

This is the report I sent to Suzy Spenser

I spent much of yesterday after noon looking at the white pollen sample. I am listing this samples as 11-28-2022. I will work on the Orange samples in the next few days.

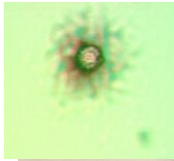
The dingy-white pollen was very interesting to examine.

I checked mostly under 40X power but also include photos from other powers as listed in the picture taken of the samples.

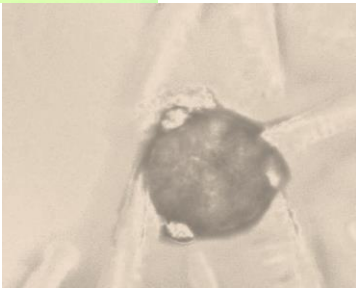
Here is what I think I can say with a lot of confidence.

The grain of white pollen is round and very uniform in size thorough out the sample.

I could see three pores on the grains examined that appear to be round. The surface is very interesting. It seems to be netted and pitted. See the close up's at 100x. Pollen size is small 20-30 μm if my scale is close.



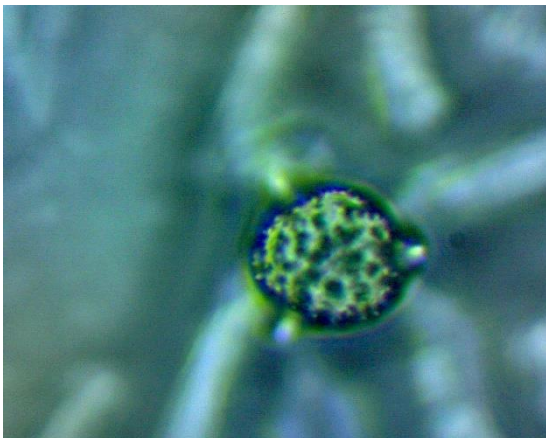
Picture of a grain at 4/0.10 40 power



A grain at 40/0.10 400 power

I used Ronald O. Kapp's Pollen and Spores guide to help in pollen identification. His guide indicates this grain is a tricolpate type: Number of pores, three, usually three located on the equator. This is a black & white picture of a white pollen grain you sent.

His book lists "The pollen for the following families are typically tricolporate: Ranunculaceae, Rosaceae, Aceraceae, Cruciferae, Laiatae, Geraniaceae, Saxifragaceae, Portuaceae, Primulaceae, Saxifragaceae, Portuaceae, Primulaceae, Fagaceae, Violaceae, Verbenaceae and many other families.

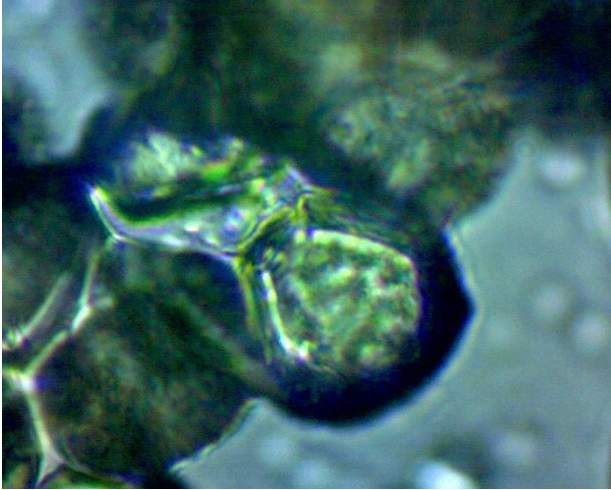


40/0.10 400 power Same grain color enhanced

Color enhanced

But there are other features of a grain of pollen that can help reduce the search for the plant producing this pollen shape and pores.

The outside wall of a grain of pollen can have a number of sculptural elements and patterns.



It is difficult to see a close up of the exine of a pollen grain. First of all when examining a grain under the microscope the focal plane brings only parts of the pollen grain into focus. The photographs that follow were taken at a higher magnification to determine the elements and patterns.

In order to use the guide I had to make a determination of what term to use for identification classes. The id is based on the location where taken, time of year, the guide and degree of magnification.

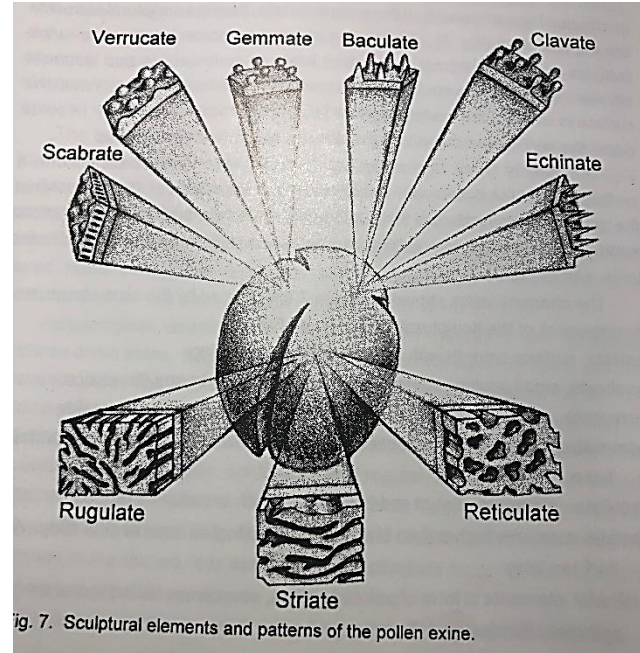
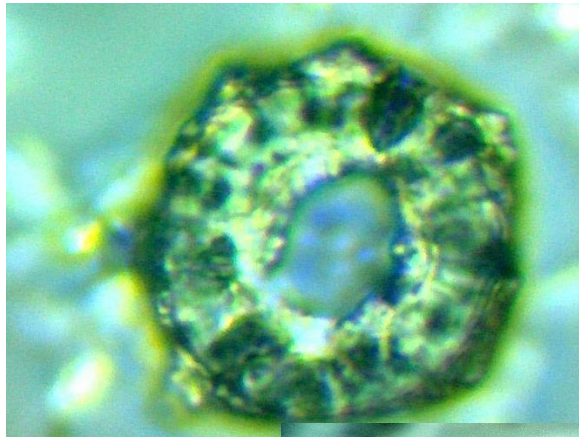


Fig. 7. Sculptural elements and patterns of the pollen exine.



I was fortunate to find a view of a pore using the 1000 power magnification. The surface of this pollen grain did not match up with a number of surfaces shown in the guide. Maybe the closest is the one identified as Reticulate.



These are 100/0.10 1000 power magnifications.

Reticulate seems to fit the choices I had.

Clearly the edges of the pore protruded above the surface which was very pitted

and ridged. Now the search is on to find the source.

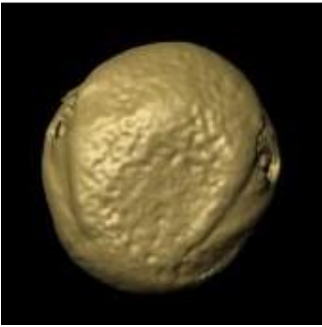
This pollen sample was taken in Raleigh, North Carolina at Oakwood Cemetery 11/28/2022.

What flowers were or could be in bloom at that time?

Some early blooming winter plants in the Raleigh area.

White clover (*Trifolium repens*)

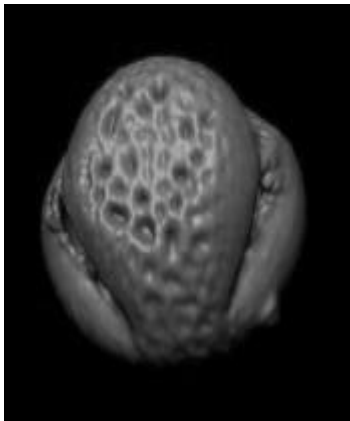
I observed clover blooming at the post office on Falls of the Neuse Rd. and Strictland Road in mid December. One dandelion was also visible with just a touch of yellow if you look close.



The little bit of yellow showing is a dandelion plant just beginning to bloom. 12-14-2022

We have had a warm early January and bees have been bringing in a lot of pollen from different sources.

Willow (*Salix alba*) From Wikipedia, the free encyclopedia



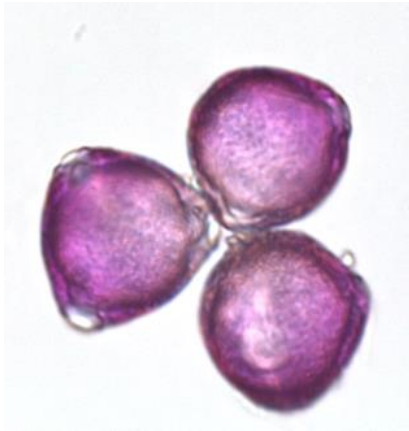
One of the early trees to bloom is the willow tree family. There are many trees in the *Salix* family. They grow along streams and range from weeping willow to black willow.

Salix alba, the **white willow**, is a species of [willow](#) native to [Europe](#) and western and central [Asia](#).^{[1][2]} The name derives from the white tone to the undersides of the leaves.

It is a medium-sized to large [deciduous tree](#) growing up to 10–30 m tall, with a trunk up to 1 m diameter and an irregular, often-leaning crown. The [bark](#) is grey-brown, and deeply fissured in older trees. The shoots in the typical species are grey-brown to green-brown.

The [leaves](#) are paler than most other willows, due to a covering of very fine, silky white hairs, in particular on the underside; they are 5–10 cm long and 0.5–1.5 cm wide. The [flowers](#) are produced in [catkins](#) in early spring, and pollinated by [insects](#). It is [dioecious](#), with male and female catkins on separate trees; the male catkins are 4–5 cm long, the female catkins 3–4 cm long at pollination, lengthening as the fruit matures. When mature in midsummer, the female catkins comprise numerous small (4 mm) [capsules](#), each containing numerous minute [seeds](#) embedded in white down, which aids wind dispersal.

Helleborus niger commonly called **Christmas rose** or **black hellebore**



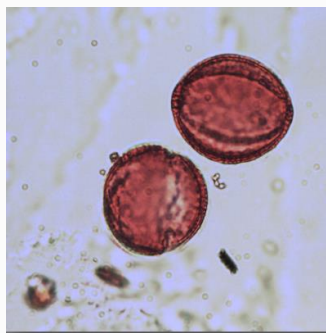
This is almost an exact match to the pollen grains I examined. I could not find anything about the color of the pollen but this is a close fit to the sample I was provided.



Description

Black hellebore is a winter-blooming evergreen perennial in the Ranunculaceae family. They are often called Christmas roses because they bloom around Christmas in warmer regions and in early spring in cooler areas. The scientific name comes from the Greek words '*helein*', meaning injures, and '*bora*', meaning food, referring to the toxic properties when the plant is eaten. The specific name '*niger*', which means black, is in reference to the color of the roots.

Winter Aconite, *Eranthis hyemalis*



Winter aconite (*Eranthis hyemalis*) is one of the earliest bulbs to bloom in spring. This plant in the buttercup family (Ranunculaceae), native to Asia Minor and Europe, has small flowers that resemble tiny buttercups. The solitary, yellow cup-shaped flowers are surrounded by bright green bracts that look like a collar around the blossom. There are six petals in each flower and numerous stamens and pistils in the center. This small tuberous perennial is hardy in zones 4-7.