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THE BULB GARDEN

The Newsletter of the Pacific Bulb Society

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GEOPHYTES IN THE SHADY GARDEN

Jane McGary

In Portland, Oregon, where I live, I sometimes worked at the information table at large plant sales. Not infrequently, people asked, "We have big Douglas firs in our yard. What can I plant under them to get some color all summer?"

My stock answer: "Put a nice bench there and paint it blue."

About 12 years ago I moved from rural Oregon to a Portland suburb, to a lot with three massive Douglas firs near the street. I was ready for them, though: I dug many tubers of *Cyclamen hederifolium* from my former garden and planted them in the root zones of the firs. Now these ultra-tolerant plants carpet the ground with their attractive foliage through autumn, winter, and spring, flowering in late summer to mid-autumn. I marked plants with especially ornamental foliage, and plenty of white-flowered forms, before the move. Their seeds, dispersed by ants, have germinated in the lawn and the roadside parking area. Depending on hardiness, many species of *Cyclamen* are useful in the shady garden, though *C. graecum* and, somewhat surprisingly, *C. repandum* do best here in sunny areas.

Bulb enthusiasts often think of geophytes as coming from open, treeless areas such as alpine meadows and rocky sites, and commercial bulb catalogs usually tell buyers to plant their purchases in rich soil in sun. Many of us, however, have trees or built structures in or next to our gardens, and this is no reason not to enjoy bulbs there. In nature, some bulbs grow naturally under deciduous trees that leaf out after the bulbs have produced their foliage and flowers, or among evergreen trees such as pines that create light shade or grow openly spaced. Forest margins and clearings are also frequent bulb habitats.

In hotter climates, even bulbs native to open habitats may benefit from some shade that keeps the soil cool and limits evaporation. We may be able to extend the heat tolerance of high-elevation species by exploiting microclimates, particularly those with afternoon shade. Moving "sun" species into partial shade may also be helpful as the climate heats up. Afternoon shade is particularly beneficial, such as that provided by a south- or west-facing structure.

Shade may even be used to advantage. Gardeners in areas where the large bulb fly, sometimes called the narcissus fly, destroys daffodil bulbs may be able to use shade to deter this pest. I have read, but can't verify, that daffodils flowering in shade are less likely to attract bulb flies. Both the larger species and hybrid narcissus do well in sites here under deciduous trees that have leafed out by the time the bulb fly emerges. I also plant a lot of commercial daffodils in the hope that they'll draw the bulb flies away from collection of precious species Narcissus.

Right: *Galanthus nivalis* and *Cyclamen coum*, natives of shady habitats and favorites in the shade garden, along with *Puschkinia*, a plant of open snowmelt meadows, growing under a deciduous magnolia. Photo by Jane McGary.

Below: Lilies like the US west coast native *Lilium pardinalum* often grow in open woodlands or at an edge where the soil is shaded but they can reach into the sun. This photo was taken on Santa Rosa Island, part of the Channel Islands National Park. Photo by Emil Friend.

Some geophytic dicots prefer shade, notably *Anemone nemorosa*, whose specific name means "of the grove." It spreads rapidly in good soil. More than half a dozen horticultural selections are available in white and blue, including the double 'Blue Eyes'. *Anemone sylvestris* ("of the forest") is a well-behaved European species. *Anemone blanda* tolerates both sunny and shady exposures.

Most *Fritillaria* species are sun-loving, but the East Asian species seem to do best with some shade. I also find the Balkan native *Fritillaria pontica* happier in afternoon shade, and the lavishly self-sowing *F. meleagris* has made its way into some shady spots here. The taller Northwest natives *F. affinis* and *F. recurva* are often seen naturally among widely spaced trees.

Many species of *Colchicum,* both large and small, are shade-tolerant. In my garden I put *C. macrophyllum*, well named for its huge leaves, in a shady shrubbery, where it flourishes – and the withering foliage is hidden. The lovely white selection 'Innocence' (formerly called *C. byzantinum album*) looks brilliant in afternoon shade.

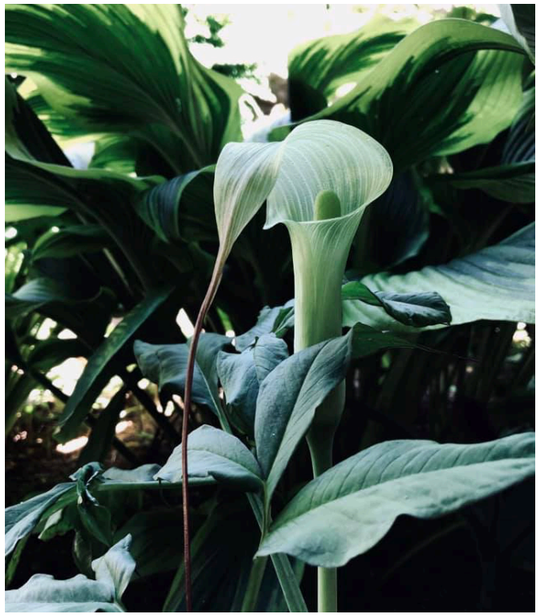
Certain genera are iconic plants of American woodlands. Several *Erythronium* species, including the eastern *E. americanum* and western *E. tuolumnense, E. oregonum,* and *E. revolutum.* They may accompany many species of *Trillium* in mixed deciduous forest of the east and conifer-dominated forest of the west. Dry pine forests with more open or scattered shade may host *Calochortus* and *Triteleia.* The American *Iris* species often grow in forest and scrub, though a few are limited to sunny habitats. Pacific Coast iris hybrids have been selected in a range of colors and patterns, and thrive in afternoon shade here. The rare endemic *Iris tenuis* covers the ground in shady places near Portland, but it flowers and sets seed mainly where the tree cover has been removed.

Several of the American *Lilium* species are plants of forest margins and shady streamsides (e.g. *Lilium pardalinum*), as are some European and Asian species. In nature they grow toward sunlight, bearing their graceful stems above grasses and shrubs.A good source of information is Edward McRae's *Lilies: A Guide for Growers and Collectors,* in which the chapter on species includes habitat descriptions.

In nature and in the garden, many aroids flourish in shade. *Arisaema* is the best known of these, and many *Arum* species also do well. When I needed more room in the bulb house, I tried to remove the various arums I'd grown from seed (it's hard to get them all out), and I relocated them to a rough shrubbery in a back corner of the property. Well-marked forms of *Dracunculus vulgaris* are attractive in shade if you can tolerate the smelly inflorescence. Even the sun-loving, drought-tolerant *Arum dioscoridis* has shown up from seeds I discarded under a plum tree, where its strikingly marked spathes will add interest in summer. I regret planting *Arisarum vulgare*, however, as it's far too vigorous. I've heard that *Pinellia* also spreads too rapidly.

As I write this, it's the season of the little blue bulbs, as Brian Mathew characterized them: *Muscari, Hyacinthoides,* and *Scilla* (and their various taxonomic "splits"). The commonly grown species of *Muscari* can be too invasive for the smaller garden, but most *Scilla* (in the broad sense) are better-behaved. The English bluebell, *Hyacinthoides non-scripta*, is a classic woodlander in nature and modest enough for the garden; however, avoid introducing *H. hispanica*, the Spanish bluebell, which has settled into my area with a vengeance. It was here when I moved in, and I'll never be able to get rid of it. I see it's now a listed invasive species on the Atlantic coast too.

It's wise to check native habitat information when choosing bulbs for a garden's microclimates. It isn't always necessary to imitate nature, though. The distribution of a species in the wild may reflect factors irrelevant to the garden, such as avoiding animal predators or retreating from terrain damaged by human activities. Two geophytes usually seen in rocky, summer-dry habitats, *Ornithogalum reverchonii* and *Lithophragma parviflorum*, got into rich, shaded spots in my garden by accident and are increasing and flowering well. If you have a surplus to gamble with, it's worth trying a few bulbs in different exposures to see if they can add interest where needed, even if it goes against the rules.



Arisaema tosaense against a backdrop of hostas, as photographed in her garden by Bridget Wosczyna. Her description: *Hard to find but gorgeous.*

Clivias, whether potted or in the ground, are known for blooming in deep shade. Most common garden varieties are derived from *C. miniata*, but there are several other species; pictured is *C. nobilis.* Photo by Emil Friend.

BOARD MEMBER INTRODUCTIONS

The Bulb Garden hasn't featured new board members in several years, so let's get caught up.

Bridget Woszcyna

Bridget came to hobby gardening in her mid-twenties, and to horticulture in her mid-thirties. She was born on the east coast, moved to southern California in her mid teens, and then returned to Pennsylvania a decade later with the beginning of the gardening bug and a bicoastal attitude: agaves or lilacs? (Well, both.)

Bridget has no formal horticulture education, but had a small garden maintenance business in southeastern Pennsylvania for 15 years and there is the added benefit of living in what many consider to be the horticultural epicenter of the US. She loves that she can travel one to two hours in any direction and be in a magnificent private garden, several horticultural educational teaching institutions, many botanical gardens and several different USDA growing zones.

Bridget now lives on 5 acres in the country and is fond of hardy aroids with a focus on *Arisaema*. Her other loves are Japanese woodland ephemerals. She became interested in PBS when it was suggested she join, as many do, for access to bulbs and seeds. She has never looked back.

After being a member for a few years, she recently tossed her hat into the ring for Bulb Exchange manager and in so doing joined the board in 2022. More recently she took on leadership of the organization as a whole when the previous president Robin Hansen stepped back. These duties have been taken on in the spirit of giving back to PBS. Bridget enjoys the busy work of bulb exchanges, and appreciates the discourse and camaraderie the Society affords all its members. She is a PBS cheerleader and advocates for people to join whenever she has the opportunity.

Emil Friend

Emil grew up in rural Pennsylvania, an area with plentiful agriculture but less opportunity for horticulture. His earliest gardens comprised farmstead heirlooms and wildflowers dug from the fields and woods, mixed with donations from family friends and the spoils from occasional nursery trips with a doting (and very patient) grandmother.

After earning a perfunctory bachelor's degree at Penn State he relocated to San Francisco, CA for a brief detour in the non-profit sector; finally he settled across the bay in Oakland where he and a business partner operate a landscape design and maintenance boutique.

Emil is a generalist, with deep affection for his roots in cottage gardens and orchards, and a fascination with the range of plants from all over the world that can grow outdoors in zone 9b/10a coastal California. Joining PBS has opened up another pathway for horticultural learning and coincided with a new hobby of growing geophytes and succulents from seed (clivias, cyclamen, aloes and dudleyas are some recent favorites). He joined the board in 2023 as secretary, and is also the editor of this publication as of this issue.

Mark Akimoff

Mark is the owner of Illahe Rare Plants, a specialty nursery that grows flower bulbs, geophytes, alpines and rock garden plants from around the world. Over his 25-year career as a professional horticulturist, Mark has worked in many sectors of the industry, including plant propagation at botanical gardens; historical garden management; large scale wetland, riparian and environmental restoration projects for government agencies; and teaching horticulture at the community college level. His degree in Horticultural Science is from Oregon State University and he studied biotechnology at Montana State University.

While his personal interests in plants run wide, a particular fondness for bulbs, rock gardens and alpine plants often has him exploring the high country for wildflowers. With a passion for travel and photography, Mark loves to share pictures of his botanical adventures with garden clubs and groups.

At the nursery in Salem, Oregon, Mark trials many different dryland and xeric plants to better help gardeners adapt gardens to changing climate conditions in the often drought-stricken western US. Check out his website to see the array of plants that he grows at www.illaherareplants.com. The flower bulb catalog that is published every summer offers a diverse array of geophytes from around the world.

Mark joined the PBS board in late 2023.

Kristen Henty

Kristen lives in Kerikeri in the Far North area of New Zealand which is zone 10b with very little to no frost, plentiful rainfall and subtropical summers. After completing a PhD in biochemistry and working for a few years in that field, Kristen gave up city life to move rurally to have a much larger garden and foster her passion to collect plants and grow much of her own food. She now works in the horticulture industry.

Her 15 acre property is on gravelly loam soil, and she has cattle on the areas that aren't used for gardening. The garden is geared towards food production with a lot of temperate and subtropical trees and a few tropicals in unheated tunnelhouses. She has a heated grow tent for the special plants including several 5-year-old specimens of *Amorphophallus titanum*. Many different bulb species were started in pots over the last few years in order to build a bulb collection. Her particular interests are South African bulbs, especially *Lachenalia*, *Gladiolus,* and amaryllids, and evergreen bulbs such as *Worsleya procera* and *Pamianthe peruviana*.

Lisa Zankowski

Lisa lives in Campton Hills, Illinois, in zone 5b. Lisa has worked for a Caterpillar dealership in the electric power generation field for 25 years, starting as a receptionist and currently as a data center field service supervisor.

Amidst her day job, she bought a cactus and succulent business in 2006 called Shoal Creek Succulents, which currently encompasses two greenhouses, totaling ~5000 square feet. In 2012, she retired early and began working full-time in the nursery. In 2023, an opportunity to fill in for a supervisor on maternity leave turned into a full-time job with the dealership once again.

Lisa's main interest in bulbs is in the Hyacinthaceae and Amaryllidaceae families. She particularly enjoys growing plants from seed to enhance the experience. At the height of working full-time in the greenhouse, she was able to sow about 1200 different packets of seed during a winter season. This has currently been much pared down until she can figure out how to bend the space-time continuum to have more hours in the day.

Lisa joined the board in 2024 as the new US Seed Exchange director.

Randall Linke

Randy has had a lifelong interest in plants. He was scolded by his mother at the age of 8 for dismembering several of her bearded iris flowers while trying to understand how to pollinate and hybridize them. It didn't dissuade him from his passion.

He grew up in the Sacramento Valley in California and graduated from California State University, Chico. While in California, he worked in landscaping and started small specialist nurseries specializing in Australian and S. African plants on the Mendocino coast. He then put in several years as a project manager in the Pacific Northwest, but moved back to California to manage a retail nursery and growing grounds, then worked in wholesale nursery sales. During the financial crises of 2008 when plant sales tanked, he became the operations manager for a small manufacturing and wholesale/websales company in Santa Cruz. He returned to the Pacific Northwest, working in operations for Filson until his retirement in 2021.

He and his wife now live in Armilla, just outside of Granada, Spain where they bought and are remodeling a small house.

His bulbous interests include irids, amaryllids and most of the subfamilies now included in the latter, though it could be said he has never met a bulb he didn't like. Randy also likes many other plants and is currently working on planting the small garden area off their back patio, having had the concrete covering it broken up and several raised planting beds built.

Randy looks forward to working with the board and putting his skills to work for PBS.

ELECTRON MICROSCOPY OF SOME ALLIUM SPECIES OF SECTION CODONOPRASUM

Carlos Jimenez, 2023 MSI grant recipient; photos by author

The genus Allium comprises about 850 species and after the latest phylogenetic studies it is accepted that it belongs in the family Amaryllidaceae, forming the subfamily Allioideae along with *Tulbaghia*, *Gilliesia*, *Ipheion*, *Nothoscordum*, *Nectaroscordum* and a few other genera. The genus *Allium* alone forms the tribe Allieae, and the genus itself is divided in a series of subgenera which in turn comprise up to 8 sections.

One of the most popular in the last three decades among botanists around the Mediterranean is section Codonoprasum in subgenus Allium, which has yielded a plethora of new species, often narrow endemics from restricted areas or even single mountains in Turkey, the Balkans and continental Greece and the Levant or small to medium-sized islands in the Aegean sea and the Sicilian archipelagos. The eastern Mediterranean, being richer in geophytes (*Bellevalia*, *Crocus*, *Colchicum*, *Muscari*, *Orchidaceae*) than the western part has been more thoroughly explored and is much more visited by enthusiasts, and the Iberian peninsula has been neglected, at least when it comes to Alliums.

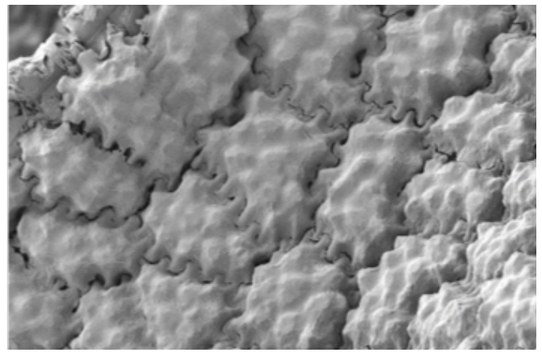
Section Codonoprasum is widespread around the Mediterranean and the near East and comprises plants with narrow leaves, normally flattened on the upper side and mostly with a semicircular section, but sometimes with ribs which give a toothed appearance to cross-sections. The flowers have rather long pedicels which are often drooping but not pendant; these are called nutant flowers. The seeds are quite unique in the genus, being flat and with the end opposite to the hylum being wider, a bit like the wing of a maple fruit.

I have been lucky enough to identify some possibly new species in this section, and besides the flower and leaf morphology I thought that the observation of the seed coats at high magnification would help me tell them apart from already known taxa. Within the genus Allium the sculpture of the seed has taxonomic value, and some works have focused on the ultrastructure of the seed coats, that is the observation of the seed through an electron microscope.

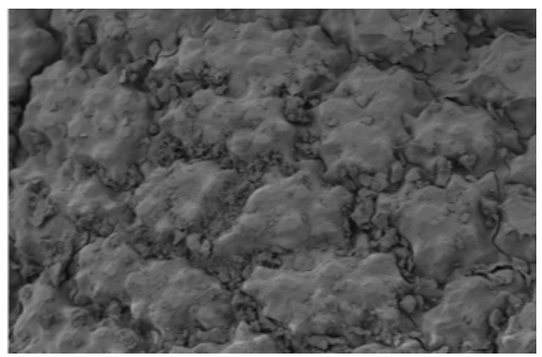
Some Electron Microscopy Examples

Allium cyrilli is not rare in the eastern Mediterranean (Eastern Crete and Turkey, mainland Greece to Serbia); it is fairly common around Sebastopol in Crimea and it has a few populations in Algeria, Italy (both in the north in Piedmont, Liguria, Emilia-Romagna and Veneto and in the south, in Apulia/Puglia), Provence in France, and a few scattered ones in central, eastern and south-eastern Spain, which I was lucky enough to report as new for the Spanish Flora (Jiménez et al., 21023). It is highly endangered in Spain because of changes in land use and trampling by pedestrians, and since the paper was published the translocation of some bulbs near Madrid City to safer places is going to be carried out in 2024.

Allium cyrilli was mistaken for *Allium nigrum* for over a century, but they are easily told apart when in bloom, as cyrilli has white (or sometimes deep pink) narrow, reflexed tepals, thickened stamens, and a black ovary, unlike nigrum. The seed coat is quite similar, though, as these two photos show.



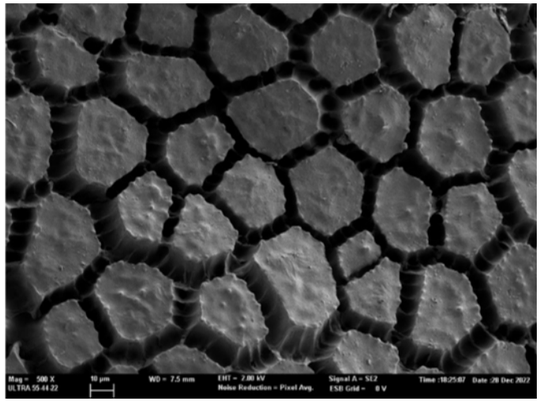
Above: *Allium cyrilli* from Valencia, Spain



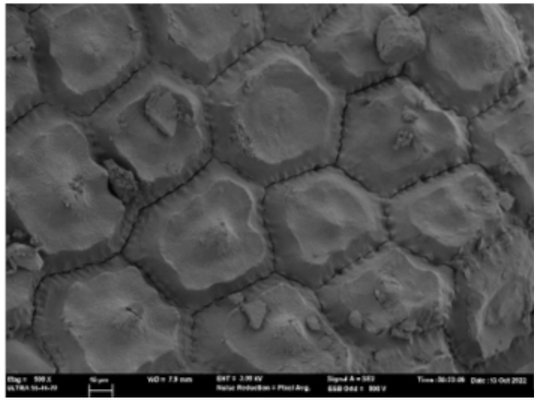
Above: *Allium nigrum* from Córdoba, Spain

Alliums chamaemoly and moly

Allium chamaemoly is a diminutive species which is not rare around the Mediterranean, but it's hard to detect even when in flower. The plants in Andalusia and west of North Africa are more robust and have a different chromosome count, and they are so far considered as different subspecies. I was lucky to get seeds of both types, and they are quite similar, with a seed coat broken into roundish to polygonal plates which seem elevated above the surface, and in western plants, "connected" by ridges.

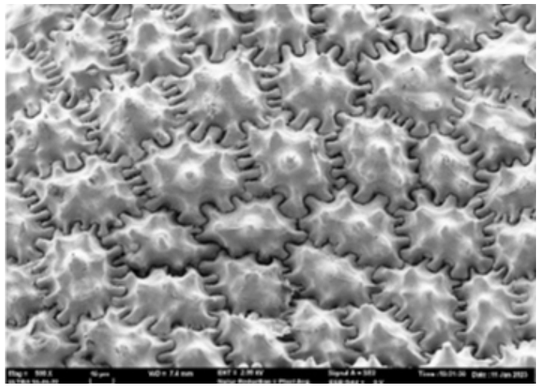


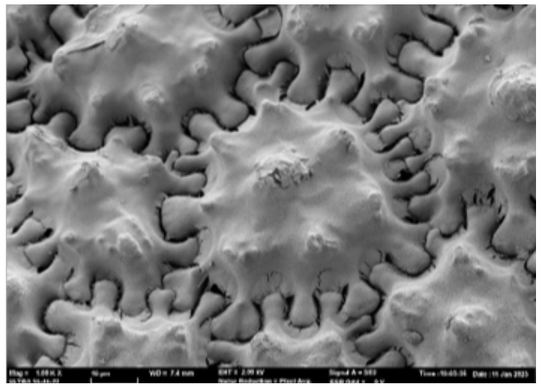
If I am to show *Allium chamaemoly* (little moly, in Greek) I should also show *A. moly;* here it is. Here the plates are pentagonal to hexagonal, a bit like pieces of Italian pasta (we'll see more of these later). *A. moly* is a curious plant which occurs in western Spain to Southern France and the Pyrenees, growing on limestone cliffs, which are humid to really wet during the winter. It produces only one leaf or a big one and 1-2 smaller ones and a bunch of sulphur-yellow flowers, and it completes its annual cycle in only 3-4 months.

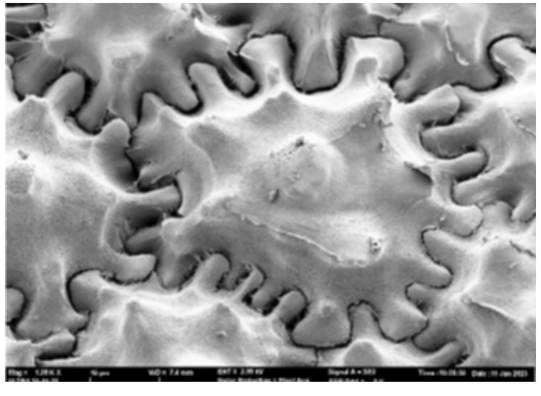


Allium commutatum from Monemvasia (Greece, ex Oron Peri).

This one is related to *A. ampeloprasum* and I found the plates on the seed coat so amazing that I simply had to include these photos. They look just like pieces of a jigsaw puzzle.







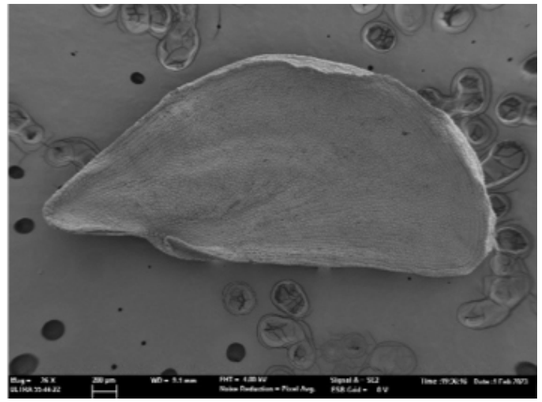
Allium subgenus Allium section Codonoprasum

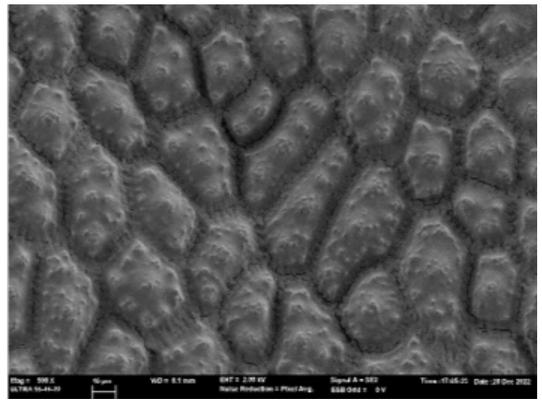
Allium spec nov. 1 (Valencia province)

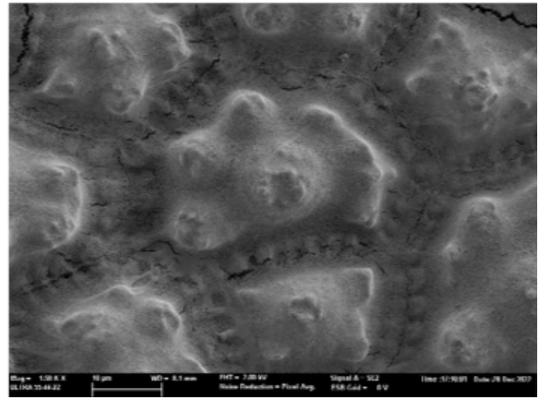
This is where it all started. I remembered having seen *Allium moschatum* in a small mountain range south of my home town, and one of my contacts wanted some bulbs or seeds, so I went there in late May, 2021. It was early but I saw some Alliums beginning to develop flower stalks and took some. When I showed the photos to my contact, he immediately said "that is not moschatum". Here started the quest to know what it was, and finally Dr. Jean-Marc Tison from France said that it is unlike any other species from the western Mediterranean he knows, and he knows a good amount of them. It seems that we also have here several microendemics that have been confused with *Allium paniculatum*, *Allium pallens*, *Allium stearnii* (a synonym of *A. pallens*), along with *A. longispathum*. I am not expecting that you understand, I don't understand it wholly myself after four years.

I have found this plant only in three places, covering a rather small area of about 30 square km, but it surely has a bigger distribution. It lives near the sea and the hills there are low and quite damaged by fires so not many people hike there, and even less so in June-July when it begins to be too hot, so the plant has surely gone undetected.

The seedcoat is formed by plates with the shape of amoebas that have a raised central part with bumps in the center and edges, and the outer edge is flat with digitations which are not tangled, so each plate seems to be just next to the other ones.

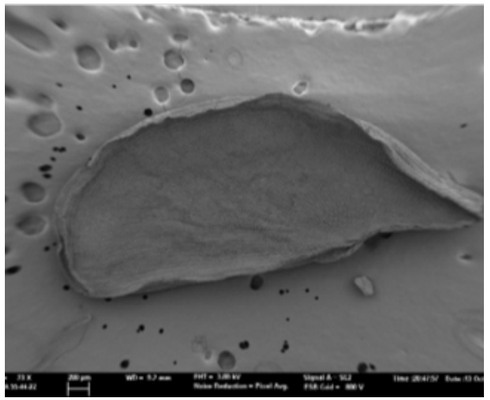


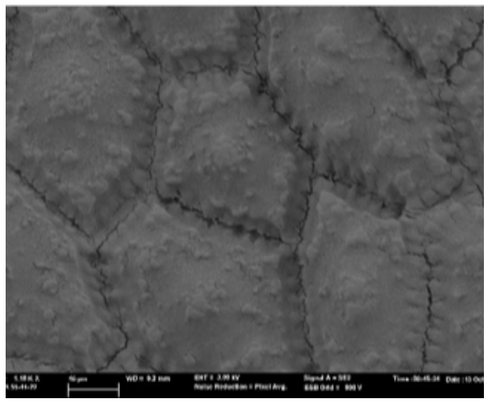




Allium spec nov. 2 (Madrid province)

I first identified this Allium in mid 2022, on photos taken by a retired enthusiast from Madrid, Ángel Fernández Cancio, who kindly indicated the exact place, among the gypsum-loving grass *Lygeum spartum* near a salt water lagoon in SW Madrid province. It grows with *A. sphaerocephalon* and I also found *A. baeticum* for the first time in that province, not far from the site. Note how different the plates are; here we have again a sort of "ravioli", also with bumps which are much less evident than in the previous one.





EDITOR'S NOTES

I am pleased to accept my recent appointment by the PBS Board as editor of this newsletter. We must trust that they know what they are doing, since it remains to be seen if I know what I am doing. That said, I had been in the mood for a writing project, and also find graphic design fun. I am excited to present topical articles, photos, and horticultural tidbits to inform and inspire you. As a garden itself is never done, so I will try to make little improvements to this newsletter. Suggestions you might have, or contributions of article ideas (or, even, articles themselves!) are welcome. Please get in touch.

Geophytes for Shade

Almost any residential outdoor gardener must know the challenge of matching plants with (more or less) the right amount of space and light. Some plants that are most vigorous with full sun exposure can still give some substantial increment of their display when forced to get along with less light. Some bulbs grown in shade may flower less often, as they build up energy reserves more slowly, but a mass planting will still have some blooms each year. As Jane suggests in her article, think first of using woodland-native geophytes under trees, or those that are trying to gather sunlight when trees above them are bare (or when sunlight comes in at a lower angle beneath the canopy).

Board Member Introductions

These brief biographies are important because, like any virtual community, PBS will function better when members know each other as people, or anyway as more than the abstractions of just names and email addresses. The volunteers on the PBS board are regular busy people, albeit with a specific shared passion, and they deserve our appreciation for the work they do. I am speaking here as a newcomer to the board, who has now witnessed what goes on behind the scenes.

Electron Microscopy

Carlos has put the seeds of many Alliums under the lens, and it seems this research will yield several new species. The photographs are stunning and we hope to publish more than we had space for in this issue, or to at least make his more comprehensive report available online.

The Pacific Bulb Society is a non-profit 501(c)3 registered in the United States. Our mission is to build community among people interested in bulbs and geophytes. We do this by hosting the exchange of knowledge on our web forum and email list, by organizing twice-yearly exchanges of seeds and bulbs, and by continually improving our public wiki database. We also offer annual grants in support of bulb research.

Learn more at

www.pacificbulbsociety.org

THE BULB GARDEN is the newsletter of the Pacific Bulb Society. It is published quarterly and is a benefit of paid membership. Kindly direct comments, suggestions, article submissions or advertisement inquiries to:

Emil Friend, editor

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COVER PHOTO: *Colchicum parlatoris* blooming in a shaded location; Greece. Photo by Jane McGary.

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