Fall 2011

La Ventana en los Valles

News of the Valles Caldera National Preserve
from the Valles Caldera Trust

The Las Conchas Fire: Flames and Floods in the Valles Caldera

by Bob Parmenter, Director of Science and Education

At one o'clock on the afternoon of Sunday, June 26th, high winds toppled an aspen tree into a power line on private land near Las Conchas, New Mexico, just south of State Highway 4 and the Valles Caldera National Preserve. The ensuing sparks on ultra-dry tinder started a fire that would burn into New Mexico's history as the largest forest fire ever recorded. During the first 14 hours, the fire raced eastward, consuming more than 43,000 acres of forest and destroying dozens of homes. The speed of the fire's spread was astonishing—averaging an acre of forest burned every 1.17 seconds (that's equivalent to burning a forested area the size of a football field in less than 2 seconds) for 14 straight hours. The fire continued to grow over the next five weeks, and was eventually contained by Forest Service firefighters on August 1st at 156,593 acres (245 square miles). Of this area, approximately 30,000 acres (55 square miles) of the Valles Caldera National Preserve was burned, mostly during the first week of the fire. (See burn severity map on page 5.)

This photo was taken a little after 3:00 p.m. on June 26, by Milt McConnell of New Mexico Trout as he drove from the staging area to the NM 4 entrance. (See his story on page 12.)

The Valles Caldera Trust oversees the Valles Caldera National Preserve, formerly the privately owned "Baca Ranch." The 89,000 acre property is located in the Jemez Mountains in northern New Mexico. It was purchased by the federal government in 2000 under the Valles Caldera Preservation Act. The property is known for its huge meadows, abundant wildlife, meandering streams, and remarkable scenery. The mission of the Trust is to create a successful model of public land management that protects and preserves the unique values of the Preserve. Toward that end, the Trust will operate the Preserve as a working ranch; endeavor to become financially self-sustaining; meet the varied needs of visitors; strive to use and steward the multiple resources of the Preserve; and work collaboratively with our neighbors.

Fire and Plants

The forested caldera rim and its interior domes, along with the grassy valles, experienced varying impacts from the fire. About 25% of the area within the fire perim-

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Dennis Trujillo, *Interim Executive Director*

The Board of Trustees

The Board of Trustees is composed of seven members appointed by the President of the United States and two who serve ex officio (Superintendent of Bandelier and Supervisor of Santa Fe National Forest). The appointed Trustees generally serve four-year terms and, except for the Chair, receive no compensation for their work.

If you would like to receive a copy of the Comprehensive Management Framework, the Annual Report to Congress, the State of the Preserve, or notices regarding events, public Board meetings, or planning for management of the Valles Caldera National Preserve, contact

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The "Fire Starter"

The Las Conchas Fire began a little after one o'clock the afternoon of June 26th when a gust of wind blew a 75 foot tall aspen into a power line. The tree was among a stand of fir trees but a small gap in the stand provided enough room for the aspen to fall into the utility right of way and snag the power line. From that ridgetop, about a quarter mile west of Las Conchas, began the largest wildfire in New Mexico history.

Dr. Bob Parmenter and Dennis Trujillo recently led a group of scientists from the Valles Caldera and the USGS at Bandelier National Monument to the site. Bob cut several cross sectional pieces ("cookies") from the trunk of the "fire starter" for analysis at the University of Arizona's Laboratory of Tree Ring Research in Tucson. He also cut a sample from a nearby Ponderosa pine stump that had numerous burn scars within its rings. The hope is to match the sprouting date of the aspen tree with one of the historic fires recorded in the pine stump. This information will add to the story of the Las Conchas fire, and help illustrate the cyclic nature of forest fire in the Jemez Mountains.

[Above] Fire Starter. [Below] Flashpoint of the Las Conchas Fire. (Photos courtesy of Dr. Bob Parmenter.)

From the Chairman's Desk

by Dr. Raymond Coretto, Valles Caldera Trust
Chairman of the Board of Trustees

"What a difference a year makes!" is how I began my Spring Newsletter message to you. I must revise that statement to, "What a difference a strong wind can make," for our Fall edition. Of course, I am referring to the gust that blew down the tree that snapped the power line that started the fire and changed the landscape of the Jemez Mountains and the Valles Caldera forever. As I am sure you have read in this newsletter, almost one third of the Preserve was burned during the Las Conchas fire, now on record as the largest wildfire in New Mexico history. It was a time of destruction and devastation, but it was also a time of great strength and resiliency displayed by our staff, friends, and neighbors.

The day the fire broke out, Preserve staff executed the evacuation of visitors to perfection and in the following days and weeks provided support to firefighting teams by helping set up the Redondo Meadows Base Camp, conducting cultural resource management, and participating with communications teams and firefighters. They were, in a word, "spectacular."

After the fire they were back at work doing what they do best: stewardship of the Preserve and rebuilding what they could. It was no accident that, while some areas outside the Preserve were still burning, the Valle Grande staging area re-opened on a limited basis July 13th.

I don't mean to minimize the devastation and destruction. It is real and it is a game changer for how we, the board and staff, will approach 2012 and the years to come. Some of the plans we made will not come to pass, others may take more time, and still others are yet to be formed. The fire forced us to take a step back and pause to recognize that we are not in control of the earth's destiny. We are here to be good stewards of what has been given to us.

So out of the ashes we shall reinvigorate relationships with our friends, neighbors, and community to restore the land and sow a new beginning to stewardship of the Valles Caldera National Preserve. Won't you please join us?

Fire Alters Grazing Program

Even before the fire crossed NM4 and entered the Preserve, Ranch Manager Tim Haarmann and his staff knew exactly what to do to keep the grazing cattle ahead of the fire and out of harm's way.

"We opened the gates, cut fences, and pushed them into San Antonio and Valle Grande areas for a couple of weeks," he said. "They never really seemed bothered by the fire. They just mingled with the elk who also were unfazed by the situation."

Fortunately, there was no known livestock loss to the grazing program from the Las Conchas fire. Most of the cattle were moved back to their pastures. However, the Rincon de los Soldados pasture was heavily burned and forced Haarmann to remove the 102 animal units that were grazing the pasture for the rest of the season. That reduced the number to 475 from the original 600 animal units that were part of this year's program. Despite the fire and reduced numbers, all other aspects of the livestock program, including the high altitude bull research and heifer replacement program, remained intact for the remainder of the season.

Cows graze while the fire burns in the background. (Photo courtesy of D. Rourke McDermott.)

Las Conchas Fire

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[Above] Burned grassland in Valle Grande, July 6th. [Below, middle] Understory burn in forest by Valle Grande trailhead off Highway 4. Note how the fire only burned grasses and litter on the forest floor. [Below] High severity burn in a forest stand on Cerro del Medio. All trees were killed in this patch, and the forest floor was covered in a deep ash layer. (All photos with this story are courtesy of the author unless otherwise indicated.)

eter (~7,700 acres) had a low burn severity; these were mostly areas of grassland, mountain meadow, and forest with low densities of trees. In such areas, the fire burned the dried surface fuels, particularly the dead grasses and forbs still standing from the previous summer, and small tree branches and dead conifer needles. Few trees and shrubs were killed in the low severity burn areas, and the re-growing grasses and wildflowers had already carpeted the ground with lush, new growth by mid-August (see photo on page 5). This new herbaceous growth also contained higher levels of protein and minerals, and being free of the dead chaff from previous years' growth, was highly nutritious and desirable to wildlife herbivores, such as elk, deer, rabbits, prairie dogs, and insects. Even the livestock in the post-fire Valle Santa Rosa crossed the fire line to graze contentedly with the elk on the abundant new grass shoots. Overall, these areas of low-severity burns undoubtedly benefitted ecologically from the Las Conchas fire, cycling nutrients and stimulating plant growth and wildlife use.

The forests higher up the domes and the caldera's rim endured a mixed-severity fire, with patches of medium- and high-severity burns. About 9,500 acres (32%) of the burned area sustained medium-severity impacts, in which understory forest fuels were consumed and some individual trees were killed, either through a "Roman Candle" effect from a flame outburst that reached the canopy of a small patch of trees, or from root death via deep, long-smoldering forest-floor litter. Grasses and forbs under these canopies burned somewhat hotter and longer, resulting in a deeper "kill zone" of the plants' live crown and roots; some of these herbaceous plants survived, but sprouted later in August than their counterparts in open meadows, and were slower to reach their pre-fire size by the end of summer.

Only 25% of the Preserve's montane forests endured a high-severity burn, and in these patches, the trees were completely killed (i.e., a "stand replacement" fire). These sites generally were composed of high-density mixed conifer and aspen stands (often between 1,500 and 2,000 trees per acre), and burned at extremely high temperatures due to the unusually low fuel moisture at the time—only 1 to 5% (for comparison, kiln-dried lumber in hardware stores has an average fuel moisture of about 12%). Forest floor litter, composed of conifer needles, tree branches, logs, and stumps, was completely incinerated, leaving only a mineral soil surface covered in fine ash up to a foot deep. With the forest canopy gone, having only the burned trees with

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Las Conchas Fire

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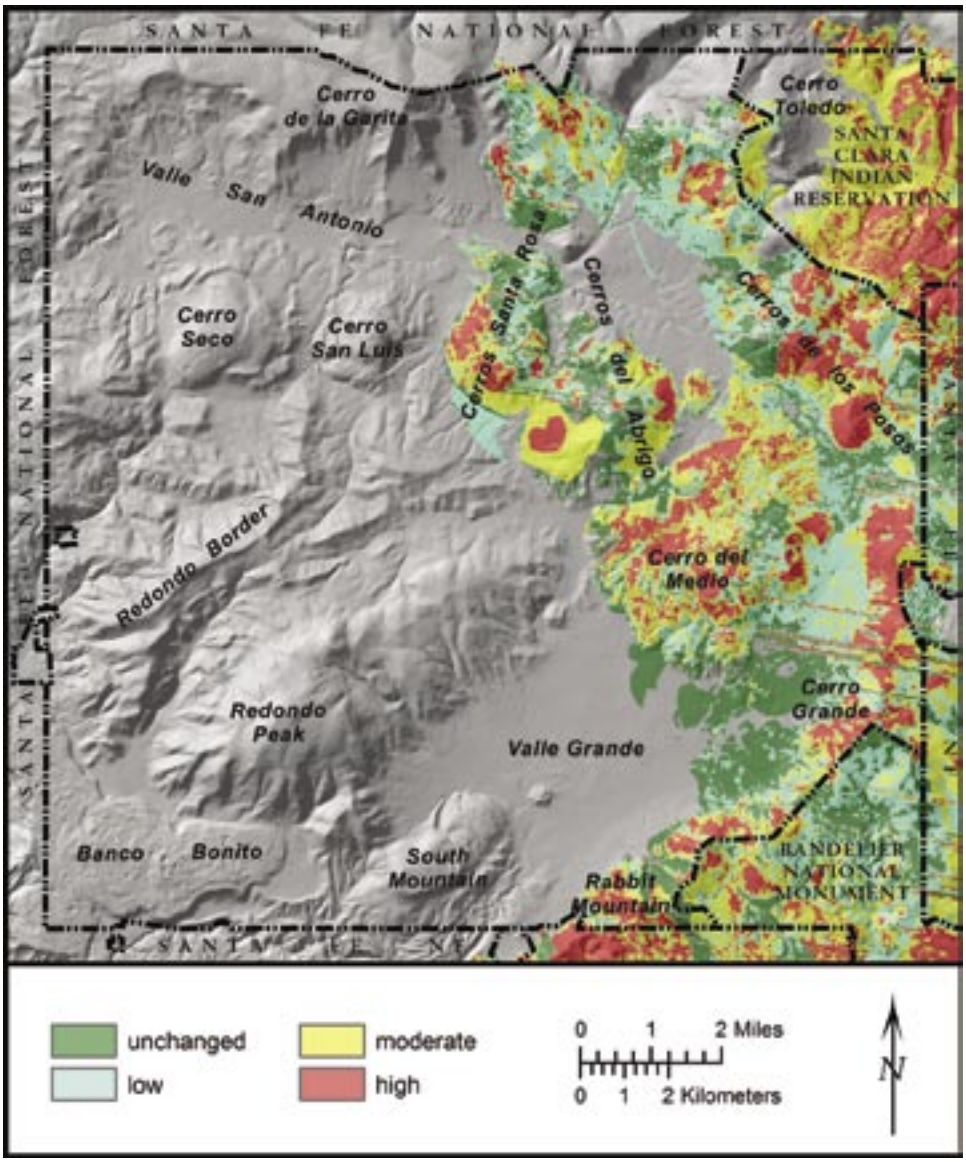

their trunks and larger branches still standing, the ground was exposed to both intense summer sunshine and pounding rain, creating an extreme environment for re-colonizing plants and wildlife. Yet even here, the young aspen trees began to sucker immediately, with foot-tall individuals growing only weeks after the fire; and in small patches of former forest light-gaps, grasses and forbs were re-sprouting. Thus, the natural succession of the montane forest began—first a meadow, then an aspen grove, then fir and spruce trees developing in the shade of the aspens, until a mature mixed-conifer forest again dominates the sites—a process that will take well over a century to play out.

[Top] Map showing burn severity on the Preserve. [Above] Post-fire grass in the Valle Grande, August 3, 2011.

Wildlife

One of the first questions many have asked since the fire was, "How did the wildlife and fisheries fare?" Here again, the answer is mixed. Larger wildlife species, such as elk, deer, bear, cougar, bobcat, and coyotes, would have simply moved out of the fire's path; indeed, Preserve biologists had been monitoring 28 radio-tagged elk calves and their mother cows prior to the fire, and all 28 survived just fine. So fire casualties of these species in the Valles Caldera would have been few in number. However, on Forest lands and at Bandelier National Monument during the first day of the fire, wildlife losses may have been much higher, due to the speed of the fire's advance and the large fire front that could have prevented successful escape.

Small mammals living in underground burrows (prairie dogs, ground squirrels, mice, and rabbits) appeared to have survived in all but the most severely burned areas. Tree-dwelling Abert's squirrels and red squirrels,

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Las Conchas Fire

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[Left] Elk and cattle graze in Valle Grande as Cerro del Medio burns. (Photo courtesy of D. Rourke McDermott.) [Below] Elk graze in post-burn grasslands near Cerro Santa Rosa, August 4th.

along with many songbirds with nestlings or fledglings, would have perished in stands receiving moderate- to severe-burn impacts. Even adult songbirds may have died during nighttime hours as the fire continued to spread—Steve Fettig, wildlife biologist and ornithologist at Bandelier National Monument, noted that songbirds have poor nocturnal vision and don't fly well (or far) at night, leaving them vulnerable after dark to the continuously advancing fire front.

Reptiles in the Preserve generally don't inhabit dense forest, preferring more open patches of bare ground and grasses; as such, these lizards and snakes could have evaded the fire by moving underground or into patches of negligible fuels, allowing the fire to pass them by. Amphibians (chorus frogs and tiger salamanders) inhabiting the Preserve's riparian zones and stock ponds also survived the flames, as the fire stopped when it hit the green, moist vegetation along the valles' streams. Even the Jemez Mountains Salamander likely survived in good shape, being safely deep underground in the pre-monsoon season. However, upon emerging, they and other small wildlife species must now contend with a radically altered habitat with far less cover, greater temperature and moisture extremes, and different food resources.

The streams and riparian zones in the Valles Caldera were minimally affected by the flame front, as the sedges and rushes along the creek margins were too wet and green to burn. Very little ash or debris fell into the streams during the fire, and for several weeks after the fire, it appeared the fisheries and aquatic invertebrates, in fact, the entire aquatic ecosystem, might have escaped the fire virtually unscathed. Sadly, this was not to last...

From Flames to Floods

On Monday, July 25th, the monsoons arrived in earnest. Starting just before noon, an intense thunderstorm dropped more than half an inch of rain and hail in a few minutes on the north rim of the Caldera and the Indios Creek watershed, unleashing a torrent of black, ash-infused water down the Indios canyon and into the Rio San Antonio. Even though only a third of the Indios Creek watershed had burned, much of that area had suffered a high-severity burn. With little or no plant or litter cover remaining to hold the moisture, the pounding rain and hail quickly generated massive sheet-flows of water, sliding downslope to the stream, and carrying large quantities of ash, soil, rocks, and charred woody debris. Dissolved oxygen in the streamwater plummeted and, coupled with the fine ash that clogged their gills (see photo on page 14), the fish in Indios Creek and the Rio San Antonio suffocated in multitudes. Preserve biologists sampled Indios Creek the next day using electro-fishing equipment, and failed to find any fish at all—the fishery was wiped out. And this was just the beginning—during the next few weeks, more monsoon rains generated a half dozen ash-laden flash floods, hitting not only Indios Creek, but also Jaramillo Creek, Santa Rosa Creek, and the ephemeral drainages of the Rincon de los Soldados and the Valle de los Posos.

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Fall 2011

News from Los Amigos

Supporting the Valles Caldera National Preserve for Present and Future Generations

Summer Projects on the San Antonio & Jaramillo

by Virginie Pointeau, Los Amigos Administrative Assistant

The first part of Los Amigos' restoration projects along San Antonio Creek are finally finished, despite the recent fires. Although the Preserve closure during the months of June and July kept us from making progress on the ground and put us somewhat behind schedule, our wetlands and restoration specialists steadily worked during August to increase wetlands and protect the proper functioning of the stream along approximately 10 miles of San Antonio Creek, and to mitigate fire and flood damage. Thanks to their long days and hard work, we completed our restoration work by early September.

[Above] Craig working at the meander cutoff site. [Left] The completed work after a large flood washed over the project area. (All photos with this article are courtesy of Van Clothier, unless otherwise indicated.)

Craig Sponholtz of Dryland Solutions and Van Clothier of Stream Dynamics completed the "plug-n-pond" project located just upstream of San Antonio Cabin early in August, the first of the series of projects scheduled for this summer under two grants from the State of New Mexico and the EPA. This particular project consisted of restoring historic drainage from two tributaries to two small wetland areas along the creek, thereby increasing water flow to these areas and helping to expand the wetlands. The project was completed very efficiently, in one week's time, after which Craig and Van moved on to our "meander cut-off" project site, located off VC09, between the VC02 intersection and the Indios Creek crossing.

Meander Cut-Off

The meander cut-off project addressed one particularly tight meander on the San Antonio that, left unaddressed, would have sent a large headcut—with subsequent erosion issues—upstream. Rivers and streams

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Summer Projects on the San Antonio & Jaramillo

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naturally change shapes and locations within their floodplains over time. Through the ongoing process of bank erosion resulting from hydraulic action and abrasion, meanders become increasingly curved, until the curve becomes so tight that the stream will cut right through the meander. Deposition of sediment eventually seals off the old meander, which then forms an oxbow lake. While this is a natural process, in the case of this particular meander, the difference in elevation from one side to the other would have created a substantial headcut, had the stream been allowed to cut through. To avoid a large headcut and associated erosion, our restoration team designed a new pathway for the stream that essentially enlarged the meander, and prevented the cut-off from happening any time soon. Precision and skill in machine operation allowed the restoration team to transport the sod layer from the new channel area to the newly filled, old meander, effectively minimizing the visual impact of the work done, and accelerating plant recovery along the stream. The newly cut channel includes a couple of shallow riffles with several large boulders, followed by deeper pools for improved fish habitat. Grass plugs were carefully inserted into the muddy edges and between boulders so that by next spring, wetland grasses will have spread along the banks, and all evidence of the work done this summer will have virtually disappeared. (See photos on page 7.)

Indios

The third site for projects this summer was off VC09, at the Indios Creek crossing, where recent floods (intensified by the fire-scarred watershed above the creek) deposited enormous amounts of sediment and debris, caused some damage to the road, and increased pre-existing issues caused by damaged and collapsed culverts. Work at this site focused in part on the Indios Creek flood plain above the crossing, with the aim of lessening the force of the water by allowing it to spread out more, and subsequently minimizing erosion and other damage during flood events. Attention was also given to the road, where some re-engineering of the road and replacement of damaged culverts will greatly improve water flow, especially during flood events. (See photo above.)

Santa Rosa

The fourth project site along the San Antonio is addressing a series of headcuts along VC02, below Santa Rosa canyon. Several flood events in the weeks following the Las Conchas fire transported substantial amounts of sediment and debris across VC02, below Santa Rosa, and into the stream bed and surrounding flood plain. In some ways, the sediment load helped our project by partially filling in eroded areas and headcuts. Erosion remains a problem in the area, however, and our restoration team re-assessed and re-designed this entire project site following the fire, to take into account the effects of flood events intensified by the fire-scarred watershed. Rock structures designed specifically to stop erosion and mitigate further damage caused by headcuts were built in a number of locations along this section of the creek. Specifically, Zuni Bowl structures—so-called by New Mexico restorationist Bill Zeedyk, who got the inspiration from an original design by the Zuni people—are being used to stabilize headcuts and arrest their movement upstream. The restoration team may also use several other structure types, such as One-Rock Dams, which act to slow water flow, encourage plant growth by holding moisture, and help re-fill scoured areas below headcuts during further work to be done by our volunteers September 23-25.

We are pleased to report, that after a number of subsequent floods, all the

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From the Chair, Doug Fraser

I think we all feel as Milt McConnell did that the Las Conchas fire was an emotionally devastating experience for those of us who love the Preserve. The scientists tell us that it will recover, but the only thing that makes me feel better right now is that our Los Amigos team of experts, funded by our restoration grants, are out on the ground working to mitigate some of the damage to our riparian resources from the fire and subsequent floods.

Our wonderful members have been out working with them and they (54 in all!) came to hear one of our experts, Steve Vrooman of Keystone Restoration Ecology, discuss our projects and their impact on the Preserve, at our delayed Member and Oldtimers Picnic. We were pleased to also have a number of oldtimers attend, such as Richard Boyd who built the San Antonio Cabin in 1945.

Members listening to Richard Boyd at the Picnic. (Photo courtesy of Jim Gautier.)

Many thanks to our members, whose yearly membership dues support these now critical restoration efforts, and who actively participate in a variety of projects organized by Los Amigos to help restore the Preserve.

Summer Projects on the San Antonio & Jaramillo

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structures that were built this summer are working as planned.

Jaramillo Inventory

Van was in a plane over the Valle Grande on June 27, starting the inventory of Jaramillo Creek for another grant we have, when he saw the fire lapping at the edges of the Preserve (see photo on page 8). He was able to finish the plane ride, but the rest of the inventory, on the ground, had to be postponed until late August and early September. It is now completed and a team of our experts will decide in January which areas we need to work on to improve functioning along the Jaramillo.

Thanks to Our Volunteers

Many thanks and much appreciation are also due to the Albuquerque Wildlife Federation and their dedicated crew of volunteers as well as our Los Amigos volunteers who commit valuable weekends and put in hours of at times arduous physical labor (like carrying innumerable litters loaded with rocks across wetlands!) to Los Amigos projects. Thanks to the tireless enthusiasm of these volunteers, we have been able to make tremendous progress on our projects in relatively short periods of time. It's really quite phenomenal.

During the volunteer weekend August 19-21, everyone camped out at the San Antonio Cabin, and enjoyed a big, delicious breakfast on Saturday morning before piling into a few 4x4 vehicles and heading down the old pipeline road west of the Cabin, to the Tres Arroyos work site. Two headcuts initiated by culverts on the pipeline road

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New Price!

Order Your Morton Print to Help Restore the Bond Cabin!

Los Amigos de Valles Caldera is selling 350 signed and numbered 18" by 22" lithographs of *Peace in the Valle* by Gary Morton (see page 8). Each is $125, which includes shipping and handling. The proceeds from the sale of the prints will be used for restoration work on the Bond Cabin, such as pouring a new foundation, eliminating the drainage problem, etc.

To order, please see the Los Amigos website, *www.losamigosdevallescaldera.org*, or mail a check with your order to Print, Los Amigos, 3250 La Paz Lane, Santa Fe, NM 87507.

Prints will be given free to each new Los Amigos Lifetime or Obsidian Guild member.

Peace in the Valle
by Gary Morton

Summer Projects

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[Above] Working at Tres Arroyos. (Photo courtesy of Jack Crane.) [Below] Van and Craig working at the plug 'n' pond site.

had, over many years, cut their way up a slope wetland, eventually creating a small incised channel that effectively concentrated the flow of water out of the area and drained the wetland, subsequently causing a change in the species and ecology of the area. Our volunteer crew worked all day Saturday (in the rain!) to fill parts of this channel with grass plugs and stop several small headcuts with Zuni bowl rock structures. The grass plugs act to block the passage of water down this drainage, raise the water table, and force a more even flow back out into the meadow, where

we hope to re-establish consistent, widespread moisture and a return of wetland species.

We will again be working with our volunteers September 23-25 at Santa Rosa Creek, under the direction of Bill Zeedyk, and Steve Vrooman. Thanks to Michael Scialdone of AWF and Jack Crane of Los Amigos for arranging these excursions and to all the volunteers for making them so successful! And many thanks to Tim Haarmann, Ranch Manager of the Preserve, who has been so helpful and wonderful to work with!

Las Conchas Fire

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Large ash and mud flows also managed to cross the open valles, slamming into the Rio San Antonio in the Valle Toledo, as well as the East Fork Jemez River in the Valle Grande.

But all was not lost—surprisingly, while knocked back in numbers and diversity, aquatic insects managed to hold on, providing the nucleus of a stream invertebrate community that will support future fish populations. In addition, not all of the watersheds had been hit by the floods. The upper third of Indios Creek, unburned in the fire, still supported fish and invertebrates. Though hit by two large floods in late August, the upper Rio San Antonio still supported a trout population, albeit greatly reduced in numbers, as well as good populations of the native, non-game fish (Long-nose dace, Rio Grande sucker, and the Rio Grande chub). The grasslands of the Valle Grande prevented many of the ash slurries from reaching the riparian zone, although some particularly powerful flows reached the upper East Fork of the Jemez River. Fortunately, the trout populations here appeared to have survived just fine; initial post-flood sampling by VCNP biologists found abundant rainbow and brown trout of all different age classes. These refugia from the flooding will provide the post-flood colonists that will repopulate and restore the damaged streams' fisheries.

[Top right] Flash flood emerging from Indios Canyon and crossing the VC14 road in Valle Toledo, July 29th. Note ash and charred logs carried downstream by the floodwaters. [Above] Flash flood heading west on the Rio San Antonio from Indios Creek, July 29th. [Right] Front wave of floating ash on Rio San Antonio during flash flood, July 29th. Ash layer was moving slowly downstream with the current, emitting a low hissing sound from rubbing against the sedges and banks. Ten minutes after this photo was taken, the water level had risen to cover the entire floodplain. [Below] View of the north slope of Cerro Grande, showing the ash slurry's pathway down into the Rincon de los Soldados.

In addition, the floods that spread ash and hillslope sediments across the valle bottoms and riparian zones served as a natural fertilization event. Ash-derived minerals, nutrients, and charcoal are important soil components, and the sedges, rushes, grasses, and wildflowers will benefit immediately and long into the future from the soil's flood-driven en-

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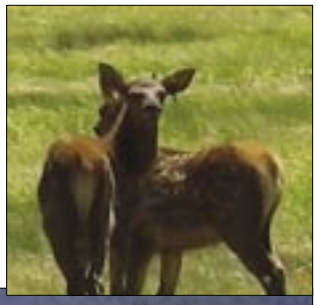
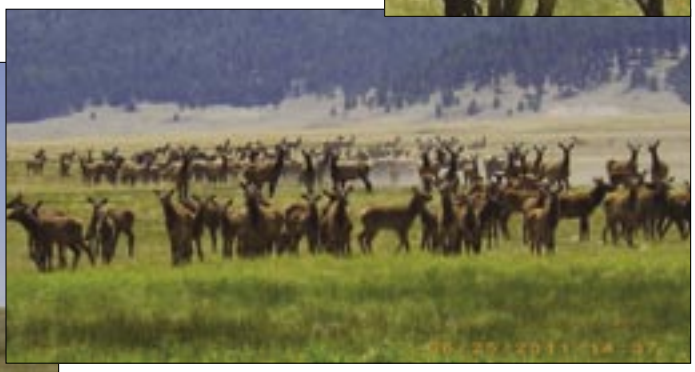
Witnessing the Fire

by Terry McDermott, Trust Communications and Marketing Manager





[Right and below] From the day before—the calm before the firestorm. [Left] McConnell took this photo from the East Fork about an hour after the fire began. (Photos courtesy of Milt McConnell.)

It was only a matter of time. Decades of fire suppression, untreated forests and severe drought set the stage for another major fire in the Jemez Mountains. All the elements were present but not even the most experienced of firefighters or learned of scientists expected what transpired after a tree fell onto a power line and sparked the Las Conchas wildfire of 2011.

New Mexico Trout member Milt McConnell was among those who witnessed the beginnings of the conflagration. McConnell and several other NM Trout members hosted fly fishing clinics on the Valles Caldera that Saturday and Sunday. That same weekend, the Santa Fe National Forest issued Stage III Fire Restrictions which prohibited campfires and other unsafe activities in the drought-stricken area.

"We were briefed on the Stage III restrictions Friday night," recalled McConnell. "Everyone was aware of the conditions."

After an idyllic Saturday coaching young anglers and taking a few photos of interested onlookers within the elk herd, McConnell and his team spent an uneventful evening at the Bunkhouse save for a curious bruin who toured the neighborhood.

The Sunday clinic was greeted with a sun-drenched, but windy, morning. After a few hours of instruction and lunch, the students journeyed by van to the East Fork to try out their newly acquired expertise. It was a little after one o'clock but southeast winds gusting to 40 mph were sweeping the bone dry Jemez Mountains.

"That's when we saw the first column of light blue smoke," remembered McConnell. "It looked like a campfire but I knew Stage III restrictions made that unlikely. So I told the group to be ready because we may have to leave."

The anglers managed, at most, one or two casts into the East Fork when the wind-driven fire triggered a radio call from Valles Caldera staff that transformed the fishing expedition into an evacuation.

"Everyone was calm, although my heart rate was slightly elevated," said McConnell. "I can tell you I never saw the Bunkhouse cleaned up that quickly before."

As McConnell drove to the Valle Grande exit he noticed that fixed-wing aircraft began monitoring the fire. By the time he reached NM Highway 4, law enforcement had closed off all southbound traffic. McConnell had to take the long way through Los Alamos to his Albuquerque home. As he wound his way around Frijoles Canyon, McConnell chanced to look back toward the fire which was beginning its march toward Bandelier National Monument and Los Alamos.

"I could see the wind fanning the flames," he recounted. "There was no stopping it."

The next day McConnell returned to his job as General Manager of Citadel Broadcasting where he heard a news report that more than 43,000 acres had burned during the first day of what was now officially dubbed the Las Conchas Fire. He remembered initial reports the night before estimated the number at 6,000 acres, and thought the morning news update was wrong.

"I told the newsroom guys to check their numbers. They told me they did. And they were right," said McConnell.

Since that first day, McConnell has viewed photos of the fire and where he once fished the Valles Caldera. He says the fire damage extends beyond the landscape to those who enjoyed the recreation on the Preserve.

"I know the Preserve will eventually recover," he said. "But right now, this is emotionally devastating."

After the Smoke Cleared

Monitoring Ecosystem Recovery

by Bob Parmenter, Director of Science and Education

[Above] Valles Caldera student intern Kelsey Yule (white hard hat) and Nando Lucero install a plant and insect monitoring site in a high-severity burn forest stand. Fence panels will keep curious wildlife from disturbing the insect traps. [Left] Kelsey Yule and Nando Lucero set up a plant and insect monitoring site in the burned grasslands of the Valle Toledo. [Below] One of the post-fire precipitation gauges (this one in Obsidian Valley) established to monitor watershed-specific rainfall events. Repeat photo sites and LiDAR GIS data are used for monitoring soil erosion. (All photos with this article are courtesy of the author.)

The Las Conchas fire has already inflicted a variety of ecosystem disturbances on the Valles Caldera National Preserve, and the legacy of this massive wildfire will influence the soils, watersheds, vegetation, and wildlife for years to come. As part of the science-based adaptive management process of the Preserve, the monitoring program for both natural and cultural resources shifted into high gear during and immediately after the fire. The objective was to assess the intensity and distribution of burned areas, and to establish a series of monitoring sites that would inform the Preserve managers of patterns and rates of ecological recovery, particularly with respect to the Preserve's watershed functions, vegetation production, wildlife populations, and fisheries.

With smoldering stumps and logs nearby, the science crew immediately moved into the post-fire burned areas to establish long-term monitoring plots. Field teams established vegetation transects in both burned and unburned ("control") sites to monitor the plant species, percentage cover, and biomass of the recovering flora. These transects were set up in the grassy valles, Ponderosa pine forests, and mixed-conifer forests. In addition, the teams installed a series of "pitfall" traps at each site to monitor the surviving populations of ground-dwelling arthropods (particularly beetles, grasshoppers and crickets, spiders, millipedes, centipedes, etc.); these species of beneficial and pest arthropods will indicate the speed and direction of successional changes during recovery of the post-fire forests and grasslands.

At the same time, Scott Compton, the VCNP's Hydrologist, began installing precipitation gauges in the watersheds of the burned forests. The goal was to document the actual watershed-specific amounts of rainfall at each site, and relate these storm totals to flash floods and erosion rates documented with repeated photographs (before and after the monsoon rains). Additional research on soil erosion was being conducted by scientists from the University of Arizona's "Critical Zone Observatory" program; these scientists used on-site measurements of soil transport and deposition, along with remote-sensing data, to understand the patterns and processes of post-fire erosion.

In addition to surface soil impacts, the mon-

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Monitoring Ecosystem Recovery

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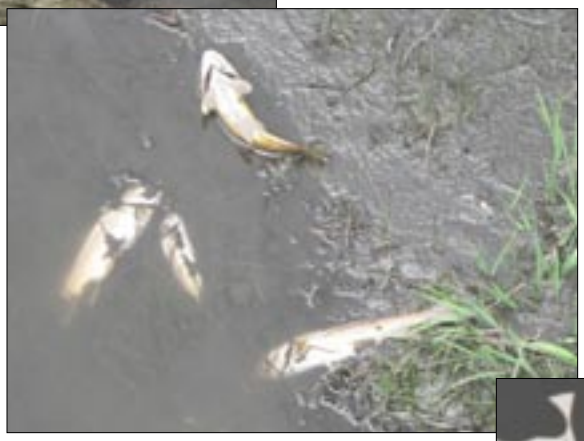

[Top] Scott Compton, Valles Caldera's hydrologist, inspects a water quality monitoring instrument (known as a "sonde") in the Rio San Antonio following a small flood event (note matted vegetation and ash deposits). [Above] Dead brown trout on the banks of the Rio San Antonio following a large flash flood on July 25th. [Right] View of the black ash-clogged gills of a suffocated brown trout from the Rio San Antonio following the flash flood of July 25th. [Below] Dr. Colleen Caldwell (USGS Wildlife Coop leader at New Mexico State University) and graduate student Matt Zeigler conduct capture-release fish sampling with an electro-shocker in Indios Creek on August 19th. They found that some brown trout had re-colonized the creek, but that densities were 95% lower than pre-fire populations.

soon rains had dramatic effects on the Preserve's watersheds through flooding and ash deposition. Following the fire, the science group augmented the existing stream water quality monitoring network of instruments to include the Indios Creek and upper Rio San Antonio near the Valle Toledo. These sites became the prime locations for flash floods, and the team was able to document both the initial impact of the floods on water quality, as well as the early stages of stream recovery.

The floods took a terrible toll on the Preserve's fisheries in the Rio San Antonio and Indios Creek. After the first flood in Indios Creek on July 25th, biologists sampled the creek and found no fish at all. Normally, the VCNP's streams support between one and three trout per linear yard of stream, and given that approximately 20 miles of streams were impacted by the floods, the loss of trout has been conservatively estimated at more the 30,000 fish. However, there was some good news—fish sampling conducted by USGS Dr. Colleen Caldwell and New Mexico State University graduate student Matt Zeigler in mid-August found some trout moving back into the flooded streams. But the density of the fish was only 5% of pre-fire values, indicating that full recovery was going to take several years. The other positive observation by Caldwell and Zeigler was that the native non-game fish (Long-nose dace, Rio Grande sucker, and Rio Grande chub) all seem to have survived in good numbers; these native species are apparently well-adapted to fire-driven flood events and survived far better than the non-native brown trout.

Finally, the stream ecosystem's invertebrate community, upon which the fisheries are based, appeared to have weathered the floods in reasonably good shape. Highlands University Professor Emeritus Jerry Jacobi assessed the aquatic insect assemblage shortly after the July floods, and found representative species of stoneflies, caddisflies, and mayflies, as well as aquatic beetles. While not as diverse or abundant as the pre-flood communities, these invertebrates showed that a substantial fauna had

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From Dennis Trujillo, Interim Executive Director

I admit that as I began my assignment as the Interim Executive Director, my immediate focus was on some of the more traditional aspects of management such as budget, strategic planning, workforce planning, and supporting my staff in accomplishing its programs of work. But, as the drought persisted, the Wallow Fire stole the headlines, and ignitions in New Mexico quickly became large fires, my attention turned to the extreme fire danger. In spite of all prevention efforts, which included restriction of access to most public land, a gust of wind toppled a healthy aspen into a power line during a windy Sunday afternoon and began the largest wildfire in New Mexico's history.

Wildland fire management has been a major emphasis of my career but, I confess, in my more than thirty years on the job, never have I witnessed a fire spread as rapidly or intensely over the landscape as I saw on the afternoon of June 26th when the Las Conchas Fire engulfed the Jemez Mountains. After all was said and done, fire burned 156,593 acres of which 30,034 were on the Valles Caldera National Preserve. Lush, green forests were replaced with what resembled a barren, black and gray moonscape from a 1950s science fiction movie. Monsoon rains soon followed, flushing ash and debris down vegetation-free slopes to flood low-lying areas and turn canyons into rivers of mud. Fortunately, the Stage III Fire Restrictions invoked just two days before the fire began kept many visitors off the back country trails and was a major reason no lives were lost. Another was the quick action by firefighters who alerted residents in the fire's path, some just minutes before the fire swept through their homes.

Since that day in June, the Las Conchas Fire and the aftermath have consumed much of my energy and that of my staff. However, it is time to look forward and to redouble our planning efforts for landscape restoration and public access. Both these huge planning efforts were significantly impacted by the fire and will require some adjustments in order to integrate the changes to our landscape into the final plan. The Las Conchas Fire certainly emphasized the urgency of restoration and reduction of the landscape's vulnerability to wildfire. In addition to completing long-term plans for the management of natural resources and public access, I shall also focus on development of a strategic plan and workforce that will improve the efficiency of our management and accessibility to the public.

Emeritus Professor Jerry Jacobi and Valles Caldera student Kelsey Yule sample aquatic invertebrates in the Rio San Antonio after the July 29th flood. Inset: stonefly larva that survived the flood event.

Monitoring Recovery

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survived and would provide the nucleus of the future reconstruction of the stream ecosystem.

Thus, within days of the last whiff of smoke, the monitoring network of the natural resources on the Valles Caldera was up and running. In addition, the activities of ongoing wildlife monitoring, such as the elk calf survivorship study, the turkey study, and dozens of research projects by outside university scientists, continue to augment the Preserve's monitoring programs in the post-fire environment. Taken collectively, these projects will provide a highly detailed understanding of the positive and negative impacts of the Las Conchas fire, and will assist in guiding Preserve managers in planning and implementing future activities for decades to come.

Las Conchas Fire

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richment. This enhanced plant growth will, of course, be attractive to wildlife, supporting a wide range of herbivores and pollinators. Thus, while the flood-impacted riparian areas may appear to be devastated now, their scars will quickly heal and lead to a more productive and diverse riparian ecosystem.

The Post Fire-and-Flood Preserve

Though the final analysis has yet to be written, it is clear that the Las Conchas fire in the Preserve has, in many places, proved to be beneficial to both ecosystem processes and management objectives. In low- and moderate-burn severity areas, fuel loads within the grasslands and the forests have been reduced, greatly decreasing the probability of near-term future fires. This will give managers time to continue forest restoration and the reintroduction of natural fire cycles needed to maintain healthy forests. The areas of high-severity fire have already begun their natural recovery, with aspens sprouting throughout the burned forest patches; in several years, the standing dead trees will have fallen, and montane meadows will cover the now-bare slopes. The streams will soon run clear again, and the fisheries will re-establish. Wildlife, from elk to butterflies, have already begun to re-colonize the burned forests and grasslands.

Lessons

The Las Conchas fire has taught us many lessons, not the least of which is that "unhealthy" forests, with high fuel loads and uninterrupted contiguous fuel distributions across the landscape, are prime real estate for history-making uncharacteristic wildfire on a previously unimaginable scale. Las Conchas is but the most recent example of this type of fire in the Jemez Mountains; Cerro Grande, Dome, and La Mesa have preceded it. Enormous efforts will be needed to restore the remaining forests on the Preserve and the western Jemez Mountains before the next ignition unleashes another uncontrollable fire. The newly begun Southwest Jemez Collaborative Forest Landscape Restoration Project, funded through USDA from a Congressional Act sponsored by Senators Jeff Bingaman and Tom Udall, is now attempting to restore Valles Caldera and Jemez Ranger District forests in a strategic manner, working first on selected areas that could impede the spread of wildfires. Working with many collaborating agencies, universities, and non-governmental organizations, land managers hope to "beat the clock" and restore sufficient areas of the Jemez landscape before the next giant fire explodes. It's already a tight race, made even more so given the long-term drought gripping New Mexico, and the prospect for a second-straight dry La Niña winter-spring for 2011-2012.

North side of Cerro Santa Rosa, showing typical patchiness of a mixed-severity burn (August 4th) that will initiate long-term successional processes (mountain meadow to aspen stand to mixed-conifer forest).

We know that the forests of the Jemez Mountains will burn, but we're working to ensure that they'll burn under our terms, not Nature's. We'll see what the future brings...

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