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From Caveman to Cave Protector: The Quest for Responsible Cave Protection Legislation

by Henry L. Welch

Editors' Summary: Caves and their valuable repositories of ecological, geological, and archaeological data are at risk from human activities such as tourism and vandalism. Structures that took millions of years to form may be destroyed in seconds by careless or malicious visitors, and delicate cave-dwelling species such as bats are vulnerable to human disturbances. In this Article, Henry L. Welch examines the statutory protections that currently exist for protecting the structures and ecosystems of caves at both the federal and state level, as well as the appropriateness of these protections given the special nature of caves as a resource. He then provides a comprehensive model cave protection statute that balances the diverse and sometimes conflicting desires of cave owners, visitors, scientists, and conservationists.

I. Introduction

Caves have been visited by humans and their predecessors for hundreds of thousands of years.¹ A romanticized view of cavemen as uncouth, unintelligent, and aggressive has developed through such popular culture references as the comic strips *B. C.* and *Alley Oop* as well as the cartoon series *The Flintstones*.² The relative fragility of the cave environment³ leaves little doubt that the protection of America's cave resources should not be left to the stereotypical sensibilities of cavemen.

Caves are geological wonders that have existed for hundreds of millions of years.⁴ Most people associate caves with their spectacular rock crystal formations such as stalactites and stalagmites, featured prominently on the brochures

and tours for caves that have been commercially developed for visits by the public.⁵ The unique wonders of caves, however, are not limited to the beauty of their formations. Caves provide habitats for many unique and endangered species.⁶ The most prominent of cave species are bats, whose colonies eat tons of mosquitoes every day during the summer months.⁷ Caves are valuable repositories of anthropological and archeological materials.⁸ Caves can also be valuable sources regarding "global climate change, waste disposal, groundwater supply and contamination, petroleum recovery, and biomedical investigation."⁹ There are obviously many reasons for protecting caves and the treasures they contain.

This Article will examine the statutory protections that currently exist for protecting caves at both the federal and state level. The need for and appropriateness of various protections will also be examined. Part II will describe the typical uses for caves, and Part III will describe the risks to which caves are prone. Part IV will analyze the protections currently provided by federal and state law, and a model cave protection statute that can be adopted by states will be proposed in Part V that balances the diverse and some-

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1. DONALD C. JOHANSON, *Cave Dwellers*, in 4 LEXICON UNIVERSAL ENCYCLOPEDIA 224 (Bernard S. Cayne et al. eds., 1989). Evidence of manmade fires as old as 750,000 years have been found in caves in southeastern France. *Id.* Some of the oldest evidence of human civilization is found in caves. NPS CAVE AND KARST PROGRAM: THE IMPORTANCE OF CAVE AND KARST SYSTEMS, http://www2.nature.nps.gov/geology/caves/program_import.htm (last visited Jan. 10, 2008) [hereinafter NPS CAVE AND KARST PROGRAM].
2. CAVEMAN, <http://en.wikipedia.org/wiki/Caveman> (last visited Sept. 30, 2006).
3. NAT'L SPELEOLOGICAL SOC'Y 2005 ANNUAL REPORT (2005), available at <http://www.caves.org/info/2005AnnualReportFinal.pdf> [hereinafter NAT'L SPELEOLOGICAL SOC'Y].
4. R.A.L. Osborne et al., *Carboniferous Clay Deposits From Jenolan Caves, New South Wales: Implications for Timing of Speleogenesis and Regional Geology*, 53 AUSTRALIAN J. EARTH SCI. 377, 394, 402 (2006).

5. See NAT'L SPELEOLOGICAL SOC'Y, *supra* note 3, at 4. For examples of commercial cave advertising see, e.g., Hidden River Cave, <http://www.cavern.org/hrc/hrchome.php> (last visited Jan. 8, 2008); Crystal Cave, <http://acoolcave.com> (last visited Jan. 8, 2008).

6. NAT'L SPELEOLOGICAL SOC'Y, *supra* note 3, at 4.

7. *Id.*

8. JOHANSON, *supra* note 1; Lynn Roebuck & Brian Roebuck, *Identification and Protection of Historic and Prehistoric Resources in the Caves of the Southeast United States*, NSS NEWS, Mar. 2006, at 7, 7.

9. NPS CAVE AND KARST PROGRAM, *supra* note 1.

times conflicting desires of cave owners, visitors, scientists, and conservationists.

II. Cave Activities

People engage in a wide range of activities associated with caves. The most prominent of cave activities is the commercial cave tour.¹⁰ Anyone who has been on one of these tours has seen the extensive alterations made by the cave owners to make them accessible to visitors. The most common alterations are railings, stairs, and lighting added to make travel through and viewing of the caves easier.¹¹ A number of caves have artificially created entrances,¹² elevators,¹³ dining facilities,¹⁴ and organs.¹⁵ The alterations made by these cave owners have clearly impacted the appearance and ecosystems of the commercial caves.¹⁶ Commercial caves not only provide tourist attractions, but also serve to educate the public regarding the unique nature of caves and the need to protect them.¹⁷ Because commercial caves represent large investments of time and money¹⁸ as well as provide access to natural beauty and educational opportunities, any statutory protections should accommodate the interests of commercial cave owners.

People also engage in a wide range of activities in undeveloped caves. Sport caving¹⁹ is rapidly becoming more popular all over the world.²⁰ The largest interest group for cavers in the United States is the National Speleological Society.²¹ Sport caving can vary from a simple and short hori-

zontal exploration trip involving walking or crawling²² to much longer and more technical trips involving ropes and vertical gear.²³ Most cavers participate in these activities to see the beautiful rock formations, but because many caves require wriggling through very tight places and long crawls through wet and muddy passages, others participate for the challenge and the sense of exploration.²⁴ Many cavers who develop a long-term interest in the activity eventually get involved in conservation activities such as litter removal,²⁵ graffiti removal,²⁶ cave restoration,²⁷ cave gate installation,²⁸ or the formation of cave and karst conservancies.²⁹ Others become involved in significant exploration efforts to find new caves and passages,³⁰ survey caves,³¹ and even dig in caves.³² Statutory protections for caves should also provide reasonable opportunities for this large segment of individuals to pursue their recreational and conservation activities.

Commercial and undeveloped caves are also home to scientific study. In addition to the obvious opportunity for geologic study, the slow evolution of caves and the near constant internal climate of caves make them warehouses of valuable scientific data.³³ Scientific evidence and data collected in caves have led to insights into global warming.³⁴ The study of water and drainage in caves and karst are also vital to protecting the freshwater supply.³⁵ Caves are often repositories of remarkably well-preserved archeological and paleontological information due to their unique climate and use for habitation.³⁶ Statutory protections for

10. The National Caves Association (NCA) lists 93 commercial caves in the United States as members from 25 states. <http://www.cavern.com> (last visited Sept. 30, 2006). Among those caves listed are eight in national parks or monuments and another eight in state parks. *Id.* The NCA does not track statistics on the number of annual visitors and revenues associated with commercial caves. E-mail from Susan Berdeaux, Coordinator, NCA (Oct. 2, 2006, 08:05:58 CDT) (on file with author). Crystal Cave, a small to moderate sized commercial cave in Wisconsin, had about 35,000 visitors in 2006 and reports that it generates much of its revenue from ancillary operations such as a gift shop and other services. E-mail from Blaze Cunningham, Owner, Crystal Cave (Oct. 10, 2006, 19:41:50 CDT) (on file with author).

11. *Cave of the Mounds: About the Cave*, <http://caveofthemounds.com/about.htm> (last visited Jan. 8, 2008).

12. Wind Cave in South Dakota is one example. Wind Cave National Park, *Historic Cave Entrance*, http://www.nps.gov/archive/wical/Historic_Cave_Entrance.htm (last visited Jan. 3, 2008).

13. Ruby Falls Cave in Tennessee is one example. Ruby Falls, *Ruby Falls Trivia*, <http://www.rubyfalls.com/trivia.htm> (last visited Jan. 3, 2008).

14. Mammoth Cave in Kentucky is one example. Mammoth Cave National Park, *Grand Avenue Tour*, <http://www.nps.gov/macal/planyourvisit/tour-grandavenue.htm> (last visited Jan. 3, 2008).

15. Luray Caverns in Virginia is an example. Sharon Faulkner, *In the Media*, NSS NEWS, Nov. 2004, at 328, 328.

16. The inclusion of metal stairwells, cement walkways, and lighting are some obvious examples. *See supra* note 11.

17. For example, Hidden River Cave in Kentucky is home to the American Cave Museum and the American Cave Conservation Association. Hidden River Cave, <http://www.cavern.org/hrc/hrhome.php> (last visited Jan. 3, 2008).

18. Sharon Faulkner, *In the Media*, NSS NEWS, June 2006, at 25, 25.

19. This is also known as spelunking, but the preferred term is caving. CHERYL JONES ET AL., *A GUIDE TO RESPONSIBLE CAVING* 5 (3d ed. Nat'l Speleological Soc'y, 2003).

20. *Id.* at 3.

21. The National Speleological Society was founded in 1941 and has over 12,000 members. NAT'L SPELEOLOGICAL SOC'Y, *supra* note 3, at 2.

22. Philip Moss et al., *The Rediscovery and Exploration of Pautler Cave*, NSS NEWS, May 2004, at 132, 132.

23. ALLEN PADGETT & BRUCE SMITH, *ON ROPE: NORTH AMERICAN VERTICAL ROPE TECHNIQUES FOR CAVING SEARCH AND RESCUE MOUNTAINEERING* 10 (1989). In order to travel vertically in caves it is necessary to find suitable anchors for the ropes. Sometimes this requires the placement of a permanent bolt in the rock wall of a cave. *Id.* at 65.

24. JONES ET AL., *supra* note 19, at 6.

25. Faulkner, *supra* note 18, at 24.

26. *Id.*

27. George Veni, *Rubble and Crystal: Caverns of Sonora Restoration Project, 1991-1995*, NSS NEWS, Apr. 2006, at 4.

28. Chuck Squatriglia, *Magical Underground World: Just-Discovered Cave in Sequoia National Park Said to House Outstanding Rock Formations, Clues to Region's Geologic History*, SAN FRANCISCO CHRON., Sept. 24, 2006, at A1.

29. John F. Rohe, *Conservation in Northern Michigan*, 78 MICH. BUS. L.J. 424, 427 (1999). There are currently at least 18 cave or karst conservancies in the United States in addition to a number of nature preserves centered around caves. NAT'L SPELEOLOGICAL SOC'Y, *supra* note 3, at 10.

30. Sharon Faulkner, *In the Media*, NSS NEWS, Apr. 2006, at 22, 22.

31. Squatriglia, *supra* note 28, at A1. Cave surveying also requires the placement of permanent or semi-permanent markers. GEORGE W. MOORE & G. NICHOLAS SULLIVAN, *SPELEOLOGY: THE STUDY OF CAVES* xii (2d ed. 1978).

32. Dale Palecek, *Caving the Ledge in Eastern Wisconsin*, NSS NEWS, Oct. 2004, at 285. This Article describes extensive efforts in Wisconsin to remove rock and glacial debris from caves so they can be visited by cavers and the general public.

33. NPS CAVE AND KARST PROGRAM, *supra* note 1.

34. *Id.* Studies of mineral deposits, cave dwelling organisms, remains of extinct animals, and ancient pollen deposits yield valuable clues to changes in global climate. *Id.*

35. *Id.*

36. *Id.* This can range from very ancient evidence to more recent information regarding the mining of bat guano to make saltpeter for gun powder during the Civil War. *Id.*

caves should also provide opportunities for responsible scientific study.

Caves are hosts to numerous visitors whose wide range of activities impact many facets of human endeavor. Not only do they serve as tourist attractions, but they also serve other recreational needs as well as providing valuable educational and scientific opportunities. Any statutory protections for caves should provide a balance between the need to protect the fragile cave environment and the desire to continue visiting caves for the many activities for which they are reasonably suited.

III. Risks to Caves

As with any element of nature, caves are susceptible to the impact of man and his activities. It would, of course, be impossible to list every possible risk to caves, but a few common themes emerge after just a brief reading of the news and cave-related literature.

Probably the single most reported risk to caves involves damage and vandalism to caves whether by careless or ignorant visitors or willful vandals.³⁷ Unlike most animal and plant life, caves develop at a very slow rate; the typical formation, such as a stalactite or stalagmite, takes thousands of years to form.³⁸ These can be destroyed or significantly altered in a single moment of carelessness.³⁹ And although all human visitation to caves has a negative impact, willful human destruction of cave formations has the most disturbing and greatest impact.⁴⁰

Vandalism in caves has a number of motivations. Some may do this simply because they can. Others prefer to leave their mark in the form of graffiti.⁴¹ Others are motivated by the monetary gain possible from the sale of cave formations that have been broken and removed from caves.⁴² Monetary gain is also a likely motivation for the removal of archeological artifacts.⁴³

Caves and their natural wonders are also susceptible to other risks. The many species that live or hibernate in caves often lead a delicate existence. For example, bats that are disturbed even once or twice during hibernation may not survive until the spring.⁴⁴ People have also been known to

stomp on and kill bats for sport.⁴⁵ Others set fires in caves⁴⁶ even though the smoke and chemicals from the fires pose a significant risk to the cave environment and the organisms that live in them.⁴⁷ Littering and other dumping of trash or waste can also adversely affect the cave environment whether this dumping takes place in the cave itself or in the sinkholes that are often their entrances.⁴⁸

Thus, there are many human-generated risks to caves. Some are minor, and are the inevitable affects of responsible human existence and visitation, while others are both disturbing and avoidable. Any statutory protection for caves must strike an appropriate balance that will reduce or eliminate the latter without criminalizing the former.

IV. Current Statutory Protection for Caves

The federal government and 29 states⁴⁹ have made express provisions in their statutes for the protection of caves. This Section will first review the Federal Cave Resources Protection Act (FCRPA),⁵⁰ then summarize the various protections implemented by the states. These statutes provide valuable insight into the types of protections that society, as reflected by its legislative bodies, should provide for caves.

A. The FCRPA

In 1988, the federal government, concerned that existing state statutes and regulations were not adequately protecting cave resources from irreparable damage due to commercial caving, vandalism, and other recreational uses, enacted the FCRPA.⁵¹ The FCRPA was enacted for two express purposes: (1) “to protect and preserve significant caves on Federal lands for the perpetual use, enjoyment, and benefit of all people”⁵²; and (2) “to foster increased cooperation” between the federal government and those who use caves “for scientific, education, or recreational purposes.”⁵³

The FCRPA does not define what makes a cave significant, but regulations enforcing the FCRPA do so. To be significant, a cave must possess one or more of the following features or characteristics: biological; cultural; geological, mineralogical, or paleontological; hydrological; recreational; or educational or scientific.⁵⁴ This list of characteristics that make a cave significant implies that it is possible

37. See JONES ET AL., *supra* note 19, at 9; Mike DeWitt, *The Lure of the Limestone Lair*, TAMPA TRIBUNE, May 28, 2006, at 18 (indicating that there are few caves that have not suffered from vandalism).

38. JONES ET AL. *supra* note 19, at 7. Stalactites grow approximately 0.1-2.0 millimeters per year. MOORE & SULLIVAN, *supra* note 31, at 47.

39. JONES ET AL., *supra* note 19, at 7 (“Mud from a caver’s glove or boot can remain forever as an ugly stain.”).

40. See, e.g., *id.* at 22 (quoting the Nat’l Speleological Soc’y Conservation Creed); Richard L. Hill, *Revealing a Sheltered Past*, THE OREGONIAN, July 23, 2006, at C1. For a more in depth treatment of vandalism in caves, see Jacob A. Kramer, *Preventing the Destruction of America’s Caving Resources: Enforcing Cave Protection Legislation Against Vandals and Profiteers*, 9 ENVTL. LAW. 725 (2003).

41. Mike Penprase, *Felony Charges Filed in Cave Vandalism*, SPRINGFIELD NEWS LEADER, May 11, 2002, at A1; Keith Rogers, *Vandals Deface Rock Art*, LAS VEGAS REV. J., Sept. 16, 2006, at B1.

42. See Cynthia Eagles, *3 Plead Guilty to Destroying Crystal Cave in Theft Spree*, LOUISVILLE COURRIER-J., Mar. 1, 1996, at A6.

43. Hill, *supra* note 40, at C1.

44. H.T. Syndication, *Bat Hibernating Sites Off-Limits to Forbes State Forest Visitors*, U.S. STATE NEWS, Sept. 8, 2006 (quoting the chief of Pennsylvania’s Ecological Services Section of the Department of Conservation and Natural Resources).

45. See Aaron Atz, *NSS Grants Indiana Caver \$1000 Vandalism Deterrence Award: A Summary of the Langdons Cave Vandalism Case*, NSS NEWS, Oct. 2004, at 112.

46. *Caves Offer Reward*, WAIKATO TIMES, Oct. 3, 2006, at 3.

47. See JONES ET AL., *supra* note 19, at 7, 17.

48. *Id.* at 7, 15, 17; Hill, *supra* note 40, at C1.

49. The following states have expressly provided some protections for caves: Alabama, Arizona, Arkansas, California, Colorado, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Kentucky, Maine, Maryland, Mississippi, Missouri, Montana, Nevada, New Mexico, North Carolina, Ohio, Oklahoma, Pennsylvania, Tennessee, Texas, Vermont, Virginia, West Virginia, and Wisconsin.

50. 16 U.S.C. §§4301-4310 (2000).

51. Roberto Iraola, *Statutory Overview: The Federal Cave Resources Protection Act of 1988*, 17 FORDHAM ENVTL. L. REV. 89 (2005). The FCRPA protects only natural underground voids, but does not extend to man-made voids such as mines. 16 U.S.C. §4302(1) (2000).

52. 16 U.S.C. §4301(b)(1) (2000).

53. *Id.* §4301(b)(2).

54. 43 C.F.R. §37.11(c)(2006).

that some caves may not be significant; the regulations, however, state “that all caves are afforded protection.”⁵⁵

The FCRPA prohibits three general types of activities without prior permission from the Secretary of the Interior or the Secretary of Agriculture—depending upon which department oversees the land on which the significant cave is located.⁵⁶ First, the FCRPA prohibits the knowing destruction, alteration, removal from, or harm to any significant cave or interfering with “the free movement of any animal or plant life into or out of any significant cave.”⁵⁷ Secondly, the FCRPA prohibits the possession, sale, barter, exchange, or offers of the same of any cave resource from a significant cave.⁵⁸ And, finally, the FCRPA prohibits activities that encourage or incite others to violate the Act.⁵⁹

To better protect significant cave resources on federal land, the FCRPA designates that the location of any significant cave will not be made public under the Freedom of Information Act unless the disclosure would further the purposes of the FCRPA.⁶⁰ This policy is motivated by the fear that publication of cave locations would create a substantial risk of vandalism or unauthorized access to the various caves.⁶¹

Under the FCRPA the various departmental Secretaries are given significant authority over the management of caves on federal land.⁶² This authority, however, is understandably not without limits. The FCRPA specifically directs the Secretaries to promulgate regulations in consultation with private sector interests, including cavers.⁶³ These regulations were also to specifically include rules that appropriately restrict the use of the caves.⁶⁴

The FCRPA also established both criminal and civil penalties for violation of its provisions. For a first offense, the maximum criminal penalty is a \$100,000 fine and up to one year of imprisonment.⁶⁵ A subsequent offense raises the maximum fine to \$250,000.⁶⁶ The regulations from the various federal departments also provide for other criminal penalties.⁶⁷ The FCRPA provides a maximum fine of \$10,000 for violations of the regulations or permit restrictions.⁶⁸

55. *Id.* §37.11(d). For a more detailed treatment of these criteria, see Kramer, *supra* note 40, at 732-33.

56. 16 U.S.C. §§4302(2), 4306.

57. *Id.* §4306(1). It also prohibits entering a cave with the intent of committing such an act. *Id.*

58. *Id.* §4306(2). A cave resource is defined as “any material . . . occurring naturally in caves . . . such as animal life, plant life, paleontological deposits, sediments, minerals, speleogens, and speleothems.” *Id.* §4302(5). A speleogen is any relief feature from the floor, walls, or ceiling of a cave, *id.* §4302(8), and a speleothem is any natural mineral formation or deposit, *id.* §4306(7).

59. *Id.* §4306(3).

60. *Id.* §4304.

61. *Id.*

62. This includes the issuing of permits for the collection and removal of cave resources. *Id.* §4305.

63. *Id.* §4303.

64. *Id.*

65. *Id.* §4306(b); 18 U.S.C. §3571(b)(5) (2000).

66. 16 U.S.C. §4306(b) (2000); 18 U.S.C. §3571(b)(3) (2000).

67. Iraola, *supra* note 51, at 97. The typical maximum fine under these regulations is \$5,000 or twice the value of the loss or gain caused by the offense. *Id.*

68. 16 U.S.C. §4307(a) (2000).

B. Overview of State Cave Protection Statutes

The FCRPA provides many necessary and valuable protections for caves, but it only extends protection to significant caves on federal land.⁶⁹ It is estimated that only approximately 4,000 of the 40,000 caves in the United States are on federal land and thus subject to protection by the FCRPA.⁷⁰ Therefore, to properly assess the status of statutory protection for caves in the United States, it is necessary to consider the various state statutes.

At present, 29 states have provided some explicit protection for caves among their various statutes.⁷¹ These vary from Wisconsin’s statute, which only protects “Rock Art,”⁷² and Mississippi’s, which only provides a wildlife fund,⁷³ to Virginia’s, which arguably provides greater protection for caves than does the FCRPA.⁷⁴ The earliest state to explicitly protect caves was Nevada in 1959,⁷⁵ while the vast bulk of the statutes were enacted in the 1970s and 1980s. Curiously, South Dakota revoked its cave protection statute in 1976.⁷⁶

Most of the state cave protection statutes have remarkable similarity. A review of them shows that many were compiled from the same template, with each state legislature dropping, adding, or altering specific provisions either due to a changing template or to adapt to other provisions within that state’s statutes. Each of the various provisions in these statutes addresses one or more of the following:

(1) protections for speleogens and speleothems, e.g. “[i]t shall be unlawful . . . to . . . [b]reak, break off, crack, carve upon, write, burn, or otherwise mark upon, remove, or in any manner destroy, disturb, deface, mar, or harm the surfaces of any cave . . . including spelothems, speleogens, and sedimentary deposits”⁷⁷;

(2) protections for plant and animal life, e.g. “[i]t shall be unlawful to remove, kill, harm, or otherwise disturb naturally occurring organisms within any cave”⁷⁸;

(3) prohibitions on selling or exporting cave resources, e.g. “[i]t shall be unlawful . . . to sell or offer for sale any speleothems in this Commonwealth, or to export them for sale outside the Commonwealth”⁷⁹;

(4) prohibitions on burning in caves, e.g. “[i]t shall . . . be unlawful to burn within a cave . . . any material which produces any smoke or gas which is harmful to any naturally occurring organism in any cave”⁸⁰;

(5) prohibitions on littering and other dumping, e.g. “[i]t shall be unlawful . . . to store, dump, litter, dispose of

69. *Id.* §4301.

70. Iraola, *supra* note 51, at 89.

71. The most complete compendium of state statutes relating to caves is maintained by the National Speleological Society. *Links to Cave Laws*, http://www.caves.org/committee/conservation/www/a_law/laws.htm (last visited Jan. 3, 2008). The list is missing Colorado. See *id.*; COLO. REV. STAT. §18-4-509 (2006).

72. WIS. STAT. §943.01 (2005-2006).

73. MISS. CODE ANN. §27-7-93(2) (2006).

74. See VA. CODE ANN. §§10.1-1000-10.1-1008 (2006).

75. NEV. REV. STAT. §381.225 (1959).

76. S.D. CODIFIED LAWS §22-34-3 (repealed 1976).

77. VA. CODE ANN. §10.1-1004(A) (2006).

78. *Id.* §10.1-1006(A) (2006).

79. *Id.* §10.1-1007 (2006). This may also include archeological or paleontological materials in a similar manner to the FCRPA.

80. VA. CODE ANN. §10.1-1005(A) (2006). An exception is sometimes included for burning acetylene gas using carbide lamps. See, e.g., ARK. CODE ANN. §15-20-604(c) (2005); 525 ILL. COMP. STAT. 5/6(e) (2006).

or otherwise place any refuse, garbage, dead animals, sewage, or toxic substances harmful to cave life or humans, in any cave”⁸¹;

(6) prohibitions on tampering with or removing signs and gates used to control access, e.g. “[i]t shall be unlawful . . . to . . . break, force, tamper with, or otherwise disturb a lock, gate, door, or other obstruction designed to control or prevent access to any cave, even though en-

trance thereto may not be gained [or to r]emove, deface, or tamper with any sign stating that a cave is posted.”⁸²

A summary of these protections is found in Table 1. In addition, some states prohibit the carrying of paint or other aerosols into caves.⁸³ A few states also include express provisions that any gate or door should not interfere with the flow of air or the entry and egress of wildlife.⁸⁴

81. VA. CODE ANN. §10.1-1005(A) (2006).

82. *Id.* §10.1-1004(A) (2006). There is generally no requirement, in most states, that entry to the cave actually occur. Indiana, however, only protects against breaking, not tampering. IND. CODE §35-43-1-3(b) (2006).

83. Arizona and Maine have such provisions. ARIZ. REV. STAT. ANN. §13-3702(A)(3) (2006); ME. REV. STAT. ANN. tit. 12, §544-N(C) (2006).

84. Kentucky, Maryland, Montana, Ohio, and Pennsylvania have such provisions. KY. REV. STAT. ANN. §433.873(c) (2006); MD. ANN. CODE NAT. RES. §5-1404(c) (West 2006); MONT. CODE ANN. §23-2-904 (2005); OHIO REV. CODE ANN. §1517.24(6) (West 2006); 32 PA. STAT. ANN. §5605(6) (2006).

Table 1—Summary of State Cave Protection Statutes

State	Damage ^a	Sale ^b	Burn	Dump ^c	Gates ^d	Life ^e
Alabama ^f	Y	Y		Y	Y	Y
Arizona ^g	Y				Y	Y
Arkansas ^h	Y		Y	Y	Y	
California ⁱ	Y		Y		Y	Y
Colorado ^j	Y				Y	Y
Florida ^k	Y	Y		Y	Y	Y
Georgia ^l	Y	Y	Y	Y	Y	Y
Hawaii ^m	Y		Y	Y	Y	Y
Idaho ⁿ	Y			Y	Y	Y
Illinois ^o	Y		Y	Y	Y	Y
Indiana ^p	Y			Y	Y	Y
Kentucky ^q	Y	Y	Y	Y	Y	Y
Maine ^r	Y		Y	Y	Y	Y
Maryland ^s	Y	Y	Y	Y	Y	Y
Mississippi ^t						
Missouri ^u	Y			Y	Y	
Montana ^v	Y			Y	Y	
Nevada ^w						
New Mexico ^x	Y			Y		Y
North Carolina ^y	Y	Y		Y	Y	
Ohio ^z	Y	Y	Y	Y	Y	Y
Oklahoma ^{aa}	Y			Y		Y
Pennsylvania ^{bb}	Y		Y	Y	Y	Y
Tennessee ^{cc}	Y			Y		Y
Texas ^{dd}	Y	Y		Y	Y	
Vermont ^{ee}						
Virginia ^{ff}	Y	Y	Y	Y	Y	Y
West Virginia ^{gg}	Y	Y		Y	Y	Y
Wisconsin ^{hh}						

a This includes breaking, damaging, harming, or marring both speleogens and speleothems and may also include the removal of either even if they were already broken.

b This includes offers of sale, export, exchange, etc. of cave resources; most specifically speleogens and speleothems. Both Georgia and Texas allow the cave owner to give permission for this. GA. CODE ANN. §12-4-144(a) (2006); TEX. NAT. RES. CODE ANN. §201.042(a) (2006).

c This includes littering and the dumping of any refuse in caves.

d This includes locks, doors, and signs posted for purposes of trespassing and/or to educate the public about the relevant state statutes.

e This includes plants, animals, and other forms of life.

f ALA. CODE §§9-19-1 to 9-19-5 (2006).

g ARIZ. REV. STAT. ANN. §13-3702 (2006).

h ARK. CODE ANN. §§15-20-601 to 15-20-607 (2005).

i CAL. PENAL CODE §623 (West 2007).

j COLO. REV. STAT. §18-4-509 (2006).

k FLA. STAT. §810.13 (2007).

l GA. CODE ANN. §§12-4-140 to 12-4-147 (2006).

m HAW. REV. STAT. §§6D-1 to 6D-13 (2006).

n IDAHO CODE ANN. §18-7035 (2006).

o 5 ILL. COMP. STAT. §§525/5-1 to 525/5-7 (2006).

p IND. CODE §35-43-1-3 (2006).

q KY. REV. STAT. ANN. §§433.871-885 (2006).

r ME. REV. STAT. ANN. tit. 12, §§544-I to 544-N (2006).

s MD. ANN. CODE NAT. RES. §§5-1401 to 5-1406 (West 2006).

t MISS. CODE ANN. §27-7-93 (2006). This statute only creates a Natural Heritage Fund. *Id.*

u MO. REV. STAT. §§578.200-225 (2006).

v MONT. CODE ANN. §§23-2-901 to 23-2-908 (2005).

w NEV. REV. STAT. §381.225 (2005).

x N.M. STAT. §30-15-5 (2006).

y N.C. GEN. STAT. §§14-159.20-23 (2006).

z OHIO REV. CODE ANN. §§1517.21-99 (West 2006).

aa OKLA. STAT. 21 §1789 (2006).

bb 32 PA. STAT. ANN. §§5601-5607 (2006).

cc TENN. CODE ANN. §11-5-108 (2005).

dd TEX. NAT. RES. CODE ANN. §§201.001-043 (2006).

ee VT. STAT. ANN. tit. 22, §§701-791 (2005). This statute only protects the archeological sites within caves. *Id.*

ff VA. CODE ANN. §§10.1-1000 to 10.1.1008 (2006).

gg W.VA. CODE §§20-7A-1 to 20-7A-6 (2006).

hh WIS. STAT. §943.01(2)(f) (2005-2006). This statute only protects rock art sites. *Id.*

In the states that prohibit damage to and removal of speleogens and speleothems, there is a general requirement that the violator must intend or knowingly cause the damage without the prior permission of the owner in order for a violation to occur.⁸⁵ In a few states, the owner cannot even give permission to do this.⁸⁶ In Alabama, rescue personnel are exempted from these prohibitions when responding to an emergency.⁸⁷ Protections for plant and animal life follow similar patterns except there is often an exception written for scientific purposes, which may or may not require a permit, depending on the state.⁸⁸

Violation of the state statutes is generally classified as a misdemeanor.⁸⁹ Many states also list cave exploration or other cave related activities as falling within their recreational use statute.⁹⁰

As a general rule, the current statutes protecting caves identify the likely risks to caves and make a reasonable attempt to protect caves and the formations and life within them. Unfortunately, as Table 1 illustrates, this protection is often not very comprehensive and tends to provide too much leeway to the property owner of the cave.⁹¹

C. Other Statutory Protections

Caves are also protected by any number of local, state, and federal laws that affect general property rights and environmental protection. For example, a property owner whose land contains a cave can rely on general statutes prohibiting trespassing and vandalism.⁹² The states and the federal government have also enacted a number of statutes to protect various species and the environment that impact caves as well. Texas, for example, has a special statute to protect bats,

which has a clear relationship with caves.⁹³ There are also various federal laws, such as the Endangered Species Act of 1973, which provides protection for some species that reside in caves,⁹⁴ and the Clean Water Act of 1977, which protects the water that flows through caves.⁹⁵ Each of these Acts provides, at best, indirect protection for caves, and they certainly do very little to address the specific protections that are necessary for caves and were a likely motivator for the FCRPA.

Taken as a whole, the existing statutory protections for caves at the state and federal level are a good beginning. These statutes tend to identify the most likely risks that caves face; yet the variability in protections from state to state and between federal and non-federal land are quite significant. It is time to develop a model statute that addresses these needs in a comprehensive fashion. The following Section does just that.

V. A Model Cave Protection Statute

Because caves are such a unique natural resource, they need special statutory protections for their distinctive features and habitats. The following sections of this Article will address each of the following elements that should appear in a comprehensive statute designed to protect caves: preamble/purpose; definitions; protections for speleogens and speleothems; protections for plant and animal life; prohibitions on selling or exporting cave resources; prohibitions on burning in caves; prohibitions on littering and other dumping; prohibitions on tampering with or removing signs and gates used to control access; exceptions to the general rules; and the creation of a special oversight board for managing cave-related issues. The Appendix to this Article will contain the complete wording of suggested statutory language.

A. Preamble to the Cave Protection Statute

To help explain the purpose and goals of the cave protection statute, the statute should begin with a preamble or statement of purpose that clearly identifies the purpose and goals of the statute. This helps place the statutory provisions in context and may provide some insight into the legislative intent in future litigation. A good preamble should clearly identify the unique geological, archaeological, cultural, and biological features of caves and further indicate their very fragile nature.⁹⁶ For specific wording of the preamble, see section Caves.2 of the Appendix.

B. Definitions for the Cave Protection Statute

Many of the terms used throughout the cave protection statute are technical terms that are not necessarily familiar to legal or lay persons, e.g., speleothem, and will need to be clarified. There are also terms that may take on a specialized

85. Each state is a little different. Alabama requires the damage to be malicious. ALA. CODE §9-19-3 (2006). Arkansas and Hawaii require recklessness. ARK. CODE ANN. §15-20-603 (2005); HAW. REV. STAT. §6D-1(a) (2006). Florida specifies no mens rea component. FLA. STAT. §810.13(2) (2007). In the states of Arizona, California, Florida, Hawaii, Illinois, Kentucky, Maine, Maryland, Missouri, North Carolina, Ohio, Oklahoma, Pennsylvania, Texas, Virginia, and West Virginia the permission must be in writing. ARIZ. REV. STAT. ANN. §13-3702(A) (2006); CAL. PENAL CODE §623(a) (West 2007); FLA. STAT. §810.13(2) (2007); HAW. REV. STAT. §6D-2(a) (2006); 5 ILL. COMP. STAT. 525/5-6 (2006); KY. REV. STAT. ANN. §433.873(1) (2006); ME. REV. STAT. ANN. tit. 12, §544-K (2006); MD. ANN. CODE NAT. RES. §5-1402(a)(1) (West 2006); MO. REV. STAT. §578.210(1) (2006); N.C. GEN. STAT. §14-159.21 (2006); OHIO REV. CODE ANN. §1517.24(A) (West 2006); OKLA. STAT. §1789(A) (2006); 32 PA. STAT. ANN. §5605 (2006); TEX. NAT. RES. CODE ANN. §201.041(a) (2006); VA. CODE ANN. §10.1-1004(A) (2006); W. VA. CODE §20-7A-2 (2006).

86. Alabama, Montana, and Nevada have such provisions. ALA. CODE §9-19-3 (2006); MONT. CODE ANN. §23-2-903 (2005); NEV. REV. STAT. §381.225(1) (2005).

87. ALA. CODE §9-19-3(6) (2006).

88. Alabama, Florida, Georgia, Indiana, and Kentucky allow such collection. ALA. CODE §9-19-3(1) (2006); FLA. STAT. §810.13(2)(a) (2007); GA. CODE ANN. §12-4-146 (2006); IND. CODE §35-43-1-3(b)(1) (2006); KY. REV. STAT. ANN. §433.873(1)(a) (2006). Hawaii, Maryland, Virginia, and West Virginia allow collection with a permit. HAW. REV. STAT. §6D-4(a) (2006); MD. ANN. CODE NAT. RES. §5-1404(b) (West 2006); VA. CODE ANN. §10.1-1006(A) (2006); W. VA. CODE §20-7A-4 (2006).

89. E.g., ALA. CODE §9-19-5 (2006).

90. E.g., *id.* §9-19-2.

91. See *infra* Part V.

92. E.g., WIS. STAT. §§933.01(2), 943.017(1), 943.13 (2005-2006) (prohibiting respectively vandalism, graffiti, and trespass).

93. TEX. PARKS & WILD. CODE ANN. §§63.101-1043 (2006).

94. 16 U.S.C. §§1531-1544, ELR STAT. ESA §§2-18.; see also Joe Mitchell, *Robber Baron-The Long Hard Road to Restoring the Cave Entrance*, NSS NEWS, Apr. 2006, at 7.

95. 33 U.S.C. §§1251-1387, ELR STAT. FWPCA §§101-607.

96. The states of Arkansas and Pennsylvania have essentially the same statement on legislative findings that would be suitable, with minor modifications, for this purpose. ARK. CODE ANN. §15-20-601 (2005); 32 PA. STAT. ANN. §5602 (2006).

meaning within the context of caves, e.g., gate. This section of the statute should serve to define these terms to provide greater clarity to the statute as a whole. A good starting point for this set of definitions is found in the Virginia Code.⁹⁷ Additional terms, however, will need to be added to address the recommended provisions in the following sections of this Article. For specific wording of these definitions, see section Caves.3 of the Appendix.

C. Protections for Speleogens and Speleothems

The protections for speleogens and speleothems are clearly at the heart of the cave protection statute. These are typically the most visible and prized features of caves and are often the most fragile.⁹⁸ Formulation of this section of the cave protection statute also presents many obstacles due to the wide range of activities that should be permitted in caves and clear differences in their impacts on caves and cave features.⁹⁹ The paragraphs that follow attempt to identify all of the relevant issues and factors that must be addressed by this section of the cave protection statute.

The typical provision protecting speleogens and speleothems in existing statutes contains wording that makes it unlawful to “[b]reak, break off, crack, carve upon, write, burn, or otherwise mark upon, remove, or in any manner destroy, disturb, deface, mar, or harm the surfaces of any cave or any natural material which may be found there, whether attached or broken, including speleothems, speleogens, and sedimentary deposits.”¹⁰⁰ Setting aside the issues of mens rea and who can give permission, this wording all but makes it unlawful to enter a cave. Because most cave floors contain mud, loose rock, and sand, it would be all but impossible to visit a cave without leaving a footprint or moving a rock or other materials. This wording also does not address the clear alterations that may be necessary to leave survey marks, place bolts for rope safety, excavate for exploratory purposes, gate caves to limit access, and update a cave for commercial purposes.¹⁰¹ Nor does it address the removal of hazardous conditions and the access needs of rescue personnel.

These concerns are generally addressed in the existing statutes by giving the cave owner blanket authority to provide permission to cavers to violate these restrictions.¹⁰² Such a broad exception is clearly inappropriate in a statute designed to protect a valuable resource, as it literally gives the owner permission to completely destroy the cave.¹⁰³ Some sort of compromise is, therefore, necessary to provide different sets of rules for incidental or minor impacts and major impacts on caves. Minor impacts on caves should be defined as any activity that is the likely result of responsible human visitation to the cave environment. These minor impacts should include leaving footprints, disturbing loose

materials as a result of passage, smoothing of non-speleothem rock surfaces caused by passage, introducing survey marks, placing climbing bolts for safety, installing cave gates, disturbing for scientific or educational purposes, and excavating a few cubic feet of material to make a passage passable. Major impacts should include converting a cave passage or room for commercial use and excavating more than a few cubic feet of material. There should also be an exception for the removal of hazards that cannot be avoided and for the operations of rescue personnel.

General permission for minor impacts should be at the discretion of the cave owner. That is, the cave owner should have the authority to give permissions for persons to enter his cave and to perform any of the minor alterations while visiting the cave. Non-minor impacts, such as damage to speleothems and vandalism, should be unlawful when committed intentionally or recklessly. Major impacts, on the other hand, should not be permissible simply at the discretion of the cave owner. Because the major alterations result in a significant impact on the cave and its environment, it is necessary for the state to provide additional oversight through a permitting process similar to those used for wetlands and other state protected lands.¹⁰⁴

The provisions for the protection of speleogens and speleothems are necessarily quite complex. The balancing of the rights of the cave owner, the desires of the cave visitor, and the special environmental needs of caves requires the multi-level classification and permission mechanisms outlined above. For specific wording of these provisions, see section Caves.4 of the Appendix.

D. Protections for Plant and Animal Life

The provisions for protecting plant and animal life in the cave protection statute follow a roughly similar rationale as do those protecting speleogens and speleothems.¹⁰⁵ In general, cave life should be protected from anything other than the minor impacts that are consistent with responsible visitation. Because cave life may also be protected by endangered species and other similar statutes,¹⁰⁶ this section of the cave protection statute should indicate that it is superseded by any other statutes that provide greater protections to cave life. For specific wording of these provisions, see section Caves.5 in the Appendix.

E. Prohibitions on the Sale and Export of Cave Materials

Because the subsequent sale of cave materials, such as speleothems and cultural resources, is often a motivating factor for vandalism in caves,¹⁰⁷ it is necessary for the cave

97. See VA. CODE ANN. §10.1-1000 (2006).

98. See *supra* Part III.

99. See *supra* Part II.

100. VA. CODE ANN. §10.1-1004(A)(1) (2006).

101. These types of alterations are described in more detail in Part II.

102. See *supra* note 85.

103. This is a bit disingenuous because other statutes, e.g., endangered species and groundwater protection acts, may prohibit complete destruction on other grounds. See *supra* notes 94-95. These other statutes, however, are unlikely to prevent large-scale destruction of speleothems.

104. See, e.g., WIS. STAT. §23.11 (2005-2006). This provision is likely to be controversial because it otherwise restricts free use of land by the owner. However, this is consistent with the requirement for a building permit with any construction project. See, e.g., MILWAUKEE, WIS., CODE OF ORDINANCES §§200-24(1) (2005). Organizations such as the NCA do not believe permitting is a guarantee of protection and believe they can be more proactive than government. E-mail from Susan Berdeaux, Coordinator, NCA (Oct. 2, 2006, 09:44:25 CDT) (on file with author). Formulation of the rules and regulations regarding the issuance of these permits is discussed in a later section. See *infra* Part V.J.

105. See *supra* Part V.C.

106. See *supra* notes 93-94.

107. See *supra* note 42 and accompanying text.

protection statute to make the sale, trade, and similar activities involving cave materials unlawful. Once again, the Virginia statute is a suitable starting point for language to this effect.¹⁰⁸ However, the Virginia statute only protects speleothems, so it is necessary to include an extra provision for the protection of cultural resources. Because the cultural resources may also be protected by additional statutes, a superseding clause similar to the one used for cave life is appropriate.¹⁰⁹ For specific wording on these provisions see section Caves.6 of the Appendix.

F. Prohibitions on Burning in Caves

The burning of materials within a cave should also be prohibited by the cave protection statute.¹¹⁰ The statutory language from Virginia is, again, a good starting point for this provision, which prohibits burning in caves and sinkholes¹¹¹; however, that language is incomplete. It should also be extended to include prohibitions on burning that may result in damage to speleogens and speleothems. Further, it is common for responsible cavers to use carbide lamps as a light source, and this common practice should be exempted from the prohibition.¹¹² For specific wording on these provisions, see section Caves.7 of the Appendix.

G. Prohibitions on Dumping and Littering

The dumping of waste and refuse, especially in sinkholes, can have a significant impact on a cave¹¹³ and should also be prohibited by the cave protection statute. The provisions for prohibitions on dumping and littering found in the Virginia statute¹¹⁴ are suitable for the model statute and have been included in section Caves.7 of the Appendix.

H. Provisions Regarding Cave Signs and Gates

Gates and doors are often used to restrict access to caves to eliminate simple trespass or protect the unique features within.¹¹⁵ It is also common for signs to be posted near caves to indicate that entrance is restricted or to notify visitors of statutory provisions.¹¹⁶ Consequently, the cave protection statute should address vandalism to gates and signs, as well as the responsible installation and maintenance of gates.

Many existing state statutes already prohibit tampering with, damaging of, and forcing of cave gates, even though entrance to the cave does not occur.¹¹⁷ Additionally, they include provisions protecting associated signs.¹¹⁸ Similar provisions have been provided in section Caves.3 of the Appendix.

The purpose of a cave gate is to control human access to a cave either to prevent trespass or to protect the unique features of the cave.¹¹⁹ However, unlike the door to a home, a cave is a part of nature, and as such, wildlife, water, and air commonly move in and out of caves. This is why a number of states have restricted the installation of cave gates so they do not obstruct the ingress and egress of nature.¹²⁰ The provisions in existing statutes generally require the free and unimpeded entry of any cave life, water, or air.¹²¹ Free and unimpeded entry, however, may not be consistent with a minor impact on a cave. When the entrance to a cave is created or appreciably widened to allow entry by people, this could change the environment within the cave or allow access by wildlife where previously there was none.¹²² Consequently, the cave protection statute should require that all gates, etc. be installed so that they attempt to provide the same access by cave life, air, and water as existed before any recent human alterations to the cave entrance. Any significant alteration of access would be subject to the same provisions as a major impact.¹²³ For specific wording on these provisions, see section Caves.8 of the Appendix.

I. Exceptions to the General Rules

As with any other statute, the cave protection statute contains many provisions that should be subject to exceptions. As already discussed, one such exception is the allowance of burning when done for the purpose of lighting.¹²⁴ Additional exceptions should be allowed for scientific collection, hazards, and rescue personnel. Each of these will be addressed below.

Collection of materials for scientific and educational purposes in museums and nature centers has long been tolerated in the United States.¹²⁵ Many of the existing cave protection statutes allow scientific collection of cave life, both with and without permits.¹²⁶ This exception should be widened to include the collection of samples for educational purposes in a manner consistent with other state statutes addressing scientific collection permits. In all cases, any collection undertaken should be consistent with a minor impact. The full text of these provisions can be found in sections Caves.3(g), Caves.3(o), Caves.4(a)(3), Caves.5(b), and Caves.6(c) of the Appendix.

Hazardous situations occur all the time in nature, and their presence in caves is no exception.¹²⁷ Whether these are due to unstable rocks or areas of particularly poor footing, the cave protection statute should make allowances for the removal of unavoidable hazards that are encountered during responsible visitation to a cave. As with other ac-

108. See VA. CODE ANN. §10.1-1007 (2006).

109. See *supra* note 105 and accompanying text.

110. See *supra* notes 46-47 and accompanying text.

111. See VA. CODE ANN. §10.1-1005(A) (2006).

112. See *supra* note 80.

113. See *supra* note 48 and accompanying text.

114. VA. CODE ANN. §10.1-1005(A) (2006).

115. See *supra* notes 28 and 82 and accompanying text; see also *supra* note 88.

116. *Id.*

117. See *supra* note 82 and accompanying text.

118. *Id.*

119. See *supra* notes 28 and 82 and accompanying text; see also *supra* note 88.

120. See *supra* note 82 and accompanying text.

121. See *supra* note 81.

122. See Mitchell, *supra* note 94, at 7; Mark Lassiter, *The Rich Mountain Blowhole Cave Project—Completion of a Five-Year Effort*, 62 NSS NEWS 346, 348 (Dec. 2004).

123. See *supra* Part V.C.

124. See *supra* Part V.F.

125. See MOORE & SULLIVAN, *supra* note 31, at xii.

126. See *supra* note 88 and accompanying text.

127. Rock falls are a common hazard. John Gookin et al., *American Caving Accidents 2002-2003*, NSS NEWS, Sept. 2005, Part 2, at 6.

tivities in caves, these removals should be done so as to minimize the impact on the cave. The full text of this provision can be found in sections Caves.3(i) and Caves.4(f) of the Appendix.

Rescue personnel are often called upon to rescue trapped or injured persons within a cave.¹²⁸ Because the cave environment often consists of small and irregular passages, it may not be possible to extract an injured caver without having a major impact on a cave. Consistent with the policy in Alabama,¹²⁹ the cave protection statute should exempt rescue personnel from the normal prohibitions on vandalism in a cave. Rescue personnel typically consist of police officers, fire fighters, paramedics, and other specially-trained volunteers.¹³⁰ The full text of this provision can be found in sections Caves.3(n) and Cave.4(g) of the Appendix.

J. Creation of a Special Oversight Board

To address the unique characteristics of caves and the special provisions of the cave protection statute, a special oversight board shall be created in each state adopting the model statute. This so-called Cave Board would propose regulations, assist cave owners, oversee the various permitting processes outlined in the statute, and represent the various constituencies with an interest in caves. The Cave Board would likely be situated within the Department of Natural Resources or other appropriate state agency or department. The Code of Virginia presents a suitable template for the development of this statutory section.¹³¹ However, because geology and caves vary extensively from state to state, a model cave protection statute cannot appropriately propose nor codify all of the specific requirements that would be necessary to determine how and when permits are issued, determine suitable rules for gating, excavation, and hazard removal, and clarify the local differences between minor and major impacts. For the Cave Board to properly serve the various constituencies, it would need representatives from the state, scientists, historians, cave owners, commercial cave owners, and cavers as is appropriate for the cave inventory of the particular state.¹³² As is consistent with the FCRPA, the cave protection statute should also insulate cave location data collected by the Cave Board from freedom of information requests.¹³³ For specific wording on these provisions, see section Caves.9 of the Appendix.

K. Penalties for Violating These Provisions

As with any other criminal statute, the cave protection statute needs to specify the relevant penalty for each of the violations of each of its provisions. Because the specific grading and penalties for unlawful acts vary extensively from state to state, a model statute should only consider the appro-

priateness of a misdemeanor or felony as a penalty for each violation and should leave it to each individual state adopting the statute to provide a more specific penalty. Most of the existing cave protection statutes classify violations as misdemeanors with escalating penalties for repeat offenses.¹³⁴ This escalating approach is consistent with the FCRPA.¹³⁵ However, a previous commentator has noted that a misdemeanor is not a sufficient deterrent and that harsher penalties should be imposed.¹³⁶ In support of that goal the model cave protection statute has listed felony as the standard penalty for violations.

L. Recreational Use and Sovereign Immunity Provisions

Cave exploration is not without its risks and cave owners and the state should be granted limited immunity from liability to those who visit their caves. Consistent with existing cave protection and other state statutes, cave owners should be insulated from liability in a manner consistent with a recreational use statute.¹³⁷ Consistent with the Virginia statute,¹³⁸ this exemption from liability should only apply to cave owners who do not charge admission. Additionally, given the complexity of the cave protection statute and the creation of the Cave Board, it is appropriate to reassert sovereign immunity. For specific wording on these provisions, see section Caves.10 of the Appendix.

VI. Conclusion

Caves are a unique, precious, and fragile resource. Extensive efforts should be made at the state level to improve and enhance existing statutory provisions for the protection of caves and the formations, life, and artifacts found within them. While existing cave protection statutes are a good start, they need an extensive overhaul to properly protect the caves, yet allow responsible visitors to caves to enjoy their many wonders. In addition, the needs of the scientific and historic communities should also be incorporated into the cave protection statute.

Consistent with these goals, this Article has outlined a model statute for the protection of caves. This model statute addresses protections based on activities that result in minor and major impacts on the cave. Additionally, it recommends the creation of a Cave Board for clarifying and adapting the specific policies of the statute to the needs of the caves in the state in which it is enacted. The author hopes that this model statute will provide direction to interest groups and legislatures that are considering adopting or improving existing cave protection law.

Caves are valuable resources that need to be protected for future generations. It is the sincerest hope of the author that others will share this vision and that caves can be properly protected.

128. A Feb. 27, 2002, incident in Three Falls Cave in New York is one example. *Id.* at 13.

129. *See supra* note 87 and accompanying text.

130. *See Gookin et al.*, *supra* note 127, at 17 (discussing a rescue training exercise that resulted in an actual rescue).

131. VA. CODE ANN. §§10.1-1001 to 10.1.1003 (2006).

132. The inclusion of the relevant constituencies early in the regulation process is generally referred to as "RegNeg." Philip J. Harter, *Assessing the Assessors: The Actual Performance of Negotiated Rulemaking*, 9 N.Y.U. ENVTL. L.J. 32, 32 (2000).

133. *See supra* note 60 and accompanying text.

134. *See, e.g.*, VA. CODE ANN. §10.1-1003(D) (2006).

135. *See supra* notes 65-68 and accompanying text.

136. Kramer, *supra* note 40, at 761-62.

137. *See supra* note 90 and accompanying text.

138. VA. CODE ANN. §10.1-1008 (2006).

Appendix: A Model Cave Protection Statute

Caves.1. Short Title

This Act shall be known and cited as the Cave Protection Act.

Caves.2. Declared Purpose for This Act

The Legislature values the following findings. Caves are uncommon geologic phenomena, and the minerals deposited therein may be rare and occur in unique forms of great beauty that are irreplaceable if destroyed. Also irreplaceable are the cultural resources in caves, which are of great scientific and historic value. Further, the organisms that live in caves are unusual and of limited numbers, and many are rare and endangered species, and caves are a natural conduit for groundwater flow and are highly subject to water pollution, thus having far-reaching effects transcending man-made property boundaries. It is therefore declared to be the policy of the state of _____ and the intent of this Act to protect these unique natural and cultural resources.

Caves.3. Definitions

The following words and phrases when used in this Act shall have the definitions provided to them in this section, unless the context requires a different meaning:

(a) "Board" means the Cave Board.

(b) "Cave" means any naturally occurring void, cavity, recess, or system of interconnecting passages beneath the surface of the earth or within a cliff or ledge including natural subsurface water and drainage systems, but not including any mine, tunnel, aqueduct, or other manmade excavation, which is large enough to permit a person to enter. The word "cave" includes or is synonymous with cavern, sinkhole, natural pit, grotto, and rock shelter.

(c) "Cave life" means any animal, plant, or other life form which normally occurs in, uses, visits, or inhabits any cave or subterranean water system.

(d) "Commercial cave" means any cave utilized by the owner for the purposes of exhibition to the general public as a profit or nonprofit enterprise, wherein a fee is collected for entry.

(e) "Cultural resource" means all or any part of any archaeological, paleontological, biological, or historical item including, but not limited to, any petroglyph, pictograph, basketry, human remains, tool, beads, pottery, projectile point, remains of historical mining activity, or any other occupation found in any cave.

(f) "Department" means the Department of Natural Resources, Department of Historical Conservation, or both as is consistent within the context in which the term is used.

(g) "Educational purpose" means activities undertaken by museums, nature centers, and similar persons with the intent to prepare displays and exhibits for education of the general public.

(h) "Gate" means any structure or device located to limit or prohibit access or entry to any cave.

(i) "Hazard" means a risk of serious physical harm to persons or property.

(j) "Major impact" means any significant impact to a cave that is generally done with a reckless or willful purpose. This includes, but is not limited to: converting a cave passage or room for commercial use and excavating more than a few cubic feet of material.

(k) "Minor impact" means any incidental impact

made to a cave that is consistent with responsible visitation and exploration. This includes, but is not limited to: the leaving of foot prints, disturbing loose materials as a result of passage, smoothing of non-speleothem rock surfaces caused by passage, introducing survey marks, placing climbing bolts for safety, installing cave gates, disturbing for scientific or educational purposes, and excavating a few cubic feet of material to make a passage passable.

(l) "Owner" means a person who owns title to land where a cave is located, including a person who is a lessee of such land, and including the State and any of its agencies, departments, boards, bureaus, commissions, or authorities, as well as counties, municipalities, and other political subdivisions of the State.

(m) "Person" means any individual, partnership, firm, association, trust, or corporation or other legal entity.

(n) "Rescue personnel" means any police officer, fire fighter, paramedic, or recognized volunteer who is acting in response to an emergency or believed emergency.

(o) "Scientific purposes" means research, or exploration, or both, conducted by persons affiliated with recognized scientific organizations with the intent to advance knowledge and to publish the results of exploration or research in an appropriate medium.

(p) "Sinkhole" means a closed topographic depression or basin, generally draining underground, including, but not restricted to, a doline, uvala, blind valley, or sink.

(q) "Speleogen" means an erosional feature of the cave boundary and includes or is synonymous with anastomoses, scallops, rills, flutes, spongework, and pendants.

(r) "Speleothem" means a natural mineral formation or deposit occurring in a cave. This includes or is synonymous with stalagmite, stalactite, helectite, shield, anthodite, gypsum flower and needle, angel's hair, soda straw, drapery, bacon, cave pearl, popcorn (cave coral), rimstone dam, column, palette, flowstone, et cetera. Speleothems are commonly composed of calcite, epsomite, gypsum, aragonite, celestite, and other similar minerals.

Caves.4. Vandalism

It shall be unlawful for any person to intentionally, willfully, or recklessly:

(a)(1) Break, break off, crack, carve upon, write, burn, or otherwise mark upon, remove, or in any manner destroy, disturb, deface, mar, or harm the surfaces of any cave or any natural material which may be found there, whether attached or broken, including speleothems, speleogens, sedimentary deposits, and cultural resources. (2) The provisions of this section shall not apply to minor impacts for which express permission has been received in advance from the cave owner. (3) The collection of samples for scientific or educational purposes requires that a permit be obtained from the Department or other agency as required by any other chapter in these statutes or by the United States Code.

(b) Break, force, tamper with, or otherwise disturb a lock, gate, door, or other obstruction designed to control or prevent access to any cave, even though entrance thereto may not be gained unless express permission has been received in advance from the cave owner.

(c) Remove, deface, or tamper with a sign stating that a cave is posted or citing provisions of this Act unless express permission has been received in advance from the cave owner.

(d) Excavate, remove, destroy, injure, deface, or in any manner disturb any cultural resource unless express permission has been received in advance from the cave owner and a permit has been obtained from the Department.

(e) Make a major impact to a cave unless express permission has been received in advance from the cave owner and a permit has been obtained from the Department.

(f) The provisions of this section shall not apply to the removal of unavoidable hazards provided they are mitigated with minimal impact to the cave.

(g) The provisions of this section shall not apply to rescue personnel in response to an emergency, believed emergency, or other rescue.

(h) Any violation of this section shall be punished as a felony.

Caves.5. Disturbance of Cave Life

It shall be unlawful for any person to intentionally, willfully, or recklessly:

(a) Remove, kill, harm, or otherwise disturb any naturally occurring organisms within any cave unless it is a minor impact consistent with responsible visitation of the cave.

(b) The provisions of this section shall not be interpreted so as to lessen the restrictions on protections for cave life that may exist as a result of any other chapter in these statutes or by the United States Code. This includes any requirement for a collection permit.

(c) Any violation of this section shall be punished as a felony.

Caves.6. Sale of Speleothems and Cultural Resources

It shall be unlawful for any person to:

(a) Sell, offer to sell, or trade in this State, import into this State, or export for sale or trade outside of this State any speleothems.

(b) Sell, offer to sell, or trade in this State, import into this State, or export for sale or trade outside of this State any cultural resources found in caves.

(c) The provisions of this section shall not apply to speleothems and cultural resources collected consistent with the scientific and educational purposes described in §Caves.4(a) of this Act.

(d) The provisions of this section shall not be interpreted so as to lessen the restrictions on the sale, trading, import, and exporting of cultural resources that may exist as a result of any other chapter in these statutes or by the United States Code.

(e) Any violation of this section shall be punished as a felony.

Caves.7. Pollution

It shall be unlawful for any person to:

(a) Burn within a cave or sinkhole any material that produces any smoke or gas which is harmful to cave life or may cause damage to speleogens and speleothems.

(b) Store, dump, litter, dispose of, or otherwise place any refuse, garbage, dead animals, sewage, or toxic substances harmful to cave life or humans, in any cave or sinkhole.

(c) The provisions of this section shall not prohibit the operation within a cave of any source of flame capable of being carried in the hand or attached to a person, pro-

vided that the light source is used consistent with a minor impact on the cave.

(d) Any violation of this section shall be punished as a felony.

Caves.8. Gates

It shall be unlawful for any person to:

(a) Install, alter, or maintain a cave gate or other obstruction at a cave entrance or within a cave that alters the ability of cave life, water, and air to pass through the obstruction that is inconsistent with a minimal impact on the cave. This means that any gate or obstruction should neither appreciably increase nor decrease the ability of cave life, water, and air to pass through the obstruction prior to recent alteration of the area so gated by persons.

(b) Gates or obstructions which significantly alter the ability of cave life, water, and air to pass through the obstruction are considered to be major impacts and are subject to §Caves.4(e) of this Act.

(c) Any violation of this section shall be punished as a felony.

Caves.9. State Cave Board

(a) The Cave Board shall be constituted within the Department of Natural Resources and shall consist of the Director of the Department of Natural Resources, the Director of the Department of Historical Conservation, and ten citizens of the State appointed by the Governor for four-year terms. Appointments shall be made on the basis of activity and knowledge in the conservation, exploration, study, and management of cave and should include members who can represent the interests of the State, scientists, historians, cave owners, commercial cave owners, and cavers.

(b) The Cave Board shall meet at least three times a year.

(c) The Cave Board may perform all tasks necessary to carry out the purposes of this Act, including, but not limited to, the following:

(1) Accept any gift, money, security, or other source of funding and expend such funds to effectuate the purposes of this chapter.

(2) Provide cave management expertise to requesting public agencies and cave owners.

(3) Provide cave data for use by state and other governmental agencies.

(4) Publish or assist in publishing articles, pamphlets, brochures, or books on caves and cave-related concerns.

(5) Facilitate data gathering and research efforts on caves.

(6) Inform the public about cave resources and the importance of preserving them for the citizens of the State.

(7) Develop regulations necessary to advance the purposes of this Act including:

(a) Further clarify the difference between minor and major impacts.

(b) Develop rules and procedures for applying for and obtaining permits required under §§Caves.4(a)(3), Caves.4(d), Caves.4(e), Caves.5(b), and Caves.8(b) of this Act.

(d) Any data collected by the Cave Board or included in the minutes or transcripts of its meeting will not be subject to freedom of information requests.

Caves.10. Liability of Owners and Agents Limited;
Sovereign Immunity of the State Not Waived

(a) Neither the owner of a cave nor his authorized agents acting within the scope of their authority are liable for injuries sustained by any person using the cave for recreational or scientific purposes if no charge has been made for the use

of the cave, notwithstanding that an inquiry as to the experience or expertise of the individual seeking consent may have been made.

(b) Nothing in this section shall be construed to constitute a waiver of the sovereign immunity of the State or any of its boards, departments, bureaus, or agencies.