



BULB LOG 33.....18th August 2021



The end of August is the ideal time to start sowing bulb seed so I decided it was timely to revise and publish a previous Bulb Log looking at the sowing methods that have given us the best success.



As a canny Scot, one of the big appeals of growing bulbs from seed is it greatly reduces the cost of a bulb plus I get so many more plants to play with, especially when you collect your own garden seeds then you can harvest hundreds or thousands of seeds. Another advantage with seed raised bulbs is you will get plants that show considerable variation which I find much more interesting and desirable than a quantity of a single clone. Many bought bulbs are often clonal and usually represent a form that multiplies itself freely - this can sometimes be at the expense of flowering. Plants that concentrate their efforts on vegetative multiplication do not always spare

the energy for flowers. Growing groups of seed raised bulbs allows for cross fertilisation and will always result in a better seed set while a single clone grown in isolation may not produce any.



Narcissus 'Craigton Chorister'

Growing plants from seed gives you the opportunity to pick the best forms and if desired to select and name your favourite seedlings, these can then be multiplied clonally, such as I have done with a number of plants one of which is Narcissus 'Craigton Chorister' shown above.



**Crocus
hadriaticus
lilacinus**

I much prefer a pot or planting of bulbs which illustrates the variation within a species, I find the range of colour more interesting and attractive than a clonal planting where they are all identical. In addition to their appearance seed raised bulbs will also have varying levels of resistance or tolerance to

diseases so you are less likely to lose all such seedlings, if a problem strikes, than if you had the same quantity of a single clone. Another advantage gained from seed raised bulbs is that they will be more suited to your growing conditions, simply because any seedlings that were totally unsuited will have died off at an early stage. It is much less painful to lose a first year seedling or two than to lose a flowering bulb bought at great expense which you find is not suited to your cultural methods or garden conditions.



Variation in **Tecophilaea cyanocrocus** raised from our own seed.



Variation in seed raised **Ipheion**.



Variation in seed raised **Corydalis solida**.



Narcissus seed

You should always collect and sow the seed of your own bulbs on a regular basis to ensure that if they are unfortunate enough to get struck by a disease or a virus you will always have healthy young stock coming on. Much is written about not letting your bulbs set seed as this weakens the bulb - this is nonsense. A bulb that is setting seed will continue growing for between four and six weeks longer than the same bulb would if it was not setting seed, this extra growing time more than makes up for the energy the plant needs to produce the seed. It is very important that we all collect and circulate as much seed from our cultivated bulbs as we can. We never know when wild sources of seed will dry up, either by legislation forbidding seed collection or by extinction of the plants in the wild, often caused by habitat destruction, or by import/export regulations so we must preserve as wide a range of cultivated material as possible. If you do not need the seed yourself share it with friends or send it to some of the many seed exchanges.

Compost

I think that growers worry more about potting mixes than the plants do. Through the years I have made up various potting mixtures for sowing bulbous seed - they changed depending on the materials that were available. What I have learned is that you can use any combination of materials provided the mixture is well-drained and can hold both moisture and air. For many years we used a mix of two parts loam, one part humus and two parts 3 to 6mm gravel, this formed a good, open compost. If your loam is heavy you may need to increase the amount of gravel to obtain a good porosity.



I use leaf-mould but other forms of humus can be substituted. I use bone meal as an added feed to provide the Nitrogen and Phosphorus (N-P) necessary for the early stage of root and leaf growth then later in the growing season, after flowering I add Potassium (K) to help build the bulb. In recent years I replaced the loam with sharp sand with equally successful results and have also had good results sowing seeds directly into beds of sharp sand. Any proprietary seed compost can be adapted by adding some form of additional drainage such as grit or sharp sand but, as the seedlings are likely to be growing in this medium for up to three years, loam based ones are the best option.



Whenever I make a new mix of potting compost, especially when I am using a different batch of materials, I always conduct a simple drainage test. My test involves filling a pot with the mixture then flooding it with water then I watch how long it takes the water to drain away – I am looking for the surface water to drain away in less than 30secs. Do not rely on the result of the first time you flood the pot, especially if the compost is quite dry, because the surface tension can slow down the drainage so make the test two or three times allowing the water to drain between each flood.

The pot on the left contains my original mix which did not drain away quick enough for my use so I added more 6mm grit then tested it again and this time it drained in less than 20 secs.

When to sow - It is not time or a calendar date that triggers plants into growth or germination but a complex combination of conditions, involving temperatures, light, moisture etc., that the plants have adapted to respond to, which will maximise their chance of growth and survival. These conditions obviously relate to the weather and physical conditions found in the plants' natural habitat and that is where we should be looking for the clues. I have always said that bulb seed has a 'time window' when seeds will want to germinate and if your seeds are not sown within that period you may have to wait a year for them to pass through the next time window before you see germination. In addition to the time of sowing there are many other factors that can affect the germination of the seeds such as for how long, one or more years, that they were stored - plus the conditions they were stored in, such as the variations in moisture and temperature during storage.

I soak all stored seeds, except the papery lily type seeds, before sowing. Those that benefit the most include Erythronium, Cyclamen, Trillium, Eranthis and other genera with a similar type of seed form.



Dry and Soaked Erythronium seed

I soak them overnight in water to which I add a tiny smear of soap, just enough to break the surface tension - this rehydrates the seeds making them nice and plump - again greatly improving the germination rate.



Fritillaria pluriflora seed

I know that some people say you should always sow your seed as soon as it is ripe because this is what happens in the wild but this does not take into account the very differing conditions found between a summer season in a garden in NE Scotland (or where you stay) when compared to that found in the plant's natural habitat. For instance the ripe seed shed from a wild growing bulbous plant in a hot dry sandy habitat with a Mediterranean type climate will experience very different conditions to those they would in our cool wet summer conditions.

Fritillaria seed is best sown at the beginning of September and watered well, just as you would treat the mature bulbs. You can successfully sow Fritillaria seed up to late November and possibly December. If I receive Fritillaria seed after December I do not sow it until the following September because I have missed the time window for Fritillaria. When I have sown it outside the time window I have found that germination in the first season is likely to be poor, if at all, and there is every chance that ungerminated seed of that type often rots off in the long period of unfavourable wet conditions of a Scottish spring and summer before the next time window comes round.

The North American Fritillarias are an exception to this and I know people who have had a good early germination following a January/February sowing - I am convinced that the American frits are very different breed to the old world frits. I have also had reports of the American Fritillarias germinating in the autumn if the conditions are mild so a good guide would be to sow these seeds when the temperature drops and winter comes.



Crocus seed

Crocus and Narcissus seed are also best sown in August or September although the time window allowing a first spring germination seems to be wider in these genera, plus any seed that has not germinated is less susceptible to rotting off during the following spring and summer months.

If you get seed from the exchanges in January and February soak it overnight then sow them immediately but be prepared for, at best, a sporadic germination in that first year, and more likely waiting for a year for that seed to be exposed through that time window before the seeds can germinate.

Seed of summer growing lilies such as *L.L. nanum*, *oxypetalum*, etc and *Nomocharis* species should not be sown until the end of January. I have made the mistake in the past of sowing such seeds in the autumn and as they do not require a cold period to break dormancy they germinate quickly before the onset of winter and then it is very difficult to keep those tiny seedlings alive though the winter. Making mistakes such as this is how gardeners must learn - I do not think a dead plant is entirely wasted if I have learnt something in the process.



Sowing

We use square plastic pots of various sizes for all our seed sowing - they make much more efficient use of the space available.

To surface sow frit and lily seed: fill the pot to about 2cm from the top and scatter the seed evenly on the surface then fill the pot to the top with a centimetre or two of 3 to 6mm gravel.

I know that the traditional advice is to sow seed thinly but with bulb seed you can get away with - and in fact sometimes get better results from -

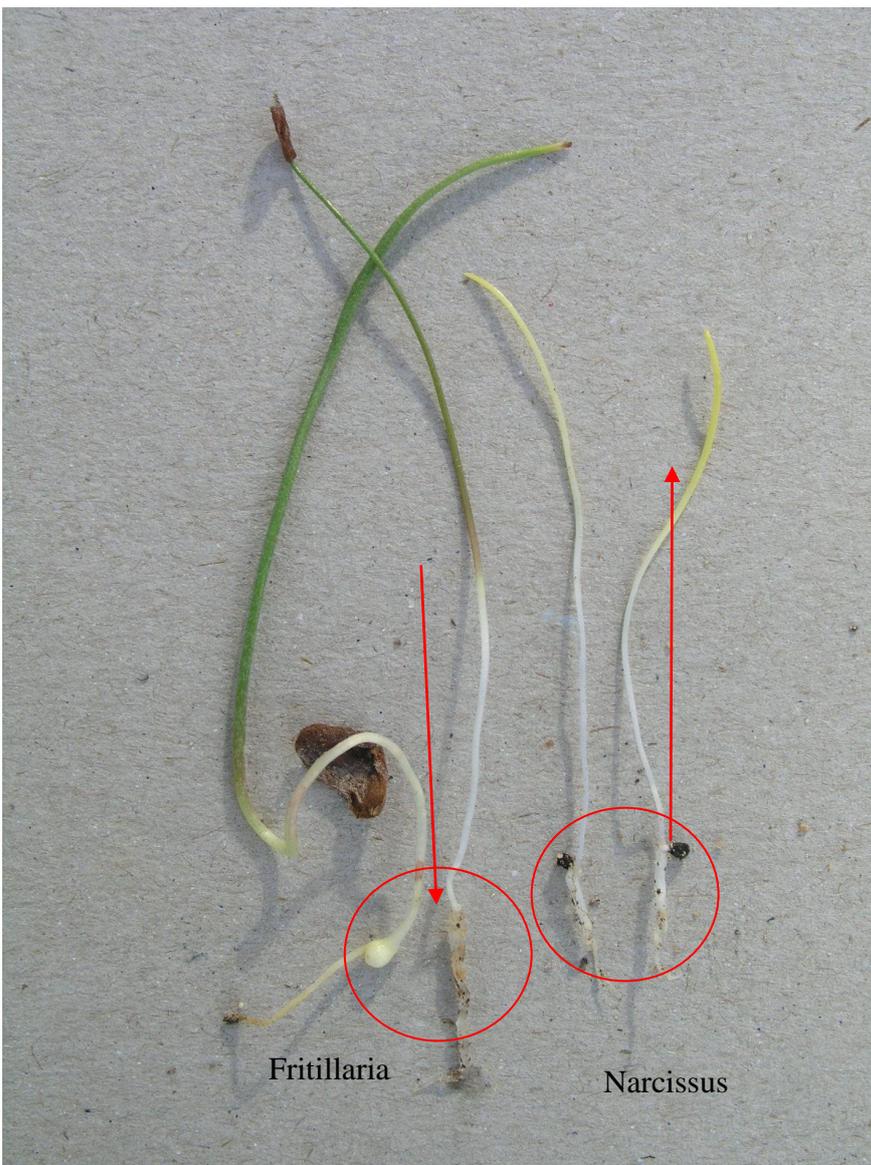
sowing it quite thickly. We often have pots that resemble a lawn on germination because we sow so thickly; bulbs do seem to enjoy company. Polystyrene fish boxes are very useful for sowing very large quantities of seed in and we grow *Erythroniums*, *Trilliums* and *Lilies* in these until they reach flowering size without the need to replot.

Even though I am trying to cut back on the number of pots we have to maintain I cannot resist sowing yet more pots of bulb seeds such as these of *Crocus* and *Narcissus*.





These are some Fritillaria seeds, sown directly onto an open sand bed in September, germinating in the early spring. Note how the growth always emerges from the pointed end of the seed so if you have plenty of time and patience you may gain an advantage by carefully slipping the seeds pointed end down into the top of the compost before you cover them with gravel.



Fritillaria

Narcissus

Fritillaria and narcissus seeds germinating

Understanding the way Fritillaria seed and Narcissus seed develop at germination along with knowing the method of natural seed distribution will help you understand the optimum depth at which to sow the seeds.

You will find that in Fritillaria the first root growth pushes down deep into the compost with the bulb forming towards the bottom end. Take that knowledge, along with the understanding that this type of seed has evolved to be wind distributed and so land on the surface, this guides us to sow all this type of seed on the surface with just a light covering of gravel to hold it in place.

With Narcissus and similar types of seed, the young bulb forms beside where the seed was sown with only the roots penetrating down into the compost - take that with the fact that narcissus seeds have elaiosomes, evolved to attract ants to carry them off to an underground store, leads to sowing them deep.



Look how deep these first year *Fritillaria* bulb seedlings, seed of which was sown on the surface, have taken themselves in their first year of germination – one is even escaping through the bottom of the pot. Learn this lesson from the bulbs and never be afraid when you are replanting small bulbs to place them that bit deeper - they will be able to get their leaves up to the surface.



Fritillaria seed germinating.



If the Narcissus seed is sown on the surface and covered with a thin layer of gravel that is where the young bulbs will spend their entire first year of growth - in subsequent years the bulbs will form contractile roots which, combined with it forming an elongated shape, will over a few years work its way down to its preferred depth.

On the left are a group of first year seedling bulbs of Muscari which have a similar type of seed to Narcissus – these were sown on the surface with just the covering of a layer of gravel. As soon as the leaf growth died back at the end of the first spring I tipped the gravel off revealing exactly

how vulnerable and exposed a position these young bulbs will be in for more than another twelve months.

Compare that to these first-year Narcissus seedlings sown around 5 cms deep - these bulbs were both larger and were in a much more stable growing environment. I also found the black shrivelled now empty seed shells from which they emerged beside the young bulbs.



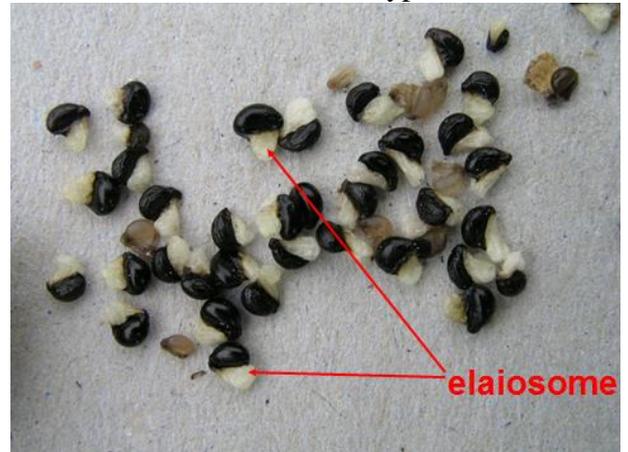
Sowing seeds of this type deeply not only saves them from having to pull themselves down but also

places them in a much more stable environment where they are less likely to dry out or be attacked by pests.



Allium & Rhodohypoxis seed heads

As I look at more of the bulbs we grow I am now starting to be able to predict whether it is best to surface sow the seed or sow at depth. On the left is a typical Allium seed head which, you will observe, hangs onto the seed for a long time even after it has opened unless it gets broken off by the wind and then it gets blown around, tumbleweed style, shedding some seed each time it is knocked. On the right, the Rhodohypoxis seed just seems to fall to the ground and I have not worked out how else it might get dispersed so I surface sow these two types.



Seeds that are best sown deep will generally have an elaiosome indicating they have evolved a distribution method aided by insects and include Crocus, (left), Cyclamen, Narcissus, Tecophilaea and Trillium.

On the left are some Crocus seeds I have sown deep, at around 5cms, pictured before the pot is filled with potting mix and topped off with a layer of gravel.



Crocus seed pods

Crocus are another group that do best if planted deep and again we can start to see the link between how the seed is dispersed in the wild and at what depth we should be planting the seed. Many crocuses also have the sticky appendage attached to the seed and there are some crocus seed pods that do not come above ground, certainly in cultivation, even when they are ripe and open.



Crocus caspius seed pods where the top tip of these seed capsules was just below the gravel top dressing.



Crocus seed germinating

After sowing we place all our bulb seed pots on a sand bed in an outside plunge bed which is left open in all weathers until germination starts to occur. Some Crocus and Narcissus species can start to germinate in the winter before the year ends and you need to look regularly at the seed frames to check for growth. Once a pot has started to germinate it needs to be covered to protect the fragile young growth from the physical effects of the weather and any prolonged periods of frost.

A good flow of air should be maintained to prevent any fungal disease attacking the growth. If the seed coat is stuck to the end of the cotyledon do not try and remove it, this is quite normal and you are only liable to do harm trying to remove it.

Also watch out for slugs, they can devour a whole pot of precious seedlings in no time, we have to admit to using slug pellets in the seed frames.



As spring arrives and the seedlings are in good growth we apply a sprinkling of sulphate of potash (Potassium K) to the surface of the gravel and then water it in. Some of the potash, a white powder, will remain on the gravel and each time we water a bit more will wash down to the roots. It is important to keep the seedlings growing for as long as possible in their first year, constantly watering and feeding until the shoots show signs of yellowing.

Once the young bulbs start going into their dormant period, keep the frame covered to prevent excessive moisture, but do not let them dry out completely. The tiny young bulbs have not yet built up a big enough store of energy and moisture to take them through long periods of drought.

The frames are kept covered as required through autumn and winter with occasional openings during light rain to keep the compost always moist.

I have found it difficult working out a reliable way to get **Tropaeolum azureum**

seeds to germinate but have now discovered that they germinate best if sown in August and the seed pots are placed outside until they germinate then move them under glass before the freezing weather arrives.

Erythronium

When saving the seed of Western North American species,

I cut the stems complete with seed capsule and place them upside down into paper packets – these are placed on a shelf in a dry, shaded shed to sit for the summer. It is a good idea to check the packets from time to time to ensure there are no small grubs or insects feeding on the seeds. **I ought to point out that on no account should you place any fresh bulb seeds into a fridge.** The seed

continues to develop for some six or eight weeks

after it parts company from the parent and placing these seeds into the cold environment of a fridge can arrest this continuing development, harming the seeds' viability.

I am often asked why I do not copy nature and sow the seeds immediately they are ripe to which I answer that you must consider all the facts before you draw conclusions. In nature seed is shed into a climatic season that provides a generally warm dry environment. When the seed ripens in our garden the weather can be cold and wet and remain so all summer long which can cause fresh-sown seeds to rot, so by storing the seeds in paper packets, kept warm and dry for the summer, then sowing them in late August I am imitating, as closely as I can, the conditions that the seeds experience in nature.



Erythronium dens-canis grown from garden collected seeds showing lovely variation in colour which looks so much nicer than a single form would.

Eurasian Erythronium, such as *Erythronium dens-canis*, seeds have evolved in woodland type habitats so are conditioned to be shed into a cooler moist ground conditions so when possible I sow these immediately they are ripe. If they are to be stored this is best done by placing them in some just-moist medium such as moss, sand, vermiculite or similar, to prevent them totally drying out. If they have been dried they will still germinate but that germination may take longer and be sporadic over a number of years.

Soaking the seed

All *Erythronium* seed stores quite successfully and reasonable results can be achieved from even two and three year old seed however the seed is best sown around the end of August in its first year - this will always give a quicker and better germination. I always soak any dry stored seed overnight in some water to which I add the smallest amount of soap - just enough to break the surface tension.



Dry seed

Seed soaked over night

The method I use for soaking is to place the dry seed into a small plastic pouch to which I add a small amount of water - by the morning you should notice that the seeds have rehydrated, plumping up considerably.



After soaking I sow *Erythronium* seed on the surface covered in a layer of gravel. If the seed is sown in the autumn it will give a good germination the following spring however seed that is received and sown in the spring will not give a significant germination until the following spring.



I thought that each bulb seed produced a single plant as circled above until March 2020 when I found two monocotyledons emerging from a single Erythronium seed also seen above.



Twins - here there are two seedlings emerging from a single Polyembryonic Erythronium seed. On doing some research I found the production of two embryos from a single seed is termed as Polyembryony: apparently it is more common in plants such as citrus and avocado but I have never been aware of it in bulbs before.

Plants are a continual source of fascination to me no matter how long you have been growing and observing there are always new things to learn: when you think you know it all then perhaps you should stop.

**Erythronium sibiricum
seed**

The first *Erythronium sibiricum* I grew was from a single bulb that I received and in our climate I struggled to get it to flower normally – the flowers always opened underground so by the time the scape grew and pushed it above ground the flower was already past.

Then I got a few seeds and in time raised the resulting plants to flower well enough to provide me with several fat seed pods full of seeds. Growing bulbs, or any plants, from seed is by far the best way to establish

them in your garden because only the seedlings that can tolerate your conditions will thrive and every subsequent generation of seedlings from your own garden seed will become more adapted to your growing conditions - I call this 'climate shifting'.



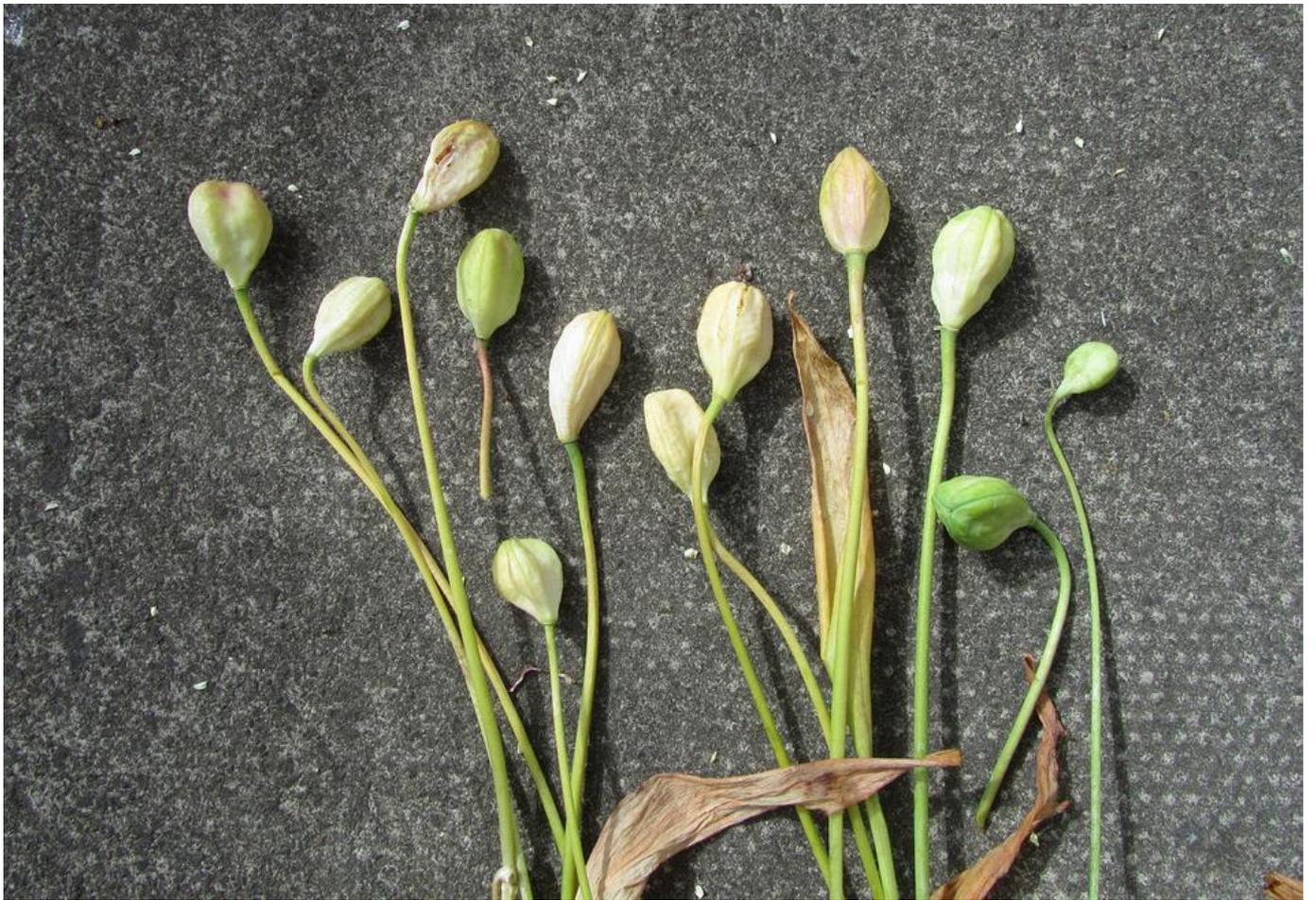
I sowed the seeds in plunge baskets and above you can see the first year seed leaves – I kept them watered and provided occasional half strength liquid feeds to keep them growing as long as I could before they went dormant.



Erythronium sibiricum second year seed leaves



After several years I have baskets full of **Erythronium sibiricum** that have self-selected to grow normally in our garden conditions, flowering beautifully and in turn setting seeds for future generations.



Erythronium sibiricum seed pods



We now have **Erythronium sibiricum** growing, flowering and self-seeding in the garden, after several generations of garden seed.



Another of the many plants that I am taking through this process of building up numbers and acclimitising through successive generations of garden collected seed is **Eranthis pinnatifida**.



Eranthis pinnatifida seed and first year seed leaf.

Once more we started with just a few bulbs of this small beauty which provided us with the seeds to increase our stocks then in subsequent years I found a source and brought in some new seed to increase our genetic pool.

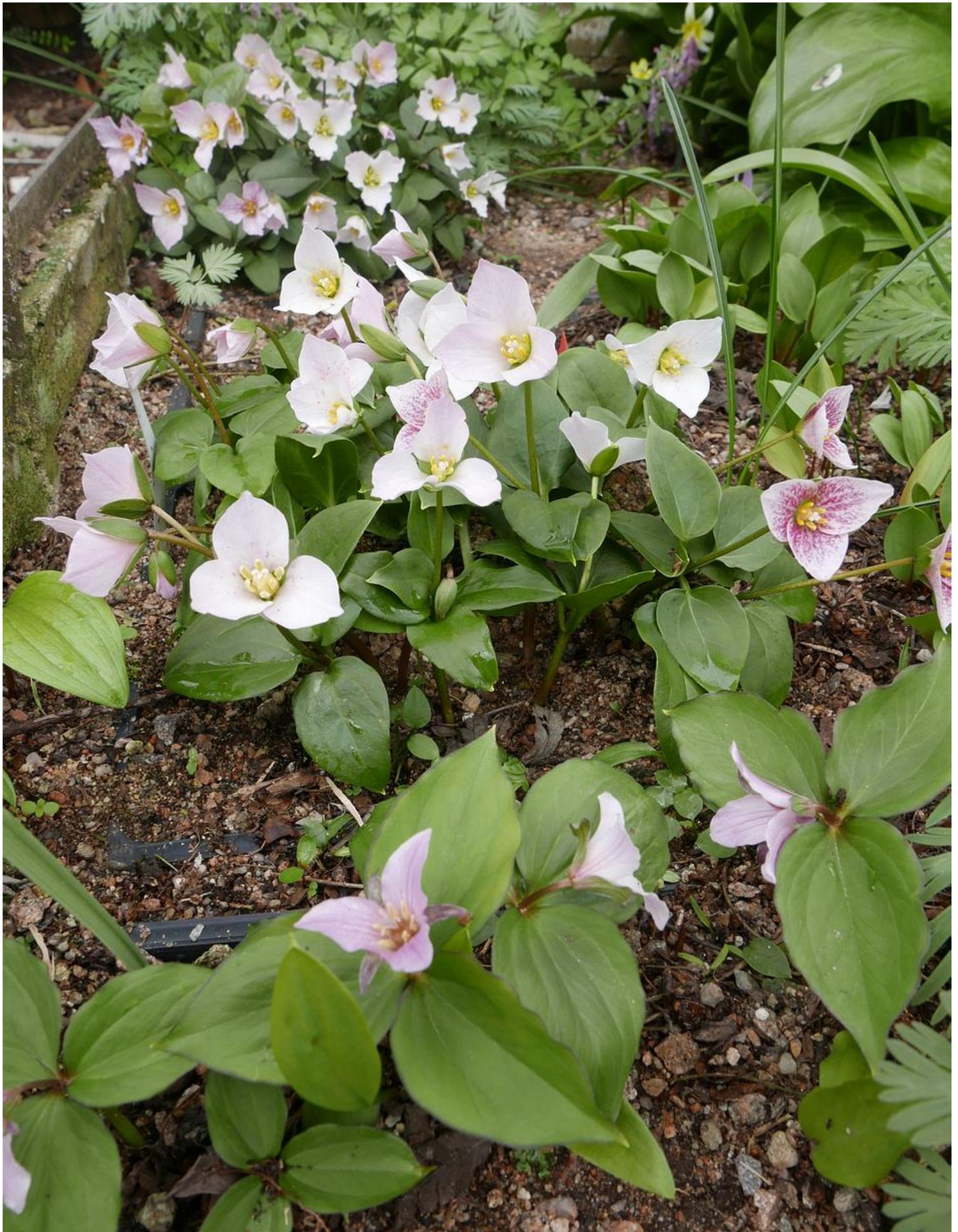


Eranthis pinnatifida

In time we built up enough *Eranthis pinnatifida* plants to feel we could risk planting some directly into the garden and now we are letting them self-sow. My main aim is to have bulbs growing and forming self-seeding colonies in the garden that is when I feel successful and the only way to achieve that is to raise them from seeds.



It was through this same seed method that we established **Trillium (Pseudotrillium) rivale** in the garden, now we have several colonies seeding around in the different habitats.



It is often the case that we are over protective of our plants not willing to risk them outside then we end up killing them by cosseting them in a pot when it is more likely the ones in the garden that will thrive. Getting seed from your own plants will allow you to raise large enough numbers to be willing to risk planting some of them out where each subsequent generation will be more adapted to your garden – enjoy your seed.....