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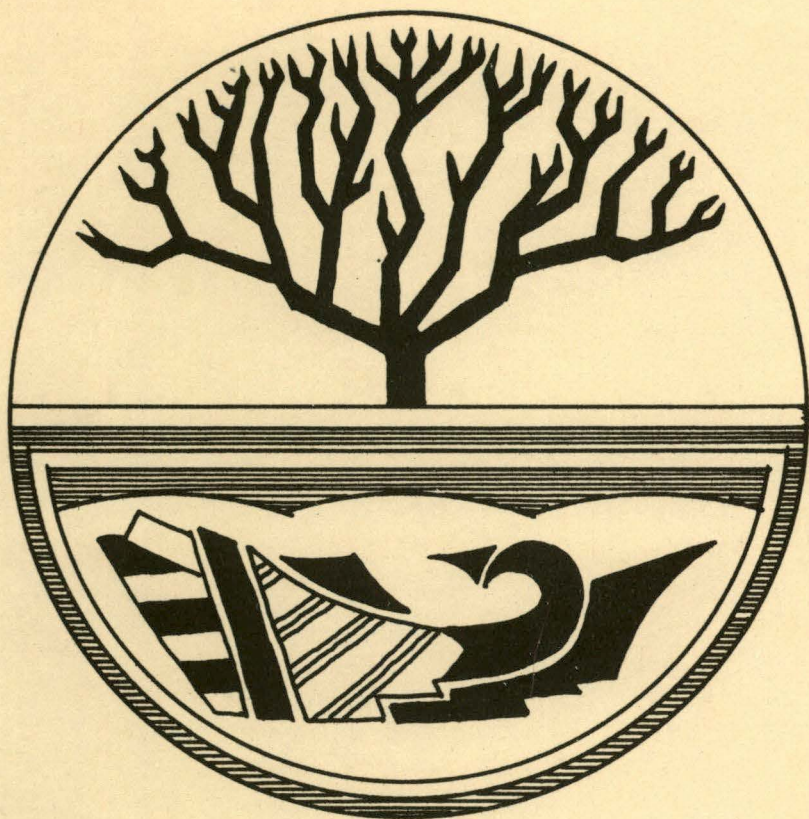
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WESTERN STATES HERITAGE CONFERENCE:

Sharing Experiences in the
Implementation of Heritage
Resource Programs in the
Western States

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- WESTERN STATES HERITAGE CONFERENCE -

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EDITOR'S INTRODUCTION

The graphic symbol on the cover of these proceedings is an abstraction of the interrelationship between cultural and natural resources. The tree represents significant natural concerns. The ancient Indian motif on the bottom of the logo was taken from a remnant piece of pottery. Symbolically this signifies not only cultural resources, but implies the value placed on those things of historical importance to our understanding of ourselves. As a symbol the linkage between cultural and natural features is extremely important. Toward the realization of that interrelationship, the Western States Heritage Conference was held April 21 through the 23rd at the Wild Horse Guest Ranch west of Tucson, Arizona.

The purpose of the conference was to bring together representative viewpoints of individuals and agencies concerned with unique natural and cultural resources. A theme of the meetings was "sharing experiences" and learning from others. It was hoped that this conference could serve as a forum for an exchange and debate of ideas pertinent to existing and future Heritage Resource Programs.

Although a primary focus was on the resources of the western parts of the United States where our knowledge is limited, the ideas discussed are applicable wherever there is concern for quality resources. In a similar way, while the agency most directly addressed by these proceedings is the Heritage Conservation and Recreation Service, it cannot escape notice that all Federal, State, and local agencies concerned with land use decisions affecting significant cultural and natural resources can find topics in this report that are directly germane to their interests. This breadth of issue designates the very dimensions of what constitutes a Heritage Resource. The subject areas of the conference were intentionally structured to issues concerning all disciplines, agency borders and individual interests. These topics included the respective roles of the state and federal agencies, universities, and the private sector in implementing Heritage Programs in western states. The implementation activities themselves and benefits and strategies of such programs were analyzed. Various means of data collection, classification, and information management utilized by such agencies as the U.S. Forest Service, U.S. Fish and Wildlife Services, and the Bureau of Land Management and individuals involved in Heritage Programs, whether on a local, regional, or national level were discussed and evaluated for efficiency and maximum potential utilization.

Many differences of opinion existed between the constituents of this conference in reference to proposed responsibilities and capabilities of the Heritage Conservation and Recreation Service in relation to and along with other participating agencies and groups. However, most of the participants share at least a common concern for our 'valued resources'. This common concern alone should serve as a strong basis for justifying further identification and development of

interdisciplinary problem-solving needs and standards. There is need for the involved governmental agencies, academic disciplines and the private sector to become more familiar with each other's responsibilities and goals. National, regional, and local heritage programs require similar information to answer the basic questions concerning our resources. Future resource inventories and other methods of data collection implemented to allow information to be interpreted for a variety of purposes, in addition to increased accessibility would be a positive step toward interagency and multi-discipline cooperation. In effect, this would also aid in minimizing duplication of research.

In a very real way, any attempt to bring many interest groups or disciplines together is destined to result in feelings of mixed accomplishments. It is not axiomatic that by bringing different groups together in a common setting there will be a blending and recognition of common objectives. Many agency people see the discussions as not addressing their day-to-day operational needs. Academicians find the solutions posed by others as unreasoned and not recognizing long term impacts. Private interest groups feel their particular concern has been slighted. Everyone discusses interdisciplinary benefits only as perceived from their own vantage points. As a result a certain blindness persists.

Nevertheless, in such settings all common problems are identified. At this conference, as these proceedings reflect, all the problems and promises of those concerned with unique resources are examined. In rereading these papers, one can recognize the total array of issues important to the success of Heritage Programs. The key to these presently existing problems is communication. Communication and discussion of all the involved cultural and natural resources, and of projected results and effects on them individually and holistically, is necessary for more totally effective Heritage Programs.

Acknowledgments:

The editor would like to recognize the contributions of a number of individuals and agencies which made both the conference and this publication possible. Dr. Russ Youmans of the Western Rural Development Center sponsored both the travel of some of the participants and part of our conference costs through a seed grant. For two years Dr. Youmans encouraged the idea of a conference during our correspondence with the Heritage Conservation and Recreation Service. A number of other agencies provided sponsorship and support including: H.C.R.S. Cooperative Unit, School of Renewable Natural Resources, University of Arizona; Arizona State Museum, University of Arizona and H.C.R.S. Department of Interior.

Glen Delgiudice assisted in the final preparation of the proceedings which included editing, writing and organizing. Robie Pardee designed the cover logo, and helped with the preparation for and the smooth operation of the conference itself. Toni Carmichael also assisted in the preparation and operation of the conference, and only Robie and Toni appreciate the "excitement" of car scheduling, collecting dinner fees, searching for speakers, running tape recorders, etc. Gene

Wehunt and Lynn Nakata of the San Francisco office of the Heritage Conservation and Recreation Service provided the required coordination between agency and University and saw the final edited version through to printing. Bette Anderson, Wendy Fitts and David Wachter of the staff of the School of Renewable Natural Resources typed numerous versions of these proceedings as authors submitted changes to their papers. All these people and the speakers, respondents and session chairmen were a pleasure to be associated with.

Anne Frondorf wrote the first letter, conceived the idea and helped with the entire procedure from the beginning to the completion; and to her these proceedings are dedicated.

AN OVERVIEW

Chris Therral Delaporte

Where is all this concern with information taking us? We can begin to answer that by first making some predictions about the nature of government and government-assisted programs in the not-too-distant future. I don't want to be caught making any Toffleresque pronouncements, but I do think it is possible to extrapolate from current national (and international) conditions and trends and to postulate how government is going to have to conduct its business from now on. And, more specifically, what role will heritage resource programs play in this picture?

I certainly don't need to remind you that inflation, the biggest single factor affecting all of our lives today, has made and is going to continue to make significant changes in the way government activities are conducted. Just as a large portion of the American public can't afford to buy a home, the Federal government can no longer afford to buy everything it wants. We just can no longer afford to solve every problem (real or imagined) simply with the application of money.

You are all aware of the President's commitment to a balanced Federal budget. In his recently proposed budget reductions, the President asked for a more than \$600 million reduction in the Department of the Interior's proposed 1981 budget, including significant reductions in both the State and Federal portions of the Land and Water Conservation Fund, the Historic Preservation Fund, and the Urban Recreation Recovery grants program. The President has also asked for rescissions or deferrals of more than \$350 million in Interior's current Fiscal Year 1980 appropriation, including reductions in all the funding programs just named. So you can see we are in for some real belt tightening over the next year and a half.

Energy is another major factor which promises to have far-reaching and permanent effects on the way we all live and the way government functions. The national commitment to energy self-sufficiency carries with it some basic questions which are going to have to be answered: including, what **kinds** of energy are we going to commit ourselves to? What kinds of trade-offs are we willing to make to get this energy? But the bottom line to the energy situation is very simple: **conservation**. Everyone, from private citizens to the U.S. Government, has to use less, do less, and waste none. And for those of us who have grown up in an age when energy was abundant and cheap, such a transformation is not going to be easy.

On the political side, there is a very palpable resentment toward the Federal government in evidence in the country today. Such resentment can be traced to a variety of causes, not the least of which

is our old friend, inflation. But regardless of its origin, the basic question is one of States' rights and local rights, in opposition to what is felt to be an increasingly unresponsive, unmanageable, and unproductive Federal bureaucracy. Here in the West, we have some quite visible evidence of the States' rights issue in the so-called "Sagebrush Rebellion".

All of this, inflation, energy, and the general political climate, means that government can't just keep on with "business as usual". We are faced with a world of limits, a world in which we have fewer and fewer options. We can no longer buy everything, save everything, or do everything. Basically, we have to set **priorities** in all those areas in which we used to ask in only a **quantitative** way, how many, or how much, now must be asked in more of a **qualitative** way, how important, or how necessary.

For those of us in resource planning, such a narrowing of alternatives will lead, indeed is leading right now, to an ever-increasing orientation toward State and locally-initiated efforts and a reduced Federal presence. That is, more of a bottom-up and decentralized orientation to resource programs and less direction and control from Washington. We're also going to see more **cooperative** resources planning and management ventures, such as are demonstrated by the Pinelands National Reserve in New Jersey or the Lowell National Historic Park in Massachusetts. From now on, there are going to be fewer and fewer public dollars available for conservation and preservation and the private sector is going to have to be relied upon more and more to help support "public" programs.

And where does information fit into all of this? Into this atmosphere of limits, constrained programs, and the need for clear priorities has come the explosion in information/communication technology which we are now witnessing. Information and communication technologies are constantly being improved upon and an ever-increasing variety of products and services, from mini-computers to video recorders, is being made generally available to the public. "Information" is one of the few industries where prices are actually going **down**. One thing we don't seem to be limited in is information and the means to collect, analyze, manipulate, store, and disseminate it. In this regard, information could well be seen as our most important "renewable resource".

In a world of limits, the name of the game, as I mentioned before, is being able to establish clear priorities, to select from among a set of alternatives based on a rational analysis of the situation. And the key to success in this game is to have the right equipment to make these decisions; that is, **information**. Having accurate information allows us to decide what (or what not) to do and when and where to do it. The more effectively and less expensively we can obtain the information we need, the better position we are in to make the right decision at the right time.

This brings us to the topic of this conference - Heritage. Natural and historic heritage programs are, by their very nature, resource programs which are founded on information and communication.

This emphasis on information, its efficient collection, analysis, and distribution, is the key to the success of on-going State and local heritage efforts - and it's also the way we're going to succeed with the National Heritage Program. At the hearings which were just held in the House and Senate on the National Heritage Policy Act, there was no doubt whatsoever expressed by those testifying about the value of the resource inventory and information exchange process. This appreciation for the importance of information comes not just from the Program's advocates, but comes even from some of the industry representatives who are opposed to certain other aspects of the legislation.

If we are going to be successful with Heritage and I (speaking objectively, of course) am convinced that we are going to be, it will be because the Heritage constituency crosses traditional disciplinary and institutional boundaries. This is because the constituency of Heritage is really the constituency of information. The result of this shared interest in information is a constituency which exhibits both **horizontal** linkages, such as are evidenced by the formation of the American Heritage Alliance, with its combination of natural and cultural resource interests, as well as **vertical** linkages, joining Federal, State, and local interests together. In fact, such vertical integration appears to be one way to help ease the Sagebrush Rebellion tension in the West. Federal agencies and their State counterparts can at least share **information** about the land, even if they can't share the land itself.

I am continually impressed (or depressed) by the frighteningly small amount of information we actually have on our irreplaceable heritage resources. I know this is a special problem here in the West, where you are dealing with such sparsely settled and immense expanses of land. To get the job done, to get all the information we need and to get it quickly and inexpensively, we **must** be able to pool our information resources. This is what Heritage is all about.

During our hearings in the House, there was also discussion of a bill introduced by Congressman Seiberling of Ohio and dealing solely with the national historic preservation program. Among other things, this bill would create a separate, independent Federal agency for historic preservation, by removing the cultural resource functions from HCRS and combining them with the Advisory Council on Historic Preservation.

There were some voices raised during the hearings in support of this move, based on the contention that any agency which concerns itself with cultural resources, natural resources, and recreation resources can never work. For some reason, I tend to take this comment rather personally. And I am here to tell you tonight that unless those three functions, and the constituencies they represent, **can** remain together, there is little hope for any of them to survive in the 80's. The times are simply going to be too demanding for **any** interest, which is perceived as being single minded, to continue to receive the public support it needs to keep alive.

I am very pleased to see that the makeup of this conference displays an awareness of the need for all of us, wherever our primary interests lie, to keep the lines of communication open and to keep

sharing information. This type of mixed gathering is also an especially meaningful way to help initiate the new HCRS Cooperative Research and Education Unit, here at the University of Arizona. The primary reason behind the creation of this Unit is to promote continuous interchange between the University's faculty and students and our agency. We hope that this Unit will serve as a prototype for other such linkages in the future.

Before I close, let me fill you in briefly on where the Heritage legislation stands. We have had hearings before the House Subcommittee on National Parks and Insular Affairs in March and just completed hearings last Thursday before the Senate Subcommittee on Parks, Recreation and Renewable Resources. We are very positive about the outcome of these hearings. The value of state-based cultural and natural resource inventories and the economic advantages of using the inventory information as a conflict avoidance tool are very clearly understood. There were unusually large audiences for these hearings and I think everyone involved was impressed by the interest and enthusiasm of those in attendance. The bills now go to markup in both Houses. And, though we're optimistic, we shouldn't ignore the fact that time is running out on this session of an election year Congress.

I am honored to help you kick off this very timely and important meeting. I thank you for your continued support of HCRS and its programs and I urge you to continue to share your thoughts, whether positive or negative, on these programs with us.

As you know, tomorrow is the tenth anniversary of the first Earth Day. As such, it's an appropriate time both to look back at our accomplishments over the past ten years, as well as to look ahead at all we have yet to accomplish. If the past decade has been the era of Federally sponsored environmental programs, then this coming decade belongs to grass-roots conservationists. If the resource programs of tomorrow are going to be primarily motivated and operated at the local and State levels, then you are all going to play a major role in determining the future of the American landscape. It is an exciting challenge and I look forward to working with you to help meet it.

PERSPECTIVES ON HERITAGE RESOURCES

Ervin H. Zube

INTRODUCTION

I want to present some perspectives on heritage resources and heritage resource programs.

Perspective is an interesting word. It connotes both the past and the future. We gain perspective on issues by understanding conditions and events which have led to the present, and we talk about perspective on the future - a mental view or prospect of what lies ahead, drawing on our knowledge of the past. The perspectives on heritage resources which I will present include:

First, exploring the genesis and the meaning of the concept of heritage resources in the Western United States;

Second, looking at a sampling of recent activities both world-wide and locally; and

Third, thoughts about the future and about the direction of this Conference.

DEFINING HERITAGE RESOURCES

What are heritage resources?

Erich W. Zimmerman in his important work **World Resources and Industries** (1951) suggests "... resources are not, they become...". In Zimmerman's definition, the word resource "does not refer to a thing nor a substance but to a function which a thing or substance may perform or to an operation in which it may take part, namely the function or operation of attaining a given end such as satisfying a want".

In Zimmerman's words, much of our environment is made up of "neutral stuff". Resources are culturally defined and encompass the satisfaction of both commodity and non-commodity wants and values. They are separated from the "neutral stuff" when, for example, new technologies can exploit them as material commodities so as to satisfy wants. A resource is also separated from the "neutral stuff" when one or more individuals attribute a value to it associated with qualities of life and environment.

The dictionary defines heritage as "that which comes or belongs to one by reason of birth or something reserved for one". Heritage resources in the context of this conference are those that are perceived as being important in maintaining or reestablishing desired attributes and qualities of life and environment. They are significant, the unique

and the important attributes of natural and cultural "stuff" that make up our local, regional, national and global inheritance. The way in which the collective societies of a nation and of the world manage and conserve their heritage resources may be a true test of civilization.

DEVELOPING THE CONCEPT

Is the heritage resource concept new to the American West? Even though most of the West was settled and developed later than the rest of the country, the landscape and resources were recognized as important elements of America's heritage early in the country's history. In 1832, George Catlin, chronicler in paintings and words of the American Indian and the western landscape, voiced a plea for "A nation's park, curtaining man and beast, in all the wild and freshness of their nature's beauty". Catlin was concerned with the effects of "the deadly axe and desolating hands of cultivating man ...". He was calling for a presentation of a part of America's heritage, preservation of the wild landscape resources of the American West (Nash, 1968).

In 1846 Congress accepted the trust left by James Smithson and enacted legislation for the establishment of the Smithsonian Institution. Included in the Act was the provision for a library and a museum to contain objects of art and of natural history belonging to the United States. Under the leadership of Joseph Henry, first Secretary of the Institution, vegetation and wildlife collections from the West and studies of western Indian tribes were initiated.

Nathaniel Pitt Langford, a member of the Washburn Expedition that explored the Yellowstone region in 1870, recounts in his journal an unusual discussion among the members of the Expedition on the night of Monday, September 19, 1870 (Langford, 1972). The party was camped at a site now named Madison Junction. Discussion centered on how members of the party could benefit financially from claiming quarter sections of land at key locations that would inevitably yield great profits from tourists and pleasure seekers. Cornelius Hedges, then a young lawyer and later slated to become probate judge of the Court at Helena in the Territory of Montana, took exception to these ideas and said, "... that there ought to be no private ownership of any portion of that region, but that the whole of it ought to be set apart as a great National Park ...". (Langford, 1972). Hedges' proposal became reality with the establishment of Yellowstone National Park on March 1, 1872.

Obviously, this conference is not the first effort to direct attention to heritage resources of the Western States. It has been a topic of interest for at least 148 years. There is a well established American mystique encompassing the landscape, history and resources of the West which probably etches the region more deeply in the minds of many Americans than any other region. It is appropriate that the first Regional Heritage Conference be held in the West.

WORLD HERITAGE RESOURCES

The current efforts to launch a national heritage program under the aegis of the proposed National Heritage Policy Act is not an isolated effort. There is an international movement that appears to be growing. I want to cite a few examples of these international efforts so as to put our efforts at this conference into a broader conceptual and geographic context.

The World Heritage Trust Convention was adopted in 1972, by the General Conference of the United National Educational, Scientific, and Cultural Organization (UNESCO). The intent of that Convention was to foster "preservation and restoration of the outstanding cultural and natural areas of the world" (UNESCO, 1972). A World Heritage List has been established and nominations to the list are reviewed, evaluated and acted upon by the UNESCO World Heritage Committee. By 1979 the convention had been ratified by 49 nations. After a slow start there are now 84 cultural and natural sites on the list with more being added annually from widely separated geographic regions of the globe (UNESCO, 1979). However, a critical review of this international effort by the recent chairman of the World Heritage Committee questioned the imbalance between natural and cultural influences on the Committee (Hales, 1980). He viewed the question of balance as a serious one demanding correction. Balance was viewed as important in both the makeup of the Committee and the number of natural and cultural sites on the World Heritage List. The very concept of world heritage resources could be rendered ineffective and the credibility of the Committee destroyed if balance is not maintained.

I want to draw your attention to two more very recent international activities. On April 7 to 11 of this year, a European Heritage Landscapes Conference was held in England for managers of Europe's heritage landscapes. The major theme of this conference was management needs in reconciling "conflict between the conservation of landscape and wildlife and the use of these areas by local people and for recreation" (Countryside Commission, 1980).

A group of over 700 environmental scientists and specialists under the initiative of the International Union for the Conservation of Nature and Natural Resources, and in cooperation with a number of United Nations organizations, announced a "World Conservation Strategy" on March 5, 1980, which is directly related to world heritage resources at the most basic level. This "strategy" attempts to make conservation and development mutually supporting. It is a recognition that conservation and development processes must be integrated if a global balance of nature is to be preserved and damage to the world's ecosystems reduced. The primary objectives of the "strategy" are (Luther, 1980):

1. To maintain essential ecological processes and "life-support systems", such as the regeneration and protection of soil, the recycling of nutrients, and the cleansing of waters.

2. To preserve genetic diversity, on which depends " the functioning of man, (ecological) processes and the breeding programs necessary for the protection and improvement of cultivated plants, domesticated animals and micro-organisms, as well as much scientific and medical advance, technical innovation, and the security of many industries that use living resources".
3. To insure that use of fish and wildlife species and valuable ecosystems such as forests and grazing lands can be sustainable and thus available for the support of "millions of rural communities as well as major industries".

These three examples from elsewhere around the globe offer evidence of a broad interest in heritage resources encompassing both natural and cultural interests.

There are some lessons to be learned from these international activities that are important to both the West and the nation:

The first is that we should be wary of too narrow a definition of heritage resources. Our heritage encompasses both the cultural and the natural environment;

Second, concern with heritage resources must go beyond the initial stages of classification and identification, to address the usually more difficult issues of management;

Third, such programs must be considered within the social and political context of the time; and

Fourth, we must recognize the wholeness of the environment and recognize as did the World Conservation Strategy that conservation and development must be mutually supporting.

The West is one of the two fastest growing regions in the country. If heritage resources programs are going to be successful here, there will have to be mutual understanding among conservation and development interests. I will return to some of these lessons and issues later.

HERITAGE RESOURCE PROGRAMS IN THE UNITED STATES

I suggested earlier that interest in the Western States heritage resources has existed for a least 148 years. There are a number of indicators of a continued and growing interest in and support for heritage resources programs over this time period. I want to mention just a few.

The national park movement observed its centennial celebration in 1972. The final report submitted to the President and the Congress on the activities of the National Parks Centennial Commission (1973) was entitled "**Preserving a Heritage**". A highlight of the centennial celebration was the rededication of Yellowstone National Park to a second century as a world heritage resource. The rededication took place on

September 19, 1972 at Madison Junction, 100 years after the creation of Yellowstone National Park and 102 years to the day after the 1870 expedition party had its historic discussion around a camp fire at that same location. Between 1872 and 1972 the national park system grew to encompass 298 natural, historic and recreation areas.

It is interesting to speculate what the future of national parks might have been had it not been for Stephen T. Mather who served as the first Director of the National Park Service (Shankland, 1970). He saw the need to build a constituency for the national parks, a constituency without which he was powerless to fight off competing lumbering, mining and grazing interests. This constituency building was not without its costs, however. It helped to produce conditions which are questioned today in places such as Yosemite Valley, conditions of over-development and resource exploitation through over-use.

One of the earliest historic heritage resources to be protected in the United States was Mount Vernon. It was purchased as an historical site in 1858 (Nash, 1968, XV). Perhaps a more dramatic example of interest in historic heritage resources is the increase in listings on the National Register of Historic Places. In 1968, six properties were listed on the Register. Nine years later, in 1977, there were 13,629 properties listed (Council on Environmental Quality, 1978).

Another indicator of public interest in heritage resources is the land area devoted to national and state parks and to Forest Service wilderness and primitive areas. In 1919 there were over 68 million acres so allocated. In 1974 this acreage had increased to well over 181 million acres (Council on Environmental Quality, 1978). Results of the RARE II and BLM wilderness studies and the allocation of lands in Alaska will obviously make significant increases in this acreage.

Additional activities relating to heritage resource programs have been developing at the state level. As of 1978, 23 states had adopted legislation for the management of wetlands and 13 had adopted legislation for the protection and management of critical areas (Council on Environmental Quality, 1978). Critical area programs differ among states but do include: significant natural and historic sites, hazard areas, prime renewable resource areas and prime sites for proposed major new developments (Frondorf, 1979).

State activity in historic preservation has been impressive. Nine hundred historic preservation and rehabilitation projects in 42 states were certified by HCRS between March 1977 and June 1979. "Nearly 1,100 single buildings have been certified as contributing to the significance of their districts, and more than 70 state and local statutes were certified by HCRS" within the same time period (Council on Environmental Quality, 1979).

Some 20 states plus the Tennessee Valley Authority had initiated natural heritage programs with the assistance of the Nature Conservancy by 1979. These programs focus on the preservation of ecological diversity and center "around systematic inventorying of ecological elements for all types of ecosystems and species habitats" (Council on Environmental Quality, 1979).

These are just a sampling of indicators. The list could be expanded to include federal, state and local initiatives in the establishment of wildlife preserves and other habitat areas, efforts to protect rare and endangered species and the establishment of wild and scenic rivers. There have obviously been many activities and programs at the several levels of government. Most of these programs were able to get underway because there was either strong support in the form of a local or national constituency or because there was no strong opposition - they were not perceived as competitive by another interest.

SUMMARY AND CONCLUSIONS

I have attempted, in these brief comments, to sketch a concept and my interpretation of the development of heritage resources within historic and geographic perspectives. As stated previously, many other examples could have been selected to illustrate the genesis and evolution of this concept, but I don't think that they would have led to different conclusions. Before stating these conclusions, however, I want to repeat Zimmerman's definition of resources - "they are not, they become" - in other words, they are culturally defined. It follows that resources are preserved, protected, managed or otherwise used only when they are perceived to have value - be it economic, ecologic or socio-psychologic.

The concept of heritage resources is not new in the West nor in the nation, it has been around under various names for well over a century. It is one that has grown in acceptance during this time and particularly during the past two decades as the United States and the world became more aware and alarmed about population growth and resource exploitation.

It would appear that the heritage concept is timely and has received acceptance at local, national and international levels. The specific resources that are included under the concept vary considerably among the different initiatives and programs ranging from the: World Heritage List which includes monuments, groups of buildings, natural features, geological and physiological formations, wildlife habitats and natural sites of outstanding scientific value or beauty; to the heritage coasts of England encompassing areas of high scenic quality; to the managed rural heritage landscapes of other European countries; and to the historic and natural areas of the proposed U.S. program. Regardless of the components, history indicates that successful programs are those with constituencies, with organized groups that support and defend them.

The National Park Service under Stephen Mather recognized this fact and the success of historic preservation efforts can also be attributed in significant part, I believe, to strong state or local constituencies. The experience of the National Parks suggests, however, that constituencies without strong scientific and professional leadership can create problems.

Previous successes in the development of heritage resource programs have to be viewed within the social and political context that prevailed

at the time of their initiation. In other words, these programs must be considered political as well as scientific and cultural programs---political, not in a partisan sense, but rather in terms of relating to the public and to the values they hold.

Looking to the future can be a risky business. Who among us remembers what happened ten years ago today? April 22, 1970 was Earth Day. That day was to symbolize a new way of looking at our environment and ourselves so as to better understand the finiteness of the planet Earth. It was viewed as a benchmark for a decade of growing public concern about the state of the environment and the failure of single discipline approaches to the solution of environmental problems. It was also viewed as a springboard for increased public awareness and for a scientific view of the environment that focused on the integrity of whole systems. Public awareness is still with us. Recent public opinion polls indicate a continuing real concern for environmental issues nationally. We have not, however, made much headway in moving away from single-discipline orientations to inter-or multi-discipline issues. It was not until 1980 that the World Conservation Strategy was drafted, ten years after Earth Day and eight years after the United Nations Stockholm Conference on the Human Environment.

What might the next decade hold for us? Will we be able to look back in 1990 and see accomplishments of a kind that cannot be seen by looking back from 1980? Whatever we do during the next decade will have to be undertaken with a full realization of the current social and political context. Current issues and conditions could force the kinds of liaisons and environmental views that were hoped for on Earth Day in 1970. Adversity does sometimes bring out the best in many of us. The social and political issues are obvious, some have already been mentioned, but they merit repeating:

1. alarming rates of inflation,
2. efforts in several areas of the country, including the West, to sharply reduce public spending,
3. efforts to curtail the role of state and national government,
4. a distrust of experts, both in government and out,
5. an energy crisis of dramatic proportions, and
6. of particular significance in the West, some of the highest growth rates in the nation.

A number of scenarios can be developed to dramatize the interactions of these issues and to identify alternative futures for environmental programs. However, whichever scenario is selected, successful environmental programs of the future will probably be those: that can be demonstrated to lead to better land use decisions; that are perceived by the public and decision-makers as efficient in the use of limited financial resources.

The intent of this conference is to discuss and explore ways and opportunities to move towards strong natural and cultural heritage programs in the West. We believe this is important and that it can be done within the current social and political context or we wouldn't be here. Our task is: (1) to inquire if lessons that have been learned in

different places and procedures developed by various professors and disciplines can be shared and can lead to more efficient operations: how can information be gathered, classified and managed to provide a more systematic and effective basis for land use decision-making? (2) to explore ways in which the unique responsibilities and capabilities of the several agencies, organizations and institutions can be orchestrated in support of common goals and objectives: how can we ensure more effective and cooperative efforts among the various state and federal agencies involved in collecting and managing information on heritage resources and how can the universities play a more meaningful role in helping state and federal agencies implement heritage resource programs? (3) to investigate problems of implementing heritage resource programs in the western states: how is support for the programs developed? What are the relationships between public constituencies and professional leadership? and, what should be the local, state and federal roles?

These should be topics of interest to all of us. This should be a stimulating and productive conference.

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DATA COLLECTION, CLASSIFICATION AND INFORMATION MANAGEMENT

Discussion of problems, techniques and costs in the inventory, classification and evaluation of heritage resources, with emphasis on the unique data collection/information management problems of the western states. Individual papers will focus on the costs (economic and political) of land and resource data collection, storage and retrieval; the development of more effective and systematic resource classification and inventory techniques; and the utilization of statewide heritage resource inventories as the basis for more objective land use decision-making.

DATA COLLECTION, CLASSIFICATION AND INFORMATION MANAGEMENT

Bill O. Wilen & Jon Rodiek

The purpose of this first session was to discuss the problems, techniques and costs of classification, inventory and evaluation of resource data. The hope was that the lessons learned in these areas by other groups could be passed on to the people concerned with Heritage Resources. This paper summarizes the ideas and concepts presented in the papers and expressed during the session.

The basic assumption often made is that needed data is available or can be readily obtained. When deadlines are set based on this assumption, decisions are often made without the necessary data and without knowledge of the impact the decisions will have on the resource.

In order to make decisions concerning management strategies, the information continua has to be segregated into groups of similar population units. The data has to be analyzed and the management alternatives have to be tested. Classification and inventory is only the first short step in this process, but it is essential, because if it is not done correctly the rest of the process will fail. You must know what your resources are, where they are and how many you have before you can develop management strategies and make intelligent resource trade-off decisions.

Why develop a classification system? To:

1. Provide uniformity of concepts and terms in order to transfer management experience and experience and extrapolate research results.
2. Describe and arrange resource information in a system useful for management planning.
3. Provide units for inventory and for mapping, if mapping is appropriate.

Classification Systems

1. Classification Systems must be able to stand alone, independent of the tools of inventory and the scale of the final map product. Mapping conventions allow you to apply the classification system regardless of the inventory tool chosen.
2. Hierarchical classification systems allow for aggregation and disaggregation of large amounts of data and information quickly. They provide the appropriate level of detail needed to make decisions at several geographic or administrative levels. Data collection starts at the top of the

hierarchy and moves down to greater and greater levels of detail. How much of the hierarchy is filled in depends on the detail needed versus available funds. As more information is needed more of the hierarchy is completed without the need to duplicate what has already been done. If a researcher has a complete set of high resolution data at the classification system and is available for aggregation to higher levels thus providing the researcher a place to plug in his data and making the information available to the decisionmaker.

3. All classification systems must have a building block that is clearly and easily identifiable by the lay public on the ground or through remote sensing. This building block might be called a class, ecological response unit, district or site. The unit must retain a high degree of permanence.
4. Classification systems have to be open-ended so as to accept the new elements or modifiers as knowledge advances.
5. Classification systems are not evaluation systems. If you incorporate your present value system into your classification system, the system will be inflexible to increases of knowledge and will overemphasize your present bias. On the other hand the classification system must provide the information that is needed to make value judgments. An example is the U.S. Fish and Wildlife Service's wetland classification system. The modifiers for water regime, water chemistry, soils, and man's influence allow the user of the classification system to make value judgements based on this information.

The classification tells you what you have and the inventory tells you where it is and how much you have. These two bits of information are essential to the effective evaluation of management alternatives.

Once a classification system is in place certain questions need to be answered before an inventory is initiated:

1. What are the questions that need to be answered by the results of this inventory?
2. What are the minimum types of information that need to be collected?
3. What is the minimum level of detail needed for each information type?

If these questions are not answered before the inventory is initiated, large amounts of money can be wasted and the necessary information may not be collected.

Inventories

1. Using the example of the U.S. Fish and Wildlife's Services National Wetlands Inventory the total cost of the inventory has been reduced in half or more by using existing aerial photography.
2. Recent advances in films and emulsions will allow inventories to use much smaller scale aerial photography. Whereas a given level of detail required 1:24,000 black and white panchromatic prints ten years ago, present technology allows use of 1:80,000 black and white or, in some cases, 1:120,000 color-infrared. This means that for the average size 1:100,000 scale quadrangle only 84 or 50 photos are needed respectively instead of the 630 photos needed when using 1:24,000 scale photography.
3. If the needed data has to be collected on the ground, it is important to collect all the data at one time. The big cost of ground surveys is getting to the data collection point.
4. If you don't need to get on the ground to collect your needed data DON'T. If feasible use the mail, telephone or a remote sensing system to conduct the inventory. Regardless of the remote sensing system used the inventory results must be verified on the ground.
5. Inventories can be designed which combine data collection on the ground with other techniques of data collection.

INFORMATION MANAGEMENT

The advances in computer systems and the increasing of computer storage have given us a great opportunity to manipulate and manage large volumes of data.

The biggest advantage these systems provide is the ability to test management alternatives. The greatest problems created by these systems are the need to prevent unauthorized access to critical data modules such as endangered species and archaeological information and to safeguard the integrity of the data bases from information of poor quality.

USE OF THE DATA

Once the data is collected and analyzed, so what? Has the project design allowed for:

1. Making the data available to the people who will likely come into conflict. This can be done if the data are provided early enough in the planning process. If at all possible the data should be provided before the developer or private individual acquires control of the land.

2. The best situation is when the land management agency or the private individual has an opportunity to participate in the development of the classification system, conduct of the inventory and review of the data products.
3. The resource information has to be presented to the general public in such a way that they will be willing to support the activities of classification, inventory, and protection. They have to see where the protection is saving them money, such as historic building being used as a public office, or the resource has a high innate value thus striking them as being "neat".
4. Best case and worst case strategies have to be developed because all the resources can not be saved.
5. Priorities have to be set on where the trade-offs will be made and why.

Budget constraints and inflation are real problems. They have already forced groups into many cooperative arrangements. The Federal/State joint high altitude area photography cooperative agreement extended air photo coverage of the State of Alaska from 30 to 80% in the last two years. In the lower 48 the Federal High Altitude Aerial Photography Data Based Program is now flying photos and the program hopes to provide photographic coverage of the entire lower 48 on a three to five year cycle.

The U.S. Fish and Wildlife Service's National Wetlands Inventory (NWI) is an example of cooperation of an interdisciplinary team. The NWI Operational Team is located in St. Petersburg, Florida. The senior level professional staff consists of three Fish and Wildlife Service personnel and a representative from the U.S. Army Corps of Engineers, the Soil Conservation Service and the U.S. Geological Survey.

Why did the agencies agree to cooperate and why has this cooperation succeeded?

1. The Fish and Wildlife Service didn't have all the needed expertise to conduct the job nor did they have the money or ceilings to hire the needed expertise.
2. Each of the cooperating agencies brought needed expertise to the team and are realizing benefits from the wetland maps which are being produced.
3. The team's one goal is to identify, classify and map wetlands using state-of-the-art scientific principles and methodologies independent of agency bias.

The Interagency Agreement Related to Classification and Inventories of Natural Resources* will surely bring about coordinated classification systems and inventories. The advantages will be:

1. Minimizing resource inventory duplication.
2. Enhancing and encouraging data collection and sharing.
3. Increased resource assessment/appraisal efficiency and program compatability.
4. Expediting technology transfer.

It may be concluded that the Heritage Information Program is the new kid on the block. It appears from past experience that it is in the interest of the states, localities and both natural and cultural heritage that HCRS make effective use of the existing expertise, technology and data bases.

* Signed in 1978 by the Bureau of Land Management, Fish and Wildlife Service, Forest Service, Geological Survey and the Soil Conservation Service.

LAND/RESOURCE CLASSIFICATION WITH INVENTORY AND DATA MANAGEMENT

Richard S. Driscoll

Recent legislation, including the Resources Planning Act (PL 93-378), as amended by the National Forest Management Act (PL 94-588), the Resources Conservation Act (PL 95-192), the Federal Land Management and Policy Act (PL 94-579) and other legislative acts have directed federal resource agencies and organizations to make and keep current evaluations of the status of the nation's resource situation. This includes, among other items, determination of grazing for domestic livestock, timber for wood products, habitat for wildlife, recreation for people, preservation of archaeological and important national heritage features, and water for many uses.

The assessments of appraisals of the nation's total resources situation must consider all of the approximately 687 million hectares of land of the United States, its territories and possessions. These assessments must consider resource interactions and tradeoffs, as well as the individual resource elements such as range, timber, and wildlife habitat. Because of these reasons and the broad scope of the legislative requirements, it is necessary to provide effective data and information exchange among responsible agencies and very close coordination with states and some organizations within the private sector. These data and information must provide decision makers effective knowledge to allocate the nation's resources in the most efficient way to meet society needs and demands within the ecological limits of the land and water base.

National, regional, and local assessments require information on **what** the resources are, **where** they are, and **how much** is there. Individual resource systems are product and function oriented. However, there are primary resource elements--soil, water, and vegetation--common across all resource systems. After the **what**, **when**, and **how much** questions are answered, then analytical techniques, both interactive and functional, will produce knowledge to evaluate the state of the nation's resource situation. This is the basis upon which classification, data collection, and information management must be developed.

THE PROBLEM

Decision rules are required for interpretation of data and information for continuing resources assessments and management planning. An inventory of the resource situation is required to determine what they are, where they are, and how much is there to allow effective decisions for program distribution and management planning. All natural resources, the principal resource elements, exist naturally as continua. However, it is extremely difficult to effectively plan for resource management without specific knowledge of the resource base to allow statements on potential, treatment opportunities, and cause-effect relationships. Therefore, the continua must be segregated into groups of similar population units which are hierarchical.

Assessments of the resource systems situation are basically interpretive. They have been interpretive based on functional objectives relying on functional data bases developed for those objectives, i.e., range for range, timber for timber, and wildlife habitat for wildlife habitat. Fundamentally, there is little reason to disbelieve that a system cannot be devised from which integrated resources evaluation can be developed. Past experiences, for whole-nation evaluations, have surfaced two problems:

1. **Lack of a classification system or systems that are compatible for data collection and data exchange.** There has been little effort to integrate classifications, if possible, so that data and information can be consistently exchanged among data sources and aggregated and disaggregated with geographic fidelity.
2. **Lack of resource inventory procedures, especially data element definitions and standards.** If precisely defined and statistical standards are to provide effective and efficient data and information transfer, how data are collected is of lesser importance provided cost-effectiveness and cost-efficiency are included in the data collection procedures. Effectiveness relates to data sharing and pooling among users so that each user has more information. Efficiency is improved because each piece of data is used more often, lowering existing cost, and each user does not incur relatively large initial fixed costs to obtain the data. Both efficiency and effectiveness in data collection must get the "biggest-bang-for-the-buck".

CLASSIFICATION--WHAT FOR

Classification is structured to suit specific purposes. Classification provides a comprehensive and systematic way for obtaining resource data (inventory) for use in the preparation of plans for resource management decisions, if it is not an inventory itself. There is no absolute classification of natural resources, a perfect one which would have no drawbacks. Classification of natural resources must be considered dynamic and flexible so that boundaries may be adjusted as new knowledge becomes available.

Purposes

Land classification organizes knowledge and simplifies complex interrelationships to identify land areas with similar characteristics. It provides stratification for sampling and allows structure for aggregating and disaggregating large amounts of data and information. The underlying purpose of land and resource classification is to identify parcels of land which should respond similarly to management practices, constrained by environmental conditions, within different levels of the hierarchy. Therefore, classification plays an important role in increasing the capability to generalize or specialize, to stratify for

resources inventory, to extrapolate research results, to transfer management experience, to efficiently apply management practices, and to evaluate management alternatives.

Concepts

Classification is an ordering and arrangement of objects and the distribution of them into compartments (Soil Survey Staff 1975). The process involves formation of classes by grouping members of the population based on common characteristics. In any system of classification, classes about which the greatest number, most precise, and most important statements can be made for the objective serve the purpose best.

There are two general kinds of classification for natural resources: (1) integrated and (2) component. An integrated classification of land unites together all parts--the vegetation, the soil, the landforms, the climate, and the water--to form a relatively complete and coordinated entity. The systems conceived by Bailey (1976) in the United States and reported by Hills (1976) and Wiken and Ironside (1977) are example of integrated classifications. The underlying principle of the integrated approach aims to provide a system that expresses the interactive character of the land's components and that is also understandable in relation to surrounding systems in a spatial hierarchy. Basic assumptions are that data and information are available or can be readily obtained and the interactive character of the land's components is **fully** understood to define the characteristics of the classes and the criteria are defined for class recognition both between and within an integrated hierarchy. Or, value judgements of unknown validity are made about which characteristics to use to develop the hierarchy. This approach could likely result in a lack of data and information to answer unusual or unforeseen questions for resource evaluations due to limited existing criteria to fully define the means and extremes of the classes. It is unlikely that we fully understand the interactive mechanisms of land components to objectively and adequately identify characterization criteria. Also, data and information can flow only up and down the hierarchy with minimum opportunity for intercomponent cross referencing within the hierarchy.

A component classification describes each part of the land-- the vegetation, the soil, the landforms, the water, and the climate--to form a hierarchical classification of each. The soil classification system used in the United States is a classic example of a component classification (Soil Survey Staff 1975). Kuchler (1965) presented a map of the potential natural vegetation of the United States. Penfound (1967) described a component classification of vegetation of the conterminous United States. The underlying principle of the component approach is to initially deal with each component as an entity, defining and describing the classes on the basis of primary characteristics. By following this procedure, information and data can be cross-referenced horizontally, as well as aggregated vertically, to provide the greatest flexibility for national, regional, or local resource assessments and appraisals.

In addition, there are natural and technical classifications. A natural classification is based on primary characteristics so that

interrelationships within and between classes are understood. These kinds of classifications are made without predetermined notions of use but contain information interpretable for various kinds of use and management. Examples are a soil series, a plant community described by kinds and amounts of individual species of the community, a landform on the basis of structural characteristics, or a water body on the basis of physical and chemical properties. Natural classification assists in organizing, defining, and naming the classes that are basic units used to: (a) identify sample individuals that are the objects of research; (b) organize research data for discovering relationships within the populations; (c) formulate generalizations to specific cases; and (d) stratify heterogeneity into more homogeneous units for sampling efficiency including resources inventory.

Technical classifications are generally developed for specific use activities. For example, certain vegetation classes can be grouped into suitable and unsuitable range for livestock grazing, or commercial and noncommercial forest and timber production. Generally, technical classifications can be developed from the natural classification system.

The most feasible classification to establish compatibility of data bases, to establish compatibility for resources inventory, and to use for unified planning and decision making is a natural system based on primary properties to define biological potential. The classification system must be consistently hierarchical to provide aggregation and disaggregation of data and information to accomplish effective program objectives. For example, if decisions are made to increase supplies of a renewable resource, the classification system with its adjunct data and information must identify where efficient and effective programs and management applications can be applied to accommodate the increases. Resource use interactions can be interpreted by first examining the data base and extracting data about specific resources such as timber and herbage production within a specific class and then evaluating tradeoffs among management alternatives.

Additional requirements of the classification system are:

1. **Objectivity.** The classification system must be as objective as possible without providing inference of functional use except as developed from information derived from the basic data. It is necessary to adequately define land classes in terms of inherent potential for resource production. Within this framework it is necessary to define and describe the present situation and opportunities and problems of manipulation.
2. **Relative Permanence.** The basic attributes of the classification system must retain a high degree of permanence. It is understood that some elements of the system, for example vegetation and soil, change as a result of resource management practices. However, some diagnostic characters and character states remain relatively permanent and the class orders of the classification can be inferred by induction or deduction. Other elements such as land surface configuration or general climate remain quite permanent

in the absence of catastrophic events such as landshifts and landslides.

3. **Perceivability.** Individuals of the classes and class categories must be identifiable on the ground according to specific criteria established for them. Their attributes must be observable and measurable. If criteria are not specific or are not related to observable field characteristics, it would be hopeless to expect compatibility of land classification within and among agencies and individuals responsible for natural renewable resource assessments and management.

Comments must be made on the relationship between classification and mapping. Maps are used to illustrate classification at different levels of the hierarchy and are not always classifications themselves. Maps may be used to study interspersions and juxtaposition but should not be the primary constraint on classification.

Maps are prepared for many purposes and the scale selected for each map is related to the intended use. For example, where very intensive management is planned, it may be desirable to map areas as small as one acre if those kinds of units are appreciable parts of the whole management unit. This would require a map scale of 1:12,000 or larger to illustrate the one-acre units. Where management units are hundreds of acres, 50 acres may be the smallest area of appreciable significance to management, providing the 50 acres is sufficiently different from the rest of the map unit. In general, the larger the map scale, the higher the cost of gathering the information necessary to prepare the map.

In nature, rarely do map units contain only one taxonomic class although one, two, or three classes may predominate together with members of very similar classes. Usually the map unit is named in the legend according to the dominant component(s) and similar and dissimilar components are described and their extent is estimated. Except for some very complex mapping units, usually the larger the map scale, the more uniform is the composition of the map units.

A CLASSIFICATION SYSTEM

The concept of a four-component classification system has been endorsed by the members of the Interagency Agreement Related to Classification and Inventories of Natural Resources. These agencies are the Bureau of Land Management, Fish and Wildlife Services, Forest Service, Geological Survey, and Soil Conservation Service. The objectives of the Coordinated Classification System are to (1) minimize resource inventory duplication; (2) enhance and encourage data collection and sharing; (3) increase resource assessment/appraisal efficiency and program compatibility; and (4) expedite technology transfer.

The system has four components: vegetation, soil, landform, and aquatic. Climate is included as a criterion in the vegetation and soil

components. The system provides a class level within each component to satisfy the requirements of different intensities of inventory and planning.

The component classification allows dealing with each component as an entity. The basic characteristics of each class are based on primary properties of the components. The classification system allows data to be cross-referenced among components, or aggregated vertically.

The vegetation component is adapted from the UNESCO (1973) System which is recognized worldwide. It is based primarily on foliar cover and height of vegetation and is related to altitudinal, latitudinal, and climatic constraints. The component is based on potential natural vegetation but includes a process whereby existing vegetation is related to potential natural vegetation through secondary plant succession.

The soil component is the Soil Taxonomy (Soil Survey Staff 1975) used by the National Cooperative Soil Survey in the United States. This system is used by the Departments of Agriculture and Interior and many state and local cooperating agencies. The Soil Taxonomy is designed to classify soils of the world and is accepted in many countries. Essentially all the soils of the United States have been classified at most levels of the system. Provision has been made to modify definitions or establish new series when necessary.

The landform component is being refined to consider land surface configuration (Hammond 1964) and geologic structure as developed by Fenneman (1928) and expanded by Fairbridge (1968).

The aquatic component is being defined and described to consider water (aquatic) systems as a medium to support life on and in the water. Physical and chemical properties of water and nature of bottom surfaces and shorelines are criteria that will be used to classify the various class levels. It is also being related to hydrologic units defined by the Water Resources Council.

A major publication will be issued by the Rocky Mountain Forest and Range Experiment Station in late 1980 describing the system. Included in the publication will be process descriptions for integrating the components into ecological response units, units of land expected to respond similarly to specific management strategies.

CLASSIFICATION WITH DATA COLLECTION

Classification stratifies the land for resource data collection, among other reasons previously defined. Resource data collection depends on the questions that need to be answered. Intuitively, the ideal system would be an inventory system that collected the basic data interpretable for many purposes. This would mean that primary data would reside in an information management system which could be interrogated for many purposes. This ideal system is not beyond reality since many

functional (i.e., timber, range, wildlife habitat) inventory systems collect data relevant to each other. Therefore, this does not mean that past inventory systems will be stopped and the data and information derived from them will be archived. It does mean that future inventories must be made with multiassessment and multievaluation objectives in mind.

For example, much of the data and information derived from livestock, range, timber, and soil inventories are required to make assessments and evaluations for wildlife and fish habitat. It is recognized that all resource parameters specific to a particular resource management system may not be included in a multiresource inventory. However, major elements of the inventory would be included in a multisystem and a subinventory system for a specific management system could be conducted simultaneously, or independently using a compatible classification base, as required.

Efficient sampling designs coupled with remote sensing capabilities are emerging to meet future demands for periodic and continuous factual resource data and information. No agency or institution has the manpower and monetary resources to continue to conduct inventories in the traditional way. The techniques emerging on use of improved remote sensing and sampling techniques that will improve remote sensing and sampling techniques that will improve the efficiency and accuracy of multiresource techniques will increase the capabilities to make periodic national assessments.

INFORMATION MANAGEMENT

An information management system that avoids file-drawer searching to retrieve and/or update inventory data and information is needed. The data files should be structured so that geographic locations are available and multiresource information is displayed. It is conceivable that such a system would be structured by a number of subsystems, each of which contains information relevant to a specific resource management system. The system should also be structured so that questions relevant to management alternatives can be answered.

Many integrated information management systems are available or are being developed. However, it is doubtful that there will be developed in the near future a common data base stored at one location on one computer system. However, we must strive for compatibility of data management systems among all units responsible for evaluations of the state of the nation's resource situation.

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THE NEW MEXICO NATURAL RESOURCES INFORMATION SYSTEMIC RESOURCE ANALYSIS SYSTEM

Bill F. Isaacs

OVERVIEW OF THE NEW MEXICO SYSTEMIC RESOURCES ANALYSIS PROGRAM

A major portion of New Mexico's lands are being heavily impacted by the rapid development of energy, mineral, and water resources. The impact comes from both the exploitation of the resources and the accompanying population expansion. An additional significant factor in the population growth is the expansion of recreational and retirement facilities. In the near future, the development of geothermal, solar, and wind energy may also have a significant environmental impact on the state. Environmental impact statements and assessments are being almost continuously prepared for the evaluation of the impact from these developments. Such reports, along with a large volume of university publications, have been accumulating at an increasing rate over the last two decades.

This accumulation of resource information has proceeded to date without any systematic attempt to capture it in a comprehensive data management system. The New Mexico Natural Resources Department has initiated a systemic resources analysis program in order to respond to the critical issues affecting the natural resources that are included within its statutory responsibility. This program will analyze in a comprehensive manner the effects of energy development and population growth upon the state's recreational, cultural, and natural resources. It is the intention of the Department to make these data available to the private sector, as well as local, state, and federal agencies in a comprehensible, accurate form. The program is designed to deliver information necessary for the state's decision-makers to review numerous data sets and their interrelationships thereby deriving objective decisions to set and direct implementation of policy. Such a resource analysis program will allow for factual, well-circumscribed policies to be developed to assist New Mexico in meeting the challenges of the next few decades.

STRUCTURES OF THE NEW MEXICO SYSTEMIC RESOURCES ANALYSIS PROGRAM

The basic structure of the resources analysis program consists of three components. These include:

- I. The New Mexico State Natural Heritage Program, designed along the lines of all the Nature Conservancy State Programs.
- II. The Heritage Information and Statistical System (HISS), a computer system of interrelated data bases.

- III. The resources analysis and issue identification system, designed to elucidate and develop priorities on state natural resources issues.

I. THE NEW MEXICO STATE HERITAGE PROGRAM

History

The New Mexico State Heritage Program began in January 1976 through a cooperative agreement between the New Mexico State Planning Office, the Federal Bureau of Outdoor Recreation (now the Heritage Conservation and Recreation Service) and The Nature Conservancy, the latter being a private, nonprofit organization devoted to the preservation of natural diversity through land conservation and protection.

The scope, products, and duration of the initial twelve-month contract were amended and expanded as the Heritage Program developed. An amended contract was developed for fourteen months and then again extended from March 1, 1977 to July 1, 1977 by The Nature Conservancy. On July 1, 1977 the Heritage Program was assimilated into the New Mexico Game and Fish Department by earlier action of the New Mexico State Legislation in the spring of 1977. The program was again transferred to the newly created Natural Resources Department on July 1, 1978 by action of the state's legislature in the spring of that year.

Purpose of the New Mexico State Heritage Program

The New Mexico State Heritage Program was established to preserve the ecological diversity of New Mexico by providing the state with a systematic basis for:

- A. Identifying ecologically significant areas, communities, species, or features.
- B. Designing a system to protect such areas from disruption or destruction.
- C. Helping the state develop a natural inventory system for data management, analysis, and protection.

Concept of the New Mexico State Heritage Program

The New Mexico State Heritage Program employs a sophisticated, efficient, economical data management system capable of providing the state of New Mexico with an informational tool that identifies, describes, and locates the irreplaceable components of New Mexico's natural diversity. In addition, the program provides guidelines for data analysis, its use, and comprehensive planning for the protection of priority sites which have emerged from the data.

The methodology of the Heritage inventory is innovative. A major shortcoming of most previous inventories has been the limitation imposed upon research workers by the arbitrary site-by-site approach. Each site is unique, due to unduplicated characteristics, or to the combination and spatial distribution of its habitats, species, and other components. In an attempt to resolve the problem, many inventories have relied upon quantitative evaluation systems that have proven to be both inflexible and complicated. In addition, the result has often been to submerge consideration of natural diversity while over emphasizing such features as degree of disturbance, scenic values, etc. Thus a limited spectrum of ecosystems, landscape types, or elements which are well represented may become frequent objects of preservation interest, while passing over the few remaining examples of truly endangered elements.

In order to avoid such problems, the Heritage Program methodology focuses first upon the elements of diversity themselves. (An element of diversity, as defined by the Heritage inventory, is a natural feature of particular interest either because it is unique, exemplary, or endangered on a statewide or nationwide basis.) A classification of element types is developed, including plant communities, geological features, as well as endangered or otherwise special plant and animal species. The list can be expanded by addition or subdivision of elements or by incorporating new classes of elements, such as cultural features, whenever it is deemed necessary. By dividing the nominated natural area sites into their components, it is possible to create element-based files in order to collect and enumerate reported occurrences of specific elements.

The element file structure provides an index of relative rarity by showing the number of reported occurrences, and the index becomes more accurate as the system accumulates data. For this reason, it is important to bear in mind that the Heritage inventory is continually being modified, analyzed, and supplemented. As more information is added and the data base is upgraded and refined, the program will become an increasingly rich repository of information.

Criteria for Selection of Natural Areas

The intent and purpose of the New Mexico State Heritage Program is to provide protection for a full array of irreplaceable components (elements) of New Mexico's natural diversity and to shelter element occurrences in the existing landscape. To provide this protection, it must first be determined what elements in the state are in need of protection. A classification system has been developed based upon a list of elements considered to be important. This system is used as a guide to data collection in order to obtain representative examples of each element in the classification system. The classification system is dynamic, allowing for constant change as new information becomes available. Continuing analysis of the data base determines how many occurrences have been documented for each element, and for which elements no occurrences have yet been documented. Some occurrences are well documented while others may be found to be either poor sources or old or no longer relevant and are eliminated. As the program continues, efforts will be concentrated on obtaining as many new occurrences for

each element as possible and verifying the status of those occurrences present in the system.

The Heritage Program provides an excellent tool for the preservation of the widest possible array of natural diversity. For example, using Heritage methodology, it is possible to locate areas containing elements which are yet unrepresented on any protected lands. Such areas, if protected, will make the greatest contribution toward preserving the state's natural diversity. Moreover, by creating what amounts to a dynamic atlas on the existence, numbers, conditions, status, location, and distribution of the elements of ecological diversity, alternatives for action by various concerned parties are made clear. In this way the state's diverse heritage can be monitored and hopefully perpetuated.

Program Accomplishments

In the spring of 1977 the Heritage Program was contacted by the U.S. Fish and Wildlife Service to participate in the identification of unique ecosystems in New Mexico that occurred on private lands and that were deserving of protection and/or acquisition. After a series of meetings on the ecosystems project, the Fish and Wildlife Service agreed to contract this work to the Heritage Program. A comprehensive survey was developed over the ensuing two years and the report completed in December 1979. Forty-eight sites were identified as being of significant ecological value and both the U.S. Fish and Wildlife Service and The Nature Conservancy have utilized this study as a basis for acquisition decisions.

In 1978 the New Mexico State Heritage Program was cited as one of the top four Heritage Programs in the U.S. by the Heritage Conservation and Recreation Service and has received strong support from The Nature Conservancy for the quality of its inventory data.

In 1979 the Heritage Program participated in the State Paleontology Task Force to consider creation of a state museum of natural resources (since funded by the 1980 New Mexico legislature). In addition, the program has carried out contract work for the Bureau of Land Management involving endangered species and is presently heading up an effort to produce a handbook of rare and endangered plants for the state.

The Heritage data base presently contains nearly 3000 element occurrences and has obtained approximately 250 users from the private sector as well as local, state, and federal agencies and related public entities.

Technical information about the program can be obtained from:

1. the New Mexico State Heritage Program Operations Manual;
2. the two-volume Classification Document of the elements of diversity; and
3. The Lowest Common Denominator (LCD) Element File Computer Manual.

These documents are maintained at the Heritage Program Operations Center.

II. HERITAGE INFORMATION AND STATISTICAL SYSTEM

The Heritage Information and Statistical System (HISS) was developed by the Natural Resources Department as a data management tool to assist managers in making decisions regarding the use and allocation of natural resources. An additional purpose of the system is to provide researchers with a first look at potential research sites prior to going into the field. This reduces the time required for exhaustive literature searches. In essence, HISS is intended to serve as a single depository for most categories of natural resources data such as plant and animal species, geology, archaeology, hydrology, etc. Management of the data categories is achieved by a set of computer programs which controls the input, update, searching, and printing of the data base. Much of the power of the management program is derived from their ability to perform correlations and investigate interrelationships and intrarelationships among the various data bases, as well as graphically display the output in a singular or multiple overlay fashion. Some of the potential users of HISS are federal and state agencies, county and local governments, universities, as well as private companies and non-profit organizations.

Systems Design

The overall design of HISS is to allow maximum flexibility and the option of alterations in data content, manipulation, and output representation. To accommodate this, HISS was built as several interacting subsystems, each of which fulfills a major requirement of the overall system. Every subsystem also has the ability to operate in a stand-alone environment if required. To accommodate the primary purposes of HISS, the following subsystems have been included. First, Natural Resources Information System (NRIS). This is the central subsystem in HISS and it serves two functions:

- A. It controls the interfacing between each and every subsystem.
- B. It handles all of the site specific data belonging to each of the data categories.

Second is the Geographic Information System (GIS). This is one of the three subsystems obtained from outside of the Natural Resources Department. The particular GIS selected was developed by NASA for use with their Land Satellite Program. A GIS is built to input, store, manipulate, and graphically display data pertaining to features which have definable boundaries. Examples are soil types, land ownership, and energy and transportation corridors.

The third subsystem is the Least Common Denominator (LCD) which was supplied by The Nature Conservancy and has been previously described.

The fourth subsystem comprises the Scientific Reference Search Program (SRSP). This is a complete and highly flexible bibliographical package.

A fifth subsystem is the Map Information System (MIS) which serves as a bibliographical or catalog system for maps. Map titles may be obtained by subject, area represented, and/or author.

The sixth and last subsystem is the Statistical Analysis Package (SAP). This is really a large collection of simple to sophisticated statistical programs. Examples are simple correlations, pattern recognitions, and various regression techniques.

Each of the subsystems developed within the Natural Resources Department is modular in design. This permits easy and rapid program modification when changes are required, as well as reducing the time involved in systems testing, and lowers total cost. It should be stressed that the type of data handled by NRIS is complementary to that handled by a geographic information system.

Since NRIS is the primary data handling subsystem, some additional explanations are required. Each data category, such as archaeological, plus a small set of specialized programs, constitutes a data module. Those state agencies with statutory authority for a particular data module may be responsible for selection, input, and updating that data base. This permits the state's expertise in the various data categories to be realized within the data base, giving it a certain level of accuracy and credibility.

Keeping with the concept of flexibility, the data content for each of the data modules may vary considerably according to user requirements. The only information required in every case is the identity and location by township/range/section of each data entry; otherwise the content and length of each data field may vary as required. This type of data structure permits the system to accommodate nearly any kind and form of existing data, as well as expansion of those data at any future time.

Since HISS may be used by a wide variety of organizations and individuals, there are multiple access control mechanisms to prevent unauthorized access to certain critical data modules (such as endangered species and archaeology). Some of these control mechanisms will also limit certain users as to which subsystem they may use and also exactly what they may do within each subsystem. Depending upon the severity of an unauthorized access attempt, that user may be prohibited from any future use of HISS.

Those organizations which are heavy users of HISS will have the necessary computer terminals installed within their own offices. Less frequent users will request the desired information through the Natural Resources Department. This permits still another access control mechanism.

Those subsystems of HISS which were developed by the Natural Resources Department are written in APL-PLUS. This allows for rapid

program development, testing, and implementation. In addition, the system is fully interactive, thus the user merely responds to a sequence of promptings to use the system. A user has no need to know or understand a computer language or how a computer operates.

The retrieval system has a bi-level search structure. The primary search operates only on element identify and/or township, range, and section. The secondary search may perform a large combination of logical operations on any data field specified. This may be repeated sequentially to further reduce the data. The advantages of this search structure are:

1. Often the primary search is all that a user will require;
2. The primary search produces a large data reduction rapidly and at minimum cost;
3. Complicated search and data reductions are performed on only the data selected by the primary search; and
4. If the result of the secondary search is undesirable, a back up may be made to the results of the primary search or that of the last secondary search.

The actual data content of the output listing may be limited to just those fields which the user requires or is allowed to access. This way locational information may be suppressed on critical occurrences. Further, the data elements may be sequenced in an ascending or descending order of any data field, or a hierarchy of data fields. The output may be displayed on either a CRT or hard copy terminal, or routed to a highspeed printer.

Upon user request, subsystem interfaces can be established between the Natural Resources Information System, the Map Information System, the Scientific Reference Search Program, and/or the Geographic Information System. This would, for instance, permit the inclusion of all map titles that pertain to the study area, all bibliographical information relating to the study area, or other supplied key words.

Additional features under consideration for development include automatic conversion of synonyms for scientific names. This will prevent the same species from being listed under a variety of names or misspellings. Another additional feature would be the conversion of scientific to common names at the time of printing. Common names are not being included within the data base since there are many variations of common names and some species do not have a common name. Also, it would require additional storage space and increased data input time. This conversion would be made only upon request.

The Natural Resources Department is interested in cooperating with other agencies in the gathering of this information. The use of this system by many agencies can only enhance the usability of the system. The Natural Resources Department is also interested in cooperative agreements for use of the system and access to its information. The

interested agency may have a terminal in its own office, doing all input, updating, and editing; or the Natural Resources Department could contract to do those operations, allowing access to the agency for all of the information.

III. THE RESOURCES ANALYSIS AND ISSUE IDENTIFICATION SYSTEM

The New Mexico Natural Resources Department has statutory responsibility for the renewable resources of New Mexico. These resources include water (surface and ground), soils, wildlife, and forests. Growth and development in New Mexico will place resources in greater demand while the resources base declines. Careful correlation of the major elements of population growth and energy development with such natural resources demand should identify the major issues with which our state's decision-makers are faced. The intent of this resource analysis program is to anticipate and prepare for these issues before they arise, rather than wait and react after they have become serious problems.

These issues fall into two categories. The first includes any issue which falls within the Department's statutory responsibility, such as cutting of aspen forests to improve elk habitat. The second includes any issue, such as strip mining of coal, where the responsibility involves natural resources questions, but also transcends them. The first type of issue, once identified as a serious policy matter, is given to the Secretary of Natural Resources for his review and recommendations for action. Departmental policies relative to such a major issue can be established after the issue in question is thoroughly analyzed and recommendation for action is made. The second issue (strip mining) is identified and analyzed insofar as it affects the state's natural resources. A comprehensive list of this second type of issue is sent to the Governor and those that he feels are of sufficient seriousness and concern are selected and ranked for importance. A limited number of priority issues will then be comprehensively analyzed by Natural Resources staff utilizing data derived from the Heritage Information and Statistical System. After this process is completed, policy recommendations will be developed for consideration by the Governor and the Secretary of Natural Resources. The Department will then perform the steps necessary to implement the policy direction that has been selected. This particular part of the program will enable the Department to establish specific, objective policies regarding its statutory responsibilities. It will also allow the Governor to determine those natural resources issues in which he expects the Department to play a contributory role in overall statewide issue resolution. The specific, objective policies derived from such a process will allow both the Governor and the Secretary of Natural Resources to deal effectively with major resource issues in an informed, systematic, and objective manner. The commitment of the Natural Resources Department to development of comprehensive data management and issue identification systems for the state and to an expanded Heritage Program is clear. The present need for a quantitative and objective system to deliver reasonable options to decision makers in the use of our natural resources is obvious. Many questions remain to be answered in bringing these systems and programs to fruition, but to not make the

effort leaves us with few answers and a narrowing time frame in which to develop them.

HERITAGE INFORMATION POLICIES, USES AND MANAGEMENT
THE NATIONAL HERITAGE POLICY ACT OF 1979

Bernard J. Niemann, Jr. and William A. Gates

INTRODUCTION

In this paper, we discuss information design issues which need to be addressed to guard against a myopic enactment of the proposed National Heritage Policy Act of 1979 (S. 1842). We discuss a concept of a heritage information program which would have the capability to include resources such as scenic beauty. We discuss the potential role of the public in a heritage resource information program. We discuss the consequences of emerging resource information technology upon a heritage information program and offer insights into what the technology could provide. We discuss other federal agency interest in emerging resource information technology. We discuss costs and benefits of information systems such as the type being proposed. We conclude with a discussion concerning the various roles Heritage Conservation and Recreation Service and the states might engage in concerning heritage resource information policies, uses, and management.

Not being westerners, but mid-westerners plus being academicians, we are compelled to explain our interest and the basis from which we are participating in this Western States Heritage Conference.

This paper has been developed by reviewing documents made public by HCRS concerning S. 1842, previous project and related research with a Heritage Area program in 15 Wisconsin counties, some limited involvement with the evolution of S. 1842, and, during the past ten years, extensive research and application of information systems for resource and public facility planning and management (Gates et al 1978), (McCown et al 1977).

We will attempt to limit our comments to the issue of data collection, classification, and information management. But to do this requires some comment as to terms, legislative intent, long-term social and environmental realities of congressional implementation, and the resultant constraints and opportunities.

Definitions

Before we begin, it is important that we define various terms and define how we interpret various terms utilized by HCRS.

For example, the word "heritage" is used in various ways. Webster defines her-i-tage as:

"heriter to inherit"--1.: property that descends to an heir;

2a: something transmitted by or acquired from a predecessor; legacy; b: tradition; 3.: birthright.
syn. Heritage, Inheritance, Patrimony, Birthright mean something received from a parent or predecessor. Heritage may imply anything passed on to heirs or succeeding generations, but usually to things other than actual property or money--"

(Webster, 1965)

HCRS does not define heritage itself, but does define Heritage Resources and National Heritage.

"Heritage resource: a select natural area or historic place with intrinsic value listed or eligible for listing on the National Register of Natural Areas or the National Register of Historic Places, respectively." (HCRS, 1979, Appendix 1)

"National Heritage: that collection of resources important to Americans because they are significant aspects of our history and culture, and/or significant elements of our natural environment." (HCRS, 1979, Appendix 1)

What is the purpose or intent of Heritage Area programs, and, more specifically, Senate Bill S. 1842? As introduced, the bill reads:

"The Congress finds and declares that: (a) it is the public interest that natural and historic resources significant to this Nation's heritage and continuity be identified and protected by a coordinated national approach to heritage conservation, so that a vital legacy providing scientific, educational, recreational and inspirational benefits will be Americans." (S. 1842, 1979, p. 1-2)

How does one interpret the meaning of such language in respect to data collection and classification, and information management? In a news release from HCRS, Secretary of the Interior Andrus provides a point of departure. He said, "the National Heritage Program is **not** a Federal land acquisition or takeover program, but a **resource information** program." (Andrus 1979). What does he mean? An automated list of natural scientific areas as a beginning, or a multi-purpose land planning and management information system?

What is meant or implied by the individual and combination of words such as resource information and program? For example, Ehrenfeld (1976) suggests that a heritage resource is a non-resource because in fact it is not a consumable or commodity resource, but a non-commodity resource. Forgetting this possibly overly restrictive definition, what kinds of things are intended by S. 1842?

Assume as a resource example a wetland type; it is an area or point in the landscape which can be described spatially or geographically, and it has certain characteristics. In addition, the wetland type has certain qualities which can be described, measured, and documented. This results in data which uniquely represent the resource of interest.

The **data** exist in a reliable form which provides for analysis and and comparison of resources. The use of **analysis** results in **information**. The transfer of such **information** through **communication** results in a decision about which resources merit concern, for the processes of protection, planning, and management. For the purposes of this paper, we utilize the following terms as defined below (Niemann and McCarthy 1979):

Spatial: Relating to, or occupying, or having the character of space.

Data: Factual information used as a basis for reasoning, decision, or calculating.

Analysis: Separation of the whole into its component parts; an examination of a complex, its elements and their relationships.

Information: The communication or reception of knowledge obtained from investigation, study, or instruction.

Communication: An act or instance of transmitting; information communicated; a process by which information is exchanged between individuals through a common system of symbols, signs, or behavior; or the technology or transmission of information (as the printed word, telecommunication, or the computer).

Previous and Proposed Activity

What is the federal history of interest in resource information? Even before 1977, Congress was discussing federal assistance in environmental and land use related data management information systems. Senate Bill 984, which narrowly lost in 1976, would have provided a Federal Office of Land and Water Resource Planning Assistance. Many referred to this bill as "Critical Areas Legislation". If the legislation would have been enacted, it would have included resource systems similar to those initially included by HCRS in 1977, e.g., scenic, wild lands, etc.

Congress does not appear to be in the mood to support issues concerning comprehensive land planning and management, or even the protection of scientific values such as the snail darter (see Sports Afield--The Little T is Gone, Almy 1980). We are told that Congress will only support a more limited resource informational program at this time.

However, the issue of a more resource limited Heritage Program needs some discussion. It is an important issue. If taken at face value, it dramatically impinges and is contradictory to the concept of a resource information program which provides for "a coordinated national approach to heritage conservation" as stated in S. 1842 (S. 1842, 1979, p. 1-2). There have been various reasons given to explain the limited aspects of S. 1842. The wisdom of such actions has been discussed quite eloquently elsewhere (Frondorf et al. 1980).

The most disturbing of these, however, is that wild and scenic resources are too subjective to be included. This has resulted in a more limited public role. Because wild and scenic resources are associated with evaluative measures (e.g. social, psychological or perceptual) in contrast to taxonomic or biological data measures, public involvement in evaluation has been excluded and limited to "assisting with identification and location of resources" (S. 1842, p.8). Our research in over 15 Wisconsin counties shows that the public can reliably identify, locate, and evaluate heritage resources using perceptual measures (Van Zandt et al. 1976). This concept of citizen identification of environmental and heritage resources was expanded upon recently by the U.S. Department of Commerce. They suggest, as a procedure to speed up EIS aspects of NEPA, that private landowners identify their own lands for heritage type resources and submit them to some governmental body for certification.

Possibly from a western perspective, private ownership may not be as important as in the Midwest. For example, even though federal, state, and local government manage approximately 897 million acres in the public's behalf, there remain over 1,367 billion acres in private or Indian trust lands (see Table 1). Given this amount of private land, it seems quite important in the long run to monitor and informationalize heritage resources on private lands. This may be even more important given the growing western interest in western state and private vs. federal land management as witnessed by the current "Sagebrush Rebellion".

Table 1. Overall ownership of U.S. land in 1974
(Frey 1977)

	Millions of Acres	%
Federal Government	761	33
State and Local Government	136	7
Indian Trust Land	51	2
Private	1,136	58
TOTAL	2,264	100

This idea to involve and include the private lands is not new. Aldo Leopold, in 1949, suggested assigning more responsibility to the private landowner:

"There is a clear tendency in American Conservation to relegate to government all necessary jobs that private landowners fail to perform--What is the ultimate magnitude of the enterprise? Will the tax base carry its eventual ramifications? At what point will government conservation, like the mastodon, become handicapped by its own dimensions? The answer, if there is any, seems to be in a land ethic, or some force which assigns obligations to the private landowner."

(A. Leopold, 1962)

Public involvement techniques have been utilized by other federal agencies (Heberlein, 1976). In addition, specific techniques which utilize each county's USDA Cooperative Extension Service have proven to be representative in a democratic sense (Gundry 1978). This reluctance to embrace a stronger public involvement stance is perplexing, particularly when it appears so politically important and so fundamental to a concept of heritage.

EMERGING RESOURCE INFORMATION TECHNOLOGY

Our concern that the intended HCRS heritage information program not become just another "annotated list" which can be sorted and searched a dozen ways is a reflection of sensitivity to the rate at which society and technology are changing. Dramatic technological changes can be seen in our abilities to measure length and time: from millimeters to angstroms, from milliseconds to picoseconds (CACM 1972). Societal changes are reflected in the programs and plans of our public enterprises.

Examples of Federal Activity

Just a few examples from the federal government illustrate the point about societal change. USGS has plans for a National Digital Cartographic Data Base to be well on its way at 1:24,000 scale by 1985. USGS has explicitly recognized the needs of today's resource managers and that this data base would be the basis for relating most resource information. They began production of digitized land use and land cover maps in 1973, and began the Digital Cartographic Applications Program in 1978 to provide digital cartographic data equivalent to 7 1/2 quad maps. In 1979 a program was begun to collect digital cartographic data commensurate to 1:2,000,000 scale. USGS has not concerned itself with just digital data, but has developed "Geographic Names Information System" to be capable of providing basic information on approximately 3 million names by 1981. Available information includes official names, feature class, location of named feature (state, county, and geographical coordinates), variant names, etc. Although we are not well informed, we in general are aware that USFWS, NPS, BLM, AND OSM are actively pursuing planning and application of resource information technology in their programs.

In February the Computer Graphics and Computer Mapping group within the Bureau of the Census took delivery of six graphics-digitizer systems to augment those they were operating to complete a broad program of digitized products for the 1980 census. Census, USGS, and the Federal Highway Administration (DOT) all provide or intend to provide digital files of state and county boundaries.

Opportunities

The conclusion is just within Interior HCRS has at its disposal considerable contemporary expertise to make use of in considering implementation of the proposed "National Heritage Policy Act of 1979". It also seems plausible that coordinated interaction with, for example, USGS and USFWS, could put HRS far ahead in efforts to provide heritage information.

INFORMATION COSTS AND BENEFITS

It is important for designers and implementors of information programs to recognize that success is based upon a multiplicity of factors including economic, administrative, legal, political, as well as technical. The Heritage Policy Act is intended as a resource information program, but what will it cost and who will benefit, and what new information will it provide?

First, with respect to information, there is growing concern and political awareness over the proliferation of single purpose resource information programs and resource data collection programs. For examples, a recent study by the Wisconsin Department of Administration, "Land Records: the Cost to the Citizen to Maintain the Present Land Information Base" (Larsen et al. 1978), indicates considerable amounts of overlap and duplication between various federal, state, county, and regional planning commission land data gatherers (see Table 3).

Wetland mapping and evaluation is an interesting and illustrative example. Four groups are involved in wetland classification in Wisconsin. Wetlands in Wisconsin have received some legal protection. The U.S. Fish and Wildlife Service proposed mapping Wisconsin's wetlands. The Wisconsin legislature has charged the Department of Natural Resources with the responsibility for classifying, identifying, mapping, and regulating wetlands. After review of the USFWS proposal, the DNR determined the mapping program to be too general for state needs. The DNR expects to be sued in respect to definition, classification, and boundary. Anticipating such litigation and at state expense, the DNR is conducting a wetland mapping program. The DNR is using 1960 rectified black and white photography as a base because it is the best available large-scale base which begins to reflect property boundaries. The USFWS may map the state using its own procedures.

In addition, the Wisconsin case study identified various land data products and evaluated them in respect to various problems (Table 4). Will the eventual heritage information program complement and provide missing informational needs? Or will it continue to add to this chaos?

TABLE 3

Examples of Overlapping Land Record Functions
Among State Agencies and Levels of Government

EXAMPLES OF OVERLAPPING LAND RECORD FUNCTIONS AMONG STATE AGENCIES AND LEVELS OF GOVERNMENT.																				
	COUNTY-WIDE MAPPING (Not all-inclusive; some mapping excluded i.e.: geologic, highway)								CLASSIFICATION/INVENTORYING							AERIAL PHOTOGRAPHY		STANDARD SETTING FOR LAND DATA COLLECTION	REVIEWS	
	Tax	Public Lands	Agricultural Lands	Wetlands	Open Space	Soil	Erosion Potential (Slope) & Non-Point Source Pollution	Utility	Forest Crop	Agricultural Crop	Vegetative Cover	Land Use	Soil Survey	Wetlands	Public Ownership	Selected Sites	Statewide		Subdivision Plat	Review
STATE AGENCIES																				
ADMINISTRATION																				
Bur. of Facilities Mgmt.		X													X					
Office of State Planning & Energy		X			X							X		X	X	X	X			
AGRICULTURE			X		X					X										
HEALTH & SOCIAL SERVICES																			X	
LOCAL AFFAIRS & DEVELOPMENT			X															X	X	
NATURAL RESOURCES		X		X			X		X					X	X	X	X	X	X	X
PUBLIC SERVICE COMMISSION								X										X		
REVENUE	X																	X		
SECRETARY OF STATE																				
TRANSPORTATION																X	X		X	
UNIVERSITY OF WISCONSIN																				
State Geologist							X											X		
State Cartographer																		X		
Cartographic Lab.		X			X	X														
Soil & Water Conservation Bd.						X	X							X						
FEDERAL AGENCIES																				
AGRIC. STAB & CONSERV. SERV.										X						X				
BUR. LAND MGT.															X			X		
ENVIR. PROTECT.							X									X		X		X
FISH & WILDLIFE				X										X		X	X	X		
FOREST SERVICE									X							X	X	X		
NATIONAL AERONAUTICS & SPACE ADMIN.														X		X	X			
SOIL CONSERVATION SERVICE			X	X		X				X			X			X		X		
US ARMY CORPS				X										X		X		X		X
US GEOLOGICAL SURVEY																	X	X		
COUNTY GOVT.	X		X		X	X	X		X	X		X	X			X			X	X
REGIONAL PLANNING COMMISSIONS		X			X							X				X				
TOTALS	2	5	4	4	5	4	5	1	3	4	0	3	2	6	4	12	7	13	5	4
KEY: An "X" indicates actually compiling the land record. We have not included "X's" for those agencies using these land records.																				

KEY: An "X" indicates actually compiling the land record. We have not included "X's" for those agencies using these land records.

Second, with respect to costs and benefits of land or resource information, very little is known. However, some information is emerging. For example, with respect to land or resource information programs which are multi-purpose and based upon cadastral or ownership standards, preliminary indications suggest benefits outweigh costs sufficiently to warrant public investment (Greulich 1979). The Wisconsin case study is the only known research in the U.S. that has documented minimum overall annual governmental expenditures for compiling and managing land data. No attempt was made to calculate benefits. The results indicate that cost to Wisconsin citizens is not trivial. What do the data show for the Fiscal Year 1975/76?

- In 1976, local governments in Wisconsin spent an estimated \$9 per state resident, or \$41,117,989 for land records.
- Wisconsin state agencies, in fiscal year 1975/76, expended at least \$11,582,818, or about \$2.50 per citizen for information about land resources.
- Federal agencies, in Fiscal Year 1975/76, spent a minimum of \$15,349,545 in public funds or about \$3.40 per Wisconsin citizen, to collect, store, and display information about this state's land resources.
- In addition, utility companies spent an estimated \$2.31 per Wisconsin resident or \$10,679,954 for land records statewide.
- In total, Wisconsin residents paid approximately \$17 each or \$78,730,306 in 1976 for information about the state's 35 million acres of land. These figures translate to roughly \$2.25 per acre (Figure 2).

The composite figures cited above and shown do **not** include the extensive land data expenditures made in the private sector. Such nonincluded private costs include nonprofit resource organizations, private surveys, title searches, abstracting updates, legal fees, and data collected by construction, mining, and forest product companies. How much more these expenditures would add to the citizen/consumer costs is unknown. No one as yet has estimated these costs in the U.S. However, title insurance companies alone are estimated to comprise a 17 billion dollar business (Moyer 1977).

The following provides some additional information concerning these cost or expenditure figures.

Local and Regional Expenditures

The total estimated expenditures for land records by Wisconsin's local governments for 1976 is approximately \$41,117,989, or \$8.89 per resident. This is an estimate of the 1976 expenditures for land records by civil towns, municipalities, counties, and regional planning commissions in Wisconsin, plus separately calculated expenditures for the City of Milwaukee.

State Expenditures

Total 1975/76 land records spending by each agency was divided by the state's January 1, 1976, population of 4,623,357. According to the annual fiscal report for Fiscal Year 1975/76, total state government expenditures for the sample year were \$4,722,529,000. Approximately 10 percent of this amount (\$472,529,000) went for environmental resources. State land records expenditures estimated through the Land Records Project were \$11,582,818 for that year. For agency estimates for land record expenditures, see Table 5.

Table 5. State land data costs in Wisconsin.

Agency	Estimated FY 75/76 Land Data Spending	Per Wisconsin Citizen
Administration	\$ 126,289	\$.03
Agriculture	311,550	.07
Local Affairs	1,158,611	.25
Natural Resources	4,389,461	.95
Revenue	535,733	.12
Transportation	4,219,147	.91
University of Wisconsin System	576,455	.12
Other	267,572	.06
TOTAL	\$ 11,583,818	\$2.51

Federal Expenditures

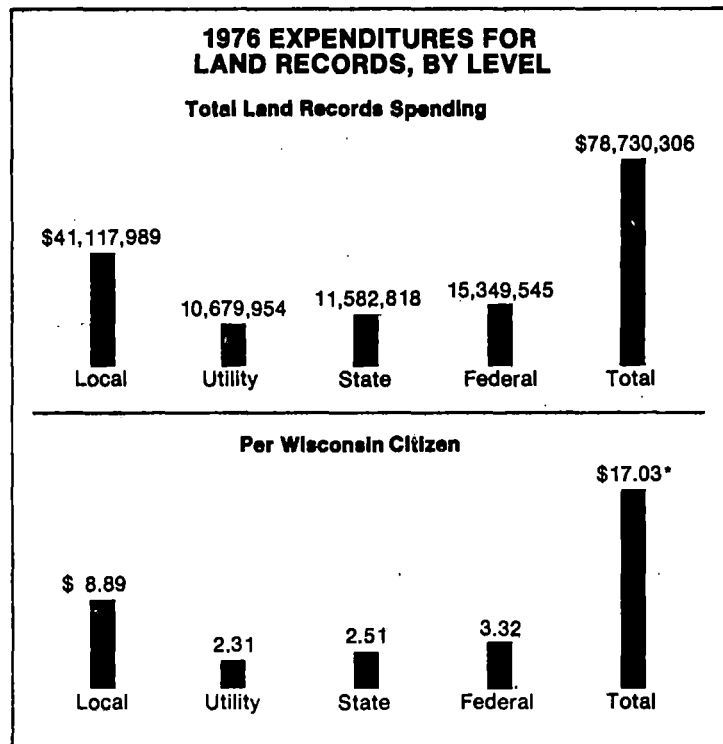
Federal agency expenditures usually were not organized by categories such as land data or by state. High and low estimates were derived by project staff by supplementing agency-supplied data under the Wisconsin project with data from two related federal studies.

The estimating and averaging process used resulted in an approximate federal expenditure of \$3.32 per citizen during Fiscal Year 1975/76.

The level of confidence in the federal cost figures was lower in confidence than local and state figures. Some federal agencies were able to provide the desired information; others were not able to, or willing to, identify and estimate costs of their land-related data and information. Separating expenditures for Wisconsin from total federal spending was a difficult task because few federal agencies publish activity reports by state. One federal agency, the U.S. Army Corps of Engineers, declined to participate, stating in their letter that "it

FIGURE 2

Land Data Costs in Wisconsin



would cost \$140,000 and six months to obtain the information you requested". Their estimate would have exceeded the Wisconsin cost study budget by four times.

Utility Expenditures

As major users and producers of land-related data and information those utilities contacted were well informed and concerned with governmental land data problems. They are an important land data group because in some other states they have provided support for Heritage data collection. Spending estimates for calendar year 1975/76 were obtained from one major telephone company and from two major gas and electric utilities. Expenditure estimates were divided by total population (not customers or households) in the utility's service area (Table 6).

Table 6. Utility costs for land records.

Company	Cost per Person	Estimated 1976 Land Records	
		Expenditures	
General Telephone	\$.83 \$.83	\$ 734,476	
Wisconsin Public Service Corp.	1.34]	939,000	
	- 1.48		
Wisconsin Power & Light Co.	1.62]	1,476,800	
	TOTAL	\$ 3,150,276	
		\$2.31	

For comparison with government expenditures, the telephone utility's per capita expenditure was added to the average of the two power utilities' per capita expenditures, for a single estimate of \$2.31 per resident. This calculation was used to estimate an annual expenditure for land records by all utilities in Wisconsin as \$10,679,954.

As described earlier, total land record expenditure estimates by all levels of government came to a one-year total of \$78,730,306 or \$17.03 per Wisconsin citizen. Since half of Wisconsin's residents are taxpayers, the actual cost to each taxpayer was \$34 in 1975/76. As indicated, this does not include the private sector costs. This investment is also an annual one. It continues each year at least at the same rate ignoring inflation. This means in the three fiscal years since 1976 an additional \$236 million has been expended by Wisconsin residents, or each taxpayer has spent an additional \$102 for land-related data in Wisconsin.

What will the Heritage Policy Act information component add to these citizen costs? HCRS states in its briefing package:

"Experience with existing state natural heritage program has shown that total start-up costs average around \$330,000 of which \$165,000 would qualify for federal matching." (HCRS, 1979, p. 23)

Considering Wisconsin citizens spend \$78 million annually, of what consequence is another \$330,000? It amounts to less than one-half of one tenth of a percent (0.05%). This seems like a trivial sum. If, however, the Heritage program emerges as a single resource information system, if it overlaps other agency efforts, if the data products contribute to problem previously identified, if it precludes public involvement, access, use, and application by the public, we wonder if the benefits will outweigh the costs.

ROLE OF HCRS AND THE STATES

In this paper we have discussed a broader and less myopic concept of a heritage information program; we have discussed emerging factors which are affecting resource information technology, and we have suggested that HCRS involve itself in this technology through cooperative efforts with other federal agencies.

Heritage information programs are like a new kid on the block and a poor one at that. Some further discussion is important because in our judgement a heritage resource information program would be far better off being more of a symbiotic contributor and less of a host to any information program development.

We have already identified some activities which HCRS needs to monitor. There are other examples. The Council of Environmental Quality continues to explore mechanisms by which information concerning the quality of the environment can be coordinated, improved, and made more cost efficient. The National Research Council - Office of Earth Sciences is about to release a report calling for a national effort to improve land information reflective and responsive to private lands as well as public lands. The U.S. Department of Agriculture and others have been mandated by Congress to address the issue of alien and corporate land ownership. For example, Section 4(d) of the International Investment Act of 1976 reads:

"The President shall conduct a study of the feasibility of establishing a system to monitor foreign direct investment in agricultural and urban real property, including the feasibility of **establishing a nationwide and multipurpose land data system.**" (emphasis added) (Pub. L. 94-472, 4 (d).

This report is completed and includes an estimate of \$1.2 billion to implement such a multipurpose, property-based, large-scale system. The prospects of such a proposal are not known, but the concept deserves HCRS observation. More specific aspects of the study have been presented elsewhere (Moyer 1979). Some will argue that such a prospect is not realistic, but it would serve the heritage informational program quite well. It would provide a large-scale and highly accurate spatial foundation for heritage resources and it would provide better informa-

tion as to who really owns heritage resources. Besides such roles as insuring standard setting between states, acting as a facilitator, providing leadership, and insuring and perpetuating a broad concept of heritage, we believe HCRS will best serve heritage and the states by assertively involving itself with other federal resource information activities. We conclude this paper with three specific examples.

An immediate potential for cooperation, coordination, and involvement for HCRS relates to a signed agreement between five other federal agencies. In October of 1978, the Bureau of Land Management, the Fish and Wildlife Service, the Forest Service, Geological Survey, and the Soil Conservation Service signed an Interagency Agreement related to Classifications and Inventories of Natural Resources (Council of State Governments, undated). We understand that HCRS requested inclusion in this "interagency agreement" but a sister agency suggested that five agencies were enough to coordinate. As we have discussed earlier, there is increasing interest in government to improve land-related information. The institutional problems which prevent multipurpose solutions remain, but there is growing awareness of the costs to continue single purpose and redundant procedures. We hope that HCRS will remain assertive in attempting to be involved.

A second example would be for HCRS to request that U.S. Geological Survey included a "heritage map" as part of the ongoing land use and land cover mapping program. Heritage units would become the sixth variable of the existing five variable set (Figure 3). The heritage units would only represent a few extra polygons in respect to the number of polygons being maintained for the land use and land cover digital files.

A third example, if the scale of the land use and cover series is too small, would be to become involved with the National Digital Cartographic Data Base being implemented by the U.S. Geological Survey. This would provide a mapping base at 1:24,000. Again, heritage units would only represent a few extra polygons.

In conclusion, we believe the heritage information program is the new kid on the block. We believe it is in the states' best interest that HCRS make use of existing agency expertise and technology to assure that the benefits will outweigh the costs.

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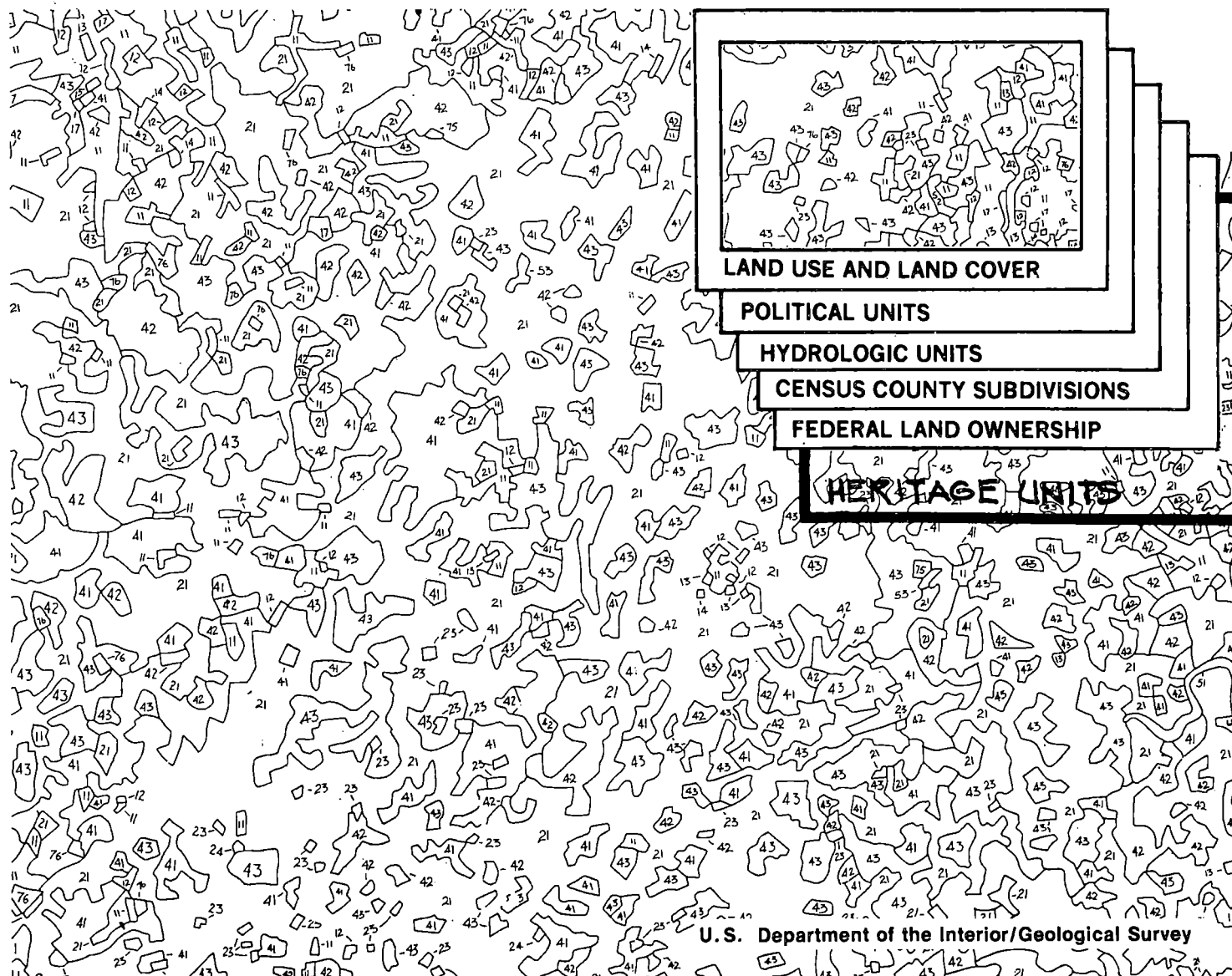
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FIGURE 3

Land Use, Land Cover and Heritage Units

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

Land Use and Land Cover and Associated Maps



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Senate Bill S. 1842. 1979. Natural Heritage Policy Act of 1979. pp. 1-2..

Van Zandt, T., J. Hutchinson and B.J. Niemann, Jr. 1976-1979. Heritage areas of 15 Wisconsin counties. Madison, Univ. of Wisconsin Extension, Dept. of Landscape Architecture, Heritage Areas Program.

DATA COLLECTION, CLASSIFICATION, AND INFORMATION MANAGEMENT

A DISCUSSION

James C. Barron

Papers in this section were to discuss problems, techniques and costs in the inventory, classification and evaluation of heritage resources, with emphasis on the unique data collections and information management problems of the western states. Papers were to focus individually on costs (economic and political) of land and resource data collection, storage and retrieval; the development of more effective and systematic resource classification and inventory techniques; and the utilization of statewide heritage resource inventories as the basis for more objective land use decision making.

The three papers presented here have addressed these issues in a variety of ways. I will make some brief comments about how each of the papers addressed those guidelines and indicate the areas of complementary and contrast among them. I will then discuss what appear to be some gaps which have not been covered and make some suggestions on possible approaches to dealing with them.

The paper by Niemann and Gates ranges more widely over the entire subject matter of this session than the other two. They address the question of costs of land and resource data collection and retrieval systems and have made some suggestions for improved ways by which HCRS can work with other data collection and resource inventory systems. Driscoll's paper is a straightforward presentation of what a natural resources classification system is and what factors are important in designing such a system. Issacs has described the New Mexico resources analysis program and provided some ideas and suggestions for how it may be applied in other places.

Niemann and Gates warn against a myopic enactment of the National Heritage Policy Act of 1979. They are concerned that the scope of the program may be limited unduly due to lack of serious national commitment and not provide adequate information for identifying, analyzing, and providing protection for certain heritage and cultural resources that may be identified.

They also make a plea for public involvement in the process of identifying heritage resources and in developing plans or procedures for their management. They do not, however, provide any suggestions on how that public involvement might operate or what specific advantages there may be to that involvement other than a vague implication of building political support. Public involvement has been a byword in the last 10 years with mixed results. Wilderness area planning, forest management, water quality improvement, and soil conservation are only a few examples of issues which have involved massive amounts of public input on a national scale. We have accepted the assumption that public involvement is good and that more is better than less. Unfortunately, there are no analytical models to tell us what the optimum level may be.

A major part of the Niemann-Gates paper deals with an examination

of the costs of maintaining land data records in Wisconsin. They estimate that the combined costs of local, state, and federal governments amounts to about \$2.25 per acre, from a variety of different land and natural resources data collection and inventory systems. One cannot help but wonder how much lower the cost may have been if a single agency had collected the information and made it available to others for their specific uses rather than undergoing the extensive duplication in the existing system. We should be quite cautious in attempting to use their data in the western states, however, where ownership patterns, size of land holdings, population distribution, and other factors are much different.

Niemann and Gates make a strong plea for aggressive involvement by the Heritage Conservation and Recreation Service in fitting into cooperative efforts with other state and federal agencies on data collection. Given the fact that there are several different resource collection and inventory systems, it would seem important that all agencies strive to develop systems that will facilitate inter-agency use of those data.

Driscoll also emphasizes the need for data collection systems that can be integrated over many uses and stresses that we must strive for compatibility of data management systems among all units responsible for evaluations of the state of the nation's resource situation. This is an excellent plea, but how do we do it? Who should be responsible? What is everyone's responsibility often winds up being no one's responsibility, and individuals or separate agencies revert back to doing things on their own without cooperative efforts suggested by these papers.

Driscoll emphasizes the nature of resource classification systems to answer the question of what the resources are, where they are, and how much is there. He described the four component classification system which has been endorsed by five federal agencies in a cooperative arrangement. Those four components are vegetation, soil, land form, and aquatic. Unfortunately, it seems quite likely that many heritage resources of concern to this group and this conference will not be adequately described in such a system. Cultural, historic, and scenic values are subjective and would not appear to be very well captured in the four component classification system.

Isaacs described the New Mexico resource analysis program in considerable detail, and described how they have developed an elaborate information system which does incorporate things other than the natural physical features of the resources.

I now turn to some of the issues that appear to be important with respect to collection and use of resource inventory and classification data that were not adequately addressed in the three papers. This is not a serious criticism, but rather an attempt to extend the points made in the papers and add some other issues.

One question that must be considered is who are the users of the data to be collected? We can start, of course, with the federal agencies who may also be the providers of that information. Included are

the Geological Survey, Soil Conservation Service, Forest Service, Fish and Wildlife Service, National Park Service, Bureau of Land Management, Corps of Engineers, and others. Federal Agencies have certain statutory responsibility and use data to make management decisions. If heritage resources are to be defined, analyzed, and/or preserved, the other federal agencies must be required to take this into account in their own planning and management. For example, as the Forest Service makes management decisions on certain tracts of land, they need to be aware of and use the information about heritage resources that may influence or impact upon their decisions, and vice versa. Interagency collaboration is less prevalent than rivalry, and except for Niemann and Gates' admonition to HCRS to be aggressive, this was not explicitly discussed in the papers.

State government will also be a user of the information and may also be a partial provider of data. States will have different objectives in some ways than the federal government, but they have similar agencies that correspond to many of those listed above at the federal level. State government both owns and manages land resources and sets policies which influence management and use of private lands.

A third group of potential users are various private groups. Environmental interest organizations will obviously be interested in and concerned about the reliability and use of data on heritage resources. Recreation resource users include a wide range of people and interest groups who may have widely divergent views about the management of those resources. Wilderness hikers, horsemen, and motorcyclists may all be interested in the same resource, but can be very incompatible. Also included as interest groups would be the natural resource exploiters such as mining, logging, and tourism industries who depend upon the natural resource base for the economic health of their industry.

A final set of possible users would be the academic research and educational institutions who would use natural resource data for both research and education purposes.

The data collection and classification system should obviously recognize who those users are and what their needs may be. I have often suspected that many data collection systems have been established and begun without thinking through very carefully the question of who would use the information and for what purposes. Thus, much information may remain unused.

Another question hinted at, but not discussed explicitly in the papers, except for some examples given by Isaacs, is a question of what decisions, or kind of decisions, need to be made? Who should make those decisions? For what purpose are those decisions to be made? Again, it is important to think about how those data will be used and for what purposes before setting out to collect it and begin to analyze it.

An example of one question is what are the parameters of a historic, cultural, or scenic resource? Niemann and Gates mentioned that subjective judgements are hard to make and have been used by some as an excuse to avoid consideration of these kinds of questions. One of

the dangers in using a subjective value on a resource is to go to one extreme or the other. Some would argue for giving it a zero value, while others would argue that it has an infinite value. Obviously, both of these judgments are foolish, but think back to how many instances you can remember where people have done exactly that in arguing for or against certain environmental issues, protection of endangered species, preservation of a particular resource, etc.

Another question is what kind of use to make of a particular resource if it is defined as a heritage resource of whatever kind? Should it be preserved in its natural state with no interference whatsoever from mankind? If so, that has certain very important implications for present or potential users and brings us back to subjective judgments. Other kinds of resources which may have historic or cultural significance may simultaneously be capable of producing minerals, timber, grazing, outdoor recreation, and other uses. There appears to be a wide range of decisions which would need to be made with respect to these questions, and the data collection system and inventory should recognize this diversity.

Another question that certain interest groups will be concerned with is how they may justify an attempt next Tuesday, for example, to get the state legislature, or the Congress, or some public agency to take specific action which they are seeking to achieve. These may be immediate kinds of questions, but are important to those public or private groups with an interest in them. Publicly provided data systems on those resources should be able to provide information helpful in making such decisions. Again, this needs to be thought of before designing and implementing the data collection system itself.

All three papers discussed or implied that resource data systems should provide information of use in identification, analysis, and management. These are three quite different kinds of decisions and it is not obvious why the same set of data would be applicable to all of them. Some resources initially identified will be dropped out of the picture before reaching the "management" stage. There are societal factors that will in some cases take priority over preservation despite the objections of the pure-hearted preservationists.

By recognizing the different data demands for identification, analysis, and management we open up two dangers. One is the compulsion to collect a vast amount of data the first time around and hope that it will be used, even though it goes beyond the needs for resource identification. If not needed, it could be a costly over-collection of data. The other danger is the reverse--too little information and the need to go back over the same ground a second or third time.

Finally, let me refer to a comment by Mr. Delaporte. He said the capacity to deal with information influences how we make decisions. The data themselves don't make the decisions jump out at us, because there are social, cultural, economic, and political values involved. The capacity of institutional structures to make decisions will always depend on human imagination, creativity, and the ability to make bureaucratic organizations function effectively.

Response to the Speakers:
Data Collection, Classification, and Information Management
Harry R. Coulombe

In my comments and response to the presentation of this section, I will address the subject areas in the order of my own bias for program design. That is: 1) from intended uses, information delivery and management requirements; 2) data structure and inventory requirements; and finally 3) classification and its role in program design and accomplishment. For those of you not familiar with my biases on this subject, I would refer you to my presentation in a workshop held here in Tucson a little over two years ago entitled "Integrated Inventories of Renewable Natural Resource" (Coulombe, 1978). I will then share some thoughts as to what the implications are to the Natural Heritage Program of HCRS.

Information Management and the User

In today's world of complex laws and regulations, increased awareness of environmental issues, and a more knowledgeable public, those of us in the natural resource conservation field operate in a setting unprecedented a decade ago. The key feature of successfully accomplishing any natural resource-related goal in today's world, I am convinced, is directly proportional to the specificity and appropriateness of scope of the information needs analysis process - prior to program development and accomplishment. This process has been an integral part of the program, including the Natural Heritage Program, representing a segment of programs across our globe at all levels of government striving for wise stewardship of our natural resources. The dimensions and magnitude of the total information needs are staggering. The differences in mandates and requirements for resolution, scope, and the timeliness of specific pieces of information about the same resource base vary considerably, all of which lead to the striking observations of Professor Niemann.

We appear at times to be stumbling over ourselves in scurrying about to collect, classify, map, and analyze our natural world. The technological explosion in information management has mixed blessings. Only a few short years ago, problems of compatibility between computerized data bases were minimal due to the limited availability of the computer hardware itself. The rapid evolution of computer technology, including approaches to programming, has not only given us a myriad of tools to assist us, but has also created more hurdles to achieving compatibility and the physical sharing of information.

Since my fundamental perspective is one of a biologist, I cannot help seeing the parallels in the evolution of information management to some of the fundamental principles of biological evolution. Only a few short years ago, as if on separate continents, the need for computer-accessible natural resource planning and management information began to be addressed by a multitude of private, local, state and federal agencies. As in convergent evolution across the biosphere, similar

requirements and needs led to similar approaches to solving problems. As this process continued, the "continental barriers" began to disintegrate as communication improved, publications and results of the various efforts began bumping into one another in the public's view. And thus, we appear on the verge of an era of divergent evolution - specialization due to competition for limited resources (people, money, and time).

Data Collection: Definition, Structure, and Compatibility

This is the most costly area of any resource planning or management program. The primary points that I would like to reemphasize here are, first of all, compatibility of data **not** related to computerized aspects. To me, this phrase of data compatibility, for which we all strive, has two dimensions.

The first is standardized definitions of data elements or data set structure. This may seem to many a relatively straight-forward problem. However, as many of us have discovered to our dismay, the definition, measurement techniques, coding requirements (interval or continuous point) of a single subject can vary greatly between technicians and ultimate users. Understanding precisely the quality of information is a major requirement for the sharing of data sets between various groups. The 5-way Interagency Agreement referred to by Driscoll, has begun a major endeavor to develop these standard definitions.

The second aspect of compatibility deals with accuracy and resolution of a defined data element. This is the area in which a wide latitude exists at the technical level, with the greatest possibility of public misunderstanding of our various missions and purposes. A good example was given to us by Professor Niemann relating to our Fish and Wildlife Service's National Wetland Inventory, as contrasted to the requirements of the State of Wisconsin. The issue perhaps also involves timeliness of information availability, but the basic difference in requirements appears to be the resolution and accuracy with which individual wetland units are mapped and documented. This issue is a common one faced by programs with national charges. The cost of collecting information (on a per acre basis) on any aspect of the natural environment is increased by increments of orders of magnitude as one goes from national level information requirements to site specific land management decision-making requirements (Coulombe, 1978). In theory, if standardized definitions and timeliness factors were universally adopted, national and regional information needs could be derived from aggregating local (high resolution and accuracy) data sets to appropriate levels. As we all know, this noble goal seems impossible to attain for a variety of reasons.

Another aspect of data sharing has to do with the accessibility of information sets. As Bill Isaacs has described to us, in New Mexico the Natural Resource Information System recognized the fact that certain information is highly sensitive. Especially in the natural heritage area, elements of ecological heritage such as the existence of a population of threatened or endangered plants or animals has profound implications on who should have access to this information. This is also a

problem with respect to archeological, geological resources, and cultural resources. This puts us in a somewhat strained situation, with the advent of "sunshine" legislation and computerized data bases. One solution may be different levels of resolution of aggregation within data elements for different levels of public accessibility. For example, the precise location of Peregrine Falcon aeries in Colorado is needed by those planning and management agencies in determining environmental impacts, the designation of critical habitat, in monitoring the status of the population, and evaluating management alternatives for reintroduction purposes. At the level of public knowledge, the exact location of these aeries is considered "Classified" information. At what level of resolution should such sensitive information be available to the public?

Land, Resource, and Heritage Element Classification

Have you ever noticed how classifiers love to classify? I am included in that group myself, and it is only with great restraint that I will abstain from adding another classification of classification systems to the participants in this workshop. I would refer the serious student of the role of classification in the resource conservation field to the October, 1978, issue of the Journal of Forestry; a series of eight articles in this issue very succinctly cover the ins, outs, whys, wherefores, and to whits of land and resource classification (see bibliography). In any program one must be careful to make a clear distinction between the **purpose** of the classification process in one's program and the **uses** of the classification per se. Uses may be ancillary benefits to the development and application of any classification process.

The purpose of the classification process in natural resource programs are basically two-fold. First, the process is used to simplify complex relationships in order to convey appropriate information to the folks that make decisions. Secondly, a classification is a framework for: 1) organizing data; 2) structuring the analysis process; 3) locating data sets within an information management system; and 4) conveying the sum and collective substance of the resultant informational products to the user. Thus, one must continually question the developers of any classification system as to why particular bits of data are required by a classification. If the answer is "in order to properly classify the objects or the units of landscape" **and not** "in order to provide needed information input to the ultimate user or decision-maker", buyer beware! I think all of us here would agree with the statement that classification is a means to an end, not an end unto itself.

The land and resource classification approaches we have discussed are necessary, but may not be sufficient, to cover the classification process requirements of the Natural Heritage Program. These kinds of classifications ultimately provide the information necessary to identify and manage ecological units, which is an essential part of several program elements. The need to identify by location, single species occurrence, is one element of ecological diversity that must be addressed. One might argue that this is not really a classification problem, as much as it is a data requirement.

Recommendations for HCRS Natural Heritage Program

First of all, I would like to reiterate the recommendations of Professor Niemann: HCRS should look to information management technology already available. The Department of Interior is making progress towards a jointly-supported geo-based information management system, which is based on many capabilities that are reflected in various state and natural resource information systems. The 5-Way Interagency Agreement agencies have individually looked into this area, and within the near future I expect to see consensus reached on compatibility requirements, if not compatible software system prescriptions.

In this arena, the additional needs of species occurrence and population status information in the natural heritage context is well on its way to developing a level of standardization and compatibility. This is occurring at the state program level through the application of the Nature Conservancy's systems. Other agencies who are dependent upon a wide variety and diversity of data sets (many of which reside at the state level) have begun experiments in a slightly different approach to gain national perspective, than we have discussed in this session.

One example is the Environmental Protection Agency's River Reach File, in which we at WELUT are involved. For a variety of purposes, EPA requires a "characterization" of river reaches within hydrologic units. This includes the status and trend of the biological systems represented in the flowing waters of our nation. The approach taken has been to create an information management system that links physical, chemical, and biological characterizations together. Pointers are given by stream segment to all data sets that exist, but are physically housed in a wide variety of locations. A summary characterization is derived and maintained in the national stream reach file as to the interpretation of available data relating to the biological integrity of the stream reach. This approach may be an appropriate avenue to explore for the national responsibilities of the Natural Heritage Program, linking the state-housed available information.

The Natural Heritage Program has a pressing need to become more involved at both the policy and technical levels with regards to land and resource classification, data structure compatibility, specific data elements available or to be collected, as well as information management systems. I made this recommendation over two years ago, and as Professor Niemann points out, the 5-Way Interagency Agreement group gave little encouragement for a full partnership at the policy level. I would point out that HCRS is not alone in this respect, being in the company of the Council for Environmental Quality and the National Park Service. However, there is nothing in the charter of the 5-Way Agreement that prevents HCRS or any other agency from "associate membership" at the policy level. There is nothing that precludes participation at the technical level. Some progress was previously made in the latter respect: however, I strongly urge HCRS to consider a working relationship with Dick Driscoll's program at Ft. Collins.

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RESPONSE TO PAPERS ON DATA COLLECTION AND
CLASSIFICATION AND INFORMATION MANAGEMENT

Douglas H. Scovill

In reviewing these papers and in thinking about what might be important to say about issues of data bases and management information systems, I sought to find an organizing theme around which I could convey my views. I wrestled with this and I think what we really are talking about when we discuss data bases and management information systems is this: we are dealing with the issues of organizing data in a manner to facilitate decision making. This will be the central theme data base/management information systems are concerned with two kinds of decision issues:

First, are decisions for the allocation of land uses with the underlying assumptions that such allocation will (a) be on a factual and rational basis, (b) according to state criteria and (c) in the public's interest. These are decisions about alternative ways of using land; they are planning decisions.

Second, are decisions relating to strategies and activities necessary to manage the resources in accordance with the purposes established by the land use decision process. These are resource management decisions.

What is missing, though, is the third type of decision which results from the allocation of staff and dollars to carry out the land use planning and resource management functions. This is the budgetary process.

It is the integration of these three subsystems-land use planning, resources management, and budget formulation-that requires a data base/management information system which can provide the synthesized information to make informed decisions that will deal effectively and in the public interest with the necessary trade-offs required by competing and often opposing land use goals; and which will provide for the management of the resources according to their particular requirements.

All three papers deal with data base/management information systems related to land use planning and resources management issues. Isaac's and Driscoll's papers describe two such systems. Niemann's and Gates' paper argues for a multipurpose land planning and management information as opposed to an annotated listing, and suggests a coordination and perhaps a leadership role for HCRS in data base/management information systems. But none of the papers deal with the applicability of the land use resources data base/management information system to the budget formulation/budget decision making process. I think this is a mistake that we in the land planning/resources management field make, for we have abdicated taking a strong role in the budget formulation process; and we should not do so.

In the final analysis it is the budgetary decision making process

that is the basic tool of effective and realistic managerial and societal decision making. And it is the outputs of the budget formulation process, the staff positions and the dollar appropriations that provide the ability to reach the decisions on land use allocation and to execute activities to manage resources. In looking at the data base/management information system issues, even if we use the ideal proposed by Niemann and Gates for a multipurpose land data system, we need to conceptualize the outputs we want from such a system not only in terms of determining and allocating land uses, or of determining resource management strategies and activities (including early definition of critical issues), but also in terms of aggregating and analyzing data that will support the budget process necessary to get the staff and funds to do the job.

We should at least be looking at our system with questions in mind such as the following:

1. How can we summarize qualitative and quantitative data about the current allocation of land uses: what changes are proposed; what are the projected effects of these allocations.
2. How can we summarize in qualitative and quantitative terms the results of existing and proposed management strategies. For example, we should be able to display data that would summarize the average cost per visitor day for use of a recreation site, a historic site or a natural site. Such a display might be broken down in terms of annual operating costs and capital costs. Or we might want to break it out in terms of visitor protection, interpretation, facilities maintenance and resources management cost per visitor day. Planning and research costs might be capitalized, rather than be considered as operating costs.

Display of data on loss of resource classes related to land use planning decisions or due to the lack of funds to implement approved resource management strategies should surely be built into the system. For example, how much land, to what extent, and at what costs is eroding due to lack of funds to apply resources management actions to conserve it. It seems to me that standardization of data in this area might be fruitful for comparing similar operations carried out in the various federal and state agencies and for displaying what is happening to the national land base.

While I do not present a well thought out subsystem here, I do suggest that the issue needs to be addressed as part of a multipurpose land data base/management information system.

Now I turn to some comments concerning the allocation of land uses for heritage purposes, whether natural or cultural. Those of us in the heritage resources business tend to ascribe almost supernatural qualities to the resources we feel meet our criteria for protection and preservation. We see all other land uses as a threat, or at least as possessing only pedestrian qualities. It would be well, though, for us to be able to view the commonalities that we share with multiple land

use management concepts and to understand better where our special interest resources fit within the land allocating system. In reality, the allocation of lands to heritage resource use is just one of many alternative uses for a particular piece of land. What distinguishes heritage land use from other land use is a statutorily imposed value system that is aimed at preserving representative and significant past natural and cultural environments. The rationale is a somewhat emotional belief that such refugia of the past have inspirational, recreational and therapeutic benefits necessary to a modern people caught up in a complex industrial society. I share this emotional belief. But in reality, heritage resources are but a part of a broader national belief system that pays major homage to multiple land use concepts based on the assumption that economic productivity is the highest and best use to which most lands should be put.

As Niemann and Gates strongly suggest in their paper, we need to eschew a myopic view of heritage resources and factor them into the multiple land use concept of land use allocation. After all, whether we acknowledge it or not, a national park or a national historic site is quite simply the allocation of land for a limited and special purpose based on culturally biased and emotional beliefs.

Let us just briefly look at some of the commonalities heritage resources share with multiple resource land uses. To carry out the natural and cultural resources conservation mandate we need to do the following.

1. Locate, identify, describe, inventory, evaluate significance and define the boundaries of the resources. This process generates the same data as is generated for multiple land use resources.
2. To define significance, which is the key concept upon which the decision to save or not to save a heritage resource is made, we need to understand the resource's historical or natural context, its redundancy, and its place within a regional or national context. This requirement frequently generates data the same as or similar to data needed for multiple land use resources.
3. To manage heritage resources, we need to understand natural processes, how the resources relate to their physical environment at the regional and local level, what changes in the environment will threaten the continued existence of the natural or cultural resources or the significant values for which they were set aside, and what actions will mitigate the threats. Here again the data requirements are similar or identical to those needed for multiple land use resources.

The point is that to carry out effectively the heritage resources mandate, we have to have the land use data at the level and complexity discussed in Niemann's and Gates' paper. An annotated list will not do it; this should have been learned from long years of experience with the

National Register of Historic Places. The National Register has been touted as a planning tool and as a resources management tool that protects the resource. It is neither. It is a useful annotated inventory, and I would not suggest its demise. It is an inventory of heritage cultural resources found qualified for consideration for allocation for heritage use. The presence of a resource on the National Register triggers an administrative mechanism that assures that a federal action will take into consideration the heritage resource values during the process of making land use allocation decisions. But approach leaves the heritage resource interests at a tremendous disadvantage due to a lack of comprehensive land use data to use in the analysis of alternatives to the destruction of heritage resources which is frequently the result of confrontation over land use allocation alternatives. And it contributes nothing to the operation, physical preservation and public enjoyment of the heritage resource; nor does it necessarily effectively protect it from land use allocation decisions.

As competition for uses of land get tougher, and all indications are that in the decade of the 80's it is going to get tougher, we in the heritage movement are desperately going to need to have and know how to use a sophisticated, multipurpose land use data base/management information system with analytical capabilities similar to the New Mexico Informational and Statistical System described by Isaacs.

Finally, I will comment on Niemann's and Gates' suggestions for the role of HCRS noted on pages 21-23 of their paper. They correctly observe that there are "institutional problems which prevent multipurpose solutions" to data base/management information system problems. As a long time and frequently frustrated participant in the institutional problems of the Washington scene, I cannot see how HCRS can successfully taken an assertive role with other federal agency resource information activities. They manage no lands, only programs. Because of this there is no reality of a broadly conceived need for a land use data base/management information system pressing them at all levels of their management decision making process. Many in the HCRS probably do see the need from an intellectual point of view, and HCRS's support of the New Mexico program validates this supposition. But they are not experientially feeling the effects of a myopic view of heritage resources data based system which is premised on the annotated list approach. Lacking a pressing need for a broader concept of a data base/management information system to support their own internal management decision making process, it is doubtful they will allocate staff resources necessary to assert themselves into a coordinating role. The Park Service has a similar problem but due to an inbuilt emotional philosophy that the parks are "islands of hope" and a predilection for seeing resources management issues as being predominantly those that come within the park's boundary, rather than seeing the park within the framework of a multiple land use concept where the major problems come from neighboring and regional land use allocations.

A second problem HCRS has is that not only is is the new kid on the block, it is also one of the smallest kids on the block. Size, historical longevity and multiple use land management concepts give the advantage to the Bureau of Land Management and the U.S. Forest Service in providing leadership in the data base/management information system

field; and size, historical longevity, and the mapping and mineral exploration function give the U.S. Geological Survey its leadership role. These are the three principal agencies in the five agency inter-departmental group referred to in the Niemann and Gates article. They have the mission, they have the problem, they have the start of the system and they have the staff resources. The best HCRS and the NPS can do is to make sure our systems are coordinated and compatible with theirs.

The third factor that mitigates a lead role being played by HCRS is how land use data bases, even multiple purpose ones, are used by the host agency. Each federal land managing agency has a specific, legislatively mandated mission and a distinctive resources planning and resources management decision making apparatus. The data base/management information system first and foremost must serve this existing, distinctive agency-specific decision making system. Under this reality, the best that can be hoped for is coordination and cooperation. Sadly, but I am afraid truly, agencies only cooperate when there is something in it for them. An altruistic belief in the greater good of the overall system is a commodity in short supply in Washington. This creates an almost insurmountable problem to agencies like the HCRS and the NPS who have special purpose mandates.

The changes proposed by Niemann and Gates can be implemented, but not by a voluntary association of federal bureaus nor by the new kid on the block asserting himself into the existing system of other federal bureaus. The problem can be solved, but not at the bureau level. It will have to come at least from the departmental level; and might better be handled by an Executive Order or through the Office of Management and Budget regulations.

I would like to leave a final thought with you and in hopes that some movers and shakers will agree with it and make something happen. In the April 4th issue of **Science** (Volume 208, Number 4439, page 30) in the article entitled "Automated Information Retrieval and Science and Technology" the authors conclude the following:

"There are those who believe that the increasing amount of scientific and technical research will create a volume of information so large as to frustrate the very purpose for which it was created. If this prediction is not going to become a reality, then a larger percentage of the resources now expended on generating scientific and technical information must clearly be invested in research on how to handle the mass of information being generated."

I would suggest that we have already passed the point where our inability to handle the data has become dysfunctional. I hope that one result of this conference will be a commitment by the federal departments that have land management responsibilities, to confront the issue and work toward the goals presented in the paper by Niemann and Gates.

RESPECTIVE ROLES OF THE STATES, THE FEDERAL AGENCIES,
THE UNIVERSITIES, AND THE PRIVATE SECTOR

Discussion of the respective roles of these institutions in determining the future of natural and cultural heritage activities in the West. Individual papers will discuss the nature of interdisciplinary and multidisciplinary efforts and the need for cooperation. How can we ensure more effective and cooperative efforts among the various state and federal agencies involved in collecting and managing information on heritage resources? How can the universities begin to play a more meaningful role in helping state and federal agencies implement heritage resource programs? How are the ongoing and anticipated natural and cultural heritage activities of the various western states intended to fit into the implementation of the proposed National Heritage Program?

RESPECTIVE ROLES OF THE STATES, THE FEDERAL AGENCIES, THE UNIVERSITIES AND THE PRIVATE SECTOR IN IMPLEMENTING HERITAGE PROGRAMS IN THE WESTERN STATES

James Ashton and Robie Pardee

Out of the necessity to organize knowledge into manageable, comprehensive divisions, academic disciplines and their affiliated professions have emerged as a means of allowing academic mastery of a portion of the whole. Although this division into disciplines is essential to intellectual mastery, this segregation must be overcome if we are to realize the potential of the concept of Heritage. What is being demanded, in light of the breadth of HCRS program, is a broadening perspective for each of the affiliated disciplines and institutions involved in heritage conservation activities.

Just as the preceding papers focussed on data collection and information management, the following papers focus on the role of the universities, state and federal government agencies and the public in working jointly in problem solving as it relates to implementing heritage programs. This process demands interdisciplinary and interagency cooperations.

In the initial paper by Bivens, she approaches the issues from the common thread of recreation, contending that recreation is common to all levels of governmental programs involved in heritage issues. Recreation is a means of recreating memories of who and what we are. She stresses the need to identify the intended constituency to be served and how, in light of current budgetary problems, interagency and interdisciplinary communication is essential to avoid duplication of research and data collection. This interdisciplinary communication, she proposes, might be better facilitated through face to face meetings in order to achieve better working relationships, through sponsoring interagency or interdisciplinary conferences and workshops, and through the circulation of newsletters; all with the intention of cooperating to solve mutual problems. The aim of this "new sharing" is to create an expanded sense of program territory, that of a meaningful revival of a common Heritage.

The second paper by McCarthy and Frondorf deals more directly with the problems intrinsic to any interdisciplinary effort. The strength of HCRS, they contend, is its striving to view heritage programs in a broader, more interdisciplinary effort. However, inherent in this approach is the need for each specialist involved to be able to view his focus of specialization within the project as a whole. A sense of team must be created in which clearly understood goals and recognizable common ground can be shared by involved professionals. In order to achieve this plateau of teamwork, each professional must transcend the limited outlook of his specialty in order to reach a common definition of the problem. By so doing, the disciplines involved can identify the

intellectual commonalities and achieve an organizational structure on which to proceed. In addition, and perhaps most directly applicable to any interdisciplinary study, McCarthy and Frondorf outline twelve issues to be aware of to best insure success.

The third and final paper deals with the pivotal roles universities can play in the heritage field. Crumpacker points out that this role is of increasing significance in light of the strongly state-oriented National Heritage Policy Act of 1979. This affords an opportunity for the faculty of western state universities to move in numerous directions in heritage related fields. Owing to the professional expertise of university faculty, many will find themselves on local advisory boards and in positions to influence local governmental heritage policy making.

This influence on policy making is further enhanced by the opportunity to implement policy through university teaching as well as research assistantships available to graduate students in the field. These graduate assistantships can be used in carrying out the state resource classification and inventory system as has successfully been done by the University of Colorado at a cost considerably below that of practicing environmental professionals.

In his paper Crumpacker explores both what has been achieved in the field by university faculty and proposes the potential opportunities available through their positions within the academic community for implementing HCRS programs.

These papers cover both the problems intrinsic to interdisciplinary work as well as opportunities available through concerted efforts of working on such endeavors. In light of both the complexity of heritage problems and the present fiscal constraints, it is increasingly propitious to develop both the skills and relationships required to successfully marshal the resources necessary to dealing with heritage issues. Recognition of the problem of organization and coordination suggests increased efforts at goal setting and team building among the professionals accepting the responsibility of preserving our heritage.

THE ROLE OF UNIVERSITIES IN IMPLEMENTING HERITAGE PROGRAMS IN THE WESTERN STATES

Wilson Crumpacker

Universities represent an enormous potential resource for use in development of Western Heritage Programs. In fact, I hope to demonstrate that a good deal of this potential is already being utilized. It remains for us today to consider ways to broaden this support while simultaneously increasing the efficiency with which it is utilized.

The range of professional expertise available in university faculty encompasses every discipline that can be considered to relate to heritage conservation, including for example, cultural anthropology, archaeology, history, geography, geology, ecology, environmental design and planning, economics, sociology, communications, recreation, political science, law, agriculture, forestry, range management, watershed management, and biology. State university faculty are expected to teach, conduct research, and serve their professions and communities. They are uniquely situated at the state level where they can conveniently interact and cooperate with state agencies, as well as with the federal and local counterparts of state organizations.

The importance of state university faculty is most clearly seen from the vantage point of the National Heritage Policy Act of 1979. This federal legislation, currently under consideration in both houses of the Congress, is strongly state-oriented. The key concept is that states offer an optimal political structure within which to promote the conservation of our national historic and natural heritage. On the technical side as well, there are important reasons for organizing at the state level. The historic, cultural, ecological, and geological diversity of the nation is considered to be too complicated for initial treatment at the national level. Instead, individual state classification and inventory systems will be devised, while paying as much attention as practicable to the need for national standardization and coordination. Integration of state information into an national system and the development of a national perspective will come later. We can expect that state university faculty will provide much of the local expertise needed to establish successful inventory programs.

The political situation in the West is different. The relative sparseness of human population over much of the area and the large amount of land in public ownership create twin illusions concerning our national heritage, viz, that there is not general need to protect western diversity and, even if there were, it is adequately protected in the federal lands. Thus, it will not be easy to sell the heritage concept in many western states. Western university faculty, who are local citizens with understanding of state and local perspectives, can again be expected to provide critical support for heritage program development.

University teaching offers an especially attractive and rapid means of spreading the heritage gospel. The opportunity exists to develop lectures, courses, and even entire curricula that deal with the heritage concept. For example, a formal course in heritage conservation could be

integrated into the curriculum of a College of Natural Resources alongside traditional courses in conservation of wildlife, soils, range, and water. Of perhaps more importance is the opportunity to develop seminars and independent study projects which would allow students to work on heritage problems while simultaneously earning academic credit.

Two seminars that provided planning aid for the newly developed Colorado Natural Areas Program were conducted shortly after the passage of the Colorado Natural Areas Act in 1977. The first, entitled "A Nature Reserve System for Colorado," took place at the University of Colorado, Boulder, in 1978. Eight graduate students and three undergraduates in the Department of Environmental, Population, and Organismic Biology constructed species lists, rosters of special-interest species (endangered, threatened, rare, endemic, relic,, etc.), geographical distributions, and ecological information for the following Colorado taxa: vascular plants, mosses, lichens, mammals, birds, amphibians, reptiles, fishes, crayfishes, freshwater mussels, and butterflies. The students also investigated problems associated with aquatic ecosystems, energy and water development, agriculture, and urbanization. General recommendations, for planning purposes only, were given as follows (Crumpacker et al. 1978):

1. A minimum of 67, and probably at least 200, nature reserves are needed for adequate protection of Colorado's biological diversity.
2. Nineteen of the minimal 67 were recommended as high priority for protection.
3. Thirteen of the 19 high priority sites were identified as being located in the Eastern Rocky Mountain Foothills and Great Plains, an area of extensive private ownership subject to diverse development pressures.
4. Four Biological Conservation Districts were recommended for establishment in riparian drainage systems on the Eastern Plains. This concept involves the use of district-wide local initiative to identify biological conservation as a valid multiple use in each district.

Several of the graduate students involved in the seminar were conducting thesis research concurrently on the status of the Colorado floras and faunas associated with some of the taxa listed above. It would have been prohibitively expensive at the time for the fledgling Colorado Natural Areas Program to have accumulated this type of information independently.

The second seminar, entitled "Colorado Natural Areas Program," was held in 1979 at Colorado State University in Fort Collins as part of the Managers of Resource Affairs Program of the College of Forestry and Natural Resources (Deinema et al. 1979). This program provides advanced training to resource agency personnel who are ready to assume key management positions and attempts to extend traditional resource management policies into the socio-political and land use planning areas. The seminar participants reviewed heritage developments in other states, as

well as those of the newly created U.S. Heritage Conservation and Recreation Service (HCRS) and the Natural Areas Program of the Colorado Department of Natural Resources. Against this background, recommendations were made for an idealized Colorado program. Topics addressed included policy strategies and guidelines; criteria for nominating and rating natural areas; federal, state and local bases of support; participation of counties and local communities; and guidelines for managing and protecting designated natural areas. In view of the then marginal funding of the Colorado Natural Areas Program and the sunset legislation that requires positive legislative action for continuation of the program past July 1, 1984, the seminar addressed a fundamental policy question: Are state, county, and local governments in Colorado, as well as the population at large, committed to the establishment of an effective natural heritage conservation program? The following methods were discussed as incentives for development of an effective protection program for natural areas: registers, permits (for development), tax breaks, and acquisition (by federal, state, or private organizations). Again, it would have been prohibitively expensive for the Colorado Natural Areas Program to have obtained this type of detailed information from an analogous group of professional resource agency personnel.

In addition to teaching, most university faculty are involved in extensive research. I suspect that the number of research projects involving topics pertinent to heritage conservation is surprisingly large. In my own department at the University of Colorado there are continuing programs related to the study of Rocky Mountain and Great Plains floras and faunas, endangered plant and animal species, and aquatic and terrestrial ecosystem classification. These types of research are critically important to the development of successful natural heritage inventory programs.

One of the most directly relevant ways to strengthen the role of western universities in the heritage conservation process would be the creation of HCRS/University Cooperative Research and Education Units such as the prototype recently established at the University of Arizona. For example, the Cooperative Education Agreement associated with this unit provides paid work experience for students with HCRS during their academic tenure. Upon graduation they become eligible for noncompetitive conversions to a career or career-conditional appointment in HCRS. This program permits the agency to evaluate student potential (and vice versa) before deciding about recommendations for employment. At the graduate education level it provides an excellent opportunity for research support related to thesis projects that involve heritage conservation topics of mutual interest to the student and HCRS.

Since university faculty are encouraged to serve their local, state, and federal communities, they are commonly found on the advisory and executive boards of historic and natural societies, civic groups, and governmental or quasi-governmental agencies. I suspect there is no single, easily identifiable occupational group which serves its communities more extensively and effectively. There is a spectrum of ways and places in which university faculty members can contribute to heritage conservation through extramural services. I will illustrate this with several "natural" (as opposed to historical or cultural) examples drawn from my knowledge of the Colorado scene and with which I am personally

familiar.

The Department of Environmental, Population, and Organismic Biology at the University of Colorado, Boulder, is a very large science department (over 800 majors) with strong ecological interests shared by its students and faculty. Yet the Department has never had a field station close enough to campus for effective utilization in teaching and research. The City of Boulder has an active, well-funded open space program. Four years ago EPO Biology faculty suggested to the City that it buy a 30-acre tract of deciduous woodland in a county enclave surrounded by city property and transfer management to the Department by means of a long-term lease. The area, which is one of the most species-rich riparian habitats remaining in the Eastern Colorado Plains and only five minutes from campus, would then be managed as an educational and research center by EPO Biology. This plan was approved by the City's Open Space Board of Trustees and negotiation with the landowners was initiated. It now appears that the transaction may be successfully completed. If this occurs, the University will probably support registration and designation of this site as a Colorado Natural Area, thereby adding a level of state protection to the property. Since the City of Boulder, as owner, would have to concur with this action through its regular governmental procedures, the entire Boulder community would, in effect, be involved in the decision. I cannot imagine a more efficient way to introduce local citizens to the concept of natural heritage conservation. An example of this sort would also encourage other communities to promote the designation of ecologically desirable sites as Colorado Natural Areas, using local governmental procedures.

State and local chapters of organizations such as the Audubon Society, Trout Unlimited, the Colorado Open Space Council, and the Nature Conservancy very actively support heritage conservation through habitat protection. Faculty at universities and colleges throughout Colorado have provided leadership to these organizations. A few years ago the Colorado State Chapter of the Nature Conservancy began a period of internal growth under the leadership of its President, Vice-President, Projects Committee chairman, and Technical Advisory Committee Chairman. Two of these officers were currently, and one was formerly, a university faculty member. Two continuing projects initiated at that time are especially noteworthy in that they represented novel approaches to local heritage conservation action. They involved development of programs designed to maintain the critical minimum stream flow required for normal functioning of the aquatic and riparian communities associated with the major natural features of two northern Colorado urban communities: the Poudre River in Fort Collins and Boulder Creek in Boulder. The approach being used is to acquire enough existing water rights through donations, trades, and purchases to guarantee the necessary flows at all seasons of the year and during drought years as well as normal ones. (Although one might encounter difficulties in explaining and gathering support for such projects in the high rainfall regions of the eastern United States, their value is readily perceived in the western states where water is very limited and subject to many competing demands, and where riparian habitat types are the richest and rarest of all.) I want to emphasize not only that these minimum stream-flow projects were initiated with guidance from university faculty and graduates working as local volunteers inside the Nature Conservancy, but

also that they were established in university communities (Fort Collins, one of the most rapidly growing cities in the United States, is the home of Colorado State University). University communities are logical places in which to launch heritage conservation initiatives, both natural and historical.

I will cite two rather different examples of how university personnel in Colorado are promoting natural heritage conservation at the level of state government. The first involves the new Colorado Natural Heritage Program. University of Colorado and Colorado State University faculty members serve on the seven-person Natural Areas Council which is the governing board in the State Department of Natural Resources. Recent Ph.D. and M.A. graduate of Colorado universities serve as the director of the Natural Areas Program and as the coordinator (leader) and plant ecologist on the Colorado Natural Heritage Inventory staff. Therefore, highly trained professionals, with a great deal of knowledge about present and past research activities, library resources and computer facilities on university campuses, as well as intimate acquaintance with local ecosystems and customs, are guiding development of Colorado's natural heritage conservation program.

The second example illustrates the importance of university advice in the state legislative and executive process. Following passage of the Colorado Surface Coal Mining Reclamation Act of 1979, the Mined Land Reclamation Division of the Colorado Department of Natural Resources convened an Ad Hoc Advisory Committee to assist its staff in the drafting of rules and regulations to implement the legislation. The earlier versions of the body of administrative law made no references in the "permitting" rule to Colorado Natural Areas, Colorado threatened and endangered species, or National Natural Landmarks; nor were any of these items except the Landmarks mentioned in the definition of "fragile lands" unsuitable for surface coal mining. A member of the Ad Hoc Advisory Committee, who is also a faculty member at one of the state's universities, suggested that these items be added. As a result, Section 2.02.2(2)(h) of the permitting rule, which applies specifically to exploration involving removal of 250 tons or less of coal (a common activity with very little regulation) contains the following wording with respect to the written notice of intention to explore that must be filed with the Mined Land Reclamation Division:

"A statement, with appropriate references from the relevant State or Federal agencies or published sources, which determines that the exploration and reclamation described will not jeopardize the continued existence of any endangered or threatened species listed pursuant to Section 4 of the Endangered Species Act of 1973 (U.S.C. 1533) or the Nongame, Endangered or Threatened Species Conservation Act (Section 33-8-101 *et seq.* C.R.S. 1973) or result in the destruction or adverse modification of critical habitat of those species." (C.R.S. means Colorado Revised Statutes.)

Section 202.3(1)(e), which pertains to exploration involving more than 250 tons of coal, requires, in addition, a map specifically showing the location of:

"...existing bodies of surface water; historic, topographic, cultural and drainage feature; and habitats of any endangered or threatened species listed pursuant to the Endangered Species Act of 1973 (U.S.C. 1531 *et seq.*), the Nongame Endangered or Threatened Species Conservation Act (Section 33-8-101 *et seq.*, C.R.S 1973), Designated Natural Areas, National Natural Landmark ...".

Hearings are presently being held on these rules and final promulgation is expected in spring of 1980. This episode suggests that efforts to increase the awareness of university faculty concerning State Heritage Programs might effect a considerable improvement in the efficiency with which heritage resources are protected, since these persons are commonly sought out for advice concerning the environmental and cultural effects of development.

Numerous opportunities exist for participation of university faculty in heritage conservation activities at the federal level. As the program of HCRS develops, the existing array of available sabbatical leaves, public and private fellowships, internships, and intergovernmental personnel exchange programs should be more fully utilized to take advantage of the expertise of university faculty in the regional and Washington, D.C. offices. This would be in addition to the extensive use on a shorter time basis of university faculty in such voluntary efforts as the task force panels created two years ago by the U.S. Department of the Interior to aid in development of HCRS guidelines for methods of natural heritage classification and protection.

I recently had an opportunity through a Rockefeller Foundation Fellowship in Environmental Affairs to interact extensively, on a daily basis, with the national office of HCRS over the period of a year. My participation was welcomed. While serving as an informal science advisor, I was permitted to make contributions to the substance of the National Heritage Program legislation which was being actively developed at the time. Incidentally, I was simultaneously able to learn a great deal about the organization of the federal executive and legislative branches and how they function. I strongly recommend such an experience to any university faculty member who is interested in teaching, research, or service related to national heritage conservation or any other federal activity. Another result of my interaction with HCRS was a formal report on the potential natural diversity which exists in the United States, and its current status of protection in one form or another, in reasonably large acreages, by the U.S. Forest Service, Park Service, Fish and Wildlife Service, and Bureau of Land Management (Crumpacker 1979). Of the 315 major ecosystem types which were identified, about half appeared to have no more than minimal protection as defined above, and approximately one-fifth did not appear to have any protection at all. Recommendations (for initial planning purposes only) were made concerning ecosystem priorities for addition to the federal land system, opportunities within individual states for filling ecosystem gaps in the federal system, and methodology for investigating the overall problem in more detail.

My talk today has emphasized the role of university faculty. Besides creating an atmosphere of support for the sorts of faculty activi-

ties I have described, universities also provide an institutional framework that lends itself to other types of heritage conservation support. I will mention two examples. Designation of a State Natural Area in a programs such as Colorado's creates the need for effective management of the site. Universities and related entities may be increasingly requested to help with these stewardship activities. For example, the Owl Canyon Pinyon Grove Natural Area near Fort Collins is state land, leased to Colorado State University, and managed by the State Forest Service which is headquartered on the CSU campus. The Mexican Cut Natural Area near Gothic, Colorado, is owned by the Nature Conservancy and is managed by the Rocky Mountain Biological Laboratory, an organization of faculty members from several universities inside and outside of Colorado. In fact, a number of Nature Conservancy preserves in various states are managed by nearby colleges and universities.

A second, more formalized instance of university support for heritage conservation is exemplified by the Natural Land and Water Reserves System of the University of California. As of May 1979, 27 reserves were included in this network. The total acres owned, leased, or controlled by easement exceeded 80,000. Groups of these reserves are managed by different campuses in the University of California System.

I have tried to describe the potential that exists in universities for implementation of Western Heritage Programs, as well as indicate how that potential is currently being used. In addition, I have pointed out some ways in which university resources can be used more effectively. There are, of course, many competent university faculty members working in pertinent fields who either are not familiar with, or do not fully appreciate, the importance of heritage conservation. To the extent that we can interest them, and also academic administrators, in the heritage concept, we should be able to increase the degree of university cooperation. I hope that our discussion later today will identify more (perhaps even qualitatively different) area in which university contributions can be made.

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THE COMMON GROUND

Michael Martin McCarthy and Anne F. Frondorf

"Discovery consists of seeing what everybody has seen and thinking what nobody has thought."

Albert Szent-Gyorgi

"The crisis consists precisely in the fact that the old is dying and the new cannot be born; in this interregnum a great variety of morbid symptoms appear."

Antonio Gramsci, Prison Notebooks

"Historic preservationists must make common cause with general environmentalists if we are to save the cultural as well as the physical environment--both as integral parts of our rich heritage."

Gordon Gray--Foreword to the
National Trusts Annual Report

Very often we are caught within our own spheres of influence and interest. Disciplinary expertise, areas of competency, and realities of the political process are powerful incentives for continual efforts to divide and subdivide. This is not a rejection of specialization, only an admonition towards specialists who fail to see the whole. As one is removed from such myopic prejudices, there is little argument with the recognition of the ever-increasing need to foster interdisciplinary, interagency, and interinstitutional efforts. Often we are able to see the failings of other groups in a much clearer way than those within our own specialization. Often we are captured by day-to-day events and in the battles of our well-guarded territories, and it is in this entrenchment that we fail to see the common ground between our various interests.

In this paper we are attempting to identify the commonalities between many disciplines. We write this in the hope that such an identification serves as a way of structuring problem solving. Specifically, as part of these proceedings on heritage resources and issues, we anticipate that this effort will be seen again in the emergence of a series of themes that are associated with the Heritage Conservation and Recreation Service (HCRS). We have identified twelve guidelines to be aware of in all interdisciplinary efforts. Our research has revealed four characteristics that have been identified by others as necessary for success in many-discipline problem solving. Finally, we have suggested five areas of commonality that should be used as a means of structuring, creating, and achieving true interdisciplinary accomplishments. None of these ideas diminish the integrity of any of the disciplines that have an interest in heritage resources. The ideas presented define their own territory where cultural and natural resource understanding, wise use, and protection overlay. This paper is written to prompt recognition of that overlap.

PUBLIC RECOGNITION OF THE NEED FOR HOLISM

For a number of years the complex nature of cultural and natural resource issues has become an accepted fact. With public prompting, the government has recognized this complexity by legislating for resource planning and management in a more all-inclusive or holistic fashion.

This legislative holism began at the state and local levels of government, and could soon be recognized in the federal government. Each of these legislative efforts attempted to mandate a recognition of the difficulties of such problems by directing that publicly supported projects were accorded a broader vision.

The classic example of government concern was expressed in the National Environmental Policy Act of 1969 (NEPA), which called for government planners to "...utilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and the environmental design arts in planning and decision-making which may have an impact on man's environment." NEPA has come to symbolize a governmental intent to approach resource problems in a more comprehensive way. It has been emulated by several state laws and has been the stimulus for the creation of many multidisciplinary planning and management teams.

The enactment of legislation, executive orders, and judicial imperatives over the past fifteen years has had a direct effect on the way agencies approach their responsibilities (Frondorf et al. 1980).

The first of these recognized responsibilities centered on the use of multidisciplinary teams. In this approach, a variety of resource specialists, whose disciplinary emphases ostensibly represent all of the facets of the problem at hand, are directed at a problem. They are then requested to provide their own disciplinary outlook or partial solution. The final solution to the problem is then taken as the sum of these interdisciplinary solutions.

The problem with this approach is that the problems being addressed do not ever merely represent linear sums of otherwise unrelated factors. The unprecedented difficulty of contemporary resource problems lies precisely in the fact that they are synergistic. The problem, in essence, represents a whole whose solution demands an integrated problem-solving process. When problems are fractionally defined and then solved, there is really no way of knowing if all the participants involved are sharing some common perception of the problem and are working toward some commonly accepted goal. It is more likely that, due to disciplinary and personal biases, each individual is working on an individually perceived problem (Ditwiler 1973; Sewell 1971; Sewell and Little 1973).

What is lacking in these efforts is a comprehensive definition of the problem based upon the initial abstraction of the broad problem area to the level at which all the disciplines involved have a common

interest. The ability to find and describe this common level and to proceed from a holistic definition rather than a set of subdefinitions is what distinguishes successful problem solving from less successful efforts.

GUIDELINES AND CHARACTERISTICS OF INTERDISCIPLINARY PROBLEM SOLVING

There are at least twelve guidelines that must be recognized as essential to successful interdisciplinary efforts:

1. The most important step is clearly defining the purpose of the entire effort before initiating any other work.
2. The fact that there are no general problem solving techniques, no totally mechanized system to provide all answers, must necessarily be recognized.
3. The validity of research to develop quantitative measures should be questioned. A more useful understanding of our environment will require, in addition, the development of qualitative measures to describe the human needs over large regions.
4. In a practical situation, differences among various regions (socioeconomic, socio-political, ecological, and land use patterns) negate any specific theory of relationships which will be entirely transferable from one region to another.
5. A weakness in most interdisciplinary efforts is the failure to properly define the state of knowledge for each component of the system (at any level) or to describe how the components link with another system.
6. Exact solutions are effectively impossible by large models or by large management efforts. Most solutions are achieved iteratively one step at a time while actual decision processes on land issues are often achieved simultaneously or in random order.
7. It is easy to get sidetracked on the solution of very detailed problems rather than developing an overall competency. Day-to-day events preclude rational long-term process thinking.
8. While manpower is the most expensive and fixed ingredient in interdisciplinary studies, data acquisition is the most variable in costs. The gathering and assembly of data is an extremely complicated problem with different scales, dates, and problems of aggregation and disaggregation increasing the difficulty.

9. The presence of many disciplines attempting to work together does tend to bend results toward one another but not as much as the uninitiated might think. Multidisciplinary work is a learning experience in itself. An intellectual tool to be developed and prepared for repeated future application. Since such multidisciplinary work is a learning experience, the persons created are as much a part of the product as the model, the management scheme, or the implications of the work.
10. An unmeasured aspect is that most multidisciplinary or interdisciplinary efforts contribute indirectly to policy by improving knowledge in the field, adding to the state-of-the-art, or by team personnel assuming role within policy decision-making groups. The question is whether, given the cost of these efforts, such contributions to policy are worthwhile.
11. The perception of information and data differs among the types of individuals using and developing this tool. System conceptualizers are charged with creating a given representation of a process. Their concern is with behavior and experience and interests are generally far removed from the pragmatic world of planners and decision makers. Technicians are often charged with the responsibility of constructing the models, the data, the algorithms, and the actual code. Seldom do these creators concern themselves with the ultimate use of the information. Planners and decision makers have a broader set of concerns and duties that regulate the sophisticated land use or regional data system to a lesser role.
12. Special efforts should be made to train potential users in the use and interpretation of interdisciplinary systems information, models, etc.; this might improve both the quantity and quality of use more than refining the systems themselves would.

In addition, several other researchers (Luszki 1958; Kast et al. 1970; and Mar 1974) have examined the nature and causes of failures in interdisciplinary activity and are in basic agreement over the following four characteristics of interdisciplinary efforts that succeed:

1. Focus on a single, well-defined problem, the definition being based on an initial abstraction of the problem area to that "lowest common denominator" which all the disciplinary efforts involved here in common.
2. Development of a common or universal "language" within the group to allow for maximum cross-disciplinary interchange without disciplinary "isolation". Of importance in attaining such intergroup understanding is that the interdisciplinary team be made up of two basic types of individuals: **specialists** who have been trained to be amenable to

cross-disciplinary linkages and **generalists** who can act as catalysts, facilitating the synthesis and integration of ideas.

3. Continuous reciprocal exchange of ideas and viewpoints among team members, i.e., continuous interaction.
4. A shared understanding of a common goal; shared responsibility for the **group's** products.

In developing interdisciplinary efforts of this type, certain barriers must be overcome. These are the "language" barriers, the professional elitism, and the narrowing of vision which too often comes with the attainment of a high level of professional expertise. Specialization proceeds as the professionals working within certain disciplines strive to become more professional and expert in their chosen field. To get ahead in the field, to be successful and respected, they must consistently narrow their vision of the world to only those factors related to their field. They thus begin to perceive reality and communicate solely as disciplinarians.

Disciplinary barriers relate to the way individuals are taught to think about problems. Much of the "blame" for the small number of specialists who can really contribute to interdisciplinary efforts must be placed upon the academic institutions which have traditionally represented the epitome of disciplinary organization.

If disciplinary barriers can be traced to the way people are most commonly **taught** to think about problems, institutional barriers are a result of the way we are generally **rewarded** for thinking about problems. It can generally be said that potential interdisciplinary flexibility tends to decrease as professionals advance within their fields (see Sewell 1971); i.e., people who have specialized longer are usually less able to generalize when the problem calls for an interdisciplinary solution. This tends to create an inverse relationship in an institutional environment between the ability to see where interagency/interdisciplinary links could be made and the power to actually make these links. The governmental budgetary process, which is also essentially structured along single agency/single discipline lines, make the financing of interagency/interdisciplinary activities very difficult. It is basically contrary to most government agencies' self-preservationist instincts to admit that portions of their jobs could be done better by joining forces with other agencies. And for those agencies which, to their credit, have begun to develop such interagency links, obtaining funding to run such interagency programs is often complex and frustrating.

It is encouraging that, in the past few years, government agencies have begun to recognize the need for interagency cooperation and have begun to forge interagency linkages. Such activities are now occurring at all government levels; some examples on the federal level would include: the Federal Committee on Ecological Reserves, the Federal Interagency Trails Council, the Interdepartmental River Study Group, or the Interagency Agreement Related to Classifications and Inventories of Natural Resources which the Forest Service, Soil Conservation Service,

Fish and Wildlife Service, Bureau of Land Management, and the Geological Survey signed in 1978. Exciting examples of interagency coordination **between** government levels include the Pinelands National Reserve and Lowell National Historic Park.

Recently, the Heritage Conservation and Recreation Service (HCERS) has been in the process of negotiating two information agreements which are useful examples of this new effort. These agreements relate to the operation of the National Landmarks Program and potentially to the National Heritage Program. The first is with the U.S. Department of Agriculture's Cooperative Extension Service. This agreement would help set up Cooperative Extension Service offices throughout the country as local contact points for information on the location, condition, and significance of the natural landmarks in the individual state counties. The offices serve as liaisons between the local citizens and their personal knowledge of the local resource base and the trained resource experts and planners who help channel this citizen knowledge and concern into actual planning and management decisions.

The key to accomplishing these types of interagency linkages is to define the common ground between the agencies involved and to develop an interactive relationship which does not subtract from anyone's duties or responsibilities but which facilitates the synthesis of their individual accomplishments into the common final product. Such interaction demands not only a common understanding and definition of the problem, but also a group or agency which can act as the focal point.

VALUED CULTURAL AND NATURAL RESOURCES AS AN INTERDISCIPLINARY ISSUE

The most recent move toward interagency coordination is the state and national heritage program. Heritage, by its very definition, represents a classic interdisciplinary value-laden issue. The goal of this approach is to provide for more effective interaction among a variety of natural and cultural resource concerns at a variety of government levels and the private sector. If such programs are going to develop in the true interdisciplinary manner described earlier, they must be based upon the "lowest common denominator" definition discussed above. That is, what factors within the total concept of heritage resource planning can serve to tie discipline to discipline and agency to agency? The essence of this resource planning and management, whether cultural or natural, is to identify certain significant areas or resources, to designate them as being of a special nature, and to protect them from unplanned impacts. To achieve these goals, it is necessary to recognize the common basis of these interdisciplinary issues.

AREAS OF COMMONALITY

Using the concept of heritage resources as an example, we intend to identify five areas of commonality. These areas can serve to instigate creative interdisciplinary approaches. As regions of overlap, they are the issues that must be addressed if the underlying reasons for a Heritage Program are ever to be met. We recognize that these areas of commonality can serve as an effective structure for any interdisciplinary efforts. The five areas include:

1. Collection, classification and management of **information**.
2. **Communication** of messages to and from the publics, and the determination of the message ahead of time.
3. As a goal, **implementation** of the legal and policy measures that insure success.
4. Recognition of **values** as the central consistent variable of all efforts. Values are the reason for and measure of cultural and natural resource programs of use and protection.
5. **Change** which demands working together to avoid duplication, addressing innovative concepts, and monitoring results as well as resources.

Each of these areas of commonality are discussed in the following sections.

1. The collection, storage, manipulation, retrieval, and exchange of **information** is definitely a common basis to all activities connected with a Heritage Program. Information systems and methods of data collection are the common ground between the various types of resources involved, between the various institutional interests, between the resources and their protection, and a means to eventual implementation.

The major emphasis of the National Heritage Program as it has been presented before the Congress is the coordination of information gathering and exchange related to natural and cultural heritage resources.

The host of ongoing federal activities which have some relation to heritage resource planning represents a major opportunity under the National Heritage Program to develop a coordinated land and resource information network. Specific heritage-related activities of some of the federal agencies include such things as the Fish and Wildlife Service's Endangered Species Program and the National Wetland Inventory; the Bureau of Land Management's Areas of Critical Environmental Concern Program; the Forest Service's resource planning procedures including their Research Natural Areas Program; the National Wild and Scenic Rivers System and the National Trails System; the National Historic

Landmarks program; not to mention the number of cultural resource programs which have similar data requirements.

The Heritage Conservation and Recreation Service is suited to this role because it is a non-landholding federal agency with a commitment to assisting state and local governments in the areas of cultural, natural, and recreational resource planning. The object of this effort is **not** on developing one new "universal" system or approach which should be used by all the local, state, and federal agencies concerned, but rather on the search for the complementary aspects of ongoing programs and systems (i.e., where exactly are the commonalities?), as well as on trying to devise "translating" mechanisms which will permit the exchange of information between parallel, but not identical, efforts.

2. The **communication** aspect represents one of the least understood and most neglected areas of interdisciplinary activity. Consistently the idea of communication is addressed only as a necessity and always last. Communication has many facets when viewed as part of a Heritage Program. It includes the communication to and from constituents, lobbyists, politicians, supporters, and detractors. Perhaps most important, for a program and agency concerned with resources that are part of our common heritage, communication to and from the widest array of the public is absolutely essential. In the developing issues that face the Heritage Conservation and Recreation Service there exists a unique opportunity to determine the methods and types of communication that could be the most effective. Communication techniques should be seen as a product that needs to be defined from the very beginning. This is not a product that has an end but rather is a continuous part of the entire agency mission.

All cultural and natural resources specialists have a common need to determine what, why, when, and how they wish to communicate. Just as important, the individuals interested in resource planning and management must determine how to allow the public to be able to communicate back to the decision makers.

3. Due to the caution that permeates much of the Heritage Conservation and Recreation Service, there may be a tendency to miss the real goals of **implementation**. Since the agency's mandate has been clearly defined as the coordination of information gathering and the establishment of focal points for cultural and natural data, it is possible that the underlying mission to effect wise use and management may be of lesser importance. We must not forget why it is important to identify heritage resources.

Recently the Tellico Dam/Little Tennessee issue provided nationwide attention to the need for strategies of implementation as well as of identification and designation. Within the watershed of the now impounded Little Tennessee River existed a prime example of the very combination of unique resources that might have been of concern to the Heritage Conservation and Recreation Service had the agency had sufficient political authority during the Tellico controversy. Almy (1980) has documented the resources: the fat rainbow and brown trout, the canoeing possibility, the snail darter, and the homeland burial ground of the Cherokee Indians--a situation of cultural and natural

resources, of heritage issues, of endangered species, recreational values, and cultural history. The water that now forms the impounded Tellico Lake has altered these resources for all time. We are well aware of the number of factors that eventually helped forge the final decision, and, in certain ways, the example is very different from the issues that are being addressed by the Heritage Program. The Tellico example is, however, a worthwhile reminder that good intentions, even with the blessing of a worthwhile cause, are not the same as implementation. The "seeing of things through" to completion is an aspect that is usually left to the last stages. There are legal and policy questions that permeate all of the responsibilities of the Heritage Conservation and Recreation Service and it is necessary to consider implemental strategies from the start.

4. Whenever we are discussing unique resources, be they prime agricultural land, archaeological areas of interest, habitats of rare or endangered species, historical communities, preserved architecture, significant recreational uses, scenic vistas, or natural areas, we are discussing values. All of these resource situations alone or in combination are prized because they are important to us. Yet, little is known about exactly what it is people value about these resources and why. In a situation that escapes ludicrousness only because of its sadness, the study of values is usually dismissed as unscientific and non-quantifiable.

This is not to suggest that values cannot be directed or changed. Skinner's (1978) concepts of behaviorial engineering address this aspect and demonstrate significant promise. A major role of the Heritage Conservation and Recreation Service should be to foster the educational awareness of the people. This is, of course, in addition to the primary need to recognize the importance of values as the major reason for any Heritage Program.

When we realize the considerable extent to which we are influenced by our literature, our advertisements, and the entertainment media of TV and the movies, it is quite apparent how little we know of the generation of values.

When we discuss valued landscapes do we understand what caused our appreciation? The southern landscapes from *Gone with the Wind* and the western landscapes of John Wayne movies are examples of influences we do not even begin to understand. Nevertheless, there exists a whole host of research literature that has examined behavior and environmental perception which can be used as a starting point. In the concept of values exists a mechanism to bring together widely different resource specialists.

5. "Old ways of thinking, old formulas, dogmas and ideologies.. no longer fit the facts. The world that is fast emerging from the clash of new values and technologies, new geopolitical relationships, new lifestyles and modes of communication, demands wholly new ideas and analogies, classifications and concepts."

Change--the most predictable aspect about it is its inescapability. There will be technological changes that result in different patterns of land use and land values. Leisure time activities could radically alter. Energy scenarios already have affected our society's perception of a number of issues. Minicomputers and videocassettes signify machine interactions we can only guess about. If nothing else, recent political patterns reveal an ever-increasing concerned electorate that is very capable of making its elected representatives extremely conscious of their views of taxes, inflation, energy, and the environment.

At its best, change can offer a unique opportunity for a program concerned with unique resources. Clear mandates exist to look for new ways to foster interdisciplinary activities which recognize that, in an age of conservation, duplication must not exist. As an agency not directly tied to land, the Heritage Conservation and Recreation Service can lead the way in developing innovative thrusts. By seeking to identify commonalities such as those discussed in this paper, the effects of change can be minimized. Studies should begin at once to explore various "what if" options. Such futures research, while not dealing with exact prediction, can prepare the way for understanding various alternatives. In a similar way, baseline studies that monitored resource change over time can provide useful information that would serve to increase our ability to solve problems. Long-term measurement of both cultural and natural resources are hindered by a lack of past research to build upon. Monitoring can address questions of changes in perception, deterioration of historical buildings, ecological succession, or patterns of use. In recent years there has been an ever-increasing recognition that our lack of ability to solve problems is related to both our inability to prepare for future changes and our void of knowledge about resource baseline conditions. It seems imperative that any program concerned with quality or unique cultural and natural resources understand change.

CONCLUSION

In the preceding section, the five areas of commonality in interdisciplinary work have been presented as necessary to the Heritage Program. Information, communication, implementation, values, and change are presented as channels by which any many-discipline effort can move into areas of overlap. These areas allow one to avoid the disciplinary viewpoints that often result in disputes and arguments which inevitably lead to a loss of perspective, a forgetting of the immensity of the problems confronting all of us. In recent years there have been increasing warnings about the seriousness of our situation (Brown 1978; Pirages and Ehrlich 1974). This is a time to find ways to work together. The challenge is enormous; the heritage we leave can be more than the resources themselves. We can also leave the heritage of a time when problems were seen as part of a process, a process that recognized the common ground, and this process became the structure for problem solving. Our intent is that these lists of areas of commonality, of guidelines, and of characteristics of interdisciplinary success become the beginnings of working together.

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THE STATES' ROLE IN DETERMINING THE FUTURE OF NATURE AND CULTURAL HERITAGE ACTIVITIES IN THE WEST

Mary Alice Bivens

Why are the questions so much easier to explain than the answers? Why do we always seem to be able to define what is, better than we can describe what should be? Why are we so prone to answer a question with a question? It would be so much easier to discuss the nature of interagency efforts and needs for cooperation in managing information on heritage resources; how the academic world can assist the bureaucratic world in implementing and integrating into the proposed Natural Heritage Program, if they could be discussed in terms of asking questions rather than in terms of identifying possible alternative solutions. However, any meaningful implementation program is directly dependent upon meaningful alternative solutions.

As the State Liaison Officer for Arizona, and the Director of the Arizona Outdoor Recreation Coordinating Commission, it is my responsibility, and that of the members of my staff, to coordinate the outdoor recreation efforts of federal, state, and local agencies. This responsibility begins with the conceptual or planning stage and goes clear through that of implementation. In this process it is necessary to understand the various mandates under which these many and differing agencies operate. No easy task, I might add. Nor, for that matter, is there a simple method for effectuating coordination. One man's bread is another man's poison, so the saying goes!

As we attempt to understand how all the pieces fit together we discover that we are not all working on the same puzzle. We have not all agreed on the definition of the word "heritage". Our individual perspectives and backgrounds preclude us from seeing the same finished product. So, I see my role, and that of our agency, as one of fitting the many faceted pieces together and to reveal the entire picture--in living color.

Let me be more specific. There are many different agencies represented here today. Each agency has a different purpose for being. Each views its role in one of the Heritage programs as being singularly important--and it is! It is important, but its importance is most significant when that role is understood in relationship to all the others. Let me give you an example. The Game and Fish Department is charged by statute with the responsibility for managing the fish and wildlife of our State. The data they gather, the statistical tables they develop, and the wealth of knowledge concerning various species of flora and fauna they have are extremely valuable. If this information is kept only to themselves, then the possibility exists that the Bureau of Land Management might decide to permit the mining of one of our natural resources in an area which is critical to the perpetuation of elk. BLM could, of course, do their own research and learn what Game and Fish already knows, but this would be a duplication, wouldn't it?

Another example may be that a significant archaeological site, heaven forbid, may be located at the very spot where mine tailings are scheduled to be deposited. Here again the information of another agency and knowledge of the State Historic Preservation Officer could be invaluable to prevent irreparable damage.

You could cite dozens of similar examples of costly duplications that confuse the public and tend to hamper the effectiveness of each organization. My examples are certainly not intended to throw stones at Game and Fish or BLM or the State Historic Preservation Officer. Rather, I am simply pointing out that we each get caught up in our own organizational responsibilities and all too frequently do not know, nor give adequate attention to, the role of other organizations which have heritage program responsibilities.

As I understand it, we have a common objective which is to insure interdisciplinary and multidisciplinary cooperation and coordination in determining the future of natural and cultural heritage activities. How in the world is this possible? It seems to me that the first step is to understand each participant's role and to know what all the puzzle pieces mean and stand for. This sounds easy, but I dare say that no one person here today could clearly define the roles of each of the other agencies represented. How can we better understand what each other is doing, or struggling to produce?

One very good method is having face-to-face meetings with each other, committing time and resources (management and money) to insure that a close personal working relationship can exist. There is simply no substitute for knowing each other personally. This is vital at all levels within each organization--from top to bottom. Another way would be to sponsor workshops or conferences, such as this one, to bring us all together. You know, it's easy to ignore a person or agency when you don't see them or aren't involved with them on a day-by-day or so basis. The circulation of newsletters or publications is very helpful in learning what's happening on the other side of the fence. And, working together to solve mutual problems will bring positive results every time.

You know, cooperation and coordination cannot be maintained, legislated, or directed unless someone or some agency stimulates the people involved to be involved with each other.

The second major step in meeting our objectives is to identify the natural and cultural heritage activities which are being or need to be carried on. The collection of data is accomplished by many and differing agencies and the data are usually for a different purpose. Areas or places need to be singled out and measures taken to preserve them. All this is well and good. The various programs are underway and fulfilling their mandates. So what? For what?

Man needs, from time to time, to participate in activities which differ from those which provide for his physical well-being. He needs to engage in leisure time activities, to have fun in pursuing these, to recreate his mind, body, and soul. We call this recreation. For most people, as an example, visiting a museum, be it natural, historic, or

anthropological, is a form of recreation. It helps us learn and better understand where we come from--our heritage--but it also serves as a means of refreshing us. I contend that "recreation" is the common thread which weaves through and links together the efforts of various federal, state, and local agencies which are implementing the differing heritage programs.

If this is in fact the case, then there is a definite and important link between what one heritage program is doing and the other. We simply must break down our separate parochial walls and work closer together. This can and must be done. I am firmly convinced that the natural and cultural heritage programs are important, not only to those who have agency responsibilities for them, but also to the public whom we serve. Translated, this means that the importance of the heritage programs demands that available expertise from all organizations, public and private, involving a wide range of disciplines be brought together and focused on the common objectives.

The private sector shares in these activities too. Examples of the importance of the private sector's involvement in Arizona include our botanical gardens, the Arizona-Sonora Desert Museum, the Nature Conservancy, and the Wildlife Federation, to name a few. I'm sure you can think of other good examples here in Arizona and in your respective western states. We certainly need the perspective of the private sector brought to bear on the heritage programs. This perspective serves as a form of "checks and balances" on those of us in public roles who sometimes get too close to the trees to see the forests. They add measures that force us to face the realities of implementation so essential to our programs.

The universities also have an important role to play. The resources available at universities--the minds, talents, and time of faculty and students--have largely been untapped for the heritage programs. Many of these people are terrifically creative and the academic setting affords time to be reflective. This is something that some of us agency people do not have because of the necessary institutional and organizational requirements of operational programs. I would like to see new and renewed efforts to involve and obtain some of this creativity for the heritage programs.

In summary, the success of the natural and/or cultural heritage programs in our respective states is directly dependent upon the success we each have in understanding one another. The level of commitment we make toward cooperation and coordination will be reflected in our plans for implementation. The desire to interact and the willingness to share both ideas and information will be evident in the quality of the end products.

HOW MUCH COMMON GROUND?

Garnet Premer

Cooperative attitudes toward government spending have prompted considerable discussion regarding institutional efficiency and duplication. Although cooperation among institutions, agencies and related organizations involved in heritage preservation is critical, recognition of limitations to cooperation is equally important. As stated in Bivens' comments, "As we attempt to understand how all the pieces fit together, we discover that we are not all working on the same puzzle."

Answers to the following questions will aid in establishing a rationale for cooperation.

1. What agencies, institutions, and industries are involved in, or potentially involved in, natural and cultural heritage activities?
2. What are their designated responsibilities, goals and objectives?
3. What are the relative strengths and weaknesses of each of the involved parties?

A number of variables deserve consideration in seeking answers to the proceeding questions. For example:

1. Who or what constitutes the clientele group of each?
2. Does a given agency's responsibility lie primarily with benefiting local community residents or in protecting a broad national public interest?
3. What is the ultimate purpose of the activity? Is identification or preservation of a given resource viewed as an end in itself or as a means to an end?
4. What is the nature of the party's responsibility? Is it educational, financial, legislative, or does it involve implementing statutory or administrative requirements?

As mentioned in McCarthy and Frondorf's paper, political realities and previous training often affect our ability or desire to approach problem-solving from a holistic perspective. It is also important to maintain a certain degree of checks and balances. Excessive cooperation or streamlining of responsibilities can in some cases actually impair the effectiveness of a balanced program. This consideration is important in identifying the relative strengths and weaknesses of any specific organization.

Cooperation rings of all-American goodness. As a result, potential benefits are frequently assumed to result from cooperation without analyzing whether such assumptions are reasonable. Before adopting procedures for closer working relationships among participants in any endeavor, three considerations merit attention. We need to anticipate who benefits and who loses; the magnitude and distribution of anticipated costs and benefits; and the relative probability that various gains and losses will in fact result. This type of analysis should begin to shape a rationale for cooperation. Cooperation simply for the sake of cooperation is hardly guaranteed to yield results. If participants have identified a need for working together, understand benefits to be gained that will not be realized without cooperation, and have a grasp of whose interests are served, efficiency and utilization of existing potential should increase.

Crumpacker, for example, discussed the unique position of universities in providing a combination of education, research, and community service. Universities tend to be viewed as unbiased. Other agencies may want to work with university researchers on a short-term basis rather than hiring an employee of their own; or several specialists may be asked to review a particular agency-prepared document. Universities do have a system for reaching into local communities via extension classes and through the Cooperative Extension Service. Many faculty members, however, as pointed out by McCarthy and Frondorf, are not regarded by their department as having responsibility for working with applied community issues. Furthermore, universities are not in a position to implement regulations, and they may or may not be in the best situation to function as a repository. Consequently, incentive systems and capabilities within universities vary and each case must be considered individually. Such an analysis of resources available from each agency or organization involved, however, as well as identifying their respective needs, will provide direction for mutually beneficial modes of cooperation.

McCarthy and Frondorf discussed in some detail the need for more coordination between specialists and generalists in addressing multidisciplinary problems. Increased cooperation may indeed be needed between specialists who conduct research and others whose job it is to apply or extend research results. Although care must be exercised in organizing a working team of specialists, we are sometimes prone to assume more responsibility for final decisions or outcomes than is necessary. If we have analyzed the needs and abilities of the target audience, the resources available from participating organizations, and agencies' needs, goals and objectives, many of the details and procedures for approach are greatly simplified. An understanding of the end result of an investigation are also important in determining the degree of multidisciplinary and/or inter-agency coordination required. For example, do resources simply need to be inventoried, is a given structure to be preserved as representative of a specific type of architecture, is a structure to be preserved as a monument to an era in our history, or are historical and natural resources being identified and discussed as a means for clarifying our current values? An understanding or clarification of why we are involved in this project and what we intend to do with it helps to focus the necessary level and degree of involvement.

As mentioned earlier, Bivens stated that we are not all working on the same puzzle. Consequently, cooperation should be viewed as a means to a mutually defined end, rather than lapsing into cooperation as an end in itself. A disproportionate emphasis on seeking common ground can be as misleading as is failure to identify the areas of commonality that do exist.

DIFFERENT LEVELS OF ORGANIZATION AND COMMON INTERESTS

W. Larry Thomas and Wayne L. Milstead

Very often the common interests of different organizations become obscured because the bureaucratic process demands that we focus on specific objectives that are germane only to a particular program. This is certainly true with the U.S. Fish and Wildlife Service (Service) and organizations such as the State Heritage Programs.

We would like to discuss the particular topic of common interests using the Service and Heritage Programs first as examples of two very different levels of organization which share the same interests. We will focus on the endangered species program of the Service and the five areas of commonality as described in the subject paper by McCarthy and Frondorf. Examples will be given to suggest that the State Heritage Programs and the Service can interact in a fashion that is mutually beneficial.

The Service, along with the National Marine Fisheries Service of the Department of Commerce, is mandated by legislation to implement the Endangered Species Act. The Service is required to furnish, upon request, a list of federally listed threatened or endangered species which may be affected by a federal action. In many cases the Service does not have specific locational data for the species in question. The best sources of this type of information are usually a university or State authority which has already shown an interest in the species in question. Very often this is a State Heritage organization which has recognized the value of the biologic resources and has made an effort to identify those of most value for its own particular State.

This identification of the biologic resource is the first area of **commonality-information**.

It is only by cooperation between the two levels, Service and Heritage Programs, that it can be realized that a common ground exists. The second area of commonality comes into focus-**communication**.

It is possible for the Service to provide the above mentioned species lists without contacting the respective State Heritage Program. If this happens both levels of organization suffer. The Service species location list suffers due to a lack of the detailed information which is very often possessed by Heritage Programs, and Heritage Programs suffer by missing the chance to review projects at an early conceptual stage.

It is easy to recognize the levels of **information** and **communication** as common ground, but it is difficult to make the two levels operational between the State and Federal systems. This brings into play the third level of commonality-**implementation**.

In this case, implementation means that the Service and the respective State Heritage Program will function in an efficient manner to protect an areas biologic resource. On the surface this would seem to be very simple task to accomplish. In reality it becomes very difficult

to accomplish.

A variety of problems surface which can pose obstacles to successful interactions of the two levels of government. It is possible that the priorities of the two respective organizations differ, e.g. game related resources may be viewed by one organization as a higher priority than non-game resources. In some cases a State Heritage Program may want to avoid a visible association with the Federal Endangered Species Program. This is particularly true with State Programs which could suffer funding constraints if they are viewed as "obstructionists" to tax yielding progress in their state.

It is only through the recognition of common values, the fourth area of commonality, that the two levels can manage to function efficiently. It must be recognized that a "federally" listed species is just a different level of recognition of a State resource. It must also be recognized that an "endangered" species is often an indicator of an "endangered" habitat. It may be difficult to share a common ground feeling with some endangered species but much easier to share a common ground feeling with that species' recognized habitat.

The last area of commonality which pulls the other four areas together is **change**. In today's atmosphere of financial and manpower constraints, we have no choice but to implement changes so that we operate more efficiently. We cannot afford the duplication which occurs when two levels operate separately to protect the same resource. This fifth area of commonality is dictated by the economic reality that we cannot afford **not** to change. The only alternative is to risk losing natural habitats which cannot be replaced.

In this short analysis we have seen examples that indicate that two levels of organization, Federal and State, have area of commonality. By viewing the types of interactions which occur in a particular program, the Endangered Species Program, it becomes obvious that the economic realities of today dictate that we recognize and share the common ground.

This common ground is, in many cases, further shared by individuals and programs from the academic community. As previously mentioned, a basic type of information required by the Endangered Species Program is site specific location data for Endangered and Threatened Species, and very often one of the best sources of such information is the University. To satisfy responsibilities of research and teaching, university faculties usually gather such information. But, communication of this information at this level is basically by way of teaching or in rather specific scientific publications, neither of which is directly accessible in an immediate sense to either the State Heritage Program or the Endangered Species coordinator at the working end of the Federal level. Communication of the gathered information from the university to levels responsible for implementing conservation and protective measures for the natural resource need to be improved. Our basic values are approximately the same, to protect the environment. And again, we must change our approach to this job from individual self-centered actions to cooperative activities that recognize our common ground.

Some current examples of areas where cooperation is proceeding among the Fish and Wildlife Service, State Heritage Programs and universities are:

1. The development of concept plans for Unique Ecosystems, that have been developed for several states under the Mammals and Non-Migratory Bird Program utilizing the State Heritage Program data and organization as a focal point for gathering essential information from appropriate expertise, often university personnel;
2. The gathering of indepth status information on candidate Endangered and Threatened species, particularly plants, has been variously contracted to university personnel and Heritage Programs;
3. Recently one State Heritage Program (Tennessee) has taken the lead in developing recovery efforts for a listed plant species, which is becoming a team effort involving university faculty;
4. The Fish and Wildlife Service operates several cooperative fisheries and wildlife research stations with universities in several states; and,
5. Section 6 of the Endangered Species Act, entitled Cooperation with the States, provides means for returning much of the control over and responsibility for Endangered species to states along with partial funding to pay for necessary state activities, which may involve a State Heritage Program as well as state universities.

Even though cooperative efforts are proceeding between the Fish and Wildlife Services and various state level institutions, there are those areas of environmental concern that may run counter to the vested interests of the states involved, and therefore, may require interstate cooperative efforts. Examples are the host of problems associated with the Colorado River and its tributaries, migratory species, and conservation regulations, particularly in bordering areas. Even though there seem to be some compelling reasons for a state level of organization in some areas of environmental work, such as gathering and maintaining data on Endangered species and unique habitats, we should not lose sight of the necessity in some instances to integrate information communication, and implementation of actions among states. The Heritage Conservation and Recreation Service should perhaps keep in mind the possible desirability of developing or organizing some State Heritage information in a national or regional system or systems.

One last comment regarding these two papers. The paper by McCarthy and Frondorf discusses the idea that specialization inhibits the development of interdisciplinary flexibility and solutions to problems. Furthermore, it is suggested that such barriers to interdisciplinary flexibility are derived partially from the way we are taught. That is, especially in higher education, specialization becomes more and more

pronounced as one proceeds through the system. We feel that this implication warrants some degree of objection, and the possibility of it does not go unrecognized by the academic community. It can be argued that specialization is a necessity in a highly technological and interactive world, and that educationally it is based on the presumption that specialized education is based on a previous general education. In addition, it can be argued that an education in great depth into a specialized field can eventually lead to a greater realization of the interrelatedness of disciplines, as well as to sharpen an individual's abilities at critical thinking such that they may in fact be more capable of functioning in an interdisciplinary mode. Even so, the paper by Crumpacker indicates that the university is aware of the necessity of reminding itself that we all ultimately function in an interdisciplinary fashion on a common ground.

IMPLEMENTATION OF HERITAGE RESOURCE ACTIVITIES
ANALYZING THE COSTS, THE BENEFITS, AND STRATEGIES

Discussion of the overall problem of implementation of heritage programs at the local, state, and national levels. What are the political and economic costs entailed in implementing a heritage resource activity? How is political support for heritage programs actually developed? How can public involvement be utilized with professional judgment? How can the traditionally conservative western states be convinced that heritage activities are worth the cost? What should be the role of the federal government in helping to absorb some of the costs of implementing heritage at the state level? How can the universities and the private sector work to enlist local political and economic support for heritage resource activities?

IMPLEMENTATION OF HERITAGE RESOURCE ACTIVITIES
ANALYZING THE COSTS, THE BENEFITS AND STRATEGIES

Raymond H. Thompson and Toni A. Carmichael

The rationale for the third session of the conference was to provide a dialogue between the various groups involved in Heritage Programs in terms of the political process. The two previous sessions emphasized the information base and the desired planning base, but these goals can only be implemented through the political process. This session presented several approaches to that process.

The first paper, by Jim Donoghue, provided us with examples of how the ideas discussed in the earlier session can be implemented within the Federal-State partnership. The emphasis was placed on the coordination of the mandating and funding role of the Federal system with the activities at the State and Local levels. The goal of such coordination is based on an area of common interest: the desire for more effective decision making concerning the use of cultural, natural and fiscal resources. Donoghue pointed out that only when such coordination is established will we be able to provide decision makers with the necessary information early enough in the planning process to have successful conflict avoidance.

His paper illustrates the kind of framework that is necessary for the academic and bureaucratic elements to function together and the importance of gaining a wide range of support from diverse interest groups. A number of successful examples of this were noted and clearly the New Mexico Heritage Program, which has been cited several times during the conference, was one of the most illuminating.

The HCRS audio-visual presentation pointed out the critical need for communication with the public and the importance of including public perspective at the earliest planning level in any kind of Heritage Program.

Jeanne Welch's paper provided a perspective that was needed within the conference as a whole. Her paper gave us the viewpoint of a Cultural Resource Manager on the one hand and the bureaucratic perspective of a State Historic Preservation Officer on the other. She comes from Washington, a state long successful not only in promoting the cultural-historical end of heritage activities, but also in integrating them with the natural and land management end of the spectrum.

This paper once again provided examples of the kind of frameworks that allow Federal, State and Local levels to work together. She also emphasized the need for support of a broad nature from diverse interest groups on all three levels, as well as the need for academic and federal communication.

Her paper was especially valuable in that it highlighted the special problems of a Cultural Resource Manager and Historic Preservation Officer which often seem to receive minimal attention.

Sally Fairfax's paper did two important things. First, it called our attention to the types of problems that are produced when programs are developed without adequate participation and consultation with the public or client group. Her documentation of some recent developments was a painful reminder that the democratic process breaks down when this necessary interaction is not fostered.

By the same token, her paper illustrated the misconceptions that can emerge when efforts are made to interpret the motivations behind the bureaucratic process. Moreover, her strongly stated criticism points out the dangers that can be generated within the academic community when it is isolated from the ongoing political process. This is the strongest justification for the establishment of more Co-op Units to bring the federal bureaucratic and academic worlds together. One such Coop unit, of the Heritage Conservation and Recreation Service, the Research and Education Coop Unit, at the University of Arizona, directed by A. Heaton Underhill, has been in existence since 1979 and is providing to be quite successful. By providing an opportunity for close interaction between the academic and bureaucratic communities it has fostered a better understanding of the political process under which Heritage Programs are implemented. The establishment of more of these Coop Units would be a wise step towards achieving the goals discussed throughout this conference.

The three respondents all provided some insight into the nature of the political process. Helen Ingram highlighted the need for both academic and bureaucratic participation in an effort to understand each other. Margot Garcia provided a much needed inventory of the many approaches to political action that are available for us to utilize. Bob Ritsch described examples of the complex tangle of relationships which make implementation of any program difficult.

It seems the original purpose of this conference was to bring together groups of people involved in Heritage Programs who do not often have the opportunity to talk to one another. This third session was a very good opportunity for people to speak freely and directly to one another about the kinds of problems that are inevitably involved when such varied interests and backgrounds are united.

In addition to what has been discussed, we would like to take this opportunity to mention a few things that are equally as important, but that have not been clearly brought out. The speakers in the conference have presented us with a great deal of information on the natural programs, about the progress that has been made and the progress that has not been made. The cultural programs were brought almost as an after-thought. There are some important political realities to the differences between the natural and cultural programs that should be recognized. We are talking for the most part, about **renewable** natural resources and **non-renewable** cultural resources. That fact in itself means that our political motivations and our opportunities for political actions are often very difficult. The natural area often covers a large space while cultural areas are usually much smaller. When one talks of saving an environment, an ecological zone, or a special population it is normally an all or nothing type of situation. On the cultural side,

however, it is difficult. The cultural property exists in its own right, but it exists also in terms of the information that it can provide for understanding the heritage of the nation. This allows us a range of options from saving it forever to letting it be destroyed with any number of intermediary types of mitigation. In other words, there are some important political options that the cultural aspect brings to the Heritage Program that perhaps ought to be applied in all types of Heritage activities.

In discussing the political process, finances are inevitably mentioned and we are hearing more and more about the reduction of funds. This is important in that it should force all of us to set priorities. Our priority setting has tended to concern itself with priorities for positive action. We must remember, however, that when things really get short we must be prepared with a set of negative priorities as well. Which cultural or natural areas will have to be the ones to go first when it comes to making that type of decision? We cannot save **anything**. It is important that we take upon ourselves the burden of helping to make those decisions now by setting such priorities. If we who are involved in the Heritage Programs do not have these decisions ready, they will be made for us by persons without our knowledge or concern for Heritage. We would like to suggest, therefore, that as a part of our concern about interaction between scholars and land managers, concerned citizens and politicians that we become as interested in the things we cannot do as we are in the things we can do.

One other thing merits discussion here in the content of this discussion of the need for interaction between Federal, State and Local levels. We are really two "nations" rather than one. There is a dividing line in our nation about the 100th meridian that separates the eastern from the western states. Those states east of this line are one "nation" where the Federal government controls practically no land outside of an occasional small national forest, park or military reservation. Those states west of this line are another "nation" where more than half of the land is federally owned. This fact has been responsible for the development of a very different type of history between these two "nations" in terms of the political partnerships between the States and the Federal government. This is a difference we have not always adequately recognized. We need to be aware of it to understand the different political priorities that will be brought up by those of us who work in the West compared to those of us who work in the East. When we talk of a national program these different political realities must be taken into account.

In summary, it seems clear from the insights provided by the six speakers in this session that we need balanced programs that take all of these political matters into considerations that such programs can best be achieved in a democratic society with effective two-way communication, and that mutual trust, respect, and understanding between the diverse interest groups involved may be the essential ingredient.

NATIONAL HERITAGE PROGRAM - A COMMON SENSE APPROACH TO
RESPONSIBILITY FOR RESOURCES

Jim Donoghue

The timing of the concern for heritage programs is based to some extent on financial constraints. Everyone seems to want efficient government at all levels and the "Proposition 13" sentiment which is still a battle cry for many doesn't show signs of letting up. Our energy needs, the inflation battle and concern for environmental quality must be dealt with continuously. These major issues are on center stage. Can we capitalize on the opportunity and adequately show that implementation of State heritage programs is a key building block in dealing with the current frustration of limited resources?

The National Heritage Policy Act is now before the Congress. It is not a proposal to establish a new federally funded program. It is an opportunity to build on existing State initiatives; and to encourage those without systematic programs to begin the effort. A primary function of heritage programs is to accumulate accurate and extensive data on a statewide basis that will provide decision makers with information "early-on" in the planning process and thereby avoid conflicts where possible. With more extensive information, problems like the "Stanislaus River Controversy" can hopefully be prevented. "Conflict avoidance" is a key selling point!

One of the very real concerns in attempting to gain public support for heritage activities is that they are often seen as somehow "elitist," or "exclusionary." Unfortunately there is some basis for this perception by our publics. Too often environmentalists are seen as idealists who are out of touch with the realities of energy needs or economic and political constraints. In some situations, narrow-minded testimony by the Sierra Club, AMC, the Citizens to save Scrub Oak Flats, or similar organizations can spell doom to a heritage program. We must seek the greatest span of support from among diverse interest groups. Don't stress just preservation, it's only one aspect. The case for heritage programs can be built on the grounds of economics, energy, and community improvement. With these diverse elements you can enlist broad support for your heritage program. A case in point can be seen in the experience of Oregon, where such diverse interests including the Corps of Engineers, Utility Companies, the Forest Industry, and environmental groups have all expressed support for the heritage program. Their area of common interest has been the desire for more effective decision making concerning the use of natural and fiscal resources. They are in agreement that the heritage programs can play an effective role in saving time, money and lengthy legal battles.

Another case was the initial establishment of the New Mexico Heritage Program. The Pennzoil and Atlantic Richfield Corporations provided funds totaling \$50,000 to the State to be used as their match for Federal funds. So the key to enlisting public support for heritage programs as I see it, is to enlist a wide range of interests rather than relying upon the energetic support of a narrow constituency. The desire

for more effective and efficient government is real, however, achievement of your objectives will help government be more of what people say they want. Make available information concerning the numerous examples of heritage success stories, and how it has contributed to more effective and efficient decision making.

For example, in New Mexico, the Heritage Program contracted with the U.S. Fish and Wildlife Service to develop their New Mexico Unique Wildlife Ecosystem Concept Plan. Information from the plan is useful to the Heritage Program as well as the Fish and Wildlife Service and it was collected and compiled without a costly duplication of effort.

In addition, in New Mexico, the New Mexico Energy and Mineral Department has signed a joint powers agreement with the State Heritage Program to have them develop a data base and inventory system to be used in decisions concerning coal mining within the State.

New Mexico's Heritage Program is becoming the focal point for the accumulation of resource data for Federal, State, and private interests throughout the State.

In Colorado, both the U.S. Forest Service and the Bureau of Land Management have provided funding to the State to assist in developing its Heritage Programs, because they are aware that heritage activities contribute to the effectiveness of their own programs within the State.

In Washington, the State Heritage Program and U.S. Fish and Wildlife Service signed the Endangered and Threatened Plant Cooperative Agreement. A two-year grant totaling \$240,000 was provided to the State to enable them to conduct rare plant identification and inventory research.

I could go on with examples from each of the 27 States where heritage programs have been established, but the bottom line is, "heritage activities increase cooperation, between Federal, State, and private interests within the State and result in more effective and efficient decision making on issues that affect all the citizens.

When the case for heritage programs is understood as a program centered around improved, effective and efficient government, support can be garnered from the labor unions, contractors, environmentalists and elected officials. Heritage programs do have positive benefit/cost ratios.

SELF-PRESERVATION THROUGH HERITAGE CONSERVATION:
A JAUNDICED VIEW OF HCRS
REGULATORY AND LEGISLATIVE INITIATIVES

Sally K. Fairfax

I was disappointed by the list of questions assigned to this panel. After two fairly normal ones (what will a heritage program cost, and how can we implement it on three levels?), it wallowed on some debatable assumptions. How is political support to be developed for heritage programs? How can traditionally conservative western states be convinced that heritage programs are worth the cost? Never mind that we have not established what the costs are; how can we persuade the states that they are "worth it"? To whom, I don't know. The final item in the list invites us to speculate on how the universities and private sector can work to enlist local, political, and economic support for heritage resource activities. Well now, if there is anything I cannot abide--perhaps it is a professional bias (it should be)--it is a foregone conclusion. Confronted by what appeared to be one, I am cantankerous enough that I have done considerable inquiry into three items: intern regulations on a (1) "National Natural Landmarks Program" 44 FR 66599 (November 20, 1979); and on a (2) "National Historic Landmarks Program" 44 FR 74826 (December 19, 1979); and (3) the companion piece--the proposed National Heritage Policy Act of 1979. I cannot focus explicitly on the relationship of these items to sound heritage conservation. My interests are in the area of institutional, legal, and administrative aspects of resource management.

I can, therefore, reflect the role of each of the three items in the bureaucratic development of the Heritage Conservation and Recreation Service (HCRS), nee BOR. I would like to focus on these materials as the best set of data I have ever encountered to document a pervasive problem in government. Here is a marvelous case study in agency survival. Created by a Secretarial reorganization in 1963 and recreated by a Presidential one, HCRS has no authorizing statute, no mission. When the old Bureau of Outdoor Recreation was reorganized into the Heritage Conservation and Recreation Service, it lost the important recreation planning and inventory functions which had been delegated to it by Secretary Udall in 1963. BOR was created in the wake of the Outdoor Recreation Resources Review Commission studies, largely in an effort to circumvent Park Service/Forest Service rivalries in recreation planning. When that responsibility was removed and the recreation programs generally redelegated back to the Park Service, HCRS was left with little more to do than shuffle papers for the Land and Water Conservation Fund. After several years in which employees seriously sought guidance from each other and outsiders on what, if anything, they might do with themselves, HCRS became the national repository of Georgia's reputed success in "heritage" conservation. Unfortunately, however, the HCRS heritage program meets no unmet public needs. It is a classic, a true monument to a ubiquitous but lamentable aspect of our national political heritage. Here we see in perfect conformation a virtually useless bureaucracy grasping at straws to create a mission when, in fact, it does almost nothing to justify its continued

existence.

This situation is not sufficiently outrageous to command attention while the nation's economy, foreign policy, and self-confidence crumble. It is, however, potentially more important than simply another unnecessary bureaucracy absorbing scarce government resources. First, the tactics through which this minor outrage is being perpetrated are so blatantly misleading that they provide disheartening evidence that we as a people are incapable of reasonable, honest government. Second, and most important--at least in the near term--is the negative impact of yet another set of redundant criteria, regulations and regulators on the nation's ability to define and implement comprehensive, rational programs for efficient protection, allocation, and development of our natural resources.

I take it as self-evident that historic preservation and protection of natural wonders are appropriate and valuable public goals. I want to focus on the HCRS programs, however, to ask whether these institutional and extensive regulatory arrangements constitute an effective way to achieve those goals. My impression is that the answer is no. The question deserves, however, more public discussion than it has received. I shall state my case quite strongly this morning in hopes of contributing to starting some.

I. TACTICS

I have numerous problems with HCRS tactics on this matter, most of which center on HCRS's apparent efforts to obscure the issues and actually limit effective discussion thereof. I shall focus on three points: the confusing array of regulations and legislation that HCRS is presently touting; their inexplicable failure to follow rudimentary notice-and-comment procedures in unveiling their Landmarks program; and the accumulation of evasions, fabrications, and simple lies which characterize HCRS attempts to conceal the lack of statutory authority for the regulations in a cloud of nonexistent past practice.

My first point is that HCRS has simultaneously unveiled three programs with confusion, overlapping names and provisions. Proposed legislation, the National Heritage Policy Act, developed by the Administration and widely known as S. 1842, is the subject of numerous handouts, brochures, articles, etc., which the agency is distributing. I am not very impressed by the HCRS lobbying at the taxpayers' expense for its own bill; but I admit it is not extraordinary for an agency to do so. To the extent that the agency's public relations misrepresents both present policy and the impact of the bill, it is more problematic, but I will not detail that relatively minor breach.

It is more important to note that the bill and the HCRS focus on the bill serve as a smoke screen for not one but two sets of regulations promulgated by HCRS last fall and winter. While urging average blokes to support the pending legislation, the agency has gone quietly about establishing two programs which overlap the bill, each other, and numerous other existing state and federal programs. The National

Natural Landmarks Program and the National Historic Landmarks Program were imposed without public debate or even advanced warning in November and December numbers of the Federal Register. Both are patterned loosely on the National Historic Conservation Act model and include study and registration of national landmarks amidst a host of other provisions which I shall touch upon later. My point here is that HCRS has created a carnival shell game with not one but three peas. It has literally taken me days to sort out all the straws in the wind; and unlike most citizens, I began knowing what "HCRS" stood for. Even well-informed persons comment on the bill without having even heard of the regulations. The confusion between and among these multiple moving targets is so complete as to virtually preclude effective public evaluation of the underlying issues.

My second complaint about HCRS tactics is that neither set of the regulations is "proposed". Though the agency has politely requested public comment, the regulations were effective immediately. The Historic program announcement contained no explanation for that departure from standard practice. The Natural Landmarks program notice asserted:

"However, since other Federal programs, state and local governments, and private organizations, and individuals are in need of definitive guidance at the present time, these regulations are to be considered as in force immediately on an interim basis pending publication of final regulations" (44 FR 6659).

However, HCRS is also alleging that the Natural Landmarks program has been in place since 1963 (under the jurisdiction of the National Park Service prior to the reorganization which created HCRS). It is not clear why a need for guidance so pressing as to preclude standard APA notice-and-comment rule making should have developed. It is also not clear why they are promulgating regulations before the requisite bill is enacted, but I shall return to that. The lack of public comment period is unexplained, inexcusable, and casts a cloud of suspicion on the whole undertaking.

My third complaint about HCRS tactics is that I believe that they are promulgating full force-and-effect regulations not only without adequate public comment but, indeed, without statutory authority. At some point these remarks become far more substantial than a discussion of tactics. That agency activities must be authorized by law is one of the most fundamental concepts of our representative system and one of the principal mechanisms by which we try to achieve popular control of government actions. Flouting this doctrine constitutes a serious assault on critical assumptions which underlie the American system. I will, however, deal primarily with the tactical aspects of that assault, focusing on HCRS efforts to cloak their unauthorized programs in a raiment of fictitious history and past practice.

HCRS is asserting that, although the legislation is necessary to protect ostensibly threatened natural and historic resources, they do, in fact, have statutory authority to support the regulations. This is somewhat awkward, but in the case of the Historic Landmarks Program, it seems to be generally true that authority exists. The Natural Landmarks

Program is, however, based on a mere, I would say, fallacious thread of attenuated statutory interpretation. The Natural Landmarks Program is based, in fact, on a perversion of the same Historic Sites Act of 1935 which supports the Historic Landmarks program. That Act declares:

"... that it is a national policy to preserve for public use, historic sites, buildings, and objects of national significance for the inspiration and benefit of the people of the United States" (16 U.S.C.A. 461).

Subsequent sections of the Code reference drawings and plans; accurate historical and archeological facts concerning sites, buildings or objects, restoration, reconstruction, rehabilitation, and preservation of sites, buildings, objects, or properties; and maintaining museums in connection therewith (16 U.S.C.A. 462). The implication of both the plain words of the bill and its history is that it references what we now charmingly call "the built environment." Nonetheless, in order to justify the Natural Landmarks program, HCRS seizes upon the word "objects" and redefines it to mean:

". . .the full range of terrestrial communities, aquatic communities, landforms, geological features and habitats of native plant and animal species that constitute the nation's natural heritage" (44 FR 66599).

Without that distorted interpretation of the word "object" in the 1935 Historic Sites Act, the Natural Landmarks Program would be absolutely without statutory basis. In consider it extremely bad form for a public agency to undertake a program, especially a massive inventory and regulation program such as the Natural Landmarks Program clearly contemplates, without either public discussion or statutory authority.

These bad tactics are supported, and my concern exacerbated, by a web of half-truths and little lies. HCRS is trying to conceal its torture of the Historic Sites Act by assuring us that the Natural Landmarks Programs has been "around" since 1963. The regulations state that the Program "was established in 1963 by the Secretary of the Interior" (44 FR 66599). When I pressed one of the principal authors of the regulations for a reference to the relevant Secretarial Order, I was told that the program was "sort of" based on the Historic Sites Act but that there was no Secretarial Order. Apparently, NPS Director Conrad Wirth recommended the Natural Landmarks Program to the Secretary of the Interior, Stuart Udall, who "approved" it on May 18, 1962. On June 27, 1963, Assistant Secretary John Carver requested budget approval, and on July 11, 1963, "BOR approved" it. "It has been around for 17 years if mere presence lends any credence," this principal author concluded. My own impression is that the data (which incidentally was readily at hand when I telephoned) and the 1963 date result from a **post hoc** file search and is not a true indicator of the lineage of the program. By tracing backwards through successive revisions of the Natural Landmarks registry in the Federal Register, I located the introduction of the program in August 1970 (35 FR 13141). When the program actually begin is, of course, a totally trivial concern. What matters is that HCRS is playing fast and loose with the facts in order to create a semblance of statutory authority for a program that has none.

This veneer of a long history is accompanied by the suggestion--wholly misleading in my opinion--that the Natural Landmarks program, as described in the 1979 regulations, is similar to the previous program which the Park Service administered. This deception is important both politically and legally. Politically, it seems designed to allay criticism. HCRS appears to be saying: "This is just the same old stuff folks, so there is no reason to get all upset about our little ole regulations." Legally, it is important because Congress appears to have mentioned natural landmarks in several statutes. It is not entirely clear that Congress is always specifically referencing to National Natural Landmarks, but it is possible from the language in three statutes to piece together a strained "Congressional acquiescence" argument. The logic is that, although the program is not specifically authorized by statute, Congress has been sufficiently aware of it so as to create an implied authorization. This is always a very weak legal argument. It is, however, most apt to fly in cases involving public land management agencies programs on the public lands because of Congress special position vis-a-vis the public lands. HCRS is not a land-managing agency, of course, and private lands are seriously affected by all the programs; and it is still a highly questionable legal theory. More to the point, however, the HCRS's attempt to draw acceptability from past practice or to create statutory authority from three congressional references to natural landmarks is totally dishonest, because the regulations they promulgated are significantly different from the previous program in which Congress ostensibly acquiesced.

The most obvious difference between the pre- and post-HCRS landmark programs is in the criteria for identifying a National Natural Landmarks. In 1970, the Park Service was clear that a Natural Landmark "must be nationally significant as possessing exceptional value or quality in illustrating or interpreting the natural heritage of our nation, and must present a true, accurate and essentially unspoiled example of natural history" (35 FR 13141). This language remained unchanged throughout the period in which the Park Service administered the Registry and was in effect when Congress allegedly "acquiesced" in the program. The HCRS definition of a National Natural Landmark is:

"A specific area designated by the Secretary of the Interior which contains a representative example (s) of the nation's natural history . . ." (40 FR 19503).

The "criteria" in the HCRS regulations amplify that definition stating that the Natural Landmark Designation "recognizes areas which best represent the ecological and geological character of the United States." The primary criterion is that "the area being considered must contain one or more high quality examples of the ecological and/or geological features identified in the classification of the natural region in which it exists" (44 FR 6601-02). Under the original program, a landmark must be exceptional--nationally significant. HCRS defines nationally significant as "typical of the region." Skeptics can be forgiven, I believe, if they see in this attempted forensic slight-of-hand a HCRS effort to gain authority over a virtually unlimited set of our nation's resources and resource management policies.

This fear is potentiated by a second change between the NPS and HCRS programs. Under the NPS program, the Registry was the heart of the undertaking. After a study by NPS, if the Advisory Board on National Parks, Historic Sites, and Monuments concurred, "the Secretary may announce that the site is eligible for registration... Registration requires agreement by the land-owner...". Thus, although the NPS Program--by announcing a site's eligibility for registration--could create pressure on a private owner to preserve the site and perhaps cause the owner unwanted publicity or notoriety, a site could not become a landmark without the owner's cooperation. Note, however, that the HCRS regulations completely obliterate the private owner's options. Under the HCRS program, the secretary does not announce that a site is eligible--he **designates** the site a national landmark. Registration, which requires the owner's permission, is an entirely separate step. The owner's only option is to accept or reject a brass plaque and public ceremony presenting same.

The HCRS effort to portray their regulations as authorized by statute or by implied Congressional acquiescence, as carrying on a long-standing program, and as encouraging **voluntary** compliance from private and other federal landowners is nothing more than a tawdry collection of half-truths and flat-out lies. It rounds out the confusing and thoroughly unforthright strategy in which the agency is presently engaged. The spectacle of a public agency slipping full force-and-effect regulations into the Federal Registry without a comment period and behind a smoke screen created by debate on the agency's own bill--ostensibly necessary to the protection of our nation's physical and cultural heritage--is really rather tawdry. I have not the slightest doubt that this is an explicit tactic rather than a confluence of unrelated events. One ACHP official, who shall remain nameless, has summarized HCRS policy to a totally reliable friend of mine, who shall also remain nameless, in the following colorful aphorism: "Buzzing flies get swatted". Apparently fearing public discussion and review of their programs, HCRS seems to have decided that the best defense is covert offense.

II. SUBSTANCE

Complaining about tactics is, of course, largely an expedient argument. When one applauds the end result, one is likely to be tolerant of a broad range of subterfuge in achieving it. Conversely, when one deplores the result, it is probably true that one will also find the tactics unsavory. I find the HCRS approach to the National Heritage Program far beyond the bounds of what even the most naive among us must accept as normal bureaucratic chicanery. I would argue further that the lack of ethics at this stage of the process bodes ill for the implementation stage should the program and the agency survive. However, I realize that I am open to the charge that my reverence for tactical purity is influenced by my criticisms of the substance of the program. I find this program unattractive on numerous counts. I shall organize my criticisms of the regulations and the bill around three general themes. First, and most obviously, the program is totally unnecessary--it overlaps, duplicates, and confuses dozens of ongoing

efforts. Indeed, it trivializes the concept of heritage protection by shifting the program away from national gems and treasures and focusing on, almost literally, whatever HCRS can get its hands on. Second, it defines for HCRS a "coordinating" role which they have not been able to play in the past and for which there is every evidence that neither they nor anyone else will be able to play in the future. My final point is that because they cannot really coordinate, HCRS authorities--which HCRS has and is trying to create for itself--present too great a potential for them to be merely obstructionists. Basically what these programs provide for is already being done. HCRS regulations and involvement seem to me too wasteful, superfluous, and potentially destructive of both heritage resource programs and the major efforts underway for the last decade to achieve comprehensive, environmentally sensitive management of our nations resources.

The key feature of the Natural Landmark regulations is the HCRS "region studies." Each natural region of the nation will be inventoried, typically by scientists under the HCRS contract, in order to provide a "baseline for identifying potential National Natural Landmarks", a "classification and description of ecological and geological features, and an annotated list of areas that best illustrate those features" (44 FR 66600). John Wesley Powell used to do that, I believe, and I am not sure we need or want to pay for another major inventory. Nonetheless, after further study by HCRS scientists, the list will provide the basis for recommendations to the Director of HCRS, who will make recommendations to the Assistant Secretary and the Secretary. There is ample allowance for notice to the owner or owners of the site and relevant state and local officials and for publication in local newspapers of notice of the pending designation. Although HCRS is under no constraint to proceed expeditiously, notified individuals then have 30 days to comment. There is **no** public involvement program referenced in the regulations. The HCRS Historic Landmarks regulations establish a similar program. HCRS has claimed authority to do a similar inventory and to designate historic sites, absent to the consent of the owner, in approximately the same procedure. Again, save for the notification of the owners and relevant local and state officials, public involvement is conspicuously absent. Although the criteria for evaluating a historic land mark retain the concept of "national significance" missing from the Natural Landmarks program, the ultimate effect of the regulations is no less flaccid. For example, sites, buildings, or objects are eligible for designation if it can be demonstrated that:

"...they have been associated with and are now the primary tangible resources that illustrate, recall or characterize individuals, groups, events, processes, institutions, movements, lifeways, folkways, ideals, beliefs, or other patterns or phenomena that have had a decisive impact on or pivotal role in the historic or prehistoric development of the Nation as a whole..." (and so on).

Laypersons, like myself, who have absolutely no idea what that might encompass are reminded by the regulations that the criteria do not "define significance or set a rigid standard for quality. Rather, the criteria establish the qualitative framework in which a comparative, professional analysis of national significance can occur" (44 FR 74829).

I would probably be less testy about the potential for HCRS to stick its long-handled spoon into a virtually unlimited array of federal, state, and private resource management and development programs if I thought the initiative were necessary. I sincerely believe that, if national cultural and natural treasures were subject to wanton destruction by government or private operatives, no one would object to a program like this and, not coincidentally, it would not be necessary for HCRS to sneak it past a somnolent public in the manner described above. It is however, totally unnecessary; in fact, it duplicates and confuses dozens of existing government and private programs.

Is it too obvious to mention that the National Park Service, from whose side this rapidly proliferating rib was carved, has long maintained a diverse and aggressive preservation program of its own and an extensive array of technical and consulting services for state, local, and private efforts? And what of the work of the Advisory Council on Historic Preservation (ACHP) under the National Historic Conservation Act? Capped by those two major bodies, federal efforts on federal lands are extensive and comprehensive.

Indeed, these concerns are a part of virtually every federal undertaking. For example, the BLM is required by the Federal Land Policy and Management Act to identify and protect "areas of critical environmental concern". The Forest Service administers a similar program, the Natural Areas Study Program. Both the Forest Service and the Bureau, as well as every other federal agency or private operator with a federal permit or funding, are required by their authorizing statutes and/or by NEPA to assess and plan for the protection of natural and cultural heritage resources. The Forest Service, the Soil Conservation Service, and, to a lesser extent, the BLM are all engaged in massive national resource inventories which are much more likely than any HCRS program to achieve the heritage program goals. RPA, NFMA, RCA, and FLPMA provide a comprehensive mandate for assessing all national resources and HCRS fiddling is simply not necessary. The efforts of the major resource management agencies are, moreover, coordinated to the extent that they can be so by the Interagency Board on Natural Areas Management. HCRS assertions that they can provide something which is necessary and lacking in this area is a total fraud.

To the extent that state and private groups wish to do so, they have also established extensive specific programs in historic and natural area preservation. Depending on what aspect of what program is under consideration, 22 to 28 states have state programs. Moreover, I am informed that a uniform inventory and data-gathering system, which HCRS alleges that they can coordinate, is already in place. It is apparently the product of considerable cooperative effort under the leadership of the Nature Conservancy. I have already admitted that I am no expert in the finer points of historic preservation. However, I am sufficiently impressed with the work of the Nature Conservancy to have named them the chief beneficiary of my will. If the information system which they have developed is inadequate, let us discuss that and fix **that**. Whatever flaws the system may have, I am not convinced that they justify or will be remedied by the perpetuation or aggrandizement of a marginal federal bureaucracy.

I hope to dramatize and summarize my concerns about redundancy and overlap by referencing two specific aspects of the HCRS Program: the secondary criteria in the HCRS Natural Landmarks regulations and extensions made in the proposed bill to the coverage of the 1935 Historic Sites Act. First, regarding the secondary criteria regulations: when it becomes necessary to compare areas that appear to be essentially similar in terms of the primary criterion which was, you will recall, typical of the region, HCRS proffers six additional considerations. Among them are that "the area contains a rare and/or fragile geological feature or an unusually high concentration of rare and/or endangered species". Now we all know that there exists an extensive federal/state cooperative program for identifying critical habitat for threatened or endangered species. What this HCRS provision does is to extend that program without criteria, without expertise, without funding, and without authority to cover high concentrations of rare species and, hence, to open the way to endless haggling beyond the careful parameters of our national comprehensive program. The very next sentence compounds the dislocation by offering landmark status to "areas essential for breeding, wintering or migration of animal species". Again, HCRS is muddying the edges and encroaching on the domain of another set of well-established and comprehensive wildlife management programs.

My problem with the proposed bill is found in three new categories added to the Historic Register. Beginning in 1935, we have been protecting sites, buildings, and objects. In 1966, "districts" were added to give coverage to historic enclaves like Capitol Hill or Georgetown. In 1980, we are being asked to add three more categories: networks, cultural landscapes, and neighborhoods. HCRS Director Delaporte defines these categories by example (11-12-79), **Outdoor America**. A "cultural landscape" includes places like Harper's Ferry which is, incidentally, already administered by the National Park Service. A "neighborhood" is apparently distinct from a district because of ethnicity. Delaporte references Baltimore's "Little Italy". As a New Yorker, I find this concept particularly offensive. One of the most fascinating things about New York's history is the ebb and flow of ethnic groups around the city. To enshrine some particular configuration would be to strangle the most vital part of the city in my opinion. The idea that HCRS will be on hand with a sheaf of regulations to complicate urban planning is not particularly attractive either. Finally, "networks" include such items as "the California Missions"--which are adequately protected according to my admittedly unexpert eye under the stewardship of a proud and very capable state and private program--and the Oregon Trail. Of course, we have a national trails bill which provides for the Oregon Trail, among others, and defines the parameters of the program rather extensively. Verily, if HCRS can get its nose into a tent called "networks" or "cultural landscapes", there is virtually no square inch of the country which will be free from the regulations which S.1842 urges them to promulgate. Everything in the regulations they have already promulgated, inspired by the term "object," suggests that such is their explicit goal. This is not, I am arguing, positive for heritage conservation programs. It trivializes the concern, and dilutes that important effort by focusing attention on extending HCRS programs and jurisdiction rather than on treasured and threatened evidence of our nation's history.

My second substantive lament is that they do these things in the name of coordinating and leading an ostensibly disorganized pursuit of cultural and natural areas preservation. It is worth mentioning that the efforts of BOR, HCRS's predecessor, were so unnotable in coordinating the recreation field that, when the entire program went on the block, there was nary an audible peep of protest. It is also worth noting that there has been no outcry of public dismay such as the recreation "crisis" of the late 1950s which precipitated BOR to suggest that the existing array of public and private institutions is not succeeding admirably. More to the point, however, HCRS's own regulations, developed in their own shop and away from the political pull and haul that typically afflict such efforts, are, quite simply, a mess. HCRS's whole program is so littered with duplicative advisory councils, consulting committees, nominations, designations, registrations, and plaques that it is almost impossible to follow. Worse still, the two programs that HCRS created and controls are absolutely in conflict from the outset.

Because of the chicanery around the definition of "object" which was necessitated by the fact that there is no statutory authority for the Natural Landmarks Program, any natural object is liable to be studied, inventoried, and designated as either a natural landmark which protects objects, torturously defined, **or** as a historic landmark which also protects "objects" along with buildings and sites. Hence, it is virtually impossible to tell, when confronted with a tangible phenomena, whether it will be treated as a natural or as a historic object, which regulations or criteria apply, and so forth. How HCRS researchers will deal with that in the field is totally a mystery. Personally, if I were given virtually free reign to fabricate a program and I wanted to palm myself off as a great coordinator, I would be much embarrassed over my inability to avoid tying my own shoestrings together at the starting block.

My final concern about the substance of the programs is related to HCRS's demonstrated weakness in the coordinating field. The potential for random troublemaking on public and private lands that is contained in these programs is virtually unlimited.

The process defined in the regulations is distressingly similar to the RARE I and RARE II fiascos. HCRS has awarded itself carte blanche to inventory the entire nation, irrespective of ownership or present or potential use, and to designate areas which are neither extraordinary nor outstanding but merely typical or characteristic as part of our national heritage. It is not inconceivable that enterprising preservationists could achieve a stalemate similar to that which occasioned the Forest Service wilderness reviews referenced above. By that I mean that it is possible to block all management activities on federal lands and all utilization of private resources that requires any federal license or permit pending the outcome of the HCRS inventory. That could carry us well into the 22nd Century. If I did not believe that this set of regulations contained that clear possibility, I would not have worked so hard to understand what HCRS was up to.

Several provisions of the bill are even more troubling. First, Section 202 (b) establishes a virtual bounty-hunter system for landmark

preservation. It is not enough that we are going to try to protect known and important aspects of our heritage. In addition to the ostensibly necessary and quite comprehensive federal-state inventories, the Act offers to pay private parties for hunting these things up. The Secretary is authorized to "extend honorific Federal recognition" to states and private groups for locating and protecting heritage resources. The potential for harassment of public and private resource managers, which is actively encouraged by this provision, is extremely troubling. HCRS seems to be saying we need a constituency and we are willing to hire one.

Section 204 requires that the head of all federal agencies take into account the impact of any program they undertake on areas included in **or eligible for inclusion in** the registry. They must also allow the Council on Heritage Conservation an opportunity to comment on proposed actions. Now much of this requirement can readily be folded into NEPA compliance and EIS review and comment. What is galling is not the fact that Congress, even while considering the Energy Mobilization Board to provide fast-track siting for energy installations, is adding new curls and wrinkles and special interest-oriented actors to the process. Congress is not noted for the conceptual cogency of its work products and it is probably vain to complain. It does annoy, however, that HCRS is transformed into yet another set of hoops through which resource management programs must jump at a time when the BLM, the Forest Service, and the SCS are all engaged in massive programs designed to achieve comprehensive national planning. Problems with Section 204 are exacerbated by Section 205. Language proposed therein would require the head of any federal agency to determine that "no prudent and feasible alternative" exists to adversely affecting any natural or historic landmark. Again, the Council on Heritage Conservation must comment on the undertaking. I applaud efforts we make as a nation, as agencies, or as individual citizens or corporations to assure that cultural and historic preservation is explicitly made a factor in resource planning. But I reject the notion that such values are primary. Indeed, I find that all single variable decision making is reprehensible. We live in a world of complex trade offs, and I am equally opposed to placing cultural resources, endangered species, or economic efficiency in a preferred position. Everything we do threatens something, and I am unalterably opposed to enthroning cultural preservation as the preeminent criteria.

Now it is true that this provision will not take effect until the Secretary promulgates regulations defining natural and historic landmarks. However, having seen what HCRS came up with in the absence of statutory authority does not build confidence that new regulations would confine the program to truly significant sites or to limit the range and scope of federal resource management issues that HCRS could muddy.

The potential for mischief on private lands is no less cause for concern. The designation of a site as a natural landmark, which the owner is absolutely powerless to stop under the HCRS program is a virtual invitation to trespassers which HCRS does not offer to help control. Moreover, the program also invites harassment of noncooperating landowners who are singled out by a designation which may constitute a costly burden and which HCRS does not offer to share. Given the

scope of the net that HCRS has thrown in selecting these sites and the minimal criteria a site must meet in order to be tagged with the designation, it is not difficult to predict that the Natural Landmark status could figure prominently in mau-mauing the legitimate efforts of the landowners to use their land and to develop resources vital to the nation's stability and survival. Nobody that I know of would condone the random destruction of natural wonders. However, there are comprehensive federal, state, and private programs to trivialize the whole undertaking by giving the least accomplished organization in the preservation field virtually unlimited opportunities to create mischief.

The program, in sum, does very little other than to authorize a whole raft of regulations, guidelines, procedures, and reporting and consulting requirements in a field that is amply served by numerous comprehensive programs and agencies with considerable expertise. HCRS has, by the regulations it has already promulgated, announced its intent to splice and torture every available word to create an opening for itself in an ill-defined, virtually unlimited array of issues and areas. It has neither the technical expertise nor the political clout to begin to implement its grandiose schemes. So the requirements will simply be there, not as a source of redress for threatened artifacts of our heritage, but an avenue for simple harassment of government agencies and private citizens. If we had no alternative means of protecting cultural and natural treasures, it might be worth the costs involved in this extensive regulatory scheme to achieve that goal. The simple fact is, however, that this whole program duplicates existing agencies and regulations. If ever there was a totally unnecessary government program, I am convinced that this is it. I will conclude my analysis by noting that if what the states really want is access to Land and Water Conservation Fund money for heritage programs, which S. 1842 provides, let us discuss an amendment to the LWCF Act and leave HCRS and its regulations out of it.

III. CONCLUSION

Literally, nothing that is contained in either the HCRS regulations or its proposed bill is not redundant, overlapping, and confusing to established programs in heritage conservation and related fields. At another time in our national history, I might merely argue that heritage programs, though legitimate public undertakings, ought to be balanced against other legitimate goals, not the least of which is to lighten the load of federal regulation and public expenditure on individual citizens. I would make that point and expect to be argued with by people who have different priorities.

At this particular point in history, however, I find this whole undertaking particularly objectionable. In the middle of a major national economic crisis, in which all sorts of fundamentally important government programs are being cut, this thoroughly expendable agency is trying to entrench and aggrandize its position. Moreover, at a time when the entire West is in various stages of dismay and rebellion over

the combined weight of synfuels, MX missiles, SMCRA, FLPMA, NFMA, the coal program, the endangered species program, RARE II, and the like, it seems unwise and unnecessary to flaunt this precious little bauble. We ought not to be surprised that HCRS is trying this. Agencies understandably fight for survival even when they have no real utility. I do not blame HCRS. I simply believe that this is such a clear-cut case of featherbedding that it is worth it to try and stop them. Real and important programs are so thoroughly threatened by the economic and political crises, generally and with particular reference to western resources, that the HCRS tryptic can only be described as obscene. I will return to the question that disappointed me at the outset. How can we build support for heritage program? If I were gung ho on this cause, I would begin by disassociating myself and my issue from HCRS. These programs and the proposed bill are so flagrantly unnecessary that they arouse ire and indignation among persons who would otherwise be quite kindly disposed toward heritage conservation. My impression is that heritage conservation may be vulnerable politically in tight budget, resource-scarce times. HCRS efforts to stay alive by riding on the back of this important but vulnerable concern will, I fear, kill it. Heritage programs are not well enough defined or a clear enough priority to survive public hostility to this transparent bureaucratic boondoggle. HCRS is deadweight--a highly costly liability. I would hate to see heritage programs used as a life preserver by a mediocre bureaucracy and sink as a result of HCRS's craven embrace.

POLITICAL AND ECONOMIC SUPPORT FOR HERITAGE PROGRAMS

Jeanne M. Welch

Since the enactment of the National Historic Preservation Act of 1966, there has been a decided progression in federal, federally funded, and licensed projects that have potential for impact on cultural resources. Vast energy projects, highway systems, multiple housing and urban development projects, and the attendant Section 106 "Procedures for the Protection of Cultural and Historic Properties", together with individual state historic preservation programs, have made Americans increasingly aware of the finite nature of their natural and man-made environment. Executive Order 11593 and the National Historic Preservation Act of 1966 provide an effective administrative framework for the identification, protection, and enhancement of heritage resources; however, implementation of cultural resource management lies with the existing federal-state partnership. This partnership should and must be extended to include the local public and private sectors if the overall goals of a growing preservation movement are to be realized. To carry out the preservation planning successfully, an administering agency or trust organization should be cognizant of political and economic realities inherent in all levels of government and in the private sector as well. To achieve sound political and economic support for preservation activities we must recognize areas of need and take positive steps to correct program deficiencies at the federal, state, and local level.

The National Conference of State Historic Preservation Officers, the National Trust, and Preservation Action, a nonprofit preservation lobbying organization, have solidified their roles in the historic preservation movement in the three years that have passed since the Office of Archaeology and Historic Preservation was transferred from the National Park Service to the newly created Heritage Conservation and Recreation Service in 1977. The Heritage Conservation and Recreation Service, formed at the request of the President of the United States with a view toward integrating natural resources and recreation interests, thus far has lacked enabling legislation. The Heritage Policy Act, a legal declaration and legislative mandate of the administrative merger, is now pending before Congress. This proposed Act makes a drastic distinction between national, state, and local significance of historic properties and carefully delineates the role of the State Historic Preservation Officer and concomitant state historic preservation programs. These functions were previously defined under "Guidelines for Procedures" as outlined by the National Advisory Council on Historic Preservation. On the other hand, the Seiberling Bill, a proposed prospectus for preservation planning, is concerned solely with historic preservation and sets up an independent preservation agency to coordinate federal, state, and local efforts and interests. The passage of either bill, no doubt, will introduce change in historic preservation procedures and programs.

In the years since the Heritage Conservation and Recreation Service was created, state historic preservation agencies have witnessed a number of changes. Some changes have been beneficial, some confusing

and controversial. The review of plans and specifications at the state level for acquisition and development grants-in-aid expanded participation in the particular process for those states that qualified; a more structured comprehensive grants-in-aid manual clarified federal requirements and regional letter of credit for apportionment funds served to shorten the reimbursement procedure for grant recipients. On the other hand, repeated changes in instructions in the organization of the states' preservation plans which outline the individual states response to specific federal priorities; yearly changes in the apportionment formula which determines the allocation of funding available to a particular state; federal mandates that mirror political concerns not directly applicable to preservation concepts at the state and local level; the negation of funds for use on historic structures that still house governmental units; and the earmarking of preservation funds for special categories of properties have had a cumulative deleterious effect on state preservation programs. Change as an accompaniment to progress is expected. However, the rapidity of change in the structure of preservation planning, coupled with a natural social resistance to change, has strained the credibility of the state historic preservation program and caused strife between state review board and State Historic Preservation Officers. A gradual process of change, based on goals and objectives mutually agreed upon and supported by the federal-state partnership, when properly executed is commendable. Successive rapid changes by mandate, without the concurrence of both parties, has been and will continue to be destructive. A closer working relationship with open channels of communication established among the Heritage Conservation and Recreation Service, the National Conference of State Historic Preservation Officers, the National Advisory Council on Historic Preservation, the National Trust, Preservation Action, and the various local preservation organizations will ensure a program that more accurately reflects the needs of the total preservation community.

The state number of the preservation partnership can exert a vast amount of influence on federal legislation that charts the course of preservation movements. Each state agency should maintain an active liaison with the Senators and Representatives of its respective congressional delegation. A well-informed congressional delegation will lend energetic support to preservation legislation that meets the needs of its constituents. The state agency should keep its delegation abreast of all activities affecting local preservationists that reach beyond routine prescribed functions of the state agency. For instance, notification of the placement of properties on the National Register of Historic Places given to respective members of the congressional delegation by the Heritage Conservation and Recreation Service should be followed by more detailed information from the state office, and the notification procedure should be extended automatically to the local level. Federal undertakings in individual states, such as energy, highway, surface mining, irrigation, soil conservation, and other land use projects that have high potential for impact on cultural resources often have political overtones that are interstate or national in scope and call for well-integrated federal, state, and local cooperation. The state agency can bridge any gaps in communication by supplying accurate information to all participants in the preservation process and by helping to arbitrate any difference of opinion. This can be particularly pertinent to the Native American population. The State

Historic Preservation Officer should work closely with all Native Americans in his or her state, advancing their expressions of concern about federal undertakings, honoring their beliefs with regard to religious and sacred objects, and respecting their wishes when burials are unearthed inadvertently during construction activities.

In addition, to ensure an effective working relationship with federal agencies exercising jurisdiction over lands within a state, the State Historic Preservation Officer should take a positive approach, directly contact the regional representatives of federal agencies, and arrange to conduct a series of mutually beneficial preservation workshops. A brief overview of the administrative and organizational structure of the federal and state preservation agencies; a summary of the federal-state preservation agencies; a summary of the federal-state preservation laws; ways to eliminate unnecessary paperwork, coordinate environmental review procedures, and advise on cultural resource management are helpful suggestions for an agenda. In essence, a well-planned workshop, ideally, should establish a cooperative working relationship.

State Historic Preservation Officers realize that regulatory and enforcement power is vested in the state for land use controls, coastal zone management, and environmental policies that can contribute to conservative use of the natural and man-made environment. Therefore, a sage State Historic Preservation Officer will keep state legislators appraised of all preservation activities of consequence that occur in his or her respective district. Properties placed on the National or State Register, restoration projects, discovery of significant archaeological and historic sites, and warnings about endangered properties are instances where the State Historic Preservation Officer should enlist the aid of local legislators to enhance the state historic preservation program. If the state agency has an honorific program for public recognition of preservation activities, for example, plaque or certification ceremonies for National and State Register properties or designation of National Historic Preservation Week, the State Historic Preservation Officer should encourage the Governor, state Senators, and Representatives to participate with local dignitaries and interested citizens in the formalities. Some states have found it productive to petition their legislative State Government Committee to establish a Subcommittee on Historic Preservation. A subcommittee devoted to historic preservation can be of inestimable value when the state energy seeks to introduce preservation legislation. As an adjunct to the federal Tax Reform Act of 1974, which provides for a 60-month amortization of taxes, each state should consider the enactment of tax-incentive legislation. Historic Properties listed in the National Register of Historic Places and declared to be such by the State Historic Preservation Officer are assessed for a specified number of years from the fiscal year following application at the true and fair value of the property. Such laws offer increased incentive for the owners of residential and commercial properties to invest in the restoration of their historic structures. A cooperative use bill, patterned on the federal General Services Administration law, which requires the director of general administration at the state level to give preference to the purchase, lease, or rental of historic, architectural, or cultural landmarks or portions thereof which meet the needs of elected state officials, institutions, departments, or other state agencies, is

another example of sound preservation legislation. All proposed legislation, whether for tax incentives, cooperative use, fiscal issues such as preservation bonds, revolving funds, or budget requests from the general fund of a state, require a well-developed political bond based on clear evidence of public benefit.

Political support at the local level also can be stimulated by means of a strong educational and public awareness program. A public relations/public information specialist conversant in the fields of architecture, architectural history, history, and archaeology, an individual who can draw on the expertise of the federal and state professional staff, is a valuable asset to a state preservation program. An information officer capable of converting the technical restoration of historic structures and the excavation of archaeological sites to humanistic values of interest to the general public; of establishing local rapport prior to advisory council meetings; of advertising program accomplishments and counteracting adverse criticism by inviting public participation, exerts a positive political force for preservation. Political support, however, cannot be generated solely through the media, television, newspapers, books, articles, brochures, and pamphlets. An introduction to historic preservation, which involves youngsters in action-oriented programs such as class visits to watch the progress of the renovation of old buildings in their neighborhoods, should begin in the grade schools providing opportunities to learn first-hand the wisdom of adaptive use of structures, and to gain an understanding of the scientific values and purpose behind the evacuation of archaeological sites. Educating students now about the built environment will help to provide for the protection of their cultural heritage in the future. An informed student of today will be able to make intelligent decisions as the office holder or voter of the future, but public awareness of preservation cannot wait for the vote of tomorrow. The here and now of preservation must be emphasized and dramatically illustrated by a comparison of the then and now. We must involve the local communities, the historical societies, the owners of historic structures, and the county planners. We must open up the preservation process, show and tell community administrators, local businessmen, and residents what has disappeared from the local scene, the links lost in their common heritage. We must teach local preservationists to recognize their cultural heritage, encourage them to take personal pride in this identity, and to preserve their legacy.

In the last decade the rehabilitation and adaptive use of old buildings has proven to be a wise investment for the private sector and has become an effective means for the federal government to revitalize urban areas. On the other hand, an individual historic structure in a small community often sets a precedent and community residents cautiously observe the success or failure of the venture. If the restoration project results from a grant-in-aid application, the success of the project often depends on the cooperative efforts of the state's restoration architect, the property owner, the consulting architect, and the contractor. The effort must be based on realistic estimates of structural needs and investment returns. But reaching far beyond "hard cash" monetary investments are the incalculable costs of failure. A poorly executed restoration project can result in loss of the validity of the cultural heritage program. A restoration project set in a small

community vividly illustrates the need for a total commitment of federal, state, and local preservationists if the preservation program is to succeed.

Success at the local level involves not only governmental authorities but the private sector as well. Local preservationists should petition their elected officials to establish boards with responsibility for the designation of local landmarks, for the enactment of ordinances to incorporate and protect historic districts, to assess zoning and to recommend local tax incentives that encourage the preservation of the community's identity vested in historic structures and sites.

Local governments should integrate their planning processes with a protection program for locally significant cultural properties and seek alliance with the state historic preservation offices and federal agencies for the enhancement of cultural heritage of the local communities.

The State Historic Preservation agency can and should be the catalyst for preservation programs at the local level by providing the public with advice, technical information on preservation techniques, sources of preservation funding, environmental law, and preservation research methodology, and, in general, integrating the state and local preservation movement.

Inevitably discussion of the preservation of cultural resources leads to economics and consideration of the costs involved. If the cultural heritage of the people of the United States is to be properly preserved, the federal government should take action to appropriate the funds authorized by Congress. Funding levels consistently have been lower than the public demand, as evidenced by the ability and willingness of the public to match federal acquisition and development grants well in excess of available federal funds.

To date only a small portion of the cultural properties eligible for listing in the National Register have been identified. This lack of knowledge impedes the review process and places the burden for identification on federal agencies, causing undue delay and costly overruns in major developmental projects. There is a dire need to identify, evaluate, and protect significant cultural resources. This need could be met easily if the Secretary of the Interior acquiesced to an authorized 70-30 match for cultural resource survey and planning activities at the state and local levels. States that have initiated a survey program, employing professional preservation planners in the county planning departments to conduct cultural resource surveys and to facilitate environmental review of federal projects have experienced difficulty in convincing county commissioners that a 50-50 match has validity for the expenditure of county fund, even though a lack of knowledge regarding local cultural properties may impede planning projects using federal funds. Local authorities must be convinced that the identification of cultural properties is on a par with pollution control, rezoning, health and welfare, and senior citizen programs. Other federal programs do not expect, nor require, even matching percentages to advance their programs at the local level. Acquisition and development grants would benefit greatly by a similar 70-30 matching capability; however, if the state were given discretionary authority to distribute 50-50 matching funds on

the basis of a match for the total acquisition and development apportionment, those grant recipients that demonstrated a decided need conceivably could receive a matching percentage in proportion to their needs.

The identification, evaluation, and protection of cultural properties is the responsibility of all federal agencies, but few, if any, have made yearly budgetary commitments for the specific purpose of cultural resource management. Acknowledgment of Executive Order 11593, the National Historic Preservation Act of 1966, and the Archaeological Resource Protection Act of 1979, by means of individual agency counterpart regulations duly executed and published in the Federal Register, does not constitute compliance with or implementation of the laws. At such time as the federal agencies appropriate funds for cultural resource management and use those funds to properly staff their environmental sections or divisions to carry out the laws, then and only then, will the federal government have carried out the Congressional intent of the laws.

Just as federal agencies must recognize their responsibilities to cultural resource management, the State Historic Preservation Officer should convince all state land-holding agencies of the advantages of locating, identifying, evaluating, and nominating eligible cultural properties under their jurisdiction to the National Register of Historic Places. Preservation seminars and technical workshops attended by environmental and fiscal managers of land-holding agencies is the recommended procedure to follow. Directors or commissions of land-holding agencies can be convinced of the efficacy of the identification program. The 50-50 matching survey program can be budgeted under operating costs, rather than having to be deducted on a project-by-project basis from the state agency's capital budget. This and all facets of the state preservation plan can be implemented with greater ease if the State Historic Preservation Officer heads an agency which enjoys autonomous status in the hierarchy of state government, receives sufficient state economic support, and has developed a public image as the information center for the identification and protection of the state's cultural resources. State economic support must be developed to the extent that the agency is not a mere conduit for environmental review of federal, federally funded, or licensed projects, but is recognized as an efficient, productive agency with adequate professional staff to ensure the protection of the state's cultural heritage and to be of service to the general public. Only through federal, state, and local governmental agencies interacting with the private sector--the lawyers, architects, bankers, historians, real estate developers, Native Americans, students, builders, consultants, and businessmen, small and large--can the public conscience be aroused to preserve and protect our heritage resources.

HCRS AND CITIZEN PARTICIPATION

Margot W. Garcia

As a respondent to the talks given this morning, I want to approach the topic from the perspective of citizen participation. Mr. Donoghue has referred to a concern for attempting to gain broad public support of heritage activities. He went on to state that a number of groups have shared the area of common interest which is a desire for more effective decision making concerning use of natural and fiscal resources. Ms. Welch has expressed the idea that political support can be stimulated by means of strong educational and public awareness program needs. She included using public participation to counteract adverse criticism. Dr. Fairfax, looking at the legal backbone of heritage conservation, noted there is not requirement for public involvement in designating areas in contrast to other federal programs such as planning for BLM public lands, National Parks and National Forests. She pointed out that the agency didn't follow one of the usual processes for involving the public, that of comment on draft regulations published in the Federal Register prior to implementation. I want to speak to these points in the framework of defining citizen participation, discussing why it has a role in agency programs, and then adding some cautions about strategies for public participation processes.

Citizen participation is a multi-faceted concept which, broadly defined, refers to activities by private citizens that are more or less directly aimed at influencing governmental action or selection of governmental personnel. These include voting, lobbying, campaigning, advising, writing letters to governmental officials, attending public meetings, hearings, and so forth. An examination of the roots of the word "citizen" which are a combination of city and inhabitant, suggests legal inhabitant or resident of a political unit. Participation comes from "part" and "to take," communicating a sense of working together in shares. Used interchangeably, but not really synonymous, is the term public involvement, because it refers to all people in a public whether they are citizens or not. There are also many different publics. Involvement comes from "to wrap in something, to roll," and implies that one thing is encumbered or controlled by another, such as government initiation and therefore control of a participation process.

Stuart Langden (1976, p.21) divides citizen participation into four types:

1. Citizen action, protest lobbying, public advocacy--activities initiated and controlled by citizens or citizen groups;
2. Citizen involvement--activities initiated and controlled by government to improve and/or gain support for decisions, plans, or services which include as techniques public hearings, workshops, advisory groups, and surveys;

3. Electoral participation--activities associated with voting, campaigning, and political parties;
4. Obligatory participation--paying taxes and serving on a jury. Each type of citizen participation has its own purpose, traditions, style, language, and following. Because purposes are so different, one person can mean one thing by saying citizen participation and another person will understand something very different. Persons familiar with taking part in one type of participation process may be very suspicious of another type. User of so many different terms with different connotations has led to different expectations and consequently confusion for both public and agency regarding purpose and resultant impact on decisions.

The primary purpose of citizen participation is to increase the responsiveness and accountability of government to the citizens affected by public decisions (Rosenbaum, 1976, p. 1). In our form of government, citizens believe they have a right to be informed, consulted, and have an opportunity to influence governmental decisions that affect them. Time and time again experience has shown that the failure to provide people with a rationale for a given proposal evokes opposition. The opposition may be based on emotion, such as feeling that someone is trying to put something over on a person, rather than the merits of the case. However, in a political context, it is the strength rather than the merit of the opposition that matters. I think this point can't be emphasized enough. Citizens want to be included early in a planning process. They want to be fully informed. They want a respectful and honest response to their concerns. Agency failure to do so almost inevitably results in a negative backlash.

In addition, new NEPA regulations require scoping, so that important issues are raised early. Environmental impact statements are to be full disclosure documents available for public inspection. Public comments and questions on draft statements must be answered by the agency in the final statements.

Public involvement can be very useful for gathering information because lay people are often good sources of information regarding past, present, and future conditions of an area. Sharing of information can be a first step in building trust between an agency and its publics. Shared goals, mutually arrived at and agreed upon means to achieve those goals is another step toward greater trust. Out of the trust comes the broad-based and supportive constituency that Welch and Donoghue desire. It is not automatic, but must be nurtured and sustained. If the public ever feels it is being manipulated in order to form a constituency, the backlash will be swift and sometimes vindictive.

A few words of caution about strategies for public participation processes:

1. An agency needs to define carefully what it wants from citizen participation before embarking on a process.

Vague goals lead to vague responses which are often irrelevant to the problem at hand or open to misinterpretations. It's not a "let's have a meeting and ask the public what it wants" situation. Clear goals, unbiased specific questions can elicit clear and useful responses. Another part of defining goals is deciding how the information collected is going to be used in the decision process and communicating that decision clearly to the public. Another way to say that: it is necessary to determine the level of power the agency is willing or legally able to share with the public (Arnstein, 1969). Is the public's role going to be giving advice, exercising a veto, being informed, or being used to generate pressure on another branch of government? Whatever level of power sharing is adopted needs to be clearly explained to the public.

2. After deciding what your goals are for public involvement, technique is chosen and there are many from which to choose. Different techniques are needed for disseminating information than collecting it, different techniques for collecting it, different techniques for collecting information about goals than about means, still different techniques for assessing reaction to a proposal than gathering trade-offs.
3. There is a need to be aware of the many publics, their characteristics and their interests. Publics change with changes in issues; one public is interested in natural areas, and a different public supports historic preservation. The overlap of the publics is the area available for building compromise. All information channels that are open to you need to be used. Examples include your own newsletter, public organization newsletters, TV, radio, newspapers, and posters. I receive **Poppies and Porticos**, and that's a good readable newsletter, generally informative.
4. Feedback is part of a public participation strategy. Let the public know the results of their efforts. They have given of their time, money for transportation or postage, and expertise. Courtesy demands acknowledgement of either a letter to each individual thanking him or her for his or her effort, or a summary of the results sent to each person.

Public involvement thoughtfully and respectfully done will bring many rewards to an agency in terms of public support and goodwill. Citizen participation poorly done will haunt an agency for years. It is a job that takes thinking through what is desired to be accomplished and interacting with the public in a professional manner. Efforts to avoid bringing the public into agency plans and dreams inevitably backfire and everyone loses. Getting the public involved early and throughout the program will bring new insight and strength to the agency. Best wishes for an exciting experience ahead.

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THE HERITAGE CONSERVATION & RECREATION SERVICE

BOB RITSCH

The Heritage Conservation & Recreation Service was created in 1978 through the amalgamation of the former Office of Archeology and Historic Preservation, the National Natural Landmarks Program, and the Bureau of Outdoor Recreation (BOR). In this reorganization, HCRS retained all of the former recreation-oriented responsibilities of BOR. Those include administration of the State and Federal portions of the Land and Water Conservation Fund and assisting the States in the planning and administration of outdoor recreation facilities. HCRS also serves as the focal point for outdoor recreation planning and administration in the Federal Government. To these recreation responsibilities were added all of the historic and archeological preservation responsibilities of the National Park Service's Office of Archeology and Historic Preservation. The National Landmarks Program, which had existed in the National Park Service since 1963, was also transferred to HCRS, while responsibility for studies of Congressionally authorized Wild and Scenic Rivers and National Trails was transferred from HCRS to NPS.

It should be stressed that the proposed National Heritage Policy Act is not an "Organic Act" for HCRS. HCRS has necessary authorizing statutes for all of its programs, including the Land and Water Fund and the Historic Preservation Fund, the National Register of Historic Places, the National Historic and Natural Landmarks Programs, the Urban Parks and Recreation Recovery Program, the Interagency Archeological Services and the National Architectural and Engineering Record, and the National Wild and Scenic Rivers and National Trails programs.

I should also point out that the proposal for a comprehensive National Heritage Program--the result of the National Heritage Task Force effort in 1977--**preceded** the decision of the President and Secretary Andrus to reorganize the Interior Department and create HCRS. This reorganization came about precisely because the Task Force (an all-volunteer group of about 150 individuals representing over 50 different private and public groups and agencies from across the country) in studying the status of natural and cultural heritage conservation in the country had noted a definite problem within the Federal government in the area of interagency communication and coordination. In making their recommendation for a nationwide heritage conservation program, the Task Force also recommended that the Federal government "get its own act together" in terms of providing a more unified focus for natural areas and historic resource conservation activities. Hence, the creation of HCRS.

If the National Heritage Policy Act doesn't represent organic legislation for HCRS, just what will it accomplish? First, it will provide for continued technical and financial assistance to State natural heritage programs. It will also provide, through the National Register of Natural Areas, a planning mechanism whereby significant natural areas which these State programs identify can be recognized and protected from inadvertent damage caused by Federal activities.

In regard to historic and archeological resources, the NHPA will continue the national historic preservation program begun by the 1966 National Historic Preservation Act, including the National Register of Historic Places and the national system of State Historic Preservation Officers. The bill will also extend the life of the Historic Preservation Fund, the primary source of funds for historic preservation in this country, through Fiscal 1983.

Those States which already have a natural heritage program are generally very strongly supportive of the Heritage bill for the following reasons: First, the bill creates a national framework for resource information collection, thus providing a long-needed level of data **consistency** among the States and between States resource data collectors and their Federal counterparts. Secondly, the proposed Natural Register will give State natural heritage programs the same type of nationally recognized planning tool as is now provided for State historic preservation programs by the National Register of Historic Places. Finally, the bill will "open up" the use of the Land and Water Conservation Fund to allow the States greater freedom, in these financially difficult times, to use LWCF money in the ways in which it is most needed, whether for intensive recreation or natural area conservation.

Many states which don't now have a heritage program have also expressed interest in and support for the Administration's Heritage proposal. These states have been interested in the concept of heritage resource planning, but have been reluctant to begin a State program until they had a clear indication from the Federal government that such programs would **continue** to receive the support and encouragement of the Federal government, i.e., that support of State heritage activities was a long-term national **policy** and not just a special interest of this particular Administration.

Federal agencies are also supportive of the Heritage bill because they see within it the opportunity to promote cooperation between Federal and State resource planners and managers by providing Federal agencies with a single natural resource information contact point within each State. Such cooperation will save them time, money, and manpower in terms of planning and implementing projects and in carrying out their environmental compliance (e.g., NEPA) requirements.

The goal of the National Heritage Policy Act is **not** regulation. We are not going to ask the Federal agencies to duplicate, override, or contradict any of their existing authorities or programs. The bill will simply help increase the similar coordination between ongoing Federal resource planning and management activities and the heritage conservation activities of State, local, and private groups. For example, the U.S. Fish and Wildlife Service's Office of Endangered Species has already begun to develop cooperative agreements with several State heritage programs concerning the exchange of information of the status and location of endangered animals and plants in the States. Potential for cooperative efforts also clearly exists in such ongoing programs as the Bureau of Land Management's Areas of Critical Environmental Concern or the interagency Research Natural Areas system. The intent of the National Heritage Program is to find where the potential for such

mutually supportive linkages exists and then to promote them. This program has been specifically designed not to create new demands on the Federal agencies but to "plug into" the programs they are already running and to allow them to help State natural heritage inventories, or vice versa. The benefits of such cooperation were clearly expressed in the recent House hearings on the Heritage legislation, when the National Park Service, Fish and Wildlife Service, Bureau of Land Management, and Forest Service all testified in support of the National Heritage Program.

State and Federal agencies are not the only supporters of the heritage concept. Private industry, including such firms as Exxon, Atlantic Richfield, and Georgia Pacific, have come out in favor of the continued operation of State heritage programs. Industry, like the Federal agencies, has recognized that the presence of a coordinated nationwide network of State natural heritage programs will greatly alleviate the burden of environmental compliance requirements by centralizing data collection and dissemination within each state and by providing for cross-state comparisons.

Because the entire Heritage philosophy is built around cooperation, understanding, and commonly perceived goals, we have made a very definite commitment, throughout the development of this program, to **actively** solicit the input and advice of a wide variety of individuals and groups in the private sector and at all levels of government. The commitment began with Secretary Andrus' invitation to all individuals interested in contributing to the original Task Force effort and has continued through every stage of the proposal's development.

We have gone to great lengths to involve any and all interested persons in the development of this proposal, not only because we believe that maximum coordination and communication is the key to the program's success, but also for a more selfish reason. HCRS is, in Federal circles, a miniscule agency. Very frankly, we just have not had the personnel nor the budget which we would have liked to devote to the Heritage Program. Because of this, we have had to rely on the very generous contributions of time, expertise and general know how of a great many private individuals and groups and public agencies from across the country to help us fill in the gaps as we tried to develop this proposal. Soliciting all this outside input has meant that it has taken us a lot longer to develop the legislation that might have been desired. Since it has now been almost exactly three years since the President first requested we develop this program, we can hardly be accused of "railroading" the idea through.

This commitment to wide open involvement and openness of operations has carried through to the administration of the two national landmarks programs which were transferred to HCRS from the Park Service in 1978. This past year, HCRS published interim regulations on both these programs: the first published regulations on the actual operation of the National Natural Landmarks Program since the program began in 1963, and the first regulations to clearly detail the National Historic Landmarks identification and designation process since this program was initiated.

Most importantly, publication of these regulations marked the first time in the history of both these programs that regulations detailing the public and owner notification process involved in landmark designation have been published. I might add that while the regulations discuss only the formal level of public and owner notification, i.e., newspaper releases and letters, it is our stated policy in HCRS to make every possible effort to ensure that everyone concerned in a landmark nomination has a chance to hear and be heard, through public meetings, personal interviews, telephone conversations, etc. It is also our policy, since assuming authority for the landmarks programs, to postpone any final action on a nomination until everyone involved has had a full opportunity to express their point of view. We regularly extend the comment period on potential landmark nominations upon request of any responsible individual or group in order to allow them the necessary time to respond to the nomination. We also extended the comment period on the interim natural landmark regulations for an additional two months.

Let me briefly describe the purpose of the National Natural Landmarks Program and how it relates to the Heritage proposal, as this is a program which had kept fairly "non-visible" up until 1978. The purpose of the National Natural Landmarks Program is to systematically identify those ecological and geological features which are the best examples of the various biogeographic regions and geological phenomena of the United States. This is **not** an indiscriminate process; the selection is primarily accomplished by nationally renowned scientists most familiar with the resources of their particular region of the U.S. Neither, I may add, is this effort duplicative. Our present systems of National Parks, Forests, Wilderness, etc. have each been selected for particular reasons based on the specific management objectives of the respective programs. Taken together all these systems do **not** constitute a systematic, comprehensive representation of the country's natural history. It is the purpose of the Natural Landmarks Program, as it is of the proposed National Heritage Program within which the landmarks program will be located, to provide a form of recognition and thereby, hopefully, protection for these most significant examples of the country's natural heritage.

A good example of the degree of selectively involved in landmark nomination can be seen if the process which HCRS has gone through since 1978. When HCRS took over the National Natural Landmarks Program there were approximately 1400 acres which had been identified as being potentially eligible for landmark status, but which had never been studied any further and were, essentially, in limbo. Since 1978 we have attempted to reduce this backlog of potential sites and to try to make the landmark nomination process less cumbersome by regionalizing the evaluation and selections stages, as well as by opening the process up to public input. Of the approximately 1400 potential sites most of which we had "inherited" along with the Program in 1978, about 650 were determined not to be eligible for landmark designation. Decisions on roughly another 550 sites were deferred due to the lack of adequate information. We now expect to nominate only about 150 sometime this year as Natural Landmarks.

While historic landmarks have a limited degree of legislated

protection afforded them through Section 106 of the National Historic Preservation Act of 1966, there are presently no direct protective restrictions whatsoever applied to natural landmarks. The owner of a natural landmark is no way legally bound to preserve or maintain the area. A large percentage of the existing historic and natural landmarks are in private ownership. A great many of these private owners have voluntarily agreed to conserve the significant qualities of their landmark property for the benefit of all Americans, while still keeping the property in active use. We have found these private landmark owners to be some of the strongest supporters of the landmarks program and of proposed National Heritage Program.

Each year, we are required by law to report to the Congress on the status of existing historic and natural landmarks. Approximately ten percent of the total number of national landmarks are reported each year as being in some way threatened or endangered. The Congress was very disturbed, as were we upon taking control of these programs, to learn that about 50 percent of these endangered Landmarks are actually located on Federal land or are being threatened by some Federal activity. This seems to be a classic example of the right hand not knowing what the left hand is doing. This is precisely the type of communication/information problem which we believe can be reduced through the National Heritage Program. Under the proposed legislation, Natural Landmarks would become the most important part of the proposed National Register of Natural Areas, which would also include areas of designated State and local significance. This relationship would directly parallel that of the National Register of Historic Places and National Historic Landmarks. The bill would provide the same type of protection for both Historic and Natural Landmarks: requiring that Federal agencies first determine there was no reasonable alternative before proceeding with any activity which would damage or destroy a landmark. This protection is **not** directed toward private landowners, but is intended to help the Federal agencies better incorporate the objectives of landmark conservation into their regular planning and management activities.

I would also like to reemphasize Ms. Welch's comment about the Federal agencies not, on the whole, living up to their responsibilities in regard to implementing Executive Order 11593 and associated legislative mandates. The Administration's Heritage bill specifically addresses this problem by putting the provisions of E.O. 11593 relating to the Federal agencies into law for the first time, as well as legally establishing the position of the State Historic Preservation Officer.

Ms. Welch has also commented on the "imposition" of specific "Federal" priorities into State and local preservation planning. In the administration of the Historic Preservation Fund we do try to focus on **national** priorities, such as energy conservation, neighborhood preservation and economic revitalization, and minority and handicapped participation. We must do this because, as has been pointed out again and again here at this conference, **effective programs cannot be pursued in a vacuum without reference to economic, social, and political factors.** We do believe our approach to administration of the Fund leaves ample room for State programs to reflect particular State and local needs.

It may not be a great comfort to say that times are tight and thus

explain why funding levels, both in the Land and Water Fund and the Historic Preservation Fund, are low, but we all must face the fact that we are going to have to look in different directions for funding support and gradually decrease our reliance on Federal sources; a reliance which has increased steadily through the years.

The key to keeping all these programs running during these times is to open them up; open them up to broader public involvement; open them up to the private business sector. This is a commitment we have made in HCRS. We are, quite basically, a State-and locally-based Federal agency. If we are not being perceived as being helpful and responsive at these levels, then we are just not doing the job for which we were created.

HCRS has been accused here today of "fighting for its survival." While I do not want to use this forum to debate that assertion, I do feel compelled to point out that everyone in this room, everyone who has an interest in environmental conservation in this country is fighting too. We are fighting for the survival of all that we have accomplished and all that we hope to accomplish. Let me warn all of you not to fool yourselves. It is not just government environmental programs which are in danger of extinction in the face of a growing economic and energy "panic", it is our entire American environmental ethic and consciousness.

I submit to you that there is absolutely no way we can keep this consciousness alive if we do not work together. I applaud the spirit of communication and understanding which I have seen expressed at this meeting and I urge all of you to continue to share your comments on the National Heritage Program and other HCRS programs with us.

SUMMARY

A HEATON UNDERHILL AND GWINN VIVIAN

The first Western States Heritage Conference was constructive though not always harmonious. There was general agreement that certain natural and built resources should be protected and preserved as part of our National Heritage, but there was less unanimity of opinion on who should do it, how it should be done, and even on what constitutes a National Heritage Resource.

Chris Delaporte set some of the parameters for our deliberations in his keynote address: Federal priorities for the immediate future have been set; cultural and natural resource interests at all levels must pool information, using more sophisticated techniques; and Federal resource and management agencies cannot increase their spending levels. Ervin Zube introduced the workshop session by pointing out that resources, cultural or natural, are neutral until man puts them in perspective. We, through our needs, our aspirations, or our actions make them critical, or scarce, or of heritage quality. He reviewed briefly the history of our concern for critical natural and cultural resources in the West, in North America, and in the world. He suggested that an interdisciplinary approach was needed both to identify and to protect heritage resources, that we can learn from the past, and that success in this effort will lead to more efficient and less costly land use decisions.

The first session, "Data Collection and Classification and Information Management," was characterized by even treatment of a difficult topic and produced some good practical information of use to most present. The paper by Issacs was especially good and hopefully it will generate more interest in the New Mexico program. The second session viewed the heritage concept from a number of different perspectives. Our participants came from a wide diversity of institutional backgrounds and from a number of disciplines. Their approaches to a National Heritage program reflect this. Land managers, by they federal, state, or private see the program in terms of its impacts on management problems and opportunities. How many dollars and how much man power will it siphon from Forest Service or BLM multiple-use management? From Fish and Wildlife Service waterfowl production? Or on the positive side, will this program aid our resource inventory? Will it help protect wetlands or identify and preserve endangered species habitat? The archaeologist, or the historian or biologist or the forester, each sees it in terms of his discipline and is a little suspicious of the other's approach and understanding of "heritage" implications.

The final session produced a number of areas of agreement. (1) Most believed there was a need to standardize terms and methods of inventorying and that cooperative information collection was possible.

(2) Agencies, levels of government, and individuals conducting inventories should avoid duplication of effort. (3) The identification of critical areas and critical resources (natural or built) will facilitate decision making. (4) There was general agreement that we should develop a broad and active constituency, and that we should seek wide

public participation in the development of any heritage program.

Not all were pleased with the direction the current National Heritage Program is taking. Jean Welch, speaking for the State Historic Preservation Officers, thought the current National Heritage proposal weakened the historic preservation program; she favored greater funding of the status quo. Sally Fairfax condemned HCRS's handling of the whole heritage program and suggested that HCRS was really an unneeded Federal agency. As you have heard or can read in the Proceedings, Bob Ritsch made a rather spirited defense of the need for a National Heritage Program and the actions that HCRS has taken to date.

Reviewing the results of the first Western State Heritage Conference, it is apparent that the National Heritage Program, and HCRS too for that matter, must develop a more vocal, united, and dedicated constituency! The field is broad enough to embrace most of America, but we must include the private citizens, not just professional archaeologists, historians, botanists, zoologists, and foresters, all slightly suspicious of the others' motives. To date, HCRS has not done a good job of welding together such a public constituency. To be successful, a program of this kind must have grassroots support. After all, heritage is something people inherit from or pass on to people. Future conferences should have more private citizen participation. Better yet, conferences should be structured as workshops. The decision as to whether or not HCRS is needed as a Federal agency will ultimately be made by the public and the Congress.

It should be obvious to all who attended this conference that identification, inventory, and protection of cultural, natural, and recreational resources can benefit from coordination. In a period of rising costs and shrinking budgets, priorities for goals and actions must be developed, programs streamlined, and duplication eliminated. Everybody believes in coordination, but nobody likes to be coordinated! As a coordinating agency HCRS has a thankless task. In retrospect, it has done better than might be expected. However, if we are going to have a viable National Heritage Program, HCRS or some other entity must continue to develop more effective coordinating mechanisms.

Wilson Crumpacker suggested a number of ways that universities can contribute to state and national heritage programs. In no other institution or agency will you find such diverse talent assembled. Public agencies have barely scratched the surface of academic contributions to their programs. Nowhere is this more true than in the broad areas envisioned in a National Heritage Program. At the University of Arizona there is an attempt to implement this concept with the formation of the first HCRS/University Cooperation Research and Education Unit.

The HCRS/U of A Coop seeks to bring HCRS and academia closer together—not just the University of Arizona but other institutions as well. We are identifying research needs and suggesting that institutions or researchers with special abilities undertake needed research. Training students with the broad background needed to tackle today's resource management problems (including the identification and protection of heritage resources) is another goal. We are seeking to improve the curricula here and at other universities across the country and will

serve as a clearing house for recreation and resource information that can be useful to educators and researchers on the one hand and resource or program managers on the other. This kind of a tie between a Federal agency and a university can go a long way toward solving some of the problems that surfaced at this conference.

BIOGRAPHICAL SKETCHES OF CONTRIBUTORS

JAMES E. ASHTON

Jim Ashton is a visiting Community Resource Development Specialist, Cornell University, Cooperative Extension and is housed with the School of Renewable Natural Resources while on study leave. Jim was trained as a horticulturalist at Farmingdale Agr. & Tech. and received a B.S. in entomology from Ohio State University, 1962. After 20 years as a country Extension Agent working in commercial, consumer, and community horticulture he received his M.P.S. degree from Cornell University in natural resource management. As a regional CRD specialist for the past six years he has worked in the nine-county region surrounding New York City. The major emphasis of Jim's work is the training of citizen leaders and elected local officials in methods of resource inventory and public decision making. Jim will be returning to New York State in May 1980.

JAMES C. BARRON

James Barron received three degrees from Pennsylvania State University. His Master of Science and Ph.D. degrees were in agricultural economics with major emphasis on natural resource economics. Following his bachelor's degree, he worked for two years as an Assistant County Agent in Cooperative Extension in Pennsylvania, and again following his master's degree served for two years as an Area Extension Marketing Agent in Pennsylvania. Following completion of his Ph.D. he accepted a position as Extension Economics at Washington State University in 1968. He had conducted both extension and research programs on a variety of natural resources planning and development issues in Washington. Land use, property taxation, agricultural land use, water policy, and environmental issues have been the focus of his extension program. From 1975 to 1977 Dr. Barron spent two years at the University of Ghana with USAID. Following his return to Washington State University he was appointed State Leader for Community Resource Development Programs and has held that position since September 1978. His address is Cooperative Extension, Washington State University, Pullman, WA 99164.

MARY ALICE BIVENS

Mary Alice Bivens received her Bachelor of Science degree from the University of Minnesota with a major in recreation. She became the first Recreation Program Director for the City of Anchorage, Alaska, where she initiated a city/school recreation program. She also started a decentralized class program for the YWCA in Atlanta as the first Mobile Services Director. Her other accomplishments include the organization of a League of Women Voters Chapter; serving two presidential terms with the local chapter and one term as vice-president of the State League where she was not only Legislative Chairman, but also parliamentarian. She was also appointed and served 3 1/2 terms as a member of the local planning commission. She is an active member of a

number of organizations, both civic and professional. Her recreation planning experiences included the development of several states' Comprehensive Outdoor Recreation Plans (SCORP) and as the SCORP Planner for the Arizona Outdoor Recreation Coordinating Commission (AORCC). Mrs. Bivens became the Director and State Liaison Officer of AORCC in March 1979 and can be reached at AORCC, 1333 W. Camelback Road, Suite 206, Phoenix, AZ 85013.

TONI A. CARMICHEAL

Toni Carmichael did her undergraduate work at Portland State University, Portland, Oregon, and the University of Arizona in Tucson. She received her B.A. in anthropology from the University of Arizona in 1977 and is currently continuing her graduate study there. She will receive her M.A. in anthropology, specializing in cultural resource management, in May 1980. While working on her M.A. she is employed by the Arizona State Museum as a research assistant for Dr. R. Gwinn Vivian, Associate Director of the Museum. Carmichael did her master's practicum in 1978 as liaison for the Museo Nacional de Costa Rica to that country's national utility company initiating a pilot project for institutional collaboration for the management of cultural resources. She has also done a preliminary study for the development of a National Heritage Program for Costa Rica that would integrate both natural and cultural resources. Her internship in 1979 was as an archaeologist for the U.S. Forest Service in the Malheur National Forest in eastern Oregon. Her interests are in international cultural resource management and applied anthropology programs. She is currently compiling a report on the archaeological investigation of a Western Anasazi site in northwestern Arizona and researching the heritage legislation of Latin American and Caribbean countries.

HARRY COULOMBE

Harry Coulombe received his academic training in zoology (B.A., M.A., Ph.D.) at the University of California, Los Angeles. His research emphasis was in vertebrate ecology of deserts and coastal marshes. He subsequently held academic positions in the Institute of Arctic Biology, University of Alaska, and the Ecology Program, San Diego State University, for six years. In 1973, he became Program Manager for the Center for Regional Environmental Studies at San Diego State. For the past five years, he had been an administrator with the U.S. Fish and Wildlife Service's Western Energy and Land Use Team; he is currently Assistant Team Leader--Program Design. His major interests are in the applications of modern technology to wildlife habitat assessment and natural resources management planning. He has worked with applied ecological problems in a variety of areas, from Florida to Alaska's North Slope, from the California desert to the Central America tropics. He has served as an advisor for a wide range of governmental units (local to federal) related to ecological and environmental problems. His mailing address is: U.S. Fish and Wildlife Services, 2625 Redwing Road, Creekside One, Fort Collins, CO 80526.

DAVID WILSON CRUMPACKER

Wilson Crumpacker received a B.S. degree in agronomy from Oklahoma State University, a certificate of meteorology from the University of California at Los Angeles, and a Ph.D. degree in genetics from the University of California at Davis. He served as a U.S. Air Force weather forecaster for three years. His graduate training emphasized plant breeding and quantitative genetic techniques in field crops. He was an Assistant and Associate Professor of Agronomy for nine years at Colorado State University where he conducted research on the production, breeding, and population genetics of corn. He had done post-doctoral research in animal populations genetics at Rockefeller University and in human population genetics at the University of Pavia, Italy. He has been a Professor of Environmental, Population, and Organismic Biology at the University of Colorado at Boulder since 1968 and served as chairman of that department from 1975 to 1978. His research at Boulder, where he is also a member of the Institute for Behavioral Genetics, has included studies on the population, behavioral and ecological genetics of insects, mice, and humans. He recently spent a year in Washington D.C. as a Rockefeller Foundation Fellow in Environmental Affairs and is now a member of the Center for Research on Judgment and Policy on the Boulder campus. His current research and teaching interests include preservation of natural diversity, ecosystem classification, nature reserve design, biological impact prediction, and the role of ecology in development of public policy. His mailing address is: Department of EPO Biology, Campus Box B-334, University of Colorado at Boulder, Boulder, CO 80309.

CHRIS THERRAL DELAPORTE

Chris Delaporte was appointed the first Director of the Interior Department's Heritage Conservation and Recreation Service (HCRS), which was created in January 1978, by Secretary of the Interior Cecil D. Andrus. Delaporte had served as Director of Interior's Bureau of Outdoor Recreation (BOR) since June 5, 1977.

Before coming to the Department of the Interior, Delaporte was Director of Oklahoma State Parks from 1973 to 1977. While Director he was on the State History Advisory Council and was in charge of seven historic house museums. From 1973 to 1976 he was simultaneously the Executive Director of the National Association of State Outdoor Recreation Liaison Officers. Earlier, he was the Director of the North Georgia Mountains Authority, and directed the Georgia Historic Preservation Program for then-Governor Jimmy Carter.

Delaporte received a Bachelor of Arts degree in political science from Oklahoma State University and served as a captain in the U.S. Air Force. Delaporte was named Outstanding Public Administrator in 1976 by the Oklahoma Chapter of the American Society of Public Administration. His mailing address is: Heritage Conservation and Recreation Service, Washington, DC 20240.

JAMES J. DONOGHUE

Jim Donoghue is Assistant Regional Director for Natural Programs with the Albuquerque Regional Office of the Heritage Conservation and Recreation Service. He has over 14 years experience in the practical planning and implementation of a wide continuum of environmental matters. He has worked in an eastern and western regional office on tasks related to Water Resource Planning, Transportation Projects, Wild and Scenic Rivers, National Trail Efforts, Natural and Historic Landmarks, and acquisition of important parcels of the Federal Outdoor Recreation Estate. His current duties include the building and maintenance of Natural Heritage Systems. His office address is: Heritage Conservation and Recreation Service, South Central Region, 5000 Marble NE, Patio Plaza, Albuquerque, NM 87110.

RICHARD S. DRISCOLL

Dick Driscoll received his bachelor's and master's degrees from Colorado A & M College and Colorado State University (the same school), respectively, in range management. His master's research emphasized effects of simulated grazing elk sedge, an important livestock and big game forage in Oregon. He completed his Ph.D. program in ecology at Oregon State University. His Ph.D. emphasized soil/vegetation relationships in the Central Oregon Juniper Zone to describe and define habitat types. He is currently Program Manager, Resources Evaluation Techniques with the Forest Service's Rocky Mountain Forest and Range Experiment Station. This R & D Program is nationwide and interagency in scope with scientists from the Forest Service, Bureau of Land Management, Soil Conservation Service, Fish and Wildlife Service, and Geological Survey working toward compatible natural renewable resource classification, inventory, and analysis techniques for resource assessments. His office mailing address is: Rocky Mountain Forest and Range Experiment Station, 240 West Prospect Street, Fort Collins, CO 80526.

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Sally Fairfax received her B.A. from Hood College in 1965 with a major in biology, her M.A. from New York University in 1969 in political science, and her Ph.D. from Duke University in 1973 in political science and administration. She also received an M.A. in forestry from Duke University, School of Forestry, in 1974. She is presently Assistant Professor, College of Natural Resources, University of California, Berkeley. Prior to that appointment she served as Chairman, Resource Policy and Management Program at the School of Natural Resources, University of Michigan, and with the United States Forest Service Division of Policy Analysis in Washington, D.C. She is the author of over 25 papers and manuscripts. She is a member of a number of organizations, including: Board on Agricultural and Renewable Resources, National Academy of Sciences; Board of Advisors, Natural Resources Law Institute; Lewis and Clark Law School, Portland, Oregon; Natural Resources Law Working Group, Society of American Foresters; and Directorate II, Man and the Biosphere, U.S. affiliate of UNESCO program. Her present address is: College of Natural Resources, 112 Giannini Hall, University of California, Berkeley, Berkeley, CA 94720.

ANNE F. FRONDORF

Anne Frondorf received her B.A. in botany from Pomona College. She received her master's in landscape architecture and her Ph.D. from the School of Renewable Natural Resources, University of Arizona. Her doctoral dissertation examined the concept of interdisciplinary activity in resource planning programs, with special emphasis on heritage resource planning and the National Heritage Program. She is presently a Heritage Resource Specialist with the Heritage Conservation and Recreation Service in Washington, D.C., where she is primarily involved in development of the National Heritage Program. Her mailing address is: Heritage Conservation and Recreation Service, 440 G Street, N.W., Washington, D.C. 20243.

MARGOT W. GARCIA

Margot Garcia received her Bachelor of Science degree in biology at the University of New Mexico, with three years of work in botany completed at the University of California, Berkeley. She received a Master of Science degree in plant physiology from the University of Wisconsin. A period of work with numerous social volunteer agencies and environmental activism led to a series of political appointments in recreation and planning activities in Tucson, Arizona, with election to the Tucson City Council in 1975. Margot supported and worked for establishment of Historic Districts and encouraged downtown revitalization and neighborhood stabilization. During her term on the City Council the problem of the role of citizen participation became ever more apparent as she tried to use the public's input in decision making. At the University of Arizona she has earned a Ph.D. in watershed management, specializing in the role of citizen participation in resource management. Currently Margot divides her time between teaching a two-course sequence in Environmental Impact Assessment at the University of California, Berkeley, and teaching the Forest Service Land Management Planning Training Course, as well as public involvement and the elicitation and analysis of issues and concerns. Her mailing address until August 1, 1980, is Conservation and Resource Studies, 112 Giannini Hall, University of California, Berkeley, CA 94720, and thereafter, University of Arizona, Tucson, AZ 85721.

WILLIAM A. GATES

William Gates is lecturer in Landscape Architecture at the University of Wisconsin-Madison. Received his Bachelor of Arts Degree in Computer Science at the University of Wisconsin-Madison in 1973. He is actively participating in research projects ranging from economics, demography to environmental studies. Currently he is working on an independent Ph.D. Committee Degree. Current research interests are geographical information systems and application of computer graphics to landscape architecture. His office mailing address is Department of Landscape Architecture, 25 Agriculture Hall, College of Agriculture and Life Sciences; University of Wisconsin, Madison, Wisconsin 53706.

BILL F. ISAACS

Bill attended the University of Washington, Seattle, and received a Bachelor of Science degree in 1960 and a Master of Science degree in 1963, and was accepted as a Ph.D. candidate, Botany Department, University of Michigan, Ann Arbor, in 1964. He is presently Program Coordinator, New Mexico State Heritage Program. He has been a member of a number of community, scientific, and environmental interests: National Audubon Society; New Mexico Citizens for Clean Air and Water; Board of Directors, Central Clearing House; National Wildlife Federation; New Mexico Ornithological Society; Mycological Society of America; International Association of Plant Taxonomists; New Mexico Solar Association; Santa Fe County Land Use Advisory Committee; American Society of Plant Taxonomists; and American Ornithologists Union. His present mailing address is: New Mexico State Heritage Program, Villagra Building, Santa Fe, NM 87503.

WAYNE LAVINE MILSTEAD

Wayne L. Milstead was born February 1, 1932, in Washington, D.C. He attended public schools in Prince Georges, County, Maryland. He graduated from High School in June, 1948. Served in the U.S. Marine Corps Feb., 1951-Feb., 1954. He attended the University of Maryland, College Park, Maryland, from Feb., 1954- June, 1958. He earned his B.S. in Horticulture in June, 1958. He attended Purdue University, W. Lafayette, Indiana from Sept., 1958-June, 1964. He earned his M.S. in Plant Science in January, 1961, and his Ph.D. in Plant Science in June, 1964. He taught at Eastern Montana College, Billings, Montana, in the Biology Department from Sept., 1964 to June, 1976 (Asst. Prof. to the Full Prof. and Head of the Department of Biological Sciences). His Sabbatical was at Cornell University, Ithica, N.Y. during the academic year of Sept., 1971 - June, 1972, in the Division of Science Education. He taught as an exchange professor at St. Mary's College, St. Marys County, Maryland in the Dept. of Biology, from Sept., 1974-June, 1975. Dr. Milstead joined U.S. Fish and Wildlife Service as a botanist in the Regional office, Atlanta, Georgia, in Aug., 1977, in the Endangered Species Program. He joined the staff of the Office of Endangered Species in Washington, D.C. in November, 1978.

MICHAEL MARTIN MCCARTHY

Michael M. McCarthy received his Ph.D. from the University of Wisconsin in environmental studies, an interdisciplinary program that investigated the application of high and low altitude remote sensing for determining levels of environmental alteration. His bachelor's and master's degrees were in landscape architecture. From 1973 to 1975 he worked at Oak Ridge National Laboratory where he served as a Project Head and later Principal Investigator of the National Science Foundation-supported research on Regional Environmental Systems Analysis. During that time he also served as visiting lecturer and research consultant to the Graduate School of Design, Harvard University. He has worked as a consultant for and as a principal of a

number of planning and design firms. He is presently Chairman of the Program in Landscape Architecture, in the School of Renewable Natural Resources, University of Arizona, where he has been since 1975. His research interests include: assessment of unique environments; future communication and information systems; and analysis techniques. He presently teaches courses on Critical/Significant Environments, Site Analysis, and Advanced Land Planning. His office mailing address is: School of Renewable Natural Resources, 325 Biological Sciences East, University of Arizona, Tucson, AZ 85721.

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Ben Niemann received his bachelor's degree in landscape architecture at the University of Illinois. After three years of professional practice with the Leo A. Daly Co. in Omaha, Nebraska, he returned to school and obtained his M.L.A. from Harvard University. Upon graduation, he joined the faculty at the University of Wisconsin in the newly created Department of Landscape Architecture and was Chairman of the Department from 1971 to 1975. Currently he is Professor of Landscape Architecture and the Institute for Environmental Studies. His current research interests include cost/benefits of land information systems, the application of micro-interactive computing systems for the management of township level land records and the monitoring of recreational use of riverways, and visual assessment using self-employed techniques. His office mailing address is: Department of Landscape Architecture, 25 Agriculture Hall, College of Agriculture and Life Sciences, University of Wisconsin, Madison, WI 53706.

ROBIE PARDEE

Robie Pardee received his bachelor's degree in anthropology with a minor in wildlife biology from the University of Arizona. Subsequently he received his master's from the same institution in counseling and has worked in various mental health settings for the past six years. He is currently working towards his M.L.A. at the University of Arizona, implementing his background in the behavioral sciences in landscape architecture.

GARNET E. PREMER

Garnet Premier received her bachelor's degree in economics and her M.S. in agricultural economics from the University of Wyoming. Her master's program emphasized natural resource economics and non-traditional land use planning techniques. She began work with the UW Agricultural Extension Service, Community Development Program in 1975. Her work with Extension has emphasized leadership development, community organization, and economic base analysis. Garnet is Instructor and Community Development Specialist. She also serves as Chairman, Western Extension Community Development Committee. Current interests include growth impact and women's involvement issues. Her office mailing address is: Agricultural Extension Service, Community Services Division, University of Wyoming, Box 3354, University Station, Laramie, WY 82071.

ROBERT A. RITSCH

Robert Ritsch is the Acting Associate Director for Natural Program, Heritage Conservation and Recreation Service (HCRS). In this capacity, he is responsible for the activities of the four divisions within the Service whose programs concern natural resources. He has previously served as Chief, Division of State Programs (with responsibility for managing the State grants portion of the Land and Water Conservation Fund) and Chief, Division of Federal Land Acquisition (administering the Federal acquisition portion of the Land and Water Conservation Fund) in HCRS and the former Bureau of Outdoor Recreation. Before joining BOR, Mr. Ritsch worked for the United States Forest Service from 1958 to 1968 in the Allegheny and George Washington National Forests and the Northeast Regional Office. Mr. Ritsch received his B.S. in Forest Management from the Virginia Polytechnic Institute.

JON RODIEK

Jon Rodiek received his bachelor's degree in plant science at Rutgers University. He received his B.L.A. and M.L.A. at the University of Massachusetts. His master's program emphasized land use planning an environmental context. After three years of professional practice in Boston, Massachusetts with the Architects Collaborative, he resumed his academic training in natural resources at the University of Massachusetts. His master's in forestry and Ph.D. emphasized the scientific aspects of environmental analysis. In graduate school, he consulted as a full partner on international and national planning projects (Caribbean, South America, Florida, West Virginia, Pennsylvania). He is presently Associate Professor at the School of Renewable Natural Resources, University of Arizona, where he is affiliated with the landscape architecture and watershed management programs. His current research interests include mined land reclamation techniques in arid and semi-arid environments, wildlife habitat planning, and wetlands and aquatic habitats inventory and evolution in Arizona. His office mailing address is: School of Renewable Natural Resources, 325 Biological Sciences East, University of Arizona, Tucson, AZ 85721.

DOUGLAS H. SCOVILL

Doug Scovill has a bachelor's degree in business administration and has done graduate work in anthropology at the University of California, Berkeley. He worked for three years for the City of Berkeley, California in City Planning and Zoning Administration prior to joining the National Park Service as a park ranger with a specialty in archaeology. He spent four years as a park ranger and two years in the Middle East as a resource planner with a National Park Service multidisciplinary planning team. Upon his return to the United States, he worked with various Indian tribes in establishing cultural resources management programs and was appointed as the first supervisor of the

Service's archaeological research center at the University of Arizona. Presently, he is the chief Anthropologist for the National Park Service in Washington, D.C. and is responsible for the development of Service-wide policies and programs related to the archaeological, ethnological, and anthropological components of the Service's cultural resources management function. In addition he is responsible for the development of policies and programs related to Service relationships with Native Americans. His office mailing address is: Anthropology Division (567), National Park Service, Department of the Interior, Washington, DC 20240.

LARRY THOMAS

Larry Thomas received his bachelor's degree in zoology from the University of Louisville, Louisville, Kentucky. His master's thesis was a terrestrial ecology study in western Kentucky. He received a Fulbright Scholarship for a one year study of venomous snakes in Australia. His activities in Australia included the catching and milking of venomous snakes and biochemical analysis of their venoms. Mr. Thomas returned to the United States and joined the Fish and Wildlife Service as a wildlife biologist at a River Basins field station in Minneapolis, Minnesota. While in Minnesota he was concurrently enrolled at the University of Minnesota and spent several months doing seal and penguin studies in the Antarctic on a NSF grant. He transferred to a Fish and Wildlife Animal Damage Control Position in Atlanta, Georgia, where he served for five years. In September, 1978, he assumed his present position in the Office of Endangered Species, Washington, D.C., where he serves as a team leader for endangered species consultations.

RAYMOND H. THOMPSON

Raymond H. Thompson received his bachelor's degree in geology at Tufts University. He received his A.M. and Ph.D. degrees in anthropology at Harvard University. While in graduate school he was a fellow in the Division of Historical Research, the Carnegie Institute of Washington and was the recipient of the John G. Ownes Fellowship at the Peabody Museum at Harvard University. Before coming to the University of Arizona he was Curator of the Museum of Anthropology at the University of Kentucky. He has been affiliated with the University of Arizona since 1956. For four years he served as Director of the Archaeological Field School. He is presently Director of the Arizona State Museum and Professor and Head of the Department of Anthropology at the University of Arizona. His areas of interest and expertise include archaeological theory, anthropological publishing, educational policy in anthropology, and United States Southwest and Mesoamerican archaeology. His office mailing address is: Department of Anthropology, University of Arizona, Tucson, AZ 85721.

A. HEATON UNDERHILL

Heat Underhill received a B.A. in botany from Dartmouth College, and a Ph.D. in fisheries and wildlife management from Cornell University. He worked in game research investigation for the New York State Conservation Department. He served five years in the Army as a commando/paratrooper. He has also served as District Game Manager of the New York State Conservation Department, and Executive Secretary of the Massachusetts Fish and Game Association. Dr. Underhill worked as Director of the New Jersey Division of Fish and Game for 13 years, and as Assistant Director, U.S. Bureau of Outdoor Recreation from 1962-1977. Since 1977 he has been Professor and Unit Leader of the HCRS Cooperative Research and Education Unit at the University of Arizona. He has a broad interest in recreation, fish, wildlife, and public natural resource management. His office mailing address is: School of Renewable Natural Resources, 325 Biological Sciences East, University of Arizona, Tucson, AZ 85721.

RICHARD GWINN VIVIAN

Dr. Vivian was born in New Mexico and has spent much of his life in the southwestern United States. He is an archaeologist and received his early training at the University of New Mexico. He took his Ph.D. in anthropology in 1970 from the University of Arizona. Dr. Vivian has been employed by the Arizona State Museum since 1963. He has held a number of positions in the Museum including archaeologist and co-Assistant Director of the archaeological field school. He was named Associate Director of the Museum in July 1978. Dr. Vivian's primary professional interests include prehistoric water control technology and the development of cultural resource management programs. He takes an active part in the training of students for cultural resource management in the Department of Anthropology. In addition to managing a number of programs in the Museum, Dr. Vivian continues active field work in the southwestern United States.

JEANNE M. WELCH

Jeanne M. Welch received her bachelor's and master's degree from the University of Washington with a major in anthropology. Following academic training, for a period of three years she conducted an intensive survey of the Chehalis River Valley in southwestern Washington. The next four years were spent as an archaeological consultant for the Weyerhaeuser Company and Ebasco Service Inc. She was the first archaeologist to be hired by the State of Washington for cultural resource management and is presently the Director of the Office of Archaeology and Historic Preservation and the Deputy State Historic Preservation Officer. Her mailing address is: Office of Archaeology and Historic Preservation, 111 West 21st Avenue, Olympia, WA 98504.

BILL WILEN

Bill Wilen received his Ph.D. in Forest Hydrology from the University of Massachusetts. He worked as an environmental consultant, primarily conducting vegetative surveys and producing topical land cover maps from 1972 until 1976. In March of 1976 he became the Assistant Project Leader of the U.S. Fish and Wildlife Service's National Wetland Inventory (NWI). Last April he moved to Washington, D.C. to take over the job as Project Leader with the NWI.

ERVIN H. ZUBE

Ervin Zube is the Director of the School of Renewable Natural Resources at the University of Arizona. A native of Milwaukee, Wisconsin, he received a Bachelor of Science degree from the University of Wisconsin (Madison), a Master of Landscape Architecture degree from the Harvard University Graduate School of Design, and a Ph.D. in geography from Clark University. He is a fellow of the American Academy of Rome. He has served on the landscape architecture faculties of the University of Wisconsin, the University of California, Berkeley, and the University of Massachusetts where he was Head of the Department of Landscape Architecture and Regional Planning. In 1971, he became Director of the Institute for Man and Environment at the University of Massachusetts and remained in that position until accepting the position of Director of the School of Renewable Natural Resources in 1977. As a consultant, he has served public and private agencies in the United States and the Caribbean including the National Park Service, Army Corps of Engineers, Rockefeller Foundation, Trustees of Reservations, Nantucket Conservation Foundation, and the governments of Puerto Rico, the Virgin Islands, and Jamaica. His current research interests include environmental design evaluation. He is the author of over sixty professional articles and monographs and is the editor or author of six books. His present mailing address is: School of Renewable Natural Resources, 325 Biological Sciences East, University of Arizona, Tucson, AZ 85721.

APPENDIX

UNITED STATES
DEPARTMENT OF THE INTERIOR
OFFICE OF THE SOLICITOR
WASHINGTON, D.C. 20240

MEMORANDUM

TO: Executive Assistant to the Secretary
Assistant Secretary, Fish and Wildlife and Parks

THROUGH Solicitor

FROM: Associate Solicitor, Conservation and Wildlife

SUBJECT: Statutory Authority of National Natural Landmarks
Program

A recent academic paper 1/ has questioned the statutory basis for the National Natural Landmarks Program in general and the 1978 HCRS regulations for this program, 44 F.R. 66599, in particular. After review of this issue, it is our opinion that adequate authority does exist for both the program and the regulations.

The Natural Landmarks Program was established within the National Park Service by the Secretary in 1963. Although guidelines for evaluating sites were developed in 1964 and the first site was registered in the same year, 2/ it was not until 1970 that the Park Service published a notice setting forth the objectives, methods, and criteria associated with the program, 35 F.R.13141. In 1978 the Natural Landmarks Program was transferred to the newly-created Heritage Conservation and Recreation Service.

The authority 3/ for the Natural Landmarks Program is found in section 1 of the Historic Sites Act of 1935, 49 Stat. 666, 16 U.S.C. 461, which provides:

It is declared that it is the national policy to preserve for public use historic sites, buildings and objects of national significance for the inspiration and benefit of the people of the United States.

General rulemaking authority to carry out this policy is provided by section 2(k) of the Act, 16 U.S.C. 462(k).

The purpose of the Natural Landmarks Program is to assist in the preservation of ecological and geological areas illustrating the diversity of the country's natural history. 44 F.R. 66599, 35 F.R.13141. These areas then, can be said to be "historical objects" and therefore within the parameter of the Historic Sites Act.

This position is arguable, admittedly, as there is no direct reference to natural history in the Act's legislative history. 4/. However, Congressional ratification of the interpretation provides additional support for the authority of the program.

It is "well settled" that Congress may "ratify . . . acts which it might have authorized". Swayne & Hoyt, Ltd v. U.S., 290 U.S. 297, 301 (1937), citing Mattingly v. District of Columbia, 97 U.S. 687, 690 (1878). Ratification may occur through appropriations or reference to the questioned action in subsequent legislation. Swayne, supra; Isbrandtsen-Moller Co., Inc. v. U.S., 300 U.S. 139 (1937). Ratification may also be implied from long acquiescence by Congress, U.S. v. Midwest Oil Company, 236 U.S. 459 (1915), or subsequent amendment of the underlying legislation without disavowal of the disputed action, Brooks v. Dewar, 313 U.S. 354 (1941).

The history of the Natural Landmark Program compares favorably with this framework. The appropriations process has exhibited Congressional awareness of the program at least since 1965. 5/ Congress has, since that time, repeatedly provided funds through the general Park Service budget. 6/ The language of the Park Service's appropriating legislation was changed for FY-74 to specifically provide for "planning, development and operation of landmarks". 7/ The Natural Landmarks Program became a "line item" when it was transferred to HCRS. 8/

The strongest indication of Congressional ratification is direct reference to the Natural Landmarks Program in subsequent legislation. 16 U.S.S. 1a-5 requires the Secretary to annually notify Congress of all areas included on the Registry of Natural Landmarks which exhibit known or anticipated damage or threats to the integrity of their resources and to include Landmarks in recommendations of areas for park status. Act of October 7, 1976, 2, P.L. 94-458. 16 U.S.C. 1908, which

specifically refers to objects illustrating "natural history", requires notification to Congress when the landmark is threatened by surface-mining. Act of September 28, 1976, 9, P.L. 94-429. 9/ Moreover, Congressional documents have referred to these acts, in conjunction with the Historic Sites Act, as providing authority for the Natural Landmarks Program. 10/

These actions clearly ratify the Natural Landmarks Program. Appropriations in conjunction with references in subsequent legislation has twice been held by the Supreme Court as constituting ratification. Dwayne, supra; Isbrandtsen, supra. In addition, ratification has been found where Congress enacts legislation providing for disposition or use of the products of the challenged action or program. Brooks, supra. (Congressional appropriation of fees attained through challenged practice of issuing temporary grazing permits). This is strikingly similar to the instant case in which Congress requires the Secretary to utilize the National Register of Natural Landmarks when reporting to Congress. 16 U.S.C. 1a-5, 1908. The Natural Landmarks Program exhibits none of the characteristics which courts cite when denying ratification. 11/

Finally, the program implemented by the HCRS interim regulations does not extend the program as administered by the Park Service. Criteria for selection under both agencies include "national significance", 12/ and ecological or geological importance. 13/ The effect of the Secretary's decision under the HCRS procedures is the same as its effect under the Park Service procedures. 14/ Moreover, under both procedures, landmark status and registration in no way diminishes landowner rights, but merely serves to alert the public and other federal agencies of the special significance of the area. 15/

Based on the history of the Natural Landmarks Program, we would conclude that authority does exist for its implementation. The high degree of Congressional awareness, acceptance, utilization, and in fact, direction that the program be carried out, serves to validate its existence.

Because of this conclusion, it is necessary for us to reach the issue, also raised by the academic paper, 16/ of the validity of the HCRS regulations which were issued in interim form, but were effective upon publication, 44 F.R. 66599.

The Administrative Procedures Act, 5 U.S.C. 551 et seq., provides that regulations are to become effective not less than 30 days after publication and must be preceeded by publication in proposed form thereby allowing an opportunity for public comment. 5 U.S.C. 553. However, this requirement may be waived when for good cause, as expressed in the rules issued, notice and public procedure thereon are impracticable, unnecessary, or contrary to the public interest. 5 U.S.C. 553(b) (B). The regulations for the National Natural Landmark program contained such a finding. In addition, the regulations are procedural in nature and, accordingly, as a technical matter, not subject to the notice and comment requirements. 5 U.S.C. 553 (b)(A).

It is our conclusion, therefore, that the 1978 HCRS Natural Landmarks Program regulations are not defective for being effective upon publication and are promulgated in accordance with the Administrative Procedures Act.

(Sgd.) Gary Widman

1/ Fairfax, "Self-Preservation Through Heritage Conservation: A Jaundiced View of HCRS Regulatory and Legislative Initiatives", "unpublished manuscript, delivered at the Western State Heritage Conference, Tucson, Arizona, April 23, 1980.

2/ See generally "National Natural Landmarks Program", Preserving Our National Heritage, 12.6 p. 295-296 (1975). Although this publication refers to guidelines being published in 1963, the earliest record we can find is 1964. Memorandum from Assistant Director, Resource Studies, to All Regional Directors, November 2, 1964.

3/ This authority was not cited in the 1970 Federal Register Notice, but was cited in similar 1973 notice, 38 F.R. 23982.

4/ Discussions referencing types of objects to be protected under the Act all speak of actual human artifacts and therefore imply a direct connection to human history. Sen. Rpt. 828, H. Rpt. 848 (79th Cong., 1st Sess., 1935).

5/ Department of Interior and Related Agencies Appropriation for 1966, Hearings Before A Subcommittee of the Committee on Appropriations, House of Representatives, Part 1, pp. 985-986 (89th Cong., 1st Sess. 1965).

6/ See e.g., Department of Interior and Related Agencies Appropriations for 1972, Hearings Before a Subcommittee on Appropriations, House of Representatives, Part 3, p. 808 (92nd Cong., 1st Sess. 1971).

7/ P.L. 93-120, 87 Stat. 429.

8 See, e.g., Department of Interior and Related Agencies Appropriations for 1980, Hearings Before A Subcommittee on Appropriations, House of Representatives, Part 5, p. 180 (96th Cong, 1st Sess., 1979).

9/ 16 U.S.A. 1908, in relevant part, provides:

Whenever the Secretary of the Interior finds . . . that a district, site, building, structure or object which has been found to be nationally

significant in illustrating
natural history or the history
 of the United States and which
 has been designated as a
 natural or historical
 landmark . . . (emphasis
 added).

10/ Report prepared for the Committee on Appropriations, U.S. House of Representatives, February, 1979, p. 16, inserted by Committee in Hearings on Department of Interior Appropriations for 1980, supra, p. 211.

11/ Courts exhibit a reluctance to apply the doctrine based only on appropriation when the disputed action is of constitutional dimension and is merely one facet of a program rather than a distinct action. Compare Ex Parte Endo, 323 U.S. 283 (1944) (authority to evacuate foreign nationals is based on security considerations and does not extend to facet of programs involving evacuation of concededly loyal foreign nationals), with U.S. v. Kennedy, 278 F2d 121 (9th Cir. 1960) (appropriations in National Park Service budget for land acquisition provides authority for acquisition for particular park), followed, Swan Lake Hunting Club v. U.S., F. Supp. 470 (D. Mont. 1976). In addition, appropriations will not serve to waive constraints of collateral legislation, Hill v. TVA, 437 U.S. 153 (1978) or affirm compliance with collateral legislation, National Audubon Society v. Andus, 442 F. Supp. 42 (D.C.D.C. 1977) (appropriations are not comment on sufficiency of Environmental Impact Statement).

12/ Compare 35 F.R. 13141 (1970) with 44 F.R. 66599, 1212.9 (1978). Significance to the region under the HCRS regulations is per se national significance since each of the several regions are unique to the country.

13/ The initial Park Service procedures set forth examples of areas eligible for the Natural Landmarks Program. The examples contained both ecological and geological subjects 35 F.R. 13141.

14/ Under the Park Service procedures, the Secretary decided "eligibility" for registration. Under the HCRS regulations, the Secretary "designates" an area as a Natural Landmark. The landowner decides whether the property is "registered" under

both the Park Service and HCRS procedures. There is no difference in the effect of the Secretary's decision since an "eligible" property attained "in fact", Natural Landmark status. "National Natural Landmarks Program" in Preserving Our Natural Heritage, supra, at 285.

15/ Compare Park Service procedures, 35 F.R. 13141, I.D. with HCRS procedures 44 F.R. 66599, 1212.6(a).

16/ Fairfax, supra, note 1 at 5.

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