Edgewood Gardens Snowdrops & Companion Bulbs

August 2023

This list represents the dormant bulbs that are available for sale in summer 2023, subject to availability.

Please order as soon as possible; quantities are very limited.

Email your orders to info@edgewoodgardens.net.

Species bulbs have been raised from seed collected in habitat. In many cases, multiple clones of species are available.

Galanthus	**$ Each**
Andreas Fault	175
Art Nouveau	65
G. reginae-olgae Autumn Snow	115
Batik	120
Bertha	110
Big Bertha	95
Blewbury Tart	35
G. reginae-olgae Blanc de Chine	95
Castle Green Dragon	125
Celia's Double	75
Chantry Bonus	175
Chantry Constable	175
Chantry Cracker	175
Chantry Dame	95
Chantry Dougal	155
Chantry Diva	155
Chantry Empress	175
Chantry Gem	295
Chantry Gold Cross	400
Chantry Lady	195
Chantry Ladylike	175
Chantry Pinstripe	155
Chantry Poppet	125
Chantry Taffeta	95
Chatterbox	115
Cherub	95
Claud Biddulph	185
Cowhouse Green	65
Colossus	45
Diggory	55
Das Gelbe vom Ei	265
David Quinton	165

Dicks Early Yellow	110
Don Armstrong	95
Dryad Gold Bullion	195
Double Vision	155
The Dragon	155
E. A. Bowles	95
Elizabeth Harrison	105
Elizabeth PJ	165
Emma Mackenzie	70
Envy	65
Essex Girl	135
Evenley Double	75
Fenstead End	85
Fieldgate Imp	165
Fieldgate Superb	55
Fiona's Gold	75
Flame	145
Godfrey Owen	55
Gill Hadland	195
Goldsmith	145
Grake’s Gold	175
Grake’s Yellow	135
Greengage	65
Grumpy	65
Helen Squire	75
Hugh Mackensie	135
Jade	65
Janet Cropley	50
Joy Cozens	85
Joe Sharman	215
Kildare	65
Kryptonite	175
Lambrook Greensleeves	30
Little Angel	195
Lucy	95
Madelaine	55
Mandarin	65
Margaret Biddulph	145
Miniskirt	215
Moonshine	150
Mr. Blobby	75
Mrs Macnamara	35
Morgana	195
Mother Goose	95
Marlie Raphael	75
Moses Basket	45

Natalie Garton/Chris Sanders	40
Nerissa	35
Oriana	175
Percy Picton	35
Phil Cornish	85
Primrose Warburg	45
Phoebe	155
Pyramid	50
Remember Remember	55
Rodmarton	35
Ronald Mackenzie	195
Rosemary Burnham	70
Sarah Dumont	65
Seraph	105
South Hayes	75
Squire Burroughs	75
The Wizard	85
Three Ships	55
Timmy Whiteley	325
Treasure Island	155
Turncoat	75
Valentine's Day	85
Veronica Cross	145
Walker Canada	85
Wandlebury Ring	75
Wendy's Gold	45
Wisp	165
Wol's Chubby	155
Wind Turbine	95
Yellow Angel	185
York Minster	195

***Galanthus* Species**	
G. elwesii monosticus	40
G. bursanus	75
G. graecus	55
G. ikariae	75
G. koenenianus	80
G. krasnovii	95
G. peshmenii	50
G. reginae-olgae ssp. reginae-olgae	30
G. rizehensis	50
G. samothracicus	75
G. samothracicus ex Athos	85
G. snogerupii	65
G. sp. nov. aff. rizehensis	85
G. transcaucasicus	125
G. woronowii	45
G. x valentinei	75

Companion Bulbs	
Crocus heuffelianus Snow Princess	45
Crocus heuffelianus Shockwave	35
Crocus fleischeri Chios	40
Eranthis Orange Glow	30
Eranthis Schwefelglanz	30
Eranthis Sachsengold	30
Eranthis pinnatifida	40

Galanthus Species Descriptions

The number of snowdrop species is partly a matter of botanical taste. About 24 is a good number to go with currently. In their native habitats, they start to flower in early October, in the Peloponnese of southern Greece, and the last species to flower in the wild, *G. platyphyllus*, doesn't come up through the melting snow high in the Georgian Caucasus until late May.

Very few of these species are cultivated in gardens, except by a handful of specialists but this is not, in most cases, because they are hard to grow. It is simply that they haven't previously been available as seed grown plants. There are species that are genuinely challenging to grow. The aforementioned alpine species *G. platyphyllus* is a good example. Others, however, such as *G. peshmenii*, *G. cilicicus* and *G. graecus* are just as easy as the more familiar species and hybrids, once you understand their needs. For several years now, I have been growing snowdrop species from seed collected in wild populations.

Because snowdrops are listed in Appendix II of CITES, international trade in their seeds is perfectly legal and, in fact, by growing genetically diverse samples of populations that are rare and often threatened by development in their native habitats, we can all make a big, positive contribution to their conservation. In this catalogue I have given brief, thumbnail descriptions with summaries of the most salient characteristics, for gardeners, of each species but bear in mind that wild snowdrops are hugely variable both within and among populations. Most of this vast pool of genetic diversity has not been available to galanthophiles previously and I hope that many more people will start to appreciate the pleasures and excitement of gardening with a wider range of species.

Glossary

Segments and other flower features - snowdrop flowers typically have six ‘petals’ in two whorls. The outer whorl has three long ‘petals’ and the inner whorl has three shorter ones. The ‘petals’ are in inverted commas because they aren’t, technically, petals at all. So, they are referred to as '(perianth) segments’. I**nner segments** are the shorter inner whorl of ‘petals’ and **outer segments** are the longer outer whorl. Sometimes the inner segments are multiplied indefinitely, and the result is a **double** snowdrop flower. Very rarely mutations cause the inner segments to resemble the outer segments. the result is a **poculiform** flower. When the opposite happens - the outer segments mutating to resemble inners - the result is an **inverse poculiform**.

Apex and base - although these words have perfectly clear English meanings, their use can sometimes be confusing. If you picture a snowdrop flower, hanging like a bell, the **base** of the segments is, of course, at the top, and the **apex** at the bottom!

Sinus and Claw - at the apex of the inner segments is a notch, called the **sinus**. Above the sinus there are usually one or more green (or rarely yellow) splashes of color. These are referred to as **marks**. Marks are generally confined to inner segments but some of the most desirable snowdrop cultivars are notable for marks on the outers. An individual outer segment consists of a narrow ‘neck’, which joins the ovary and the main, bowl-shaped section of the segment. The narrow neck can be short and broad or long and narrow. It is referred to as the **claw**. Marks on the inner and outer segments and the shape of the claw are among the best ways of distinguishing cultivars.

Vernation - almost all snowdrops have two leaves per bulb. The way in which the leaves are arranged is a good way of distinguishing among species. The simplest arrangement is called **applanate**, in which the two leaves are flat and the margins (side edges) of the leaves are also more-or-less flat. This is the form of vernation in *G. nivalis*. In **supervolute** vernation one of the two leaves is wrapped around the other. This is exemplified by *G. elwesii*. Finally, in species with **explicative** vernation, such as *G. plicatus*, the margins of the leaf are folded back in a sort of pleat.

Spathe, Scape, Ovary and Pedicel - the stalk of a snowdrop is referred to as the **scape**. At the top of the scape is a structure called the **spathe**, which encloses the developing flower bud. When the flower is mature, it breaks free from the spathe

and dangles on a thread-like **pedicel**. Between the end of the pedicel and the flower is a roughly conical structure, universally referred to as the **ovary**. Again, various combinations of these features of the plant can be diagnostic.

Thumbnail sketches of 24 snowdrop species

G. platyphyllus – a clump-forming, alpine species from the high Caucasus, with enormous, fleshy bright green leaves and abundant flowers, with a very small sinus and marks at both the apex and base of the inner segments. Challenging to grow but rather wonderful.

G. krasnovii – a clump-forming species of very wet woodland over limestone, similar to *G. platyphyllus* but with pointed apices to the inner segments, usually no basal mark and extraordinarily elegant, long-clawed outers. Hard to please, but slightly easier than related species.

G. panjutinii – a recently rediscovered and renamed species, closely related to the two previous taxa, and with similar cultivation challenges. Apparently now restricted to inaccessible high elevation meadows over limestone in Abkhazia, a breakaway Republic that Georgia claims as its own.

G. trojanus – a fascinating species, of slightly obscure origin, now confined to a few woods in north-west Turkey. It has bright green leaves, typically applanate vernation, a single mark at the apices of the inner segments and a fabulous scent. Often produces two scapes per bulb. Easy.

G. ikariae – growing on a handful of Aegean islands, this relative of *G. elwesii* has bright to dark green, broad, shiny leaves, supervolute vernation and large flowers held on strikingly upright scapes. The inner segments have only an apical mark, reminiscent of a molar tooth. Gorgeously scented. Not hard but needs careful positioning to avoid worst of winter weather.

G. cilicicus – a winter-flowering relative of *G. elwesii*, with narrow, blue glaucous leaves, present at flowering, applanate vernation and large, often textured flowers. There is a single, usually heart-shaped mark at the apices of the inner segments. Grows on limestone. Easy with some care.

G. peshmenii – a fall flowering species from southern Turkey, where it grows as a chasmophyte, always on limestone. It flowers with the leaves only slightly developed; when they do, they have a characteristic pale stripe down the middle of the upper surface. One green apical mark. Easy.

G. elwesii – an immensely variable species from central and southern Turkey. Leaves are glaucous, vernation supervolute, the flowers often rather globular and both apical and basal marks on the inners. Often proves very amenable to cultivation and one of the easiest to grow well.

G. graecus – this is the name I use for plants from the eastern Aegean, northern Greece and the western Black Sea region. Often with narrower leaves than *G. elwesii*, ambiguous vernation (usually weakly supervolute). Basal mark usually does not extend to ovary. Gorgeous and easy.

G. gracilis – a narrow-leaved relative of *G. elwesii*, from western Turkey. The applanate vernation and often helically twisted leaves are characteristic. Apical and basal marks separate, the latter usually like a tear drop, sometimes with an olive yellow cast, usually extending to the ovary. Often produces two scapes per bulb. Can be very vigorous in cultivation or frustratingly hard!

G. nivalis – needs no introduction, the classic spring-flowering snowdrop of Europe. Immensely wide-ranging, immensely variable and often throwing up mutants that greatly please galanthophiles. The easiest snowdrop to grow, in most gardens.

G. plicatus – occurs primarily north and south of the Black Sea, in Crimea and northern Turkey, with a handful of scattered populations further west. Instantly recognizable by its explicative vernation, it is nevertheless hugely variable. Plants with a single apical mark are traditionally referred to as subsp. *plicatus*; those from near Istanbul, with both apical and basal marks as subsp. *byzantinus*. Flowers are often strongly textured. Easy, especially higher elevation forms, and versatile.

G. bursanus – a fall-flowering, incredibly exciting find described in 2020! Relatively narrow leaves, with the distinctive pleating characteristic of *G. plicatus*, but which are absent or only a few centimeters long when the plants flower. The flowers have a fabulous scent. The outer segments are frequently heavily textured with longitudinal grooves or a seersucker effect. The inner segments usually have two distinct marks, a small apical V and a much larger basal blotch, which doesn't quite reach the ovary. Often the two marks meet and occasionally almost the entire inner segment is green.

G. x *valentinei* nothosubsp. *subplicatus* – fascinating, highly variable plants from Turkish Thrace and northern Greece, of controversial parentage but uncontroversially gorgeous. Glaucous, linear leaves with hooded tips, almost flat, narrowly explicative or ambiguous vernation; large flowers, with an apical mark and, often basal green smudges. Often exceptionally well scented. Easy.

G. samothracicus – recently discovered and described, from the Greek island of Samothraki, this is probably very closely related to the above taxon, though plants with basal green marks are fairly rare. The scent is exceptional and it must be grown for this feature alone. Easy.

G. reginae-olgae – has the longest flowering period of any snowdrop, with wild populations in flower from late September to late March. Closely related to *G. nivalis*, but instantly recognizable by the paler median stripe down the middle of the upper leaf surface, which varies in color from blue glaucous to emerald green. Large flowers, often well scented. The earliest flowering populations flower without leaves; leaves are emerged to variable extent in later populations. Not difficult to grow but provenance and flowering time data essential to successful cultivation.

G. lagodechianus – from the Caucasus mountains, this species has been named multiple times. Has a reputation for shy flowering but this is a reflection of the origin of cultivated clones, some of which are from populations that rarely set seed. Other populations flower freely and set abundant seed. Dark, matt green leaves, applanate vernation and a single apical mark on the inners.

G. rizehensis – morphologically very similar to *G. lagodechianus*, perhaps with more tendency to have a narrow pale stripe down the middle of the leaf upper surface. Its range in in north west Turkey and it does not overlap with *G. lagodechianus*. Also hugely variable, not least in how freely it flowers, and it is important to choose seed-grown, strongly flowering clones.

G. woronowii – very well-established in cultivation, as a result of the legal export of millions of bulbs each year from Turkey and Georgia. Many of these do not survive and many that do produce large clumps with few flowers. Better to choose seed-grown clones from populations that flower freely.

G. fosteri – a fabulous species that everyone ought to try. It has a unique combination of features, with bright green leaves that are grooved on the undersides, supervolute vernation, bottle green basal and apical marks on the inners and the

whitest flowers of any snowdrop. Rare in the wild from northern Turkey to Lebanon, it is probably a relict of an earlier, wetter era. Surprisingly easy.

G. alpinus – hugely variable over its wide range in the Caucasus, south to Armenia, Azerbaijan and Turkey. Leaves are glaucous, vernation supervolute, flowers with a single apical mark on the inners. Grows, always on limestone, from near sea level to true alpine conditions. Hard to grow well and essential to have provenance data but the best forms are exceptionally good.

G. koenenianus – closely related to and similar to *G. alpinus* but with strongly grooved undersurfaces to the leaves, more prominent than those in *G. fosteri*. Also most clones have green smudges at the base of the inner segments. Difficult.

G. angustifolius – essentially a very narrow-leaved version of *G. alpinus*. The combination of leaves only one tenth of an inch wide and relatively large flowers is enchanting. Not easy to flower.

G. transcaucasicus – with the widest elevational range of any snowdrop, it grows from below sea level, on the shores of the Caspian, to at least 2,500m in the Alborz. Leaves are green with supervolute vernation and the flowers have a single mark at the apex of the inners. Not at all difficult to grow, though sea level plants experience very mild winters in the wild.

The Snowdrop Story

I find it much easier to get my head around the diversity of snowdrops by having in mind a basic understanding of their evolutionary history and the resulting relationships among the species that are still extant. Evolution is often explained using the metaphor of a branching tree. A more realistic image, however, is that of a river delta, flowing across a wide plain, with various broad and narrow channels diverging and occasionally merging again. Each separate channel that reaches the sea corresponds to a living species, while the principle arteries of the delta are analogous to lineages – clades, in botany-speak – lines of descent just like the branches in a family tree.

The big advantage of the river delta metaphor is that it helps to make it intuitively obvious that species (especially plant species) are simply not neat, platonic categories, each with a set of characteristics that can be listed and against which a plant of unknown origin can be ‘tested’. In the real world, plants grow in populations. In the case of snowdrops, these populations are often small and widely separated and genes flow among them via pollinators glacially slowly, allowing them to diverge. Climate change sometimes causes them to come into proximity and regular exchange of genes again. In some regions – e.g. north-west Turkey and adjacent Greece and Bulgaria – several ‘species’ occur close to one another and often flower at similar times. The result is a complex matrix of populations that can be attributed only provisionally to a traditional species, named by reference to certain canonical ‘type’ specimens in an herbarium cabinet.

Snowdrop diversity is best understood by reference to seven clades (lineages), of which five comprise more than a single species. Within each clade, the species are closely related, typically interfertile and often at least somewhat arbitrarily defined. It is a lot easier to hold in mind seven categories than 23 and doing so renders comprehensible the underlying diversity, the variation that so fascinates galanthophiles, among and within species, populations and individuals.

One final word: figuring out the evolutionary history of snowdrops is not easy, especially as no fossil snowdrops have ever been found. The scheme I describe here is a work in progress and is bound to be refined – or in part even radically rewritten – as more populations are studied and their relationships unraveled through molecular studies and fieldwork. That’s what makes it fun!

Platyphyllus clade

Like most stories, this one starts at the beginning. Somewhere in what is now the Caucasus, four or five million years ago, two lineages of amaryllids, both recognizably snowdrops, went their separate ways. One lineage spread far and wide, diversifying into most of the snowdrop species alive today. The other lineage stayed in the Caucasus and evolved into a group of closely related alpine and subalpine species. Perhaps this split occurred when much of the western Caucasus was an island in the Paratethys Sea, one group remaining on the island, the other on the mainland. But this is, for now, speculation. The snowdrops that remained in the Caucasus evolved into plants that emerge as the snow melts and embark on brief, frenetic growing seasons, during which they produce enormous, fleshy, bright green leaves, with masses of flowers that, unlike all other snowdrops, lack (or almost lack) a sinus at the apex of the inner segments. At most sites, the leaves collapse into mush by early summer, leaving the ground strewn with seed capsules, which remain green and continue to mature in the summer warmth for several weeks before splitting for seed dispersal. They are, as a group, quite unlike any of the snowdrops familiar to most gardeners.

G. platyphyllus

Occurs on both the southern and northern sides of the Caucasus ridge, in Georgia, Abkhazia and Russia, typically close to passes through the mountains, in open alpine meadows by streams or under the shade of beech or alder forest on steep, wet slopes. Plants form large clumps and each bulb typically produces two or more scapes, making a population in full flower a spectacular sight. Like many alpines, the plant must devote huge energy to flowering, to attract relatively rare pollinators. It occurs at elevations from about 1,500m to at least 2,500m and has been reported flowering as late as August (though typically late March or April in cultivation). The flowers are large, compared with other snowdrops, but are rather dwarfed by the huge leaves, though the flowers rise well above them. The outer segments are frequently strongly textured. The inners have, at most, a vestigial sinus and have a small dark green mark, frequently split into two, just above the apex. The base of the segment is typically stained a paler green, a feature that varies widely among clones. The leaves grow to more than a foot in length and up to two inches wide and are bright green and rather thick textured. The vernation is strongly supervolute, with one broad leaf wrapped around the other at the base. This extraordinary snowdrop is difficult to grow well in lowland gardens, requiring a cold winter, ideally under snow, limitless water during the growing season and a situation where the roots, which I suspect are present throughout the year, are never allowed to dry out completely. Those caveats mentioned, I have grown it successfully here at Edgewood for several years and have several batches of seedlings in production.

G. krasnovii

An exquisite species, known from rather few sites in Turkey, Georgia and Abkhazia, in the coastal mountains rising from the eastern margins of the Black Sea. These mountains receive enormous annual precipitation, which falls as snow in the long winters, burying the populations under a dozen feet or more of snow, where they presumably remain insulated from extreme cold. They occur in very wet places under alder or beech, often with running water at their feet in the growing season. As with *G. platyphyllus*, the leaves are long, bright green and exceptionally broad, sometimes as wide as a hand. The plants form large clumps, bearing abundant flowers which are exceptionally elegant, the outers sporting long, narrow claws that expand abruptly into a spoon-shaped blade. The inner segments entirely lack a sinus and the apices are in fact distinctly pointed. The inner segments have a small, dark green mark, often split into two, above the apex and the remainder of the segment is white, rarely with a little green shading at the base. This species is slightly easier to grow than the other two species in the clade, naturally flowering a bit earlier, but it requires similarly exacting conditions to the others to thrive in cultivation.

G. panjutinii

A recently rediscovered species that had been named – invalidly – in the early 20th Century by the Russian botanist P.S. Panjutin. It was found again in 2008, growing at a site in the mountains above Sochi in the Russian Caucasus, but that population was soon destroyed in development work for the Sochi winter Olympics. It is now apparently confined to a handful of very inaccessible populations in Abkhazia, a breakaway region of Georgia that is not officially recognized by most members of the UN. Unsurprisingly, it is very rare in cultivation! It occurs at elevations of 1,200m to 1,500m in sites that receive many feet of snow each winter, growing in wet meadows with numerous other herbs and bulbs, in forests of beech and fir, always on limestone. The flowers are small relative to the size of the very leafy plants but there are two or three scapes per bulb and the impression created by a large clump (and almost all clones form large clumps) is of a mass of flowers. They have a distinctive bell shape, with very long claws on the outers. The inner segments have a more rounded apex than *G. krasnovii*, often with a very small sinus, above which is a dark green mark. There is usually a paler green smudge at the base of the inners. The anthers end in an apiculum (tapering point), like *G. krasnovii* and unlike *G. platyphyllus*, which has blunt-ended anthers. Amaze your friends with that fact at dinner parties, if you want to edit your list of friends. The leaves are broad, with strongly supervolute vernation and rather fleshy. The plants emerge and flower as the snow melts, usually in May and are in leaf for only about two months, going dormant as soon as temperatures rise significantly. As with the other species in the clade, it is likely that the roots are never entirely dormant. At Edgewood, I grow it successfully in the drier end of a bog garden, in quite a bit of shade, where it appears to be perfectly happy and flowers well.

Trojanus clade

As time went by, the snowdrop lineage that would eventually evolve into all extant snowdrops other than the platyphyllus clade apparently split again, the less prolific branch being represented by only a single living species today. This unique species, clinging on in a few, isolated oak woodlands, occurs in north-west Turkey, far from the Caucasian origin of the genus. It is quite possible that the DNA evidence, which suggests an ancient split from the rest of the genus, is misleading and that this part of the snowdrop story will have to be rewritten. The alternative explanation for its puzzling location is that it is a relict of an old radiation of snowdrops, all members of which are now extinct save this isolated species. Either way, the clade is a puzzle wrapped in an enigma.

G. trojanus

An expedition by Kew Botanic Gardens to north west Turkey collected – as a *Scilla* species – a bulb that, when it flowered in cultivation was quickly recognized by the experts there as a snowdrop. What's more, it was clearly an undescribed species, having bright, matt green leaves, applanate vernation and a single apical mark on the inner segments, quite unlike the other species to be found in this corner of Turkey. Subsequent fieldwork by Turkish botanists located a few, mostly small populations in flower. Though rare in the wild, *G. trojanus* grows easily from seed and will hopefully become better established in cultivation, where it will be safer than in some of the wild populations, which are tiny islands of uncultivable land, surrounded by farmland. It is a beautiful thing, the pristine white flowers almost luminous above the green leaves. The small mark above the sinus is dark, bottle green, contrasting nicely with an often paler ovary. Many clones are also deliciously scented. I am very excited to be able to offer a few bulbs from the first batch of seedlings to commence flowering. More are in production.

Ikariae clade

After the platyphyllus and trojanus clades went their separate ways, the ancestral lineage of all other living snowdrops split again, into two major channels. One of these channels evolved and diversified into *G. elwesii* and its relatives, distributed in present day Turkey, Greece and other countries bordering the western shores of the Black Sea. Before most of that diversification took place, another small clade split off and it is represented today by only a single species, which grows on a few isolated islands in the shallow Aegean Sea between Greece and Turkey and is distinct from all its nearest relatives by virtue of its green, not glaucous leaves.

G. ikariae

On four islands in the Aegean: Ikaria, Andros, Naxos and Skyros grows one of the most beautiful of all snowdrop species, *G. ikariae*, which combines attractive puckered, almost seersucker-textured foliage and wonderfully scented flowers, which are among the largest in the genus. The habit of the plant is distinctive. It forms large clumps and the scapes rise bolt upright, as do the spathes, with the flowers held well above the foliage, which is fresh, green and luxuriant. The vernation is clearly supervolute. The distinctive puckered texture of the leaf surface is explained by large air spaces in the leaf, the function of which is not clear. The flowers are, as noted, large (outer segments up to 1.5 inches long), rather globular and emitting a glorious scent, the best in the genus, with the possible exception of *G. samothracicus*. There is a single apical mark on the inner segments, typically covering about the apical third (very rarely the entire segment), and bleeding slightly into the rest of the segment. This feature alone distinguishes it from *G. woronowii*, a distantly related, lesser plant, with which it is often scandalously confused on the labels of plants in nurseries that ought to know better. Its habitat is variable: it grows alongside permanent streams, often under the shade of plane trees and also in much more exposed sites near the summits of high peaks. On Skyros it grows in the shade of copses of stunted *Acer sempervirens*, a unique habitat, largely restricted to that island. On Ikaria and Andros it grows on schist and other metamorphic rocks, whereas on Naxos and Skyros it is on limestone. Such a tolerant plant is, unsurprisingly, not at all difficult to grow, though it needs protection from the worst of the winter weather. It is well worth the effort!

G. ikariae subsp. *snogerupii*

The Greek botanist Georgia Kamari recognized one subspecies, *G. ikariae* subsp. *snogerupii*, from Andros, distinguishing it from plants on Ikaria by its lighter green leaves and earlier flowering. Populations on Skyros and Naxos are morphologically similar to those on Andros, but flower at least a month later. This snowdrop honors Dr Snogerup, a Swedish botanist who devoted a lot of his life to studying the plants of the Greek Aegean island of Andros. Whether or not one wishes to retain the name, plants from Andros are certainly horticulturally distinct. They flower much earlier than Ikarian plants – in late December or early January in the wild – and they have shiny leaves, a paler bright green than those of *G. ikariae*. The difference is very noticeable when grown side-by-side.

Elwesii clade

Having parted company with its sister, the ikariae clade, the elwesii clade diversified and now has about five members, depending how you count. They are distributed over a wide range from Mersin (ancient Tarsus, from whence the Apostle Paul hailed) in contemporary Turkey to the mountains around Thessaloniki in Greece and from the Black Sea plains of Ukraine, to the clement islands off the southern Turkish coast. They grow from sea level to subalpine elevations and flower from fall to late spring. The clade perfectly exemplifies the difficulty and sometimes absurdity of trying to force the diversity in a young plant genus, in which closely related lineages readily swap genes, into neat species buckets, for the convenience of taxonomists. There are two species that are quite distinct and reproductively isolated by habitat and flowering time from the others but the remaining three species comprise numerous populations each of which represents a point on a continuum of diversity. I use the existing species labels to refer to ‘typical’ representatives of each but the

reality on the ground is far more complicated and interesting. It is true that a galanthophile, deposited at random in a population of one of the three latter species would be able to say, without much hesitation, which species she was looking at but there are ambiguous populations and ambiguous plants within most populations which, if studied in an herbarium, might be misattributed.

G. cilicicus

The low, limestone hills north of the Turkish coastal city of Mersin are sunbaked in summer and mild in winter. Most of the land is cultivated for fruit trees but, on a few rocky outcrops that the ploughs haven't yet reached, a handful of populations of this rare snowdrop species cling on. In the wild it flowers in mid-December to January but is often a little earlier in cultivation. The flowers are large, with deeply concave outer segments that are often strongly textured and inners that typically have a bold, heart-shaped mark on the apical half. The glaucous leaves are narrow and lack the paler median stripe that characterizes the superficially similar *G. peshmenii*; they are also almost always already in growth when the plant flowers. The plant often forms quite large clumps in pockets of soil in the heavily eroded limestone in which it grows. This excellent species should be much more common in cultivation. It would be well worth trying in American gardens with the same hot summers and mild winters that it experiences in the wild.

G. peshmenii

This wonderful fall-flowering snowdrop starts to bloom in the wild just a few weeks after *G. reginae-olgae*, which it resembles superficially but to which it is not particularly closely related. In fact, *G. peshmenii* is phylogenetically close to *G. elwesii* and the resemblance to *G. reginae-olgae* is presumably a case of convergent evolution. It flowers before the leaves start to emerge, from late October in the wild and a little earlier in cultivation. The flowers are superficially like those of *G. nivalis*, though typically a little larger and typically with a smaller apical mark on the inner segments. It always occurs on limestone and almost always grows as a chasmophyte, in pockets of soil on north-facing cliffs and large boulders, sometimes forming quite sizeable clumps. In a few locations it grows on sea cliffs, within reach of salt spray, perhaps the unlikeliest of all habitats for a snowdrop. Despite its unusual habitat it is not at all hard to grow in any situation where it has very free drainage. It is hardy in the garden here.

G. elwesii

One of the three commonest species of *Galanthus* in cultivation, our perception of its diversity is skewed by the collection locations of the millions of plants legally exported from Turkey each year, collected from wild populations, mainly in the mountains north of Alanya. Its range in Turkey is much wider, occurring in scattered populations throughout the mountains of southern and central Turkey. In most of the west of Turkey, it is replaced by populations with narrower leaves, often helically twisted, which I refer to *G. gracilis* and, in numerous places in the eastern Aegean islands, northern Greece and countries bordering the western shores of the Black Sea, similar plants should probably be referred to the species *G. graecus*, which was described from the island of Chios.

Stereotypical *G. elwesii*, as it is known in cultivation, is a handsome plant, with broad, glaucous, hooded leaves, clearly supervolute vernation and large, globular flowers. It can be quite a tall plant – up to about 12 inches – but is usually rather shorter. The inner segments have two marks, one at the base and one at the apex, the apical mark a V or U shape and the basal mark, covering up to half the segment, a more-or-less rectangular block, sometimes indistinctly split into two longitudinally. Often the basal and apical marks merge, to form a rough X-shape. This bare-bones description hardly begins to cover the immense variation in the wild, however. It occurs at elevations between about 600m and 2,100m, always over limestone rocks, flowering from early December at the lowest elevations to as late as May at some high elevation, inland sites. It is my impression that plants at the highest elevation sites tend to have the broadest leaves (and therefore supervolute vernation). One of the reasons it is so familiar in cultivation is that it often adapts very well to gardens and is rather easy to grow. It should be recognized, however, that the clones that have survived and prospered are the result of

a rigorous process of facilitated natural selection, representing the survivors of the millions of exported bulbs, most of which, sadly, die.

G. elwesii var. *monostictus*

When Aaron Davis (now the leading expert on the world's rapidly disappearing wild coffee species) was researching his outstanding monograph, 'The Genus *Galanthus*', he examined hundreds of herbarium sheets of wild-collected *G. elwesii*. None of them had only a single apical mark (as opposed to the typical apical and basal marks). Plants with one apical mark were well known in cultivation, however, often confusingly applied to *G. caucasicus*, a name that should be dropped. The name *G. elwesii* var. *monostictus* was applied to these plants in 1996, the description and type specimen taken from a plant growing in Cambridge Botanic Garden in the UK. Recent fieldwork has revealed that rare populations of *G. elwesii*, with a single mark at the apex of the inner segments, occur scattered along the southern coast of Turkey, at elevations from about 100m to about 800m. These flower in fall, from early November to late December. Some populations clearly aren't with the program and contain examples with X-shaped inner segment marks, all green inner segments and plants that, if they turned up in an herbarium, would unhesitatingly be recognized as typical *G. elwesii*. It is a matter of tedious nomenclatural debate what these plants should be called but, take it from me, the best of them are some of the very finest of all snowdrops, for galanthophiles.

G. graecus

There is a long and interesting story to be told about the origin, validity and applicability of the name *G. graecus*, but this is not the place to tell it. Suffice it to say, for now, that the name is not currently officially accepted as valid, but it is nevertheless the best one, in my opinion, to use for snowdrops, closely related to *G. gracilis* and *G. elwesii*, which occur on Lesbos and Chios in the eastern Aegean, on many mountains in northern Greece, and in Bulgaria, Romania and Ukraine, both near sea level and in mountains. As might be expected, a species with such a wide geographical range is highly variable. The best examples are bewitchingly beautiful plants, among the finest of all snowdrops. The flowers are large, often highly scented and typically have two dark green marks on the inner segments. The apical mark is a narrow V over the sinus and the basal mark is a much larger, teardrop shape, often extending over two thirds of the segment and sometimes meeting and fusing with the apical mark. The basal mark often starts a little way from the base of the segment, leaving a conspicuous white gap. The glaucous leaves more closely resemble those of *G. elwesii* than *G. gracilis*, being relatively broad, with supervolute vernation. This plant almost always occurs over limestone rocks, usually at fairly high elevations, but does well in cultivation and is not hard to grow.

G. gracilis

Plants that resemble *G. gracilis* occur in many, widely-separated populations in western Turkey and each population is distinctive. In its best incarnations, it is my favorite snowdrop species. The features that distinguish *G. gracilis* from the closely related *G. elwesii* are applanate vernation and narrow to very narrow glaucous leaves, which are more-or-less helically twisted, like the thread of a corkscrew. These features are often rather ambiguous, however, and the two taxa are similar, except in their extreme forms. The flowers vary vastly in size within and among populations, but all have two marks on the inner segments, a narrow V at the apex and a larger teardrop shaped mark at the base, usually extending right to the base, without a white gap below the ovary. In some, but not all, populations there is a distinctive olive cast to the ovary and inner segment markings. Many clones produce two scapes per bulb. Wild populations occur in a wide range of habitats, from damp, low elevation woodland, to heavily grazed *Paliurus* scrub, to north-facing cliffs in the mountains. It is always associated with limestone, sometimes growing as a chasmophyte, in pockets of soil on limestone cliffs, where it can form sizeable clumps and these populations sometimes have exceptionally narrow leaves. Generally, however, it is not a clump-forming species. It is well worth trying a range of un-named forms of this species, which can occasionally be extraordinarily vigorous and, in other cases, frustratingly hard to grow well. I do not yet know enough about its cultivation

in American gardens to predict which forms will do best where, but I have seed-grown strains from many different wild populations in the pipeline.

Nivalis clade

Stepping backwards slightly, you will recall that, having split irrevocably from the platyphyllus clade and the mysterious trojanus clade, a broad channel diverged again. One branch, as we have seen, evolved into the elwesii clade and its close relative the ikariae clade. The other diversified rampantly, both geographically and morphologically and the result, today, is the remaining three clades of living snowdrops: the alpinus, woronowii and nivalis clades. The latter is widespread throughout Europe and western Asia and one species, *G. nivalis*, is what almost everyone thinks of as 'the' snowdrop. Where Europe meets Asia, around the shores of the Black Sea, the story gets really interesting.

G. nivalis

Summarizing the variation in a snowdrop species with a range that spans a continent is akin to rendering Shakespeare's complete works in a couple of paragraphs. It's a travesty but needs must. Populations of snowdrops that galanthophiles and botanists readily recognize as *G. nivalis* occur today from the central Pyrenees to Bulgaria and from Poland (and Ukraine, where they may not be native) to southern Italy. It grows at sea level on the Croatian coast and at 2,000m in Andorra. Europe, like North America, has experienced repeated glaciations over the last several million years, with the ice advancing and retreating cyclically. During the glacial periods, snowdrops must have vanished from much of their current range, surviving in refugia in Iberia, Italy and the Balkans, recolonizing during the inter-glacials, the most recent of which began only 20,000 years ago. It is very likely, therefore, that there is a lot of invisible 'structure' within what we recognize as a single species and it is quite possible that *nivalis* from the Pyrenees is at least as genetically distinct from Balkan *nivalis* as *G. elwesii* is from *G. graecus*. It's the reverse of the elwesii clade labelling problem.

It is widespread in cultivation because many forms have proven remarkably easy to grow and it is popular with galanthophiles, because exciting new mutants regularly crop up. The plants in cultivation, however, are a severely restricted cross-section of the wild variation. Compared to most of the snowdrops described above, *G. nivalis* is a relatively small plant, usually no more than five inches tall, with relatively small flowers, with outer segments usually less than an inch. Vernation is applanate and the leaves usually have flat margins, sometimes very slightly rolled back (subrevolute) in broad-leaved variants. The tip of the leaf is flat, not hooded (cucullate). The inner segments have a single, roughly U or V-shaped green mark above the sinus. Regional variants have been frequently named for one characteristic or another: for example, *G. imperati* for large forms from southern Italy or *G. montanus* from the Carpathians. These names are confusing, imprecise and best avoided for now, pending much further study. Of course, it is the variation around this basic description that captivates galanthophiles: clones with green marking on the outer segments, all-green inner segments, yellow ovaries and markings, poculiform and inverse-poculiform flowers (where all six segments are equal in length), examples with exceptionally long pedicels or exceptionally long outer segments are all present in wild populations and have found their way into cultivation. Populations in central Europe from Poland, though the Czech Republic to Austria and Slovenia have so far yielded many of the most exciting finds but that no doubt reflects in part where people have looked hardest.

G. plicatus

Around the southern margins of the Black Sea, in Crimea, in Russia and in a handful of sites in other western Black Sea countries, grows a highly distinctive species with leaves that fold back conspicuously at the margins to form narrow pleats. Populations of this snowdrop in north west Turkey are generally to be found at low elevations, often near sea level, but further east in Turkey and in Crimea, they also occur up to about 1,400m. They are almost always plants of deciduous woodland, often very wet woodland, and can sometimes be seen flowering with their feet in water. They flower in the wild typically between late January and April, depending on elevation (but see below for exciting, recently discovered fall-

flowering populations). All forms have the characteristic explicative vernation described above but this varies enormously in extent as does leaf width and plant stature. Plants from Lake Abant in Turkey have some of the broadest leaves, whereas the most statuesque plants typically hail from Crimea. The flowers are also highly variable in size, the largest having outer segments up to about 1.2 inches long. The outer segments are frequently attractively textured with longitudinal grooves or a seersucker effect. Two scapes per bulb is common.

The species has traditionally been split into two subspecies, subsp. *plicatus* and subsp. *byzantinus* on the basis of the inner segment mark, which is generally restricted to the apical half of the segment in subsp. *plicatus* and divided into separate basal and apical marks in subsp. *byzantinus*. As always, the truth on the ground is more complicated and many populations contain plants that are intermediate between these two states. A further problem with the traditional treatment is that subsp. *plicatus* occurs in Crimea, adjacent Russia and north central Turkey, whereas ssp. *byzantinus* is restricted to north west Turkey. The Black Sea is deep, however, and there has never been a land bridge between the north and south shores, so it is likely that populations with a single apical mark have evolved independently in Turkey and Crimea. But these considerations are appropriately byzantine.

G. plicatus has long been established in cultivation and is easy to grow, especially in the case of higher elevation forms. It is well worth exploring the enormous range of wild variation by growing seed-grown plants from different locations, to see which grow best for you.

G. bursanus

With the explosion of interest in growing snowdrops, several species enthusiasts have been scouring the ranges of wild snowdrops in search of new populations. This work is transforming our understanding of the diversity in this remarkable genus. In north-west Turkey are several populations of *G. plicatus* that flower in the fall or winter. They are an incredibly exciting find! They have relatively narrow leaves, with the distinctive pleating characteristic of *G. plicatus*, but which are absent or only a few centimeters long when the plants flower. The flowers have a fabulous scent. The outer segments are frequently heavily textured with longitudinal grooves or a seersucker effect. The inner segments usually have two distinct marks, a small apical V and a much larger basal blotch, which doesn't quite reach the ovary. Often the two marks meet and occasionally almost the entire inner segment is green. Plants grown from seed collected in these populations should be of great interest to anyone who appreciates fall flowering snowdrops and to anyone interested in breeding hybrids involving species that flower well before Christmas. The habitat is scrubby woodland over limestone, facing west (unusual for snowdrop species, which almost always prefer a north or east-facing aspect) and the plants grow in crevices in the limestone, often forming big clumps. It would be fascinating to try to produce hybrids with *G. peshmenii* or *G. cilicicus*, which flower at similar times and grow in similar habitats.

G. x *valentinei* nothosubsp. *subplicatus*

In Thrace, Turkey-in-Europe, west of the Bosphorus are scattered populations of a very intriguing snowdrop, exceedingly variable from one place to another, with characteristics seemingly intermediate between *G. plicatus* subsp. *byzantinus* and one or both of two other species, *G. gracilis* and *G. nivalis*. In the academic paper that describes this putative natural hybrid, the authors write: 'In Turkey, in the western part of the province of Istanbul, there are large populations of *Galanthus* that do not conform to any existing taxon, but instead appear to be a hybrid swarm'. The paper concluded that these populations are natural hybrids between *G. plicatus* and *G. nivalis*, a hybrid that forms readily in cultivation. Recent fieldwork has shown that populations of what appears to be the same taxon also occur in northern Greece, at least as far west as Mount Athos, the fascinating peninsula hosting an all-male monastic community that has been almost entirely shut off from the world for a thousand years. Populations recently discovered on the island of Samothraki (see below) are apparently closely related. It is also plausible that populations of snowdrops near the south-east coast of Bulgaria, that have previously been attributed to *G. nivalis* are in fact this taxon.

Its salient features are leaves that are glaucous, linear (parallel-sided), like those of *G. nivalis*, but typically with a slightly hooded (cucullate) apex and margins that vary from subrevolute to distinctly explicative (like *G. plicatus*). In stature, they vary from huge (more than a foot tall, with broad leaves) on and near Mount Athos, to diminutive, for example on the Black Sea coast near Bulgaria. The flowers are larger than those of most examples of *G. nivalis*, but could be confused with that species, except that every population contains a variable proportion of individuals with green smudges or eye marks at the base. In some populations, plants occur mainly as single individuals but elsewhere, especially on rich, alluvial soil, they can form large clumps. They are frequently found over limestone but, especially in northern Thrace, also form large populations on sandy soils over metamorphic rocks. Many plants are highly scented and the best are exceedingly beautiful, at least the match of the many hybrids in cultivation and they ought to be widely grown.

So what are they? I am increasingly of the opinion that *G. nivalis* is not closely involved in the parentage of this taxon or, if it is, only by way of ancient introgression. There are three reasons for this, the simplest being that there are no extant populations of *G. nivalis* anywhere near Thrace, with Bulgarian coastal populations (which may well turn out not to be *nivalis*) the closest candidates. The other two reasons are technical, drawing on the results of the most recent available molecular phylogenetic studies and other studies of the DNA mass in different species, a measure of genome size. These studies are, however, consistent with the possibility that *G. gracilis* and *G. graecus* is closely involved in the ancestry of these populations. This suggestion is also biogeographically more plausible than the notion of involvement by *G. nivalis*, since there are populations of both *G. gracilis* and *G. graecus* scattered in Thrace and in adjacent Bulgaria and Greece. These speculations will be resolved by further molecular studies and, pending that happy day, I urge galanthophiles to explore the diversity in this hugely variable, exquisite and slightly mysterious plant.

G. samothracicus

The most recently described snowdrop species and still almost unknown in cultivation, *G. samothracicus*, was discovered on the Greek Aegean island of Samothraki, where it grows beside streams and in pastures, where the sheep and goats seem very sensibly to ignore it. At first sight, one could be forgiven for mistaking it for *G. nivalis*. The vernation is applanate, the leaves narrow and glaucescent, with a noticeable, blueish bloom, that is easily rubbed off. There is a single apical mark on the inner segment which is typically somewhat larger than the equivalent mark in *G. nivalis* and, rarely, basal green smudges. In most cases the pedicel is longer than the spathe, an attractive feature that makes the flowers dance in a breeze. It forms clumps, sometimes comprising dozens of bulbs and occasional clones produce two scapes per bulb. Its finest feature, from a horticultural perspective, is its incredible scent, which is among the best produced by any species in the genus. We await with bated breath the results of ongoing genetic studies to clarify the relationship between the plants on Samothraki and those in Thrace and northern Greece discussed above.

G. reginae-olgae

In the southern Balkans and in southern Italy, *G. nivalis* is replaced by a closely related species, *G. reginae-olgae*. It is largely confined to the western halves of the Balkan and Italian peninsulas, with a few notable exceptions, and grows from sea level to at least 1,700m. It is easily and instantly recognizable by the combination of narrow, linear leaves, applanate vernation, a prominent paler stripe down the middle of the upper leaf surface and flowers with a single apical inner segment mark that resemble those of *G. nivalis*, but which are typically larger.

Traditionally, this species has been split into two subspecies, subsp. *reginae-olgae*, which flowers in the fall, with leaves largely absent and subsp. *vernalis*, which flowers in winter or spring, with leaves already in growth. This distinction is entirely arbitrary, however, as there are populations in flower, somewhere in the enormous geographic and elevational range of the species, every day from late September to late March, at every stage of leaf development. Populations of spring-flowering plants are scattered throughout the range, in the Peloponnese, in central Greece, in the northern Balkans

and in Italy. Surely each of these populations is more closely related to adjacent fall-flowering populations than to distant populations that currently flower in spring. Nomenclatural niceties aside, the wide range of this species means that it is enormously variable and outstanding selections are starting to become available, which, between them, flower over almost the entire snowdrop season.

These plants are not at all hard to grow but it is essential to know something about their origin, in particular the elevation at which they grow in the wild. This is one of the great advantages of choosing seed-grown plants of known provenance.

G. reginae-olgae winter and spring flowering

As noted above, the only thing these populations have in common, other than their membership of the species, is their flowering time in the wild. Populations near the coast or at low elevations in Montenegro, Bosnia-Hercegovina and Croatia start to flower around Christmas time and continue flowering at increasingly high elevations, as the snow melts. The latest populations do not flower until well into March. They are rather diminutive plants, by the standards of the species. They have glaucescent or glaucous leaves and some clones are the 'bluest' snowdrops around. In the Peloponnese, some populations contain enormous plants, with very large flowers, perhaps three times the size of the northern Balkan plants. Italian populations of *G. reginae-olgae*, whatever time of year they flower, tend to have green leaves, often a delicious emerald green and many populations have a small proportion of individuals with green markings on the outer segments.

G. reginae-olgae fall flowering

The first snowdrop species to flower each fall, both in cultivation and in the wild. The earliest clones start to flower in late September, especially if the bulbs receive some water in late summer. Many people think of snowdrops as exclusively spring flowering plants and fall flowering forms of this species are not particularly well known in cultivation, which is a shame because they are some of the loveliest of all snowdrops. Their defining characteristic is that they flower before the leaves and even the roots start to grow, the developing flower deriving all its water and nutrition from the bulb. The leaves emerge as the flower fades and they continue growing slowly through the winter, reaching their maximum extent in spring. The absence of leaves at flowering time seems to me to enhance the beauty of the flowers, which are among the largest in the genus. Usually, but not always, they have an excellent scent. A typical flower looks very similar to a flower of *G. nivalis*, but is much larger, on average. Forms with textured outer segments, green markings on the outers, albinos and forms with entirely green inners are starting to make their way into cultivation. This is not a difficult plant to grow, though it is native to places that experience mild winters. That, coupled with its winter growing habit, suggest a position near a wall, with some protection from the worst winter weather. A situation in which *Cyclamen coum* thrives would suit this snowdrop equally well. Most plants in wild populations occur as singles or clumps of two or three bulbs but, in a favorable position in cultivation, the more vigorous clones bulk up rapidly.

Woronowii clade

The details of when and where the remaining two snowdrop clades diverged from the nivalis clade are still murky but today all the surviving species are to be found in north-east Turkey, the Caucasus and northern Iran. All the members of the woronowii clade have green leaves, of varying shades and varying degrees of glossiness. They grow from sea level, within sight of the Black Sea, to high in the mountain fastnesses of the Caucasus. Only one of the species, *G. woronowii*, is well-known in cultivation which is a shame because the best forms of the others are every bit as beautiful.

G. lagodechianus

Galanthus lagodechianus, which occurs in the eastern half of the Caucasus Mountains and further south, into Armenia and Azerbaijan, has been named several times by different authors. These names are generally considered synonyms but

they are still widely used by Russian and Georgian botanists and the populations to which they refer are quite distinct. They are briefly described below, with an emphasis on which perform best in cultivation.

G. lagodechianus

The species was originally described from Lagodekhi National Park in north-east Georgia, a bewitchingly beautiful, utterly unspoiled tract of forest, accessible only on foot or by horse. Large populations of snowdrops still flower there in early spring, often from late January in mild years. The plants have dark matt green leaves, applanate vernation and flowers with a single apical green mark. Morphologically they are not unlike the distantly related *G. trojanus*, which has brighter green leaves. This species, though it has been cultivated for a long time, has not become popular, perhaps because it has a reputation for being shy flowering. This is an unfair slander! There are indeed many populations of *G. lagodechianus*, in the wide sense, that spread almost entirely clonally and form large clumps, in which only a few bulbs flower each year. These populations, which are discussed below, set very little seed. Populations at low elevations in Lagodekhi National Park (600m to 800m) flower freely, set abundant seed and generally occur as single individuals or small clumps. The great advantage of choosing seed-grown plants, of known origin, is that you are much more likely to get a free-flowering clone, that has already survived its first and harshest test in cultivation. Intriguingly, all forms of *G. lagodechianus* that have been studied have a chromosome number of 2n = 72, whereas all other snowdrop species are (usually) diploid, with 2n = 24. This suggests that *G. lagodechianus* arose from an ancestral species (perhaps *G. rizehensis*) by an increase in ploidy.

G. artjuschenkoae

Eleonora Gabrieljan applied this name to populations in Armenia and adjacent Azerbaijan of a magnificent, tall, free-flowering, clump-forming snowdrop that is, in my opinion, the finest form of *G. lagodechianus* for gardens. The ovary and inner segment markings often have a yellowish cast. It is difficult to get hold of authentic material and it is not the easiest snowdrop to grow well but keen galanthophiles should, in my opinion, seek it out!

G. cabardensis

I am only vaguely familiar with plants grown under this name, which is applied by Russian botanists to populations of *G. lagodechianus* growing in the north Caucasus. The few plants I grow flower poorly and are curiosities for the most obsessive galanthophiles only. No doubt anyone reading this who is familiar with gorgeous, free-flowering wild populations will be howling in outrage!

G. ketzkhovelii

Named by Liubov Kemularia-Natadze, G. ketzkhovelii occurs in Georgia, at high elevations under magnificent old beech forest. It is quite different from populations of that species in Lagodekhi National Park. The leaves are typically strongly recurved, dark, matt green, with a faint but definite narrow grey median line on the upper surface. The vernation is applanate. The flowers have a single green V-shaped mark at the apex, which is variable in shape and extent. The population structure is very unusual, with large, clonal clumps, each separated by several feet, presumably a consequence of the fact that they set very little seed. Rare seedlings bulk up quickly, however, by vegetative division. The places where it grows experience long, cold winters, often with a lot of snow and it ought to do well in American gardens with a similarly continental climate.

G. kemulariae

Described from populations near Zedazeni Monastery, not far from the Georgian capital Tiblisi, it is not at all clear to me how this differs from other populations of *G. lagodechianus* though, as with *G. ketzkhovelii*, it is not very free flowering and should be regarded as a curiosity.

G. rizehensis

The north-east corner of Turkey is a fascinating place for galanthophiles, with five snowdrop species *(rizehensis, woronowii, alpinus, koenenianus* and *krasnovii)* growing within a few dozen miles of one another. The first two on the list are the commonest and both occur from just above sea level, where they are often to be found at the margins of tea plantations or in hazel coppices, to riverbanks and cliff edges high in the mountains. Around the town of Hopa are several populations that appear to contain plants that are morphologically intermediate between *G. rizehensis* and *G. woronowii*. I am growing seeds from these populations and it will be fascinating to see, a few years from now, what emerges. *G. rizehensis* has matt to slightly glossy mid or dark green leaves, sometimes with a slightly paler median stripe on the upper surface. The flowers have a single apical mark on the inner segments. This species is fairly well known in cultivation and it has a reputation for being easily grown but shy flowering. As with *G. lagodechianus*, I think the explanation for this is that some wild populations do seem to spread mostly by clonal division, whereas others are not clump-forming and flower and set seed as well as any other snowdrop. Morphologically it is not possible to separate this species from *G. lagodechianus* reliably, though the ranges of the two species do not overlap (rizehensis occurs in north east Turkey, Abkhazia, possibly Georgia and Russia, close to the Black Sea) and they are kept distinct by the ploidy difference mentioned above.

G. woronowii

Exported under license in vast quantities from Turkey and Georgia, this is one of the commonest snowdrop species in cultivation and is easily grown in a wide variety of gardens. It is also easily recognized, having broad, bright green, glossy leaves, strongly supervolute vernation and flowers with a single apical mark. Although they are not yet widely grown, plants with green markings on the outer segments are not uncommon in wild populations. This is a clump forming species and some populations do not flower particularly freely. It is worth seeking out clones from populations that are known to set abundant seed. Habitats range from citrus groves and tea plantations near the Black Sea coast to wet woodland slopes up to about 1500m in the mountains. It frequently grows as a chasmophyte, on wet cliffs above rivers, usually, but not always, on limestone.

G. fosteri

This fascinating, rare species, with its unique combination of features, is a personal favorite of mine. It has an unusual distribution range, running north-south, from north-central Turkey in the north to the mountains of northern Lebanon and Syria in the south. It grows exclusively on limestone, as a chasmophyte or under scrubby oak forest and populations are far apart and small. Surviving populations are likely relicts from a period with a different climate. The leaves are a bright, glossy green, with distinctly grooved lower surfaces, similar to those for which *G. koenenianus* is better known. The vernation is clearly supervolute. The crystalline white flowers are marvelously beautiful, with two inner segment marks, bottle green in color, one at the apex and one at the base, the latter often extending over more than half of the segment and sometimes merging with the apical mark.

One variety, *G. fosteri* var. *antepensis*, has been named, for a population in the south of the range and this is by far the best form for cultivation, being much larger in stature and flower than other populations of this species, which is typically diminutive. All are worth growing and it is remarkably hardy and not difficult in the garden, though the smaller forms are perhaps best in a pot.

Alpinus clade

The final clade in the snowdrop story is nowadays restricted to the Caucasus and the mountains bordering the southern shores of the Caspian Sea. It is intriguing that our story both starts and ends in the Caucasus but it would be misleading to suggest that this clade was the most recent to emerge in the snowdrop lineage. We don't yet have enough resolution in the data to know where and when the younger lineages diverged. Further study, as scientists love to say, is required.

G. x *allenii*

Included here for completeness, this curious plant – which is horticulturally outstanding in my opinion – is thought by some to be a natural hybrid between two other species, that arose either in the wild or in cultivation. Speculation by J. Allen in the nineteenth century that the parents might be *G. alpinus* and *G. platyphyllus* seems highly unlikely to be correct, given the distant relationship between those two species. No wild populations have ever been found. The broad leaves are a unique, instantly recognizable shade of blueish green, with strongly hooded apices and the flowers are large, elegant and bright white, with a simple green mark at the apex of the inners.

G. alpinus

As is the case with *G. nivalis*, this is a single name that conceals a great deal of hidden structure and variability. Its range is vast, spanning the entire Caucasus (though north of the ridge, in the central Caucasus, it is generally replaced by its close relative *G. angustifolius*) and south into north west Turkey, Armenia and Azerbaijan. It grows from near sea level on the Black Sea, to true alpine elevations above 2,000m in Georgia, sometimes as a strict chasmophyte, sometimes under deciduous forest and sometimes in alpine grassland. All populations share supervolute vernation, glaucous leaves, with hooded tips and flowers with a single mark at the apex of the inner segments. Populations vary immensely in stature, however. Some of those growing close to the Black Sea become enormous after flowering, with leaves 15 inches long or more, whereas alpine forms are some of the smallest of all snowdrops. Cultivation requirements vary enormously, depending on provenance and its reputation for being difficult to grow is only partly justified. If you know where the seeds were collected, it is much easier to provide appropriate conditions for each clone.

Populations from near Lake Shaori, with particularly broad leaves, have been named *G. schaoricus*. This is a handsome plant, well-worth growing, but it represents just one point on a continuum of variation. An interesting population in the Kamenka River catchment in Kabardino-Balkaria, Russia, has been named *G. alpinus* var. *bortkewitschianus*. It is apparently triploid and sterile, spreading clonally. It flowers well nonetheless and is one of the easier forms of this species to grow.

G. koenenianus

An exciting, recently described species, closely related to *G. alpinus*, which occurs only in a handful of populations in a single valley in NE Turkey. It is a small plant, typically no more than 15cm tall but with flowers that are disproportionately large. They have a dark green mark at the apex of the inner segments and usually, but not always, a paler smudge at the base of the inners. The defining characteristic of the species, however, is the deeply grooved lower surfaces of the leaves, a feature not present in any other snowdrop species except *G. fosteri*, in which it is less developed. It occurs under *Corylus* trees at elevations of about 1600m, flowering as the snow melts. Successful cultivation requires permanent moisture at the roots.

G. angustifolius

Vernation, or the manner in which developing leaves are pressed together in bud, visible in growing plants at the base of the leaves, is a useful character in snowdrop identification. In truth vernation is just the reflection of a packing problem. As leaves become wider, they must be folded in some way or wrapped around one another, in order to cram them into the bud. Narrow leaved species or forms tend to have applanate vernation, with no folding or wrapping necessary. *G. angustifolius* is essentially *G. alpinus* with (exceptionally) narrow leaves – often only a tenth of an inch wide – and applanate vernation. It occurs quite commonly in the north Caucasus and morphologically similar plants have recently been found at one site in Georgia. It is barely known in cultivation and, in truth, I have found it difficult to persuade it to flower, though it persists and increases well enough. The combination of thread-like leaves and relatively large flowers is beautiful in the wild and perhaps in time forms grown from seed that flower freely in cultivation will be introduced.

G. transcaucasicus

This species grows in a long arc in the extremely diverse Hyrcanian forests that clothe the mountains rising above the southern margins of the Caspian Sea. It has probably the widest altitudinal range of any snowdrop. It's the only *Galanthus* to grow below sea level, not as an aquatic but on the shores of the Caspian, which is 17m below mean sea level, and it extends at least up to 2500m in the Alborz Mountains of Iran. This incredibly wide range unsurprisingly results in populations that vary in flowering time in the wild, from early December to early May, at the highest elevation sites. In cultivation, plants from most low elevation sites start to flower in November. *G. transcaucasicus* is a distinctive species, having green leaves without any glaucous bloom, supervolute vernation and a single mark at the apex of the inner segments. Clones producing two scapes per bulb are fairly common and forms with green markings on the outer segments are also occasionally found. In the wild it tends not to form clumps, except in situations where it receives a lot of nutrients, for example at the margins of orchards. Cultivation requirements vary hugely, depending on provenance. Plants from near the Caspian coast, which is very hot and humid in summer and mild in winter ought to do well in parts of the southern USA where other snowdrops are challenging to grow.