



William Cullina, *Wintergreen (Gaultheria procumbens) flowers*

Provenance and Propagation

The whys and hows of growing
well-adapted species from locally-sourced seeds

by William Cullina

MY YARD IS A STUDY IN CONTRAST. I live just south of Boothbay Harbor, Maine, on Southport Island. The island is known affectionately as “The Rock,” a nickname whose origin becomes apparent when you try to plant anything. My front yard does have a decent layer of soil—the result, I’m convinced, of years and years of sand and dust kicked up and blown off the road by cars and plow trucks. Below this is a 6-inch layer of coal ash that lies like evidence of some long ago eruption from the era of coal heating. Blend this all together with a generous annual helping of compost, and I am able to grow some of the fussy cottage garden flowers that look so appropriate fronting our 125 year old Victorian house. However, stroll around to the back yard, and you will be greeted by a massive grey, lichen-covered ledge that slowly transitions to soft mossy green under the shelter of the tall spruces farther up.

When our family moved in seven years ago, this ledge was covered in a dense shroud of briars and vines, as well as a few forlorn hostas, daylilies, and astilbes that hinted at a former owner’s failed attempt to beat the hardscrabble into a garden. There were even a few pockets of topsoil that had been laboriously carried, bucket by bucket, up the ledge and held in place among the boulders by chinks and shards of well-placed stones. Initially, I entertained the idea of wheelbarrowing in more soil then adding irrigation and compost to create a beautiful garden amidst the ledge, but with three young kids and two working parents, the task seemed more ambitious than I could undertake. Besides, a colorful—though highly artificial—garden would seem too out of character with the serene and simple beauty of the spruce, fir, and moss just beyond. I decided instead to work with the indigenous mosses and vascular plants: the tiny, resilient polypody fern, delicate tufted hair grass, intermediate wood fern, New York aster, wintergreen, blueberry, and withered viburnum, to name a few.

I wish I could tell you that all I had to do was head down to my local garden center to purchase these natives, but the truth is most of them are difficult to find commercially. Just as it is far easier to find a bag of snack chips and a soda than a pound of fiddleheads or wild blueberries at the local supermarket, locally native plants are not as easily procured commodities as hybrid delphiniums and garden roses. You might be



Top: Knight's plume moss (*Ptilium crista-castrensis*) with partridge berry (*Mitchella repens*)

Bottom: Intermediate wood fern (*Dryopteris intermedia*)

Opposite: *Hendrick's Hill Backyard*



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fortunate enough to have a specialist nursery near you, but chances are, if you want to cultivate most of Maine’s native plants, you will have to propagate them yourself.

PROVENANCE

The word provenance is commonly used in botanical circles when referring to the wild origin of a particular plant or plants. Common wild species such as witherod viburnum (*Viburnum nudum* var. *cassinoides*) often grow naturally over a wide geographical range. Witherod, for example, can be found from eastern Canada, south down the spine of the Appalachians, to central Alabama, and west to the Great Lakes. Its close relative, smooth witherod (*Viburnum nudum* var. *nudum*), is adapted to warmer, longer growing seasons and dominates in the lowlands from Connecticut to the Gulf Coast.

If I grow seeds collected from an Alabama population of either variety (seeds with an Alabama provenance), it is highly likely that they will not thrive in coastal Maine because they have evolved in a very different climate. Typically, these southern plants grow more slowly than their local counterparts in our cool summers and die back rather shockingly in our harsh winters. The same holds true when going north to south. A few years back, I collected seed of hobblebush viburnum on the peninsula south of our home and grew them alongside seed I found in northeastern Connecticut. I sowed both lots at the nursery of the New England Wild Flower Society in central Massachusetts. During the heat of the Connecticut River Valley summer, the Maine seedlings turned yellow and died while the more heat-tolerant southern New England seedlings powered through just fine.

As a rule, seed collected from wild plants growing within 100 miles of your location will be more successful in the long term than those with a more distant provenance. However, if you think finding local natives at your neighborhood garden center is hard, try finding ones with a known local provenance. Unless you are fortunate enough to shop at a nursery specializing in local provenance material, it is virtually impossible.

One of the aims of Wild Seed Project is to be a source for Maine provenance wild seed in coming years. It is also straightforward and rewarding to collect your own seed, as I will cover below. Please understand, though, that I am not trying to discourage seed growing from non-local sources if that is all that is available. However, if there is a choice, go with seed from more local sources whenever possible for best results.

A TIME TO SOW

Growing natives from seed is not too different from growing other plants. You sow seeds in pots filled with a good potting soil or, in many cases, simply plant them in a suitable place outdoors. If you are new to propagation, start with easy species such as milkweeds, asters, and other plants in the aster family such as sunflowers and blazing stars. If sown in pots placed on a sunny window or outdoors, these will germinate in a few weeks once the weather has warmed.

Note that most other wildflowers, native shrubs, and trees *do* require a period of cold temperatures after sowing to overcome dormancy—a process called cold stratification or vernalization. If you can plan far enough in advance, this can be satisfied by sowing the seed in the autumn or even late winter and leaving it outdoors. The cold temperatures destroy chemicals that inhibit germination, and seeds will sprout when the weather warms. If the timing is not right, you can substitute a spell in the refrigerator (not the freezer) for a winter outdoors.

I simply place seeds in a self-sealing baggie, add some water, and let them soak overnight, then carefully squeeze or pour out all excess water, seal the baggie up, and leave it in the refrigerator for a period of time, typically 90 days. Alternatively, you can wrap the seeds in a paper towel and dampen it before placing it in the baggie. In either case, remember to label and date each baggie as you go. Once enough time has passed, remove and sow the seeds as detailed above. If you are working with small seeds, you may find it helpful to mix a few teaspoons of potting soil in with the seeds either in the beginning or just before removing them to make handling easier.

One common mistake is to sow seeds too deeply. Seeds sunk too far into the soil may die or simply refuse to germinate. A good rule of thumb is to plant seeds only as deep as they are wide. (If a particular seed is long and narrow, split the difference.) Seeds smaller than a grain of salt should not be covered at all: instead, simply scratch them lightly into the soil or potting mix. If you premixed small seeds with a bit of potting soil in a baggie, you can skip this last step and just spread the lot on top of the pot and water them in.

Make sure to thoroughly water newly planted seeds with the gentle rain from a watering can or kitchen sprayer. If sowing outdoors, use a light touch with the hose, or time your work to coincide with a period of rainy weather for best results. Place potted seeds on a sunny windowsill, under grow lights, or outdoors in



Natives adapted well to local soil and weather conditions. Seeds from plants collected within 100 miles of your location will grow more successfully in the long run. Clockwise from upper left: Witherod viburnum (*Viburnum nudum* var. *cassinoides*), hobblebush viburnum (*Viburnum lantanoides*), seedlings from Connecticut stock compared to Maine stock grown in Massachusetts – the Connecticut variety was better adapted to the hot summer climate; hobblebush viburnum.

Photographs by William Cullina

a somewhat sheltered place. Under no circumstances let the seeds and soil surface dry out excessively until the seedlings are fully emerged. At this point, handle your young plants as you would any others, providing regular waterings and occasional applications of half-strength fertilizer until they are large enough to be transplanted into their permanent location.

COLLECT YOUR OWN

Once you have gained some confidence sowing seeds, try collecting and germinating some of your own as well. The simplest answer to the problem of finding indigenous plants of local provenance for your garden or restoration project is to collect and grow the seed yourself. I have been growing wild plants from seed for 30 years now and while no two species are the same, and each year has its share of failures along with successes, trust me, it is not as difficult as you might think.

ARE THEY RIPE?

Knowing when seed is ready to harvest requires some experience. However, there are rules of thumb that can help. It is important to get this right, because immature seed will not survive and germinate. Seeds are ripe when the seed coat—the hard “shell” that surrounds the embryo—has darkened and hardened. Unripe seed has a coat that is soft and either white or green. If you cut or peel open a capsule or fruit, you can see this very clearly. Ripe seed, with very few exceptions, has a hard coat that is tan, brown, or black. It can take anywhere from three weeks to three months for seed to ripen, but the average is around six weeks or so after flowers have wilted. If the seeds ripen inside a fleshy fruit, the ripe color of the fruit itself is a clue that the seeds, too, are ripe. Likewise, if seeds mature inside a pod or woody capsule, the capsule will dry and turn brown when the seeds inside are ready to collect.

Bring along some paper envelopes (for dry seeds and seeds in pods or capsules); or plastic baggies (for

seeds in berries or other moist fruits); and a waterproof marker to label with suspected ID, location, and date. I cannot tell you how many times I have collected seeds and thought, “I’ll remember what this is,” only to find all memory of them gone two weeks later!

Promptly clean and dry your seed then refrigerate it until you can plant. Seeds should be spread out on paper inside to dry for a week or so then separated from pods, capsules, or stems prior to storage. I find an old rolling pin useful to gently crush seed capsules, a kitchen strainer to sieve seeds from debris, and a few file folders to carefully tilt and shake seed. Since seeds—even tiny seeds—are usually heavier and rounder than chaff, you can get them to roll off onto the table by tilting and tapping the envelope. If the seed is contained in a fleshy fruit, it may be simplest just to squash the lot on a paper towel, let it dry for a few days, then flick out the seeds. This is especially true of small-seeded fruits such as blueberries. For large batches or very hard berries, I usually soak handfuls in a pail of water for 5–7 days to let the pulp ferment. Once soft, it can be dumped into a strainer and cleaned at the sink.

Store your cleaned and dried seeds in plastic baggies or paper envelopes (junk mail and return address envelopes are great for this!) in the refrigerator until it is time to sow them. Dry storage will maintain the viability of your seeds far longer than storage at room temperature. It will not, however, substitute for cold stratification since the seeds are dry, not damp. I usually collect, clean, and store seeds all summer then plant them all at once in the fall.

I hope you will give growing your own natives from seed a try. It is a very inexpensive way to get your hands on well-adapted species of local provenance for your garden or restoration project. Best of all, there is nothing that connects you more to a species than collecting the seeds in its native haunts then raising them from embryo through infancy and adolescence into adulthood. Once you get good at it, your biggest problem will be finding a home for all those plants. 🍓

*William Cullina is the Executive Director of Coastal Maine Botanical Gardens in Boothbay Maine and author of several books on native plants, including **Growing and Propagating Wildflowers and Native Trees, Shrubs, and Vines.***

Lisa Looke, *Wild Strawberry (Fragaria virginiana)*, 2014

RESPONSIBLE SEED COLLECTION: SOME IMPORTANT THINGS TO REMEMBER

PURCHASE A GOOD FIELD GUIDE AND GET TO KNOW YOUR PLANTS.

For Midcoast Maine, I like *The Plants of Acadia National Park* by Linda L. Gregory, et. al., as well as the online Go Botany key from the New England Wild Flower Society: <https://gobotany.newenglandwild.org/>.

DO NOT COLLECT SEED FROM RARE OR ENDANGERED SPECIES

These may be indicated as such in the guide. If not, Maine Natural Heritage Program publishes a list of rare or endangered species: www.maine.gov/dacf/mnap/features/rare-plants/plantlist.htm.

IF YOU ARE NOT COLLECTING ON YOUR OWN PROPERTY, ASK THE LANDOWNER FOR PERMISSION FIRST.

If this is not practical, the roadsides along public rights of way are usually legitimate sources. Lands with public access (national or state parks, conservation lands) prohibit wild-seed collection.

IT IS BETTER TO COLLECT A FEW SEEDS EACH FROM A NUMBER OF INDIVIDUALS RATHER THAN A LOT OF SEEDS FROM ONE INDIVIDUAL.

DISCOVERING NATIVE PLANTS *at* COASTAL MAINE BOTANICAL GARDENS

LOCATED IN THE MID-COAST REGION OF MAINE, an hour’s drive north of Portland, is a botanic garden, a sanctuary really, celebrating Maine’s unique environment and the gardens and landscapes that make it so beautiful. The Coastal Maine Botanical Gardens, just outside the village of Boothbay, encompasses 270 acres of tidal shore land and coastal forest habitat. The Gardens features plants from all over the world, each year focusing on specific themes.

The Gardens dedicates two areas specifically to native plants. Next to the Visitor’s Center is the Bosarge Family Education Center, where all sides of the building have been landscaped with neatly labeled natives and with additional signage for other ecological landscaping topics. The second location that boasts a large number of native species, is on a trail that leads through the Hanely Hillside Garden and heads off to the outer trails along the shore. Masses of native shrubs, wildflowers, and trees, as well as granite garden features are beautifully displayed and sure to inspire you to add more natives to your own landscape. The CMBG website, www.maine gardens.org, also has a convenient database called FloraFind where you can search for a specific plant at the Gardens and find its location.

— Heather McCargo



Heather McCargo, *A Quartet of Native Plantings at CMBG*
Lisa Looke, *Turk's Cap Lily (Lilium superbum)*, 2014

