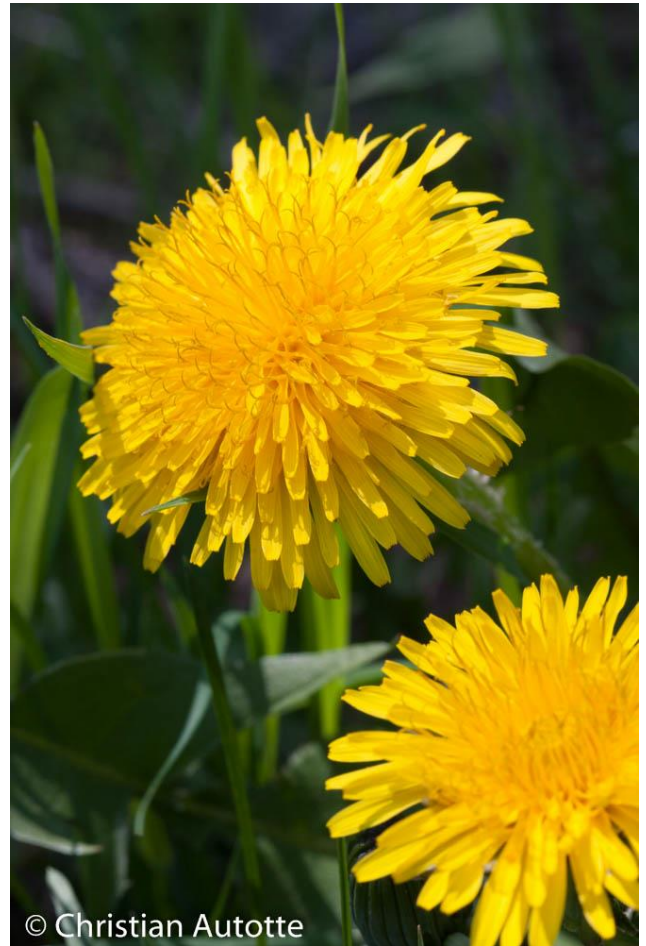


# THE UBIQUITOUS AND FASCINATING DANDELION

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Its common name comes from the French: Dent de lion, literally *tooth of the lion*, in reference to the jagged shape of its leaves. Dandelions (*Taraxacum officinale*) are not indigenous to North America; they first originated in Eurasia then spread all over the world, in part thanks to man propensity to travel. Resilient, they prefer temperate environments but can even be found growing in the arctic. They may be obvious on your lawn, but are not picky and can grow in very poor soils, along roadsides, in vacant lots, and even in cracks in the sidewalk. Many people consider them “weeds”, a generic term that tend to describe very successful species other than ourselves...

On our side of the Pond, European settlers brought the dandelion with them in the mid-1600. While it is now considered as an invasive weed, the early settlers *cultivated* dandelion in their gardens as a source of food and for medicinal use. Its early flowers give honey bees their first important source of nectar. Flowers can be used to make a kind of herbal tea and a decent wine. The roots can help treat heartburns or be used as a mild laxative. Once the seeds come out they are a source of food for many species of birds, including the goldfinch that I recently photographed.



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Goldfinch eating seeds

You said “invasive”?...



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Flower head cut in half show individual seeds

We tend to think of the yellow “flower” as a single entity, but dandelions are composite, which means that its flower is really a multitude of individual flowers grouped together. Pull on a single petal and you will see a single flower come out, with its double stigma, the female part, on top of a cylinder made up of joined anthers, the male parts that produce pollen. Each of these flowers eventually leads to a single seed that can be seen as part of a seed head. When the seeds are produced, the stalk will grow taller as a way

for the plant to put its seeds in the wind. Each seed head can contain between 150 and 200 seeds and a single plant can produce several seed heads per season, resulting in a total of 1000 to 2000 seeds a year. And here’s something particular: these seeds need not be the product of fertilization. The female part of the plant can produce a seed that grows by itself into a genetically identical dandelion, literally a clone of the mother plant, a process known as *apomixes*.



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Individual flower



Close-up of the flower head

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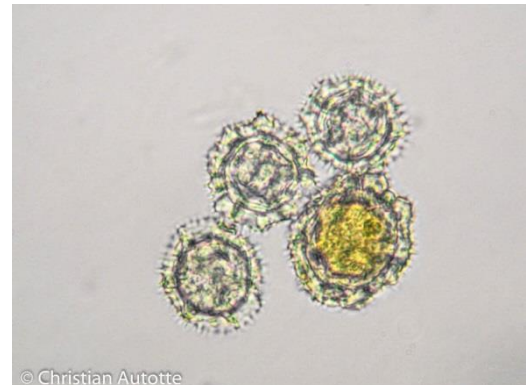
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A close look at the stigma usually finds them covered with pollen grains.

Collecting pollen to make a permanent mount is easy. I have done it by simply shaking a flower directly over the mounting medium on a slide. But a better solution is to dip the head in a small container filled with alcohol; the alcohol will dissolve the slimy coating on the pollen grains. After allowing the pollen to concentrate at the bottom of the container, I put a drop or two of the alcohol on a slide and let it evaporate. Then I cover the pollen with a mounting medium containing glycerol, which should rehydrate and maintain the shape of the pollen grains. So far, the result is promising.



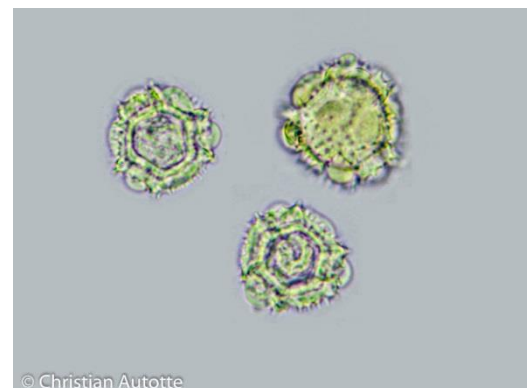
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Pollen grains at 400x



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The seed heads are a favorite of children all over the world. What can be more fun than blowing on those seeds as you would candles on a birthday cake? Try to pull out a pinch of seeds to admire the amazing architecture of the seed head. All of it is design to make the seeds easily picked up and dispersed by the slightest breeze.



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On top of that stalk are between 100 and 110 fibers making up a “parachute” that can carry the seed to great distances. In fact, the dandelion seed holds the record for the longest travelled distance by a passive structure: 100 kilometers! It has four times more flight time than predicted by fluid mechanics calculations. A research published by the University of Edinburgh has revealed a type of vortex that forms in the air around the parachute’s filaments, pulling the seed up and keeping it afloat.





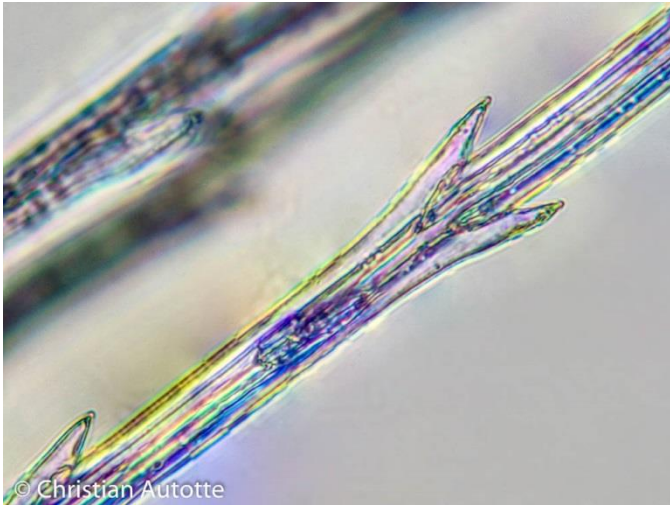
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When the seeds are developing their stalk is very short; it will grow in length as the seed mature. Even in their early state, we can see the kind of back pointing projections seen on the ripe seeds. I find these seeds fascinating; these “hooks” are a way for the seed to hold fast as it germinates and sends its root down in the ground. That explains in part why we can find dandelions growing in cracks in the sidewalk!



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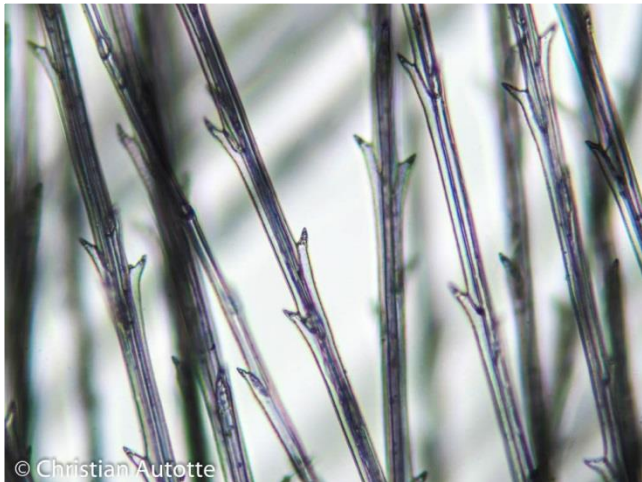
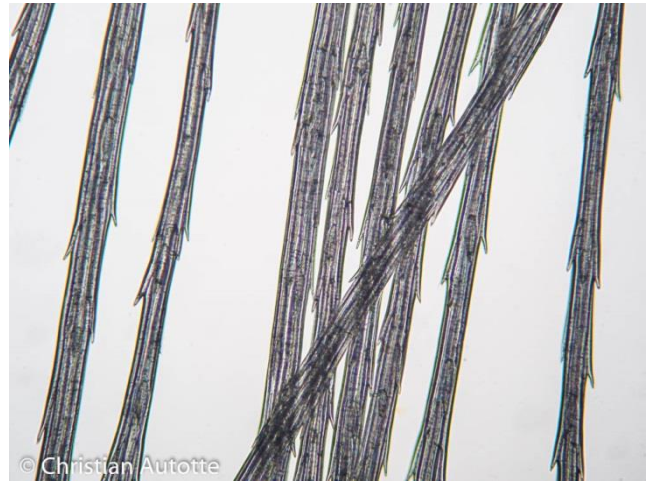




Seed fibers at 400x

The fibers of the “parachute” are curiously covered with microscopic thorns of their own. But what is even more curious is that the seeds of the coltsfoot (*Tussilago farfara*), also a composite flower, show a similar pattern. It should be interesting to investigate similar parachutes from other plants.

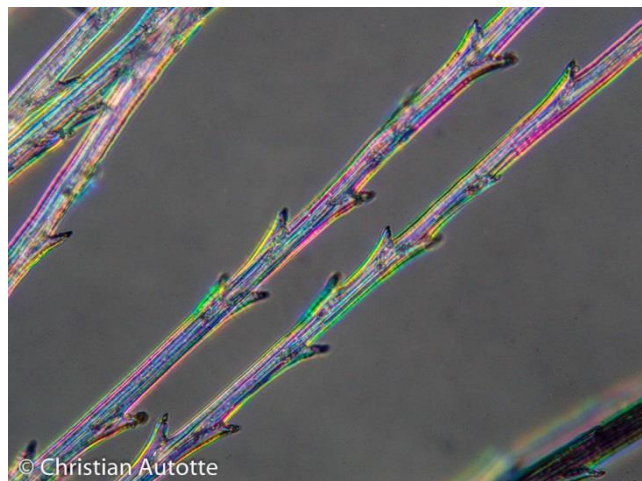
Those fibers are also interesting in polarizing light.



Seed fibers, 200x



Coltsfoot fibers at 200 and 400x, with a group of flowers



Seed fibers in polarized light, 200x





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Cross section of flower stem, unstained, 200x

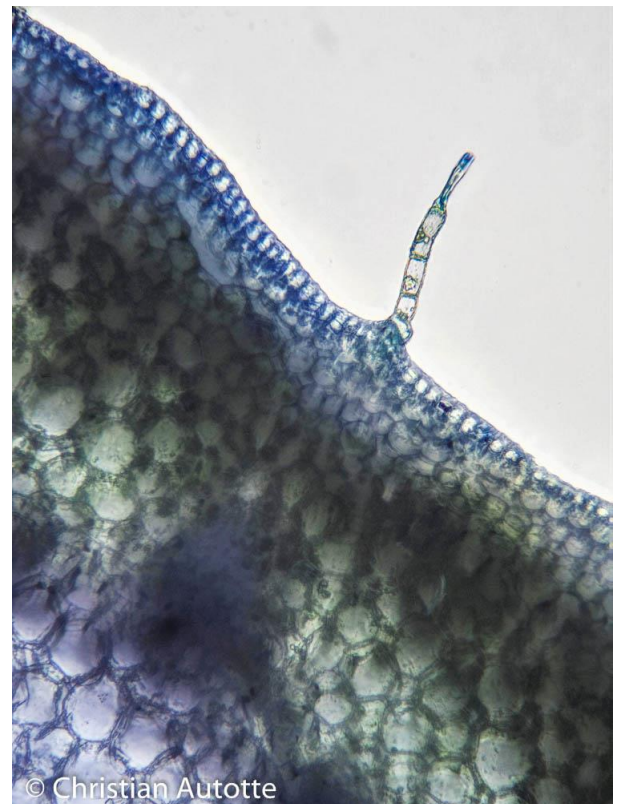
To finish my investigation I tried to make a few cuts of the stem with a pair of razor blades. Even though I am not a botanist and don't always understand what is seen under the microscope, the images remain fascinating.

I made several cross sections and on a few of them I found short hair-like extensions reminiscent of root hairs.

And speaking of roots, in my collection of commercial slides there is a slide of dandelion root in cross section.



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Dandelion root, cross section, 200x



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Cross section of flower stem, stained with Toluidine, 200x

I will probably continue my investigation of the dandelion for it is not only common in spring but can be found all summer long, there for the picking by the curious amateur naturalist.

To me, dandelions represent a return of the warm weather, the beginning of summer. Their appearance put a smile on my face year after year.

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