including a detailed statement of the purpose of the conference, conference format, budget, timeline, conference date, deliverables, etc. The Steering Committee agreed that a conference or a symposium would help the Working Group develop a clear understanding of how to use social science information to make management decisions. Hopefully, it could be demonstrated through a symposium how exactly social science could be integrated within ecosystem restoration and what the consequences of ignoring this integration would entail.

In October of the following month, the Steering Committee decided to conduct interviews with social scientists who had been working in South Florida to collect information about the critical issues in the interaction of the society and natural environments. These responses would then be used to determine and agenda for the symposium as well as key points of discussion that would need to be addressed.

Referrals were also requested for people that could be contacted to be a panelist or speaker. Contained within Appendix C are the questions that were given to the twelve social scientist interviewees who were deemed to be the most enlightened in terms of the societal/environmental issues relevant to the efforts of the SFERTF's ecosystem initiative. A compilation of the interviewees' responses are also given below each of the questions, including the lists of prominent social scientists around the country who were thought to have pertinent ecosystem management experiences of their own which might be shared, critiqued, and added to the knowledge base of the South Florida effort.

In January of 1997, the Social Science Steering Committee members reviewed the interviews that they had conducted and looked for common themes. As the compilation of answers noted in Appendix C illustrates, recurring themes included water distribution, social equity, and the balance between human society and the natural environment. Some issues that were raised were whether the panels should be made up of experts alone, or should include community leaders, planners, etc. Also at issue was whether the Steering Committee, itself, and the heralded symposium should be mechanisms for addressing critical influential matters, or whether they should be considered as tools in order to establish only a broad representative view of social sciences utilization.

These previous issues discussed at the January meeting of the Steering Committee were still being heavily debated when I arrived at Everglades National Park in May of 1997. At a conference call on May 20 the first draft agenda for the symposium was reviewed and many suggestions were made for modifications. The first draft agenda took more of a broad representative view of social science usage and relied primarily on panels of experts, a fact which would lead to further "in house" contro-

Included in Appendix C, the original symposium agenda was to kick off with a well-rounded and knowledgeable keynote speaker followed by a discussion among a chosen panel of differentiated social scientists. The attending public would be then able to question the panelists and keynote speakers. Following an overview process that would lay out the remainder of the day, a broad conceptual model conveying linkages within the model would take shape within three panelist groups. The topics for these linkage areas were debated frequently among the Steering Committee members. It was decided that the three linkage areas would be: 1) Natural System/Economy, where individual project-specific decisions affecting the natural systems would be discussed; 2) Economy/Quality of life, where socio-cultural studies would highlight the economic and social ramifications of natural resource decision making; and 3) Natural system/Quality of life, which would include discussion on sociopolitical studies or environmental justice/equity issues. The second day of the first symposium draft agenda would concentrate on building an actual action plan. Following a discussion on what should be perceived as the most important human ecosystem questions facing the South Florida ecosystem restoration efforts, a research agenda would be developed in workshop style utilizing the research questions generated from the previous day's discussion on key linkage areas. Here the Steering Committee wanted what Machlis termed "usable knowledge", where the information gleaned could be established in a sort of priority hierarchy as either critical, important, or merely good to know. Also important in the development of this action agenda would be identifying the critical scales, whether the knowledge was pertinent on a local, cluster, or regional level. Finally the draft symposium agenda would conclude with the all-important discussion of the question,

"How do we get the necessary information that the expert panelists have termed necessary?" In other words, what processes would be needed to implement a social science action plan involving a consolidation of information needs into discrete research projects?

The original symposium draft agenda was not unanimously favored by members of the Steering Committee and it would be further debated at a June charette arranged by the Center for Marine and Environmental Analyses (CMEA) and the MAB. At the charette 50 invited participants, involving social scientists primarily from Florida, but also Tennessee, Louisiana, Maine, and Washington D.C., worked on a conceptual metamodel outlining social science implementation in ecosystem restoration and discussed the content, process, and output for the proposed symposium that had been thus far developed by the Social Science Steering Committee of the Working Group.

The draft agenda for the proposed symposium was reviewed by charette participants who collectively proffered the following recommendations. First the draft agenda seemed muddled and not specific enough. It was agreed that Dan Basta of NOAA should be contacted, who was said to have a great deal of expertise in "knowledge engineering", to assist the Steering Committee in scoping out, organizing, and planning the symposium for a more direct outcome (a "usable" report for the edification of the Working Group). Second, the focus of the symposium needed to be altered. The overview sessions planned for the first half day would be omitted due to time limitations and the fact that it would appear superfluous in light of the fact that most social scientists would already be generally familiar with the overview subjects. Also, the attendance would be scaled back to 30 attendees to better focus the group and

facilitate a working group atmosphere. Concerning the attendees, it was suggested that they should already be familiar with the South Florida restoration effort and its current state of research. Furthermore, it was suggested that the entire symposium be focused on an applied example, such as the C&SF Restudy or the Governor's Commission's Conceptual Plan for this Restudy. This recommendation was made so that a newly termed "Action Plan for Social Sciences" could have not only an applied audience, but could still be used as a generic example. In this manner, existing literature on the C&SF Restudy could facilitate a rapid summary background for all attendees and the subject would have applications for virtually all Working Group members, who after all were the intended audience of a finalized social science action plan. The applied example could then be broken down into temporal components such as the reconnaissance/planning phase, alternative selection phase, implementation phase, monitoring/evaluation phase, and community involvement/public outreach efforts of the Restudy. The charette concluded with the acknowledgement that the rest of the Steering Committee that could not attend would need to be consulted in making the above changes.

After the Maine charette, I was individually charged with making logistical arrangements for a place to hold the symposium and with conducting an extensive research on the list of potential panelists who were cited by the interviewees in the aforementioned questionnaire contained in Appendix C. This research was designed to eventually aid the Steering Committee in determining what social science studies these potential panelists from around the country had already conducted, in short, determining how useful each scientist would be in a symposium directed at South Florida Ecosystem restoration in particular.

During this interlude after the June charette, members of the Steering Committee continued to voice their own dissension concerning the current status of the symposium agenda via memos, faxes, and phone calls. Some felt that the symposium seemed too nebulous in its overall focus. One committee member felt that without more clearly defined goals, the symposium or conference could end up as a useless and disorganized list of "pet projects" with wishful budgets. Hence, the concern was that pre-conference decision making and organizational priorities for the final reporting process needed to be etched out more clearly. The question of how to tie specific research recommendations that would be proposed at the symposium to the actual symposium objectives (and other current South Florida projects already ongoing) of aiding the Working Group in its restoration efforts was another concern. Another pervasive consideration was that the current symposium agenda implied a very "top-down" approach, and would simply make the issues more irrelevant to the public rather than assisting in understanding what the public wants from restoration efforts. Certainly, a top-down approach is not consistent with current social science literature on natural resource management. The IEMTF (1996a) states that the ecosystem approach promotes cooperation among *all* (emphasis added) interested stakeholders and that realistically, "a top-down approach is neither feasible nor desirable". Similarly, Roe (1996) asserts that "Stakeholder planning today is not so much bottom-up in contrast to top-down as much as it is an outside-in planning...." The disapproval for too much outside-in planning while having been voiced among the Steering Committee before was not completely quelled and would again be addressed as a substantial point of contention.

During the following summer months and into early fall, the symposium planning efforts fell into a kind of quagmire. At the outset of this section I mentioned the old adage about "too many cooks spoiling the broth", and as the initial date of the symposium neared (September 18 and 19), it was clear that the symposium planning efforts were foundering and in need of more centralized guidance, and further clarification and refinement. In late June, Bonnie Kranzer--a Working Group member and Director of the Governor's Commission as well as a co-chair of the Steering Committee--solicited the help of Dan Basta, Bob Leeworthy, Tom Cullition and Pete Wiley at NOAA's Strategic Environmental Assessments Division (SEA) in the Office of Ocean Resources Conservation and Assessment. In her continuing consultations with the members of SEA, a number of changes were made in order to better flesh out a precise agenda and work product that would squarely illuminate, for the Working Group, just what, how, and why certain social science information/processes were needed in restoration activities. This would hopefully, result in information sources or processes that were essential versus those that were merely nice to have. Accordingly, the symposium was reformatted to fit some of the recommendations that were given at the Maine charette, where the symposium would focus on an entire example, in this case, the C&SF Restudy was targeted as the most useful application for social science input.

Throughout July and into August members of NOAA's SEA Division, armed with their expertise in "knowledge engineering", analyzed the materials produced to date by the Social Science Steering Committee and formulated a more precise path for the symposium agenda to follow. With SEA as the veritable captain at the helm, it was determined that the symposium preparations had indeed passed the feasibility stage and

was at the true analytical phase. However, it was decided that the original dates of September 18 and 19 for the symposium would be pushed back to late November or early January. Overall, SEA believed that symposium could be conducted in three stages: evaluation, identification and prioritization of gaps and additional needs. First, symposium participants could evaluate any socioeconomic effects studies that were conducted as part of the reconnaissance and feasibility phases of the South Florida Restoration process. Second, based on the evaluation, participants could develop a list of specific questions or needs that should be addressed in relation to particular proposed activities. Lastly, participants could develop specific actions to meet the needs of the prioritized proposed projects.

September saw a definitive meeting in Silver Springs, Maryland, between those helping out at SEA and several Steering Committee members. A "Social Science Symposium Process" flow chart was created to illustrate the steps that remained in the preparation process (See Figure 5 in Appendix C). The input or preliminary work phase of the symposium would require a delineation of which of the C&SF related projects would be most representative and most amenable to social science application. Out of a total of hundreds of individual projects, the list would be winnowed down to five particular topic areas. A preliminary literature review of current and past social science projects, studies, and programs related to South Florida ecosystem reconstruction efforts would likewise need to be created to provide an accurate picture of where we already stood. Finally, socioeconomic criteria for evaluating restoration projects would need to be set and presented to the Working group to further convince them of the efficacy of social science utilization. As far as the content of the symposium itself, the previous

recommendations made by SEA were gauged to be the most efficacious: the three steps of evaluation, identification and prioritization, and development of final actions (projects, studies, processes) would be incorporated into the final symposium agenda.

Another evolution in the symposium planning process was the formation of the Social Science Core Group (again see Figure 4 in Appendix C for illustration of the symposium planning hierarchy) which would now bear the brunt of the symposium logistical preparations. This Group was not meant to be a review type panel but instead meant to serve more as the arms and legs of the project. Bonnie Kranzer was declared the chair of the Group while several members of the Steering Committee who were affiliated with Working Group agencies were moved into the this new Core Group. Laura Ogden, an anthropologist with the EPA working out of the Governor's Commission, was a new outside addition to the Group, and along with Karyn Ferro of Everglades National Park, the two were instrumental in winning the final support of the Working Group. Included in Appendix C is a list of responsibilities and operational arrangements for both the Core Group and the Steering Committee, where the latter's members would now act in more of an advisory capacity.

With the road to the symposium clearly paved out in terms of agenda content and necessary preliminary preparations, the primary stumbling block was manifested in the continued reluctance of some Working Group members to accept the need for social science input, and consequently crucial symposium funding hung in the balance. Some members of the Working Group still clung to the already discussed disregard for the social sciences as they pertain to ecosystem restoration. These members tended to look upon the social sciences as too "touchy-feely" and not hard ecological science. Other

members thought that social science input might be enlightening in an academic sense but would prove to be of no real pragmatic value when it came to socioeconomic indicators. To quote Karyn Ferro, it appeared as though the Working Group "just didn't get it". Ironically, the Working Group who had once been inspired by the presentations of Dr. Machlis to set up a Social Science Ad Hoc Committee two years before, now wallowed in ambivalence and disagreement.

Finally, compounding the situation, there was some dissension among a portion of the ranks at the Jacksonville District Army Corps of Engineers who admonished the Core Group and the Steering Committee, because they perceived a social science symposium as being a potential money wrench in the machinery of the Restudy efforts (Pruett, tel. int., 1998). The Army Corps, of course, is required by law to conduct limited socioeconomic studies supplemental to any projects it undertakes, and again some Army Corps personnel felt that further social science input would get in the way of their own efforts or simply muddy up the waters creating ambiguity in terms of their own social science assessments. Nonetheless, the Steering Committee and Core Group maintained that the Army Corps' social system studies were in fact just too limited. The Army Corps may have done some socioeconomic assessments, but they simply followed the letter of the law thus representing the tendency toward minimalism. Likewise, the Corps studies represented mainly cost-benefit analyses and were not essentially community-based.

Not until November of 1997, when the Core Group gave a final briefing to the Science Coordination Team who would in turn briefed the Working Group, was funding finally received for the symposium through the Department of the Interior's Critical Ecosystems Initiative. (See Table 1 in Appendix C for a general breakdown of the total

allotted budget of $60,000). One factor behind winning the Working Group's approval were the now firmly etched out perceived implications of the six social science disciplines upon ecosystem restoration (enumerated in the above previous section). The two most key factors in winning final approval for funding from the Working Group, though, was the fact that the scope of the symposium would be less generic and limited to the C&SF Restudy and the Core Group's emphasis on the efficacy of socioeconomic indicators. As defined by Force and Machlis (1997), socioeconomic indicators are "an integrated set of social, economic, and ecological measures, collected over time and primarily derived from available data sources, grounded in theory, and useful to ecosystem management and decision-making".

As detailed in the November 3, Core Group Presentation to the Science Coordination Team (1997), socioeconomic indicators maintain the following functions:

1) Detect and document resultant changes in ecosystem restoration utilization
2) Suggest how these changes impact the market and non-market values associated with the ecosystem's resources
3) Provide concise descriptions of socio-economic conditions
4) Allow for systematic comparisons across time and space
5) Reflect society's current priorities
6) Enable managers to develop "report cards" (to gauge progress)

As far as being able to assist environmental managers, socioeconomic indicators:

1) Evaluate options when restoration decisions may impact communities and economies
2) Help with the early identification of problems
3) Evaluate human ecosystem responses to resource management decisions
4) Help prioritize actions

Now that the planned symposium was guaranteed funding (albeit later than anticipated) and a new symposium date was "set in stone" for February 26-27 of 1998, preparations for the conference immediately switched into high gear. The sense of

urgency was increased manifold for two primary reasons. The Army Corps of Engineers representatives on the Working Group pacified the disapproval of the dissenters at Jacksonville and convinced them of the potential value of further social science input. Now a symposium would need to be held in haste so that the new social science recommendations could adequately aid and supplement the projects in the C&SF Restudy Report that was due out in July of 1998. Thus, since the symposium could not be delayed in any longer, the result was a virtual last minute crunch in terms of the many final preparations that needed to be made

In December, my own status as an Americorps volunteer was transformed and I was now hired on as a staff member of the Core Group along with Mary Lee Liggett (also a RSMAS Marine Affairs graduate student), while our funding fell under the symposium budget allotted by the Department of the Interior's Critical Ecosystems Initiative.

As the Core Group scrambled about, dangling from the rope of the preparation crunch, the noose unmercifully tightened further. While, Karyn Ferro and Laura Ogden assessed the final breakdown of which Restudy projects would be represented at the symposium, Mary and I took on a flurry of further tasks. We would need to continue researching over 100 potential symposium participants around the country to get a feel for their expertise. Also, in the works was the daunting endeavor of securing the ideal meeting facilities for a symposium that would be held during the peak tourist season in South Florida with little time to give notice to the sales managers of the various hotel establishments who would need to be contacted. Furthermore, following the SEA meeting preparation flow chart, it was necessary to create and send out an inventory form of social science projects related to the South Florida Ecosystem Restoration effort to

every individual deemed to have knowledge in this regard (See Appendix C for a blank copy of the inventory form which included a map for illustrating the breakdown of the total South Florida Ecosystem into organizational areas). This information would then be entered into a pre-symposium bibliography of all the known relevant social science projects pertaining to South Florida Ecosystem Restoration.

Once the invitations to potential participants were sent out (virtually every mail-out was expedited via Federal Express) it was estimated that at least 70% would be able to attend, so those that might not be able to attend needed to be accounted for. Heeding the original concern for too much "outside-in" stakeholder involvement, most of the seventy social science related experts that were eventually chosen were from the South Florida area or were those that dealt with South Florida issues even though they lived outside the state. Once again, this decision represents the departure from the original Steering Committee agenda which outlined a much more generic approach to utilizing social science. The pervading notion was basically that in order to appease the Working Group and reap real "usable knowledge" that could be applied pragmatically to the C&SF Restudy, it would be much more beneficial to recruit participants already familiar with many of the ecological and socioeconomic issues elemental in South Florida Ecosystem restoration. In essence, even though more participants were now to take part in the symposium than had been originally planned, the primary focus of the conference would be much narrower.

The last step in the preparation process once the five social science project areas and the participants for the symposium had been selected, was the assignment of the participants to a particular project area or break-out group (as will be discussed, however,

six break-out groups were eventually created at the last minute). Each participant's expertise was evaluated, and then each individual was accordingly assigned to the project area judged to be best suited to each participant's knowledge. Each breakout group would have approximately 15 social scientists. The original concept of highlighting the six core social science disciplines at the symposium was now expanded to be representative of the interdisciplinary and multidisciplinary expertise of many of the participants. The fields now represented were: Anthropology (including Archeology), Economics, Environmental Psychology, Geography, History, Policy/Policy Analysis, Political Science, Risk Assessment/Environmental Ethics/Environmental Justice, and Sociology.

Needless to say, it took quite a concerted effort to gather all the pertinent information for each breakout group to be sent in pre-symposium packets for the pre-edification of those would participate at the conference. Poring and sifting through numerous documents in the Everglades National Park and Governor's Commission archives, eventually yielded the appropriate background documents for the five different break-out group topic areas. The relatively extensive bibliography (bigger than once thought) of current and completed South Florida social science projects related to ecosystem restoration was finally completed and added to the pre-symposium packets, while the overviews were written for each break-out group's project topic. With the copiers, faxes, and computer e-mails running at full tilt, the Fed-Ex onslaught was once again about to commence.

On February 26-27 of 1998, after 2 ½ years in the planning arena, the long awaited conference entitled, "South Florida Social Science Symposium: Building a

Social Science Action Plan for South Florida," was finally held. The project topic areas that were discussed at the symposium represent a cross section of the range of South Florida Ecosystem Restoration Working Group (or member agency) restoration efforts. The three primary aspects that factored into the cross section selection of the chosen project topic areas were: the projects' stage in the planning process, the projects' geographic scale, and finally the projects' geographic location. Essentially, the Core Group wanted a broad representation of the projects that the C&SF Restudy would address so that not just one particular area of the South Florida Ecosystem would be represented. Likewise, the project topic areas discussed at the symposium were at varying stages (in terms of individual project planning at the Army Corps). Some of these project areas were broader in scope than others in order to best establish how the social sciences could affect the whole spectrum of C&SF Restudy efforts. The Core Group also considered cost of the projects, if they incorporated multiple social science themes, and feasibility for implementation of social science initiatives. As mentioned, actually choosing which projects to address at the symposium involved searching through sources that included hundreds of projects, but the final chosen project areas were taken from one of three sources: the Working Group's 1997 Integrated Financial Plan, the U.S. Army Corps of Engineers' Critical Projects List, and the 1996 Farm Bill.

The five breakout groups actually became six during the symposium and the topic areas were as follows:

1) Originally the first breakout group was meant to address the total South Florida Ecosystem. The Core Group made last minute changes at the symposium for two reasons. First, the focus for this group was perceived as

being too broad, and secondly, there were too many participants in this group to adequately address the issues meant for this group (there were 26 total Group one participants). Consequently, Break-out group 1 was divided in two (Group 1a and Group 1b) so that the two most important aspects of the total South Florida Ecosystem could be addressed.

1a) This group focused on the best management practices (BMP's) for agriculture. The primary focus of the BMP's is a comprehensive approach to manage agricultural runoff, especially that of phosphorus loads. Under the Lake Okeechobee SWIM plan, agricultural water users in the Everglades Agricultural Area (EAA) are required to develop farm management practices to reduce phosphorus loads from the basin by 25% (Anderson and Flaig, 1995). Agricultural BMP's, then, are being developed and implemented to comply with water management, environmental, and regulatory standards. While BMP's are improving runoff water quality, additional research is is necessary to gauge the socioeconomic effects of the best combination of BMP's for individual farms.

1b) This group focused on the economic assessment of the C&SF Restudy. As already mentioned, the Army Corps of Engineers had developed limited socioeconomic studies for its Restudy projects, but the participants in this group were urged to make broad assessments and recommendations to help supplement what the Army Corps had already devised. Emphasis in this group would be placed on the economic benefits of total ecosystem restoration, an comprehensive adaptive management plan, and development

of a natural resource accounting system along with a carrying capacity study which would take into account updated demographic, land and water use parameters for devised models.

2) This break-out group would concentrate on the storage reservoir north of Lake Okeechobee. As described in the Core Group's overview packets for symposium participants, the purpose of this project is to increase regional water storage north of Lake Okeechobee, and provide flood attenuation, estuary flow protection and water supply benefits. The location of the storage reservoir has not yet been determined, but will be contained within 30,000 acres of Glades, Highlands, Okeechobee, Osceola and Polk Counties at a maximum depth of ten feet. An alternative to capturing lake water would be to attenuate flood waters before reaching the lake. This could be accomplished north of the Kissimmee River which could have positive impacts to the Kissimmee River Restoration Project or within the Taylor Creek/Nubbin Slough which would improve water quality entering Lake Okeechobee.

3) This break-out group focused on the North Fork of the New River restoration which is on the Army Corps of Engineers' Critical Projects List. As described in the Core Group's overview packets for symposium participants, the North Fork restoration is part of a larger effort to revitalize the environmental and aesthetic qualities of the New River Basin. The area has been identified as an area of low water quality due to impacts from pollution and low water circulation. Stormwater runoff, illicit discharges, and debris dumping have

been chronic problems for the area. Septic tanks and sewage lines surrounding the waterway have also contributed to the river's contamination. Compounding the situation, is the fact the river segment is surrounded by low-income minority communities that are themselves threatened by water and sediment quality characteristics. Restoration plans include spot dredging, improving flow regimes, shoreline re-vegetation, identification of contaminants and the promotion of urban infill development consistent with the principles of the Governor's Commission initiative, Eastward Ho!

4) This break-out group discussed the South Biscayne Bay Watershed Manage-Ment Plan and the Florida Keys Carrying Capacity Study. As described in the Core Group's overview packets for symposium participants, the South Biscayne Bay Watershed Management Plan will direct the management of the South Biscayne Bay watershed's land and water resources. The plan objectives are: to preserve the environmental, economic, and community values of Biscayne National Park; to identify and establish mechanisms for protecting the constitutional private property rights of land owners, to support a viable, balanced economy including agricultural, recreation, tourism, urban development in the area; and promote land uses and zoning decisions in the area consistent with long-term objectives for a sustainable south Miami-Dade County. The other topic for break-out Group 4, the Florida Keys Carrying Capacity Study's goal is to determine what level of human population and activities can be supported by a healthy, balanced, functioning ecosystem in the Florida Keys. This determination will be made by identifying "component

thresholds" which define ecosystem sustainability. A number of agencies will use the study's findings to govern their actions with respect to the rate of growth and permit allocation in Monroe County.

5) The last break-out group focused on the Indian River Lagoon Restoration Feasibility Study. As described in the Core Group's overview packets for symposium participants, this Feasibility Study will examine alternative surface water management options and develop a regional plan for addressing water resource opportunities specific to the canal watersheds in Martin and St. Lucie counties, even though the C&SF Restudy will develop a comprehensive plan for the entire Indian River Lagoon region. The first goal of the Feasibility study is to enhance ecological values through planning objectives such as improving the quantity, quality, timing, and distribution of freshwater flows to estuaries, and improving habitat quality in the estuarine ecosystem. The second major goal of the Feasibility Study is to enhance economic values and social well-being through projected actions such as improving regional water supply for urban and agricultural use, maintaining a healthy estuarine system that supports economically significant fisheries, and finally enhancing opportunities for eco-tourism.

Included in Appendix C are the symposium agenda, layouts of the meeting areas at the Westin Beach Resort in Key Largo, a map illustrating the location of the project topic areas, and a finalized list of participants who were actually present at the symposium as presented in the April Draft Summary of Symposium Results (Social Science Sub-group, 1998), respectively.

The opening plenary session highlighted the broad overview of the already discussed need for social science in ecosystem restoration, and more particularly for restoration efforts in South Florida, bringing all participants up to speed on what was currently taking place in this region. Participants were informed of the agenda process and what the focus for the six break-out groups would be.

The breakdown of the work to be performed in the break-out groups mirrored that of what SEA had recommended at the September meeting at Silver Springs and that was to follow the three steps: 1) Evaluation of existing socioeconomic studies, 2) Identification of management information needs, and 3) Development of actions to meet the management information needs.

On the first day participants in each break-out group were to be given further overviews of each particular project topic by technical specialists assigned to each particular break-out group because they were intimately familiar with the complete details of each project area. After the technical specialists' presentations, each break-out group participant was given copies of the template Worksheet A designed by the Core Group (see Appendix C for blank copies of Worksheets A, B, and C that were used at the symposium) to be used for identifying **existing** social science activities that address each particular project. Participants then determined if the existing studies, collectively discussed, adequately measured the social and/or economic impacts of the proposed projects pertinent to their break-out group. This information was then used to help identify new or additional social science activities that are would be required using template Worksheet B.

This second phase of the agenda, had break-out group participants identifying the critical social science information **needed** for each project, as well as identifying the social science gaps associated with each project. This was accomplished on individual copies of template Worksheet B by each participant. Then, each break-out group collectively discussed the brainstormed social science "gap-fillers", and the resulting ideas were written down on large charts for each participant to view. For the gaps that were identified, the participants would later prioritize these gaps and establish criteria for filling these gaps on template Worksheet C the following day. Completing Worksheets B was supposed to be the last step on the agenda for day one. However, a couple of groups, especially Break-out Group 3, were not able to fully finish this step in the symposium agenda for day one. In fact, all the break-out groups required more time to focus on the second phase of the agenda and consequently the symposium process fell behind the proposed set agenda.

The third and most important phase of the symposium was to actually **develop actions** to meet the management information needs, in other words, establishing the criteria and actions needed to fill the perceived social science information gaps. This process included outlining the scope of each recommended action, and determining the stage in the restoration effort planning process where the action would be most beneficial. Worksheet C represents the strategy form for each project gap. Here, on this form, the proposed actions or activities could take a variety of different forms: either as a research effort, monitoring activity, establishment of a regulatory requirement, or an educational outreach initiative. At this point, participants in each break-out group formed teams of

two to complete Worksheet C but did so only once each participant in each break-out group voted on the priority of each recommended social science action or "gap-filler".

In most of the break-out groups there was also not enough time for each team to give a prolonged account of the completed Worksheet C forms to the rest of the break-out group participants, nor was there any time for all the participants to extensively review other break-out group results before the final plenary session.

Because almost every break-out group was behind in terms of the set agenda on the second day, the final plenary session was held later than anticipated and was cut short. During this final plenary session, a brief review of the next steps to be taken, as well as a statement of how the actual action plan would be contrived, was conveyed to the symposium participants. Ted Strong of the Columbia River Intertribal Fish Commission gave a poignant address expressing his positive views on how the symposium would be successful and how they partly mirrored the efforts of his Commission in addressing the problems confronting the Colombia River in Oregon. Bonnie Kranzer, expressed a final note of thanks to all those who participated at the symposium and assured everyone that the results would be wholly positive and forthcoming in a Draft Summary of Results.

In the wake of the symposium, there was much work to be done in preparing the Draft Summary of Symposium Results (1998) that would be put out a month and a half after the symposium in April. All of the individual Worksheet templates as well as the information on all the break-out groups' large chart pages needed to be entered into a database format so that they could be added to the Draft Results Report. Basically, anything that was written on any piece of paper was lent to establishing a complete

picture of the participants' ideas generated at the symposium. Unfortunately, bad hand-writing caused a little of the information to be illegible. But overall, the information generated at the symposium was voluminous. For the entire month of March and into April, this Draft Summary was in formation.

Along with the creation of the Draft Summary, the existing projects that were cited on Worksheet A during the symposium needed to be followed up on so that they could be added to the existing bibliography of current social science projects and activities, that would in turn later be included in the finalized Action Plan. Many of the projects cited were scattered around not only South Florida, but those symposium participants from outside Florida, cited projects from other states that they thought correlated with efforts here in South Florida. Needless to say, following up on these cited projects involved a lot of time on the telephone in terms of gathering detailed information on these projects that would hopefully prove useful when the final Action Plan was written.

In conversing with my supervisors, Laura Ogden and Karyn Ferro, and with the participants, themselves, it became clear that the feedback on the symposium was overwhelmingly positive. Calls coming into the Core Group headquarters from symposium participants contained many appreciative and congratulatory comments. Overall, the facilitators and participants at the symposium provided an evaluation of "what went well" at the symposium and "what didn't go well". These evaluations are contained in the Draft Summary of Symposium Results (1998) and are as follows:

<u>What went well</u>

1) The preparation and the structure of the symposium was well designed to ensure concrete, meaningful results

2) A collaborative process was used which resulted in an interdisciplinary assessment of "case studies" and the "Total System"
3) Participants left feeling like they had made a contribution to the process and with a willingness to work on the recommended activities
4) Participants recommended ideas that had been used successfully elsewhere
5) Participants linked research recommendations to their application, such as public engagement strategies and management decision-making needs
6) Symposium provided a forum for one-on-one dialogue between project managers/technicians and a broad range of social scientists—leading to personal contacts and exchanges
7) Participants focused on concrete and realistic recommendations, rather than abstract academic issues

What didn't go Well

1) Additional time was needed to develop recommendations fully and solict additional review from other break-out group members
2) The final plenary session should have include time for participant comment and questions
3) Participants expressed concern about follow-through on their recommendations; and the "next steps" should have been more clearly defined

The completed Draft Summary of Results turned out to be quite extensive. Overall, between the six break-out groups, there were 58 recommended social science actions or activities illustrated on Worksheets C. Combined with Worksheets A and B, the report gives a comprehensive view of both the social science activities and projects already completed or ongoing in South Florida Ecosystem restoration, as well as those that seventy social scientists at the February symposium feel need to be addressed in the restoration efforts of the future. Given the veritable plentitude of recommended social science actions, it is beyond the scope of this report to enumerate them all. Table 2 in Appendix C lists the top three social science recommendations for each topic area as they were prioritized by the participants in each of the break-out groups (Social Science Sub-group, 1998).

My nearly year long internship ended in mid-April of 1998, with the completion of the Draft Summary of Results for the Symposium. Upon my departure, there still were steps to be taken in the final drafting of the final Action plan. The Core Group, along with the Social Science Subgroup of the Science Coordination Team were to work with symposium participants in order to clarify the recommended strategies and to ensure that they accurately reflect the participants' intentions. In a form of peer review the Draft Summary of Results could undergo revision subject to several conditions. One condition is if the Core Group, or Social Science Subgroup, or any of the symposium participants determine that there are several social science recommendation strategies embedded within one. Another condition is if there is any overlapping among the strategies. In either of these two cases, the recommendations would either be divided to create new ones, if there are multi-faceted strategies, or combined to compensate for the overlapping of strategies. A final condition for revision is that the need could arise for further prioritizing of the social science recommendations in terms of identifying the highest-priority recommendation strategies. In this case, specific actions will be further detailed including schedules, scale, budgets, feasibility, timeframe, etc.

At the time of this report's creation, the Draft Action Plan is still in the works. The final Action Plan will include all of the social science strategies developed at the February symposium. It will summarize how the actions meet management needs and evaluate how they will be fundamentally applied to South Florida Ecosystem management. The Action Plan will also summarize the resource requirements in order to implement the actions and address how the actions can be monitored for their overall effectiveness. Finally, after more peer review among symposium participants, the Core

Group and the Social Science Subgroup, as well as stakeholder review, the final Action Plan will be presented to the Working Group for its review. Contained within Appendix C is the complete example template of the format for the final Action Plan that was developed at the SEA meeting at Silver Springs, Maryland, in September of 1997.

Although the agencies that make up the SFERTF and its Working Group will not be under any obligations to fund any of the proposed social science recommendations and strategies contained within the Action Plan, it is worth noting that the Environmental Protection Agency is already looking to fund three of the proposed social science projects/strategies developed at the February symposium (Karyn Ferro, tel. int., 1998). Likewise, the Dade County Department of Environmental Resource Management (DERM) wants to look at the symposium recommendation strategies for the South Biscayne Bay Watershed Management Plan, as this agency determines how to possibly incorporate some of these proposed social science strategies into its own efforts for restoring South Dade County (Ibid, 1998).

In the end, although the Working Group formerly harbored ambivalence toward the utilization of social science in its restoration efforts, it already appears that some environmental agencies are taking notice of the symposium results. Then again, with so much positive feedback from the majority of social scientists present at the symposium, it will be hard for any environmental entity *not* to take notice of a largely successful symposium that indeed generated what Machlis had once called for: truly "usable knowledge".

Conclusion: Toward a Total Social Science Synergy

In this new age of ecosystem management, environmental managers are at last acknowledging the all-important nexus between the social sciences and the traditional natural/conservation sciences. The hesitation and ambivalence harbored by the SFERTF's Working Group concerning the incorporation of social science into the efforts for restoring the South Florida Ecosystem is essentially an almost microcosmic example of the way in which environmental managers have slowly realized the need for social science in other ecosystem management endeavors around the country. Indeed, the picture I have striven to paint is one in which the canvas of environmental management should be perceived as incomplete due to the lack of an important color scheme in the palette of critical decision-making strategies. Not until the environmental policy brush is dipped into the social science paint will the ecosystem management portrait be truly complete.

Fortunately, the call for social science was heeded by the multi-agency Task Force in South Florida, even if it needed to be convinced and reconvinced of the efficacy of its application. The South Florida Social Science Symposium yielded much in the way of concrete "usable" social science knowledge. However, the knowledge gained will do no apparent good as long as it remains on paper. From the moment of its first conception, the knowledge gained from a social science symposium was never meant to be a "paper tiger" but instead a useful tool to help South Florida's environmental managers make effective policy decisions and to fill in information gaps where necessary socioeconomic knowledge was required. Only when an appropriate, holistic synergy of

the natural and social sciences is utilized, will ecosystem management be wholly successful.

With social science now having been incorporated into the adaptive framework of ecosystem management, I believe there are two future forums or arenas where social science can seemingly shine brightest in its fullest potential application here in South Florida. One of these project forums had already been established and researched before the February symposium: the Governor's Commission's Eastward Ho! initiative. The other forum for social science input was one of the six primary topic areas addressed at the symposium, the North Fork region of the New River. Fundamentally, the two project initiatives and the regions they fall into, as well as the restoration principles/strategies that will be necessary for the successful implementation of both, are inextricably intertwined. While individual reports could be written on either project, I wish only to briefly highlight how the social sciences may be utilized in both cases.

Eastward Ho! was the creative brainchild of the Governor's Commission for a Sustainable South Florida and was featured in the Commission's *Initial Report* (1995), while the North Fork of the New River Restoration project was featured in the Army Corps of Engineers' Critical Projects List (1997).

Underscoring its importance and perceived social science implications, in all the subgroups at the February Social Science Symposium where each breakout group dealt with the various aforementioned different problem areas in South Florida, it was the Eastward Ho! literature that was uniformly distributed for the pre-edification of each and every participant. This urban restoration initiative elicits goals of promoting home ownership, encouraging community schools, improving public safety, and creating jobs

that sustain the character of the revitalized neighborhoods in the study area lying within the urban corridor between the Florida East Coast (FEC) and Chesapeake Seaboard (CSX) railroads beginning in southern Dade County and extending up to north central Palm Beach County (South Florida Regional Planning Council, 1996). The primary goal, though, of this urban restoration is to capture a greater percentage of the enormous projected growth for Southeastern Florida's Urban areas, as opposed to letting suburban sprawl spread unchecked into the environmentally sensitive Everglades lands to the west.

Undoubtedly, the Eastward Ho! initiative relies heavily on economic studies to determine the feasibility of the infill projects necessary in urban revitalization, such as providing development incentives, enforcing development codes, and helping to solve relocation problems. Still, there are many more social science issues that come into play. For instance, criminal activity is higher in the dilapidated downtown areas of the three metropolitan counties that Eastward Ho! comprises. Likewise, minority populations and the homeless are concentrated in these corridors sometimes creating ethnic and social tensions among residents. To alleviate these and other concerns, knowledge from the social science disciplines of sociology, geography, anthropology, and political science are needed to help communities rise to the challenge of improving social infrastructure that is "integral to the physical redevelopment of the area" (Schneider et al., 1996). Thus issues and strategies include affordable housing, community leadership, credit rebuilding, and most paramount--education, which will spread optimism that redevelopment and infill can be achieved thereby bringing more people back into the urban corridor.

Accordingly, in redeveloping blighted areas and bringing in middle-class and mixed-income residents to low-income neighborhoods, "you need the support of local

government, and you have to be creative" (Westlund, 1998). Innovative solutions are exactly the key to solving many of the Eastward Ho! problems, and in devising these strategies local government officials will need to rely heavily on the social sciences to address the many multi-faceted socioeconomic dilemmas. At the Ninth Annual Growth Management Conference focusing on southeastern Florida and the Eastward Ho! initiative, it was stated that "no one has paid attention to the social needs of residents in the east" (Schneider et al., 1996). All of the good schools, libraries, and recreational areas were said to be out west of the urban core areas. Therefore, the challenges facing Eastward Ho! are primarily socioeconomic in nature and "it will take a huge public sector financial commitment" to make the initiative a success (Westlund, 1998). This creative and ambitious project initiative is thus a prime example of the creative utilization of the social sciences to confront an environmental conservation problem, in this case, trying to thwart unbridled urban expansion into the sensitive wetland areas critical to the greater South Florida Ecosystem.

Lying within the Eastward Ho! boundaries, the North Fork of the New River is a somewhat obscure river terrain in the heart of urban Fort Lauderdale that can likewise profit from the same social science knowledge and input as the broader Eastward Ho! initiative. In part, I pay particular heed to this problem area because I became quite familiar with it in my own responsibilities as a staff member of the February Symposium's Social Science Core Group. During the Symposium, I was assigned to the breakout group that was charged with brainstorming potential socioeconomic/ sociopolitical solutions for the dilapidated and endangered North Fork region. Yet, I assert that this relatively tiny, urban encircled remnant of the original South Florida

Ecosystem provides a perhaps subtle but unique opportunity to put to the test the efficacy of all of the pertinent social science disciplines. Everything about this diminutive sector of Broward County admits the need for special attention, much more than the traditional bio-physical approach to ecosystem coordination and planning. This little aqueous oasis, while being endangered itself, is also surrounded by communities sorely in need of urban revitalization. In truth, the decaying and neglected neighborhoods only serve to further pollute and perturb the surprisingly diverse riverine flora and fauna.

Here, as in some other urban core areas of southeastern Florida, crime, poverty, and homelessness is rampant. A predominantly African-American area, the region is subject to discrimination and avoidance by wealthier citizens who ignore the area and choose to live elsewhere. One such dilapidated community bordering the North Fork is the Franklin Park neighborhood. The Broward County Department of Strategic Planning and Growth Management has come up with one socioeconomic plan for this area's restoration (Comprehensive and Neighborhood Planning Division, 1995). The following are just some of the social science goals for enhancing the neighborhood:

1) Promote increased production, preservation, and maintenance of housing to to meet the needs of current and future residents
2) Correct property maintenance problems where needed and sustain otherwise healthy conditions
3) Maintain and improve property values in residential areas through appropriate land use and zoning
4) Improve and maintain sound infrastructure conditions
5) Supply park facilities and adequate open space based upon community needs and conduct activities and programs for children and adults
6) Create a neighborhood focal point within Franklin Park
7) Provide a safe and uniform street system for the neighborhood
8) Promote efficiency in transportation that is affordable and convenient for all neighborhood residents
9) Make Franklin Park a safer and more cohesive neighborhood
10) Improve the level of human services to neighborhood residents

11) Create and maintain economic growth opportunities and economic stability in the Franklin Park neighborhood
12) Strengthen and improve the identity of the Franklin Park neighborhood and enhance its image as a desirable place to live

The Broward County Department of Natural Resource Protection (DNRP) has also taken part in the plans for the North Fork region's (including Dorsey River Bend, Washington Park, and St. George communities) revitalization. Washington Park along with Franklin Park are the main focus of the DNRP's efforts as these areas manifest demographic statistics that are quite grim: a young, impoverished, and poorly educated minority community relative to the rest of Broward County. Education has been a central focus for the DNRP's outreach program (Broward County DNRP, 1997). This program has continued to target school-age children and the public with relevant environmental information. The DNRP has also implemented a Best Management Practice program on an industry specific basis, providing for more flexibility than the standard command and control regulation by setting outcomes and giving the permittee choices in achieving desired environmental outcomes. Finally, the DNRP received appropriations to develop a Brownfield Work Plan that will carefully combine enterprise zones, community redevelopment target areas, and neighborhood improvement projects to address the needs of the impoverished and blighted North Fork communities (Ibid., 1997).

In my own personal tour of the North Fork area, I further saw how the social science recommendation strategies proposed at the February symposium could aid the area. Equity/environmental justice studies along with human health risk assessments would be fundamental in understanding the adverse impacts of an unsafe environment on the surrounding populace and would determine if the North Fork residents' rights to equal protection, free-informed consent, equal opportunity, due process, and

compensation are in fact being violated (Social Science Sub-group, 1998). In personally witnessing the number of homeless scattered throughout the area, I believe a survey of homeless person's environmental uses and needs would help determine future actions to safeguard those who are most vulnerable to environmental degradation. An ethnographic study of river use and a cultural inventory would help provide baseline information for formulating planning alternatives, as well as project monitoring, and would form a basis for community rapport and involvement (Ibid., 1998). Because some ecotourism already takes place in the form of small boat rides to sight-see the beautiful (although not pristine) scenery, an ethnographic and cultural study would aid those businesses seeking more clientele, as these small entrepreneurs would essentially stand to benefit from overall New River cleanup efforts. Finally, an evaluation of existing crime levels and the impact that North Fork restoration might have on these levels might once again bring in more visitors, tourists and businesses to the area if the threat of crime could be reduced. This is an important element in seeking river restoration because preliminary anecdotal evidence suggests that crime is an important factor in limiting recreational river use as well as confounding efforts for its clean-up when considering illegal dumping and blatant littering (Ibid., 1998).

The North Fork of the New River may be small in the scope of the whole of the South Florida Ecosystem, but it is home to ecologically important riverine flora and fauna and has even more significance in that it provides so many aesthetic and recreational values for the communities that live along its banks. After having toured the North Fork area and lost in contemplation of it, I am reminded of the account Aldo Leopold gave in the *Sand County Almanac* (1949) of some of the last remaining Silphiums that grew in an

unnoticed corner of a Wisconsin graveyard. Like the vanishing Silphiums that once made up a part of a vast prairie ecosystem, victims of burgeoning agriculture and urban development, the North Fork remains as a testament to the once sprawling Everglades and now stand as an endangered oasis amidst urban expansion and subsequent decay.

Ultimately, the previous two examples illustrate how a synergy between the social sciences and the natural sciences is needed more than ever in the efforts to restore the South Florida Ecosystem. Perhaps it is understandable that environmental managers formerly viewed the social sciences with distrust as it has been human technological and economic endeavors that have been the primary causes for environmental malaise around the world. Yet, the current "ecologic crisis is about what it means to be human....And if natural diversity is the well-spring of human intelligence, then the systematic destruction of nature inherent in contemporary technology and economics is a war against the very sources of mind" (Orr, 1994). Humankind's rapidly evolving technology and unchecked economic growth are indeed quickly outpacing our social wisdom and societal theories of how to cope with unbridled change. This is evident in everything from genetic engineering and computerized efforts at artificial intelligence down to the widespread destruction of whole ecosystems and the species they engender.

Our "sources of mind," then, should tell us that the adaptive management of ecosystems is profoundly the management of human activity. In this light, we must turn to the social sciences, and as we utilize them, we must hope that they can eventually evolve along with our "hard" science knowledge. Frank Golley (1993) notes the pervasive yet ambiguous melding of the social sciences into the biophysical realm of ecology:

> It is not clear to me where ecology ends and the study of the ethics of nature begins, nor is it clear to me where biological ecology ends and human ecology begins. These divisions become less and less useful. Clearly, the ecosystem, for some at least, has provided a basis for moving beyond strictly scientific questions to deeper questions of how humans should live with each other and the environment. In that sense, the ecosystem concept continues to grow and develop as it serves a larger purpose.

As the legendary literary detective, Sherlock Holmes, was fond of saying, "the game's afoot." Hearkening back to the opening metaphorical scenario, without doubt, the game and the stakes are undeniably crucial, and the social sciences have been called up to the plate. As a society and an "enlightened" civilization, we can only hope that this newcomer in the environmental policy version of hardball can do everyone a favor and knock the ball out of the park.

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Appendix A

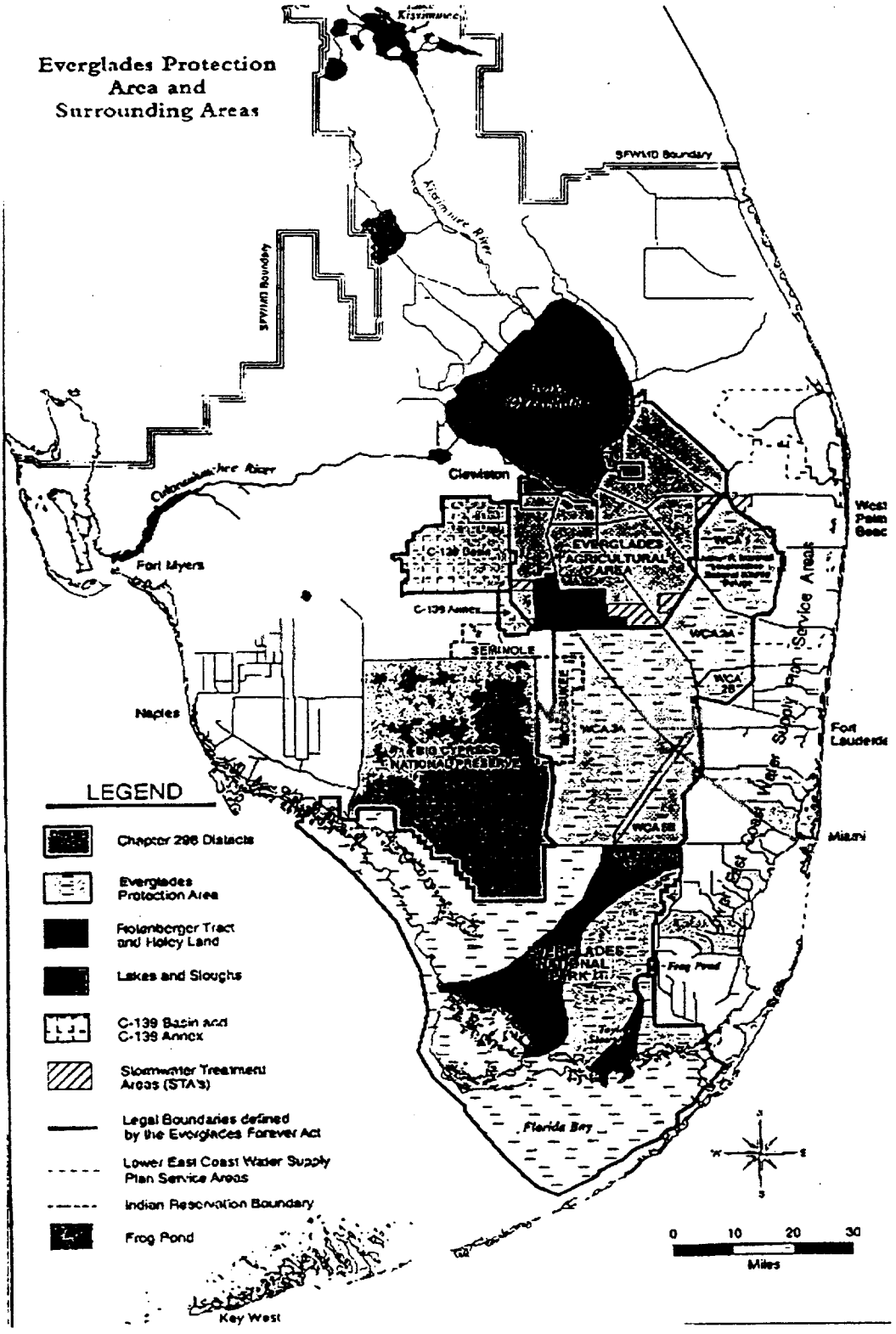


Figure 1. The South Florida/Everglades Ecosystem

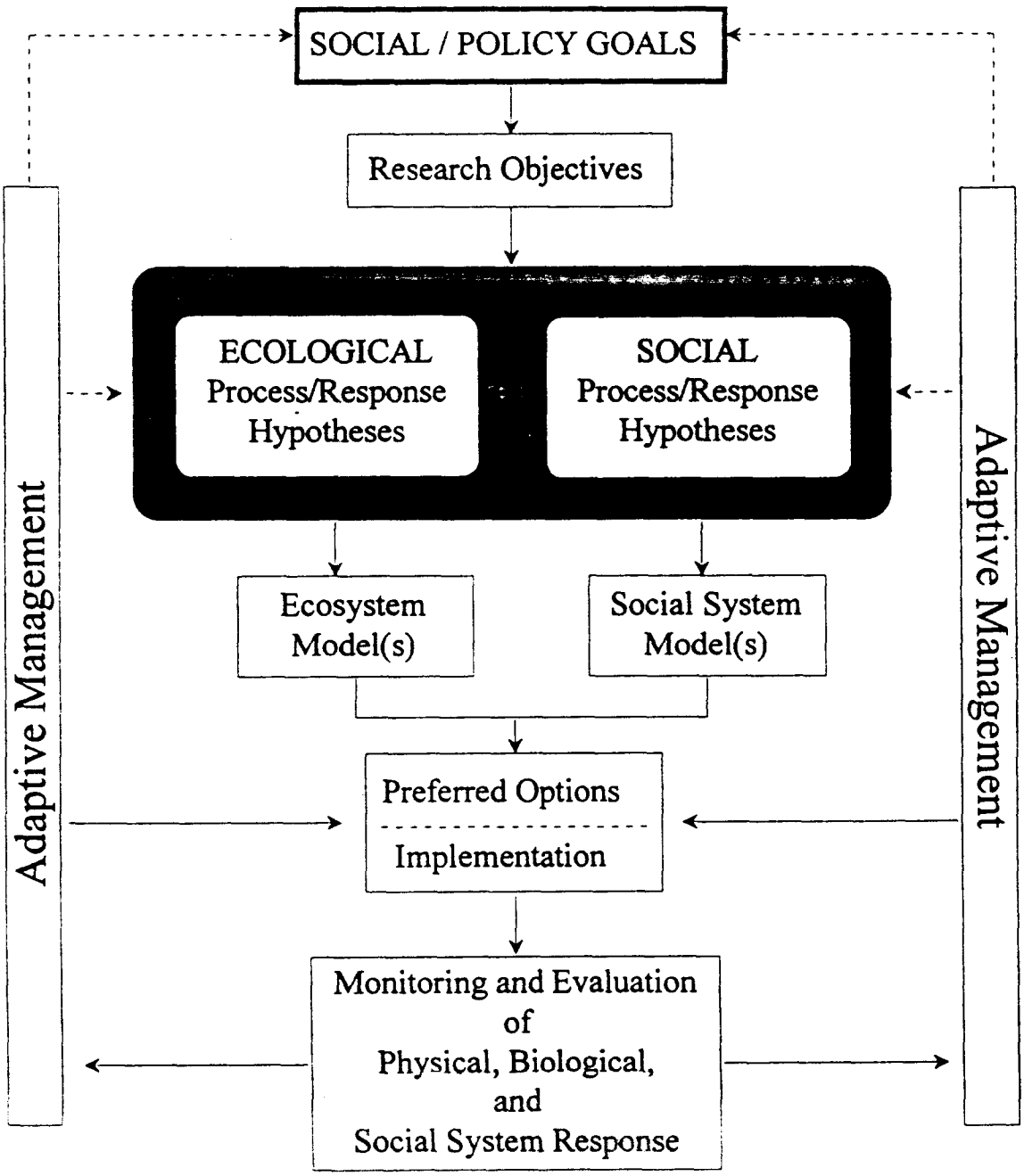


Figure 2. Natural and Social Science Research in an Adaptive Management Framework

Appendix B

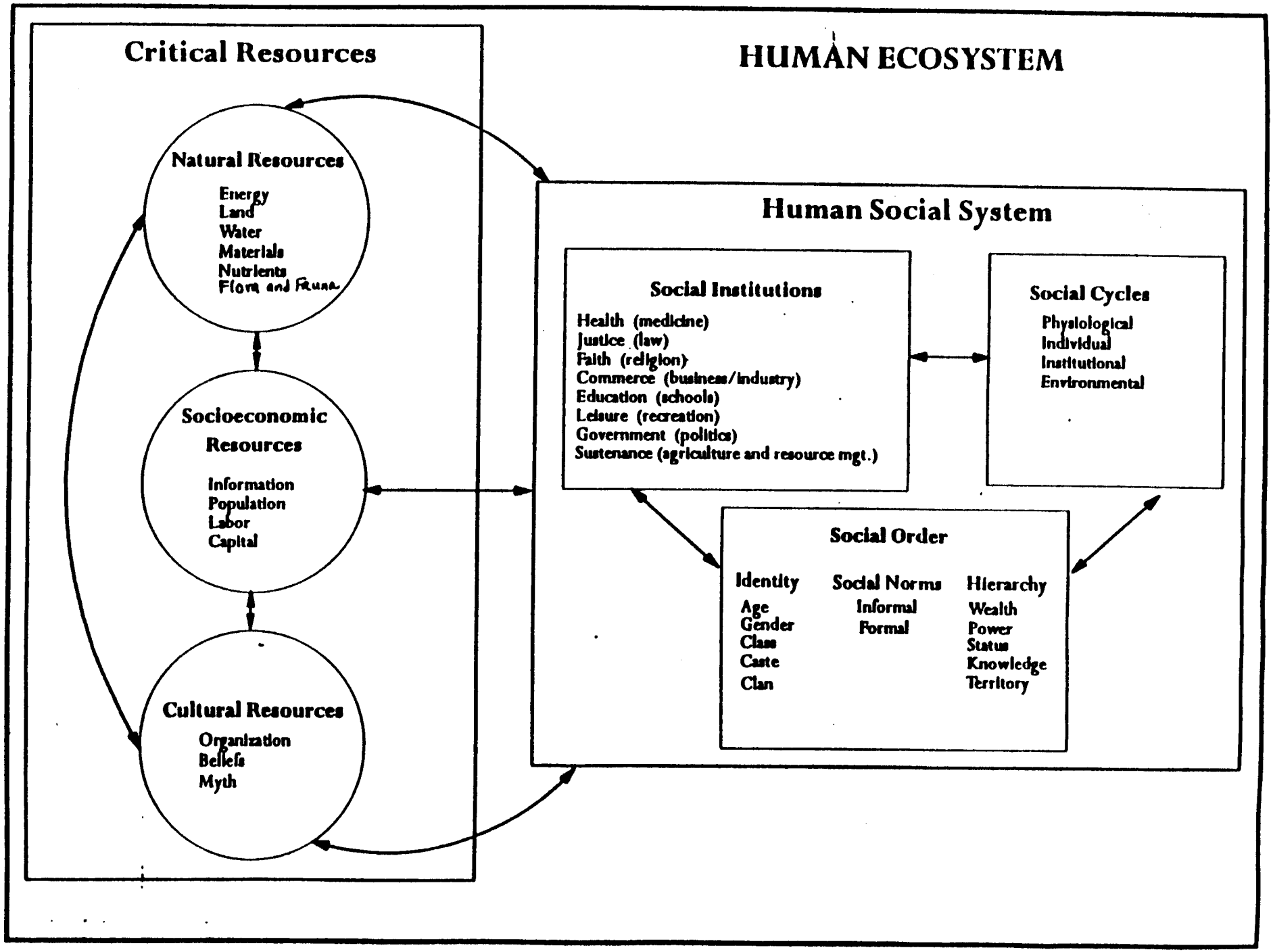


Figure 3. Working Model of Human Ecosystem: Equilibrium Model

Appendix C

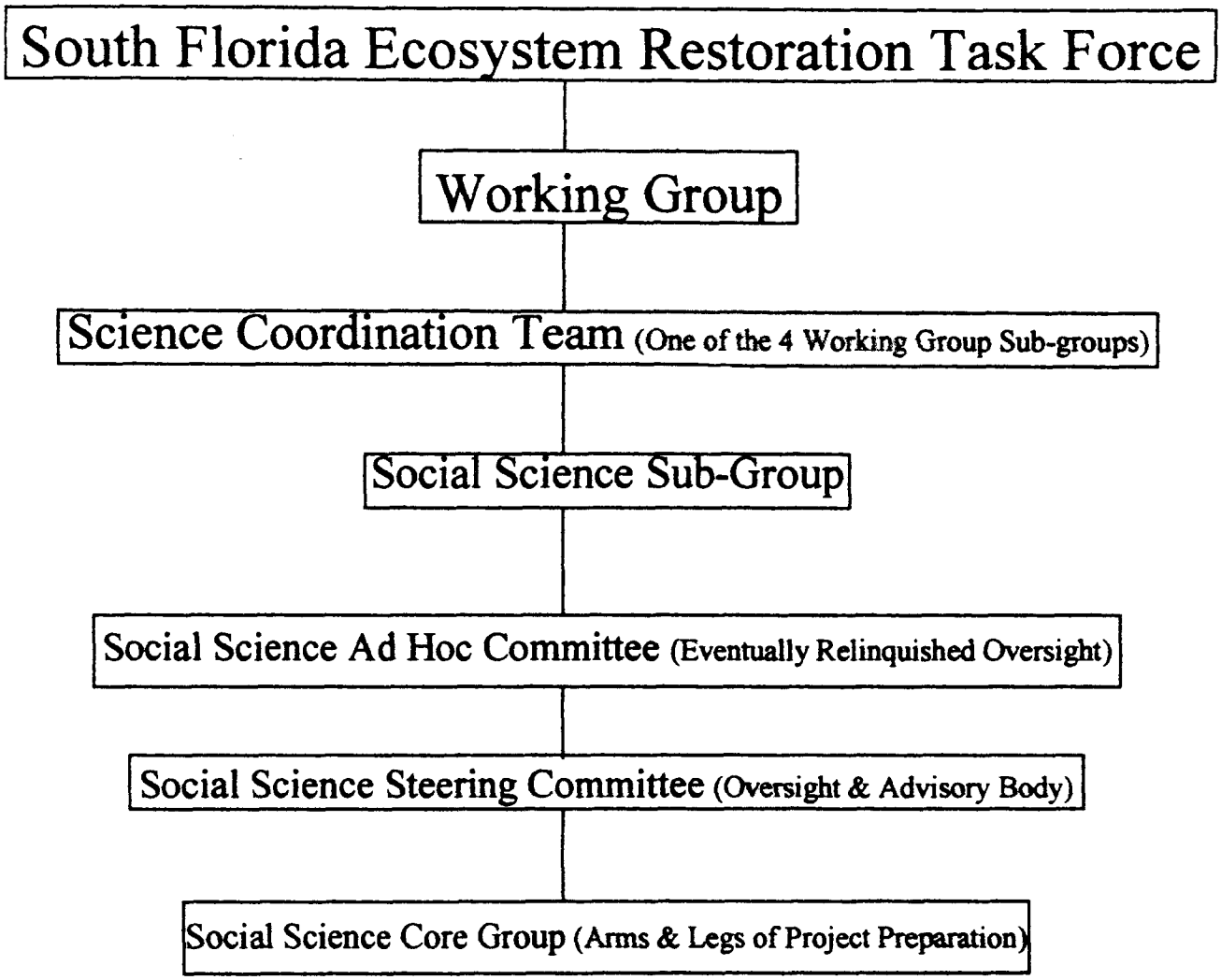


Figure 4: Organizational Hierarchy of the 1998 South Florida Social Science Symposium

QUESTIONNAIRE FOR PHONE INTERVIEWS

1. What are the most critical issues/topics involving the interaction of individuals/society and the natural environment in the context of ecosystem management, both in general and specific to the South Florida region?

Growth management; translation of issues into terms understood by constituencies; environmental justice, water flows and the Corps' restoration; social equity; cost benefit analysis. land use trends; socioeconomic trends; confusion regarding accountability for environmental quality; economic and social impacts of management decisions; economic and social impacts of land acquisition; characteristics of the population (who they are, what their values are . . .)

2. What are the likely tradeoffs inherent in restoration efforts, that is which groups or sectors will gain or lose?

Economic health vs. ecosystem health; human services vs. restoration; in any power struggle the Federal government will be the loser (US taxpayers); everyone must make concessions; free riders; consumptive users vs. non consumptive users.

3. What purposes/functions/ utility can social science information/research/data provide to applied ecosystem management?

Identifying social equity; make issues more relevant to the public; identify gains and losses. Should not try to conceptualize the entire system, need good GIS base; summaries to aid negotiations.
Understanding of what people understand and expect from the environment and what levels of commitment are needed to restore it.
Biological explanations are proxies since the causes are interdisclipinary, the solutions must be interdisclipinary as well.

4. Can you provide us with names of individual social scientists who can provide a compelling overview of the role of social sciences in ecosystem management?

Steven Sanderson; Dept. Chair, Dept of Political Science, UF
Frederick Buttel
Herman Daley (economist)
C.S. "Buzz" Holling; UF
Gardner Brown; U of Washington, Econ.
Nancy Bockstael; U of Maryland, Ag. & Res. Econ.
A. Myrick Freeman III; Bowdoin College
Dr. Raymond Kopp; Resources for the Future, Quality of Env.Division.

Michael Hanemenn; Ag and Res. Econ. UC-Berkley
Alan Randall; Ag Econ. Ohio State
Frances Westerly; Canada
Kye Lee; U of Washington
Bill Clark; Harvard
Don Michael; Berkeley
Dick Smith; FSU, Planning Dept.
Chuck Connely; FSU, Planning Dept.
Tony Parades; FSU, Anthropology
Neal Smith; Rutgers
Dave Berry; Interagency Working Group on Sustainable Development Indicators
Allen Hammond; World Resources Institute
Alan Atkisson

5. Can you provide us with names of individual social scientists who can provide, present and discuss a pertinent case study of social science application and its relevance for ecosystem management in South Florida? We are looking both for cases where social science analyses make a positive contribution to decision making and cases where social science was not done (or was ignored) and the "wrong" decision was made (a decision with negative consequences was made).

Walter Rosenbaum; UF, Dept of Political Science
Richard Tobin; Director of Env. Programs, Institute for International Research, Arlington, VA.
Michael Hanemann; RE Mono Lake, CA
McConnell; Ag & Res. Econ. U of Maryland, RE Chesapeake Estuary
Wally Milon; Ag. Econ. UF RE Indian River Lagoon
Bill Solecki
Bob Walker; FSU
Kye Lee; RE Columbia River Basin
Bob Costanza; RE Chesapeake Bay
Gloria Davis; World Bank
Mancur Olson; U of Maryland
Gary Machlis, Ph.D. NPS social science, Interior Columbia River Basin
Bill Freuendenburg, University of Wisconsin, Madison; social impact of energy decisions
Gene Rosa, Washington State; Public perception of risk re: nuclear energy
Bill Burch; International Development, Social Forestry, social science applied to urban issues in Baltimore, human ecosystem management
Jean McKendry, GAP analysis for Puget Sound, Interior Columbia River Basin
Tom Kelly, Tufts University; Environmental Literacy (Glouster Net Ban/Merripack River Waters Case Study. Chemical Plant in New Hampshire)
Professor D.J. Howell, Environmental Law Center; environmental education, campus activism
Benjamin H. Ross
Steve Sanderson, Chair, Political Science Department
Terry McCoy, UF, Sociologist
Roy Carriker, food and resource economics w/ policy insights
Steve Light, Minnesota DNR; institutional issues

Cliff Rosse @ Vanderbilt
Soc. Environ. econ
RFF

DRAFT SOCIAL SCIENCE SYMPOSIUM AGENDA
September 18 and 19

DAY ONE
Introduction and Overviews

I. Introductory Keynote Speaker: Person to speak for ~ 30 minutes to lay the compelling case of the importance of social sciences in natural system decision-making. This person needs to be broad and exciting. Sets the stage.

II. Interdisciplinary Panel of Social Scientists: a 1 hr. panel (10-15 minutes per speaker) to discuss the merits/contributions of a distinct range of social science disciplines. Example: an anthropologist, economist, political scientist and theologist. Purpose is to let everyone open their minds to the variety and breadth of the disciplines.

III. Q and A for the key note speaker and the panelists. 1 hr.

IV. Overview of process of the remainder of the day and the product that will be complete by the end of day two. Facilitator, conference director? 30 minutes. Introduction of a broad conceptual model showing linkages with discussion for further input and overview of planning framework (brief overview of Government Performance Results Act, etc.) for day 2.

LUNCH

(Lunch speaker if available, Lance deHaven Smith, political scientist?)

Linkage Areas

V. Natural System/Economy: Individual project-specific decisions affecting the natural system. Case study examples. 3 panelists - to discuss their case study linkage and its implications for S. Florida. 1 hour presentation total, with 1/2 hr. Q and A.

VI. Economy/quality of life: Socio-cultural studies: Discussion by 3 panelists of the economic and social ramifications of natural resource decision-making. (ripple effect e.g., fishermen, logging, oystermen, etc.) Same amount of time as above

VII. Natural system/quality of life: socio/political studies, or environmental justice/equity issues: Same format and time as above.

VIII. Panel of Experts - Wrap Up. Moderator or spokesperson from each of V-VII above, conferring with panelists, to provide a 10 min. summary of their observations and perspectives in preparation for the next day's action plan development.
Recess

DAY TWO

Developing an Action Agenda for the Social Sciences in South Florida

I. What are the most important human ecosystem questions facing the South Florida Ecosystem restoration effort? (40min to 1 hr)

II. Develop the Research Agenda using the research questions generated in the previous workshop. (40min to 1hr)

Useable Knowledge!!!
Prioritize: Critical needs, Important, Good to Know.
Critical vs. other

Identify critical scales:
local (municipality or federal interest land (i.e. a park or refuge)),
cluster (groups of local, i.e. South Dade, West Broward, Lower West Coast)
project coordination/region level (South East Coast, Central Everglades, etc.)
ecosystem

III. How do we get this information? The Action Plan!! (4 hrs)
Organizing for Social Science
Building a Research Base
Diversifying the Research
Completing the Research Program
Answers the question: What processes do we need to get there?
Involves a consolidation of information needs into discrete research (empirical or meta) projects.

The above 3 sessions performed with a facilitator in a workshop style with experts from previous day contributing to the discussion and products.

Social Science Symposium Process: Developing a Social Science Action Plan to Support the South Florida Restoration Effort

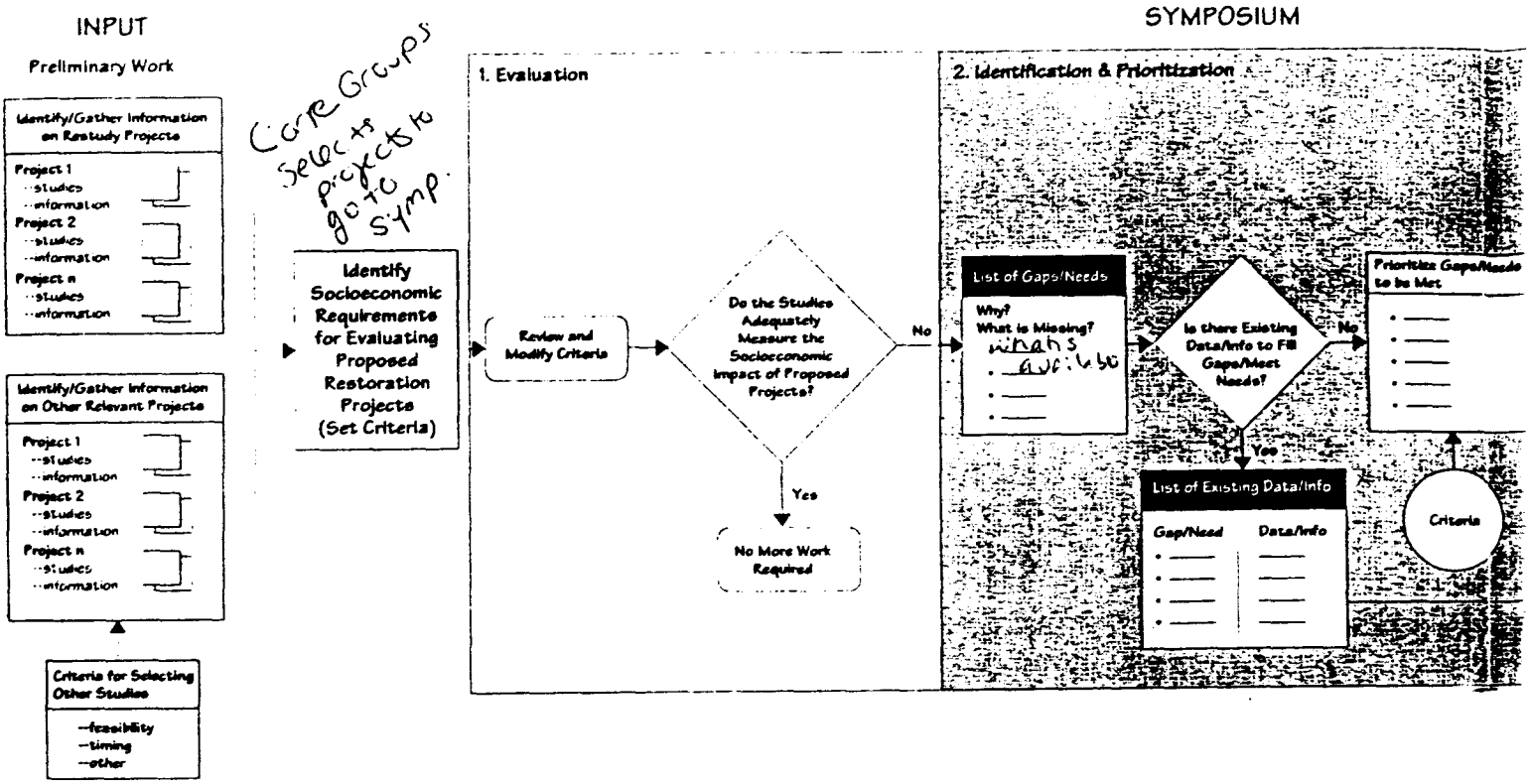


Figure 5: Flowchart of Symposium Preparation Process

Core Group - Facilitators

Eric F.

A. Responsibilities:

1) Determine, the structure and outcome of the process through consensus, in consultation with the agencies/groups involved (e.g., the Steering Committee)
2) Act as a liaison between the team and individual agencies/groups, e.g., team members represent their agency/group's position on the issues and will be responsible for reporting group decisions to their agency/group and the Steering Committee
3) Help plan and develop text, data, and other information to build interim reports, the Action Plan, and to support workshops. This includes preparing summary information from data bases, etc.
4) Help plan and prepare for meetings
5) Assist with the facilitation of workshops and meetings
6) Help refine the raw materials generated at workshops and meetings, e.g., review and refine materials, assist with synthesis, analysis and characterization, help write supporting summary pieces.
7) Help develop major components of the plan
8) Develop and disseminate a information concerning progress of the effort

B. Operational Arrangements:

1) Meet every 4-6 weeks
2) Travel to Silver Spring to help plan "Next Steps", prepare for workshops, refine raw materials, and develop major components of the plan
3) Design and content of interim products will be finalized at meetings
4) Development and review of products will occur between meetings and during travel to Silver Spring
5) Review of interim products prior to dissemination will be assigned to specific team members and must be completed within a set, agreed upon time frame
6) Review of interim products will be conducted via fax and/or mail

Steering Committee

A. Responsibilities:

1) Provide advice and assistance to Core Group
2) Provide assistance and expertise at workshops and meetings, and for specific tasks, if necessary
3) Review major elements of the program

B. Operational Arrangements:

1) Meet with the Project Development Team at major stages of program development - 4 times/yr.
2) Travel to Silver Spring if necessary
3) Development and preparation of materials will be conducted on a voluntary basis in conjunction with the Core Group - this may involve individuals or groups, but not the entire Steering Committee
4) Review of major elements will be conducted by mail, and/or at meetings

1997-1998 Budget for the Social Science Symposium
(Funding Provided by the DOI Critical Ecosystems Initiative)

Symposium Activity	Final Approximate Cost of the Activity
Staffing & Staff Travel	$18,700
Invitational Travel	$14,800
Conference Facilities	$3,800
Mailing Costs	$1,000
Supplies (Before, During, After)	$500
Final Approximate Cost (04/98)	$38,800

Table 1: Breakdown of Symposium Total Budget Allowance of $60,000 as of April 1998
(Approximately $21,200 left for development and distribution of the Action Plan)

Inventory of Social Science Projects Related to South Florida Ecosystem Restoration Effort

PROGRAM/PROJECT:

KEY WORDS (Please List All Possible Choices--Very Important in Building Our Database):

SOURCE CITATION INFORMATION:

Title of Work:_____

Author (s):_____

Document Type:

___ Journal Article (Journal Title, Volume Number, Page Numbers)

___ Report (Institution/Organization of Researcher(s), Sponsor Institution/ Organization, Address)

___ Book (Publisher, Place Published)

___ Data (Institution/Organization Source, Address of Source)

___ Other

_____

(Journal Title *or* Institution/Organization of Researcher(s) *or* Publisher *or* Institution/Organization Source)

_____

(Journal Volume Number *or* Sponsor Institution/Organization *or* Place Published *or* Address of Data Source)

_____

(Journal Page Numbers *or* Sponsor Institution/Organization Address)

Date if Published : _____ _____
(month) (year)

DISCIPLINE OF PROGRAM/PROJECT: (Check all that apply)

____ Anthropology
____ Archaeology
____ Economics
____ Geography
____ Political Science
____ Psychology
____ Sociology
____ Other (_____)

TOPIC AREA: (Check all that apply)

____ Agriculture
____ Commercial Fisheries
____ Housing/Real Estate
____ Mining
____ Wetlands/Habitat
____ Waste Disposal/Pollution
____ Education/Public Outreach
____ Health
____ Economic Development
____ Subsistence/Resource Use
____ Population
____ Recreation/Tourism
____ Transportation
____ Water Use
____ Income/Employment
____ Energy Use
____ Government/Institutions
____ Community Diversity
____ Damage Assessment/Restoration
____ Other (_____)

CONTENT TYPE:

____ Theoretical ____ Literature Review ____ Applied Analysis

GEOGRAPHIC AREA OF STUDY (Name of Area and Number from Attached Map):

SUMMARY or ABSTRACT:

CURRENT STATUS OF PROJECT/PROGRAM (Completed or Ongoing):

_____ Completed (Explain if necessary: _____)

_____ Ongoing (Explain if necessary: _____)

APPLICATION OF INFORMATION:

Target: Identify the proposed restortation activity/program/project for which this information is being/could be used.

_____

_____

CONTACT INFORMATION:

Respondent Data:

Name: _____

Title: _____

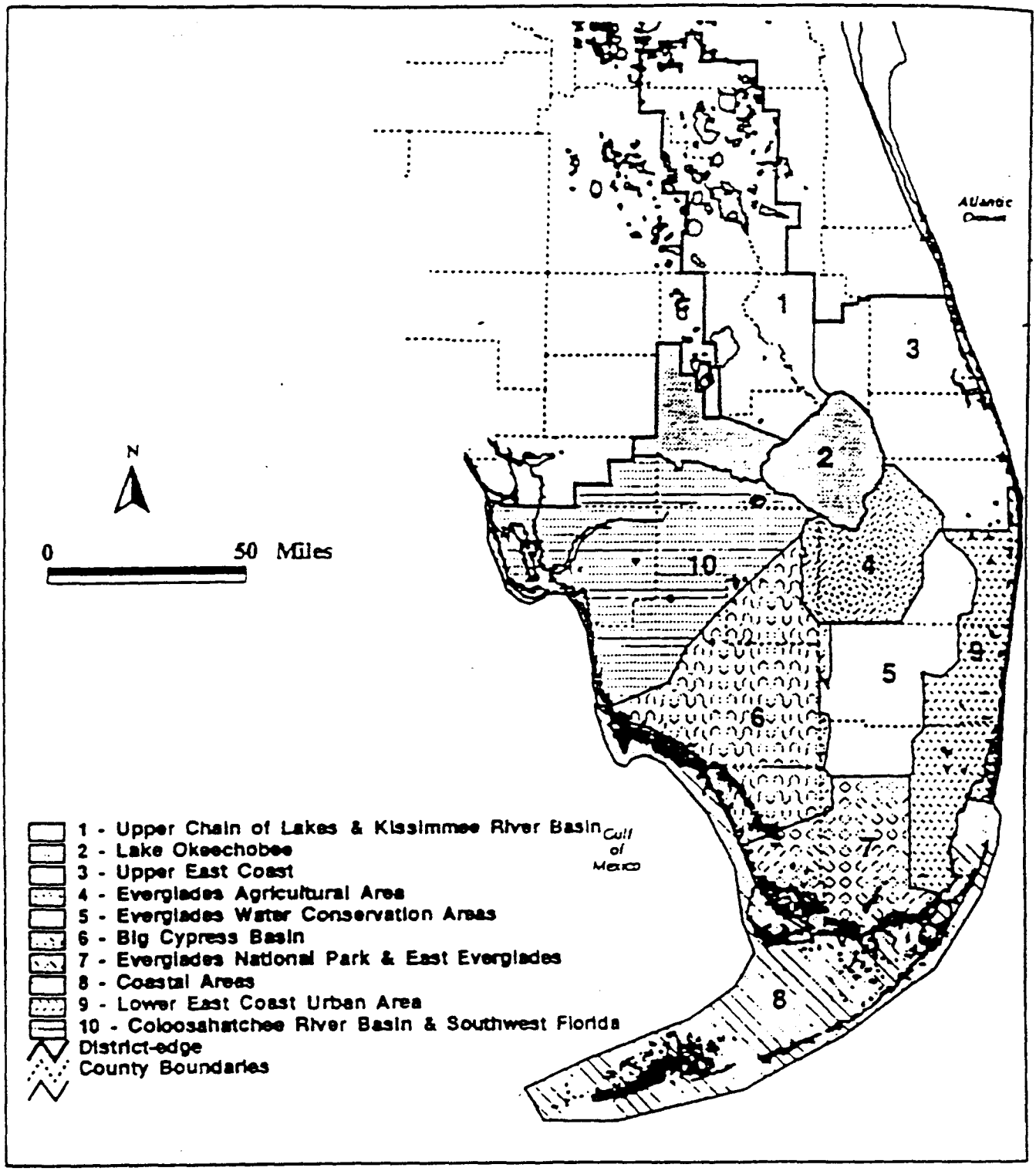
Address: _____

_____

E-mail: _____

Phone/Fax: _____

How/Where May We Obtain the Information You've Reported on:



The Total Sytem - Kissimmee Through the Keys (including 10 subregions)

Agenda
Building a Social Science Action Plan for South Florida

Westin Beach Resort
Key Largo, Florida
February 26-27, 1998

Day One

8:30-9:00 ■ **Registration**

9:00-10:15 ■ **Plenary: Welcome and Overview**

Restoration goals and objectives

Overview of South Florida restoration process

Review restoration projects addressed by symposium

Review agenda and process

Break Into Project Groups

10:30-12:00 ■ **Part 1. Assessment of Social Science Activities (Worksheet A)**

Presentation of restoration project(s)

Identify existing activities/studies that address project(s)

12:00-1:00 **LUNCH (provided)**

1:00-5:00 ■ **Part 2. Identify and Prioritize Additional Social Science Activities (Worksheet B)**

Identify and describe new or additional social science activities (by project)

Break

Prioritize social science activities (by project)

Identify teams to complete Worksheet C

Review Worksheet C

■ **End of Day 1**

6:00-7:30 ■ **Reception**

Public Invited to Attend and Participate

Agenda
Building a Social Science Action Plan for South Florida

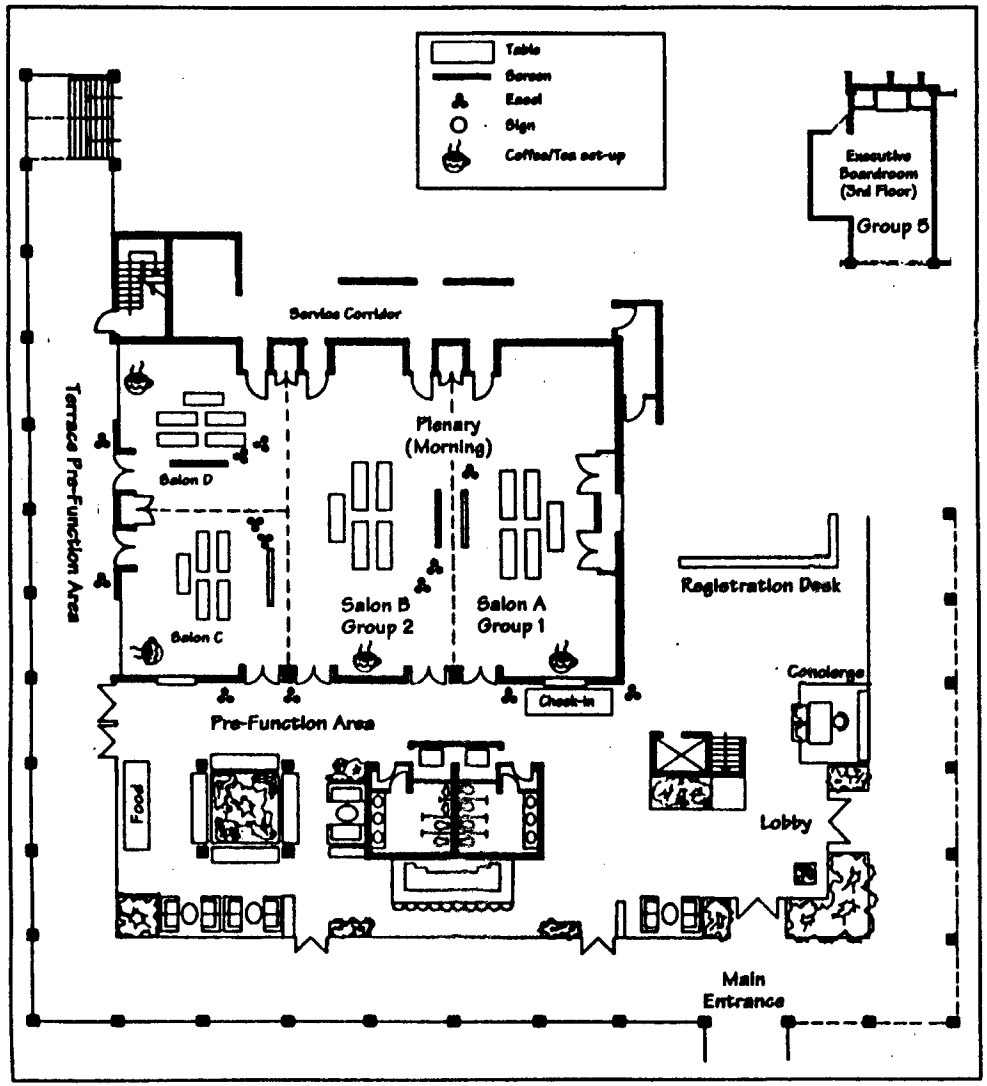
Westin Beach Resort
Key Largo, Florida
February 26-27, 1998

Day Two

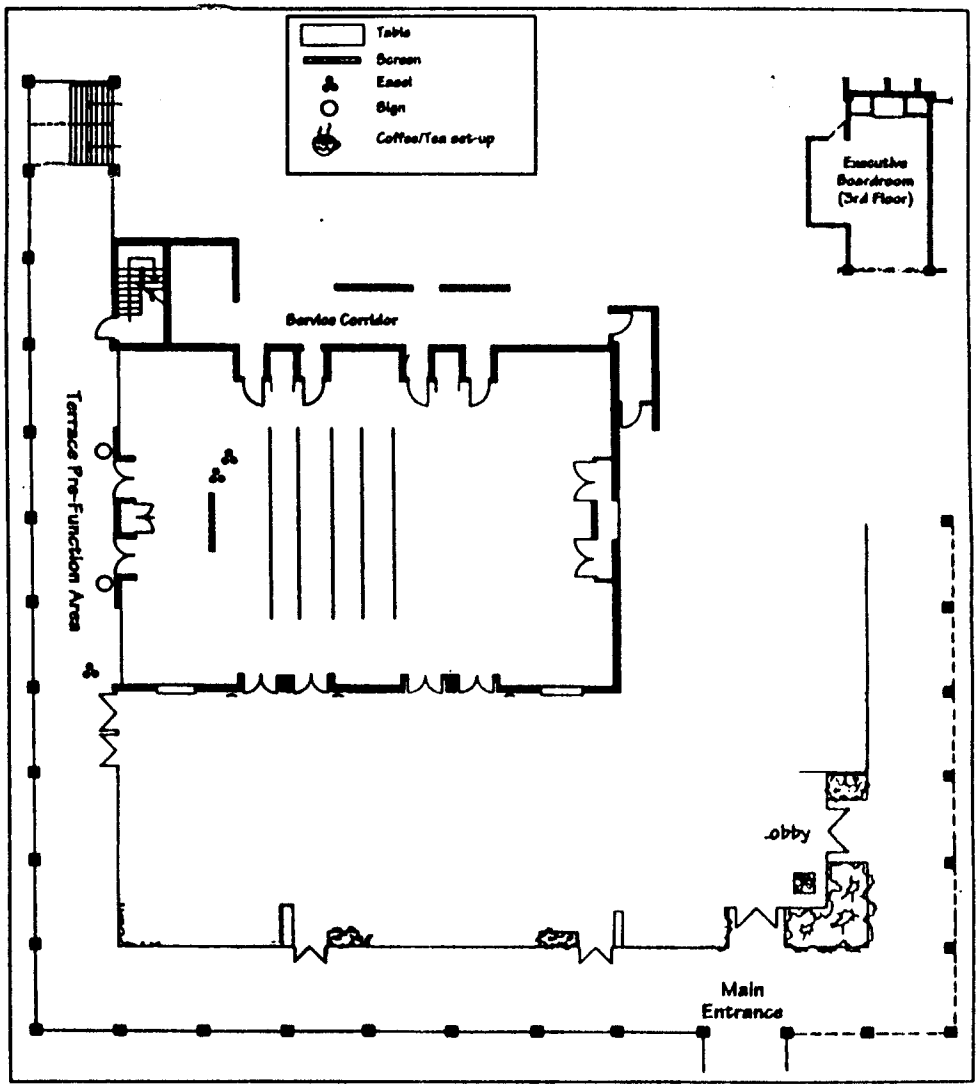
8:30-9:00	**Plenary**
	Return to Project Groups
9:00-12:30	■ **Part 3. Complete Social Science Activity Form (Worksheet C)**
	Review assignments
	Break into teams
	Teams complete Worksheet C independently
12:30-1:30	**WORKING LUNCH (on your own)**
1:30-3:00	■ **Part 4. Review/Revise Social Science Activity Forms**
	Teams present completed forms to group
	Break
3:30-4:30	■ **Plenary**
	Review results
	Discussion of Next Steps
	■ **End of Workshop**

South Florida Social Science Symposium Floor Plan - Day 1

Registration & Breakout Groups
Coral Reef Ballroom (1st Floor)



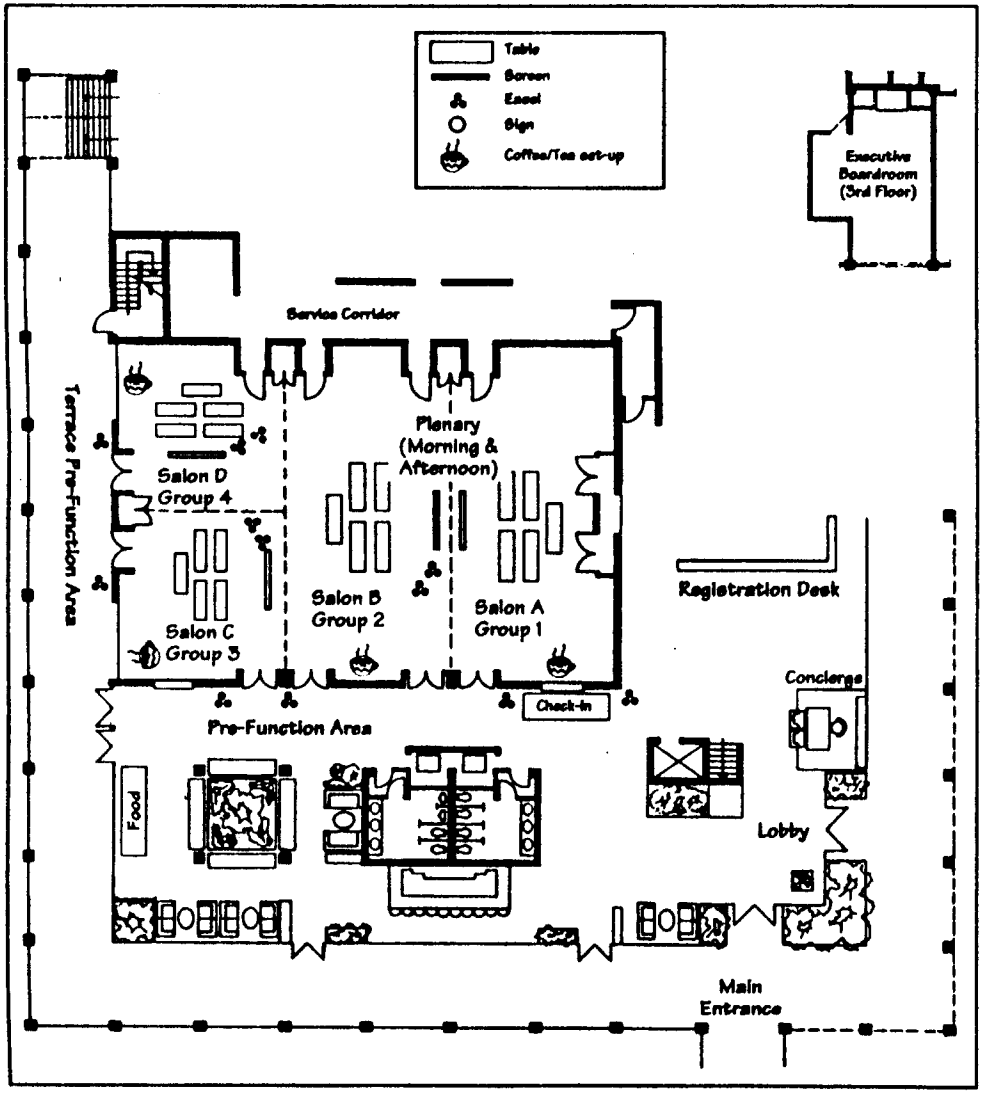
Bougainvillea Room (2nd Floor)



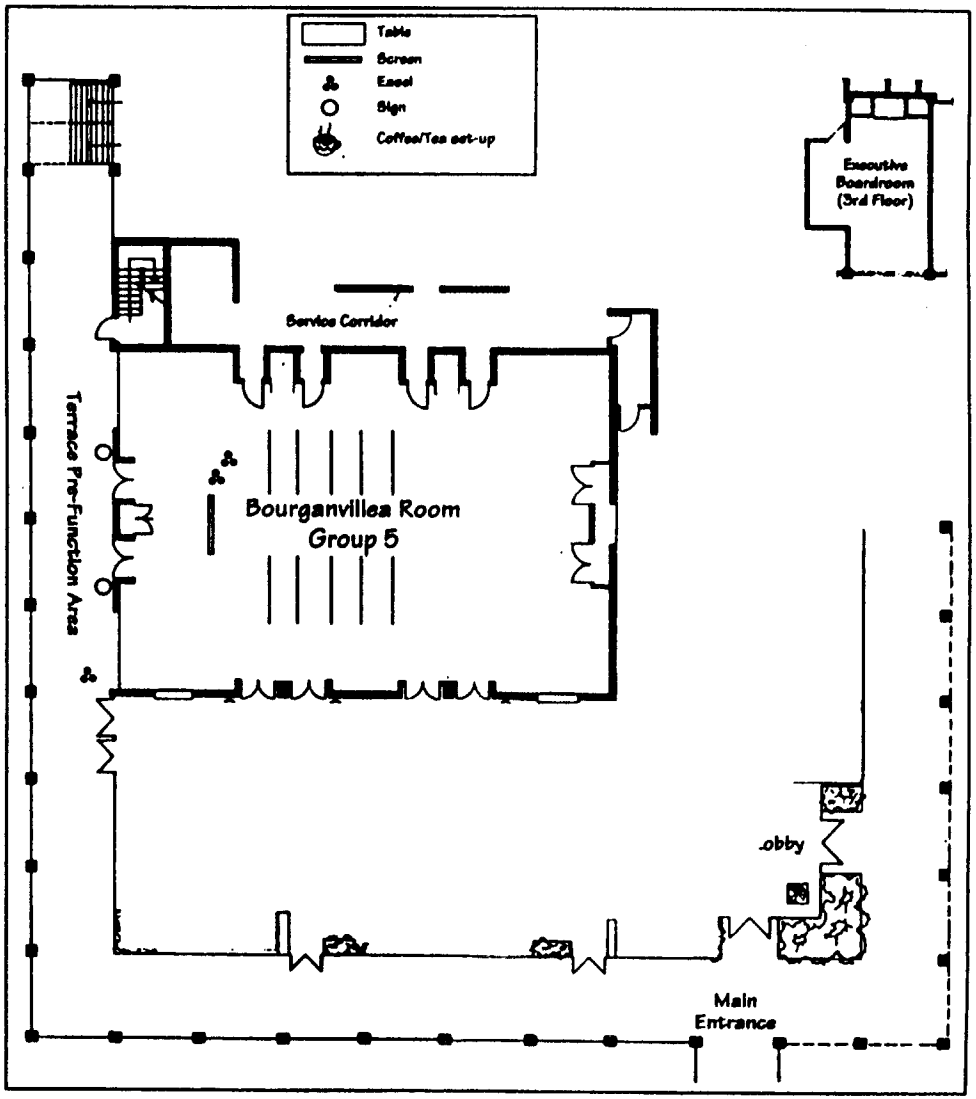
Additional Breakout Groups:
Group 3 - Parrot Pub
Group 4 - Treetops
Group 5 - Executive Boardroom (3rd Floor)

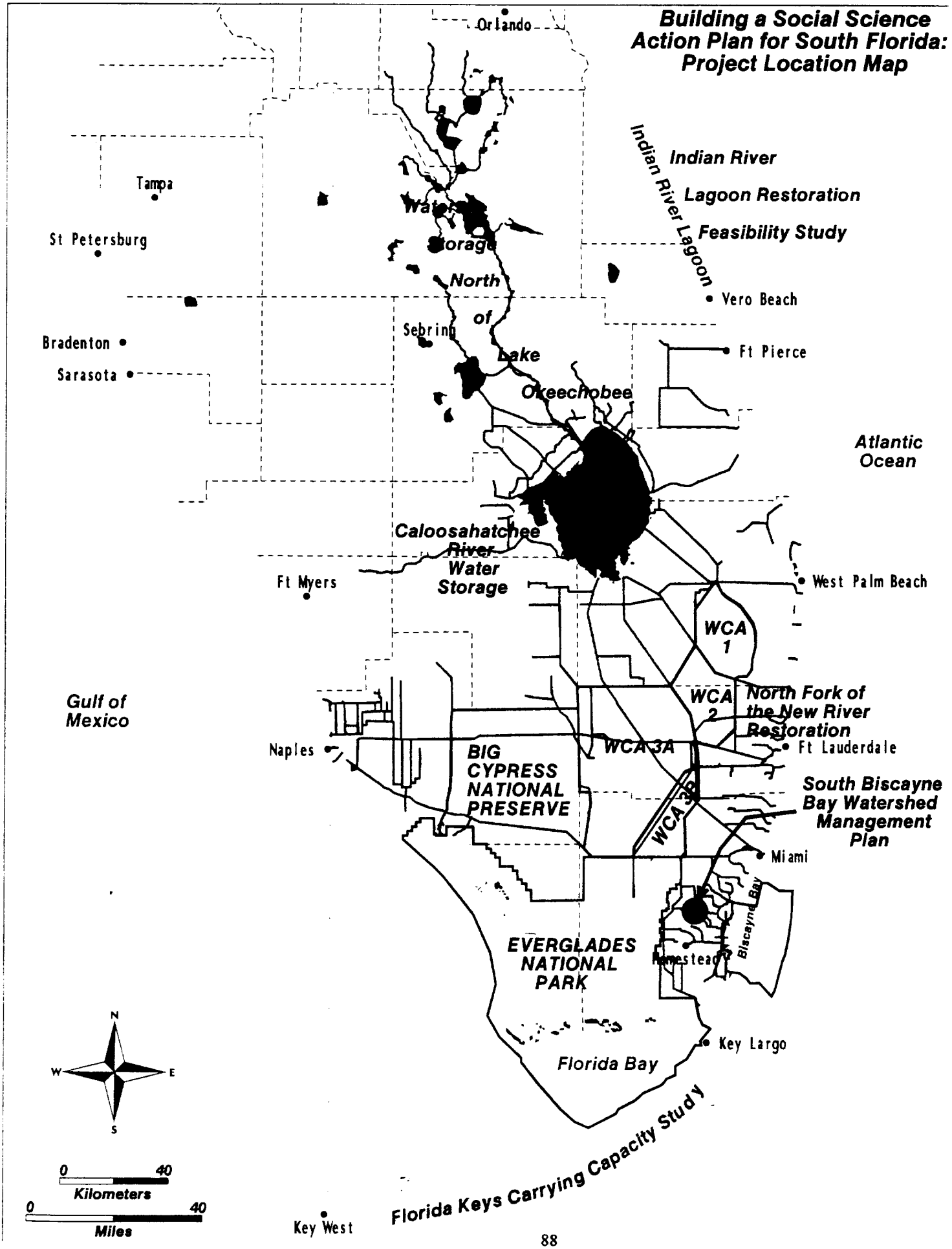
South Florida Social Science Symposium Floor Plan - Day 2

Plenary & Breakout Groups
Coral Reef Ballroom (1st Floor)



Breakout Group 5
Bougainvillea Room (2nd Floor)




Building a Social Science Action Plan for South Florida: Project Location Map
Orlando
Tampa
St Petersburg
Bradenton
Sarasota
Vero Beach
Ft Pierce
Sebring
Indian River Lagoon
Indian River Lagoon Restoration Feasibility Study
Water Storage North of Lake Okeechobee
Atlantic Ocean
Caloosahatchee River Water Storage
Ft Myers
West Palm Beach
WCA 1
WCA 2
North Fork of the New River Restoration
Gulf of Mexico
Naples
BIG CYPRESS NATIONAL PRESERVE
WCA 3A
Ft Lauderdale
WCA 3B
South Biscayne Bay Watershed Management Plan
Miami
Biscayne Bay
EVERGLADES NATIONAL PARK
Homestead
Key Largo
Florida Bay
Florida Keys Carrying Capacity Study
Key West
N
W
E
S
0 40
Kilometers
0 40
Miles

Participants

Group 1a: BMPs for Agriculture

Maureen Warren – Facilitator	NOAA, SEA
Greg Hendricks – Technical Specialist	NRCS
Craig Russell – Staff/Support	NOAA, SEA
Ron Smola	NRCS
Margot Anderson	U.S. Department of Agriculture
Cindi Katz	City University of New York
Evan Ringquist	Florida State University
Patricia Wickman	Seminole Tribe of Florida
David Letson	University of Miami
Kate Kramer	Western Center for Environmental Decision-Making

Group 1b: Economic Assessment of Ecostudy

Laura Ogden – Facilitator	Governor's Commission for a Sustainable South Florida
Bill Hunt – Technical Specialist	U.S. Army Corps of Engineers
David Miller – Technical Specialist	David Miller & Associates, Inc.
Keith Harrington – Technical Specialist	David Miller & Associates, Inc.
Webb Smith – Staff/Support	Governor's Commission for a Sustainable South Florida
Ted Strong	Columbia River Intertribal Fish Commission
Bob Johnson	Everglades National Park
Robert Burchell	Rutgers University
Andrew Laughland	U.S. Fish and Wildlife Service
Susan Stans	Florida Gulf Coast University
Jo Leigh Johns	Florida Gulf Coast University
Carl Woehlcke	South Florida Water Management District
Walter Milon	University of Florida
J. Anthony Paredes	Florida State University, National Park Service
Dick Ring	Everglades National Park
Gary Machlis	University of Idaho, National Park Service

Group 2: Water Storage North of Lake Okeechobee/Caloosahatchee

Theresa Trainor – Facilitator	U.S. Environmental Protection Agency
Agnes McLean – Technical Specialist	South Florida Water Management District
Dick Dawdy – Technical Specialist	South Florida Water Management District
Carolyn Sharp – Staff/Support	Governor's Commission for a Sustainable South Florida
Frederick Bell	Florida State University
Len Berry	Florida Atlantic University
Susan Brown	U.S. Sugar
Patrick Gostel	South Florida Water Management District
Arthur Oyola-Yemaiel	Florida International University
Robbin Shoemaker	U.S. Department of Agriculture
Karla Slocum	University of North Carolina
Paul Templet	Institute for Environmental Studies
Richard Weisskoff	University of Miami
Dreamal Worthen	Florida A&M University
Marshall Breeze	University of Florida
Dennis Wiedman	Florida International University

Group 3: The North Fork of the New River

Betsy LaRoe – Facilitator	U.S. Environmental Protection Agency
Cynthia Morani – Technical Specialist	South Florida Water Management District
Kevin Carter – Technical Specialist	Broward County, DNRP
Eric Fink – Staff/Support	Everglades National Park
Shelley Brodie	U.S. Environmental Protection Agency
Ping Chang	South Florida Regional Planning Council
Miki Crespi	USDI, National Park Service
Stephen Farber	University of Pittsburgh
Richard Gragg	Florida A&M University
Grace Johns	Hazen and Sawyer, P.C.
Setha Low	City University of New York
David McCullough	U.S. Army Corps of Engineers
Kristin Shrader-Frechette	University of South Florida
Neil Smith	Rutgers University
Sandra Thompson	Florida Memorial College
Walter Rosenbaum	Harvard University
Michael Harris	Florida Atlantic University
Bernice Butler	DEED,CO
Mark Watts	Florida International University
Mary Hudson-Kelley – observer	University of Florida

Group 4: Southern Biscayne Watershed Management Plan Florida Keys Carrying Capacity Study

Paul Dye – Facilitator	The Nature Conservancy
Deborah Peterson – Technical Specialist	U.S. Army Corps of Engineers
Edward Pruett – Technical Specialist	U.S. Army Corps of Engineers
Jerry Bell – Technical Specialist	Dade County Dept. of Planning, Development & Regulation
Karyn Ferro – Staff/Floater	Everglades National Park
Wendy O'Sullivan - Staff/Support	Biscayne National Park
Miranda Harris – Staff/Support	NOAA, SEA
Chuck Adams	University of Florida
Mahadev Bhat	Florida International University
Alice Clarke	Florida International University
Brien Culhane	Everglades National Park
Robert Degner	University of Florida
Deborah Drum-Duclos	South Florida Water Management District
David Forrest	Health Crisis Network
John Freeman	Louisiana State University
Dewitt John	National Academy of Public Administration
Bob Leeworthy	NOAA, SEA
Anthony Oliver-Smith	University of Florida
Sidney Wong	Florida International University
Monika Reuter	Everglades Research and Education Center, UF
Michael Boswell	Florida State University
William Hopper	Florida Memorial College
Mechel Paggi	US Department of Agriculture
Billy Causey	FKNMS
Jack Gentile	University of Miami
Tony Janicki - observer	PBSJ
Michelle Fikel – observer	SEIC
Chris Clayton – observer	SEIC
Susan Goodan - observer	SEIC
Mary Plumb – observer	South Florida Ecosystem Restoration Task Force
Jenny May – observer	Montgomery Watson

Group 5: Indian River Lagoon Restoration

Stu Langton – Facilitator	
Kim Taplin – Technical Specialist	U.S. Army Corps of Engineers
Mary Lee Liggett - Staff/Support	Everglades National Park
Maria Dolores Espino	Citizens for a Better South Florida
Shirley Fiske	NOAA, OAR
Constantine Hadjilambrinos	Florida International University
Barbara Johnston	Society for Applied Anthropology
Eric Raasch	U.S. Army Corps of Engineers
Terry Rice	SFERTF "Working Group"
Suzanna Smith	University of Florida
Phillip Steinberg	Florida State University
Daniel Suman	RSMAS, University of Miami
Stefano Guerzoni	Marine Geology Institute, Bologna, Italy

Worksheet A: Assessment of Social Science Activities

Worksheet A is to be used for identifying existing social science activities that address the project. This information will be used to identify new or additional activities that are required (using Worksheet B).

Restoration Project: _____

Identify Studies Not Included in Survey (Relevant to Project)

Social Science Study / Activity	Summary Description	Lead Contact / Institution	Project Status			Type(s) of Data / Information Collected	Is data collected adequate to address impacts of Restoration Project?		
			Planned	Ongoing	Completed		Yes	No	Comments

Worksneet B: Identify and Prioritize Additional Social Science Activities

Restoration Project: ______________________

Worksheet B is to identify and prioritize new or additional activities that should be considered for this project and to describe them for the headings shown. The activities can take the form of a research effort, monitoring activity, establishing a regulatory requirement, or an educational outreach initiative. The priority activities will be fully characterized on Worksheet C.

Description of Additional Social Science Activity	Type of Social Science Activity	Advantage (+)	Disadvantages (-)	Links to Ongoing / Proposed Activities	Criteria for Priority Setting: Required (must do)	Critical	Important	Useful	Overall Priority
	☐ Research ☐ Measurement ☐ Monitoring ☐ Regulatory ☐ Assessment ☐ Educational Other: ________								
	☐ Research ☐ Measurement ☐ Monitoring ☐ Regulatory ☐ Assessment ☐ Educational Other: ________								
	☐ Research ☐ Measurement ☐ Monitoring ☐ Regulatory ☐ Assessment ☐ Educational Other: ________								
	☐ Research ☐ Measurement ☐ Monitoring ☐ Regulatory ☐ Assessment ☐ Educational Other: ________								
	☐ Research ☐ Measurement ☐ Monitoring ☐ Regulatory ☐ Assessment ☐ Educational Other: ________								
	☐ Research ☐ Measurement ☐ Monitoring ☐ Regulatory ☐ Assessment ☐ Educational Other: ________								

Restoration Project Group:_____

Worksheet C

Social Science Activity Form

Identify Type of Activity

- ☐ Research
- ☐ Measurement
- ☐ Monitoring
- ☐ Regulatory
- ☐ Assessment
- ☐ Educational
- ☐ Other _____

Worksheet C is for describing a priority social science activity identified on Worksheet B. The activity could take the form of a research effort, monitoring activity, establishing a regulatory requirement, or an educational outreach initiative.

(1) Activity Name (from Worksheet B):

(2) Your Name(s):

(3) Brief Description of Activity:

(4) Justification for Implementation (Advantages/Disadvantages):

(5) Steps/actions needed to accomplish this activity. Identify all prerequisites (what is required before activity can be carried out?). Please describe in detail, use back if necessary:

(6) How will this be administered? (who should carry out what; identify oversight/supporting roles; provide examples of what is being done elsewhere):

(7) Project Scale (e.g., individual, community, county, metro area, region):

(8) Cost/Staff Summary
How much is this going to cost?

One Time ("start-up" costs)	Annual (includes capital and labor)
☐ Less than $1,000	☐ Less than $1,000
☐ $1,000 to $10,000	☐ $1,000 to $10,000
☐ $10,000 to $50,000	☐ $10,000 to $50,000
☐ $50,000 to $100,000	☐ $50,000 to $100,000
☐ $100,000 to $200,000	☐ $100,000 to $200,000
☐ $200,000 or more	☐ $200,000 or more

How many staff/volunteers are needed? For what portions of the activity?

What sources of money/staff/volunteers are available that could potentially be acquired to fund this activity? (Government Aid, Tax Credits, Private Capital, Grants, taxes, impact fees, user fees, or other funding)

Please provide details (particular programs, etc.):

(9) Timeframe (How much time--months/years--will be needed to effectively implement the activity? Is there a deadline that should be met?):

(10) Would this be a recurring activity? (Y / N)

(11) Potentially Affected Sectors/Activities (as applicable, please indicate an "N" for negative effect or a "P" for positive effect, and explain why. Please leave unaffected sectors blank.):

Effect	Sector	Explanation
	Tourism	
	Agriculture	
	Commercial	
	Industry	
	Land/Development	
	Residential/Domestic	
	City/Local Government	
	County Government	
	State Government	
	Other	

(12) Evaluation of activity (how will we determine if the activity is working):

Group 1a (Best Management Practices for Agriculture)

1. Ethnographic study of key farming groups in South Florida Ecosystem, focused on local meanings of "sustainable agriculture".
2. Expand planning to include BMP's to urban areas (include chemical inputs from other sources: parks, golf courses, homeowners, etc.).
3. Examine the potential of agriculture's sustainability within the international market place.

Group 3 (North Fork of the New River)

1. Community-based planning designed to help set and implement goals for North Fork of th New River restoration.
2. Ethnography of river use/cultural inventory
3. Evaluate existing crime levels and determine how they influence use of the river; evaluate impact of river restoration project on crime i the neighborhood.
4. Proactive steps to mitigate adverse social consequences of restoration

Recommendations 3 and 4 tied for 3rd priority.

Group 1b (Economic Assessment of the C&SF Restudy)

1. Develop a carrying capacity study of South Florida and develop a natural resource accounting system.
2. Establish and implement an integrated natural and social science based adaptive management plan.
3. Update and document demographic, land use, and water use parameters for models.
4. "Green GNP": Economic benefits of ecosystem restoration.

Recommendations 1 & 2 tied for 1st priority.

Group 4 (Florida Keys C.C. and South Biscayne Bay Watershed Management Plan)

1. Conduct lifestyle studies: impacts of lifestyle related to quality of life, different sub-populations.
2. Identify and incorporate representative socie Preferences (not just advocates) in these projects.
3. Evaluate housing/tourism development/ Agriculture land use equity impacts.

Group 2 (Water Storage North of Lake Okeechobee/ Caloosahatchee)

1. Community Studies: Socio-cultural characteristics, perceptions, and values.
2. Build a vision for South Florida, characterizing society, economy, and the environment for 2020 And 2050.
3. Baseline of social/economic community; develop indicators, monitor for feedback into project design.
4. Projections of population density, land use, tourism, economic base, export base, create maps, GIS, computer forecast modeling.

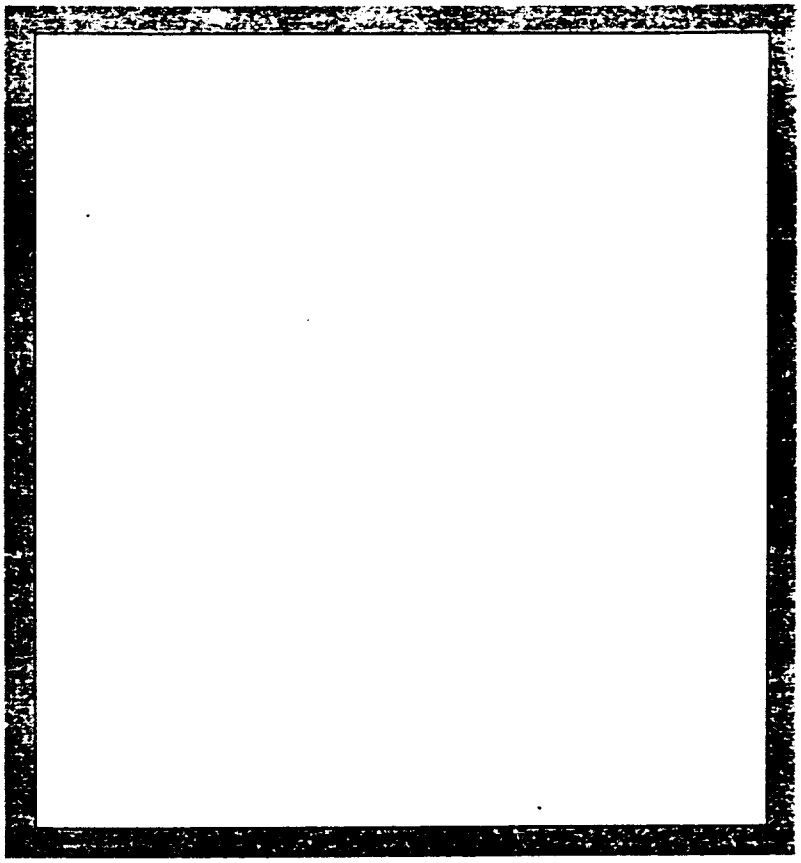
Recommendations 3 and 4 tied for 3rd priority.

Group 5 (Indian River Lagoon Feasibility Study)

1. Social impact analysis of proposed projects.
2. Develop strong/early public participation (bu broad-based participation, community relatio approach, minority outreach, ensure public participation in decision-making).
3. Develop socio-cultural profiles of communiti affected by proposed projects.

Table 2: Priority Social Science Recommendations/Actions at South Florida Symposium

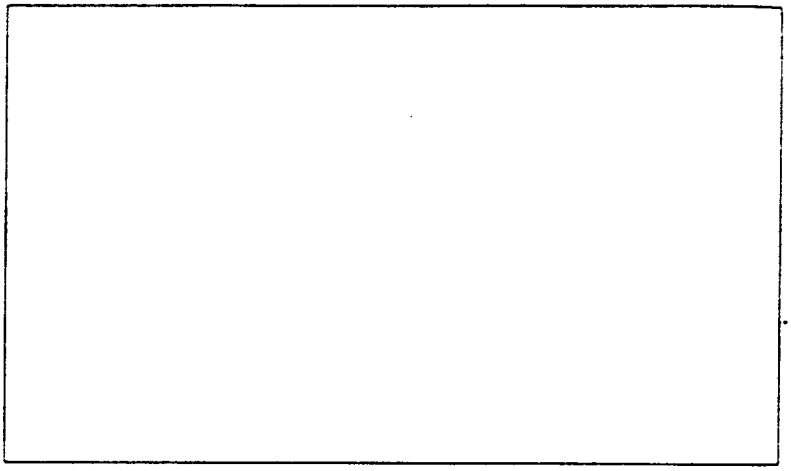
South Florida Social Science Action Plan



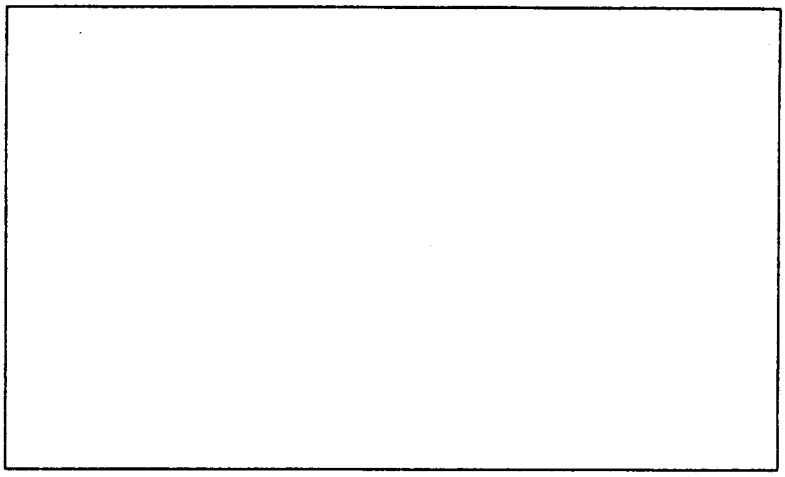
Governor's Commission for a Sustainable South Florida
South Florida Ecosystem Restoration Task Force

Spring 1998

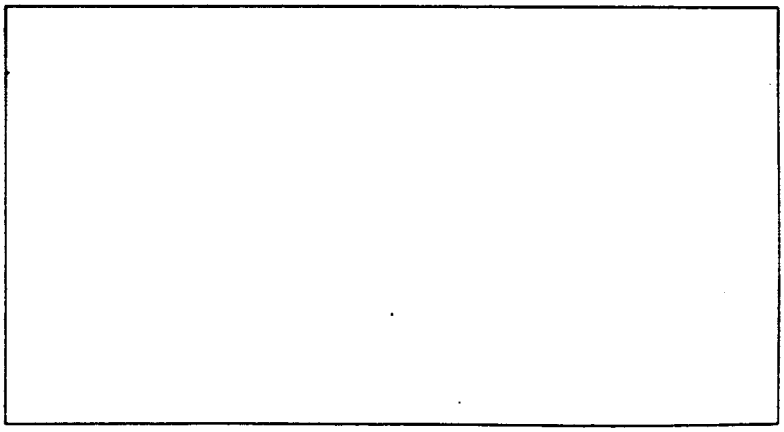
Origin and Purpose of the Social Science Action Plan



About this Document



For more Information



Acknowledgements

Thank you to the major sources of funding.....

Core Group

Advisory Team (if established)

Symposium Participants

Working Group I

Working Group II

Working Group III

Working Group IV

Symposium Staff

Foreword

Chairs

Letter from Commissioner

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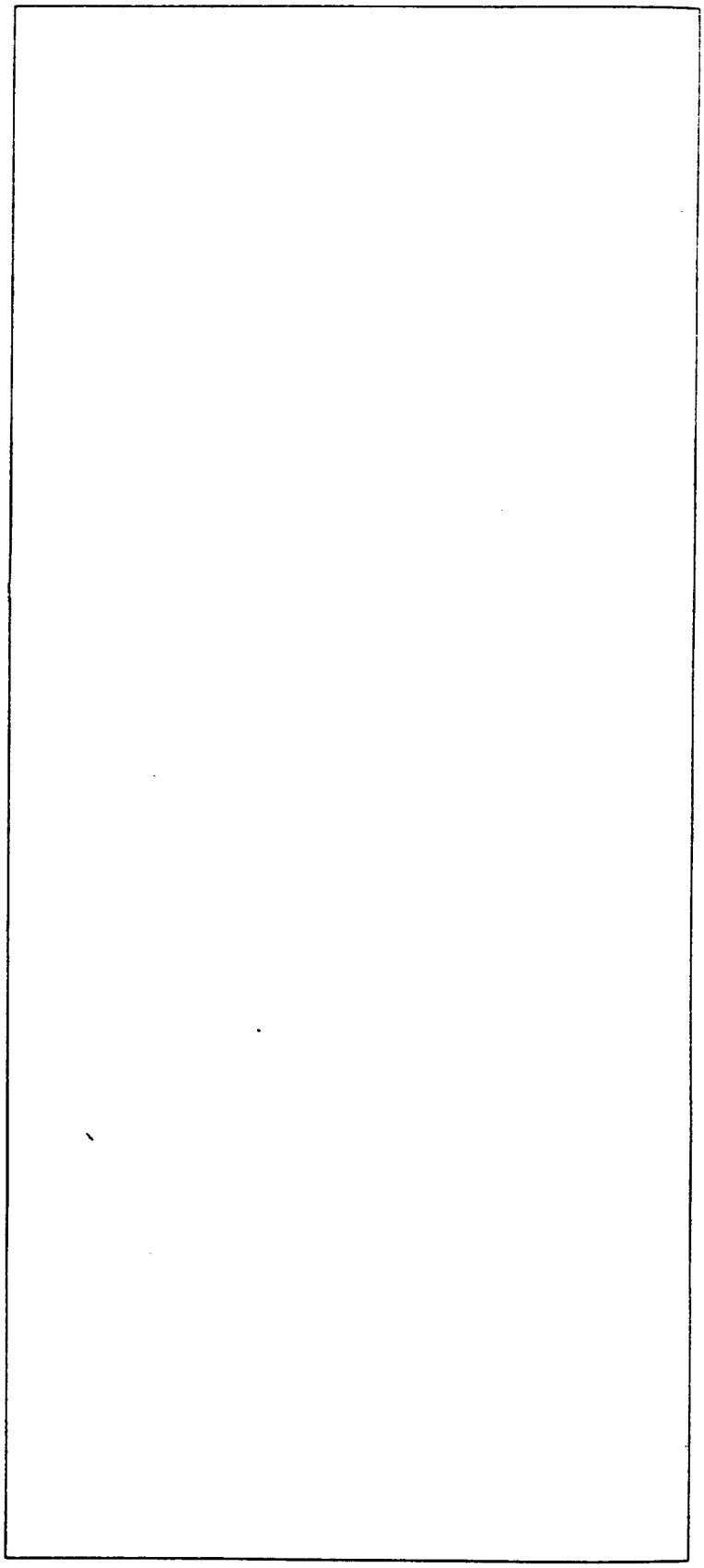


Executive Summary

The Need for Social Science

Why is this Effort Needed?

Why are we doing this? Establish the link to restoration.

The Role of Integration?

Why are we doing this? Establish the link to restoration.

The Social Science Symposium Process

Pre-Sympsoium.

Symposium.

Post Symposium.

Management Needs, Gaps, and Available Resources

Social Science Management Needs.

Summarize symposium results about mangement information needs. These needs may or may not be addressed by current studies. Management needs represent the type of information mangers must have to do their jobs.

--

Social Science Infomation Gaps.

Summarize symposium results about social science information gaps. Information gaps represent the type of information mangers may need to do job, but is not critical.

Existing Social Science Infomation Resources.

Identiy existing social science efforts/studies.

Explain how they may be useful or are already being used.

Proposed Social Science Actions

Introduction
what are these actions
how many
types of actions
etc.

Action Group 1 (project or theme)

one paragraph summary
types of actions
objectives
some operational details

Action Group 2 (project or theme)

one paragraph summary
types of actions
objectives
some operational details

Action Group 3 (project or theme)

one paragraph summary
types of actions
objectives
some operational details

Action Group n (project or theme)

one paragraph summary
types of actions
objectives
some operational details

Background

Introduction

introduce the

The Need for Improved Decisionmaking.

make a compelling argument

The Need for Improved Decisionmaking (cont.).

Case Study

Example of why we need to do this

Table X. Potential Contributions to Restoration

Discipline	Study Domain	Restoration Applicability
Sociology	text summary	text summary
Geography	text summary	text summary
Anthropology	text summary	text summary
Psychology	text summary	text summary
Other	text summary	text summary
Other	text summary	text summary

The South Florida Context

Brief description of the region; provide an intr

Geographic Extent.

Population Characteristics.

Natural Systems.

Socioeconomic Characteristics.

Land Use.

South Florida Restoration Efforts

introduce the
--task force/working group
--governors commission
--other

Ecosystem Restoration Focus.

focus on ecosystem and not political/ jurisdictional units

The Restudy.

--define (what, why, how, who, etc.)
--provide a timeline/schedule

The Restudy Schedule

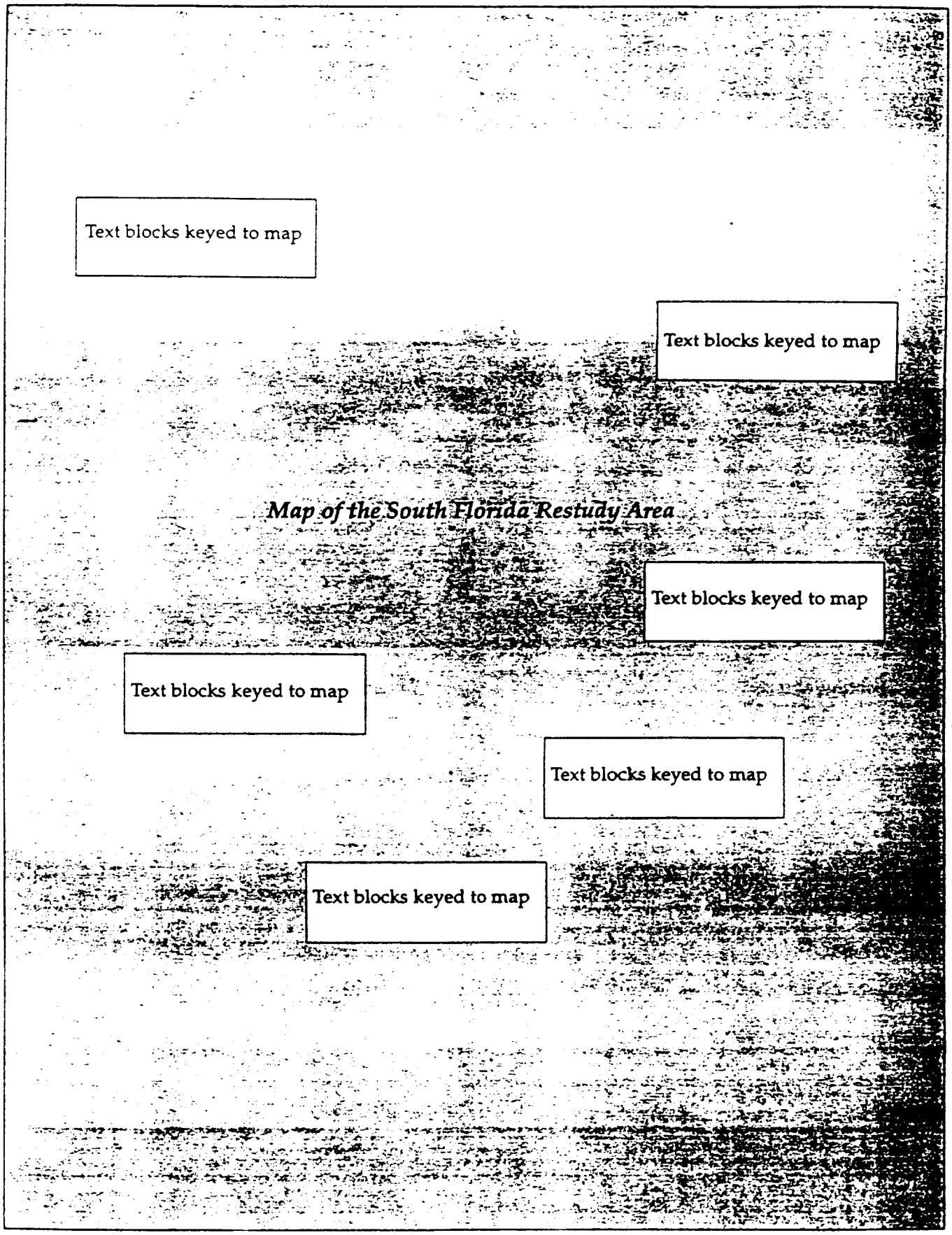
•*Project*	*Date*
•*Project*	*Date*
•*Project*	*Date*
•*Project*	*Date*
•*Project*	*Date*

The Restudy (cont.)

Goals and Objectives of the Restudy

Restudy Themes (Projects??)

Theme/Project	*Theme/Project*
Theme/Project	*Theme/Project*
Theme/Project	*Theme/Project*
Theme/Project	*Theme/Project*


Text blocks keyed to map
Text blocks keyed to map
Map of the South Florida Restudy Area
Text blocks keyed to map
Text blocks keyed to map
Text blocks keyed to map
Text blocks keyed to map

The Florida Keys.

–explain ongoing restoration linkages
–FKNMS actions

Critical Projects.

Farm Bill.

SERA.

State.

"Eastward Ho."

Local.

Social Science Symposium

purpose
–why
–how formulated

The Role of the Core Group.

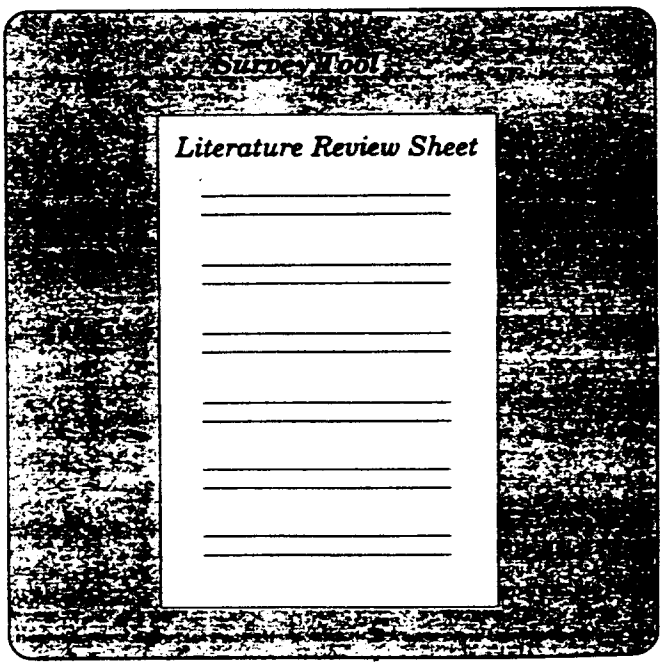
--

Preparation for Symposium.

Literature review
Database
Other

Preparation for Symposium.

Literature review
Database
Other



Project Identification.

Selection Process.

Selection Criteria.

Social Science Symposium

--Objectives

Part One - Evaluation of Socioeconomic Studies.

--

Part Two - Identification and Prioritization of Management Needs and Gaps.

Part Three - Developing Actions to Meet Gaps and Needs.

Developing Social Science Report Cards.

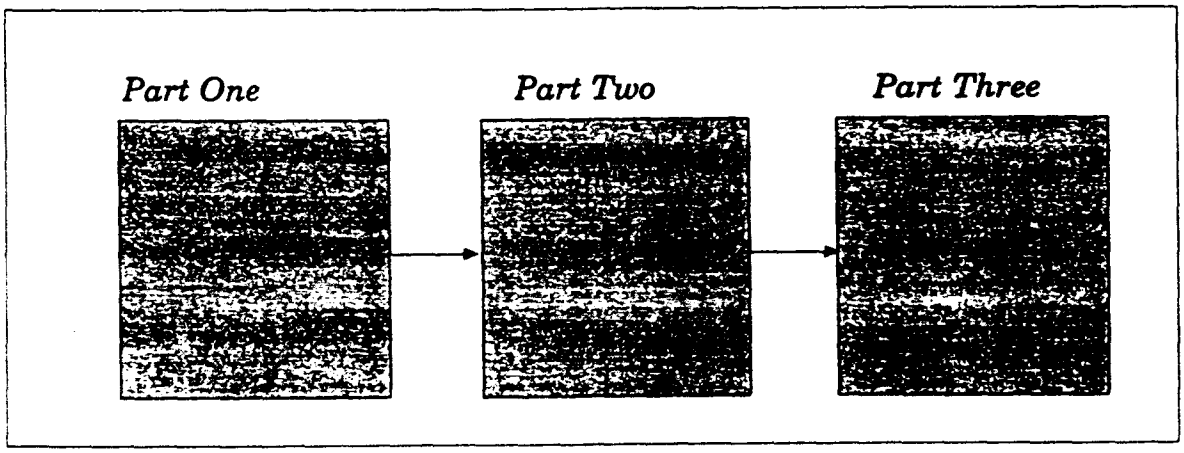


Figure X. The Symposium Process.

Projects Considered at Symposium

Theme/Project	*Theme/Project*
Theme/Project	*Theme/Project*
Theme/Project	*Theme/Project*
Theme/Project	*Theme/Project*

Information Needs, Gaps, and Available Resources

–Introduction

Project/Theme Area 1.

Infomation Needs.

--

Infomation Gaps.

Available Resources.

Project/Theme Area 2.

Infomation Needs.

Infomation Gaps.

Available Resources.

Project/Theme Area 3.

Infomation Needs.

Infomation Gaps.

Available Resources.

Infomation Gaps.

Project/Theme Area 4.

Infomation Needs.

Available Resources.

Infomation Gaps.

Project/Theme Area n.

Infomation Needs.

Available Resources.

Infomation Gaps.

Project/Theme Area 5.

Infomation Needs.

Available Resources.

Action Plan

Overview of Actions

introduce theme groups/#'s of actions by group

Project X/Theme X.

Summarize actions

Project X/Theme X.

Summarize actions

Project X/Theme X.

Summarize actions

Project X/Theme X.

Summarize actions

Project X/Theme X.

Summarize actions

Actions

Project 1/Theme 1

Project 2/Theme 2

Project 3/Theme 3

Projectn/Theme n

How Do the Actions Meet Management Needs

Summarize how actions meet management needs

introduce theme groups/#'s of actions by group

Management Needs

Actions	Category A	Category B	Category C
Action 1	√		
Action 2		√	
Action 3		√	
Action 4	√	√	
Action 5	√	√	
Action n		√	√

Table X. Action/Management Need Matrix.

Action Application in Resource Management

Planning Process Steps

Actions	Identification	Evaluation of Alternatives	Other
Action 1	√		
Action 2		√	
Action 3		√	
Action 4	√	√	
Action 5	√	√	
Action n		√	√

Table X. ??????.

Project/Theme Area 1

Introduction

--

Action 1.

Provide a one-paragraph summary description about the action (all activities)

Activity 1.

Provide a one-paragraph summary description of activity
--specific actions
--cost
--funding sources
--spatial or thematic focus
--etc.

Activity 2.

Provide a one-paragraph summary description of activity
--specific actions
--cost
--funding sources
--spatial or thematic focus
--etc.

Action 2.

Provide a one-paragraph summary description about the action (all activities)

Activity 1.

Provide a one-paragraph summary description of activity
--specific actions
--cost
--funding sources
--spatial or thematic focus
--etc.

Project/Theme Area 1 Actions

Action 1
Action 2
Action 3
Action n

Activity 2.

Provide a one-paragraph summary description of activity
--specific actions
--cost
--funding sources
--spatial or thematic focus
--etc.

Action 3.

Provide a one-paragraph summary description about the action (all activities)

Activity n.

Provide a one-paragraph summary description of activity
--specific actions
--cost
--funding sources
--spatial or thematic focus
--etc.

Activity 1.

Provide a one-paragraph summary description of activity
--specific actions
--cost
--funding sources
--spatial or thematic focus
--etc.

Actions	Cost	Spatial Area	Timing	Institutional Responsibility
Action 1 *Activity 1* *Activity 2*				
Action 2 *Activity 1* *Activity 2*				
Action 3 *Activity 1* *Activity 2*				

Table X. Summary of Resource Requirements by Action & Activity

Implementation

Appendices

There will be two sections

I. LITERATURE REVIEW

II. OVERVIEW OF SOCIAL SCIENCE DISCIPLINES