Come explore with us! Its yellow flowers can maintain lower temperatures even during peak heat In southern Spain, summer heat can make life tough for a plant. The thistle Carlina corymbosa beats the heat by cooling its flowers to well below the temperature of the air around it. Carlos Herrera By Darren Incorvaia April 5, 2024 at 6:30 am In the sun-drenched mountains of southern Spain, one type of thistle seems to have built-in air conditioning. The flowers of this plant — Carlina corymbose — stay cooler than the hot air around them. Ecologist Carlos Herrera reports they are, on average, about 3 degrees Celsius (5.4 degrees Fahrenheit) cooler. But during the hottest part of the day, the temperature difference becomes even more extreme. The flowers can cool up to 10 degrees Celsius (18 degrees Fahrenheit). So, when the air reaches a blazing 45 °C (113 °F), the plant’s flowers can remain a relatively chilled 35 °C (95 °F). Herrera shared his findings February 13 in Ecology. “Those are substantial coolings relative to the air next to it,” says ecologist Christopher Still. He works at Oregon State University in Corvallis. He was not involved in the work, but says, “It’s a nice, careful study.” In Spain’s Sierra de Cazorla mountain range, scorching summers leave many plants dead, dried out or dormant. But in this brown sea, bursts of yellow thistle flowers peek above browned-out neighbors. On a recent trek through the mountains, Herrera touched one of the thistle heads. Even though it was the peak of the day’s heat, the bloom felt pleasantly cool. Herrera works at the Spanish National Research Council in Sevilla. But he was up in the mountains to study links between the region’s plants and their pollinators. He recalls bending over to touch the bloom because he “was checking for the presence of nectar in the flower head.” Weekly updates to help you use Science News Explores in the learning environment Thank you for signing up! There was a problem signing you up. But once he did, he became curious about why the flower felt chilled. He decided to find out more. Using an electric thermometer, he measured the temperatures of seven thistles across two different sites. Herrera checked each bloom many times and on different days. The flowers grew consistently cooler as the day heated up. Many plants beat the heat by letting water evaporate through tiny holes, or pores. This process is called transpiration. It’s similar to how people sweat to stay cool. There’s been little research on how flowers keep their cool. Most studies have focused on a plant’s leaves. And leaves don’t usually get cooler than the air around them. When they do, Herrera reports, the difference is less drastic than was seen in these thistle flowers. It’s certainly possible that the thistle cools itself down more than leaves, Still says. But because flowers and leaves are measured differently, it’s hard to say for sure.