

One Flower You'll Never Find in the Herbarium

by Carol Ann McCormick, Assistant Curator of the University of North Carolina Herbarium

The UNC Herbarium is a research collection of 750,000 pressed and dried plants. What does an herbarium specimen look like? If it's a wildflower, the entire plant is glued and sewn onto stiff, acid-free 11 ½ x 16 ½ inch paper. If the specimen is a tree, then a portion—a twig with leaves and flowers—is mounted on the paper. Bulky items such as pine cones or black walnuts are kept in acid-free cardboard boxes.

There are some plants that are collected infrequently. A plant may be rare, so botanists sparingly collect it. Or it may live in an inaccessible place—in the spray zone of a waterfall or as an epiphyte in the treetops—so botanists have a difficult time obtaining it. *Opuntia humifusa*, prickly-pear cactus, is downright painful to collect, and a botanist might just pass it by unless she has gloves to wear and a sturdy box to put it in. Poison ivy (*Toxicodendron*) is common outside, but less so in herbarium cases. The oil that makes this plant toxic persists for years, and one can get poison ivy rash from a herbarium specimen!

There is one flower, the Ice Flower, that will never be found in a herbarium—but not because of its rarity, habitat, or toxicity. I first encountered Ice Flowers several years ago along my driveway in Alamance County. One cold December morning, I was peeved to see Styrofoam packing “peanuts” scattered along a rocky east-facing bank uphill from Big Branch Creek. I got out to clean up the litter and discovered that these were not Styrofoam but delicate whorls of ice. Even more amazing, each whorl of ice was around the base of only one kind of plant: *Cunila origanoides*. There were plenty of other plants on the rocky bank—Christmas ferns, goldenrods, and melicgrass—but I saw ice whorls only at the base of the wild oregano plants.

A little research revealed that I am by no means the first to observe “Ice Flowers.”^{1,2,3} Ice Flowers are delicate ribbons of ice that encircle the stems of certain plants when the temperature falls below freezing. According to Forrest Mims, the flowers “are formed when liquid water inside [the plant] stem freezes and splits the stem open. Water and water vapor inside the stem is then emitted directly into the air, where it is transformed into a delicate ribbon of ice.”³

As I had observed, Ice Flowers do not form on just any plant.

But in my research, I found no explanation to why the ice forms on some plants and not on others. The association is not based on family. The plant best-known for forming Ice Flowers is frostweed, *Crocantemum canadense* in the Rockrose family.⁴ *Verbesina virginica* (white crownbeard) and *Verbesina alternifolia* (wingstem), both in the Aster Family, form Ice Flowers.^{1,2} “My” Ice Flower plant, wild oregano, is in the Mint family.

How big are Ice Flowers? I mistook the smallest ones for packing “peanuts,” but the largest were fist-sized. When do Ice

Flowers form? I first noted them in a cold spell in mid-December. On a walk at 8:30 p.m., I shone a flashlight beam on the rocky bank, and tiny whorls of ice were beginning to form. How long do Ice Flowers persist? Once the morning sun heats the forest floor (8:30 a.m. on this particular slope), the delicate whorls melt away. Where do Ice Flowers form? The only place I've seen them form in my forest is along a 50-foot stretch of my driveway where *Cunila origanoides* flourishes. I must point out that I am not typically hiking at 7 a.m. on January mornings, so perhaps they “grow” elsewhere! At a meeting of Garden staff last January, I asked if anyone else had noted Ice Flowers. Most people admitted they'd never heard of, much less seen, the phenomenon.

I noted Ice Flowers frequently in December and early January but not afterward. I hypothesize that as winter progressed, the wild oregano stems dried out, so less water and sap was available for freez-

ing. Clearly I have many more questions than answers about Ice Flowers, but I urge you to be on the lookout for these ephemeral, never to be collected “flowers.”

Sources and Notes

1. Means, D. Bruce. 2004. Blossoms of Ice. *Natural History*: 113(1): 36-37.
2. Means, D. Bruce. 2004. Nature's hidden works of art. *Tallahassee Magazine* 26(1): 81-85.
3. Mims, Forrest M., III. 2003. Frost Flowers. www.sas.org/E-Bulletin/2003-12-19/mimsci/body.html.
4. Botanists now recognize the genus *Helianthemum* as an Old World genus, and our Eastern North American frostweeds are placed in the genus *Crocantemum*.



Photograph courtesy of D. Bruce Means. For a gallery of photographs of Ice Flowers, go to http://www.brucemeans.com/photo_iceflowers.htm