

Hooded lady's tresses
(*Spiranthes romanzoffiana*)
are one of several orchid
species known to grow in the
San Francisco Peaks area.

WHERE THE WILD ORCHID GROWS

The number is counterintuitive, but Arizona ranks third in the nation in terms of plant diversity, with nearly 5,000 different species. Of that number, more than 800 grow in the San Francisco Peaks, including Franciscan bluebells, mountain monardellas, monkeyflowers, graceful buttercups and an orchid commonly known as hooded lady's tresses. There's a lot to see in the mountains, so we sent our writer and photographer out to have a look.

BY ANNETTE MCGIVNEY | PHOTOGRAPHS BY EIRINI PAJAK

GLENN RINK IS A GUERRILLA BOTANIST. While more traditional scientists are in their labs, staring at computer screens and studying DNA models and species databases, Rink is out in the wild, in search of the real thing. He has a reputation among naturalists in the Southwest for hiking far and fast — and for disproving widely accepted assumptions about Arizona's plants. Rink's old-school, boots-on-the-ground approach to botany has led to the discovery of new plant species and expanded known ranges for others. And he doesn't just study plants; he experiences them.

"I hike to look at plants," Rink says as photographer Eirini Pajak and I traipse behind him. We are approaching a pond in Lockett Meadow where Rink suspects some orchids might be hiding outside their usual habitat.

It's the third week in August, and the high meadows in Northern Arizona's San Francisco Peaks are in the ecological equivalent of the over-full condition humans experience following Thanksgiving dinner. After two months of steady monsoon rains and a nonstop pollen fest, the bees are in a food coma amid a profusion of spent flowers and lush grasses bending under their own weight.

Once at the pond, Rink kneels in the grass and cups his hand around the delicate white flowers he spotted at a distance. "*Spiranthes romanzoffiana*," he declares — an orchid commonly called hooded lady's tresses. "But I have no idea what *this* is." Rink is now focused on a nearby flowering plant. He takes off his worn daypack and pulls out his "plant press," a low-tech affair composed of two pieces of cardboard, some twine and newspaper. He places the mysterious plant between sheets of newspaper and sandwiches them between the cardboard. He'll study it later. On this day, our quarry is the graceful buttercup (*Ranunculus inamoenus*), an elusive plant I've wanted to see for years.

With its alluring name and delicate yellow flowers, the graceful buttercup has become something of an obsession for me. In all of Arizona, it grows only in a few places high on the San Francisco Peaks. And while species databases report its existence, none of my many scientist friends in Flagstaff have ever seen it during their hikes.

Unlike the common paintbrush and lupine, the graceful buttercup is stealthy. Its growing season is short, and it blooms during the peak of the monsoon, when hiking up to the plant's possible hiding places is treacherous due to lightning danger. Yet the hazards don't seem as daunting as the fact that even if I get to where the field guide says the graceful buttercup exists, I might not be able to recognize it. Despite two decades of hiking in the Peaks, my ability to identify the area's plants is sorely lacking. I want to get to know this and other unique flora on the mountain. And, fortunately, the guerrilla botanist has agreed to help me.

From Lockett Meadow, Rink, Pajak and I hike up a staircase of switchbacks toward the grassy bowl of the Inner Basin. Stands of closely spaced aspens form a ceiling of green leaves overhead, and the multitude of white trunks are dappled with shadows and sunlight. Rink frequently wades through knee-high ferns in the aspen stands to look at a flowering plant under a hand lens he carries around his neck.

"It's hard to get anywhere with a botanist," Rink jokes when we're back on the trail. Rink, 59, is far too absorbed in his surroundings to keep up with his reputation for speed hiking. After working two decades as a Grand Canyon river guide and studying geology in college, Rink changed gears and got a master's degree in botany from Northern Arizona University. "I liked to hike, and I wanted to know what I was looking at," he explains of his fascination with South-

BELOW: Deezchiil Benally, age 7, joins her family on a trip to the San Francisco Peaks to collect plants for use in Navajo medicine.

BELOW, RIGHT: Whipple's penstemons (*Penstemon whippleanus*) can be found in the Peaks' alpine and subalpine zones.

OPPOSITE PAGE: Below Snowslide Spring, botanist Glenn Rink stops to take in the view, which includes the Inner Basin and O'Leary Peak.



western flora. When he's not out in the field, tracking down species, Rink is at NAU's Deaver Herbarium, cataloging the many specimens he's collected.

Soon enough, we stop to look at another plant: creeping Oregon grape (*Berberis repens*). Its vines are draped over a lichen-covered cliff along the trail. There are plump berries growing next to the plant, and we pop a handful in our mouths. Rink points out that the creeping Oregon grape is a popular traditional medicine for the Southwest's Native American tribes, several of which have long used a decoction of the plant's roots to treat everything from bladder infections and venereal disease to scorpion stings.

In addition to roving field botanists like Rink, those most familiar with the many plant species on the San Francisco Peaks are members of the 13 Native American tribes that hold the mountains sacred. The plants not only comprise their traditional pharmacy but also are a tangible connection to their spiritual stronghold. Of the more than 800 different vascular plant species growing in the area, 237 have medicinal or spiritual uses for surrounding tribes. That's according to a 2006 study by New Mexico-based ethnobotanist Kristin Henningsen, who researched the connections between Peaks plants and Native American tribes for her master's thesis at NAU. Henningsen's extensive survey found more than 1,300 applications of the area's plants for all manner of physical, emotional and spiritual ailments, as well as for cultural ceremonies.

"The San Francisco Peaks' ethnobotanical ... significance is unparalleled in the Southwest," Henningsen writes, "and as such, deserves the same reverence today that native peoples have shown for thousands of years."

Many modern medicines trace their origins to plants. Aspirin is based on a compound found in the perennial herb meadow-sweet, and morphine and codeine are still made from poppies. Plus, many new anti-cancer drugs are derived from plants. Ethnobotany, the study of how plants are used by indigenous cultures for medicines and other purposes, is often associated with the ecologically rich rainforests in the Amazon. But in the Southwest, the Peaks are an ethnobotanical treasure chest unlike any other in the United States.

When we reach the Inner Basin, at an elevation of 10,000 feet, it looks more like fall than summer. The flowers are few and far between, and the meadow is thick with tufts of green grasses starting to turn gold. "The grasses are coming into their own," Rink notes. He explains that all seed-bearing plants have flowers. "Grasses are flowers. They're just not very showy," he says. "When I first started fooling around with plants 20 years ago and noticed that all plants had flowers, it opened up a whole new world to me."

The rest of our route will be off the trail, as we climb another 1,000 feet to a tiny oasis called Snowslide Spring. My extensive online digging turned up a few reports of the graceful buttercup being spotted here in July a few years ago. But Rink is worried that in our attempt to wait out the monsoon and avoid lightning danger, we might have missed the window for seeing this sneaky plant, assuming that it was ever there at all.

Part of what makes the Peaks so ecologically diverse and unmatched as an ethnobotanical resource is their many "life zones." In 1889, biologist Clinton Hart Merriam famously

In the Southwest, the Peaks are an ethnobotanical treasure chest unlike any other in the United States.



ABOVE: Jones Benally explains the medicinal uses of some of the San Francisco Peaks' plants to his granddaughter, Dyathi; his son, Clayson; and Clayson's infant daughter, Zonnie. Benally has made traditional Navajo medicine his life's work.

OPPOSITE PAGE: The raggedy-looking San Francisco Peaks groundsel (*Packera franciscana*) has been found high atop the Peaks — and nowhere else.

described six distinct ecological zones in Arizona that were defined by elevation and latitude. The San Francisco Peaks contain the upper four zones, each with its own distinct variety of plant life. On our hike, we started in the ponderosa pine forest, then moved into the mixed conifer forest, and now we're gasping for air as we climb to the top of the subalpine conifer forest. Making our way up a gully of sharp volcanic rocks, we look for signs of flowing water. In a place so close to the treeless alpine tundra, a spring seems impossible.

But I spot increasingly large patches of green in between the rocks ahead and start to feel hopeful. Soon, we hear water trickling over rocks and find ourselves standing amid a lush carpet of yellow monkeyflowers. We stick our hands in the icy water and follow the narrow stream toward its source, perched just below the tree line at the base of Agassiz Saddle.

"Could there be a skunk up here?" I ask Rink, perplexed by a sudden musky smell that fills my nostrils.

"No," he laughs. "It's the *Primula*." We are surrounded by Parry's primroses (*Primula parryi*), which have beautiful hot-pink flowers that emit a noxious odor.

We also come across mountain monardella (*Monardella odoratissima*), an herb that smells refreshingly minty. Rink says it's used by the Hopis as a tea and food spice. The Paiutes use it as a cold remedy and for indigestion.

"Try this," Rink says as he pulls fat green leaves off a plant with tiny lavender flowers. He puts a leaf in his mouth and offers another one to me. "It tastes like spinach," he adds.

The Franciscan bluebell (*Mertensia franciscana*) not only tastes like spinach, it's also a powerful plant used in traditional Navajo ceremonies. It serves as a fumigant to treat various ailments and is rubbed on the body to protect against witches.

But so far, there's no sign of the graceful buttercup. While Rink walks around hunting for unusual species and Pajak makes photos of flowers, I sit on a rock next to the spring and look east, upon the vast expanse of the Painted Desert far below. Islands of pastel colors extend all the way to the horizon, where the Hopi mesas sit like tabletops against the blue sky. Just behind me, Humphreys Peak rises to 12,633 feet and dark clouds congregate around its summit. A hawk circles overhead as a soft, slow thunder sounds like drumbeats emanating from within the mountain, rather than above it. I think about what Leigh Kuwanwisiwma told me a few weeks earlier during my visit to the Hopi village of Hotevilla-Bacavi atop Third Mesa.

"Our relationship with the Peaks is ancient," he said. "We have been utilizing the plants and all the resources of the mountain for more than a thousand years. It is where the Katsinas and the cloud priests live, and we pray to them for rain. We pray to sustain our way of life."

KUWANWISIWMA, THE HOPI TRIBE'S longtime cultural preservation director, invited me to the Home Dance ceremony in late July in Hotevilla-Bacavi. The annual dance is held in communities across Hopi land and is a ceremonial send-off for the Katsinam — spirits that live on the Hopi mesas for part of the year, then return to their home on the Peaks.

Kuwanwisiwma said there are 12 ceremonial shrines on the Peaks where Hopis give prayer offerings. He also makes regu-



lar pilgrimages to the Peaks to gather wild tobacco, flowers and spring water for ceremonial purposes. "Pilgrimages happen year-round, even in winter," he said. But one of the most important gathering rituals on the Peaks is the Home Dance. Men meet in the village kiva to pray and then journey to the Peaks to collect spruce boughs for the dancers to wear during the ceremony. They adorn themselves with the alpine essence of the mountain.

During the Home Dance, I stood at the edge of the crowded village square while others sat atop flat-roofed houses to get a good view. Dancers wore handmade sacred objects called Katsina friends, along with feathers and fox pelts. Wreaths of spruce boughs were wrapped around their necks, and spruce branches protruded from armbands. The dancers shook gourds intended to sound like rain and threw gifts of fruit and bread into the audience to symbolize prayers for a plentiful harvest. The Hopis believe the rain allowing them to dry-farm in their high-desert home emanates from snow on the Peaks. And it doesn't happen by accident.

"The Peaks are all about praying for rain," Kuwanwisiwma said. "If we petition the cloud priests with respect and humility, our prayers will be answered."

When the Arizona Snowbowl ski resort began making artificial snow from reclaimed water in 2012, Kuwanwisiwma said, it "put a dagger into Hopi spirituality." For more than a millennium, the tribe had maintained a sacred relationship with the mountain so the cloud priests would reward it with lifesaving moisture. And now, that miraculous moisture was being churned out by a machine using water from Flagstaff's toilets. But the pilgrimages to the Peaks, the ceremonies and the prayers continue. The mountain still has medicine.



When I was watching the Home Dance, I kept my eye on the Peaks some 100 miles away, where the summits were cloaked in heavy, gray clouds. The dancers' songs were like an echo that traveled uninterrupted from Third Mesa to the mountain and back. By the time I was walking to my car that afternoon, it seemed the prayers had been heard. A curtain of rain drifted up from the south and across the Painted Desert to Hotevilla-Bacavi. Fat, wet drops fell from the cloudless sky.

TRADITIONAL NAVAJO HEALER JONES BENALLY has been gathering plants from the Peaks for most of his 80-something years. He's not sure exactly how old he is, because he was born in the Navajo community of Big Mountain before the days of birth certificates.

"I know I was born in the winter and on a Sunday," he tells me as we walk toward Schultz Tank at the base of the Peaks. I've joined the Benally family on a collecting trip to learn more about their connection to the mountain's plants. With us are Jones' wife, Berta; son, Clayson; daughter, Jeneda; and three grandchildren.

When he was a boy, Jones learned how to use plants from his mother and grandfather, both medicine practitioners. He's devoted his life to working as a traditional healer, offering plant medicine, prayers and ceremonies to patients. He came out of retirement to treat patients at the Winslow Indian Health Care Center. He's also internationally acclaimed for performing hoop dance ceremonies. Now, Jones is passing the knowledge on to his children and grandchildren.

But it's becoming increasingly difficult for the Benally family to find undisturbed places on the mountain where they can carry out their traditions, due to numerous fires on the Peaks and the snowmaking at Snowbowl.

"We are nervous to pick, because the medicine could be poisonous," Jeneda says of places where fire retardant was dropped on the landscape. And they believe the reclaimed water used to make snow contaminates the plants on a spiritual and physical level. But the family feels comfortable in areas of the Peaks that remain undisturbed by fire and development.

Jones tells me how he's used plants he gathered from the Peaks to effectively treat patients who were not helped by modern pharmaceuticals. I ask him what plants he used, imagining some obscure species in an inaccessible place.

"Everything," he says, motioning to what look to me like weeds along the road. "This is medicine. The medicine is everywhere." But, he says, the higher a plant is on the mountain, the more powerful its medicine is. I think of the graceful buttercup.

When we reach the far edge of the tank, the family spreads a blanket in the grass. As they sit, Clayson pulls his traditional drum out of a bag. Jeneda's two daughters cradle Navajo baskets to hold what they gather. But first, they will sing as part of their ritual.

"You have to pray before you get the medicine," Jones says. "And you can't yank the plant out of the ground. You must ask it

The Rusby's milkvetch (*Astragalus rusbyi*) is known to grow only in two locations, both in the Flagstaff area. Its main population is on the south and west sides of the San Francisco Peaks.

if it is OK to be picked. The plants know their purpose."

As he watches his granddaughters walk through the meadow, looking for lobster mushrooms to put in their baskets, Jones leans on a tree root he's using for a walking stick. He looks up at Fremont Peak, where puffy rain clouds hug the summit, and it occurs to him that I'm probably thinking too narrowly about the concept of medicine.

"The medicine is for the wildlife, too," he says. "Even the bees. We all use it."

THE MAGICAL OASIS OF SNOWSLIDE SPRING is a hard place to leave. But increasingly ominous skies above and below us, along with a chilly wind, are bringing our guerrilla botany expedition to a close. Despite hunting for the graceful buttercup for several hours, Rink, Pajak and I have had no luck. But Rink has collected, in his plant press, several interesting species he'll study back at the herbarium. And Pajak has infused her clothes with the skunky smell of Parry's primroses by lying on them to photograph other plants.

Before hiking down, we eat a late lunch while looking out on the Painted Desert. From our 11,000-foot perch, we have all six of Merriam's ecological zones in view. Storm clouds seem to slide down the Peaks and out onto the desert floor, where they drift and dance, pulling a gray veil of rain behind them.

"I love being up here in this place on the planet," Rink says.

As we put things in our daypacks, sunlight pushes the clouds apart between Rees and Doyle peaks below us. And suddenly, a ribbon of color appears between these distant summits, giving us a rare view of a rainbow from above.

We arrive at the Inner Basin at sunset, and the meadow grasses are electric with golden light. There is no more time to linger looking at plants if we want to make it back to the trailhead before dark. But just before we head down into the aspen stands, Rink sees something that stops us in our tracks.

"There it is," he says. "*Ranunculus*." The graceful buttercup.

The plant contains just a few green leaves on a tiny stem rising from dead leaves along the side of the trail. There are no tiny yellow flowers. Rink says it looks like an elk ate the blooms. And it doesn't surprise him that the plant is not where the computer databases say it's supposed to be. Such is the nature of guerrilla botany.

At dusk, we're still about a mile from the trailhead, and it's almost dark in the dense aspen stand. I see something black moving between the trees. Rink and Pajak see it, too, and we stop to discern the creature in the fading twilight.

It is a fat, adolescent black bear, leisurely walking through the woods about 100 yards away. We stand frozen and silent, watching in fascination. The bear catches our scent and pauses momentarily to stick its nose in the air. But it's unconcerned. The bear drops onto its back and scoots across the ground, pushing its snout into flowers and ferns, getting its fill of the mountain's medicine. Then it scrambles back onto all fours and ambles down a hillside, into the darkness. **OH**