RANGER

The Journal of the Association of National Park Rangers

ANPR *Stewards for parks, visitors and each other*

Vol. XVIII, No. 2 • Spring 2002

In the NPS Basement: Geology

Letters

NPS Director thanks ANPR board

I want to personally thank you as a board member for the Association of National Park Rangers for joining me for a breakfast discussion during the Ranger Rendezvous in Jackson, Wyoming. I appreciated the candor and open discussion of the meeting as well as the chance to learn about the role and function of ANPR. Thank you also for your flexibility in adjusting your schedules as my sudden health issues led to unexpected shifts in my schedule.

Several issues were discussed during that meeting including recruitment, diversity, retention, housing and the fee demo program, and others that I am discussing and following up with my staff. Thank your for sharing your thoughts on those issues with me.

I understand that ANPR's mission is to ". . . communicate for, about and with park rangers and to support the management and perpetuation of the National Park Service and the National Park System." As I visited with members at the reception and the following dinner with members, I was struck by the sense of community. ANPR represents the community of park rangers and a community becomes so critical as we are faced with new threats at home as well as abroad. I am honored to be welcomed into this community of National Park Service employees and look forward to working with you.

— Fran Mainella
NPS Director

Olympic spirit

Hi and greetings from Salt Lake City. The Winter Olympics are very much under way and I am in the action. Myself and several other rangers are staffing a visitor center that is located in downtown Salt Lake City, just a block or two from the Olympic Square and the Ice Arena. It is a pretty busy place, receiving visitors from all over the world.

Just down the block from us is the center of ticket scalping where a bunch of unsavory characters (not from Utah of course) prowl the streets. The police have already made several busts there.

Another assignment is at the cross country skiing venue where I worked today. A beautiful spot in the mountains called Soldier Hollow. We have an exhibit about the Pony Express complete with horses and reenactors in costume.

Later this week, on days off, I will attend women's hockey, speed skating, and ski jumping as well as several of the medals ceremonies. I love to be at the actual events because that is where I feel the Olympic spirit most strongly. It is great to see people from all over the world joined in watching a sporting event. And to see many Americans of all ages excited about sports they know little about, such as today's biathalon.

No recent photos since I cannot connect my digital cam to my old laptop but here is a website — *http://www.beckyskids.com/* — with more pictures from the torch relay. It is still unbelievable that I did that. Happy Olympics to all and more to follow

— Dan Greenblatt
Arches

TORCHBEARER: *Dan Greenblatt, right, gets the Olympic flame for a run through Arches. Look for more details of his adventures in the next issue of Ranger.*

Kudos for enjoyable Ranger Rendezvous

I wanted to take time out to express my sincere thanks to you for the superb planning and enjoyment of the 25th Rendezvous festivities (October/November 2001). My previous work in Alaska has preempted my attendance at past Rendezvous for the last 15 years. I have always felt that faith, family and friends are the core ingredients to keep us fueled, focused and firm through the good and the bad. The week you provided for all of us at Jackson was one that not only the Association needed, but it was one that I personally needed for recharging, reassurance and just plain fun.

Each of you put a tremendous amount of work into the event, much more than I will ever know, and to this I thank you also. The highlight

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ANPR Calendar

ANPR Board of Directors

Mid-Year Meeting — April 19-21
Nashville, Tenn.

Ranger (Summer issue)
deadline ..... April 30
Theme: "The New Role of Security"

Ranger (Fall issue)
deadline ..... July 31

Rendezvous XXV ..... Nov. 18-22
Reno, Nevada

RANGER

The Journal of the Association of National Park Rangers

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Ranger (ISSN 1074-0678) is a quarterly publication of the Association of National Park Rangers, an organization created to communicate for, about and with park rangers; to promote and enhance the park ranger profession and its spirit; to support management and the perpetuation of the National Park Service and the National Park System, and to provide a forum for social enrichment.

In so meeting these purposes, the Association provides education and other training to develop and/or improve the knowledge and skills of park rangers and those interested in the profession; provides a forum for discussion of common concerns of park rangers, and provides information to the public.

The membership of ANPR is comprised of individuals who are entrusted with and committed to the care, study, explanation and/or protection of those natural, cultural and recreational resources included in the National Park System, and persons who support these efforts.

ANPR's official address is P.O. Box 108, Larned, KS 67550-0108. Members receive *Ranger* as part of their membership dues. Consult the inside back cover for membership and subscription information.

Submissions

Prospective authors should contact the editor or editorial adviser before submitting articles. Editor, Teresa Ford, 26 S. Mt. Vernon Club Road, Golden, CO 80401, (303) 526-1380 or fordedit@aol.com. Editorial adviser, Amy Vanderbilt, (406) 752-7660 or moserblt@digisys.net.

Deadlines

Spring issue ..... Jan. 31
Summer issue ..... April 30
Fall issue ..... July 31
Winter issue ..... Oct. 31

Submit copy to editor in Microsoft Word format or Rich Text Format as an attached file to *fordedit@aol.com* or on computer diskette to the address above.

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Features

Cover: Drawing of a petrified stump at Florissant Fossil Beds by Linda Lutz-Ryan. Fossil insects, seeds and leaves are preserved in remarkable detail at Florissant, along with an unusual display of petrified tree stumps. See article on page 4.

President's Message

I'm sure that the members of ANPR join me in welcoming the following new members to the ANPR Board of Directors:

Melanie Berg — Secretary
Bill Halainen — Special Concerns
Bill Sanders — Professional Issues
Steve Dodd — Seasonal Perspectives.
Mark Harvey — Education & Training

Mark is filling the remaining year of a vacant position; the other four were elected to three-year terms. Their addresses, phone numbers and e-mails can be found on the back cover of this and future issues of *Ranger* magazine. Put them to work; contact them (and the other board members) with your thoughts. I am particularly encouraged to see a good mix of new blood and experienced people with this election.

While we are on the topic of the board, the selection committee hopes to hire the executive director sometime in March. We received about 40 applicants for the position. The committee is doing yeoman's work to select the best candidate for the long-term future of ANPR.

The new board already has started work on many issues that members identified at Ranger Rendezvous and elsewhere. The strategic plan still provides the focus for our efforts.

However, a troublesome issue still requires your help. At Ranger Rendezvous and elsewhere, members and employees are concerned about field staffing levels. Wherever we turn the story is the same: every year it gets more difficult to deliver resource and visitor services, at the professional level that the Service has proudly developed. The causes are varied (we need your help identifying the full suite of these causes), and potential solutions are just as varied (and again we need your help).

We haven't completely scoped this issue, but ANPR will be addressing park staffing levels to include all disciplines and functions, not just field ranger staff. Members perceive that increased mandatory compliance, project management, legal and supervisory requirements, coupled with decreases in seasonal staff and new NPS units, have contributed to this situation and have completely offset recent (modest) increases in staff.

It is no surprise that the NPS is hiring fewer seasonals. Volunteers are increasingly used to offset the lack of seasonals. Because there is greater turnover in volunteers and we can't always screen for the necessary academic and skills, they often take three to five times as much supervision and training when used in place of paid staff.

However, it is not sufficient to take up this cause and identify increased staffing levels as the solution. Many agencies in the government are in the same situation as the NPS; there aren't enough fiscal resources (especially post-Sept. 11) to make any agency "whole" as might be seen by that agency.

As an employee-based organization, we are uniquely positioned to address this issue. We may be able to help the Service by synthesizing information already collected, such as R-MAP and VR-MAP, or by helping to champion reports like "Towards the 21st Century," released by NPCA. ANPR can also go to non-governmental sources that set standards for staffing in such areas as fee collection, administrative support, structural fire protection and park management, to name a few.

ANPR will continue the organization's traditional approach that favors positive, constructive dialogue with NPS and DOI management to solve problems. We continue to be an independent, professional organization that seeks solutions to problems and issues in ways we believe offer the most likely avenue(s) of success.

Ken Mabery

It's not just another pretty picture

The National Park Service Geologic Resources Inventory

By Tim Connors and Bruce Heise
NPS Geologic Resources Division

Many units of the National Park Service were set aside because of their unique geologic features and processes. Examples that come readily to mind are Yellowstone, Arches, Grand Canyon, Badlands, Mammoth Cave and Mount Rainier.

However, often a park's basic geology is overlooked as a significant natural resource and regarded as a static feature responsible only for the scenery. Aficionados of geology in the NPS and the Geologic Resources Division are making strides to change this perception — and to promote the concept that geology is indeed the "bedrock of the ecosystem."

When geology is viewed as both science and as a natural resource rather than just scenery, it can serve as the basis for understanding the relationship of geology to soil development, topographic expression and landscape, microclimates, vegetation and species distribution, paleontological resource locations and fire history. Geologic processes such as earthquakes, floods and mass wasting, and features such as volcanoes and glaciers are present in many NPS units. They provide opportunities for the NPS interpretive staff and concessioners alike to educate the public. They also are subjects of concern to resource managers, planners and park managers dealing with public safety, hazards and facility siting.

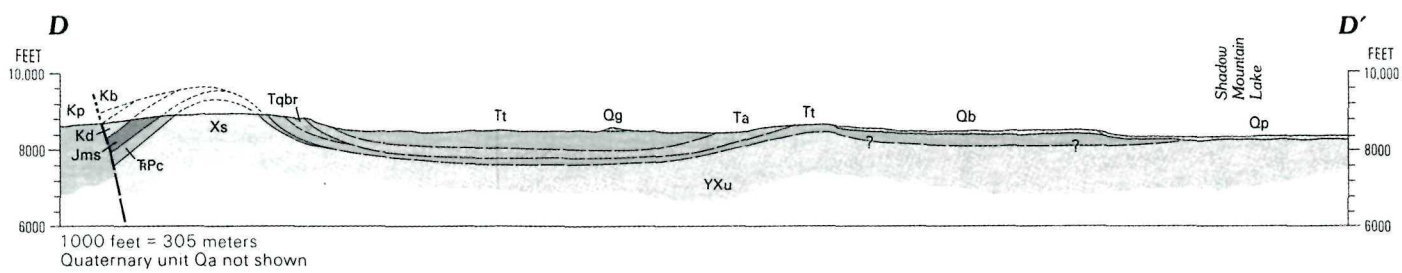
With the Inventory and Monitoring Program, initiated in fiscal year 1998, the NPS has undertaken a major step toward assessing the natural resources we are charged with protecting.

Twelve themes were originally identified for inventories: geology, species lists, bibliographies, base cartography, vegetation, water quality, water body information, soils, species surveys and distribution, air quality, air quality-related values and long-term climatic data. The main product stemming from most inventories is a digital spatial layer that can be used in a park's Geographic Information System to address resource management issues and interpretation, for both educational and scientific value, to better manage the natural geologic resources of the park.

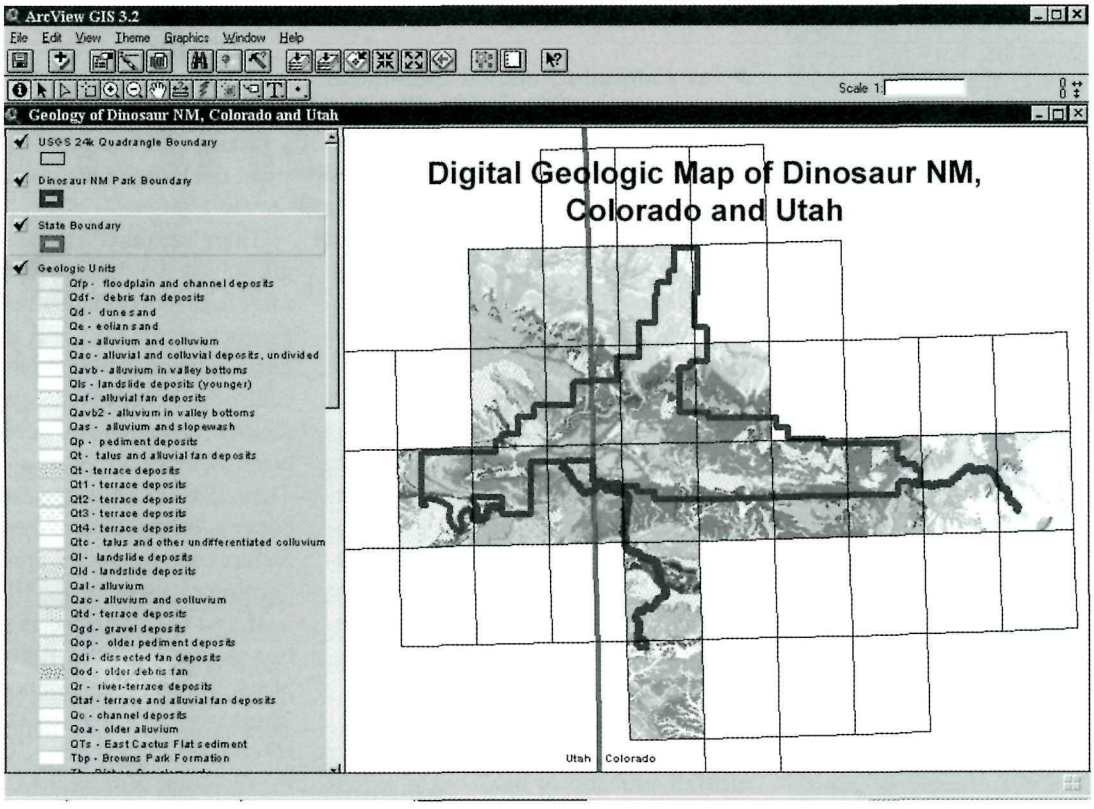
The concept of a Geologic Resource Inventory was unprecedented. There were 272 NPS "natural resource" units targeted, but no guidelines existed that laid out exactly what constituted an inventory of a park's geology. To determine that, the Geologic Resources Division conducted a workshop in November 1997 in Denver with geologists from individual parks, the U.S. Geological Survey and academia, and state geologists from Colorado, Utah and North Carolina. The workshop identified four necessary components for the inventory to provide meaningful information to resource management staffs. These components are:

- a scoping meeting held at each park for the purpose of bringing together local experts on a specific park's geology.
- a geologic bibliography generated for each park and posted on a website.
- a digital geologic map for use in a park's GIS.
- a comprehensive geologic report covering multiple facets of the parks' geologic features and processes.

With no similar inventories from which to base the program on, workshop participants decided to conduct a three-year pilot project inventorying every park in three states to establish a methodology to use for the rest of the parks. Coincidentally, Colorado, Utah and North Carolina were selected as the pilot states, and the program commenced in 1998. The three pilot states offered a wide variety of park management



Rocky Mountain NP
I-1973: Geologic Cross Section D-D'
Geologic Map of Rocky Mountain National Park and Vicinity, Colorado
by William A. Braddock and James C. Cole
U.S. Geological Survey, 1990



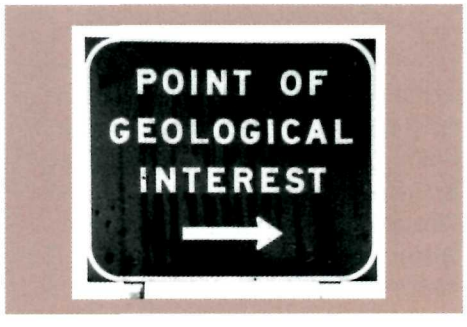
units (parks, monuments, seashores, historic sites) and a broad spectrum of geologic features.

While there were some initial "teething" problems, the program has since taken off to the point where there now is a waiting list of parks requesting an inventory. On-site scoping meetings are particularly popular with park staff. So far dozens of geologists from the USGS, academic institutions, state offices and interested locals have participated in these one-day field trips along with park interpretation and resource staff, providing detailed discussions of the park's geologic features, processes and potential hazards. This is typically followed by a day in the office assessing the quality and extent of existing map coverage and publications and, where dated or inadequate, plans to acquire new or missing data.

While initiating new parkwide mapping projects are generally beyond the scope of the GRI, leveraging inventory and monitoring funds and other in-kind contributions with other federal, state or academic projects has proven to be an effective way of obtaining new geologic data. GRI funds have been used to partner with ongoing projects with the USGS in Death Valley, the Utah Geological Survey in Glen Canyon and Stanford University at Great Basin, just to name a few. In each case, the sole goal has been to provide quality geologic maps in a digital format to park management. Once the digital data is obtained, NPS Natural Resource Program Center staff strive to format it in such a way that park managers need not be geologists to understand what is being presented.

Inventory funds have also been used in more innovative ways, such as paying for a Utah Geological Association publication that provides detailed geologic reports for every park unit in the state. It was written by the experts in the field, at a fraction of the cost necessary to acquire otherwise. A similar volume is planned for the parks of New Mexico, again in partnership with the state geologic survey.

The Geologic Resource Inventory is a cooperative effort of the NPS Geologic Resources Division (Lakewood, Colo.) and the Natural Resource Information Division



Inventory and Monitoring Program (Fort Collins, Colo.). To date 58 parks have been scoped and another 18 are proposed for fiscal year 2002. Additionally, 235 of the 272 geologic bibliographies are completed (found at *http://165.83.36.151/biblios/geobib.nsf*; **NOTE: user name is "geobib read" and password is "anybody"**) and 16 parks have digital geologic maps available for download at *ftp://gis01.nature.nps.gov/"<insert NPS 4-letter code>"/data/nrdata/geology/*.

While using geologic maps to understand and predict geologic phenomena, the scoping meetings have revealed numerous examples of parks using maps for decidedly non-geologic purposes. Some examples are:

➤ **At Mesa Verde** there is a growing awareness that the many alcoves containing cultural resources distributed in the park are usually geologically controlled in their origins. Groundwater moving laterally in the geologic strata carves out alcoves along contacts between geologic units of differing susceptibility to erosion. Studying the nature of these geologic contacts as they are distributed in the park may lead to the discovery of unknown ruins.

➤ **At Dinosaur** the main attraction is

the large "graveyard" of complete dinosaur skeletons contained at the Dinosaur Quarry site. However, the geology of the park is also responsible for several maintenance headaches, including the actual building over the main dinosaur quarry, which is subject to numerous shifts and shakes because of the nature of the bentonitic (swelling) soils that underlie the structure. Maintenance nightmares include heaving floors, windows popping out of frames and not a square doorjamb in the entire building. The geologic maps also are used to predict the distribution of the endangered spiranthes (orchid) as its habitat is constrained to certain geologic units. Additionally, consultants have used the geology to predict habitat of the endangered Colorado pike minnow based on geologic structures that provide the river bottom morphology critical for spawning.

➤ **At Capitol Reef** the distribution of endangered Winkler's cactus is controlled by the underlying geology. The cactus grows only in soils derived from the Morrison, Curtis and Dakota formations. By querying the digital geologic database, these geologic units can be identified and the distribution of Winkler's cactus can be better predicted, and therefore, better protected.

➤ **At Colorado National Monument** recent geologic mapping conducted by the USGS has revealed new insight into the fire history of the area. Charcoal horizons found in drainage sediments have been age-dated, and 20,000 years of regional fire activity can be identified. USGS geologists, supported by Inventory funds, also produced a poster showing the geologic map and explaining the relationship among the geology, biology, hydrology and human history. This poster, the "Geologic Map of Colorado National Monument and Adjacent Areas, Mesa County, Colorado," is a popular item at the Natural History Association bookstore and was awarded the "Best Overall Presentation" at the Environmental Systems Research Institute Inc. 2001 GIS User Conference.

➤ **At City of Rocks National Reserve** rockfall probability maps were generated by the USGS by combining the mapped geology with topographic and aspect data in a GIS database for park use in facility siting. These maps are useful in determining safe locations for campsites and other park facilities.

➤ **In the Great Smokies** cerulean warbler habitat is found only in vegetation growing on acidic soils derived from underlying, one-half-billion-year-old shales. The habitat distribution is mapped on the basis of the geologic map.

There are other examples. As parks begin to receive their inventory data, many more uses will probably be discovered. The products of the GRI will assist superintendents, rangers, interpreters/environmental educators, resource managers, scientists and facility management personnel to make better decisions regarding park resources. They also will provide the park visitor a better understanding of the unique geologic features and processes present in the many "geologic" parks in the NPS.

If you are interested in further information on the Geologic Resource Inventory, please contact Tim Connors (*tim_connors @nps.gov*; 303-969-2093) or Bruce Heise (*bruce_heise@nps.gov*; 303-969-2017) at the Geologic Resources Division, or consult the GRI website at *http://www2.nature.nps.gov/grd/geology/gri/*

Tim Connors' interests include geologic mapping, computer uses of geologic data for resource management, inspiring others to see the importance of geology in our everyday lives, and reminding folks that "geology is history, just without the people." Bruce Heise likes to run around looking at rocks. Both are geologists with the NPS Geologic Resources Division in Lakewood, Colorado.

Project P.I.C.K.

A partnership for paleontological education, resource management and research

Florissant Fossil Beds preserves late Eocene plant and insect fossils that provide important information about ancient environments, climate and elevation. These paleontological resources provide the focal point for a unique partnership opportunity that is facilitating the monument's programmatic goals for education, resource management and research.

Project P.I.C.K (Paleontological Interns Conserving Knowledge) provides the monument with the means to meet these goals. This project is made possible through a grant provided by Canon USA, Inc., Parks As Classrooms and the National Park Foundation. The program is a partnership between Woodland Park High School, Florissant Fossil Beds, the Denver Museum of Nature and Science, and the Florissant Fossil Quarry (a private quarry outside the monument). It supports college-level interns who study paleontology, geology, resource management, interpretation, education and museum curation. Each intern spends two weeks in training and three to four months working for the monument. Their work alternates between paleontology projects and performing outreach in the local schools.

The primary paleontology project involves construction of a comprehensive paleontologic database to document Florissant fossil specimens from museums around the country, as well as the corresponding publications in which the fossils were described. This database and indexing program contains over 7,000 images and records, along with over 12,000 pages of related publications. The outreach aspects of Project P.I.C.K. involve developing and instructing an education program, which teaches high school students to excavate and catalog fossils for an institutional collection that is used by scientific researchers.

Benefits of the project include:

- ➤ providing new fossil collections from an important site outside of monument boundaries
- ➤ support for completion of the database
- ➤ developing an active educational program that stimulates student interest in paleontology

—Linda C. Lutz-Ryan and Herbert W. Meyer, Florissant Fossil Beds, and PaulaThorpe, Woodland Park (Colo.) High School

Rangers

potential front-line observers of geologic systems

By Robert D. Higgins
Geologic Resources Division
Natural Resource Program Center

Rangers are truly the eyes and ears of the National Park Service. Collectively — roving and patrolling — rangers see more park territory, more often and with more eyes than almost any other group.

As a geologist, it strikes me that this puts rangers in a unique position to contribute to geologic study in the parks. The heart and soul of geology, like many other natural sciences, lies in many observations, both small and large, that when put together, over time, tell a story. As a desk-bound geologist, I miss the opportunity to be in the field to see the effects of geologic processes on the landscape, both the day-to-day changes and the possibility of being there when extreme events occur. Since most parks don't have geologists, lately I've been thinking that rangers could be called upon to make and record geologic observations.

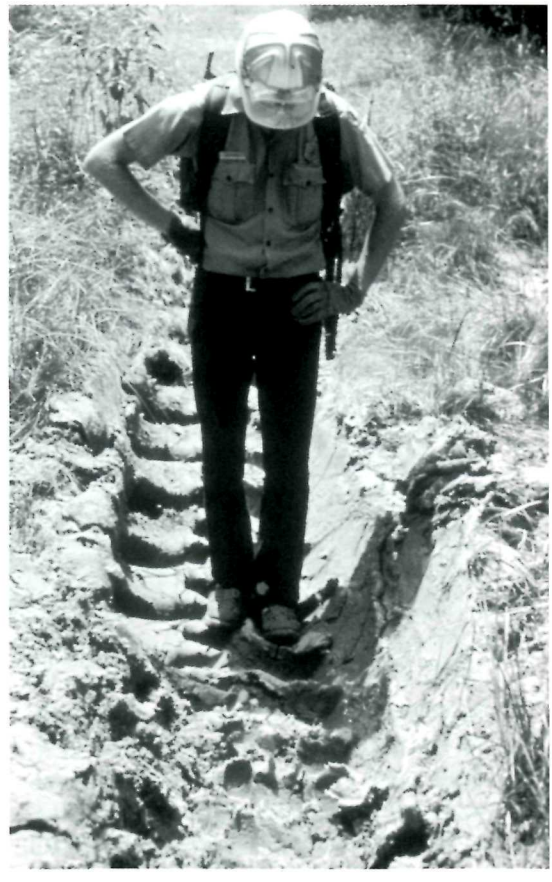
Let me outline what I see as your opportunity, motive and capability to take on such a task.

The duties of a park ranger often provide an opportunity to be out on the land on a daily basis. Even if you only see a portion of the park, being on the ground creates the opportunity to become an active observer of natural processes. Patrol rangers top the list of people who could make geologic observations.

In order to preserve and protect the land entrusted to us, we must seek a better understanding of the resources. A systematic program of natural resource observation and reporting would enable rangers to contribute to a knowledge base that will help preserve park resources for future generations.

It's not a stretch of most rangers' capabilities to make good geologic observations. Rangers and geologists share important skills. When I hire geologists for the NPS, I am looking for someone who enjoys fieldwork and is able to make detailed observations, accurately record facts and employ deductive reasoning. With your training in investigative techniques, ability to accurately record information and interest in park resources, you have great credentials for geologic resource monitoring.

Even with no geologic training, rangers are well equipped to be front-line observers of geologic systems. I remember one of my college professors saying that he did not hold much promise for our class of geology students, however, we had been well trained in taking accurate field notes, so perhaps those who followed us would read our notes and use them for the academic insight we failed to possess. Although not an endearing comment to geology students, this is often how science really works. It takes a lot of observers recording basic conditions to lead to one scientific discovery. Accurate notes of field conditions are a valuable contribution, and one that becomes irreplaceable as time passes.



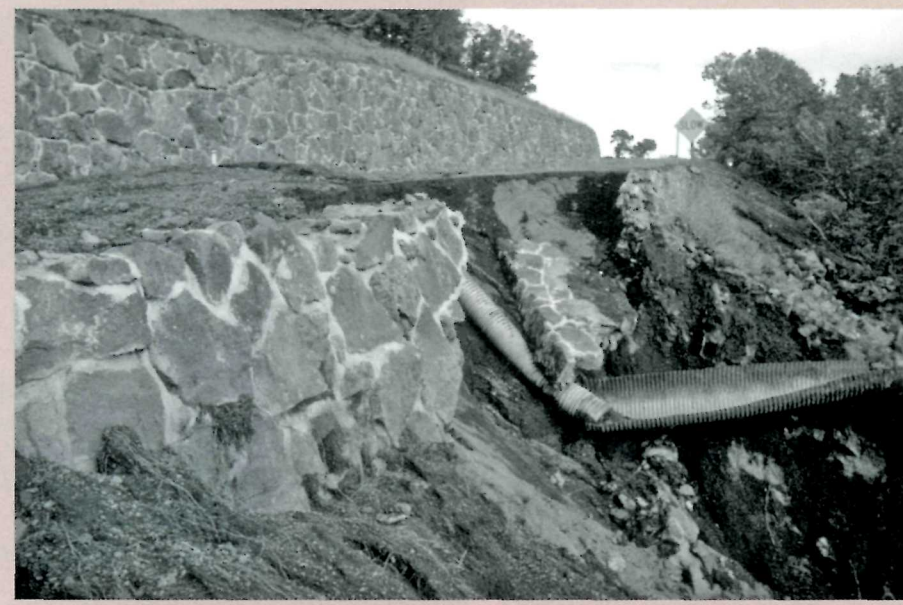
TIRE TRACK: *The human footprint on the land can be telling, long lasting and disruptive.*

LANDSLIDE: *Geologic events, such as landslides, can happen quickly and have long lasting effects. Did we see or miss the clue that this was going to happen? This landslide in the Salmon River Canyon in northern Idaho is upstream of the confluence of the Snake and Salmon rivers.*

Recording observations and promoting resource conservation are part of the daily routine for most rangers. This is not a new idea; in the 1920s to 1950s, ranger-naturalists were the mainstays of most park natural resource programs. These early naturalists dealt with all park resources and were familiar with the physical and biological components of their parks. In many ways the broad scope of their work led to a better understanding of natural systems and interrelationships in nature, concepts that are fundamental to the modern ecosystem approach to managing natural resources.

The NPS' heritage of naturalist observations actually predates the first parks, extending at least as far back as the westward expansion of the United States. During the westward trek of frontiersmen, settlers, military, miners, scientists and others, many individuals documented weather, geology, landscapes, plants and animals. The jour-

All photos courtesy of the NPS



ROAD FAILURE: *A stone wall with splayed culvert at Capulin Volcano. Holding the land at bay sometimes is successful, sometimes not. Observing the result is important.*

nals created by these people and members of the western land surveys helped Congress identify many of the special places that were later designated as national parks.

Some form of journal writing could still be useful for recording geologic observations in the field. A journal allows you to jot down notes at the time and place of the observations or as soon as possible afterward. Journaling is a time-honored practice of everyday people as well as generals, politicians, scientists, world leaders — and hopefully, park rangers. Journals — whether written long ago or in the recent past, whether simple notes or eloquent writings, whether technical or general — are extremely useful to those who follow us.

Present-day technology can take natural resource documentation and journaling farther than ever. We have at our disposal, global positioning systems, camcorders, digital cameras, tape recorders, palm pilots and other tools useful to the outdoor observer. This equipment has enhanced our capabilities while out on the trail at the same time that improvements in data storage and retrieval systems have revolutionized the way we use information. Gone are the days of digging through dusty, battleship gray file cabinets for misplaced notes, long-lost letters and faded incident reports. Computers can make rangers' observations useful in real-time and create a more accessible data archive.

Many of the geologic processes and features that need to be monitored in parks are those that rangers see on a daily basis. Useful geologic observations would include dates, descriptions and photos of the following: rock falls and landslides; erosional processes such as river bank collapse, gullying, debris along roads and trails, arroyo downcutting and changing shorelines; soil condition changes such as compaction from social trails, loss of topsoil and disruption of biotic crusts; stream changes including flood and drought conditions, moving sandbars, meanders and increases in sediment; changes in alpine features including glacier movement, changing size of snowfields and permafrost areas, impacts to tundra, ice on rivers and lakes, and first freeze events; altered cave and karst processes including changes in temperature, humidity and water levels. There are many other "real-time" geologic observations that can be made. For more information see *http://www2.nature.nps.gov/nature/geology/monitoring*.

DESERT WASH: *The landscape is always changing. How deep, how wide and how long are important things to observe and measure. This view is at Big Bend.*

Your natural resource observations will have park significance, but may also prove valuable in identifying Servicewide and national trends. Currently, the NPS Natural Resource Challenge is providing a framework to incorporate the collection of new data throughout the system. The NPS has committed to long-term monitoring of our natural resources to better understand their condition and changes that are taking place. There are several areas where rangers' observations could be part of this effort. There are geologic strategic planning goals that could potentially benefit from your observations. The goals include reporting on disturbed lands restoration efforts; the condition of fossil sites, caves and other geologic features; and geologic processes influenced by human activity.

I would like to encourage you to consider — while on patrol or roving — taking some notes, locating the position of dynamic geologic sites, taking some photos, and recording your thoughts on tape or in reports. These simple tasks, when undertaken with a ranger's professionalism and eye for detail, will be invaluable for science and resource stewardship.

If nothing else, do consider a journal of your patrols; it builds character. Next time you are on patrol or roving, view the landscape as part of the ecological puzzle of your park. By gathering the geologic clues through your observations, eventually and over time, we will have a better understanding of the story of the earth.

Robert D. Higgins is chief of the NPS Science and Technical Services Branch of the Geologic Resources Division, Natural Resource Program Center, in Lakewood, Colo.

LEAF DESIGN: *A beautifully preserved leaf is found in lake deposits at Fossil Butte.*

Definition of a fossil

By Vincent L. Santucci
Fossil Butte

Paleontology is unquestionably an established and recognized scientific discipline. Professional paleontologists have become highly specialized and employ a wide range of scientific methodologies in pursuit of data. Research into the functional morphology of ancient organisms, the physics of tetrapod locomotion, the development of extinction models, the application of molecular biology in systematics, comparative bone histology and other practices are certainly based upon the scientific method.

What common denominator unifies all of the diverse fields within paleontology? The answer is clearly — FOSSILS. However, a close examination of the use of the word *fossil* in modern society demonstrates that the definition of a fossil is less than scientific.

"What is a fossil?" is a common interpretive theme presented in museum exhibits, educational activities, natural history programming, books, media and more. Each individual has his or her own perception of a fossil. To many children fossil means dinosaur. To a ranger at Petrified Forest, a fossil may be an object that visitors occasionally collect illegally. To a commercial dealer a fossil may mean dollars. Grandma sometimes even calls grandpa a fossil! What variables should be included in a scientific definition of a fossil? Likewise, what variables should be omitted from the definition?

To begin on some common ground, it is widely accepted that a fossil is evidence of life. This includes the physical components of the biological organism (leaves and teeth) or some indication of biological activity (footprints and burrows).

The term fossil has been inappropriately applied to geologic features such as "fossil sand dunes" or "fossil ripple marks." Although these descriptions have become commonly accepted, this usage adds to the subtle consternation that exists in the use of the word *fossil*.

Another area of confusion relates to the use of the word *fossilization*. The word *fossilization* implies some process, transition or metamorphosis resulting in preservation of biological remains. To some, the word *fossilization* is considered synonymous with the word petrification. Both words denote a process, however, petrification is a specific type of fossilization involving the conversion of organic material to stone (more precisely minerals). Furthermore, there are various types of petrification including mineral replacement, permineralization and recrystallization. Not all types of fossilization involve petrification. Fossilization can occur through other processes, such as freezing, desiccation or encasement of organic remains within other materials (amber), and does not necessarily involve any mineral replacement (petrification).

The preservation aspect of a fossil needs further analyzing. Perhaps the concept, "I am, therefore I exist," could be applied directly toward limiting our definition of the word *fossil*. For a fossil to be a fossil it must exist, and therefore, it must be preserved in some form or state. It should be noted that the use of the words *preserve* and *preservation* does not necessitate mineral replacement or chemical alteration.

Does the degree or mode of preservation need to be incorporated into the definition of a fossil? Do the remains from the past need to be chemically replaced, recrystallized or turned to stone (petrified) in order to be accepted as a fossil? Indeed, we can answer "no" to both of these questions. The fossil record includes many examples of unaltered animal and plant remains. Conversely, are the bones of a coyote that fell into a Yellowstone hot spring a few years ago fossils? The mineral-rich waters of the hot spring promote rapid mineralization of recent bones. In some cases, these recently trapped bones show a higher degree of mineralization than do some bones that are millions of years old. The fact that a fossil simply exists and is therefore preserved is more meaningful in defining a fossil than the degree or mode of preservation.

The word *subfossil* appears in scientific publications. What does this mean? Perhaps it means small fossils, or material incompletely fossilized or something beneath/below the fossil. There are two common uses of the term *subfossil*. The first is in reference to the degree of preservation. It suggests a minimal degree of mineral alteration or a partial replacement. The second use is common when references are made to remains of life from the Holocene (recent). This use of subfossil is related to the acceptance of the idea that a fossil must be from a previous time period. Subfossil is a term that is used inconsistently, and its ambiguity hinders the ability to rigorously define the term *fossil*.

FOOTPRINTS: *Early dinosaur tracks are preserved in sandstone at Glen Canyon.*

Definitions of fossil that incorporate a time reference or date result in interpretations that are unscientific. Many sources have presented a definition that indicates a specimen must be older than 10,000 years or from a previous geologic time period to qualify as a fossil. Establishing a boundary or date may make classification easy, but does this make real scientific sense?

Shall biological remains that date to merely 9,000 years ago be denied space in the paleo cabinets? Do we need to consider waiting another 1,000 years until these remains can officially be called fossils?

Likewise, what is significant about defining a fossil through its occurrence in a past geologic time period? Humans establish these boundaries. What intrinsic relationship do these boundaries have with determining whether biological remains are fossils?

Are the Wrangell Island mammoths to be excluded from being recognized as fossils? In the late 1980s the remains of mammoths were discovered in the Russian Arctic. These mammoths underwent exhaustive research. Scientists from St. Petersburg established isotopic dates of 4,000 years B.P. (before present) for the mammoth remains. Other researchers confirmed this work independently. Does this discovery support a definition for fossil, which includes a reference to a particular date or time period?

If the definition of a fossil is free of time association, then what are the limits defining a fossil? Is there rationale for including extinction as a criterion in the definition of a fossil? A cursory look at the fossil record indicates that there is no basis for including extinction as a criterion. For example, the extant genus *Lingula* (a bivalved marine organism) extends back to the Cambrian, whereas many species of plants and animals have succumbed to extinction within the last century. There doesn't seem to be a unified taxonomic component suitable for inclusion as a criterion in the definition of a fossil.

As clever government bureaucrats, perhaps we could establish some useful acronym to help us with our fossil definition. The following acronym came to me during a late night attack of insomnia: F.O.S.S.I.L. (Fairly Old Stone-like Specimen Indicating Life). It is apparent, however, that this approach is still not scientifically sound.

In consideration of the discussions presented above, there appears to be one important element missing from the various definitions currently being used for the word *fossil*. This element is the geologic context in which the fossil is preserved. The geologic context refers to the environment, both components and conditions, in which the organic remains occur. The preservation of biological organisms is directly dependent upon the geologic context or the ancient environmental (paleoenvironmental) conditions to which they are exposed. Evidence of this environment is often preserved itself in the form of sediments, soils and other geological resources.

SENTINELS: *These standing petrified trees are in an ancient forest in Yellowstone.*

As most paleontologists recognize and advocate, the geologic context in which fossils occur provides some of the most important information regarding the fossil. Fossils removed from strata without documentation of the associated geologic and stratigraphic data have limited value to science. The associated geologic information can yield valuable information relevant to the fossil including: climate, sedimentary environment, age, contemporary organisms and other data.

What, then, do we propose as a scientifically sound definition for the word fossil?

Fossil: ***evidence of life preserved in a geological context.***

It appears that the concept of geologic context may be the critical missing element and may resolve some of the "gray areas" existing in the current definition for the word fossil. The geologic context helps to differentiate a fossil from fresh road kill along the highway. Placing biological remains in a geologic context seems more congruent with the actual scope of paleontology than to reference a relative time marker or a degree of preservation.

The lack of a consistent and scientifically based definition for what we recognize to be a fossil is problematic. As the foundation for the science of paleontology, fossils should be more clearly defined. The definition should be based upon science and logic in order to minimize the ambiguity and to maximize understanding. We should establish a consistent definition to facilitate our efforts in resource stewardship and public education. Furthermore, the lack of a sound scientific definition for fossils limits our ability to establish an acceptable legal definition for fossils.

As a final note, we have come to learn in the science of paleontology that our knowledge of the history of life is only as good as our previous field season. Our interpretations may need to be modified as our fossil database grows.

This discussion was not presented to be dogmatic, nor was it presented to be adversarial. On the contrary, this discussion is intended as a means to generate meaningful discussions between those of us who manage and care for fossils. Perhaps paleontologists and public land managers should work together and discuss topics such as definition of a fossil in order to better attain consistency and the highest level of understanding in our management, protection and interpretation of the nonrenewable resources known as fossils.

Vincent Santucci is chief ranger at Fossil Butte National Monument. He has served as a ranger and a palenotologist with the NPS since 1985, and he has been involved in the inventory of paleontological resources throughout the NPS. Santucci also has worked at Badlands, Petrified Forest, Grand Canyon and Yellowstone, and he has served as the servicewide paleontologist for the Geologic Resources Division.

Photos courtesy of the author.

GIPs aid parks

By Judy Geniac
Geologic Resources Division
National Park Service

Photos courtesy of the NPS

TOP OF THE WORLD: *Andrew Irvine, above and lower left, spent the summer as an intern at Denali. Most of his work was conducted just north of Mount McKinley. His job consisted of various field projects including surveying a mining operation and researching glaciers. Although Irvine wasn't always in direct contact with visitors, he was always eager to explain geology with visitors and fellow park employees who were in awe of the incredible geology around them.*

So often it seems that rangers — short staffed and more than busy — are helping everyone. But once in a while, ***they*** get help.

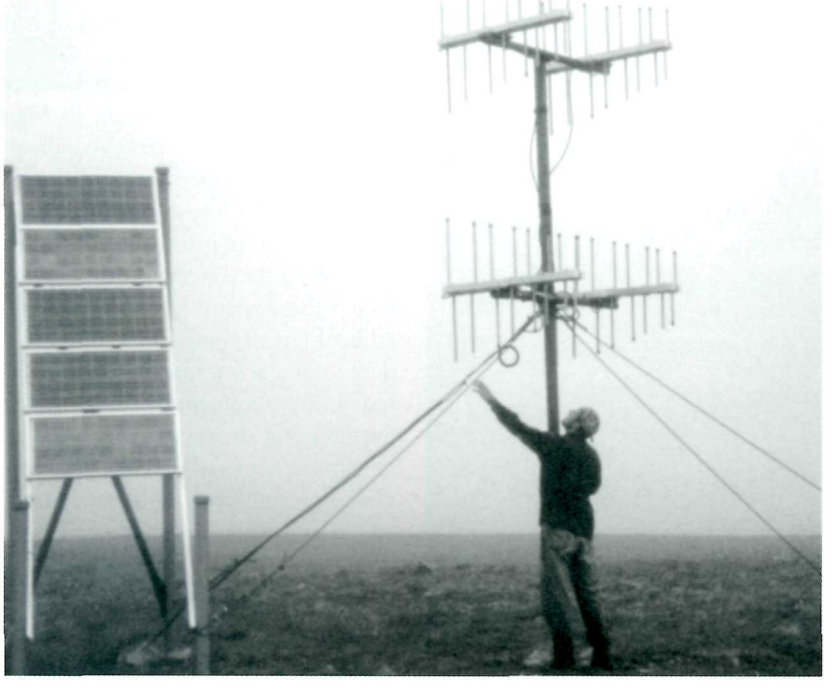
The Geoscientists-in-the-Parks Program is one example. This year there will be up to 75 GIP participants placed in parks, more than in any previous year. All are a response to park proposals for assistance in interpretation, resource management, research and a mix of other needs. These geoscientists help improve our understanding of the geology, hydrology, air quality and other physical sciences; they help us understand the role these physical sciences play in our biotic resources; and they play key roles in helping to meet resource protection needs and improve the visitor experience. Park enthusiasm is a major factor in the program's rapid expansion. With the prospect of increased future funding, we hope to see a continued increase in the number of proposals.

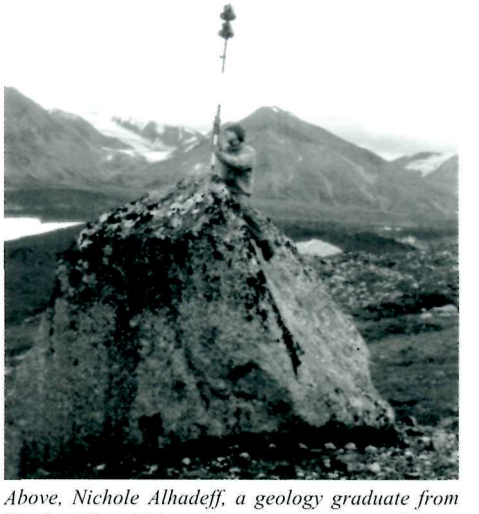
This year's temporary loss of Internet access has slowed things down, but the gears in the "wheels of aid" are still moving. To input one-page proposals at anytime, feel free to use the Intranet site via the GIP link found at *http://www2.nrintra.nps.gov/grd/*

For a list of our funding partners and examples of projects and services, check out the GIP website at *http://www2.nature.nps.gov/grd/geojob/*.

If you have ideas that you want to discuss, would like information about the GIP program, or simply need an alternative means to submit a proposal, please contact Judy Geniac at (303) 969-2015 or *judy_geniac@nps.gov*.

Judy Geniac manages the Geoscientists-in-the-Parks Program through the NPS Geologic Resources Division. She works closely with staff of the Natural Resource Program Center, including the Water Resources Division, Air Resources Division and Information Management Division.





Above, Nichole Alhadeff, a geology graduate from Portland State University, spent a summer working at Denali. Her main duties involved inventorying and organizing park geologic specimens and helping to develop interpretive exhibits. Alhadeff also participated in sample identification, labeling, database input and development of ideas regarding the park's geologic history. She was hired for an additional two months, mainly spending her time traveling to remote field sites via helicopter.

By Rick Olson and Colleen O'Connor Olson
Mammoth Cave

The Land of Caves

Managing Karst and Pseudokarst

We all know what caves are, but there is a lot more to caves than what's underground. Caves are part of a special landscape called karst, and proper management of karst is important for many reasons.

Karst landscapes are areas with underground drainage, usually through caves created largely by the natural dissolving action of water with carbonic and sometimes sulfuric acid. Closed depressions — sinkholes — are often, but not always, developed on the surface. The bedrock may be carbonates such as limestone, sulfates such as gypsum, and chlorides such as rock salt, but can also occur in less soluble rocks such as quartzite.

Karst accounts for approximately 15 percent of the earth's **land surface, and that in limestone is most prevalent**. Pseudokarst is similar to karst in that it has subterranean drainage and caves, but is created by completely different processes. Pseudokarst develops in lava, unconsolidated sediments, volcanic ash, talus, ice, and permafrost. Water may or may not flow through lava tubes, but surface runoff often quickly sinks to resurface at springs via crack systems in lava fields. This makes groundwater in all these areas highly vulnerable to contaminants from the surface, such as highway spills, agricultural runoff, sinkhole dumps, failed septic systems, plus oil and brine from wells.

In order to minimize impacts to groundwater, parks in karst areas have devised various management strategies. At Mammoth Cave, with which we are most familiar, catchment and filtration basins are being designed to minimize runoff from Interstate 65 into sinkholes, and similar structures are used with livestock operations to prevent pollution from manure. To clean up sinkhole dumps, volunteers get together for "Don't Mess With Mammoth Day" and transfer trash from sinkholes to dumpsters.

In order to eliminate as many septic systems as possible, a regional sewage treatment facility serving Mammoth Cave and the surrounding area was built. At Wind Cave, runoff from the visitor center parking lot passes through filters before sinking underground; their lead will likely be followed at many parks.

Caves formed by water long ago may now be dry, and preserve extremely significant archaelogical resources. As an indication of how rich cave passages can be in cultural resources, more than 9,000 artifacts have been recorded over the past eight years in approximately 2.5 miles of upper level passage in Mammoth Cave. Among pseudokarst caves, lava tubes have a particularly high frequency of cultural artifacts. At Hawaii Volcanoes, cultural resources such as burial sites are a major emphasis. The National Park Service and U.S. Geological Survey are conducting an inventory of geologic processes in national parks, and will consider subterranean cultural artifacts as both resources to be protected, and as indicators of distortion to the cave environment. Decay of in situ ancient organic artifacts may indicate changes in the cave environment caused by alterations to entrances, usually for the convenience of people. Protection of such significant archaeological resources requires cooperation among park rangers, interpreters, and resource management staff. Under the Federal Cave Resources Protection Act all caves on federal lands are considered significant. These caves must be considered in any land management decisions and it is illegal to damage or take any cave resources.

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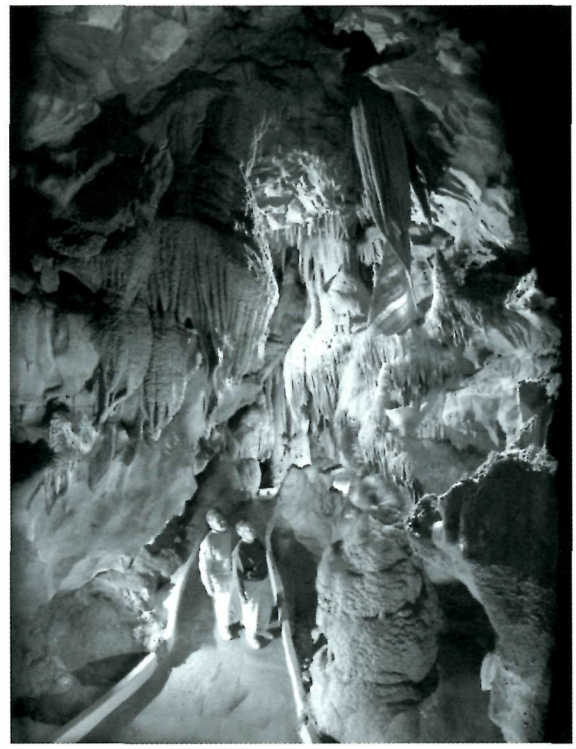
Aerial view of sinkhole plain above Mammoth Cave

Plant remains are often well-preserved in dry caves. These remains can be used for ecological restoration above ground. Some species of plant stems used as torches by Native American explorers in Mammoth Cave 2,000 to 3,000 years ago indicate there was much more open vegetation at that time than the dense forest existing today. Fires set by Native Americans likely played a role in creating the savanna or open woodland where these plants grew. This is not only archeologically important, but also part of the ecological foundation for prescribed fire today. Subterranean drainage in karst and pseudokarst areas means there are less streams to act as fire breaks. Depending on climatic conditions and vegetation, karst and pseudokarst areas may be more fire prone than similar landscapes with surface drainage. There certainly will be less surface water available for fire fighting.

Though there are bat populations num-

bering in the millions today, caves historically provided refuge for much greater populations across the continent. The bat flight at Carlsbad Caverns National Park gives you a sense of what bat populations may have been like in many other caves in the past. Though Mammoth Cave has a low bat population today, it may have once been the biggest bat hibernation site in the world, according to Merlin Tuttle of Bat Conservation International. Efforts to restore habitat conditions for endangered Indiana Bats in Mammoth Cave are being guided by paleontology. By identifying bones of bat species no longer in the cave, and knowing the species' biology, we have set restoration targets. This long term goal involves all park divisions, especially maintenance, interpretation, resource management and the superintendent's office.

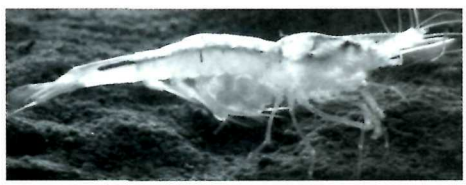


Gary Berdeaux

Diamond Caverns

Aquatic cave animals such as blind fish, crayfish and shrimp are fascinating to see, but are also useful indicators of groundwater quality. If aquatic cave life is healthy, then water quality is generally good. Leaks from oil wells, retarded flow caused by river dams, and land-use related pollution can severely affect habitat conditions and therefore animals in cave ecosystems. The *Kentucky cave shrimp* is listed as endangered due to all these impacts.

Exemplary caves within karst landscapes



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are economically significant, especially in terms of tourism. Caves, as our favorite part of the karst landscape, are regional economic engines. For example, Mammoth Cave has an annual statewide economic impact of more than $100 million. This economic value, including tax revenues generated, helps to make karst landscapes worth protecting to a broader range of people. Even though ecosystems tend to run themselves, with the ever increasing human population and associated impact, ecosystem management is needed to correct distortions. Visitation to show caves can be very high, sometimes numbering hundreds of thousands of visitors each year. Given the non-renewable nature of caves, making this use sustainable in an ecological (and ultimately economic) sense is a major challenge for all show caves.

Diamond Caverns in Kentucky is a good example of a sustainably managed show cave.

Though a great economic asset, a karst landscape is also an economic hindrance because of its vulnerability to groundwater pollution, and the greater cost of infrastructure due to unstable bedrock. A sustainable economy in such a complex and vulnerable landscape must be based on understanding how the surface and subsurface relate to each other.

In most landscapes, key resources can be located with little possibility for confusion. However, in karst landscapes it is possible to have a pond at a given site on the surface, an archaeological site in a dry cave passage below, and possibly a cave stream at a still lower level.

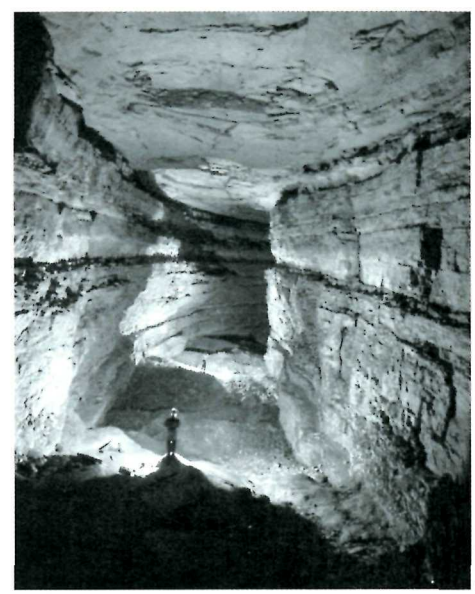
The best analogy is that managing karst and pseudokarst landscapes is like playing three-dimensional chess instead of the usual mind boggling two-dimensional game. To gain the understanding needed, we must map cave passages and determine the routes of groundwater flow by dye tracing. Cave mapping is largely done by unpaid cave explorers or "cavers." Organizations such as the Cave Research Foundation and the National Speleological Society contribute these complex data to land managers in a cooperative environment. Some dye tracing is carried out by volunteers, but large-scale dye tracing is generally done by professionals.

Karst and pseudokarst landscapes are found in a wide range of NPS units and beyond. Everglades, Lava Beds and Jewel Cave have little in common — except karst or pseudokarst. Obviously, karst landscapes cross modern political as well as biogeographic boundaries. Understanding these complex situations is crucial to sound management, and the recently established National Cave and Karst Research Institute within the NPS will play an extremely significant role in acquiring and coordinating needed research. Over the past few decades, the cave and karst research and management community has matured impressively, and the prospects for properly caring for these resources are good.

NOTE: The NPS has a cave resources management expert, Ron Kerbo. He is available to any of the 60-plus NPS units with karst or pseudokarst resources, and cooperates widely with organizations such as the National Caves Association, which is comprised of show cave operators.

Rick Olson has been involved in cave and karst exploration, research and conservation for over 30 years. He has served as ecologist at Mammoth Cave for the past nine years.

Colleen O'Connor Olson has served as an interpreter at Mammoth Cave for the past nine years. She has written several papers for the Mammoth Cave staff and co-authored a soon-to-be-published book on Mammoth Cave.



Gary Berdeaux

Dixon Cave

Agate's basement — a cultural and natural resource

By Ruthann Knudson
Agate Fossil Beds

Agate Fossil Beds National Monument is on the upper Niobrara River in far northwestern Nebraska, at the northern end of North America's High Plains province. Its basement includes its bedrock layers and their included mammalian fossils; the soils and landforms of the breaks, terraces and wetlands; and the overall landscapes that have been important to people for millennia. There is no way one can be a responsible steward of these landscapes and their included features without integrating natural and cultural resource management, protection, interpretation and maintenance.

Agate is a scientific storehouse of geological, paleontological and paleoecological information about the last 20 million years up to today's river course and weathered profiles. It also is an unglaciated landscape that tells a story of the traditional cultural use of the area, probably for the last 20,000 years, and then the last century of Euroamerican ranchers and researchers along the river.

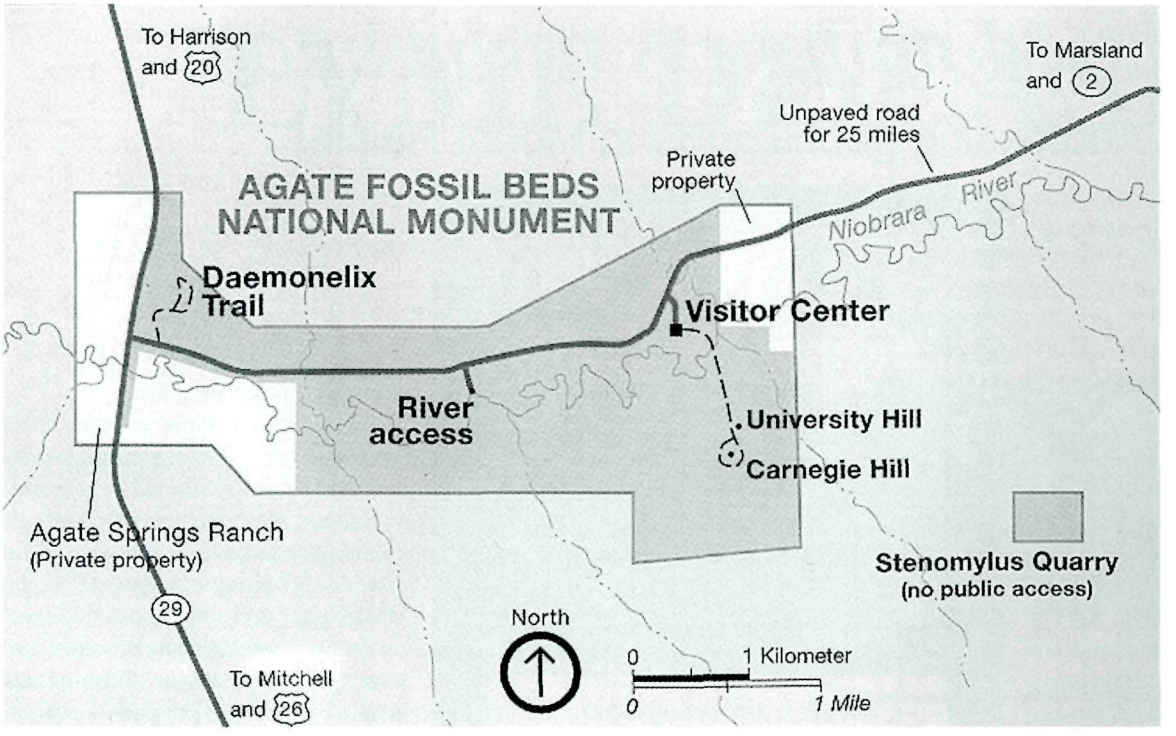
The landscape is also a tale of the past 35 years or more of National Park Service ownership, management and interpretation. It is a windswept, relatively treeless vista where one can read the land, and where there are representatives of all the communities of users to help tell that story.

The monument is relatively small, including 3,150 acres within its boundaries, of which 2,270 are fee lands that can be managed. Over 90 percent of this is a natural zone, including four miles of walking trails and 18 wayside exhibits. The visitor center has an impressive life-size exhibit of the Miocene mammals found in Agate's Fossil Hills, and an extensive 19th to 20th century Native American artifact collection. Agate's 2001 visitation was about 18,000, and it has a full-time equivalent staff of eight. Small park, small staff — yet it contains a complex set of multidisciplinary responsibilities for interpretation and protection.

Telling Agate's stories involves first understanding them. Research in the fossil deposits in Amherst (North), University,

▲

Fossil Hills South: *in photo above, Carnegie Hill (left), University Hill (center) and Beardog Hill (right) and their main fossil quarries, looking north over the Niobrara River Valley. Photo by Ruthann Knudson.*



Carnegie and Beardog hills was extensive in the early 20th century and again in the 1980s. There is a lot of scientific and paleoecological information there for interpretation and education. The Stenomylus Quarry deposits have been researched but not well published, so we have found a partner to help us understand that site and its management needs.

Agate has an extensive archive and historic library, the Cook Collection, which holds published and unpublished information about the history of paleontological and geological research on monument lands, and has been little used to date.

Another partnership has been developed with a University of Wisconsin geography doctoral candidate to study the Cenozoic (last 18,000 years) history of Agate's Niobrara River terraces. This study is a regional assessment of information from Agate east to the mouth of the Niobrara, through the area of the Niobrara National Scenic River—a fascinating story line for both parks! Agate has developed partnerships with 31 tribes that are culturally affiliated with the monument landscape, and has recently acquired documentation of traditional Lakota values associated with the fossil deposits and their associated landforms. In 1997 it was estimated that there were 200 acres of Canada thistle (*Cirsium arvense*) on monument lands. Agate has been working with a regional consortium of public and private land managers to control the thistle infestation. This requires an understanding of Niobrara Valley soils at Agate, and their seasonal ground water fluctuations as the river backs up and freezes over. You have to know about dirt at Agate.

The stories are told to Agate's visiting and non-visiting public through the waysides, museum exhibits, ranger walks and talks, site bulletins, and research publications of our partners. Many of these stories are dynamic, changing as new information becomes available. As in many parks, maintenance crews are often the interpreters to people in the picnic area and along the trails, and these areas have to be maintained with a good understanding of the *basement* of associated values. Agate's commissioned law enforcement officer also is an interpreter and educator as he interacts with visitors and local community members and passes along messages of resource significance and protection needs. Agate's geophysical *basement* is important to all the monument's shareholders.

Ruthann Knudson, Ph.D., is superintendent at Agate Fossil Beds. She began her NPS career cooking in Yellowstone and Mesa Verde, then as a seasonal ranger in Bandelier in 1963. Before coming to Nebraska she was in the Washington Office.

◀ . . . . . .

RED CLOUD SHIRT: *At left, a quilled hide shirt worn by Red Cloud, chief of the Lakota (Sioux), late 19th through early 20th century, collections of Agate Fossil Beds. Photo courtesy of Agate Fossil Beds.*

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Teresa Ford, Editor
fordedit@aol.com
(303) 526-1380
26 S. Mt. Vernon Club Road
Golden, CO 80401

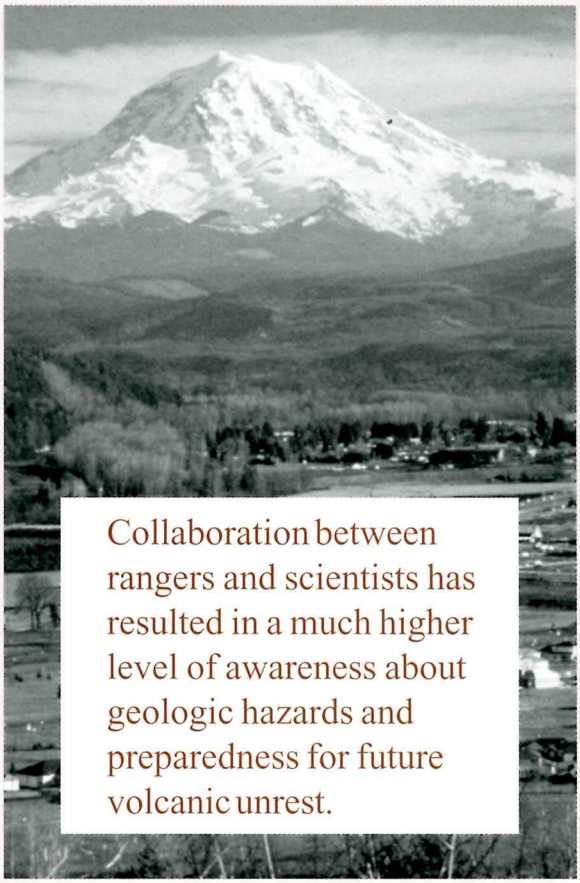
Amy Vanderbilt, Editorial Adviser
moserblt@digisys.net
(406) 752-7660
Box 331
West Glacier, MT 59936

The Mountain is a Volcano!

Addressing geohazards at Mount Rainier

By Carolyn L. Driedger
U.S. Geological Survey

Ted Stout and **Jill Hawk**
Mount Rainier



U.S. Geological Survey

Collaboration between rangers and scientists has resulted in a much higher level of awareness about geologic hazards and preparedness for future volcanic unrest.

In local parlance Mount Rainier is commonly referred to as "The Mountain." Unlike nearby Mount St. Helens, Mount Rainier's true volcanic nature is frequently dismissed with terms such as "dormant" or erroneously, "extinct." Active steam vents, periodic earth tremors and reported historical eruptions provide ample evidence that Mount Rainier is in fact an active volcano.

The National Park Service staff at Mount Rainier have a long history of working with U.S. Geological Survey scientists — and the park has benefited greatly from this partnership. Collaboration between rangers and scientists has resulted in a much higher level of awareness about geologic hazards and preparedness for future volcanic unrest.

Mount Rainier looms above the Puget Sound lowland about 40 miles southeast of Tacoma, Wash. At 14,410 feet, it is not only the highest peak in the Cascade Range, but it also supports as much snow and ice as all the other Cascade volcanoes combined. Although Mount Rainier isn't presently in an eruptive stage, it is entirely capable of waking from its slumber and producing volcanic ash falls, lava flows and hot avalanches of gas and rock called pyroclastic flows. During previous volcanic events, these hot eruptive products melted snow and ice causing lahars, slurries of mud and boulders that whisk down valley at speeds of 40 mph or more and destroy everything in their paths. Abundant geologic evidence documents past eruptions and extensive deposits from lahars that have inundated valleys around the mountain. More than 100,000 people now live upon the rocks, mud and debris that have flowed from the volcano in events of the last 6,000 years.

In 1995 scientists from the USGS' Cascades Volcano Observatory began an intensive outreach campaign intended to inform NPS staff, emergency managers, media and at-risk communities about geologic processes and geohazards at Mount Rainier. The campaign's efforts were quickly expanded through the involvement of state and local emergency managers, community leaders, local educators and NPS staff. Through frequent interaction, members of this Mount Rainier Volcanic Hazards Work Group put forth consistent and complementary messages in response plans, media reports, signs, presentations, brochures, exhibits, websites and educational materials.

In 1999 this group created a working document to serve as a guide for regional response to large volcanic disturbances. Early warning devices placed on the Carbon and Puyallup rivers, and the establishment of signed evacuation routes in Pierce County are some of the other achievements of the multi-agency effort.

At Mount Rainier all park staff have been trained in geohazard awareness and have contributed to park preparedness. Resource managers developed a geohazards risk assessment and continue to provide assistance to the USGS and other scientists who monitor the volcano for signs of unrest and who study the volcano's history and eruptive potential. The park's evacuation plan, now under development by the protection division, will provide detailed procedures, identifying specific areas of high probability for activity, rescue and recovery. The goal of this plan is to guide the NPS and multi-agency response within the park and to supplement the regional plan.

The park's new general management plan calls for education as a primary means of preparing for volcanic events. Interpretive staff have developed a "Geohazards Awareness Campaign" implemented annually through a variety of in-park interpretive programs, bulletin board messages and park literature. Visitor center exhibits, developed with the USGS, provide more in-depth explanation. New exhibits proposed at Paradise and Sunrise will have a strong emphasis on geology and geologic hazards.

Ongoing cooperation with USGS scientists results in the park's ability to train seasonal staff, provide a summer speaker series and sponsor an annual teacher's workshop. Park education staff also are working with area teachers and the USGS to develop a new curriculum-based educators' guide about volcanic hazards at Mount Rainier. Other results from the partnership include fact sheets, bookmarks, a poster and the USGS-produced film, "Perilous Beauty," shown daily at the main visitor center.

In 2001 two events served as a further wake-up call for park staff and area resi-

(continued on page 20)

LYME DISEASE

Education is your best defense

By Linda Finn

Bumps and bruises, stings and bites, scrapes and bad weather — these are occupational hazards for people who work outdoors. They are taken for granted, shrugged off with no worry about long-term consequences.

It is time to remove tick bites from the no-worry category. Lyme disease is now the No. 1 vector-borne disease in the country. Nationwide, it is estimated that five people per 100,000 contract the disease. However, this frequency figure is an average; in some locations the risk is much greater. In a few highly endemic communities, from 1 to 3 percent of the population may contract the disease each year.

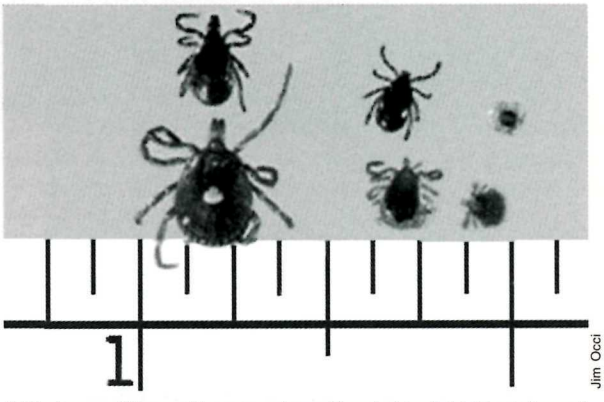
It has been found in nearly every state and continent. In the United States the highest numbers of reported cases are in the Northeast, the upper Midwest and northern California. The top 10 states are New Jersey, New York, Pennsylvania, Maryland, Connecticut, Massachusetts, Rhode Island, Wisconsin, Minnesota and California.

If you live elsewhere and never travel, you are still not safe. In Michigan, for example, almost no cases have been reported in the last year or two. However, support groups have hundreds of members and a Lyme patient organization was so concerned that it rented a billboard on an interstate highway to display the message, "Lyme disease — Education is your best defense."

Few cases are reported in Texas, but the state legislature recently held hearings that concluded Texans with Lyme disease do not get proper care. Lyme disease has been contracted in national parks — at Fire Island, Catoctin, Assateague, Mammoth Cave, Sequoia and who knows where else? No record is kept; most people don't see the tick and don't know where they were bitten.

Disease surveillance

The reported number of cases is only a rough guide to disease prevalence. Two states that have tried to determine actual numbers of cases — Connecticut and Maryland — found that only one of every 10 or 12 cases is reported to the Centers for Disease Control and Prevention (CDC). In Maryland this works out to 50,000 cases over a period of 20 years, mostly in the last decade, and a large number of cases for a small state. The CDC says only that there is "considerable underreporting."



Jim Occi

Life stages of Lyme disease vectors: *Top, left to right, black-legged tick – female, male and nymph. Bottom, left to right, lone star tick – female, male and nymph.*

The best way to determine risk is with local tick survey and analysis, not with the reported number of cases of Lyme disease. Another clue is distribution of Lyme-carrying ticks. The black-legged tick is widespread in southern states like Florida, Alabama, Mississippi and Louisiana — states with few reported cases. People have been infected in Tennessee and Kentucky even without black-legged ticks in abundance; so something else is going on as well. The lone star tick has a mainly southern distribution and can carry Lyme bacteria too.

What is your individual risk? The amount of time you spend in tick habitat is one factor, but chance is also involved. In some states the risk truly is minimal, and it may approach zero in deserts because these ticks prefer a more humid environment. A case could be made for a three-tier construct of the risk: endemic states (the top 10); states with some risk, increasing over time; and states with almost no risk. Park employees who vacation or visit endemic states may be at risk; central office employees who live in endemic states may also. As with other diseases, the outcome is variable. Some cases are mild and easily cured; others are more serious. Unfortunately, too many are not diagnosed until late stages, if at all.

The problem

A 20-year-old wilderness instructor began to have headaches and back pain about six years ago after leading hiking and whitewater trips in various parts of the U.S. She was hospitalized and tested extensively. An assortment of medications was tried — including steroids, which unfortunately suppress the immune system. Her symptoms grew progressively worse, with numbness, double vision and meningitis-like findings. Although infectious disease experts were consulted, she was not correctly diagnosed or treated and spent the next several years being transported around to major U.S. medical institutions. It wasn't until last year that an expert in Lyme disease was finally consulted and the correct treatment began. Her mother observed, "You never hear about this kind of extreme disability with Lyme disease."

Regrettably, tests aren't reliable, symptoms are nonspecific and medical institutions are still in the learning process. Diagnosis and treatment may therefore be suboptimal. If Lyme disease isn't caught early, it can have permanent consequences. Late-stage disease may be treatable but not curable. Injury to joints, nervous system, heart, eyesight and hearing may be irreversible.

Teresa Ford

Ranger John Waters visits with photographers who descend regularly on Mrazek Pond in the Everglades to view pelicans, roseate spoonbills and other waterfowl. Although there are few reported cases of Lyme disease in southern states such as Florida, Alabama, Mississippi and Louisiana, the black-legged tick is widespread.

Fatalities are documented in the medical literature.

The medical world is in turmoil about appropriate treatment, especially for cases beyond the early stage. This controversy is as big a risk to your health as is the tick itself. Prevention is the goal; early diagnosis and treatment are the fall-back position. You don't want to find yourself in the late stage.

The symptoms

Lyme disease preferentially attacks the nervous system (including the brain), the joints, the cardiovascular system; it is a multisystem disease with nonspecific symptoms. These are symptoms that can be shared with any number of other diseases, making the diagnosis more difficult. One doctor describes the diagnosis as being more of an evaluation of the gestalt of symptoms. *Gestalt* is a German word meaning a pattern of elements so unified that the whole cannot be derived from a simple summation of its parts. Most doctors don't immediately suspect Lyme disease, even in outdoor workers in endemic regions. Medical schools train them to look for common diseases first, rare ones second.

The course of the disease is highly variable. People are told to look for a bull's-eye rash and flu-like symptoms, but not everyone experiences these. A field entomologist who never realized he was tick-bitten ended up in a hospital only days away from undergoing back surgery. No bull's-eye rash had materialized and the diagnosis was delayed. A vacationer on the North Carolina coast went to an emergency room with both rash and fever but he was sent away without medicine, wrongly told that it was a spider bite.

If a person has a bull's-eye rash, no further testing should be required, and antibiotics should be administered promptly. This is the only symptom specific to Lyme disease that should not be confused with anything else. But, clearly it is. If a suspicious rash occurs, it should be photographed, using a scale of some kind. Date the photo. Make sure a doctor sees the rash. If it expands or appears elsewhere, photograph it again. The purpose of the photography is to have proof, because the rash will disappear, leaving only nonspecific symptoms to confuse the diagnosis. Keep a list of symptoms. If they are multisystem, then suspect one cause, rather than four or five causes. Keep the tick if it is seen and removed. Some states have tick-testing facilities.

Lyme disease has been misdiagnosed as chronic fatigue, fibromyalgia, lupus, multiple sclerosis, Alzheimer's, Parkinson's, ALS, mental illness, hypochrondria, laziness and attention deficit disorder (in children) and more.

Testing

Testing for Lyme disease is usually done on blood, sometimes on other body fluids. The two-tier testing recommended by the CDC includes only antibody tests, which are indirect tests. An advisory issued by the U.S. Food and Drug Administration states that these tests shouldn't be used by themselves to establish or exclude a diagnosis, and points out that there is considerable inter-laboratory variation.

Tests don't cover enough genetic variability either. In one study in Georgia and South Carolina, it was discovered that these tests produced false negatives for the majority of cases.

Direct tests are better for diagnosing current infection. They look for DNA or protein from the invading bacteria. Culturing of the organism is the gold standard, but it is difficult to accomplish. Although direct tests can have problems too, a few labs are now doing a better job. Most doctors, however, still use the indirect tests.

The vector

Three tick species are thought to be the agents transmitting the disease:

- The black-legged tick (formerly known as the deer tick). On the West Coast the species is *Ixodes pacificus*; on the East Coast it is *Ixodes scapularis*.
- The lone-star tick (*Amblyomma americanum*).

These species are hard ticks, which depend on questing behavior and large numbers of offspring to succeed. Although Lyme disease bacteria have been found in other biting insects, including mosquitoes and flies, transmission of disease to humans has not been proved.

Co-infections

In some places substantial numbers of ticks are co-infected. The tick that carries Lyme disease bacteria can carry other infectious agents: babesia, ehrlichia, bartonella and others. The same tests and medicines don't work on all of them. Babesia, for example, is a protozoan, not a bacterium, and is treated with anti-malarials. Treating a co-infected person is complex; not many doctors are able to do it well.

Other tick-borne diseases

If bitten by other ticks, people can also be infected with Rocky Mountain spotted fever, Colorado tick fever, tularemia, relaps-

Adult black-legged tick (ixodes scapularis)

USDA, Agricultural Research Service, photo by Scott Bauer

ing fever, tick paralysis and encephalitis. A variety of tick species are involved, and the pathogens include viruses and bacteria. Although first identified in Idaho, Rocky Mountain spotted fever is now more common in the East. The largest outbreak of relapsing fever in this hemisphere took place in 62 campers staying in cabins in Arizona.

Prevention

To avoid getting these diseases, avoid being bitten by ticks. Using repellents can help. Permethrin insecticides can be sprayed on clothing, hats, shoes and gear, allowed to dry before using or wearing, and confer some protection. The chemical compound is said to bond with fibers, last for two weeks or more through multiple launderings and not damage fabrics. The U.S. Army, describing tick-borne diseases as a major threat to forces in the field, found that uniforms impregnated with permethrin resulted in fewer tick attachments on soldiers. These sprays are sold as permanon and duranon. One brand name, Repel, is available in sporting goods/outdoor stores (rather than drugstores); Wal-Mart also carries it. Sawyer makes a permethrin spray and a water-based DEET spray intended to reduce absorption through the skin. If unavailable in your area, try the Internet.

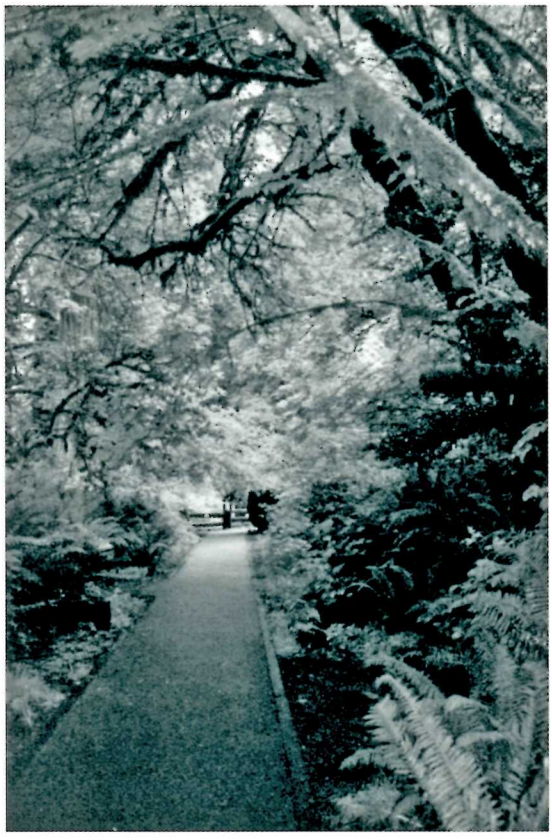
Another worthwhile prevention tip is to throw field clothes in a hot dryer for 10 minutes to kill any attached ticks.

Some ticks will get past defensive measures, so do frequent checks to remove them as soon as possible. A piece of advice frequently given in the popular media: remove ticks with pointed tweezers, pulling on the tick close to the point of attachment to the skin, without breaking the tick into pieces or squeezing it. Easier said than done. It might be worth checking into patented tick removal devices instead. Backpacker magazine (May 1997 issue) discusses the merits and sources of several such tools, including Pro-Tick Remedy. It sells for $3.50 plus shipping from SCS Ltd. in Stony Point, N.Y. Most of their business is with government agencies and they offer government pricing and volume discounts. Combining orders reduces shipping costs. They also sell permethrin sprays. Get more information at 1-800-749-8425 or at the website: *http://www.tickinfo.com* (with links to the store and pictures of ticks). You could keep one of these tools or tweezers in several places: glove compartment, backpack, medicine cabinet and first-aid kit.

Don't handle ticks with bare hands. Don't use lighted matches, Vaseline or nail polish because these methods are said to cause the tick to regurgitate its infectious cargo into the wound.

The usual advice given to the public is that ticks must be attached for 24, 48 or even 72 hours before transmitting the bacteria. It turns out that only a couple small studies on lab animals—rabbits, mice, and hamsters—are the basis for this claim. There does seem to be a correlation between length of time a tick feeds and disease transmission, however, some people have become infected after only a few hours of tick attachment.

The FDA has approved a vaccine for Lyme disease, called LYMErix. It requires a series of shots. Protection may be short-lived, the booster schedule not yet determined. Some questions have been raised about its safety. Second generation vaccines are being researched; none is approved yet.



Teresa Ford

Lyme disease has been found across the United States. Those states with the highest number of reported cases include California in the top 10. This scene is in Redwood National Park.

Educational devices and programs

Land-managing agencies need to do a better job of educating employees and warning visitors of the hazards of tick-borne diseases. Aside from considerations of lost time from work and concern for employee well-being and visitor safety, there is the potential for workers' compensation cases among employees.

Few parks, forests or refuges now include Lyme disease in their hazard warnings. The state of New Jersey issues a full-color multi page handout, probably because former Governor Whitman had Lyme disease. The state of Virginia's health department produced a folder entitled, "Preventing Tick-borne Diseases in Virginia." But these are exceptions to the rule. More common is a Maryland state park displaying a bear-warning poster on its bulletin boards, even though bears are uncommon in this part of the state. Meanwhile, park visitors have been infected with Lyme and no warnings are visible. A camp counselor acquired Lyme in another Maryland park, less than a mile from Camp David. A tick bite in this neighborhood can have international consequences.

Improvements would be fairly easy. Libraries and outlying offices in parks in endemic states can purchase copies of a good reference book (*see Recommended Reading on page 18*). Bulletin boards can display a generic tick poster or folders from the Lyme Disease Foundation. These folders could be included in packets for new employees and for seasonals. Safety training for all field personnel can include the topic — for rangers and maintenance personnel alike. Park folders and newspapers, when revised, should add tick-borne diseases to their hazard section.

The natural history

The tick life cycle includes several stages: egg, larva, nymph and adult. Unlike some tick-borne diseases, Lyme bacteria aren't often transferred from adult to egg; so the hatched egg stage (larva or seed tick) is less likely to be infective. After the larvae feed on infected hosts like white-footed mice, however, they molt into nymphs and thereafter are capable of transmitting disease to other hosts. Most dangerous is the nymphal stage; its small size makes detection diffi-

cult. People with many freckles may miss a nymphal tick (the size of a poppy seed), even if they do regular tick checks. The adult can be easier to find, but might still be missed in hair or in less visible locations. Success in evolutionary terms is a tick that isn't detected. To this end they inject anesthetic and anticoagulant. Don't count on feeling the bite, in other words.

The proportion of infected ticks can vary widely from one state to another, one season to another, year to year, and even one habitat to another. In one rural New Jersey county, 55 percent of sampled ticks were infected with at least one tick-borne pathogen. Ten percent were infected with two pathogens. One site in New York yielded 52 percent infected with one disease, 26 percent with more than one. In California, the density and prevalence between sites differed dramatically (a range of 0 percent to 41 percent). A Berkeley scientist states that the rate in one site in Mendocino County equaled that in highly endemic northeast U.S. locations. Lyme disease is thought of as a coastal menace in California; Humboldt County, in the southern part of Redwood, has many cases. However, the tick vector has been found in nearly all California counties, and infected ticks in half of the state's counties. Butte County south of Lassen has had a number of cases. Infected ticks have been found in the Santa Monica Mountains.

In a survey at coastal locations in the East, including Cape Hatteras and Assateague Island, all 14 mammal species studied showed antibodies to the Lyme bacteria. The animals included opossums, mice and rats, deer, voles, foxes and raccoons. Feral cats and horses also had these antibodies. The highest rate was found in white-footed mice a month after peak nymphal intensity.

Indications are that Lyme is becoming more widespread geographically. Migrating birds can carry infected ticks to distant locations. They also carry the disease in their blood in some cases. Spirochetes were isolated from veeries, grosbeaks and yellowthroats in one study. Along the St. Croix River in Minnesota, ground foraging migrant bird species accounted for most of the tick-parasitized individuals in a study of 9,200 individual birds representing 99 species. Twenty-two percent of the black-legged ticks were infected. A Canadian biologist suggests that spring migrants are transporting the black-legged tick to locations in Ontario where mammals didn't previously play host to these ticks.

Although black-legged ticks are found in the South, as are lone star ticks, fewer Lyme cases are reported from these states. Dr. James Oliver with the National Tick Collection at Georgia Southern University suggests that it is perhaps more a situation of different human population patterns and lack of recognition of symptoms by doctors and patients, rather than ticks that don't transmit disease.

For more information on tick natural history and related subjects, consult the book, "Ecology and Environmental Management of Lyme Disease," edited by Howard Ginsberg (an NPS employee) and published by Rutgers University in 1993. It is dated in some respects because of more recent research, but still useful. The discussion about control methods makes it plain that reducing tick-borne disease will not be easy. An expert describes the goal as risk reduction because "eradication is not achievable for any vector-borne infection."

Lyme Disease Facts

Cause: An infection by the spirochete *Borrelia burgdorferi.* Spirochetes are spiral-shaped bacteria with mobility provided by flagella; 300 strains identified throughout the world.

Vector: Hard ticks of several species that transmit the disease to a wide variety of animals and to humans.

Range: Worldwide. Different species of borrelia and ticks are involved outside the United States.

Symptoms: Variable. Can include stiff neck, headaches, joint pains, vision and hearing problems, heart arrythmia, rashes, flu-like symptoms, Bell's palsy (a facial paralysis), fatigue, swollen glands and neurological symptoms such as tingling, burning and numbness. Course of disease is variable also, with acute illness soon after the tick bite, or slowly developing over months or years.

Testing: Three kinds of tests are available — antibody tests to measure immune response; antigen tests to detect DNA or protein from invading organisms; and culturing of spirochetes in an artificial lab medium.

Treatment: Antibiotics of several kinds, administered orally, intravenously or by intramuscular injection.

Prognosis: Good if caught early and the tick did not transmit other diseases too. Can cause serious long-term problems if treatment is delayed or not adequate. Can be fatal. Can be transmitted to babies in utero.

Recommended Reading

"Everything You Need to Know about Lyme Disease and Other Tick-borne Diseases," Karen Vanderhoof-Forschner, 1997. Available from bookstores or from The Lyme Disease Foundation, One Financial Plaza, Hartford, CT 06103; 1-860-525-2000

Website: *http://www.lyme.org*

E-mail: *lymefnd@aol.com*

Linda Finn's 25-year career with the NPS included 10 years as a field interpreter at Cumberland Island, Redwood and Natchez Trace, followed by 15 years as a planner at Harpers Ferry Center. She left the NPS in 1994.

Stay in touch!

Signed letters to the editor of 100 words or less may be published, space permitting. Please include address and daytime phone. *Ranger* reserves the right to edit letters for grammar or length. Send to Editor, 26 S. Mt. Vernon Club Road, Golden, CO 80401; *fordedit@aol.com.*

IN PRINT

Staying Fit Over 50
Jim Sloan
Mountaineers Books

By Rick Jones
Glen Canyon

My metabolism has begun to fail me. I can no longer eat with the same gusto and in the same quantity that I did before, without accumulating excess mass. Those of you whose metabolisms have not yet crossed this temporal divide will no doubt snicker and consider this whining. Just wait.

I still enjoy macho outdoor activities, but hauling that extra bulk around just doesn't make it quite as much fun. Time to do something about it. Although I have a few years before I surmount the half-century mark, "Staying Fit Over 50" looked like the ticket for planning and executing a journey to the new me. It proved to be perfect.

I abhor fitness books that give you a stark regimen of exercise and diet, but don't give you the supporting facts and rationale. Staying Fit is different. It cuts through the myths and preconceptions, giving you a deep insight into how fitness and good living can forestall many of the effects of aging. The author's in depth research has been translated into an understandable, scientifically based essay on diet, nutrition, fitness, and anti-aging strategies. In addition the author has expanded sections on running, cycling, rowing, swimming, skiing, walking, snowshoeing and hiking, some of the primary sports that many of us enjoy and participate in to keep fit.

So, the next time you're struggling with a component of the PEB, or are having trouble breathing after leading a group of visitors up a rocky trail, consider giving this book a look. It might just give you the tools and incentive to create that new you.

Rick Jones, ANPR's board member for fund raising activities, is the visitor center supervisor, subdistrict interpreter, at Carl Hayden Visitor Center, Glen Canyon.

Most people are about as happy as they make up their minds to be.

—Abraham Lincoln

If you're serious about advancing your career . . .

Try the ANPR Mentoring Program

Whether you want to be a protégé or a mentor, the first step is filling out an application. You will find the forms on ANPR's website at ***www.anpr.org***. Go to the link under Membership Services. It's easier than ever to sign up online.

For more information contact Bill Supernaugh, ANPR's mentoring coordinator, at *bsuper@gwtc.net*.

Mount Rainier *(continued from page 14)*

U.S. Geological Survey

dents. In February the ground shook and the park evacuated its staff during the 6.8 magnitude "Nisqually Earthquake." In August a small debris flow originating on a lip of the Kautz Glacier cascaded down Van Trump Creek. This temporarily closed the road to Paradise and halted trail use in the area for several weeks. Fortunately, neither of these events caused much lasting damage but they have focused attention on the dynamic geology of the area and the importance of preparing for future events. The mountain is indeed a volcano and the NPS and the USGS will continue to work together to act upon that knowledge.

If you are considering expanded interpretation of your park's geohazards, here are some suggestions:

- ➤ Maintain frequent contact with scientists working at your park.
- ➤ Choose an interpretive message for visitors, or a hierarchy of messages, which are concise and consistent and suggest ways to prepare for geologic events.
- ➤ Use multiple approaches that support long-term awareness.
- ➤ Train park staff regarding geohazard issues and recommended responses. Training must be ongoing and be applied to all new and temporary staff.
- ➤ Consider coproducing and sharing costs of interpretive products/ services.
- ➤ Expect and accept refinements in scientific understanding, which may change your messages, including the accuracy of interpretive products/services.

Carolyn L. Driedger, a USGS hydrologist, has conducted extensive research on snow and ice in the Cascades. Since 1995 she has led an effort to educate the public, officials and educators about volcanic hazards in the Cascades. Ted Stout supervises interpretive operations on the east side of Mount Rainier and coordinates the park's outreach efforts. He is a self-confessed "geology junkie" who is happy he's spent five of his 13 years with the NPS in the shadow of the volcano. Jill Hawk, chief ranger at Mount Rainier, came from the Blue Ridge Parkway in 2000. A 12-year NPS employee, she spearheads efforts to forumlate a practical emergency plan for the park.

The Professional Ranger

Resource Management

The 1998 National Parks Omnibus Bill has been touted for finally providing the National Park Service with a research mandate, as recommended in numerous independent reviews of NPS science and resource management programs conducted between the 1960s and the '90s.

Anxiety thus pervades the field, though not generated by the NPS, about the apparent misuse of research on a highly visible threatened species, the Canada lynx. Field biologists from two federal agencies and Washington state, working in national forests, submitted unauthorized animal hair samples that led to unsupported reports of lynx existing in some sites. The biologists reportedly claimed to be doing a "blind test" of a DNA-analysis lab. The Forest Service conducted an investigation in which the Fish and Wildlife Service participated and concluded that the biologists violated peer-reviewed research protocols and professional standards, compromising the credibility of the interagency lynx survey. The employees involved were disciplined and barred from further survey work.

Whether a simple mistake or a misguided effort to help a rare species, subsequent press coverage indicates that not only is the Endangered Species Act still a public enemy in many quarters, science is now more suspect. Research data and analysis should always be open to scrutiny as to its objectivity and applicability, but we all lose when the very motives of science are questioned. Across the NPS, thousands of research projects are undertaken each year by park staff, private cooperators and academic partners from many institutions.

Yet even among park staffs, research is often undervalued or misunderstood. Employees may think that money is better spent directly on resource management, protection, interpretive or maintenance programs, although research is generally funded from sources that do not directly compete with field operations. Critics also question the utility and relevance of park studies. Parks use a variety of means to scrutinize proposed studies' objectives, methods and applicability to park issues. Parks may require that proposals be peer reviewed by other specialists prior to being permitted; some have an interdisciplinary committee that recommends decisions about whether to allow a proposed study. Researchers are required to submit an Investigator's Annual Report indicating their progress.

Research in parks may be either "applied" (directly relevant to helping solve a park's resource issue) or "basic" (adding to the base level of knowledge about a resource or process). Permitted research in parks must be consistent with applicable laws and NPS management policies, and "will be conducted in a manner as to pose no threat to park resources or public enjoyment derived from those resources." The Omnibus Act calls for "full and proper utilization of the results of scientific study for park management decisions." Practical scientists know that studies will not provide all the answers to any management question, but add incrementally to the tool chest from which park managers build their strategic decisions.

Parks can use a growing network of NPS Cooperative Ecosystem Studies Units, located on campuses across the nation, to find expertise in conducting natural and cultural resource studies. At new park learning centers, funded as part of the Natural Resource Challenge, the emphasis is on transferring results from scientific research into practice. Information about each park's science program is available by talking to resident resource specialists or a science adviser, and by visiting the NPS website at *http://www.nps.gov*. Take opportunities to comment on your park's research needs and specific study proposals to help ensure your park has a credible science program that addresses priorities developed through interdisciplinary consensus building.

Mail angst — A different anxiety raised by cultural resource specialists is the U.S. Postal Service's new program to irradiate mail in envelopes and packages sent through the facility at Main Interior and other locations. The Keeper of the National Register's office has already experienced damage to cultural materials, especially historic photographs and magnetic media such as computer diskettes. Irradiation is likely to kill live natural resource specimens, cause plant fibers and paper to lose tensile strength, destroy DNA molecules, fade dyes and render samples invalid for thermoluminescent dating. When sending packages of specimens, objects and archival collections, parks should ship via an alternate carrier, such as United Parcel Service or Federal Express.

— Sue Consolo Murphy, Yellowstone

Protection

Today more than ever, we in the protection ranger career field find ourselves facing a seemingly endless barrage of important issues. I have tried to address some of these since I began writing this column, and in this issue, it seems I've once again chosen to write about one of the more serious of our concerns. A bold and courageous step, I know, but it's high time somebody carried the torch. I'm confident you'll agree how important this topic is and you'll not be disappointed. And one other thing — Robert Service I am not. But Robert Service didn't know squat about footbags either.

Sincerely,
Kevin Moses, Big South

An Ode to the Humble Footbag

To each of us there exist some friends who often go unmentioned
Even though untold hours of boredom for us they've quenched
These friends wish only to accompany us anywhere we go
We just gotta grab them on our way out the do'.

They're teensy weensy, itty bitty, and hardly weigh an ounce
Yet they persevere like no one else every time we pounce
And pounce we do, again and again, it seems we never tire
Of punishing our poor little friends whom we so deeply admire.

Whether in camp, or pack, or cargo pocket, and often the weeds
If you look long enough, you'll find the ubiquitous bag of beads
To themselves they rarely draw attention and are usually unassuming
Despite their talent for aerial stunts, like graceful arcs and zooming.

In fact, the only way our modest little friends ever boast
Is by showing off their motley-colored crocheted cotton coats
And even their bright and brilliant threads in time do fade subdued
After enough repeated circles of Hack have in the dirt ensued.

By ourselves, or in a group, we kick 'round the ol' Sippa Sippa
And the experts can even do it while downing a sip-a-coffee
Inside kick, outside kick, and juggling with your knees
At first you'll be a soup sandwich, but it quickly becomes a breeze.

Before you know it, if you spend enough time with these tiny acrobats
They'll teach you complicated moves like how to catch them on your hat
Fancy serves, "round the world," foot stalls, and sequential hacks
Are just a few of the groovy tricks you'll for someday have a knack.

Kick to music to develop rhythm and figure out your groove
Or kick to silence to hear the telltale "ffft" each time the beads inside do move
Guard vigilantly all Hacky holes, for each one the clever tricksters will surely spot
And like a guided missile, aim right for them when you're paying attention not

But whatever you do, don't touch them with your hands while they're in flight
Or your Hackin' mates will use them to beam you with all their might
Thou shalt also avoid serving to oneself, and never ever say "I'm sor—"
'Cause if you do, there is no doubt you really will be sorry.

Usually, though, they're a lot of fun and great for foot-eye coordination
And another benefit they produce is to enhance our concentration
One more plus our friends do for us is to get our heart rate going
A little faster than normal, like what it'd be if a big ol' yard we were mowing.

And spending time with our little friends is a great way to get limber
Before a psychotic death march straight up into tall timber
Why do you think so many firefighters keep them in their pockets?
That's easy—to keep their knee joints from popping out of socket.

Wherever you are—the grocery store, the gas pump, or even in a boat
Try your hand at footbagging, and fear not, 'cause most of them do float
So remember one thing when making ready your ever-ready pack:
Be sure to toss in our unfailing friend—the humble Hacky Sack.

IRF Update

The back of the ANPR 25th anniversary Rendezvous T-shirt talks about the ability of a small group of people to make a significant impact on the world. I'd like to tell you how the efforts of one person have made that kind of impact.

Carola Vaca Salazar is a Bolivian ranger. She works in Noel Kempff National Park, reportedly one of Bolivia's most spectacular protected areas. As in many Latin American areas, the park is managed under a co-management agreement between the government and an NGO. Carola was lucky enough to secure a scholarship to attend the Third World Congress of the International Ranger Federation, held in September 2000 in Kruger National Park, South Africa. While she met colleagues from all over the world, her contacts with the rangers from Ecuador, Venezuela, Argentina, Uruguay and Costa Rica were the most important. She told me when she left South Africa that she would do what it took to establish a ranger association in Bolivia.

During the next year, she shared her advances and retreats with me via e-mail. Her fellow Bolivian rangers were enthusiastic about the prospect of a ranger association. The agency for which they work was less enthusiastic, fearing that an organized group of employees might represent something other than a professional association. Securing government recognition, one of IRF's requirements, was very difficult. Yet, she persisted throughout, often spending her off-duty time working on the details of the organization.

On Dec. 14, 2001, as president of the IRF, I was able to welcome the Bolivian Association of Conservation Agents to the international family of rangers as our newest affiliated member. I think *Ranger* readers can best understand what this means to our Bolivian colleagues by reading my translation of Carola's message that she sent to everyone who had supported her efforts to establish the association. It went like this:

"The Bolivian Association of Conservation Agents is now affiliated with IRF. Great news! I don't even think we know what it means yet, but from here on out, our commitment is great and Bolivian rangers will grow and get better in the accomplishment of our task of protecting

(continued on page 28)

ANPR ACTIONS

ANPR Partnerships

Our partnership with NPCA has been the most active since January. When we found out that members wanted ANPR to work on the issue of dwindling field staff, it was fortuitous that NPCA was kicking off an initiative "Americans for National Parks." This initiative seeks to substantially augment the ONPS budget for field operations. As one of over 25 partner organizations in this effort, ANPR is the only organization in the position to speak to employee needs and our contributions to preservation, protection and use. ANPR has made preliminary contacts in the Department, WASO and on Capitol Hill to express our concerns and interests. These contacts will contribute to the greater network of contacts that NPCA is putting together through its 25+ organization coalition.

The tagline for NPCA's campaign is: "Americans for National Parks, because there's just too much to lose." That seems to just about sum up ANPR's feelings also. The coalition of organizations that NPCA is putting together "supports congressional appropriations sufficient to ensure that the National Park Service meets its mission. . ." In that regard, the aim is to remind Congress of its obligation to fund operations of the entire system. NPCA's campaign has targeted an annual addition to ONPS of $280 million.

The interim or 18-month goal of the coalition is to build public demand for park protection and continue to build a bipartisan group of influential members of Congress to work with the collation. ANPR's actions will mirror that approach. ❑

— Ken Mabery
ANPR president

The rivers run through my veins, the winds blow in and out with my breath, the soil makes my flesh and the sun's heat smolders inside of me.

— Richard Nelson
from "The Island Within"

ANPR Reports

Retirement

New Savings Opportunities in 2002 — Thrift Savings Plan has changed the percentage of contribution. FERS employees can now contribute 12 percent of their salary with the government still matching 5 percent. CSRS employees can go from 6 percent to 7 percent contribution; there is no government match for CSRS employees. You can increase your contributions at the next TSP open season, if you haven't already done so. It is wise to make the maximum contribution to your 401(k). I'm still recommending the C Fund with perhaps 10 percent to 20 percent in the S Fund. That gives you an investment in the total stock market.

Take advantage of the great $1,000 increase in the **2002 IRA**. This year individuals can contribute $3,000 into a Roth IRA. The Roth is a non-deductible IRA, but both the principal and all interest earned is *tax free* when redeemed. Assuming a 7 percent rate of return (which means your money doubles every 10 years), a dollar saved in your twenties will be worth almost eight times as much at retirement age as a dollar saved in your fifties. However, those of you who are now over age 50 *or will turn 50 anytime this year*, Congress is throwing a life preserver to these older "spendthrifts." A catch-up provision allows an additional $500 invested in an IRA. So, this year a $3,000 IRA is available for younger folks and $3,500 IRA for the over-50 crowd.

Open a Roth IRA account in a no-load mutual fund early in the year. History shows the benefit of saving early each year rather than waiting until the last minute to make a contribution. During the 20 years through 2000, a hypothetical investor setting aside

$2,000 each January in a diversified investment would have ended up with $26,549 more than someone putting the same amounts away months later. IRAs are an excellent way to diversify so that you do not invest in some of the same stocks that are in the C fund. A couple of suggestions might be two funds from Dodge and Cox Company (*www.dodgeandcox.com* or 800-621-3979). Their Stock Fund was up 6.3 percent in 2001, and the Balanced Fund was up 8.2 percent in 2001. That's better than a 12 percent loss anytime.

Here is a tip you might want to pass along to younger family members with lower incomes. There is a new tax credit of as much as $1,000 for contributions to IRAs or qualified retirement plans. It is available to people with no more than $50,000 in income on a joint return or $25,000 on an individual return. The credit gets people involved in plans who normally may not have saved.

Starting in 2002, money withdrawn from state-sponsored **529 Education Savings Plans** will be tax free if the money is used for education. A 529 plan is the best way to save for your kids' education. Look at the website, *www.savingforcollege.com,* for your state's plan. If you don't like it, go to another state that fits your program. The 529 is flexible in that parents can invest in any state's plan and use the money to send kids to any college or university in the U.S. If you want to play catch-up, large contributions, some topping $200,000, which varies state by state, can be made. Grandparents can contribute also. In some states contributions can be deducted from the state income tax — if the contributors are state residents. If one child doesn't need the money earned in the 529, then the money can be transferred to another sibling or even down as far as first cousins.

The Coverdale Education Savings Account, formally called the Education IRA, has also been expanded this year. Each child can have a Coverdale Account up to $2,000 per year. This is up from $500 in previous years.

How should families allocate their additional savings dollars if they are looking to provide for both their own retirement and their kids' education? A number of financial professionals say retirement savings should take the higher priority. Most people should be committed to paying yourself first — saving for retirement. While children may qualify for grants or loans to help pay tuition bills, most people don't want to be scrambling for money to live comfortably in retirement. And, just between us, the kids can also work to help pay for their own education. What a great idea!

We have all experienced "paper losses" in our retirement accounts over the past couple of years, myself included. That is if you didn't move or sell any of your shares. However, since you folks are still employed and, hopefully, did not change your contribution limits, you piled up more shares of the C fund with each contribution. All indications are that the fund will return to its previous high sometime in 2002 and there was a little recovery in late 2001. If that continues, those extra shares you bought on sale while the stock price was down will reward your patience. ❑

— Frank Betts, Retired

Fund Raising

First and foremost, thanks to Chip Davis for his efforts in laying the groundwork for our Pro-Deal with The North Face. All ANPR members may now buy North Face equipment at professional prices, which are substantially lower than retail. In addition, The North Face has agreed to donate 10 percent of those sales back to ANPR! (Turn back to page 19 if you missed the ad.)

You may access the order forms at the VF Solutions website. You must use your NPS employee log-in and then access the ANPR Pro-Deal Form from the link on that page.

Please help promote more advertising in *Ranger*. If you know about any companies or individuals who would like to reach 1,100-plus NPS employees and supporters, please contact Teresa Ford or Rick Jones *(contact information on back cover).*

We continue to move forward on possibilities for grants and corporate fund raising. If you would like to assist in this endeavor, please contact Rick Jones. Thanks to those who already volunteered for this and other tasks at Rendezvous. We will be in contact!

— Rick Jones
Glen Canyon

Professional Issues

ANPR is the voice of the professional, traditional (generalist) park ranger. We also speak to the concerns of the other professions and occupations working within the National Park Service to achieve the Service's mission. (ANPR's mission and purposes can be found on page 1, left column, of every issue of *Ranger*.)

Under new and invigorated leadership, the Service has an opportunity to complete and implement many organizational improvements for the ultimate good of park resources and park rangers. ANPR's Professional Issues will work to see organizational and other improvements made to the way rangers are managed. We believe certain organizational changes are necessary for the long-term health of the park ranger profession and vital to enable the park ranger profession to fulfill its role in achieving the mission of the Service.

The ranger profession around the world has a long and proud history of dedication to resources and service to visitors. The history of the ranger profession is replete with examples of outstanding skills, outstanding courage and spectacular achievements. Professional rangers display these attributes regardless of their employer. The dedication of rangers to "mission-above-self" is a long-standing tradition spanning the entire profession. It is clearly evident in the dedicated work of rangers in countries with emerging parks and protected areas.

We will seek to work cooperatively and supportively with all elements and entities interested in assisting rangers to achieve status and recognition as a profession. Al-

(continued on page 28)

New members join Board of Directors

These candidates were elected to three-year terms to the ANPR Board of Directors in elections completed in January:

Professional Issues
Bill Sanders, Hopewell Furnace

Seasonal Perspectives
Steve Dodd, Seasonal Law Enforcement Training Program, Northern Arizona University

Special Concerns
Bill Halainen, Delaware Water Gap

Secretary
Melanie Berg, Badlands

Also, **Mark Harvey**, Yosemite, was appointed to serve the remaining year of the Education and Training position.

Show your pride in ANPR — order special items

SALE ITEMS	ORIG. PRICE	SALE PRICE	#	TOTAL
ANPR coffee mug (ceramic)	$6.00	$4.50		
Large totebag, cream & forest green	$15.00	$10.00		
Mousepads, tan with ANPR logo	$4.50	$3.00		
Leather folder, tan with gold ANPR logo in lower right corner	$19.50	$15.00		
Insulated mug, large, black (20 oz.)	$6.00	$3.00		
Pewter key ring	$4.50	$2.25		
SALE ITEMS	**ORIG. PRICE**	**SALE PRICE**	**#**	**TOTAL**
ANPR coffee mug (ceramic)	$6.00	$4.50		
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Insulated mug, large, black (20 oz.)	$6.00	$3.00		
Pewter key ring	$4.50	$2.25		

Subtotal	
Shipping & handling (see chart)	
TOTAL (U.S. currency only)	

ANPR's 25th anniversary silver pin, enlarged to show detail, actual size is 3/4 inch, silver look with relief, made in U.S.

View other products on ANPR's website: www.anpr.org. Go to Member Services.

Send order form and check — ***payable to ANPR*** — to Marianne Karraker, P.O. Box 3351, Page, AZ 86040.

Name _____

Address _____

_____

Phone _____ E-mail _____

Questions? Call Marianne Karraker at (928) 645-8133 or send an e-mail to makarraker@hotmail.com.

Shipping & Handling (all orders sent insured mail)

Orders up to $25 ..... $6.00
$25.01 to $50 ..... $7.50
$50.01 to $75 ..... $9.00
$75.01 to $100 ..... $11.50
Over $100 ..... call or e-mail for cost
Orders shipped outside U.S. ..... call or e-mail for cost

Payment by Visa or MasterCard accepted:

Visa _____ *or* MasterCard _____

Credit Card # _____ Expiration date _____

Name on account _____

Cardholder signature _____

Courtesy of Reno-Sparks Convention & Visitors Authority

Reno's Riverwalk is a key element of downtown's revitalization. A renewed focus on the Truckee River has energized the whole community.

Join the fun in Reno, Nevada

Rendezvous XXV

Annual event set for Nov. 18-22

Planning has begun for Rendezvous XXV. Committees are being lined up and the agenda is being formulated. As always, the Rendezvous committees are looking for new and innovative ideas to make this gathering informative, fun and entertaining.

ANPR will again sponsor several training sessions of interest to NPS employees. We are working to schedule one-, two- and three-day training sessions to meet a variety of interests and needs. Look for more information in the next issue of *Ranger*. In addition, other Rendezvous traditions — workshops, speakers, regular raffles and auctions, a super raffle and the photography contest — will continue.

During the last Rendezvous in Jackson, Wyo., many of you volunteered to assist in various capacities during the Rendezvous and other ANPR functions. Don't worry, we have your names and you will be contacted in the near future.

If there are other members who would like to assist or have ideas or suggestions on how to make this Rendezvous the *best* ever, please let us hear from you. Here is a list of Rendezvous XXV committee leads:

Dan Moses – overall Rendezvous coordinator, *mosesdd@aol.com*

Barry Sullivan and Barbara Goodman – program chairs, *SullivanBT@aol.com* and *GoodmanBo@aol.com;* they are planning a theme of "How Integrated Management and Divisional Efforts are Accomplishing the Mission."

Pat Quinn – hotel contract, *pquinn82@cybertrails.com*

Bob Reynolds – onsite coordinator, *BobRPark@yahoo.com*

Dan Greenblatt – Super Raffle, *dan_greenblatt@email.msn.com*

Erin Broadbent – registration, *Ebroadbent@aol.com*

Paul Stevens – exhibits, *paul_stevens@nps.gov*

Mark Harvey – training courses, *mpharvey@inreach*

Marianne Karraker – merchandise sales, *makarraker@hotmail.com*

Dan and Diane Moses – regular raffle, *mosesdd@aol.com*

Teresa Ford – photo contest, *fordedit@aol.com*

❑ ❑ ❑

The Reno-Sparks/Lake Tahoe area is the perfect spot for exploring the great outdoors. There are traditional activities such as hiking, camping, fishing, boating, golfing, skiing, boarding and snowmobiling, and more extreme outdoor activities like rock climbing and wind surfing.

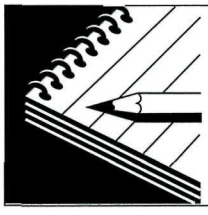
The location also includes plenty of destinations for day trips. Take an hour's drive northeast and you'll find yourself at Pyramid Lake, home to prehistoric cui-ui fish, cutthroat trout and American white pelicans. You can also explore ancient Paiute Indian petroglyphs.

Lassen and Yosemite are only a day's drive away, so arrive early to Rendezvous or stay afterward and discover a new part of the country. See you in Reno!

ANPR is your organization.

- In order to fulfill our role as a world leader in the conservation of our natural and cultural heritage, we need adequate funding.
- ANPR is looking for a few dedicated individuals willing and able to help expand our funding base through grants and other means.
- Here's your opportunity to step up to the plate!

Please contact Rick Jones, (928) 608-0820 or *rcoj@page.az.net*



Share your news!

We want to hear from you. Take a minute to tell others your news. Use the form on the inside back cover or visit the ANPR website: www.anpr.org

All in the Family

Please send news about you and your family. All submissions must be *typed or printed* and should include the author's return address and phone number.

Send via e-mail to fordedit@aol.com or write to Teresa Ford, Editor, 26 S. Mt. Vernon Club Road, Golden, CO 80401. Changes of address should be sent separately to the ANPR Business Manager, P.O. Box 108, Larned, KS 67550-0108.

Dave and **Pat Buccello** (GRCA, EVER, SEKI, YOSE, ZION, IMRO, WASO) has changed jobs from a special agent, WASO-RAD, to the medical standards program manager, WASO-RAD. While Dave continues as the chief ranger at Acadia, Pat is getting to know the Bar Harbor and National airports quite well. Address/phone: 87 Mill Brook Road, Bar Harbor, ME 04609; (207) 288-0968.

Loren Goering (INDE) is chief of interpretation for the Upper Delaware Scenic and Recreational River. Previously he was a supervisory park ranger for National Capital Parks, Central. **Melissa W. Cahn** (INDE, EDAL, GWMP, ARHO) was a supervisory park ranger at Arlington House, The Robert E. Lee Memorial. She temporarily left the NPS to care for their twin sons, **Abraham Wotring Cahn** (on left) and **August Regier Cahn**, born Sept. 13, 2000. Address/phone: RR 2, 2428 River Road, Beach Lake, PA 18405; (570) 729-7574.

Larry Johnson (HEHO 83-86, APIS 86-91, YELL 91-94, VOYA 94-98, HAFE 98-01) is the new chief ranger at Ozark National Scenic Riverways. Previously he was chief ranger at Harpers Ferry. After living the past three years in the East, Larry and wife **Jan** are happy to have returned to the rural Midwest and are looking forward to exploring the area's crystal clear waterways. Address: P.O. Box 968, Van Buren, MO 63965; *Ljan@semo.net*

Scot McElveen (NATR, GUIS, GRSM, PIRO, ASIS, DEVA, JODA) is the new chief ranger at Harpers Ferry NHP. Previously he was chief ranger at John Day Fossil Beds. **Jeannine** (ASIS, SSA, INS, DEVA, JODA) will be an administrative support assistant in the Client Services area of Harpers Ferry Center. She was the administrative technician at JODA. Their new address and phone is uncertain, but their e-mail remains the same: *jmc004@aol.com*.

Kevin Moses (GRSA, GRSM) has transferred from the North District of Great Smoky Mountains to the Tennessee District of Big South Fork. He and his bride, **Angela**, and two princess daughters, **Makenna** and **Alyssa**, will live in Oneida, Tenn. Work phone: (423) 569-2404, ext. 267.

Gordon Olson (ANTI 79-81, WOTR 81-82, ANTI 82-88, ASIS 88-92, DENA 92-02) is the new chief of the natural resource branch at Shenandoah. Previously he was chief of the Denali Division of Research and Resource Preservation.

Ralph Satterberg (GRSM, GREE, EVER, NWCC, VICK, EACC) has returned to the high desert country of northern Nevada and is attempting to pay the rent as the center manager of the Central Nevada Interagency Dispatch Center, (775) 623-1750. Address/phone: P.O. Box 925, Winnemucca, NV 89446, (775) 625-30304, *rufusdufus@theonramp.net*.

Gary Warshefski (NCR-C, FIIS, SAMO, USAR, MASI, FOST, ECNHC) is the assistant superintendent of Lake Mead. Previously he was the superintendent of Fort Stanwix and project manager for the Erie Canalway National Heritage Area. Address/phone: 645 Paloma Drive, Boulder City, NV 89005; home, (702) 293-7722; work, (702) 293-8920; *garywalter@aol.com*. ❑

Kasten seeks information on missing persons for book

Freelance writer-photographer **Jerry Kasten** continues to gather research for a book on missing people in national parks.

His e-mail address has changed since this notice appeared in *Ranger* (Winter 2001-02). Contact him at *jdkasten@att.net*; fax, (972) 991-1938; 6123 White Rose Trail, Dallas, TX 75248.

Crater Lake employee reunion part of centennial celebration

All present and former employees of Crater Lake are invited to a reunion on Monday, Aug. 26, 2002. The reunion is open to National Park Service employees, volunteers-in-parks, concessioner employees, and employees of major contractors, partners and cooperators.

The gathering will take place at the park, and will include a picnic luncheon, tours of the current administrative areas and interpretive tours of the park. The reunion is scheduled the day after the official Centennial Rededication Ceremony set for Sunday, Aug. 25, at Rim Village.

If you're interested in attending the reunion, contact the park by mail at Crater Lake NP, Box 100, Crater Lake, OR 97604. Include names, addresses, telephone numbers, e-mail addresses, former duties and the years employed. Official invitations and programs will be sent to individuals beginning in March.

The park is seeking help in locating its former employees. Please spread the word about the reunion and how to make the initial mail contact. Currently the park can't receive e-mail messages from outside the NPS because of the Department of the Interior Internet shutdown.

Crater Lake is still the incredible blue gem that you remember from your times working there. If you haven't returned to visit the park recently, this is a great opportunity to reacquaint yourself, both spiritually and intellectually, to its natural and cultural wonders.

The reunion will provide an opportunity to visit with old friends, swap stories about park experiences, and see how the park operates today. Current employees will be available to talk about the latest in park research projects, internet based administrative tools, the new General Management Plan which is being developed, snow removal equipment, and a variety of other topics of interest.

The **National Park Trust** invites ANPR members to sign up for Parkland News, the e-mail news source dedicated exclusively to America's parklands, wildlife habitat and open space issues.

www.parktrust.org
legacy@parktrust.org

Welcome (or Welcome Back) to the ANPR Family!

Here are the newest members of the Association of National Park Rangers:

Sally Sprouse & Jim Roche ..... Death Valley, CA
Dave Anderson ..... Helendale, CA
Judy Bartzatt ..... Twentynine Palms, CA
Gillian Bowser ..... Washington, DC
Rhonda Brewer ..... Jacksonville, FL
Robert U. Bryson ..... Victorville, CA
Harry Butowsky ..... Washington, DC
Edward F. Clark III ..... Temple Bar Marina, AZ
Robert J. Conway ..... Santa Clarita, CA
Christine Czazasty ..... Devils Tower, WY
Costa Dillon ..... Center Moriches, NY
Scott Fischer ..... Chiriaco Summit, CA
Matt Graves ..... Harpers Ferry, WV
John T. W. Gray ..... Canada
William W. Gwaltney ..... Englewood, CO
Jane Hendrick ..... Anchorage, AK
Jerry Kasten ..... Dallas, TX
Anne K. Kearns ..... Barstow, CA
Rick Kendall ..... Coulee Dam, WA
D. Nicole Kinsey ..... Eastsound WA
Sue Lamie ..... Wall, SD
Greg Lawler ..... Groveland, CA
Steve Luckesen ..... Halls Crossing, UT
Mike & Joan Mayer ..... Page, AZ
Barbara Mertin ..... Austria
Jeremy Monroe ..... Chiriaco Summit, CA
Richard T. Moore ..... Yellowstone NP, WY
Carol Mutch ..... El Portal, CA
Joy M Pietschmann ..... Newark, DE
Kevin Poe ..... Tropic, UT
Ernie Quintana ..... Twentynine Palms, CA
Tim Schad ..... Woodland Park, CO
Steve Shackelton ..... Yosemite NP, CA
Jean Sigafoos ..... Interior, SD
Todd Stoeberl ..... Moab, UT
Grant E. Stolhand ..... Lackey, VA
Elaine Thomas ..... Australia
Historic Preservation
Training Center ..... Frederick, MD
Rick Trigg ..... Saint Louis, MO
Tom Ulrich ..... Divide, CO
Sandy Walter ..... Groton, MA
Mike Warren ..... Boise, ID
Bill Wright ..... Homestead, FL

SARSCENE 2002 — Nova Scotia

The National Search and Rescue Secretariat is planning its 11th annual search and rescue workshop Sept. 11-14 in Halifax, Nova Scotia. SARSCENE 2002 will provide a forum for search and rescue personnel to share expertise and experiences and to find out about new SAR technologies. More than 600 participants are expected from air, land and marine organizations across Canada and worldwide. For more details visit the website: *www.nss.gc.ca*.

Missing ANPR Members

The ANPR business office needs your help to find these people. Many of these names have appeared in previous issues of *Ranger*, but addresses haven't surfaced yet. Please check the list and send information to ANPR, P.O. Box 108, Larned, KS 67550-0108; *anpr@larned.net*

Benny Batom ..... San Francisco, CA
Eileen A Fenton ..... Lenoir, NC
Michelle Fidler ..... Moose, WY
Haywood S. Harrell ..... Savannah, TN
Marcus Hathaway ..... Denali Park, AK
Jack Kane ..... Altoona, PA
Kheryn Klubnikin ..... Thousand Oaks, CA
Dave Rhinehart ..... Grand Canyon, AZ
Richard F. Ryan ..... S. Wellfleet, MA
Peter J. Ward ..... Washington, DC

We need your ideas!

Ranger welcomes short submissions for:

- **Humor in Uniform** — NPS humorous anecdotes
- **Quotable Quotes** — pertaining to the national parks
- **"Good" News** — Positive news from parks or members

Send your submissions to:
Teresa Ford, Editor
fordedit@aol.com
or to 26 S. Mt. Vernon Club Road
Golden, CO 80401

ROAD MAP *for my heirs*

ANPR has prepared this "Road Map" to assist family or friends in handling details when a spouse or loved one dies.

This notebook has fill-in-the blank forms about:

- your desires about final arrangements
- civil service, military & Social Security details
- insurance facts, bank accounts and more
- synopsis of life, obituary & family history
- list of disposition of personal items
- anatomical gift wishes
- examples of durable power of attorney

$10 per book, plus $4 for shipping and handling. **U.S. currency only.**

Make check payable to ANPR.
Send to: Frank Betts
4560 Larkbunting Drive, #7A
Fort Collins, CO 80526

Letters *(continued from front inside cover)*

of my time during the week, in addition to seeing old friends, was the special dinner invitation that you provided to the seven of us with Director Mainella.

While I realize we were chosen randomly, I cannot thank you enough for the special evening that I experienced that night. I am sure it was a bit costly to the organization but for this ranger there could not have been anything more significant that you could have offered to make me feel proud to be a member and motivated to contribute to the work of our Association. With this thought in mind, I have included a check for $50 to help defray the cost of our dinner.

Thank you again for a grand week of reminiscing about the past and looking to the future. Also, please include me as a willing volunteer to help with organizational needs. I would be willing to focus on assisting committee tasks associated with recruitment and competency issues.

— Jim Hummel
International Falls, Minn.

Student seeks your help

I am in eighth grade at Montezuma (Iowa). I hope to be a park ranger some day. I have some experience with hiking, finding things in the woods and nature itself.

I travel a lot with my family and we have gone hiking in the Grand Canyon and in the woods at Yellowstone National Park. At Yellowstone and other places a park ranger always gives me a booklet and I would have to find or see the things that are in the booklet. I always find the things in it and they give me a park ranger badge. I have gotten a badge for every park I've been to.

Some day I wish to be a park ranger and help the wilderness. If you have any information that I could look over, I would be thankful if you would send it to me.

— Michael Williams
122 Falcon Drive
Montezuma, IA 50171

Belgian ranger enjoys *Ranger*

I have gotten your *Ranger* issue (Winter 2001-02) and I thank you very much. This time I have read it almost entirely. What pleasure to read these very interesting articles, especially from ANPR's 25th anniversary and all these pictures where I see many smiles on rangers' faces. This time I have still learned and I am very glad to learn and see those many rangers attended a big Rendezvous.

My congratulations go to Ken Mabery about his article on page 7. My special congratulations go to Dawn O'Sickey and Judy Chetwin about their artwork to concept the new logo "Ranger at heart." What a great idea and a very nice logo. My biggest thanks to Dawn O'Sickey about the publication of my letter to the first page . . . really I have been surprised and honored.

My special congratulations and encouragements to Einar Olsen to keep up his work and devotion about these foreign rangers. Big congratulations to Rick and Cindy Ott-Jones about their nice smiling on page 13. I thank you very much.

— Francis Pierard
Nature and Forest Division, Belgium

IRF Update *(continued from page 21)*

and conserving our natural areas.

To everyone who gave us a hand in the establishment of our organization, thank you.

Thanks to those who had confidence that Bolivian rangers were capable of making a commitment.

Thanks to those who gave us a daily push. We hope you never stop helping us.

Thanks to rangers from around the world who were following our effort. For those who have not yet taken the steps to form an organization, we will be glad to share our experiences with you.

Thanks to those who have been with us every step of the way. We will always welcome your advice.

Thanks to God for giving us the strength to achieve our objectives.

Thanks to Rick Smith for his aid, patience and confidence in us.

Thanks to Juan Carlos Gambarotta for betting that we Bolivians could do this.

Thanks to the Argentine rangers. We love you for your aid, your friendship and the example you set for us.

Thanks to everyone who receives this letter. God bless you for aiding, having confidence and believing in the Bolivian rangers.

We will continue in the task we have set for ourselves — caring for the Bolivian protected areas.

A big hug,"

— Carola Vaca Salazar

As former IRF President Gordon Miller said to me after reading the note from Carola, "It makes it all worth while, doesn't it?" ❑

— Rick Smith, IRF President

Professional Issues *(continued from page 23)*

though the U.S. government's (Office of Personnel Management) personnel system has never been completely comfortable with exactly where "park ranger" fits within its classification system, we believe it is vital to continue the process of "professionalizing" the park ranger occupation. We seek not only common use of the term "profession," but also acceptance of the reality that park rangers are professional employees able to render services independently and expertly to achieve peer-accepted results. That will require defining the body of knowledge necessary to perform the work as well as defining the competencies one must demonstrate in order to be considered a successful professional park ranger.

Ranger Futures and Ranger Careers have already accomplished much of the work. They were written but never fully implemented. Our challenge is to find a way to overcome the organizational inertia that has stymied the full professionalization of the ranger occupation as designed in Ranger Careers. We must fold in the implementation of other vital improvements such as the IACP report, Thomas report, and other specific recommendations on improving the ranger profession's capability and how it is managed within the Service.

We welcome the support of the "Rangers of the 21st Century" initiative and the various law enforcement and fire studies in reawakening interest in ranger occupation issues. We caution, however, that studies and reports focused on solving single issues within the broad spectrum of "ranger work" often carry the seeds of specialization tending towards technician status for rangers. Care must be exercised. The entire occupation must be managed professionally by academically prepared, resource-based professionals highly skilled in the individual specialties. We seek a management-driven personnel system rather than a personnel-driven management system.

This is a lofty objective, but if rangers are willing to work together, we cannot fail. If we do not step up now, we may see the fragmentation of the park ranger profession into narrow specialties and witness the demise of the traditional park ranger. Extinction is forever. ❑

— Bill Sanders
Hopewell Furnace

MEMBERSHIP APPLICATION — Association of National Park Rangers

❑ Renewal *or* ❑ New Membership Date _____ Park Code _____ Region _____ ❑ Retired?

Name(s) _____ Office phone _____

Address _____ Home phone _____

City _____ State _____ Zip+4 _____ Home e-mail address _____

Important Notice

In order for ANPR to be an effective, member-oriented organization, we need to be able to provide board members with lists of members by area. It is, therefore, vital that you enter the park and region four-letter codes before submitting your application.

Note: It costs $45 a year to service a membership. ANPR suggests additional dues based on your annual income according to the chart below.

Type of Membership (check one)	**Individual** One year	**Individual** Two years	**Joint** One year	**Joint** Two years
Active *(all NPS employees and retirees)*				
Seasonal	❑ $25	❑ $45	❑ $40	❑ $75
Under $25,000 annual salary (GS-5 or equivalent)	❑ $35	❑ $65	❑ $50	❑ $95
$25,000 – $34,999 (GS-7/9 or equivalent)	❑ $45	❑ $85	❑ $60	❑ $115
$35,000 – $64,999 (GS-11/14or equivalent)	❑ $60	❑ $115	❑ $75	❑ $145
$65,000 + (GS-15 and above)	❑ $75	❑ $145	❑ $90	❑ $175
Associate Members *(other than NPS employees)*				
Associate	❑ $45	❑ $85	❑ $60	❑ $115
Student	❑ $25	❑ $45	❑ $40	❑ $75
Corporate	❑ $500			
Supporting	❑ $1,000			
Life Members *(May be made in three equal payments over three years)*				
Active	❑ $750		❑ $1,000	
Associate	❑ $750		❑ $1,000	

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____ Rendezvous Activities
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(**ANPR may publish a membership directory, for distribution to members.** May we publish: your **e-mail address?** ❑ yes ❑ no

(To assist the ANPR board in planning Association actions, please provide the following information.

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Share your news with others!

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Send news to:
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check ANPR's website: *www.anpr.org*
and go to Member Services page

Name _____

Past Parks — Use four-letter acronym/years at each park, field area, cluster (YELL 88-90, GRCA 91-94) _____

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President
Ken Mabery, Regional Ecosystem Office
12616 SE Alder, #109 • Portland, OR 97233
(503) 341-6716 • ANPRpresident@aol.com

Treasurer
Lee Werst, Carlsbad Caverns
1300 N. Pate St., Apt. F163, Carlsbad, NM 88220
(505) 628-8497 • lswerst@aol.com

Secretary
Melanie Berg, Badlands
HCR 54, Box 104, Interior, SD 57750
(605) 433-5580 • badlspitfire@hotmail.com

Education and Training
Mark Harvey, Yosemite
P.O. Box 187, El Portal, CA 95318
(209) 379-1840 • mpharvey@inreach.com

Fund Raising Activities
Rick Jones, Glen Canyon
P.O. Box 3907, Page, AZ 86040; home: (928) 608-0820;
fax: (928) 608-0820 • rcoj@page.az.net

Internal Communications
Bill Supernaugh, Badlands
HC 54, Box 103 • Interior, SD 57750
(605) 433-5550 • bsuper@gwtc.net

Membership Services
Kathy Clossin, Bureau of Land Management
130 Watt St., Battle Mountain, NV 89820
(775) 635-2580 • glades_quilter@yahoo.com

Professional Issues
Bill Sanders, Hopewell Furnace
213 Colorado Drive, Birdsboro, PA 19508-9049
(610) 404-1872 • wnksanders@aol.com

Seasonal Perspectives
Steve Dodd
5950 Mountain Oaks Drive, Flagstaff, AZ 86004
(928) 526-5779 • Steve.Dodd@nau.edu

Special Concerns
Bill Halainen, Delaware Water Gap
4032 Conashaugh Lakes, Milford, PA 18337
(570) 686-3828 • bhalainen@hotmail.com

Strategic Planning
Ed Rizzotto, Boston Support Office
P.O. Box 407, Hingham, MA 02043

Past President
Cindy Ott-Jones, Glen Canyon
P.O. Box 3907, Page, AZ 86040
(928) 608-0820 • rcoj@page.az.net

Task Group Leaders

Elections
Dawn O'Sickey, Grand Canyon
P.O. Box 655, Grand Canyon, AZ 86023
(928) 638-6470 • dosickey@grand-canyon.az.us

International Affairs
Tony Sisto, PWRO
1348 Glen Drive, San Leandro, CA 94577
(510) 633-1282 • anthonyandadams@aol.com

ANPR Chronicler
Don Ross, Mesa Verde
14920 Road 30.2 • Dolores, CO 81323 • (970) 882-1234 • dkjlross@fone.net

Mentoring
Bill Supernaugh, Badlands
HC 54, Box 103, Interior, SD 57750
(605) 433-5550 • bsuper@gwtc.net

Promotional Items
Marianne Karraker, Glen Canyon
P.O. Box 3351, Page, AZ 86040
(928) 645-8133 • makarraker@hotmail.com

Rendezvous
Dan Moses, North Cascades
622 13th St. NE, East Wenatchee, WA 98802
(509) 884-7093 • mosesdd@aol.com

Retirement
Frank Betts, Retired
4560 Larkbunting Drive, #7A, Fort Collins, CO 80526
(970) 226-0765 • frankbetts@prodigy.net

Marketing Plan
Wendy Lauritzen, PECO
c/o Pecos NHP, P.O. Drawer 418, Pecos, NM 87552

Ranger Magazine Adviser
Amy Vanderbilt, Glacier
Box 331 • West Glacier, MT 59936
(406) 752-7660 • moserblt@digisys.net

Advertising
Dave Schafer, Lyndon B. Johnson
Route 1, Box 462, Blanco, TX 78606
(830) 833-1963 • dschafer@moment.net

Staff

Editor, Ranger
Teresa Ford
26 S. Mt. Vernon Club Road, Golden, CO 80401
Home office & fax • (303) 526-1380 • fordedit@aol.com

Business Manager
Jim VonFeldt
P.O. Box 108, Larned, KS 67550-0108
(620) 285-2107 • fax: (620) 285-2110 • jlv@cpavbv.com

Association of National Park Rangers
P.O. Box 108
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