

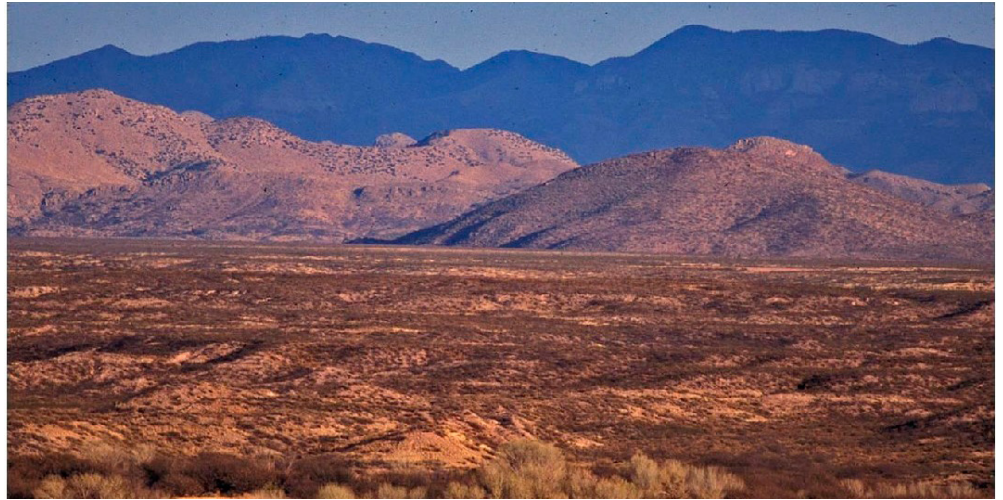


# Our Stories

## *Southwest Science Applications*

### **Wildlife Refuge Manager Bill Radke Protects Rare Species with the Help of Science**

*Builds Win-Win  
Relationships with Border  
Patrol, Landowners, and  
Vulnerable Habitat*



*Photo Credit: W. Radke, USFWS. View across the San Bernardino National Wildlife Refuge toward the Sierra San Luis in Chihuahua, Mexico. The Rio San Bernardino riparian corridor is the headwaters of the Rio Yaqui, which provides habitat for a host of endemic species.*

Tanned, blonde and rugged--think part California surfer, part Western cowboy--wildlife biologist Bill Radke has a love affair with the environment and a mission

to protect it. Wearing his official uniform, a camera bag slung over his shoulder, and a disarming sense of humor, he is all suited up for a day's work in Southern

Arizona's Cochise County.

Work could be anything from monitoring wildlife trends with digital photography, to collaborating with local ranchers on restoring wetland habitat, to seeking cooperative solutions in a border region where landscape protection and national security interests sometimes clash. It helps that Radke, an ecologist and manager at the U.S. Fish and Wildlife Service (the Service) for three decades, is also a sworn officer of the law. "We want to get the bad guy—but do it in an environmentally sensitive way," he says.

Radke is in charge of the San Bernardino National Wildlife Refuge (NWR) and the Leslie Canyon National Wildlife Refuge in the small Rio Yaqui watershed, which bumps up against the U.S.-Mexican border at Sonora. The Service acquired these lands in the 1980s to catch and store precious water resources and provide habitat for eight species of native fish, some of which are federally-listed as threatened or endangered.

For thousands of years the valley wetlands have attracted a variety of creatures--some with fins, some with four legs, some with two. A large colony of lesser long-nosed bats live in the adjacent mountains and visit the watershed



*Photo Credit: W. Radke, USFWS. Refuge law enforcement officers work cooperatively with U.S. Border Patrol agents and others to prevent smuggling, ensure public safety, and help provide national security in an environmentally sensitive manner along the southwest border.*



**Photo Credit: USFWS. William Radke, Refuge Manager of the San Bernardino and Leslie Canyon National Wildlife Refuge in the southwest borderlands, assisting with research on rare gila monster lizard.**

nightly to feast on flowering agave plants. More than 355 documented migratory birds have dropped by to quench their thirst and refuel their batteries en route to cooler points north.

An occasional endangered ocelot or jaguar wanders over the border to spend a little time on the refuges, and several of their non-endangered cousins, including mountain lions and bobcats, call the refuges home. Radke and his science-based management team use non-invasive digital trail cameras to document the passage of these and other mammals through the U.S.-Mexican corridor.

As for human traffic, “This was a very important trade route,” says Radke, recalling the region’s colorful past. “You can find seashells from the Sea of Cortez that certainly didn’t get here on their own.”

Long before Francisco Coronado, the Spanish conquistador, arrived with his army in 1540 to seek the fabled Seven Cities of Gold, the fertile watershed was a major passage for migrating tribes of Native Americans. Geronimo, the fierce Apache leader who fought the white man against daunting odds, used the valley as an escape hatch in the 19th Century—jumping back and forth between jurisdictions when U.S. and Mexican armies were both in hot pursuit.

## Climate Change

Tough as he was, Geronimo eventually surrendered to U.S. authorities. Today Southern Arizona faces a more intractable foe. “Climate change wasn’t on my radar screen when I came here 12 years ago,” says Radke.

For a dozen years, he and his team have been monitoring the groundwater, and the data are disconcerting. Water flowing in Leslie Creek through Leslie Canyon during the month of June relies on precipitation that fell on the Chiricahua Mountains the previous winter, and the decline in groundwater matches the decline in mountain snowfall. Winter snowstorms still turn the mountains white but the snow melts quickly, and there hasn’t been a significant snow pack for the last decade. As a result, the aquifers are not recharging sufficiently to sustain the watershed. The stream that used to serve up liquid refreshment to wildlife at the Leslie Canyon refuge all year round now runs dry except immediately after a thunderstorm.

## Science-based, Landscape-scale Conservation

Science based management requires making critical decisions in the face of uncertainty and incomplete information, and Radke and the Service are aggressively moving in that direction. In a world of accelerating climate change,

the Service aims to conserve landscape-scale habitats on a significantly larger scale and at a considerably faster rate. To ensure a bright future for fish and wildlife in the face of widespread environmental threats will require conservation efforts by many different individuals, agencies and organizations. Scientists and conservationists will work together to develop new approaches to scientific modeling and forecasting, test them in action, learn from experience, and continually improve.

“The world has changed over time. We know this from fossil records, so we can’t lock ourselves into thinking that everything will always be the same,” says Radke. “The Service’s emphasis on reinvigorating science through Science Applications, Refuge Inventory and Monitoring programs and similar efforts are helping reduce scientific uncertainty and help people deal with change, which tends to be a struggle for humans.”

He worries that as a society, we tend to get caught up in the blame game—a dangerous distraction at best. “We should be focusing on how we can be adaptable enough to survive changing patterns and trends, instead of debating whether or not climate change is manmade or whose fault it is,” says Radke.

Humor helps when it comes to finding common ground among divergent interest groups. As a boy Radke was



**Night camera captures images of visitors**

the class clown. As an adult problem-solver, he finds that poking gentle fun during a group presentation or one-on-one encounter diffuses the tension in the room and helps to personalize the conversation.

### Win-Win Solution

Climate change is a long-term issue, but for threatened habitats the future is now. A plan underway in Leslie Canyon is a promising model for environmental collaborations elsewhere.

When the water began drying up in Leslie Canyon, the Service collaborated with upstream landowners to protect threatened fish species. "Refuge planners didn't just establish a protected area and put a fence around the boundary. They were visionary in encompassing the whole watershed, and they viewed it as an entire landscape instead of just the occupied habitat for these endangered fish," says Radke.

The Service owns about 1/10 of the Leslie Canyon Refuge boundary acreage, which



**Photo Credit: USFWS/C. Lohrengel.  
Arizona Game and Fish Biologist  
Sharon Lashway and Refuge Manager  
Bill Radke working a pool in Rucker  
Creek.**

was essentially the occupied habitat for the fish. The remaining upstream land is privately owned. Over the last 12 years, the Service has purchased conservation easements on those private lands to make sure that habitats are available for these species within the entire acquisition boundary of the refuge.

*"It lets the Service have some control over the destiny of these fish, but it also gives landowners control over their own destiny. It isn't this clash between 'I want to ranch' or 'I want to protect endangered fish,'" says Radke. If the species continue to decline, the Service can move the fish on to private lands with available water in the form of stock tanks, springs, lakes, or ponds, most of which were originally constructed for livestock management. This positive collaborative relationship with others has led to a win:win formula for landscape conservation and endangered species recovery. ♦ By the Science Applications Team, USFWS*

For more information visit <http://www.fws.gov/southwest/refuges/arizona/sanbernardino.html>

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