

## Flower's mysteries stump researchers

No one's quite sure why plant blooms only on tiny plot of land

**By RUFFIN PREVOST**  
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CODY - More than 17 years after its discovery, researchers are still unsure why a rare flower is found only on a small patch of Wyoming badlands. But a federal land order announced last month has set aside 360 acres to protect the plant.

The desert yellowhead (*Yermo xanthocephalus*) grows on only about 50 acres administered by the U.S. Bureau of Land Management, and it is listed by the U.S. Fish and Wildlife Service as a threatened species.

The site in Fremont County between Sweetwater Station and Riverton is home to roughly 11,000 of the plants, said Dick Scott, a retired biology professor who has studied the yermo since 1991.

Scott, 66, and his wife, Bev, have for years taken an annual census in which they count every plant using a meticulous grid system. He also has measured the plant's vegetative growth, fruit production, flowering, dormancy and seed germination.

"What we still can't answer is what is this thing doing here?" Scott said.

A perennial herb in the sunflower family, the yermo grows well where it is found but has failed to spread naturally to nearby sites that seem equally suitable.

Its closest relatives, which are still notably different, thrive thousands of miles away in much wetter habitats. How the yermo came to be in Wyoming, but hasn't grown at seemingly ideal spots just miles away, remains a mystery.

"It's probably a relic population from many millions of years ago, when the climate was very different, and it's survived in this particular habitat since that time," said Robert Dorn, a Cheyenne botanist who discovered the yermo in 1990.

"It's probably different genetically from what it started out as originally, and probably evolved as conditions changed, ending up in this habitat with little or no competition," Dorn said.

The site's poor quality soil is highly mineralized and likely very salty, and barren except for the yermo, he said. Sites that may look similar could be different in ways not yet understood and thus are not suited for the plant's specialized adaptations.

Scott, who works as a consultant mapping rare plants and invasive weeds for the BLM, the Forest Service and other agencies, said Dorn's relic population theory is one hypothesis, but he thinks others are more likely.

His germination studies found that yermo seeds will sprout in a lab without requiring a cold treatment. A plant that survived millions of years, and several ice ages, would probably have evolved to lie dormant during cold periods before sprouting, he said.

He figures the yermo is more likely a hybrid, the result of a rare but documented kind of offspring known as an alliploid, which is produced when two separate parent species combine in a way that creates a reproductively viable new species.

It may also be the result of a more complex interaction between a cacalia, a group of plants also related to the sunflower, found in Mexico. That cacalia may have hybridized with an existing Wyoming plant to form the yermo, he said.

Yermo fruits are similar to the white, puffy parachutes found on dandelions that carry seeds aloft on strong breezes, Scott said.

"What if some guy came up from Mexico and brought his bedroll up and it had these type of fruits on it?" Scott said.

Dorn disagreed, saying the cacalias found in Mexico are "not anywhere close to being the same plant."

Scott said genetic testing would be the best way to learn the yermo's origin, but the process is costly and outside his field of expertise.

His efforts to count and study the yermo over the past two summers have been stymied by road closures into the area where the plant grows, Scott said. While he could walk in, hauling his bulky, heavy gear has been problematic.

The closures were made in 2005 to protect critical habitat for the yermo after opals were found in the area, said Sue Oberlie, a BLM wildlife biologist in Lander.

"It kind of set off a gold-rush fever, with people staking claims as allowed under the 1872 mining law," Oberlie said.

The highest-quality opals are gemstones that are as valuable as diamonds, and people were scrambling to stake mining claims in an area close to the yermo site.

"It was rather exciting there for a while," Oberlie said, adding that opal fever has since died down. But the roads into the yermo site are likely to remain closed, she said.

"It's good protection for the plant to keep those (closures) in place," she said.

Surface mining and other activities within the 360-acre yermo site are prohibited. But oil and gas could conceivably be extracted from beneath the site by drilling directionally from a safe distance, although no plans exist for such drilling, she said.

Scott said cowboys are generally careful to keep cattle away from the site, and he doesn't worry about the plants being gobbled by wildlife or livestock.

"We have noticed that essentially nothing eats it," including cows, antelope or wild horses, he said.

During a BLM meeting at the site, one curious woman chewed a few of the leaves, he said.

"Her throat and tongue went numb," Scott said, raising another mystery about the plant but also highlighting a reason to preserve it until it can be studied further.

Dorn agreed, saying that "the main reason for protecting things like this is it's a genetic resource that might be worth tapping someday."

"You don't even know what it has at this point. The work just hasn't been done," he said.

By the end of the year, Scott hopes to compile data from several different yermo studies, for use by the BLM. Oberlie said the agency does not have the budget to study the plant.

In the meantime, Scott said, he doesn't expect to stumble on any definitive answers to how and why the yermo grows only in one desolate spot.

"The more you learn about it, the more questions you start asking that you can't answer. That's been the pattern that all these studies have followed," he said.

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