

**Defining the Elusive  
Conceptualizing Cave Wilderness and Designation Values**

Patricia E. Seiser

Adjunct Professor, New Mexico Tech, Department of Humanities  
Cave Research Specialist, National Cave and Karst Research Institute  
Carlsbad, NM 88220

Michael A. Schuett

Associate Professor, Associate Head Graduate Programs and Research  
Recreation Park & Tourism Sciences Texas Cooperative Extension  
Texas A & M University  
College Station, TX 77843

INTRODUCTION

For some, caves are one of the last remaining frontiers for adventure, wilderness, and exploration. In acknowledgment of these qualities, a few have sought national recognition for caves in the form of a wilderness designation. Their efforts have not resulted in any cave or portion thereof receiving wilderness designation.

During the years that the Wilderness Act was under Congressional consideration, numerous hearings were conducted. A report, submitted by de Saussure (1962) entitled Cave Resources, as well as testimony by representatives of the National Speleological Society, was taken under review during preparation of the final draft of the Wilderness Act (Stitt, 1982).

The Outdoor Recreation Resources Review Commission (ORRRC), in its 1962 Study Report No. 3 under the section: Summary of Major Findings and Recommendations, noted the potential wilderness value of caves:

Rivers and caves are considered in the report as important potential wilderness resources, and we have attempted a limited inventory of wilderness rivers and discussion of cave preservation in appendixes to the full report. It is apparent that special study is needed to develop suitable definitions for these recreation resources, which can be applied in survey and management efforts (ORRRC p. 4).

In the end, the Wilderness Act of 1964 made no reference to caves. However, cave conservationists felt that Congress was aware of caves' potential as wilderness and had intended to include them, just as other natural features were included without specific reference (Stitt, 1982).

Since then, attempts have been made to have caves or portions of caves declared wilderness (Stitt, 1991). Yet, no federally designated wilderness has been established based on the wilderness qualities inherent to the caves found there. Nor have the presence of caves been an important criterion in the determination of any wilderness designation (Seiser, 2003). This lack of designation suggests that cave wilderness is not an intuitive concept, at least not in the context of the Wilderness Act.

The lack of understanding, by the general public and policy makers, of caves ecological importance and associated wilderness values may play a role in the lack of a designation. Congressional testimony and other records indicate that values were a critical focal point in the passage of the Wilderness Act of 1964 (Cordell et al, 2003). Developing an understanding of values associated with caves may lead to better understanding of cave wilderness and the need for a congressionally legislated designation.

Justifications for wilderness preservation arise from values ascribed to wilderness. McCloskey, 1990, defines these values as reasons, based in philosophy and culture, for wanting wilderness. These tangible and intangible values are attributed to the benefits experienced by individuals, society, or nature. Various wilderness and protected areas related value typologies have been developed. Two specific typologies address American and worldwide perspectives. A thirteen item Wilderness Values Scale (WVS) was been used, as part of the American National Survey on Recreation and the Environment, reference table one (Cordell et al. 2003; Cordell et

al. 1998). The World Commission on Protected Areas (WCPA), a voluntary technical body of the IUCN, developed a typology of intangible values most commonly associated with protected areas, reference table one (Putney, 2003). These typologies have contributed to the understanding of the diverse values associated with protected areas, both nationally and internationally. Cordell et al. (2003) work highlights the change, over time, in the relative importance of specific values associated with wilderness in the United States.

In a 1961 Cave Research Foundation Report, Smith (1981), wrote “The application of wilderness philosophy to caverns is neither a well defined nor a widely thought about concept. It is not an easy concept to develop for speleological wilderness values are alien to much of the human experience.” Other authors have discussed values associated with both caves and wilderness (Gamble, 1981; Huppert & Wheeler, 1992; Watson & Smith, 1971). The intrinsic values of caves make it evident that many caves do meet the criteria as a wilderness site (Huppert & Wheeler, 1992). However, there has been little to no research identifying which values are associated with the creation of a special cave designation such as cave wilderness.

Much of the research on cave wilderness has been confined to the legal definition of wilderness (Seiser, 2003). Several definitions for cave wilderness have been proposed, most are grounded in the Wilderness Act, and none have gained wide acceptance (table two). The lack of a federally designated cave wilderness may lie in the lack of a clear definition for cave wilderness defining both intent and purpose of such a designation, as well as, predication of the definition of cave wilderness on the Wilderness Act 1964.

The purpose of this study was to explore values and meanings associated with cave wilderness from the perspective of stakeholders who perceive their lives to be affected by caves and/or a cave wilderness designation. The study also examined stakeholder expectations of and

concerns regarding a special cave designation, such as cave wilderness. In establishing the foundations of meaning for a phenomenon, it becomes possible to construct sound scientific and political theories, management practices and policy (Pickles, 1983). The defining of a concept, such as cave wilderness, is a way to enhance the knowledge base for the discipline of cave resources stewardship (Parse, 1997).

### STUDY DESIGN

Cave regions of central Kentucky and southeast New Mexico were selected as study sites for a phenomenological investigation of cave-related stakeholders, using a focus group format. Focus groups dynamics can stimulate discussions, encourage in-depth articulation of concerns, attitudes, and perceptions; thus providing insights into the research topic (Fleitas, 1998; McDonald, 1993). Discussion topics covered meanings and values associated with cave wilderness; need for a congressional wilderness designation, and perceived benefits and risks associated with a cave wilderness designation.

Both study sites contain a national 'cave' park: Mammoth Cave and Carlsbad Caverns National Parks. Attempts to establish cave wilderness have occurred at both parks.

These cave regions differ culturally, historically, economically, in population, land ownership, and designated wilderness. They differ in mechanism of cavern development; resulting differences in the nature of these caves and their relation to the surface landscape may affect individual awareness of caves. These distinctly different regions provided a wide range of experiences and values from which stakeholders drew upon in discussing their perspectives of caves and a special cave designation, such as cave wilderness.

Participants were recruited based on membership in selected target populations - stakeholders who may effect or be affected by cave stewardship policies and legislation. Cave-related

stakeholders fell into one of two, potentially overlapping, communities - the community of interest and the community of place (table three).

Nine focus groups were conducted, involving sixty participants. Four focus groups were held during a national caving event (thirty-nine participants, who had caved in one or both study regions). Five were held within the specific study sites (twenty-one participants), three in Kentucky, and two in New Mexico. Effective focus groups comprise six to eight participants. For complex topics, or when participants have expertise on the subject smaller groups should be considered (Krueger, 1995). In this study, focus group sizes ranged from two to twelve. Variations in group numbers resulted from participants failing to attend or the inclusion of individuals invited by participants.

In addition to focus group participation, stakeholders were asked to complete a questionnaire covering demographics, caving experiences, and wilderness visitation.

Focus group sessions were taped using video and audio recorders. Transcripts of recordings, were first coded by the researcher to identify themes, reviewed by the research assistant, and then evaluated by two independent, non-caver reviewers. Identified themes and concepts that appear to link substantial portions of the data together served as a basis for a developing narrative (Winter, Palucki & Burkhardt, 1999; Fleitas, 1998).

## FINDINGS AND DISCUSSION

It is beyond the scope of this paper to report on all findings of this research. The intent of this paper is to identify values associated with the establishment of a special designation such as cave wilderness based on themes identified from focus groups discussions. The paper will also criteria for a special designation derived from focus groups discussions. In addition, the research

revealed a need for a clearly delineated definition of cave wilderness. A purposed definition is presented, based on values and criteria derived from focus groups' discussions.

### Focus Groups

The sociodemographic profile of focus groups participants was predominately white (98%), male (78%), between the ages of 40 and 69 (77%), had a bachelors degree or higher (74%), an annual income of \$40,000 or higher (72%), had visited a wilderness site (90%), and identified themselves as a caver (76%); reference table three. Caving experience levels ranged from novice to very experienced to retired. They also indicated wide-ranging specializations (explorer, photographer, cave diver, etc...) (Seiser, 2003).

### Designation Values Themes

Seven value related themes were identified regarding a special cave designation, such as cave wilderness: 1) research and monitoring, 2) experiential, 3) resource protection, 4) educational, 5) future, 6) significance, and 7) existence. Themes often overlapped. The first four themes were discussed by all groups to varying degrees. Educational and future value themes were directly or indirectly addressed by seven groups. Existence value was discussed by only two groups.

### Research and Monitoring

Focus groups' discussions on the intent of a special designation centered on protecting physical and social scientific values and resources. This included establishment of baseline data for monitoring purposes. The preservation of future discoveries was an important component of scientific research. The value of research and monitoring is illustrated in this stakeholder comment:

*Who cares that they're the last unexplored frontier, because of that we don't know enough about them. This is an opportunity to go into an environment that we have not impacted on our planet and study ecosystems that are undamaged. We've never really had an opportunity to do that before and now we have the tools to do it, and we are*

*getting so much information from those environments... So, the scientific potential is vast for these areas, what we can learn. For most people, if you say the cave needs to be protected, it's very delicate, we have these formations, we have these complex ecosystems, they're not going to get that, but when you say it's this incredible scientific resource, which it really is, then they're like oh science well that's important please do that.*

### Experiential

Preservation of the experiential aspect of wilderness was another important component of a special designation. Such an experience offers the perceptions of solitude, remoteness, and self-sufficiency. This value is aptly discussed by this stakeholder comment:

*If I'm in Fairy Cave and I'm way back in the most miserable part of Fairy Cave which is still like an hour from the entrance I don't feel like I am in the wilderness; I am in a wild cave there, but I'm not in wilderness. When I'm in Lech and I'm like four or five hours from the entrance, and we're camping down there, I absolutely do feel like we're in the wilderness. I think, for me, it's how far am I from the infrastructure of 'somebody else can take care of me,' when I feel like I'm getting away from that is when I feel like I'm in the wilderness. Maybe it's the same for Joe Blow public, at what point does he cross the boundary where it's like oh my goodness I'm taking care of myself now? This is wilderness.*

### Resource Protection

Resource protection discussions ranged from broad statements, such as “good for the health of the planet,” to more specific benefits including protection of water quality and protection of fauna. Protection included the physical aspects of a cave – preservation of the cave’s natural state and its original resources, and recognition of resource fragility. The following stakeholder comment discusses the value of resource protection:

*... you know if you get a pass to go into what I would deem as a cave wilderness area, it just takes one person to go in there and take what he wants and that piece is nonrenewable... But, there is more chance of renewability on the surface, than there is, because in caves there's virtually no chance.*

### Educational

Focus groups discussed the importance of a special designation in generating public awareness of the significance of caves. Specially designated caves can serve as educational resources for land managers and the public (with or without visitation). The educational value is best illustrated by this stakeholder comment:

*If we go through the process of trying to pursue some kind of designation, it should be for the purpose of creating broader community outreach and a broader forum for education about caves and karst, obviously for the protection of cave and karst. But in order to protect you've got to educate. So, the education aspect of any kind of designation would just be paramount.*

#### Future

Discussions focused on the need to protect caves based on not only today's knowledge and values, but also on the preservation of cave resources for future generations' needs and values. Preservation would also protect the potential for future discoveries as noted in the following stakeholder comment:

*Why do you want to preserve this, is it for current scientific study, is it for future scientific study? Let's don't exhaust all of resources. With science, we may discover in a hundred years, we may find that science in 2002 was just in its infancy. Let's do what we need to do to learn to as much as we can about what's beneath us and leave it in such a way so that two generations hence they won't say oh you've wiped out the footprints.*

#### Significance

Discussions touched upon the need for the designation to be based on the overall quality of the resource to be protected, as opposed to one or two resource attributes (including scientific, aesthetic, and other intangible attributes). The following stakeholder comment discusses significance:

*There has to be some value criteria in there too. It's got to be an outstanding example of something. Outstanding resources, outstanding geological speleothems, hydrology for the*



*local area, whatever it is, you can't just take any little feature... it's got be of great value, significance.*

#### Existence

Two groups mentioned the value of knowing that wilderness existed even without actual visitation, as illustrated by the following comment: *"There's a lot of wilderness areas that I don't get any selfish thing from personally, but I feel good knowing that there are places out there that humans aren't [messing] up."* *NOTE: actual term used: 'fucking'*

#### Designation Values Discussion

With one exception, focus groups values associated with a special designation such as cave wilderness were similar to those of the WCPA Intangible Values Typology (Putney, 2003) and the Wilderness Values Scale (Cordell et al. 2003, Cordell et al. 1998) (reference table one), indicating that these values are not dissimilar from those associated with other types of protected areas.

The one exception was experiential value. The WCPA typology covers a wide variety of protected areas and it is understandable that experiential value would not be a primary value of all sites. Perhaps it is not included in the WVS typology because the perceptions of solitude, remoteness, and self-sufficiency, are integral components of wilderness.

Focus groups indicated difficulty with use of the phrase 'cave wilderness'. Two primary reasons were negative experiences associated with wilderness hearings and establishment of wilderness, and, the concern that such a designation would serve as an attractant, resulting in the destruction of the resources intended to be protected. Such concerns may be why emphasis was placed on the experiential value by all focus groups. If a special designation did not use the term wilderness, it was still to protect the experience of wilderness.

Scientific research was a primary component of focus groups' discussions, indicating the importance of research and monitoring values to a special cave designation. This runs contrary to recent research indicating that scientific value was not a significant aspect of wilderness (Brown & Alessa, 2005, Cordell et al, 2003). In the case of this study, scientific value is significant to the establishment of cave wilderness.

Five of the nine focus groups discussed recreation; specifically noting that cave wilderness should not be established for recreational purposes, as illustrated by the following stakeholder comment: *"It's not for recreational use; it's for exploratory and documenting."* While it can be argued that cave explorers are recreating while they are mapping and inventorying a cave, they are producing scientific documents. It is questionable if cave visitors, whose primary interest in caves is for sport/adventure, would feel the same way about a non-recreation based wilderness designation.

Values not identified in focus groups' discussions on cave wilderness, yet listed in the two the WCPA and WVS typologies should not be considered as unimportant to focus groups participants. Rather, these values are not significant in the establishment of a special cave designation. As noted by Harmon, 2003 "... no single protected area can cover the spectrum of intangible values" (pg.20). It is highly likely that additional values will be associated with cave wilderness once a designation is established. Understanding the values associated with a special designation begins to lay the foundation of cave wilderness. Such knowledge will aid in answering the question "What is cave wilderness?"

#### Designation Criteria Theme

Research findings suggest the following goals are important in defining the intent of a special designation such as cave wilderness: 1) protection of cave resources and associated scientific

values that occur within a wilderness setting for present and future research opportunities; and 2) protection of the wilderness experience. The sense of isolation, as defined by solitude and remoteness, and the sense of self-sufficiency are important elements in a cave wilderness experience.

One discussion theme was that of a special cave designation. Within this category, the sub-theme of special designation criteria is of relevance to the focus of this paper. Criteria important to the development of a special designation and its associated legislation were identified. These criteria comprised the following: 1) intent, 2) visionary impact, 3) scientific values, 4) experiential values, 5) access issues, 6) resource protection, and 7) educational values (table four).

#### Designation Criteria Discussion

In that a special cave designation should require both surface and subsurface lands, as well as associated activities, be considered the established criteria addresses the multi-dimensional aspect of cave boundaries. It does not require that the surfaces lands meet wilderness qualifications, only that activities occurring on the surface do not adversely affect the subsurface cave wilderness.

The criteria indicate that research and education are integral components of cave wilderness stewardship. While this provides opportunities for researchers to pursue cave and karst investigations, there still exists the obligation of protecting the cave resources and wilderness experiences while managing research activities. Public education may require the expansion of current educational programs and the development of new programs.

The criteria delineates cave wilderness stewardship goals without placing specific restrictions or requirements on how they are to be achieved, thus allowing each designated site to be managed as appropriate to protect the values and resources for which it was designated.

These criteria are consistent with the values associated with the establishment of a special designation such as cave wilderness: 1) research and monitoring, 2) experiential, 3) resource protection, 4) future, 5) educational, 6) existence, and 7) significance

### Defining Cave Wilderness

Rodgers and Knafl (1993) described three elements of concepts. First, concepts are a human construct. Their meanings are not an inherent element that waits to be discovered and they are created to serve the intentions of their users. Second, a concept can convey an impression of a human experience or use experiences as an indicator. Concepts are separate from the phenomena; they are associated with it to affect how an individual comprehends the phenomenon (i.e. the idea of wilderness is not the site itself, it is a description of how the site is perceived and thus, managed). Third, the structure of concepts is such that it is possible to identify the ideas and empirical phenomena that are or are not included.

Various processes have been put forth in defining a concept, many based on the traditional detailed systematic approach, which includes concept identification and attribute verification (Parse, 1997). A different approach is one of concept inventing. The elucidation of a concept may result from the interpretation of literature arising from various disciplines, personal experience, and other sources, in order to discover associated meanings. The scholar selects which meanings to use in the definition and distinguishes the concept via a logical combination of these chosen meanings (Parse, 1997). In the first approach, the structure of the concept is

generated from the research participants. In the second approach, the ideas arise from multiple sources (Bournes, 2000).

In developing the idea of cave wilderness, a combination of these two approaches was used. The traditional approach was used to identify values and meanings associated with the concept via focus groups. The findings were complimented with the researcher's personal experiences, reflections on wilderness and cave wilderness literature, and from the Wilderness Act of 1964, the Wild and Scenic Rivers Act of 1968, the Federal Cave Resources Protection Act of 1988, and the Lechuguilla Cave Resources Protection Act of 1993. Thus, values and meanings of the concept of cave wilderness developed from research participants inputs, as well as emanating from a synthesis of multiple sources.

The proposed definition of cave wilderness is also guided by an added component – the idea of exploration and discovery. Kerbo and Roth (1989) note that caves not only emphasize wilderness qualities and benefits; they also allow individuals to experience the spirit of exploration and adventure. Although alluded to in discussions regarding exploration and mapping, and other scientific activities, explicit expression of this idea by research participants as a specific value of cave wilderness did not occur. The idea that exploration and discovery be part of the wilderness experience is not a new one. Believing that the urge to explore was a basic to human nature, Aldo Leopold felt that designated wilderness would provide opportunities to safeguard the romance of exploration (Sutter, 2002). “And now, speaking geographically, the end of unknown is at hand... Is it to be expected that it shall be lost from human experience without something likewise being lost from human character?” (Leopold, 1991, p.124). In combining the possibility of adventure and wilderness preservation, Leopold envisioned the potential to prevent the loss of the idea of exploration from the average person's life.

In defining the idea of cave wilderness, consideration is given to the physical conditions of the cave, its wilderness qualities, and stewardship goals. A definition should recognize that humans have a past, present, and future history with caves and recognize that scientific ventures can be intertwined with a wilderness experience.

The following preamble and definition of cave wilderness are proposed:

*Caves are valuable, non-renewable resources. Wilderness caves and other significant wild caves exist and are protected to preserve their recreational and educational values for the perpetual use, enjoyment, and benefit of all people. There exist some caves and cave passages that are repositories of scientific and cultural resources of extraordinary value, known and unknown. These same caves and cave passages exhibit high degrees of wildness and naturalness (the physical reality of wilderness) and the intangible essence of wilderness (solitude, self-sufficiency and sense of remoteness) such that visitation evokes a wilderness experience. In order to protect these scientific and cultural resources, wilderness qualities, and opportunities for discovery, it is proposed that the designation of cave wilderness be established. In recognition of the spirit of exploration and discovery, cave wilderness shall be open to those who desire to meet the cave on its own terms, to explore, discover, and report, thereby contributing to the world's knowledge of speleology and other sciences. It is the hope that use of such knowledge will be for education, resource stewardship, and other additional beneficial purposes for all of humankind.*

*Cave wilderness is defined as those caves and cave passages exhibiting exceptional scientific and cultural resources, and wilderness qualities. These sites display a high degree of wildness, in which the physical structure and ecological systems are largely unimpacted by humans and in which there is a sense of remoteness from the ordinary activities and works of humankind. Cave Wilderness is to mean those caves and cave passages in which stewardship shall protect the cave resources, its wilderness values, and future discoveries. Stewardship goals include: sanction of exploration and other scientific research activities, while seeking to limit the impact of these activities and other visitation; protection of the sense of solitude, remoteness and self-sufficiency as well as other characteristics of a wilderness experience; recognition of the historic connection of humans and caves, such that evidence of historic human visitation and usage that does not detract from the cave's wildness or wilderness experience is acceptable; and management of surface activities to protect the cave resources and wilderness qualities.*

The preceding preamble and definition is based on themes identified from discussion groups conducted in two cave regions of the US. The questions arise whether the same themes would be identified from focus groups conducted in other regions of the US, and are there issues and concerns not addressed by the KY and NM focus groups? Additional research would aid in determining the nation's level of interest in a cave wilderness designation. It would also provide an opportunity to evaluate the level of understanding and interest in cave stewardship, as well as determining cave related educational needs.

### CONCLUSIONS

This research identified values associated with the establishment of a special designation such as cave wilderness. Hendee & Dawson (2001) noted that in the future, wilderness may represent remnants of ecosystems, wild conditions and opportunities for wilderness experiences; and is reflective of our stewardship of today. Threats to existing wilderness sites are similar to those faced in the stewardship of caves. The identified values associated with cave wilderness can guide today's stewardship practices to protect these nonrenewable environments. They can also be used to help identify caves on federal lands that deserve special designation (be it called wilderness or go by another name) and the protection associated with such a designation.

For some the world 'wilderness' is troubling. But whether a special cave designation goes by the a convoluted title such as "site of extraordinary interest for speleological exploration and research" or other verbiage; the heart of the designation is still to protect the wilderness of cave and their associated values.

While this research needs to be expanded to other cave and non-cave regions of the US for further validation, it is a beginning for laying the foundation for cave wilderness. There is also a

need to understand the public's knowledge of and perceptions regarding caves and caving activities, including exploration.

An understanding of the values associated with a special cave designation, as well as a clear definition of cave wilderness, may aid in legislators' and the public's appreciation for the need of a congressionally legislated special cave designation.

This is one of the first scientific investigations to consider a specific landform as wilderness. This research emphasizes the need to expand the concept of wilderness to include non-traditional wildernesses such as caves, and the idea that wilderness can be managed with an emphasis on science, education, and exploration, instead of recreation. This research lays the foundation for the idea of cave wilderness and should aid in expanding the concept of wilderness. The proposed definition of cave wilderness provides a framework upon which to base cave ecosystem management practices and policies.

Recently, Senate Bill 1170 was introduced to congress proposing to establish the Fort Stanton – Snowy River National Cave Conservation Area, located on BLM land near Capitan, NM, “to secure, protect, and conserve subterranean natural and unique features and environs for scientific, educational, and other appropriate public uses” (S.1170, June 6, 2005). The nature of Fort Stanton cave and its long history of recreational visitation do not lend much of the known cave to wilderness consideration. Of the eight criteria defining the idea of cave wilderness, the bill specifically addressed six, lacking the criteria of ‘visionary impact’ and ‘experiential values’. While the bill seeks to establish protected status for a specific cave and does not specifically establish a land management category, it does not preclude that use.



The significance of the bill lies in the potential establishment of a designation for the protection of scientifically notable caves, regardless of their wilderness values. This could be the first step towards the establishment of a cave wilderness based designation.

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Table 1. Cave Wilderness Definitions

<b>Cave Wilderness Definitions</b>		
<b>Author</b>	<b>Year</b>	<b>Definition</b>
Watson & Smith	1971	Underground wilderness consists of cave systems that generally appear to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable.
Stitt & Bishop	1972	Underground wilderness is that portion of a cave or karst area, lying below the surface of the earth, which meets the requirements of the Wilderness Act regarding value and impact on the observer.
Gamble	1981	Areas from which Man can derive the wilderness experience exists in the remote areas of cavern systems, where the impact of Man's activities is largely unnoticeable. Any cave or portion thereof, which has not been markedly disturbed by tourism or other exploitive activities, therefore includes substantial tracts of wilderness.
Wood	1983	[Cave] Wilderness is an area that can provide people with wilderness experience. The primary purpose of wilderness is recreational and cultural with ecological values important but secondary. Wilderness experience consists of feelings of freedom, beauty, empathy with wild nature, and remoteness from the ordinary works of man.
Millar	1994	Cave wilderness is a function of the difficulty of ingress/egress, travel within the cave and/or the feeling of remoteness from the surface.

Table 2. Community of Interest and Community of Place Stakeholders

<b>Defining Stakeholders by Community of Interest and Community of Place</b>	
<b>Community of Interest</b> (those who use and/or participate in the stewardship of caves and karst)	
1. Individuals who utilize caves for recreation, exploration and/or research	
2. Individuals who own or manage wild or developed caves (regardless of ownership or commercial use).	
3. State and federal government officials responsible for decisions impacting caves or cave management.	
4. Special interest organizations that have an interest in cave and karst environments.	
<b>Community of Place</b> (those who work, reside on, or own land in cave and karst regions)	
1. Local individuals who earn a living via a non-resource extraction business.	
2. Local individuals who earn a living via a natural resource extraction industry.	
3. Local government officials who may have an impact on cave stewardship activities.	
4. Local residents.	

Table 3. Focus Groups Sociodemographics.

Focus Groups' Sociodemographics		
	Total Responses	Percentage of Total Responses
Gender (n = 54)		
Female	12	22
Male	42	78
Ages (n = 48)		
20 - 29	1	2
30 - 39	7	15
40 - 49	15	31
50 - 59	12	25
60 - 69	10	21
70 - 79	2	4
80 - 89	1	2
No Response	6	
Education (n = 54)		
HS Grad/GED	6	11
Some College	8	15
Bachelor	20	37
Masters	15	28
Doctorate	5	9
Income Range (n = 46)		
< \$15,000	2	4
\$15 - 24,999	4	9
\$25 - 34,999	7	15
\$35 - 49,999	9	20
\$50 - 74,999	14	30
\$75 - 99,999	2	4
> \$99,999	8	18
No Response	8	
Visited Wilderness (n = 50)		
Yes	45	90
No	5	10
No Response	4	
Caver (n = 54)		
Yes	41	76
No	13	24



Table 4. Protected Areas Value Typologies

<b>Value Typologies</b>		
<b>Cave Wilderness Designation Values (2003)<sup>1</sup></b>	<b>WCPA (2003) Intangible Values of Protected Areas<sup>2</sup></b>	<b>NSRE (2000) Wilderness Values Scale<sup>3</sup></b>
Experiential Research & Monitoring Existence Educational Future Resource Protection “ “ “ “	Research & Monitoring Existence Educational    Recreational Aesthetic Spiritual Cultural Therapeutic Identity Artistic Peace	Scientific Study Knowing it Exists  Option for Future Generations Protecting Water Quality Protecting Air Quality Protecting Wildlife Habitat Preserving Unique Wild Plants & Animals Protecting Rare & Endangered Species Recreation Opportunities Scenic Beauty Spiritual Inspiration  Tourism Income Option for Personal Use
<sup>1</sup> As Identified in this Paper <sup>2</sup> See Putney (2003) <sup>3</sup> See Cordell et al. (2003)		

Table 5. Criteria Important in Defining the Idea of Cave Wilderness.

<b>Criteria Important in Defining the Idea of Wilderness as Established by Focus Groups</b>	
<b><i>Intent</i></b>	
	Is the designation for resource protection or recreation and knowledge? It is necessary to define what is being protected and from what activities or events. Cave wilderness should not be established primarily for recreational purposes.
<b><i>Visionary Impact</i></b>	
	Designation must protect caves based on today's knowledge and values and preserve caves and cave resources for future generations' needs and values
<b><i>Scientific Values</i></b>	
	Designation must provide protection of the cave's scientific values and resources, for study now and in the future, including preservation of future discovery opportunities.
<b><i>Experiential Values</i></b>	
	Designation must provide for the protection of individuals' ability to have a wilderness experience that offers the perceptions of solitude, remoteness, and self-sufficiency.
<b><i>Access</i></b>	
	Access restrictions should occur for the protection of the cave resources, but should not result in permanent closure of the cave. Rationales for limiting access include the existence of other caves open for recreational purposes and the ability to provide alternative ways to experience the cave via the use of photographic and videographic imagery.
<b><i>Resource Protection</i></b>	
	Designation will need to provide protection for physical, biological, and other components of a cave, preservation of the cave's natural state, its original resources, and recognition of resource fragility. The designation will address surface as well as subsurface activities that may impact upon the cave resources. It will also need to provide protection for the human dimension aspect of a cave – protection of physical and social sciences' values, aesthetic values, wilderness values, and other values.
<b><i>Education</i></b>	
	Specially designated caves can serve as educational resources (with or without requiring physical visitation); generating public awareness of the significance of caves
<b><i>Management</i></b>	
	Designation must recognize that each cave is different. It would be necessary to tailor management practices to meet specific cave needs. Specific management should evolve from cave resources (physical and social sciences), and skill requirements.