

The Bulb Garden



~Gardening with Bulbs~

Volume 18, Issue 3

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What's Inside...

COLCHICACEAE — Cultivated *Colchicum* Species by Dr. Dimitri Zubov
with selected photos covering Europe,
Mediterranean east to Western and Central Asia,
Western Himalaya, including Caucasus

COLCHICACEAE: Cultivated COLCHICUM Species

Dr. Dimitri Zubov is a biologist and biotechnologist, who is involved in the Ukrainian industry of human cell-based medicinal products manufacturing. He is also lead researcher in the State Institute for Genetic & Regenerative Medicine, National Academy of Medical Sciences of Ukraine, but his first passion is botany and bulb growing. Actually he lives in Ukraine, Kiev area, where he maintains in the ground a living collection of geophytes from different geographic sites, like genera such as Galanthus, Colchicum, Fritillaria, Scilla, Erythronium, Paeonia, etc. Dimitri is also a member of a phylogenetic team based in Kew Gardens (Dr. Aaron Davis), Richmond, United Kingdom, which studies the evolution history of snowdrops and their infrageneric kinship. In 2018 they described a new snowdrop species, Galanthus panjutinii Zubov & A.P. Davis (Platyphyllus clade) from Southern Russia; and in 2019 autumn-flowering Galanthus bursanus Zubov, Konca & A.P. Davis (Nivalis clade) from Western Turkey. All photos copyright Dr. Zubov.

The genus *Colchicum* L. is one member of the evolutionary ancient plant group, the family Colchicaceae of monocotyledons; the primitive morphological features can be found in African members of the closely related genus *Androcymbium* Willd., which some botanists have merged taxonomically with *Colchicum*. The name of the genus derives from the Ancient Greek name Κολχίς, the Caucasian region of Kolkhida in present-day Georgia. In fact, this is a well-known refugium of an ancient flora (the present-day Colchis Lowland).

In combined phylogenetic analyses of plastid sequences and morphological characters made by Karin Persson (Göteborg Botanical Gar-

den, Sweden) et al., 2011, *Colchicum* is placed as sister to the genus *Androcymbium*. In the same study, members of the genus *Colchicum* turn out to be sisters to *Androcymbium gramineum* (Cav.) J.F. Macbr., one of a North African/Mediterranean group of species. The Göteborg Botanical Garden possesses one of the largest living collections of *Colchicum* species, mainly cultivated in greenhouses.

All colchicums are highly toxic plants, which should be kept in mind when handling them, especially the corms and fresh green capsules with seeds. The ingestion of any plant parts may cause severe multi-organ failure and death. Nevertheless, its toxic compound colchicine is widely used in medicine to treat skin cancer, familial Mediterranean fever and urarthritis (gout).

The colchicums themselves (including the former genera *Meren-dera* Ramond and *Bulbocodium* L.) have a typical flower with six perianth (tepals) which are separate or fused into a tube. Representatives of the genus (a few more than 100 species, excluding *Androcymbium*, according to K. Persson, 2007) are naturally distributed from Spain, Portugal, and countries of North Africa (northern areas of Morocco, Algeria, Tunisia, Libya and Egypt) in the west, to India and Pakistan in the

COLCHICACEAE cont'd

east, and from Germany and Poland in the north, to Saudi Arabia in the south. Depending on their ecological niches and climatic conditions, various species and their geographic races exhibit rich variability in morphological, anatomical and phenological characters. Colchicums are mesic geophytes with corms. Plants are from 3-5 cm to 20-25 cm in height when flowering, with leaves in the fruiting stage from 10 cm to 60 cm in height; the flowers have six perianth segments separate or fused into a tube; the growth pattern may be synanthous (leaves visible at flowering, such as the late autumn-, winter- and spring-flowering groups) or hysteranthous (leaves appearing much later after flowering, generally species from the late summer- to late autumn-flowering groups); perianth colors include white to pink, lilac, dark purple and yellow; corm tunics are papery, membranous to subcoriaceous and hard coriaceous; leaves number 2 to 25 per corm, and are linear to widely lanceolate, bright green or glaucous, glabrous to pubescent, or with cilia along the margin of the leaf blade.

An interesting feature of most species is the "scout-flower". This is the very first one that appears above the soil surface, as if assessing the current weather situation. If it is frosty or very hot, then it gives a "signal" to retard the development of all other flowers in the corm. The flowers are bright and fragrant and pollinated by bees, bumble bees, various flies and ants. The seed capsule is septicidal, with three compartments, from syncarpous multi-leaf (with separate carpels, for example, as in the genus *Androcymbium*) to syncarpous capsule (carpels fused to varying degrees); as the ovary of a flower remains underground, the fruits mature under the soil surface, barely showing the apices of the carpels or they sometimes sit on the stalk a few centimeters above that level. In the wild, capsule ripening depends on the species and flowering pattern, any time from very late winter to late spring or early summer. The seeds are more or less round or rounded and irregularly faceted, with a hilum, small (0.2 cm, e.g., *C. soboliferum*) to a relatively large 0.6 cm (e.g., *C. luteum*, *C. woronowii*, *C. robustum*) in diameter, light-colored when the capsule is ripening, then drying out and darkening, and passing into a long period of dormancy during which germination is inhibited (Fig. 1) Consequently they should be sown

immediately after harvesting. It is advisable to keep the substrate moist until they germinate. In this case the seedlings will appear the next spring; otherwise they can germinate much later, even several years after dry storage. I keep the freshly harvested seeds after capsule ripening in a barely wet perlite/vermiculite mix (1:1) in



Fig. 1



Fig. 2

plastic zip lock bags at room temperature with no direct sun until sowing them in the ground in October (Fig. 2). When self-sown, the seeds remain under the parent plant and will germinate in a cluster the next spring. Apparently, there is no one agent known to distribute them, since they generally do not contain fleshy appendages like those of snowdrop seeds with elaiosomes. From seed sowing, colchicums can start to bloom, depending on the species, in 4 to 7 years.

The corm is annual, with a new replacement corm formed every year. The

variability in corm shape is impressive: round to ovoid; without a vertical outgrowth or “foot” (e.g., *Colchicum hungaricum*, *C. bulbocodium* ssp. *bulbocodium*, *C. manissajianii*, *C. kurdicum*); or with a foot (Fig. 3), at the distal end of which a new bud



Fig. 3

sits (in most species, e.g., *C. macrophyllum*, *C. szovitsii*, *C. decaisnei*, *C. freynii*, *C. jolantae*); there are also more or less stoloniferous corms which lie horizontally in the soil (e.g., *C. soboliferum*, *C. boissieri*, *C. davisii*, *C. minutum*, *C. munzureuse*) (Fig.



Fig. 4

4). The corms are covered with sheaths (tunics) colored straw-tan, brown, or reddish to nearly black, the remnants of old leaves, extending



Fig. 5

into a neck of variable length. Sometimes the neck is much longer than the corm (e.g., *C. laetum*, *C. greuteri*, *C. kesselringii*, *C. freynii*), and this is a distinctive feature for identifying the species (Fig. 5). The corm tunics can be very hard coriaceous

(leathery) to subcoriaceous, as in species from arid regions with soils that become hard and dry (e.g., *C. trigynum*, *C. candidissimum*, *C. varians*, *C. freynlkii*); they may have thin papery tunics, as in alpine meadow species and species from seasonally inundated habitat biotopes (e.g., *C. raddeanum*, *C. triphyllum*, *C. leptanthum*, *C. soboliferum*, *C. hirsutum*); most other species have sub-membranous to membranous tunics (e.g., *C. autumnale*, *C. woronowii*, *C. laetum*, *C. macrophyllum*, *C. szovitsii*, *C. ser-pentinum*, *C. doerfleri*).

Many species form vegetative clones through daughter corms from the main and lateral buds (e.g., *C. autumnale*, *C. szovitsii*, *C. speciosum*, *C. bulbocodium* ssp. *bulbocodium*, *C. hungaricum*, *C. munzureuse*), while some produce tiny stolon-borne corms, from a few to many (e.g., *C. varians*, *C. freynii*). However, most species generate only a single replacement corm annually.

The most problematic species in cultivation are those that come from extreme habitats: high alpine meadows with long-lasting snow cover, or arid land which remains hot and dry for much of the year. Mediterranean species that produce foliage in winter are not very frost-tolerant, and need protection in colder regions. Otherwise, the colchicums are unpretentious and highly decorative geophytes that will delight you with their prolonged flowering period from the end of July or early August to April, provided you select a wide range of species.

The known speciation and biodiversity centers of colchicums are Asia Minor (primarily Turkey), the Caucasus and Transcaucasia, the Mediterranean, and central, southern and eastern Europe. Several species grow in North Africa, the Iberian Peninsula, the Middle East, Western and Central Asia, and in the western Himalayas (India, Pakistan).

Persson (2007) has suggested that evolution in Colchicaceae in part is reticulate because of the high percentage of probably allopolyploid species, c. 75% of the species in Colchicum being polyploid (Persson, 1993b, 2009a).

My living collection includes nearly 190 colchicum accessions, including geographical races and interspecific hybrids grown since 2000-2004 (mainly spring-flowering ones). Some of them are illustrated here as both flowers and dormant corms. My plants are cultivated in the open ground (Kiev region, Ukraine; approximately USDA hardiness Zone -5b) with minimal agrotechnical measures, but annual lifting and replanting. It is most convenient to

COLCHICACEAE cont'd

organize my colchicum collection according to geographic principles.

I also give here two new taxonomic combinations based on my field and garden studies: *Colchicum candidissimum* (Miscz. ex Grossh.) Zubov, comb. nov. = *Merendera candidissima* Miscz. ex Grossh., Fl. Kavk. 1: 190 (1928). – Type: Azerbaijan: ‘Prov. Baku, distr. Lenkoran, prope pag. Orant, culta in sect. cauc., leg. Grossheim, det. Misczenko’, lectotype TBI (designated in: Persson K. (2007) Nomenclatural synopsis of the genus *Colchicum* (Colchicaceae), with some new species and combinations. - Bot. Jahrb. Syst. 127: 165-242).

Although Karin Persson states that *Merendera candidissima* is considered by her conspecific with *C. trigynum* (*M. trigyna*) I've decided based on my studies, to separate this taxon with its given distribution only in Transcaucasia and Talysh (S Armenia, Azerbaijan, W Iran). The very polymorphic *C. trigynum*, in contrast, is distributed within Ciscaucasia and the Caucasus (Russia, Georgia, N. Armenia) and, possibly, in northeastern Iran's Golestan Province.

Colchicum jolantae (Czerniak.) Zubov, comb. nov. = *Merendera jolantae* Czerniak., in Izv. Glavn. Bot. Sada SSSR 29: 133 (1930), Repert. Spec. Nov. Regni Veg. 27: 264 (1930). – Type: Iran/Turkmenistan: ‘Turcomania borealis, Kopet-dagh, Razarash [Rizarash, Kuh-e Reza], ad nives deliquescentes’, 9.VI.1924, Czerniakovska 160, holotype LE.

In northeastern Iran *C. robustum* and *C. jolantae* (*M. jolantae*) are sympatric, at least near Raz village close to the Turkmenistan border. In the wild it is very difficult to distinguish them but when cultivated side by side their morphological differences are obvious (see figures here). Nonetheless, K. Persson considers erroneously that the two taxa are conspecific, with the priority name *C. robustum*.

Ed.: Dr. Zubov's photos are presented by the geographic areas where they grow. Note the differences between those that flower before leaves appear and colchicums that flower with or after leaves come up. This can aid in identifying bulbs in the field, but is only one clue among many. A new and excellent reference is Colchicum, the complete guide, Grey-Wilson, et al, Royal Horticultural Society, UK.

Crimea, Ciscaucasia, Caucasus & Transcaucasia*Colchicum eichleri**Colchicum candidissimum**Colchicum freynii*



Colchicum laetum



Colchicum raddeanum



Colchicum greuteri



Colchicum speciosum



Colchicum mirzoevae



Colchicum speciosum

Crimea, Ciscaucasia, Caucasus & Transcaucasia *cont'd*



Colchicum szovitsii



Colchicum triphyllum



Colchicum bifolium



Colchicum umbrosum



Colchicum ninae



Colchicum woronowii

Europe and the Mediterranean



Colchicum arenarium



Colchicum boissieri



Colchicum asteranthum



Colchicum chimonanthum



Colchicum boissieri



Colchicum doerfleri

Europe and the Mediterranean *cont'd*



Colchicum hungaricum 'Veilbt Star'



Colchicum pusillum



Colchicum montanum



Colchicum sikkasianum



Colchicum macrophyllum



Colchicum trigynum

Europe and the Mediterranean *cont'd*



Colchicum turcicum

Asia Minor & Western Asia, Middle East *cont'd*



Colchicum atticum



Colchicum variegatum



Colchicum balansae

Asia Minor & Western Asia, Middle East



Colchicum atepense



Colchicum burtii

Asia Minor & Western Asia, Middle East *cont'd*



Colchicum crocifolium



Colchicum hirsutum



Colchicum dayisii



Colchicum kotschyi



Colchicum figlalii



Colchicum kurdicum



Colchicum lagotum



Colchicum micaceum



Colchicum leptanthum



Colchicum minutum



Colchicum manissadjanii



Colchicum munzurense

Asia Minor & Western Asia, Middle East *cont'd*



Colchicum persicum



Colchicum mischkanum



Colchicum sanguicolle



Colchicum soboliferum



Colchicum serpentinum



Colchicum szovitsii ssp *brachyphyllum*

PBS Board Meeting—Minutes, November 8, 2020

PACIFIC BULB SOCIETY

Conference Call Board Meeting

Meeting began at 1: 13 p.m. Pacific Time (6:13 p.m. Germany)

Roll call: Luminita Vollmer, Lee Poulsen, Johannes Urban, Martin Bohnet, Arnold Trachtenberg, Jane McGary, Robin Hansen, Kathy Andersen.

President Hansen welcomed new board member Martin Bohnet to the board. Martin is now the assistant seed/bulb exchange director for the EU Exchange.

Vollmer moved, seconded by Trachtenberg to accept minutes. Motion carried.

Trachtenberg gave the financial report, up-to-date as of Nov. 6, 2020. He reported that because PBS is incorporated in California, our registered agent must reside in that state and he has arranged with a commercial firm to act as registered agent. PBS board information has been updated. Trachtenberg also received one estimate for a liability policy for an errors and omissions policy, but felt it was too high and is continuing to research carriers.

Membership Report: McGary reported as of now we have 376 members and new members continue to join.

Hippeastrum book: McGary reported that she expects the book to be ready for download and/or print in January or February. She said the designer has done excellent work.

US Seed/BX exchange: Vollmer said that Exchange 471 had 85 orders with a few people ordering one of everything on the list of 67 items. Vollmer commented that for some very small seed donations, there might be 3 very tiny seeds in a packet and McGary suggested donors of these tiny seeds prepack because of the time required before sending. Further discussion concerned those members who ordered “one of everything” and the general consensus was that a limit was needed with suggested limits on the order of 20 or 25 packets per person as a good amount. Also discussed was the suggestion from Urban to notify all members by email when a BX is announced. The problem is that McGary doesn’t always get updated email addresses, plus that information is available in the internet group and is on the wiki.

EU Exchange: Urban had sent around a review of the first EU exchange. He said that the PBS website is not very accessible on smartphones (since corrected by David Pilling, Webmaster). He also suggested emailing all members announcements of seed and bulb exchanges. He prepacked a lot of seeds before sending to Bohnet for distribution, which took a great deal of time, and Urban instead suggested that SX/BX directors could prepack several packets but not the full amount donated since until requests come in, it isn’t known how many packets would be needed. He did comment that he and Bohnet thought the first EU exchange went well but were surprised that Mediterranean seeds and bulbs were not much requested. He hopes that will change with an article in the

Mediterranean Garden Society journal in the future.

A discussion was held regarding the PBS wiki and website being on David Pilling’s private server. Martin Bohnet said he has full backups of David’s server and makes them frequently but will try to increase the number of backups. Also it was suggested and will be implemented that David be invited to our next board meeting.

Hansen said that it was now time to send out updated membership directories. These are sent every two years. It was determined these will be sent out after the first of the year with the Bulb Journal.

McGary said she had been contacted by what she presumed was a Russian regarding an issue over bulbs ordered from a former seed director who is still using their PBS title, but is no longer a PBS member. Motion was made by Arnold, second by Jane and approved by board to contact this person requesting removal of any mention of PBS.

Meeting adjourned.

Respectfully submitted,

Robin Hansen

substituting for Kathy Andersen



**It's time to renew
for 2021 !**

**We appreciate
your support—
we would hate to lose you!**

**Whatever you do—make sure we have your
correct email address. This is very important
when we need to contact you directly.**

Renewing is easy. You can renew **ONLINE** (\$20 U.S., \$25 international) via PayPal. Just use the button on our membership page,
<http://www.pacificbulbsociety.org/membership.html>.

**You can also mail in your renewal. Make check
payable to: Pacific Bulb Society and mail to:**

PACIFIC BULB SOCIETY
c/o Arnold Trachtenberg, 140 Lakeview Avenue,
Leonia NJ 07605

Whether renewing online or by mail, please contact Jane McGary (janemcgary@earthlink.net) if any of your contact information has changed.

**Thanks again for your continued support of
the Pacific Bulb Society!**

Asia Minor, Western Asia, Middle East *cont'd*



Colchicum varians

Central Asia & Western Himalaya



Colchicum xalberti



Colchicum varians white form



Colchicum xalberti 'Janis Ruksans'



Colchicum wendelboi



Colchicum jolantae

Central Asia & Western Himalaya *cont'd**Colchicum kesselringii* 'My Choice'*Colchicum luteum**Colchicum kesselringii* f. *albiflora**Colchicum robustum**Colchicum luteum* 'Vakhsh'

ATTENTION
PBS Members

**CALL FOR APPLICATIONS FOR THE 2021 MARY SUE ITTNER
GRANT FOR BULB STUDIES**

This grant is set up to support anyone interested in learning more about bulbs. It may be used to support any type of research, including field-work, and education. It is available to paid PBS members world-wide, and you may apply for membership when you submit your application. Applications deadline is Mar. 31.

PBS has awarded applications to study Floral Traits and Pollination Syndrome in *Thalictrum*, Umbel-viable Diversity in *Allium*, and Phylogeography and Trait Evolution of the Ethnobotanically Important *Bomarea edulis* among others. You will find the reports of these studies in future issues of *The Bulb Garden*. For more information, visit PBS on the web under Grant.

Gardening with Bulbs



Mature flowering size corms of *Colchicum robustum*, upper row, vs. *C. jolantae* immediately after lifting.

Inside This Edition:

COLCHICACAEAE—Cultivated Colchicum
Species by Dr. Dimitri Zubov, including
Photos of Selected Colchicum Species

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The Bulb Garden is the newsletter of the Pacific Bulb Society (PBS). It is published, if enough articles are submitted, around the third week of each quarter and is available to PBS members. This newsletter provides gardening or bulb related articles, news of interest to members, and announcements of the PBS organization.

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