NAT. CROAT. | VOL. 34 | No 2 | 421-470 | ZAGREB | December 31, 2025

professional paper/stručni članak – museal collections/muzejske zbirke
DOI 10.20302/NC.2025.34.31

PLETHORA OF PLANTS - COLLECTIONS OF THE BOTANICAL GARDEN, FACULTY OF SCIENCE, UNIVERSITY OF ZAGREB (10): GLASSHOUSE SUCCULENTS OF THE FAMILY ASPHODELACEAE - SUBFAMILY ALOOIDEAE

Dubravka Sandev*

Botanical Garden, Department of Biology, Faculty of Science, University of Zagreb, Marulićev trg 9a, HR-10000 Zagreb, Croatia

Sandev, D.: ***Plethora of plants*** **– collections of the Botanical Garden, Faculty of Science, University of Zagreb (10): Glasshouse Succulents of the family Asphodelaceae - subfamily Alooideae. Nat. Croat., Vol. 34, No. 2, 421–470, 2025, Zagreb.**

This paper discusses the plant lists of glasshouse succulents, subfamily Alooideae, grown in the Botanical Garden since 1895 until 2025. The synonymy, nomenclature and origin of plant material were sorted. Lists of species grown in the last 130 years are constructed to show that throughout that period at least 172 taxa of succulent plants from subfamily Alooideae inhabited the Garden's cold glasshouse collection.

Key words: Zagreb Botanical Garden, Faculty of Science, historic plant collections, succulent collection, subfamily Alooideae, Croatia

Sandev, D.: ***Obilje bilja*** **– zbirke Botaničkoga vrta Prirodoslovno-matematičkog fakulteta Sveučilišta u Zagrebu (10): Stakleničke mesnatice iz porodice Asphodelaceae - potporodica Alooideae. Nat. Croat., Vol. 34, No. 2, 421–470, 2025, Zagreb.**

U ovom članku sastavljeni su popisi stakleničkih mesnatica, potporodice Alooideae, uzgajanih u Botaničkom vrtu zagrebačkog Prirodoslovno-matematičkog fakulteta između 1895. i 2025. godine. Uređena je sinonimija i nomenklatura te istraženo podrijetlo biljnog materijala. Rezultati pokazuju kako su tijekom 130 godina kroz zbirku mesnatica hladnog staklenika iz potporodice Alooideae prošle najmanje 172 svojte.

Ključne riječi: Botanički vrt PMF-a u Zagrebu, povijesne zbirke biljaka, zbirka mesnatica, potporodica Alooideae, Hrvatska

INTRODUCTION

In a continuation of the comprehensive investigation of the plant collections in the Botanical Garden of the Faculty of Science, University of Zagreb (in further text "the Botanical Garden" or "the Garden") initiated in 2015 (Kovačić, 2015) discussed here are the inventories of glasshouse succulents (Sandev *et al*., 2013) with subfam. Alooideae of the family Asphodelaceae that have been a part of our collections ever since the Botanical Garden's foundation. General facts about the Garden, its collections and glasshouses were published in our previous papers.

* e-mail: dubravka.sandev@biol.pmf.hr

Following the principles established in Kovačić (2015), I made an inventory of all existing and once-existing species of exotic succulent plants from subfamily Alooideae. Subfamily Alooideae comprises the well-known aloes and their close relatives in family Asphodelaceae. Older classifications treated the alooids in various ways – as Aloaceae, Liliaceae, or even Xanthorrhoeaceae – while recent molecular studies have dramatically revised their classification (Manning *et al.*, 2014). For example, what was once the single genus *Aloe* is now split into six genera: *Aloe* (sensu stricto), *Aloiampelos* (rambling aloes), *Aloidendron* (tree aloes), *Aristaloe* (awn-leaf aloe), *Gonialoe* (kannieddood aloes) and *Kumara* (fan aloes) – together numbering about 613 species worldwide (POWO, 2025). These "aloes" belong to a broader clade of alooids that also includes other succulent genera such as *Astroloba*, *Gasteria*, *Haworthia*, *Haworthiopsis* and *Tulista* (Manning *et al.*, 2014). Southern Africa is the undisputed centre of diversity for Alooideae (especially South Africa and Namibia), with many taxa endemic to this region. Significant secondary centres occur in East Africa, Madagascar, the Arabian Peninsula and nearby islands (Daru *et al.*, 2013). Aloes also grow 'wild' far beyond their natural distribution: they have escaped cultivation and become naturalised in parts of Central and South America, India, around the Mediterranean and eastern Atlantic islands. Because of this diversity, the botanical collection includes numerous southern African species. Many names have changed with taxonomic updates, for example, *Aloe plicatilis* (L.) Burm.f. is now regarded as *Kumara plicatilis* (L.) G.D.Rowley (Photo 1i), and the former genus *Haworthia* has been split into three distinct genera (*Haworthia*, *Haworthiopsis*, *Tulista*) based on DNA evidence (Rowley, 2013).

Alooideae succulents are of high conservation concern. Aloes are traded commercially or informally as living plants and are used in horticulture for gardening, landscaping or succulent collecting. They are used in food, cosmetics and various supermarket commodities. The natural products industries are dominated by two species: *Aloe vera* (L.) Burm.f. (produced predominantly in North- and South America and Asia), and *Aloe arborescens* Mill. (Asia). Fortunately, the vast majority of the most valuable horticultural subjects are naturally quite common species, and these are readily available in the horticultural trade through artificial propagation (Grace, 2011). Extinction is, alarmingly, a risk to many species of aloe in the wild. Like many other members of the plant kingdom, the principal factor is habitat loss, due to farming, road construction, and urban development. Trade in aloes is regulated; for instance, a CITES Checklist notes that all aloes except *A. vera* (bitter aloe) are included in the Appendices (CITES, 2025). Botanical garden collections function as insurance against extinction. Ex-situ seed and living collections preserve genetic diversity for research, restoration and potential reintroduction. In practice, a botanical garden glasshouse acts as a secure repository: nearly one third of all known plant species are estimated to be cultivated in gardens worldwide, highlighting their conservation role (Bachman *et al.*, 2020). Succulents like aloes are especially suitable for living collections because they propagate readily from seed and tolerate ex-situ conditions.

The history of and living conditions in the Botanical Garden glasshouses were depicted in Kovačić (2015), and the details of the cold glasshouse intended for overwintering of succulents in Sandev *et al.* (2018). During 2025 I thoroughly examined the published works, Garden-database and our own inventory records to establish the lists of exotic succulents subfam. Alooideae living in the cold glasshouse collection between 1895 and 2025.

MATERIAL & METHOD

This study synthesizes three sources of accession data for Alooideae succulents in the Garden's collection. The historical inventory (ca. 1895–1980s) is based on original handwritten records in notebooks from the Garden's early curators. The passive database compiles all exotic alooid taxa grown from 1948 to 2020. These entries (often hand-written cards) reveal when plants were lost from the collection or some similar short notes about species. There were overlaps in the recording of arrived and living species in the collection from 1948 to the 1980s, when for unknown reasons, double records of all species in the collection were kept (in historical notebooks and the passive database). Finally, the active database represents all alooids currently in cultivation (digitized in 2020 and updated through 2025). Current plant lists are derived from annual or biannual staff inventories, ensuring up-to-date coverage of living accessions. Together, these three inventories allow us to track each taxon's provenance and nomenclatural history.

- Historical database (1895–1980s): Early accession logs and curator notes.
- Passive database (1948–2020): Records of taxa that we cultivated during that period, many of which we still cultivate today and are in the active database; includes many synonyms and duplicate entries that we have consolidated. The details on the collection's database and inventories after 1948 until today are explained in Budisavljević & Kovačić (2020).
- Active database (digital, 2020–present): Current living collection, based on regular inventories by the garden staff.

All alooid plants in the glasshouse are seed-grown, arrived as cuttings or in small amounts arrived as adult plants (mostly as gifts). Seeds were obtained primarily through the botanical garden seed exchange network (*Index Seminum*). The Garden received material from many botanical gardens and some other breeders. Some seeds originated from field collections from natural habitats, but most are collected in Gardens (many of the Garden's older succulents were acquired before CITES rules, so we now hold CITES-listed species that were freely exchanged at the time). All incoming seeds and plants are grown in quarantine. Most of the plants in the recent cold glasshouse collection are represented with three to five clay-potted-specimens, which are rejuvenated (vegetatively or germinatively), when and if possible. For most of the newcomers after 1948, the home town or the botanic garden of origin was noted, together with the year when the material was acquired.

Using these inventories and seed records, I have sorted each entry according to the accepted scientific name and documented synonyms. For instance, historical records labelled *Aloe saponaria* (Aiton) Haw. have been merged with *A. maculata* All., and *Haworthia* entries updated to *Haworthiopsis* or *Tulista* as appropriate. The final checklist thus reflects current nomenclature and highlights the origin of each accession (for the most of taxa this information has been recorded).

Table 1 comprises the details extracted from the historical, passive and active Garden-database, but missing date in the collection are shown as 'nn' or "unknown origin". Again, as specified in Kovačić (2015), examination of this part of the database inevitably led to the identification of many synonyms, and double (even triple or more) entries for same plant specimen or species, as well as the identification of several larger plant die-offs during the decades. Even during the last decade we have beenwitness to one of the succulent die-offs, since the Exhibition Glasshouse is under

reconstruction and the collection has been replaced few times. The first move was less suitable, but to better facilities in 2020 (Fig. 1).

The final part of this study is based on our active Garden-database and recent records on the alooid succulents growing in the cold glasshouse collection. Tab. 1 depicts glasshouse succulents living in the Garden collections as of May, 2025. The basis of that list is the register of inventories, which is assembled biannually by the attending gardeners.

The general nomenclature of taxa follows Plants of the World Online (POWO, 2025).

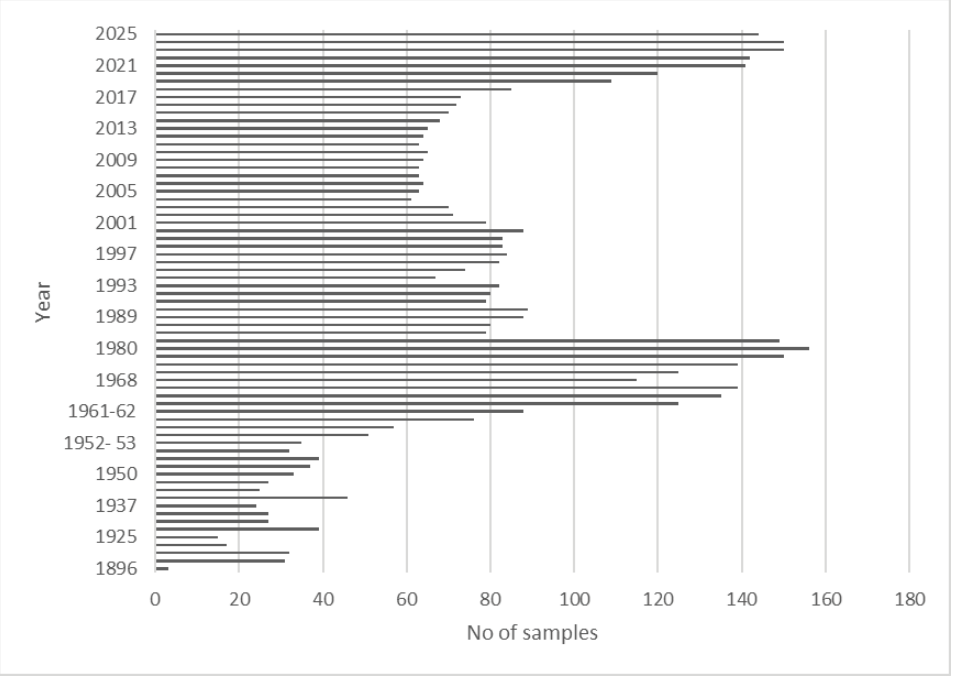


Fig. 1. Temporal changes in the number of specimens of plant species from the subfamily *Alooideae* since the establishment of the Botanical Garden, illustrating trends in collection growth, turnover, and long-term management.

RESULTS AND DISCUSSION

It is well known to any garden curator how difficult it is to compare plant data from various ages, due to the extensive synonymy and immense changes in taxonomic and systematic relationships of plants, following the latest research results over the years (further explained in Kovačić, 2015). In the first published paper of all exotic succulents in the Garden (Sandev *et al.*, 2018) and for simple "gardener-friendly" purposes we sorted the plants of interest into "Dicotyledons" and "Monocotyledons", and within them into the families, genera and species. Due to newly discovered historical notebooks with data on plant species that we previously did not know we had had, the database has changed considerably, and this is a new, more detailed list with more

accurate data on taxa from the Alooideae subfamily. Here follow some explanations and clarifications of the data listed in Tab. 1, arranged by genera of alooid exotic succulents grown in the cold glasshouse collection of the Garden (Photo 1).

Eleven genera were recognized in the subfamily Alooideae and all of them once lived in the succulent glasshouse collection. Data shows that two of them, *Aristaloe* and *Astroloba*, were lost over the years. Genera *Astroloba*, with a total of 12 species, is vegetatively very similar to some species of *Haworthia* and the two genera are distinguished by floral symmetry (Daru *et al.*, 2013). According to my results (Tab. 1) we had just one species from this genera *Astroloba spiralis* (L.) Uitewaal (arrived as *Aloe spiralis*), that was last time mentioned in the historical database in 1912. Most of the former and recent exotic plants subfam. Alooideae of the Garden collections belong to the largest genus *Aloe*, 98 taxa or 16.55% of all known aloes. As seen in Tab. 1 in the late 19th century, in the oldest publication on plants in the Botanical Garden, Heinz (1895-96) mentioned just two alooid species *Aloe ferox* Mill. and *A. succotrina* Weston. According to the information we can gather from historical records, *A. succotrina* remained in the garden for as long as 35 years, unlike *A. ferox*, which apparently withered the same year in which it was accessioned/planted/ recorded. Aloes were not only the first plants from subfamily Alooideae, but they were also the longest-lived species in the alooids collection. Thus, we can trace four species of aloe that we have had continuously in the garden for 122 years: *Aloe arborescens* Mill., *A. brevifolia* Mill., *A. grandidentata* Salm-Dyck and *A. vera* (Fig. 3). Here we must emphasize that it is not one specific plant that has lived that long, but these species were regularly propagated from the original plant material or plants were grown from seeds that were continuously ordered from different botanical gardens. The longest-lived specimen is also an aloe, one that we have had in the garden for a full 77 years. It is an *Aloe* × *caesia* Salm-Dyck that arrived in 1904 under a different name *Aloe* × *salm-dyckiana* Schult. & Schult.f., and is actually the hybrid formula of *A. arborescens* × *A. ferox* (Fig. 4). The current principle for data input is explained in Budisavljević & Kovačić (2020) and all specimens of the same species whose origins were different were given a different number in digital database. Considering this, currently Botanical Garden have 61 aloe species and 95 specimens of aloes in the succulent glasshouse collection (Tab. 1). The other three genera, which used to belong to the 'true aloes', were present in the Garden with one to three representatives each. Thus, in the genus *Aloiampelos*, in which I find there are only 7 species, we had as many as 3, 2 of which are living in the collection today: *Aloiampelos ciliaris* (Haw.) Klopper & Gideon F.Sm. and *Aloiampelos striatula* (Haw.) Klopper & Gideon F.Sm (Tab. 1; Photo 1m). Species A. ciliaris has been present in our collection for a full 122 years, the only genus other than Aloe that has been in our collection of succulents from the subfam. Alooideae for so long (Fig. 3). The genus *Kumara* has been present in our collection from the beginning with one species out of two possible, and genus *Aloidendron* with two, of which *Aloidendron dichotomum* (Masson) Klopper & Gideon F. Sm. (Photo 1s) is still cultivated today as a relatively young plant obtained through seed exchange in 2023 from Monaco (the seeds were collected in their natural habitat in South Africa, Tab. 1). Manning *et al.* (2014) described the new genera *Aristaloe* and *Gonialoe*, based on their isolated placement in a grade between *Astroloba and Haworthia*. Morphologically, they share a dwarf habit, similar flowers with the outer tepals fused more than halfway and untoothed leaf margins. *Gonialoe* differ from other genera by itsleaves with cartilaginous margins and relatively large capsules and seeds. This most drastic change in the genus *Aloe*

resulted in four species being transferred to *Gonialoe* with *Aloe variegatis* L. as the representative species, now *Gonialoe variegata* (L.) Boatwr. & J.C.Manning (Photo 1r). This species is in our collection today, the only representative ofthe genus (Tab. 1 *Haworthia* has received similar treatment because the three subgenera have been shown to be more distantly related than previously thought and do not have a common evolutionary origin, making *Haworthia* itself paraphyletic. Rowley (2013) has consequently split *Haworthia* into three genera. *Haworthia* is now a smaller genus, limited to the 'soft-leaved' species of subgenus *Haworthia*, with Linnaeus's *Aloe pumila* var. *arachnoidea* L. as type species (Photo 1a). *Haworthiopsis* is a genus with 19 species based on *Haworthia* subgenus *Hexangulares* with *Haworthia coarctata* Haw. as type species. This new genus is near-endemic to South Africa and found in most of the provinces of the country. It is also known from southern Namibia, Swaziland and possibly Mozambique. It is interesting to compare the species of genus *Haworthiopsis* by Manning *et al.* (2014) and those of Gildenhuys & Klopper (2016). Both, following the publication of Manning *et al.* (2014b), have the same number of species but that of Manning *et al.* (2014), records species only and excludes varieties, still widely used these days, and 'forma' is hardly ever used. Gildenhuys & Klopper (2016) uses all lower taxa down to forma. This seems to confirm that even among scientists there are still differences about how to name wild plants. The difference between scientists on the one hand and nurserymen and the purchasing public on the other is that the latter need names to identify plants for collections and collectors. Therefore, here in the Garden 20 taxa have passed through, nine of which are currently present (Tab. 1). One of the oldest specimens in the collection is *Haworthiopsis reinwardtii* (Salm-Dyck) G.D.Rowley. We have had this particular specimen for 71 years, and the species for more than 110 years. *H. attenuata* (Photo 1b) and *H. fasciata* are two species that we had among the first species in our collection, back in 1904 (Tab. 1, Fig. 3, Fig. 4).

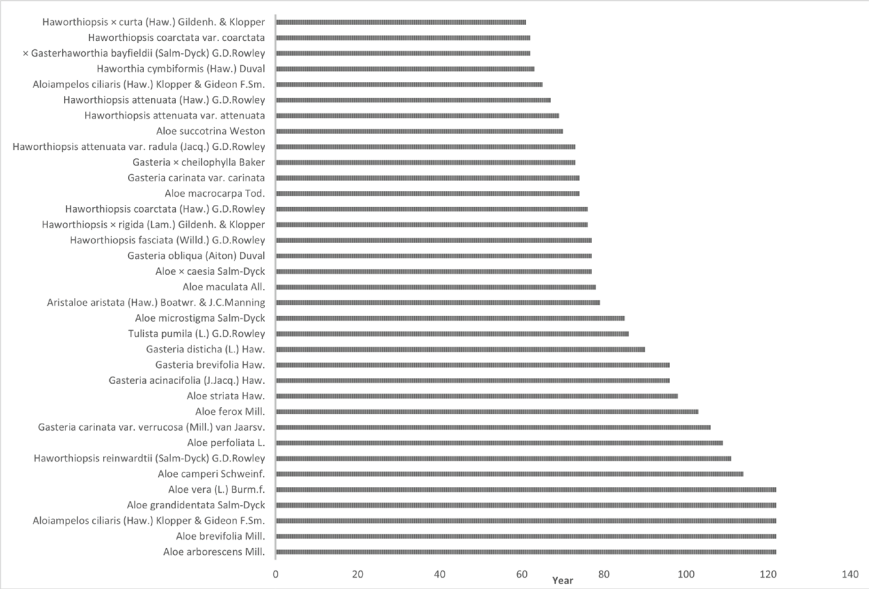


Fig. 2. Retention patterns of plant species from the subfamily *Alooideae* within the botanical collection, highlighting taxa demonstrating the longest persistence under cultivated conditions.

Fig. 3. Representative specimens of plant species from the subfamily *Alooideae* demonstrating the highest recorded longevity within the botanical collection, indicating superior adaptability and long-term survival under ex situ cultivation conditions.

The final genus is an old name reinstated, Tulista, dating from 1840, with *Tulista* (*Haworthia*) *margaritifera* (L.) Raf. as type, including 4 species. Examples of new names here include *Tulista marginata* (Lam.) G.D.Rowley (*Haworthia marginate* (Lam.) Stearn), *Tulista minor* (Aiton) Gideon F.Sm. & Molteno (with 33 synonyms) or *Tulista pumila* (L.) G.D.Rowley (*Aloe pumila* L.; Photo 1f); the last one has been in the collection since 1929, arriving as *Haworthia margaritifera* (L.) Haw (Fig. 3). This is not the only synonym under which this species came to our collection (Tab. 1), and as a species it has been present in the Garden under different names for 86 years. *Haworthia* includes 59 species with native range localised and largely restricted to the winter rainfall parts of South Africa. According to my calculations, 23 taxa of *Haworthia* passed through our collection and four of them have been present for more than 50 years (Tab. 1). The first 'ordered' plants were back in 1904, but since then it seems they were neglected for almost 50 years. The first intensive orders, most often as 'planta viva' or cuttings, began in the early 1960s, and today the collection has only 5 species and 8 specimens. According to the processed data, the oldest *Haworthia* in the collection is *Haworthia*

cymbiformis (Haw.) Duval, which arrived from the Botanical Garden in Brno in 1963 and has been present in our collection for 63 years (Fig. 2, Fig. 3).

Gasteria has long been considered a well-defined, monophyletic genus, primarily recognized by its recurved, pendulous pedicels and gasteriform, curved perianths (Van Jaarsveld, 1994). However, until 20 years ago, the infrageneric relationships were poorly understood with only 10 studies describing the more than 100 names (Van Jaarsveld, 1994) that had been proposed at the species and subspecies levels within *Gasteria*. Van Jaarsveld *et al.* (1994a) utilized a combination of 21 morphological characters in a cladistic analysis of *Gasteria* and reduced the total number of *Gasteria* species to 16. Furthermore, some additional species have been identified, bringing the total to 26 species (Van Jaarsveld, 2001, 2007, 2020; Van Jaarsveld & Van Wyk, 2001, 2004, 2005). Among the traditionally recognised genera, only *Astroloba* and *Gasteria* remained unchanged, and analysis placed *Gasteria* as sister of *Haworthia* (Daru *et al.*, 2013). It is significant that *Gasteria* is one of few bird-pollinated, Old-World taxa with sucrose-rich nectar (Van Wyk *et al.* 1993), supporting the proposition of a shift from insect to bird pollination in the subfam. Alooideae. The oldest *Gasteria* plant specimen grown in the Garden today is 75 years old and it belongs to *Gasteria carinata* var. *verrucosa* (Mill.) van Jaarsv (arrived as *G. picta* var. *formosa*). This is also the longest species from this genus present in the collection, 106 years (Fig. 3). Today the collection includes 15 specimens and 9 species (50% of all the species we have ever had).

Like today, the most abundant were the genera of *Aloe* and *Gasteria* but the once much more numerous genus *Haworthia* is now less represented than the genus *Hawothiopsis* (Tab. 1; Photo 1a). It should be emphasized that many scientific names are difficult to track due to the immense amount of synonymy and because species were not previously recorded together with the names of authors, so it is impossible today to predict whether a species, whose name is no longer valid, belongs to one species or another. Many interesting species were ordered repeatedly from different botanic gardens during the years, among which an absolute "winner" is *Aloe microstigma* Salm-Dyck. It was ordered 16 times and under 5 different synonyms from 1904 and *Gasteria obliqua* (Aiton) Duval was ordered 15 times under 8 different synonyms from 1912 (Tab. 1; Photo 1h, Photo 1k). Also, it is obvious that some taxa were more popular than others, more available for ordering in *Delectus seminum* or were simply easier to grow. So, out of more than 700 species in the subfamily Alooideae, 35 taxa have been in cultivation for more than 60 years and 6% of all taxa are more than 100 years in cultivation in the Garden. Many species, over 12% of them, were recorded in the garden for only one year (Fig. 2, Fig. 4). According to a verbal statement by the former head of the Garden Dr Regula, there was a period when species were entered into the cards after the receipt of ordered seeds, although the seeds might never even have germinated. Therefore, in the passive database, after the species and year of order are entered, no comment or any further information about a particular species appears on the cards. It is difficult to say that these species were ever part of the collection. Furthermore, the largest number of species remained in our collection for up to 10 years, as much as 32%, i.e. 55% of the species have been present for up to 30 years (Fig. 4).

According to my calculations, over 130 years we had two peaks in the number of specimens in the collection. One came in the early 1970s and lasted until the mid-1980s, after which the number of specimens dropped by half. The second peak occurred in the 2020s, when the number of specimens was 100% higher than it had been 5 years earlier (Fig. 1). I will not discuss the assumptions as to why the growth and

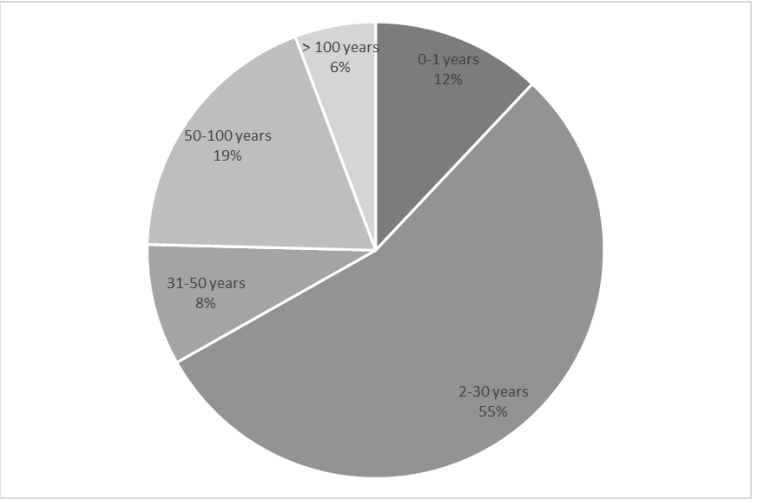


Fig. 4. The percentages of plant species from the subfamily *Alooideae* in the botanical collection according to how long they have been present, illustrating the temporal structure and stability of the species.

decline of the end of the last century occurred, , but the jump 5 years ago occurred due to the renewed intensive ordering of plant species through the exchange of seeds between botanical gardens as the collection of all succulents was renewed, including from the subfam. Alooideae (Tab. 1).

All species of *Aloe*, *Aloiampelos*, *Aloidendron*, *Gonialoe*, *Kumara* and Gasteria currently cultivated in our collection are included in the CITES appendices, with the exception of *Aloe vera*. Species belonging to the genus *Haworthia* are not listed under CITES regulations (2025). In addition, 20.4% of our living specimens and 20.9% of living species are assessed in the IUCN Red List of Threatened Species (2025). Within the Endangered (EN) category, our collection comprises 3.3% of species, including *Aloe citrea* (Guillaumin) L.E. Newton & G.D. Rowley, *Aloe elgonica* Bullock, and *Aloe sinkatana* Reynolds. The Vulnerable (VU) category is represented by a single species, *Aloidendron dichotomum* (Masson) Klopper & Gideon F. Sm (Photo 1s). Species categorized as Near Threatened (NT) include *Aloe ibitiensis* H. Perrier and *Aloe perryi* Baker. Finally, 14.4% of the species in the collection fall within the Least Concern (LC) category (Tab. 1).

Tab. 1. Species in subfamily Alooideae grown in Zagreb Botanical Garden of the Faculty of Science from 1895 to 2025 acc. to *The World Flora Online.*

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
× *Gasteraloe lapaixii* (Radl) Guillaumin	Palermo (Italy), 1964		yes		1985		Gasteria lapaixii	
× *Gasterhaworthia holtzei* (Radl) Guillaumin	Glasgow (Scotland), 1951	yes			1951		Gasteria holtzei	
Aloe sp.	nn, 1929	yes			1962			Nine different description of species under name *Aloe* sp., two plants donated to Pionirski grad in 1955.
Aloe × *nobilis* Haw.	Budapest (Hungary), 1970	yes	yes		1970		Aloe nobilis Haw., cutting	The hybrid formula of this artificial cross is suggested as *A. arborescens* or *A. brevifolia* × *A. perfoliata*.
Aloe × *runcinata* A.Berger	Lisbon (Portugal), 1954		yes		1966		Aloe runcinata A.Berger, seeds	The hybrid formula of this artificial cross is *A. ferox* × *A. maculata*.
Aloe × *schimperi* Tod.	Lisbon (Portugal), 1954		yes		1966		Aloe schimperi Tod., seeds	The hybrid formula is *A. maculata* × *A. striata*.
	nn, 1912	yes			1958		Aloe paxii A.Terracc.	The hybrid formula is *A. maculata* × *A. striata*. One plant donated to Botanical Garden in Split 1952.
	nn, 1912	yes			1912		Aloe schimperi	The hybrid formula is *A. maculata* × *A. striata*.
	nn, 1953	yes			1953		Aloe schimperi, planta viva	Plant obtained through exchange with other institutions
Aloe aculeata Pole-Evans	Jerusalem (Israel), 2017			yes	2025		seeds	
	Jerusalem (Israel), 2018			yes	2025		seeds	
	Jerusalem (Israel), 2020			yes	2025		seeds	
Aloe africana Mill.	Cape Town, BG Kirstenbosch (JAR), 1970		yes		1985			
	Cape Town, BG Kirstenbosch (JAR), 1971		yes		1985			Incorrect 1984

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Cape Town, BG Kirstenbosch (JAR), 1986		yes		2025			
	Frankfurt BG (Garmany), 2020			yes	2025		seeds	
	Jerusalem (Israel), 2020			yes	2025		seeds	
Aloe arborescens Mill.	Barcelona (Spain), 1971		yes		1978			
	Bucharest, BG "Dimitrie Brandza" (Romania), 1972		yes		2025	LC		
	Bucharest, BG "Dimitrie Brandza" (Romania), 1973		yes		1985			
	Coimbra (Portugal), 1970		yes		1985			
	nn, 2021			yes	2025	LC	planta viva	Gift
	nn, 1904	yes			1966			One plant donated to Botanical Garden in Split.
	nn, 1932	yes			1966		Aloe frutescens Salm-Dyck	
	Budapest (Hungary), 1970	yes			1970		cutting	
	Sofia (Bulagaria), 1971	yes			1971			
Aloe asperifolia A.Berger	Frankfurt BG (Garmany), 2018			yes	2025		seeds, Namibia	
	Frankfurt BG (Garmany), 2020			yes	2025		seeds, Namibia	
Aloe bellatula Reynolds	Wageningen (Netherlands), 1967	yes			1967		cutting	
Aloe bergeriana (Dinter) Boatwr. & J.C.Manning	Lisbon (Portugal), 1954		yes		1966		Aloea bergeana Haw.; seeds	
Aloe branddraaiensis Groenew.	Monaco, Jardin Exotique de Monaco, 2021			yes	2025		seeds	
Aloe brevifolia Mill.	Leipzig (Germany), 1988		yes		1998		seeds	
	Lublin (Poland), 1989		yes		2025		seeds	
	Rotterdam (Netherlands), 1969		yes		1985		planta viva	
	nn, 1904	yes			1966			

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
Aloe brevifolia var. *depressa* (Haw.) Baker	nn, 1904	yes			1932		Aloe depressa Haw.	
Aloe brownii Baker	Vienna BG (Austria), 2018		yes		2025		planta viva	
Aloe buhrii Lavranos	Jerusalem (Israel), 2018			yes	2025		seeds	
	Jerusalem (Israel), 2020			yes	2025		seeds	
Aloe × *caesia* Salm-Dyck	nn, 1904	yes			1980		Aloe × salm-dyckiana Schult. & Schult.f.	The hybrid formula is *A. arborescens* × *A. ferox*.
	nn, 1938	yes			1938		Aloe caesia	The hybrid formula is *A. arborescens* × *A. ferox*.
Aloe camperi Schweinf.	Cluj-Napoca (Romania), 2021			yes	2025	LC	cutting, A. eru	
	Menton (France), 2005		yes		2025	LC	Aloe eru, seeds	
	nn, 1974		yes		1993		Aloe eru	
	nn, 1912	yes			1958		Aloe eru A.Berger	
Aloe camperi Schweinf. 'Maculata'	Barcelona (Spain), 1970		yes		1985		Aloe eru f. maculata hort.	
Aloe candelabrum A.Berger	Monaco, 1996		yes		2016		seeds	
Aloe capitata Baker	Barcelona (Spain), 1969		yes		1981			Incorrect
	Barcelona (Spain), 1986		yes		2025	LC	seeds	
Aloe castanea Schönland	Jerusalem (Israel), 2016		yes		2025		seeds	
	Jerusalem (Israel), 2018		yes		2025		seeds	
Aloe chabaudii Schönland	Frankfurt BG (Garmany), 2019			yes	2025		seeds, Zimbabwe	
	München (Germany), BG Nymphenburg, 2019			yes	2025		seeds, South Africa	
Aloe citrea (Guillaumin) L.E.Newton & G.D.Rowley	Kiel (Germany), 1997		yes		2003		seeds, Lomatophyllum citreum	
	Klagenfurt (Austria), 2021			yes	2025	EN	seeds	
Aloe claviflora Burch.	Frankfurt BG (Garmany), 2019			yes	2025		seeds, Zambia	
Aloe comosa Marloth & A.Berger	Cape Town, BG Kirstenbosch (JAR), 1970		yes		1981			
Aloe conifera H.Perrier	Frankfurt BG (Garmany), 2019			yes	2025		seeds, Madagascar	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
Aloe cryptopoda Baker	Gent (Belgium), 2022			yes	2025		seeds, South Africa	
	Lisbon (Portugal), 2019			yes	2025		seeds, South Africa	
Aloe davyana Schönland	Barkley (USA), 1973		yes		1985			Note '*' - this may mean it is from its natural habitat
Aloe dichotoma Masson	Berlin-Dahlem (Germany), 1986		yes		2000		seeds	
	München (Germany), 1976		yes		1989		seeds, SW Africa	
	nn, 1904	yes			1904			
Aloe distans Haw.	nn, 1904	yes			1932			
	Stockholm (Sweden), 1951	yes			1951			
Aloe elegans Tod.	nn, 1938	yes			1938			
Aloe elgonica Bullock	Debrecen (Hungary), 2022			yes	2025	EN	seeds	
	Padova (Italy), 2021			yes	2025	EN		
Aloe ellenbeckii A.Berger	Lisbon (Portugal), 2019			yes	2025	LC	seeds	
Aloe esculenta L.C.Leach	Monaco, 2019			yes	2025		seeds	
Aloe ferox Mill.	nn, 1896	yes			1904			
	Barcelona (Spain), 1962	yes	yes		1985			
	Barcelona (Spain), 1963	yes	yes		1972			
	Barcelona (Spain), 1967		yes		1984		seeds	
	Barcelona (Spain), 1986		yes		2000			
	Basel (Switzerland), 2014		yes		2025			
	Jerusalem (Israel), 2012		yes		2017			
	Jerusalem (Israel), 2014		yes		2025			
	nn, 1961	yes	yes		2017		planta viva	Plant obtained through exchange with other institutions
	Ventimiglia, Latte (Italy), 2017		yes		2025			
	nn, 1904	yes			1922			
	nn, 1904	yes			1912		Aloe supralaevis Haw.	
	Cape Town, BG Kirstenbosch (JAR), 1950	yes			1966			

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
Aloe fleurentiniorum Lavranos & L.E.Newton	Frankfurt (Garmany), Plamengarten, 2023			yes	2025			
Aloe gariepensis Pillans	Cape Town, BG Kirstenbosch (JAR), 1984		yes		1993		seeds	
Aloe gilbertii T.Reynolds ex Sebsebe & Brandham	Lyon (France), 1955	yes			1958			In notebook it says A. gisbrechtii, which does not exist, so it is probably entered incorrectly
Aloe grandidentata Salm-Dyck	Cape Town, BG Kirstenbosch (JAR), 1982		yes		2003		seeds	
	Cape Town, BG Kirstenbosch (JAR), 1986		yes		2025		seeds	
	nn, 1968		yes		1985			
	nn, 1904	yes			1958			
	Barcelona (Spain), 1956	yes			1966			
	Palermo (Italy), 1957	yes			1957			
Aloe greatheadii Schönland	Frankfurt BG (Germany), 2019			yes	2025	LC	seeds, Zimbabwe	
	Lisbon (Portugal), 2020			yes	2025	LC	seeds	
Aloe harlana Reynolds	Barcelona (Spain), 1980		yes		1990			Not in the literature
Aloe humilis (L.) Mill.	Frankfurt BG (Germany), 2018			yes	2025		seeds, South Africa	
	nn, 1938	yes			1938		Aloe virens Haw.	
	nn, 1938	yes			1938			
Aloe ibitiensis H.Perrier	München (Germany), BG Nymphenburg, 2019			yes	2025	NT	seeds	
Aloe juvenna Brandham & S.Carter	Salaspils (Latvia), 2019			yes	2025		Aloe squarrosa Baker ex Balf.f., cutting	
	nn, 2021			yes	2025		planta viva, gift	
	Wien(Austria), BG, 2024			yes	2025		planta viva	
Aloe karasbergensis Pillans	Frankfurt BG (Germany), 2018			yes	2025		seeds, South Africa	
	Halle (Germany), 2020			yes	2025		seeds	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
Aloe kedongensis Reynolds	Basel (Switzerland), 2021			yes	2025		seeds	
Aloe lateritia Engl.	Uppsala (Sweden), 1985		yes		2025	LC	seeds	
	nn, 1938	yes			1938			
Aloe lateritia var. *graminicola* (Reynolds) S.Carter	Berlin-Dalem (Germany), 1971		yes		1993		Aloe graminicola Reynolds	
Aloe littoralis Baker	Frankfurt, Botanischer Garten Frankfurt, 2020			yes	2024		seeds	
	Potsdam (Germany), 1966	yes	yes		1985		Aloe rubrolutea Schinz, seeds	
Aloe longibracteata Pole-Evans	Blanes (Spain), 1984		yes		1993		seeds	
Aloe longistyla Baker	Barcelona (Spain), 1970		yes		1983			
	Heidelberg (Germany), 1962	yes	yes		1985			
	nn, 1969		yes		1985			
Aloe lutescens Groenew.	Jerusalem (Israel), 2020			yes	2025		seeds	
	Monaco, 2019			yes	2025		seeds	
Aloe macrocarpa Tod.	nn, 1962		yes		1985			
	nn, 1975		yes		1985			
	nn, 1912	yes			1966		A. borziana (bortiana/ borzeana/barseana)	
	nn, 1938	yes			1966			
	nn, 1954	yes			1966		A. borzeana, seeds	
Aloe maculata All.	Barcelona (Spain), 1986		yes		2025		Aloe saponaria (Aiton) Haw., seeds	
	Kiev (Ukraine), 1989		yes		1993		Aloe saponaria (Aiton) Haw., seeds	
	nn, 1968		yes		1993		Aloe saponaria (Aiton) Haw.,	
	nn, 1938	yes			1938		Aloe spuria A.Berger	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	nn, 1949	yes			1966		Aloe saponaria (Aiton) Haw., seeds	
Aloe marlothii A.Berger	Heidelberg (Germany), 1962	yes	yes		1985			
	Jerusalem (Israel), 2018			yes	2025	LC	seeds	
	Lisbon (Portugal), 2019			yes	2025	LC	seeds	
Aloe megalacantha Baker	München (Germany), BG Nymphenburg, 2021			yes	2025	LC	seeds, Somalia	
Aloe microstigma Salm-Dyck	Adelaide (Australia), 1951	yes	yes		1985			
	Bern, 1951	yes			1951			
	Frankfurt BG (Germany), 2018			yes	2025		seeds	
	Heidelberg (Germany), 1962	yes	yes		1985			
	Cape Town, BG Kirstenbosch (JAR), 1957	yes	yes		1985			
	Cape Town, BG Kirstenbosch (JAR), 1961	yes	yes		1985			
	Cape Town, BG Kirstenbosch (JAR), 1971		yes		1993		Aloe obscura Mill.	
	Cape Town, BG Kirstenbosch (JAR), 1971		yes		1982			
	Krakow (Poland), 1961	yes	yes		1972		Aloe obscura Mill.	
	Krakow (Poland), 1962		yes		2000		Aloe obscura Mill.	
	nn, 1969		yes		1993		Aloe obscura Mill.	
	nn, 1969		yes		1985			
	nn, 1904	yes			1929		Aloe saponaria (Aiton) Haw.	
	nn, 1938	yes			1938		Aloe obscura Mill.	
	nn, 1966	yes			1966		Aloe brunnthaleri A.Berger ex Camm.	
	nn, 1966	yes			1966		Aloe arabica Salm-Dyck	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
Aloe microstigma subsp. *juttae* (Dinter) Klopper	nn, 1966	yes			1966		Aloe juttae Dinter	
Aloe millotii Reynolds	Salaspils (Latvia), 2019			yes	2025	LC	cutting	Probably *A. decaryi*
Aloe monotropa I.Verd.	Lisbon (Portugal), 2019			yes	2025		seeds	
Aloe mutabilis Pillans	Debrecen (Hungary), 2021			yes	2025		seeds	
Aloe niebuhriana Lavranos	Nancy (France), 2021			yes	2025		Yemen, seeds	
Aloe pachydactylos T.A.McCoy & Lavranos	Prague (Czech Republic), 2023			yes	2025		seeds	
Aloe peglerae Schönland	Pretoria, 1975		yes		1980		seeds	
Aloe perfoliata L.	Berkeley (USA), 1973		yes		2025		Aloe mitriformis Mill.,	
	Munchen (Germany), 1995		yes		1996		Aloe mitriformis Mill., seeds	
	nn, 2020			yes	2025		planta viva, gift	
	nn, 1904	yes			1966		Aloe mitriformis Mill.	
Aloe perfoliata var. *serrulata* Aiton	nn, 1904	yes			1912		Aloe serrulata (Aiton) Haw.	
Aloe perryi Baker	Siena (Italy), 2018			yes	2025	NT	seeds	
	Siena (Italy), 2019			yes	2025	NT	seeds	
Aloe perryi Baker?	Siena (Italy), 2018			yes	2025	NT	Aloe plicatilis (L.) Mill. - WRONG!	Probably *A. perryi*
	Siena (Italy), 2019			yes	2025	NT	Aloe plicatilis (L.) Mill. - WRONG!	Probably A. perryi
Aloe pretoriensis Pole-Evans	Kiel (Germany), 1996		yes		2025		seeds	
Aloe pruinosa Reynolds	Lisbon (portugal), 2019			yes	2025		seeds	
Aloe rabaiensis Rendle	Meise (Belgium), 2023			yes	2025	LC	seeds, Kenia	
Aloe rauhii Reynolds	Wageningen (Netherlands), 1967	yes	yes		1972		cutting	
	Wageningen (Netherlands), 1969		yes		1985			

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Wageningen (Netherlands), 1972		yes		2000		seeds	
Aloe reitzii Reynolds	Barcelona (Spain), 1967		yes		1985			
	Barcelona (Spain), 1971		yes		1990			
	Kiel (Germany), 1996		yes		2025		seeds	
Aloe sinkatana Reynolds	Monaco, 2021			yes	2025	EN	seeds	
Aloe speciosa Baker	Ventimiglia (Italy), 1990		yes		2025		seeds	
	Munchen (Germany), 1976		yes		1993		South Africa	
	nn, 1990		yes		1993			
Aloe spectabilis Reynolds	Ventimiglia (Italy), 1990		yes		2000		seeds	
Aloe spicata L.f.	Bochum (Germany), 2018			yes	2025		seeds	
Aloe × *spinosissima* A.Berger	nn, 1938	yes			1966		Aloe spinosissima	The hybrid formula of this artificial cross is A. arborescens × A. humilis.
Aloe steudneri Schweinf.	nn, 1953	yes	yes		1975		cutting	
	nn, 1938	yes			1938			
Aloe straussii A.Berger	Adelaide (Australia), 1959	yes	yes		1985			
	nn, 1953	yes			1955			Plant obtained through exchange with other institutions in 1952.
Aloe striata Haw.	Antibes (France), 1962	yes	yes		1985			
	Cape Town, BG Kirstenbosch (JAR), 1961	yes	yes		2003			
	Liège (Belgium), 1986		yes		2025	LC	seeds	
	nn, 1970		yes		1972			
	Siena (Italy), 2019			yes	2025	LC	seeds	
	Wordamin, 1961? Koji je ovo grad	yes	yes		1962			
	nn, 1904	yes			1904		Aloe albocincta Haw.	
	Berlin-Dahlem (Germany), 1951	yes			1951		Aloe albocincta Haw.	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	nn, 1929	yes			1966			The management of the Garden donated plant to Pionirski grad, 1955
	Hamburg (Germany), 1950	yes			1950		planta viva	
	Cape Town, BG Kirstenbosch (JAR), 1950	yes			1950			
	nn, 1938	yes			1938		A. striata v.albo	
Aloe striata Haw. Hort.	nn, 1912	yes			1912		Aloe hanburiana hort.	
Aloe succotrina Weston	nn, 1895	yes			1930			
	Antibes (France), 1962	yes	yes		1985		Aloe purpurascens (Aiton) Haw.	
	Turku (Finland), 2015		yes		2025		seeds	
Aloe suprafoliata Pole-Evans	Ventimiglia (Italy), 1990		yes		2025		seeds	
Aloe supratacoides?	nn, 1904	yes			1904			Unknown name
Aloe thraskii Baker	Jerusalem (Israel), 2018			yes	2025		seeds	
	Kiel (Germany), 1958	yes	yes		1963			
Aloe vacillans Forssk.	Frankfurt (Germany), 2018			yes	2025		seeds	
	München (Germany), BG Nymphenburg, 2019			yes	2025		Yemen, seeds	
Aloe vanbalenii Pillans	Frankfurt (Germany), 2021			yes	2025		Sounth Africa, seeds	
Aloe vaombe Decorse & Poiss.	Essen (Germany), 2006		yes		2025	LC	seeds	
	Neuchatel (Switzerland), 2021			yes	2025	LC	seeds	
Aloe variegatis hort.	nn, 1904	yes			1904			
Aloe vera (L.) Burm.f.	Nursery (Bauhaus), 2009		yes		2016		planta viva	Purchased
	nn, 1969		yes		1985			
	nn, 2021			yes	2025		planta viva	
	Palermo (Italy), 1962	yes	yes		2025			
	Palermo (Italy), 1998		yes		2024		seeds	
	Siena (Italy), 1990		yes		1993			

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Siena (Italy), 2013		yes		2025			
	Siena (Italy), 2015		yes		2025		seeds	
	Siena (Italy), 2018			yes	2024		seeds	
	Tübingen (Germany), 1995		yes		1996		seeds	
	Vienna (Austria), 2018			yes	2025		planta viva	
	nn, 1904	yes			1904		Aloe elongata Murray	
	nn, 1904	yes			1958			
Aloe winteri	nn, 1912	yes			1912			Unknown
	nn, 1954	yes			1955		seeds	Unsolved
Aloe welwitschii Klopper & Gideon F.Sm.	Marburg (Germany), 1951	yes			1951		Haworthia angolensis Baker	
Aloe wickensii Pole-Evans	Kiel (Germany), 1996			yes	2025			No inventory card
	Nantes (France), 2021			yes	2025		seeds	
	Pecs (Hungary), 2021			yes	2025		seeds	
Aloe × *todari* Borzi.	Barcelona (Spain), 1971		yes		2003		A. todari	This could be A. ferox; probably artificial intrageneric hybrid (Smith and Newton: Aloaceae in U. Eggli: Monocotyledons)
Aloe yemenica J.R.I.Wood	Monaco, 2020			yes	2025		Yemen, seeds	
Aloe zebrina Baker	Monaco, 2017		yes		2025	LC	seeds	
	nn, 1951	yes			1958		planta viva	Plant obtained through exchange with other institutions.
Aloiampelos ciliaris (Haw.) Klopper & Gideon F.Sm.	Barcelona (Spain), 1962	yes			2025		Aloe ciliaris Haw.	
	Barcelona (Spain), 1983		yes		1990		Aloe ciliaris Haw., seeds	
	Caen (France), 1993		yes		2025		Aloe ciliaris Haw., seeds	
	nn, 1968		yes		1972		Aloe ciliaris Haw.	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Ventimiglia (Italy), 2019			yes	2025		Aloe ciliaris Haw., seeds	
	nn, 1904	yes			1966		Aloe ciliaris Haw.	One piece donated to Botanical Garden in Split, 1952.
Aloiampelos striatula (Haw.) Klopper & Gideon F.Sm.	Cluj-Napoca (Romania), 2017			yes	2024		Aloe striatula Haw., seeds	
	Ventimiglia (Italy), 2016		yes		2025		Aloe striatula Haw., seeds	
	Ventimiglia (Italy), 2019			yes	2025		Aloe striatula Haw., seeds	
	Ventimiglia (Italy), 2021			yes	2025		seeds	
Aloiampelos tenuior (Haw.) Klopper & Gideon F.Sm.	Barcelona (Spain), 1980		yes		1983		Aloe tenuior Haw.	
	Lyon (France), 1958	yes			1958		Aloe densiflora	Probabaly this was an Aloe tenuior var. densiflora Reynolds
Aloidendron dichotomum (Masson) Klopper & Gideon F.Sm.	nn, 1904	yes			1904		Aloe dichotoma Masson	
	Monaco, 2023			yes	2025	VU	seeds, South Africa	
Aloidendron ramosissimum (Pillans) Klopper & Gideon F.Sm.	Bonn (Germany), 1995		yes		2017		Aloe ramosissima Pillans, seeds	
Aristaloe aristata (Haw.) Boatwr. & J.C.Manning	Bochum (Germany), 1989		yes		1989		Aloe aristata Haw.	
	nn, 1974		yes		1989		Aloe aristata Haw.	
	nn, 1904	yes			1932		Aloe longiaristata Schult. & Schult.f.	
	nn, 1929	yes			1966		Aloe aristata Haw.	One piece donated to Botanical Garden in Split, 1952.
Astroloba spiralis (L.) Uitewaal	nn, 1904	yes			1912		Aloe spiralis L. = Apicra spiralis (L.) Baker	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
× *Gasterhaworthia bayfieldii* (Salm-Dyck) G.D.Rowley	nn, 1975		yes		2003			
	Wageningen (Netherlands), 1964	yes	yes		1993			
	Wageningen (Netherlands), 1965	yes	yes		1993			
	Wageningen (Netherlands), 1965		yes		1968		cutting, Gasteria × bayfieldii (Salm-Dyck) Baker	
	Wageningen (Netherlands), 1969	yes	yes		2025		cutting	
Gasteria sp.	nn, 1929	yes			1929			Six differently described pimmeras
Gasteria × *cheilophylla* Baker	Adelaide (Australia), 1954	yes	yes		2025		Gasteria cheilophylla Baker	The hybrid formula of this artificial cross is *G. carinata* var. *verrucosa* × *G. pulchra*.
	nn, 1929	yes			1929		Gasteria cheilophylla Baker	
	Adelaide (Australia), 1955	yes	yes		2000		Gasteria cheilophylla Baker	The hybrid formula of this artificial cross is *G. carinata* var. *verrucosa* × *G. pulchra*.
	Adelaide (Australia), 1959	yes	yes		1985		Gasteria cheilophylla Baker	The hybrid formula of this artificial cross is G. carinata var. verrucosa × *G. pulchra*.
	Besancon (France), 1971	yes	yes		1974		Gasteria cheilophylla Baker, cutting	The hybrid formula of this artificial cross is G. carinata var. verrucosa × *G. pulchra*.
Gasteria acinacifolia (J.Jacq.) Haw.	Adelaide (Australia), 1953		yes		2025			The label of G. sulcata was wrongly affixed to the pot
	nn, 1961	yes	yes		1961			
	Adelaide (Australia), 1953	yes	yes		2010		Gasteria acinacifolia var. venusta (Haw.) Baker,	
	nn, 1929	yes			1929		Gasteria acinacifolia var. venusta (Haw.) Baker,	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Berlin-Dahlem (Germany), 1979		yes		2010		Gasteria huttoniae N.E.Br.	
	nn, 1929	yes			1951			
	nn, 1929	yes			1929		Gasteria acinacifolia var. nitens (Haw.) Baker	
	Adelaide (Australia), 1955	yes			1958		Gasteria acinacifolia var. nitens (Haw.) Baker	
Gasteria acinaciformae	nn, 1938	yes			1938			Unknown species
Gasteria brachyphylla (Salm-Dyck) van Jaarsv.	nn, 1938	yes			1938			
Gasteria brevifolia Haw.	nn, 1949	yes	yes		1966			
	nn, 1963		yes		1993			
	nn, 1929	yes			1951			
Gasteria carinata (Mill.) Duval	Cape Town, BG Kirstenbosch (JAR), 1984		yes		2024		seeds	Mislabelled plant, possibly *G. disticha* or due to the sickle-shaped and smooth leaves it is even more possible that it is G. bicolor, or *G. obliqua*, which means that we have probably not had this *G. carinata* for years.
	nn, 1904	yes			1912			
	Bern (Switzerland), 1951	yes			1951			
Gasteria carinata var. *carinata*	Berlin-Dahlem (Germany), 1978		yes		2024		Gasteria sulcata (Salm-Dyck) Haw., seeds	In some containers this label was written as if we had that species, but it was completely mislabelled, it was *G. acinacifolia*, I believe it was because the label was stuck on wrongly, and not because the plant came under the wrong name
	Duisburg (Germany), 1995		yes		2000		Gasteria glabra Haw., seeds	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Gent (Belgium), 1970		yes		2025		Gasteria pseudonigricans Haw.	Redetermined
	nn, 1951	yes	yes		1966		Gasteria excavata (Willd.) Haw.	
	nn, 1929	yes			1929		Gasteria excavata (Willd.) Haw.	
	Pecs (Hungary), 2018		yes		2025		Gasteria picta Haw., seeds	Redetermined
	Wuppertal (Germany), 1995		yes		2016		Gasteria sulcata (Salm-Dyck) Haw., seeds	
	nn, 1929	yes			1929		Gasteria angulata (Haw.) Duval	
	Glasgow (Scotland), 1951	yes			1951		Gasteria angulata (Haw.) Duval	Not germinated
	Adelaide (Australia), 1954	yes			1985		Gasteria angulata (Haw.) Duval	
Gasteria carinata var. *verrucosa* (Mill.) van Jaarsv.	Adelaide (Australia), 1953	yes	yes		2003		Gasteria verrucosa var. asperrima (Salm-Dyck) Poelln.	
	Cluj-Napoca (Romania), 2010		yes		2025		Gasteria verrucosa (Mill.) Duval,	
	Marburg (Germany), 1953	yes	yes		1966		Gasteria verrucosa (Mill.) Duval,	
	nn, 1929	yes			1955		Gasteria verrucosa (Mill.) Duval	
	nn, 1929	yes			1929		Gasteria verrucosa var. scaberrima (Salm-Dyck) Baker	
	Adelaide (Australia), 1953	yes			1985		Gasteria verrucosa var. scaberrima (Salm-Dyck) Baker, seeds	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	nn, 1929	yes			1966		Gasteria scaberrima	
	nn, ?		yes		?		Gasteria verrucosa (Mill.) Duval,	
	nn, 1951		yes		2025		G. picta var. formosa	Changed its name to *G. bicolor* var. *bicolor*, but it is not that species, apparently the labels have been mixed up over the years, redetermined
	nn, 1929	yes			1929		G. picta var. formosa	
	Padova (Italy), 2014		yes		2017			
	nn, 1904	yes			1912		Aloe verrucosa Mill. = Gasteria verrucosa (Mill.) Duval	
	nn, 1912	yes			1912		Gasteria intermedia (Haw.) Haw.	
Gasteria croucheri (Hook.f.) Baker	nn, 1912	yes			1912			
Gasteria disticha (L.) Haw.	Adelaide (Australia), 1959		yes		2025		Gasteria angulata (Willd.) Haw.	Redetermined
	Berlin-Dahlem (Germany), 1978		yes		2025		Gasteria conspurcata (Salm-Dyck) Haw., seeds	
	nn, 1938	yes			1938		Gasteria conspurcata (Salm-Dyck) Haw.	
	nn, 1938	yes			1938		Gasteria mollis Haw.	
	Nancy (France), 1953	yes	yes		1961		Gasteria obtusifolia Haw.	
	Nantes (France), 1953	yes	yes		1980		Gasteria obtusifolia Haw.	Incorrect 1981
	nn, 1929	yes			1938		Gasteria obtusifolia Haw.	
	nn, 1904	yes			1912			

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
Gasteria gigantea Graessn.	Cluj-Napoca (Romania), 2000		yes		2006			Unsolved name
Gasteria Multipunctata?	nn, 1938	yes			1938			There is no such name in the database, possibly a cultivar
Gasteria nitida (Salm-Dyck) Haw.	Besancon (France), 1971	yes	yes		1985		Gasteria trigona (Salm-Dyck) Haw., cutting	
	nn, 1938	yes			1938		Gasteria trigona (Salm-Dyck) Haw.	
	nn, ?		yes		unknown			
	nn, 1955	yes	yes		1961			
	nn, 1929	yes			1951			The management of the Garden donated plant to Pionirski grad, 1955
	nn, 1955	yes	yes		1966		Gasteria decipiens Haw.,	Not on list 1975
	nn, 1929	yes			1951		Gasteria decipiens Haw.,	
	nn, 1929	yes			1955		Gasteria nitida var. grandipunctata (Salm-Dyck) A.Berger	
	Wuppertal (Germany), 1995		yes		2003		Gasteria trigona (Salm-Dyck) Haw., seeds	
	Wuppertal (Germany), 1996		yes		1997		Gasteria trigona (Salm-Dyck) Haw., seeds	
Gasteria nitida var. *armstrongii* (Schönland) van Jaarsv.	Berlin-Dahlem (Germany), 1978		yes		1993		Gasteria armstrongii Schönland	
	Pecs (Hungary), 2005		yes		2025		Gasteria armstrongii Schönland; seeds	
	Pecs (Hungary), 2021			yes	2025		seeds	
Gasteria obliqua (Aiton) Duval	Cluj-Napoca (Romania), 1999		yes		2017		Gasteria bicolor var. liliputana, seeds	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Berlin-Dahlem (Germany), 1978		yes		2025		Gasteria conspurcata (Salm-Dyck) Haw., seeds	Redetermined
	Duisburg (Germany), 1998		yes		2000		Gasteria maculata Haw., seeds	
	Frankfurt (Germany), 1960	yes	yes		2025		Gasteria maculata Haw., cutting	
	Bern (Switzerland), 1951	yes			1951		Gasteria maculata Haw.	
	nn, 1951	yes	yes		1985		G. picta var. formosa	
	Wageningen (Netherlands), 1964	yes	yes		2025		Gasteria liliputana Poelln.	
	Wageningen (Netherlands), 1967	yes	yes		1971		Gasteria liliputana Poelln., cutting	
	Wageningen (Netherlands), 1969	yes	yes		1972		Gasteria liliputana Poelln.; cutting	
	Wageningen (Netherlands), 1971	yes	yes		2025		Gasteria liliputana Poelln.	
	Wageningen (Netherlands), 1972		yes		2000		Gasteria liliputana Poelln.	
	nn, 1912	yes			1912		Gasteria picta Haw.	
	nn, 1929	yes			1929		Gasteria caespitosa Poelln.	
	nn, 1958	yes			1958		Gasteria caespitosa Poelln.	
	nn, 1958	yes			1958		Gasteria spiralis Baker	
Gasteria pillansii Kensit	Warsaw (Poland), 2023			yes	2025		Gasteria neliana, seeds	
Gasteria pseudonigricans Haw.	Chișinău (Moldova), 2019			yes	2025		seeds	
Gasteria pulchra (Aiton) Haw.	nn, 1951	yes	yes		2003			Plant obtained through exchange with other institutions.

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	nn, 1929	yes			1929		Gasteria nigricans (Haw.) Duval	Redetermined
	nn, 1958	yes			1958		Gasteria nigricans (Haw.) Duval	
Gonialoe variegata (L.) Boatwr. & J.C.Manning	Barcelona (Spain), 1987		yes		2000		Aloe variegata L., seeds	
	Brisbane (Australia), 1963	yes	yes		1985		Aloe variegata L.	
	Monaco, 1996		yes		2002		Aloe variegata L., seeds	
	Montreal (Canada), 1995		yes		2000		Aloe variegata L., seeds	
	Salaspils (Latvia), 2019			yes	2023		Aloe variegata L., cutting	
	Tartu (Estonia), 1993		yes		2000		Aloe variegata L., seeds	
	Vienna (Austria), 1964	yes	yes		1968		Aloe variegata L., planta viva	
	Meise (Belgium), 2023			yes	2025		seeds	
Haworthia × *janseana* Uitewaal	Wageningen (Netherlands), 1964	yes	yes		1985		Haworthia janseana, planta viva	
Haworthia × *krausii* hort.	nn, 1938	yes			1938		Haworthia krausii	Unresolved name
Haworthia aristata Haw.	Palermo (Italy), 1961		yes		1966		Haworthia denticulata Haw.	
Haworthia cooperi var. *cooperi*	nn, 1971		yes		1978		Haworthia vittata Baker	
	Pecs (Hungary), 1996		yes		2025		Haworthia vittata Baker, seeds	
	Salaspils (Latvia), 2020			yes	2025		Haworthia vittata Baker, cutting	
	Wageningen (Netherlands), 1964	yes	yes		1985		Haworthia vittata Baker	Incorrect 1981
	Wageningen (Netherlands), 1965	yes	yes		1985		Haworthia vittata Baker	Incorrect 1981

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Wageningen (Netherlands), 1972		yes		1985		Haworthia vittata Baker	Incorrect 1981
	Wageningen (Netherlands), 1974		yes		1985		Haworthia vittata Baker	
	Wageningen (Netherlands), 1980		yes		1981		Haworthia vittata Baker	Incorrect 1981
Haworthia cooperi var. *tenera* (Poelln.) M.B.Bayer	Brno (Czech Republic), 1963	yes	yes		1985		Haworthia tenera Poelln.	
Haworthia cymbiformis (Haw.) Duval	Antwerpen (Belgium), 1965	yes	yes		1971		cutting	
	Brno (Czech Republic), 1963	yes	yes		2025			
	Cluj-Napoca (Romania), 1967		yes		1985		cutting	
	Iasi (Romania), 1963		yes		1971			
	nn, 1970		yes		1985			
	Palermo (Italy), 1963		yes		1990			
	Pecs (Hungary), 1997		yes		2025		Haworthia pumila (L.) Duval, planta viva	Redetermined
	Wageningen (Netherlands), 1964	yes	yes		1966		Haworthia planifolia Haw., planta viva	
	Kiev (Ukraine), 1989		yes		1989		Haworthia planifolia Haw., planta viva	
	Wageningen (Netherlands), 1966	yes	yes		1985		Haworthia planifolia Haw. cv. 'Variegata'	Not in the literature
Haworthia elegans	Tomsk (Russia), 1959	yes	yes		1990			Not in the literature
Haworthia glauca var. *herrei* (Poelln.) M.B.Bayer	Wageningen (Netherlands), 1967	yes	yes		1979		Haworthia armstrongii Poelln., cutting	
	Wageningen (Netherlands), 1968		yes		1985		Haworthia eilyae Poelln.,	Incorrect 1981
	Wageningen (Netherlands), 1969	yes	yes		1979		Haworthia eilyae Poelln., cutting	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Wageningen (Netherlands), 1969	yes	yes		1985		Haworthia herrei Poelln.; cutting	
	Wageningen (Netherlands), 1968	yes	yes		1985		Haworthia armstrongii Poelln., cutting	
	Wageningen (Netherlands), 1970		yes		1985		Haworthia armstrongii Poelln.,	
Haworthia helos Roem.	Nancy (France), 1963	yes	yes		1990			Not in the literature
Haworthia herbacea (Mill.) Stearn	Liberec (Czech Republic), 1964	yes	yes		1966		Haworthia pallida Haw.,	
	Madrid (Spain), 2000		yes		2003		Haworthia papillosa Haw.	
	Palermo (Italy), 1966		yes		1981		Haworthia papillosa Haw., cutting	Incorrect 1981
	Pecs (Hungary), 1996		yes		2001		Haworthia translucens (Willd.) Haw., seeds	
	Pecs (Hungary), 1997		yes		1997		Haworthia papillosa Haw., planta viva	Incorrect and redeterminated, *H. cymbiformis*
Haworthia icosiphylla Baker	Wageningen (Netherlands), 1965	yes	yes		1985		cutting	Garden hybrid
Haworthia Martini	nn, 1954	yes			1954		seeds	Unknown
Haworthia marumiana Uitewaal	Wageningen (Netherlands), 1964	yes	yes		1985		planta viva	
	Wageningen (Netherlands), 1965	yes	yes		2017		cutting	
	Wageningen (Netherlands), 1967	yes	yes		1968		cutting	
	Wageningen (Netherlands), 1968	yes	yes		1985		cutting	Incorrect 1981
	Wageningen (Netherlands), 1970	yes	yes		1985		cutting	Incorrect 1981

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
Haworthia marumiana var. *batesiana* (Uitewaal) M.B.Bayer	Besancon (France), 1971	yes	yes		1985		Haworthia batesiana Uitewaal, cutting	
	Cluj-Napoca (Romania), 2021			yes	2025		Haworthia batesiana Uitewaal, cutting	
	Kiev (Ukraine), 1989		yes		1990		Haworthia batesiana Uitewaal, planta viva	
	Wageningen (Netherlands), 1964	yes	yes		2001		Haworthia batesiana Uitewaal, planta viva	Half plants in pot incorrect 1981
	Wageningen (Netherlands), 1965	yes	yes		1985		Haworthia batesiana Uitewaal, cutting	Incorrect 1981
	Wageningen (Netherlands), 1972		yes		1985		Haworthia batesiana Uitewaal	
Haworthia mirabilis var. *triebneriana* (Poelln.) M.B.Bayer	Wageningen (Netherlands), 1964	yes	yes		1985		Haworthia nitidula Poelln., planta viva	Incorrect 1981
Haworthia mucronata Haw.	Wageningen (Netherlands), 1964	yes	yes		1971		Haworthia altilinea Haw., planta viva	
	Wageningen (Netherlands), 1965	yes	yes		1985		Haworthia altilinea Haw., cutting	
Haworthia reticulata (Haw.) Haw.	Linz (Austria), 2001		yes		2025		Haworthia angustifolia Haw.	Probably *H. reticulata*, old inventory card lost
Haworthia retusa (L.) Duval	Wuppertal (Germany), 1995		yes		1997		seeds	
	nn, 1904	yes			1904		Aloe retusa L. = Haworthia retusa (L.) Duval	
	nn, 1904	yes			1904			
Haworthia ryderiana Poelln.	Wageningen (Netherlands), 1964	yes	yes		1990		planta viva	Garden hybrid
	Wageningen (Netherlands), 1965	yes	yes		1985		seeds	Garden hybrid
Haworthia speriscula Haw.	Vienna (Austria), 1964	yes	yes		1966		planta viva	Not in the literature

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
Haworthia turgida Haw.	Berlin-Dahlem (Germany), 1960	yes	yes		1985		Haworthia laetevirens Haw.	Some plants incorrect 1981, last plant stolen 1985
	Cluj-Napoca (Romania), 2021			yes	2025		cutting	
	Linz (Austria), 2001		yes		2025		seeds	
Haworthia undulata	nn, 1951	yes			1951			Unknown species
Haworthia viscosa (L.) Haw. 'Variegata'	Wageningen (Netherlands), 1965	yes	yes		2001		Haworthia tortuosa Haw. var. variegata, cutting	
	Wageningen (Netherlands), 1970		yes		2001		Haworthia tortuosa Haw. var. variegata, cutting	
Haworthiopsis × *cassytha* (Baker) Gildenh. & Klopper	Wageningen (Netherlands), 1964	yes	yes		1985		Haworthia cassytha Baker, planta viva	The hybrid formula of this artificial cross is *H. viscosa* × ?.
Haworthiopsis × *curta* (Haw.) Gildenh. & Klopper	Wageningen (Netherlands), 1965	yes	yes		2025		Haworthia tortuosa var. curta (Haw.) Baker,	The hybrid formula of this artificial cross
Haworthiopsis × *hybrida* (Salm-Dyck) Gildenh. & Klopper	nn, 1912	yes			1912		Haworthia hybrida	The hybrid formula of this artificial cross is *H. radula* × *H. rigida*.
Haworthiopsis × *major* (Salm-Dyck) Gildenh. & Klopper	Wageningen (Netherlands), 1967	yes			1967		Haworthia tortuosa var. major (Salm-Dyck) A.Berger, cutting	
Haworthiopsis × *pseudorigida* (Salm-Dyck) Gildenh. & Klopper	Palermo (Italy), 1958		yes		1968		Haworthia tortuosa var. pseudorigida (Salm-Dyck) A.Berger,	The hybrid formula of this artificial cross is *H. viscosa* × ?.
	Valencia (Spain), 1961	yes	yes		1985		Haworthia tortuosa var. pseudorigida (Salm-Dyck) A.Berger,	The hybrid formula of this artificial cross is *H. viscosa* × ?., incorrect 1981.
	Valencia (Spain), 1962	yes	yes		1963		Haworthia tortuosa var. pseudorigida (Salm-Dyck) A.Berger,	The hybrid formula of this artificial cross is *H. viscosa* × ?.
	Palermo (Italy), 1957	yes			1958		Haworthia × subrigida Baker	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Valencia (Spain), 1961	yes			1985		Haworthia subrigida	
Haworthiopsis × *rigida* (Lam.) Gildenh. & Klopper	nn, 1951	yes	yes		1963		Haworthia rigida (Lam.) Haw.	This hybrid formula is *H. viscosa* × ?. One plant donated to Botanical Garden in Split 1952.
	Wageningen (Netherlands), 1964	yes			1966		Haworthia rigida (Lam.) Haw.	
	Wageningen (Netherlands), 1964	yes	yes		2025		Haworthia rigida var. expansa (Haw.) Baker, seeds	This hybrid formula is *H. viscosa* × ?.
	Wageningen (Netherlands), 1965	yes	yes		2025		Haworthia rigida var. expansa (Haw.) Baker, seeds	This hybrid formula is *H. viscosa* × ?.
	Firence (Italy), 1950	yes			1950		Haworthia rigida var. expansa (Haw.) Baker, seeds	Not germinated
Haworthiopsis × *tortuosa* (Haw.) Gildenh. & Klopper	Debrecen (Hungary), 1955	yes	yes		1961		Haworthia tortuosa (Haw.) Haw.,	The hybrid formula of this artificial cross is *H. viscosa* × *?*.
	nn, 1938	yes			1938		Haworthia tortuosa (Haw.) Haw.,	The hybrid formula of this artificial cross is *H. viscosa* × ?.
	Berlin-Dahlem (Germany), 1956	yes			1958		Haworthia tortuosa (Haw.) Haw.,	
	Firence (Italy), 1950	yes			1950		Haworthia tortuosa (Haw.) Haw.,	
	Kiev (Ukraine), 1989		yes		1990		Haworthia tortuosa (Haw.) Haw., planta viva	The hybrid formula of this artificial cross is *H. viscosa* × ?.
	Wageningen (Netherlands), 1965	yes			1966		Haworthia tortuosa (Haw.) Haw., seeds	
	Wageningen (Netherlands), 1967	yes			1967		Haworthia tortuosa (Haw.) Haw., cutting	
Haworthiopsis attenuata (Haw.) G.D.Rowley	Debrecen (Hungary), 1956	yes	yes		1961		Haworthia attenuata (Haw.) Haw.	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Monaco, 1992		yes		2025		Haworthia fasciata (Willd.) Haw., seeds	Redetermined
	Monaco, 1994		yes		2025		Haworthia attenuata (Haw.) Haw., seeds	
	Rotterdam (Netherlands), 1969	yes			1969		Haworthia fasciata (Willd.) Haw., planta viva	
	nn, 1963	yes	yes		1968		Haworthia attenuata (Haw.) Haw.	
	Wageningen (Netherlands), 1969	yes			1985		Haworthia attenuata (Haw.) Haw.; cutting	
	nn, 1904	yes			1912		Haworthia attenuata hyb.	
	nn, 1904	yes			1912		Aloe attenuata Haw.	
	Marburg (Germany), 1951	yes			1951		Haworthia attenuata (Haw.) Haw.	
Haworthiopsis attenuata var. *attenuata*	Dijon (France), 1989		yes		2025		Haworthia subulata (Salm-Dyck) Baker, seeds	
	Liberec (Czech Republic), 1965	yes	yes		1985		Haworthia attenuata var. britteniana (Poelln.) Poelln., cutting	Incorrect 1981
	Monaco, 1994		yes		2001		Haworthia attenuata var. argyrostigma (Baker) A.Berger, seeds	
	Palermo (Italy), 1958	yes	yes		2025		Haworthia subattenuata (Salm-Dyck ex Schult. & Schult.f.) Baker	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Berlin-Dahlem (Germany), 1958	yes			1958		Haworthia subattenuata (Salm-Dyck ex Schult. & Schult.f.) Baker	
	nn, 1904	yes			1904		Haworthia subattenuata (Salm-Dyck ex Schult. & Schult.f.) Baker	
	Wageningen (Netherlands), 1964	yes	yes		1985		Haworthia subulata (Salm-Dyck) Baker, planta viva	Incorrect 1981
	Wageningen (Netherlands), 1964	yes	yes		2000		Haworthia attenuata var. argyrostigma (Baker) A.Berger	
	Wageningen (Netherlands), 1965	yes	yes		1981		Haworthia subulata (Salm-Dyck) Baker, cutting	Incorrect 1981
	Wageningen (Netherlands), 1967	yes			1967		Haworthia subulata (Salm-Dyck) Baker, cutting	
	Padova (Italy), 2000			yes	2025		Haworthia subulata	
	Munster (Ireland), 1966		yes		1985		Haworthia tisleyi Baker, cutting	Incorrect 1981
Haworthiopsis attenuata var. *radula* (Jacq.) G.D.Rowley	nn, 1963		yes		1985		Haworthia radula (Jacq.) Haw.,	Incorrect 1981
	Antwerpen (Belgium), 1954	yes			1966		Haworthia radula (Jacq.) Haw., seeds	
	Palermo (Italy), 1957	yes	yes		1961		Haworthia radula (Jacq.) Haw.,	
	Palermo (Italy), 1957		yes		no data		Haworthia attenuata var. clariperla (Haw.) Baker,	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Palermo (Italy), 1960	yes	yes		2025		Haworthia attenuata var. clariperla (Haw.) Baker,	
	Palermo (Italy), 1961		yes		1961		Haworthia attenuata var. clariperla (Haw.) Baker,	
	Wageningen (Netherlands), 1969	yes	yes		1985		Haworthia radula (Jacq.) Haw., cutting	Incorrect 1981
	nn, 1938	yes			1938		Haworthia radula (Jacq.) Haw.,	
	Salaspils (Latvia), 2019			yes	2025		Haworthia radula, cutting	
Haworthiopsis attenuata var. *glabrata* (Salm-Dyck) G.D.Rowley	nn, 1938	yes			1938		Haworthia glabrata (Salm-Dyck) Baker	
Haworthiopsis coarctata (Haw.) G.D.Rowley	Iasi (Romania), 1963	yes	yes		1966		Haworthia coarctata Haw.	
	nn, 1961	yes	yes		1966		Haworthia coarctata Haw.	One plant donated to Botanical Garden in Skopje, 1959
	nn, 1968		yes		2025		Haworthia coarctata Haw.	
	nn, 1929	yes			1929		Haworthia coarctata Haw.	One plant donated to Botanical Garden in Split 1952.
	Wageningen (Netherlands), 1970		yes		2001		Haworthia coarctata Haw.	
Haworthiopsis coarctata var. *coarctata*	Wageningen (Netherlands), 1964		yes		1985		Haworthia reinwardtii var. fallax (Poelln.) Poelln.,	
	Wageningen (Netherlands), 1966	yes	yes		1993		Haworthia greenii Baker, cutting	Some plants incorrect 1981

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Wageningen (Netherlands), 1966	yes	yes		1985		Haworthia reinwardtii var. fallax (Poelln.) Poelln.,	Incorrect 1981
	Wageningen (Netherlands), 1966	yes	yes		1980		Haworthia resendeana Poelln.	
	Wageningen (Netherlands), 1967	yes	yes		1985		Haworthia greenii Baker, cutting	
	Wageningen (Netherlands), 1967		yes		1985		Haworthia resendeana Poelln.	
	Wageningen (Netherlands), 1968	yes	yes		1985		Haworthia resendeana Poelln.; cutting	
	Wageningen (Netherlands), 1970	yes	yes		2025		Haworthia greenii Baker, cutting	Some plants incorrect 1981
Haworthiopsis coarctata var. *tenuis* (G.G.Sm.) G.D.Rowley	Wageningen (Netherlands), 1966	yes	yes		1978		Haworthia reinwardtii var. tenuis G.G.Sm., cutting	
Haworthiopsis fasciata (Willd.) G.D.Rowley	Barcelona (Spain), 1961	yes	yes		1962		Haworthia rugosa (Salm-Dyck) Baker,	
	Iasi (Romania), 1958	yes	yes		2025		Haworthia rugosa (Salm-Dyck) Baker,	
	nn, 1958 (maybe Iasi - Romania)	yes	yes		1961		Haworthia rugosa (Salm-Dyck) Baker,	
	Palermo (Italy), 1962	yes	yes		1985		Haworthia subfasciata (Salm-Dyck ex Schult. & Schult.f.) Baker	Incorrect 1981
	nn, 1904	yes			1912		Aloe fasciata (Willd.) Salm-Dyck ex Schult. & Schult.f. = Haworthia fasciata (Willd.) Haw.	
	Valencia (Spain), 1961	yes	yes		1966		Haworthia fasciata (Willd.) Haw., cutting	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Wageningen (Netherlands), 1969		yes		2025		Haworthia attenuata (Haw.) Haw., seeds	
Haworthiopsis limifolia (Marloth) G.D.Rowley	Bologna (Italy), 1966	yes	yes		1985		Haworthia limifolia Marloth, planta viva	
Haworthiopsis reinwardtii (Salm-Dyck) G.D.Rowley	Kiev (Ukraine), 1989		yes		1990		Haworthia reinwardtii (Salm-Dyck) Haw., planta viva	
	nn, 1955	yes	yes		2025		Haworthia reinwardtii (Salm-Dyck) Haw.	
	nn, 1912	yes			1951		Haworthia reinwardtii (Salm-Dyck) Haw.	
Haworthiopsis scabra (Haw.) G.D.Rowley	nn, 1951	yes			1951		Haworthia scabra Haw.	
Haworthiopsis tessellata (Haw.) G.D.Rowley	Vienna (Austria), 1964	yes	yes		1985		Haworthia tessellata Haw., cutting	
	Debrecen (Hungary), 1956	yes	yes		1985		Haworthia tessellata Haw.	
	nn, 1957	yes	yes		1961		Haworthia tessellata Haw.	
	Palermo (Italy), 1958	yes			1958		Haworthia tessellata Haw.	
	Berlin-Dahlem (Germany), 1956	yes			1958		Haworthia tessellata Haw.	
	nn, 1938	yes			1938		Haworthia parva Haw.	
Haworthiopsis viscosa (L.) Gildenh. & Klopper	Vienna (Austria), 1964	yes	yes		1971		Haworthia asperiuscula Haw., cutting	
Kumara plicatilis (L.) G.D.Rowley	Barcelona (Spain), 1970		yes		1985		Aloe plicatilis (L.) Mill.	
	Jerusalem (Israel), 2018			yes	2025		Aloe plicatilis (L.) Mill., seeds	
	Cape Town, BG Kirstenbosch (JAR), 1986		yes		1993		Aloe plicatilis (L.) Mill., seeds	

Nomenclature acc. to Plants of the World Online - KEW	Origin (botanical garden, city, nursery) and year obtained	Historical database (1895 – 1980s)	Passive database (1948 – 2020)	Active database (digital, 2020 – present)	Last records	IUCN - red list	Original name in the Garden database/ arrived as	Notes in the original inventory-card or notes
	Meise (Belgium), 2023			yes	2025		seeds	
	Uppsala (Sweden), 1957	yes			1958		Aloe plicatilis (L.) Mill.	
Tulista pumila (L.) G.D.Rowley	Gottingen, 2000		yes		2025		Haworthia margaritifera (L.) Haw.	
	Cape Town, BG Kirstenbosch (JAR), 1961	yes	yes		1985		Haworthia margaritifera (L.) Haw.	
	Cape Town, BG Kirstenbosch (JAR), 1950	yes			1950		Haworthia margaritifera (L.) Haw.	
	nn, 1952	yes	yes		1961		Haworthia margaritifera (L.) Haw., seeds	
	nn, 1929	yes			1951		Haworthia margaritifera (L.) Haw.	
	nn, 1971		yes		1981		Haworthia semimargaritifera (Salm-Dyck) Haw.	Incorrect 1981
	Pecs (Hungary), 1997		yes		2001		Haworthia pumila (L.) Duval, planta viva	
	Valencia (Spain), 1961	yes	yes		1985		Haworthia semimargaritifera (Salm-Dyck) Haw., cutting	
	Madrid (Spain), 2000			yes	2025		Haworthia pumila	

CONCLUSIONS

Based on a comprehensive review of available historical and contemporary records, I determined that over the past 130 years a total of 172 taxa and 517 individual specimens of succulent plants belonging to the subfamily Alooideae have been cultivated in the cold glasshouse collection of the Botanical Garden, Faculty of Science, University of Zagreb (Tab. 1).

Currently, 82.6% of these taxa remain preserved in the Garden's living collection, representing a significant proportion of the historically documented diversity. This high level of taxonomic continuity highlights the long-term success of conservation and cultivation practices within the Garden.

Moreover, the presence of species listed under CITES and the IUCN Red List indicates the broader relevance of this collection in the context of global biodiversity conservation. By maintaining both threatened and non-threatened taxa, the collection not only contributes to ex situ conservation efforts but also provides valuable material for scientific research, education, and public awareness of plant diversity and conservation challenges. The long-term maintenance of this collection emphasizes the importance of botanical gardens as repositories of living biodiversity and as institutions that bridge historical horticultural traditions with contemporary conservation priorities.

Received November 10, 2025

REFERENCES

Bachman, S.P., Wilkin, P., Reader, T., Field, R., Weber, O., Nordal, I. & Demissew, S., 2020: Extinction risk and conservation gaps for *Aloe* (Asphodelaceae) in the Horn of Africa. Biodivers Conserv **29**, 77–98.

CITES (Checklist of CITES Species), 2025: Available from: http://checklist.cites.org/#/en

CITES Secretariat, 2024: CITES Checklist for aloe species: an updated checklist to the aloes of the World. Compiled by: Klopper, R. R., Carter-Holmes, S., Demissew, S., Figueiredo, E., Grace, O. M., Neale, S., Newton, L. E., Rakotoarisoa, S. E., Smith, G. F. & Walker, C.C. (eds). SANBI Biodiversity Series. South African National Biodiversity Institute, Pretoria.

Daru, B. H., Manning, J. C., Boatwright, J. S., Maurin, O. M., Maclean, N., Kuzmina, M. & Van der Bank, M., 2013: Molecular and morphological analysis of subfamily *Alooideae* (Asphodelaceae) and the inclusion of Chortolirion A. Berger in *Aloe* L. Taxon **62**, 62–76.

Eggli, U. & Nyffeler, R. (eds), 2020: Illustrated Handbook of Succulent Plants: Monocotyledons. Springer-Verlag, Berlin, 1–832.

Gildenhuys, S. D. & Klopper, R. R., 2016: A synoptic review and new infrageneric classification for the genus *Haworthiopsis* (Xanthorrhoeaceae: Asphodeloideae), Phytotaxa, **265**(1), 1–26.

Grace, O. M., 2011: Current perspectives on the economic botany of the genus *Aloe* L. (Xanthorrhoeaceae). South African Journal of Botany **77**(4), 980–987.

Heinz, A., 1895-1896: Kr. Botanički vrt u Zagrebu. Glasnik Hrvatskoga naravoslovnoga društva, **8**(1–6), 1–54.

IUCN, 2025. The IUCN Red List of Threatened Species. Version 2025-1. Available from: https://www.iucnredlist.org

Kovačić, S., 2015: *Plethora of plants* - Collections of the Botanical Garden, Faculty of Science, University of Zagreb (1): Temperate glasshouse exotics – historic overview. Natura Croatica **24**(2), 361–428 (397*).

Manning, J., Boatwright, J. S., Daru, B. H., Maurin, O. & van der Bank, M., 2014: A molecular phylogeny and generic classification of Asphodelaceae subfamily Alooideae: A final resolution of the prickly issue of polyphyly in the alooids? Systematic Botany, **39**(1), 55–74.

Manning, J., Boatwright J. S. & Daru B. H., 2014b: Aloe and goodbye: a new evolutionary classification of the alooids. Alsterworthia International, **14**(2), 7–15.

POWO, 2025: Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet; https://powo.science.kew.org/ Retrieved 07 July 2025.

Rowley, G. D., 2013. Generic concepts in the Alooideae 3: The phylo genetic story. Alsterworthia International Special Issue **10**, 1–7.

Sandev, D., Mihelj, D., Kovačić, S., 2018: Plethora of plants – Collections of the Botanical garden, Faculty of Science, University of Zagreb (2): Glasshouse succulents. Natura Croatica, **27**(2), 407–420.

Van Jaarsveld, E. J., 1994: Gasterias of South Africa. A new revision of a major succulent group. Fernwood Press & Nat. Bot. Institute, Cape Town.

van Jaarsveld E. J., Smith G. F., van Wyk B., 1994: A cladistic analysis of *Gasteria* (Aloaceae). S. Africa J. Science **90**, 467–470.

Van Jaarsveld, E. J., 2001: *Gasteria polita* Van Jaarsv., a new species from the Western Cape. Cactus and Succulent Journal (U. S.), **73**, 127-130.

Van Jaarsveld, E. J. & Van Wyk, B.-E., 2001: *Gasteria pendulifolia* Van Jaarsv., a new species from the Kwazulu-Natal. Cactus and Succulent Journal (U. S.), **73**, 68–70.

Van Jaarsveld, E.J., 2007: The genus *Gasteria*: A synoptic review (new taxa and combinations). Aloe, **44**, 84–104.

Van Jaarsveld, E. J. & Van Wyk, A. E., 2004: *Gasteria doreeniae*, a new species from the Eastern Cape. Aloe **41**, 81–83.

Van Jaarsveld, E.J. & Van Wyk, A.E., 2005: *Gasteria tukhelensis*, a new species from KwaZulu-Natal, South Africa. Bothalia, **35**, 164–166.

Van Wyk, B.-E., Whitehead, C. H., Glen, H. F., Hardy, D. S., Van Jaarsveld, E. J., Smith, G. F., 1993: Nectar sugar composition in the subfamily Alooideae (Asphodelaceae). Biochemical Systematics and Ecology, **21**, 249–253.

SAŽETAK

Obilje bilja - zbirke Botaničkoga vrta Prirodoslovno-matematičkog fakulteta Sveučilišta u Zagrebu (10): Stakleničke mesnatice iz porodice Asphodelaceae - potporodica Alooideae

D. Sandev

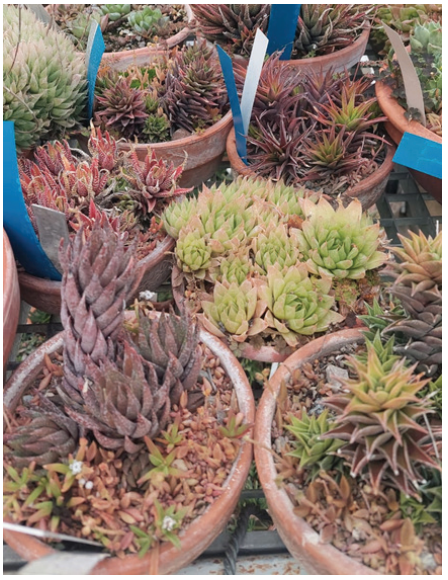
Prema propisima Europske unije koji se odnose na muzejsku djelatnost, potrebno je službeno registrirati i sve žive zbirke biljaka u botaničkim vrtovima, kako bi se moglo pratiti njihovo podrijetlo i put od sjemenke do odrasle biljke te spriječilo neovlašteno korištenje i moguća zlouporaba materijala.

Nakon dosadašnjih, načinili smo i analizu dijela zbirki mesnatica iz potporodice Alooideae hladnog staklenika. Analiza je, osim postojeće povijesne kartoteke, obuhvatila i sve sačuvane povijesne zapise zbirki iz 19. i 20. stoljeća, zapisane u 29 inventarskih bilježnica počevši od osnivača Botaničkoga vrta, profesora Antuna Heinza („Kr. Botanički vrt u Zagrebu“, 1895-1896). Iz bilježnica doznajemo od kuda su, kako i koliko je biljnih svojti do 80.-tih godina prošlog stoljeća u staklenicima raslo.

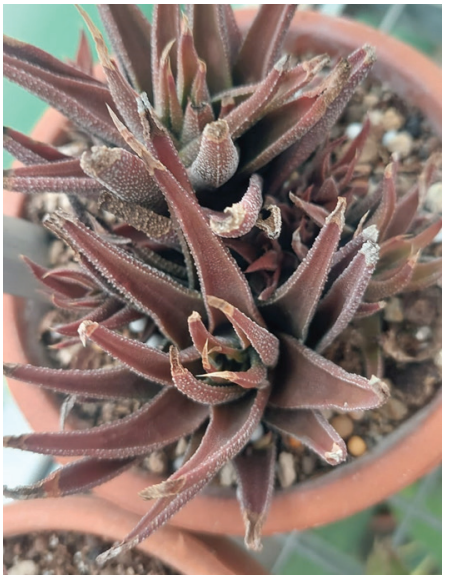
Povijesna kartoteka osnovana 1948. godine pomaže nam pratiti zbirku uzgajanih svojti u Vrtu do kraja 20.-tih godina ovog stoljeća. Analizom povijesnih zapisa i današnje aktualne digitalne baze podataka utvrdili smo da je kroz zbirku mesnatica hladnog staklenika iz potporodica Alooideae od 1895. godine do danas prošlo najmanje 172 svojte te 517 uzoraka biljnih svojti. S krajem 2025. godine u zbirci mesnatica hladnog staklenika obitavale su 142 svojte iz potporodice Alooideae.

Photo-tab. 1. Representatives of species in subfamily Alooideae grown in Zagreb Botanical Garden of the Faculty of Science from 1895 to 2025.

All photographs are originals, taken between 2024 and 2025 in the collections of the Botanical Garden of the Faculty of Science (University of Zagreb) by Dr Dubravka Sandev, senior Garden curator. Old photos are mostly by unknown authors.



a) Collection of *Haworthia* and *Haworthiopsis* in greenhouse



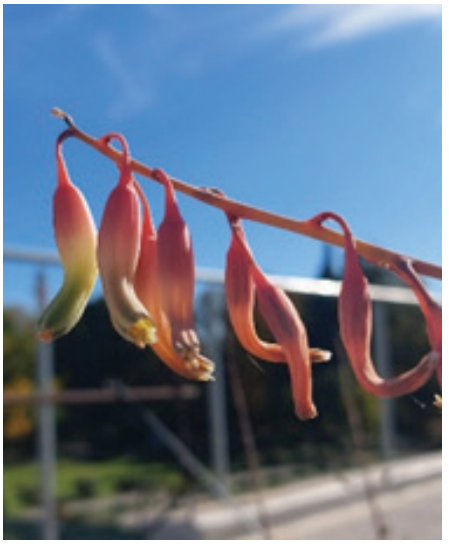
b) *Haworthiopsis attenuata* (Haw.) G.D.Rowley

c) *Haworthiopsis* × *tortuosa* (Haw.) Gildenh. & Klopper

d) *Haworthia ryderiana* Poelln.

e) *Haworthia* × *janseana* Uitewaal

f) *Tulista pumila* (L.) G.D.Rowley

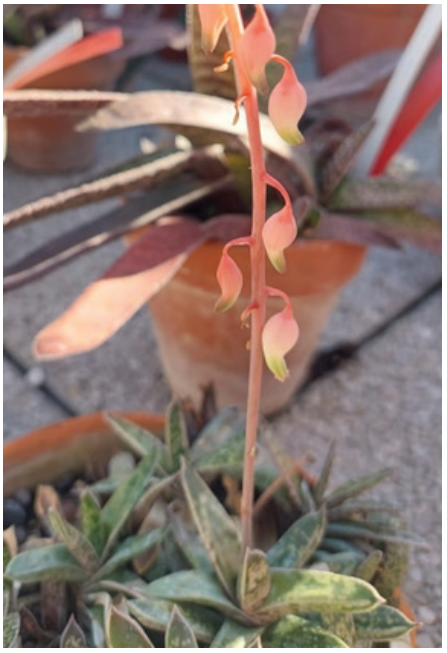


g) *Gasteria acinacifolia* (J.Jacq.) Haw.

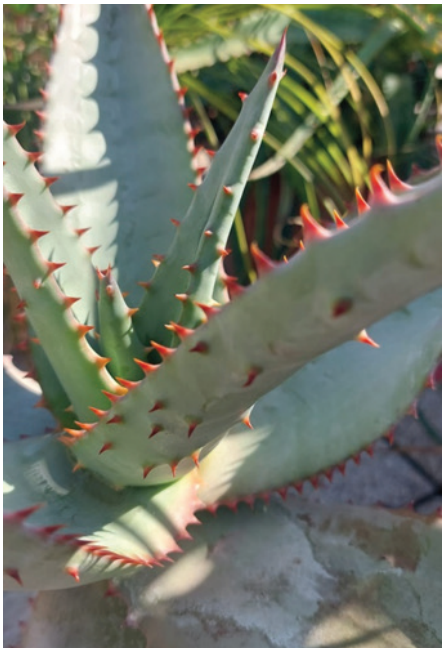
h) *Gasteria obliqua* (Aiton) Duval (arrived as *Gasteria bicolor*)

i) *Kumara plicatilis* (L.) G.D.Rowley

j) × *Gasterhaworthia bayfieldii* (Salm-Dyck) G.D.Rowley

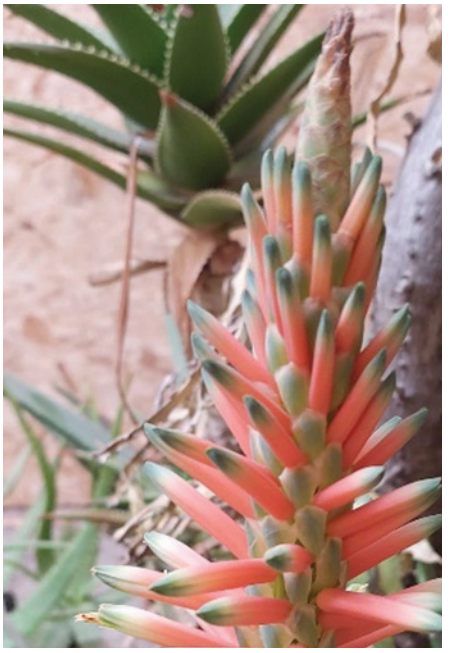


k) *Gasteria obliqua* (Aiton) Duval (arrived as *Gasteria liliputana*)



l) *Aloe ferox* Mill.

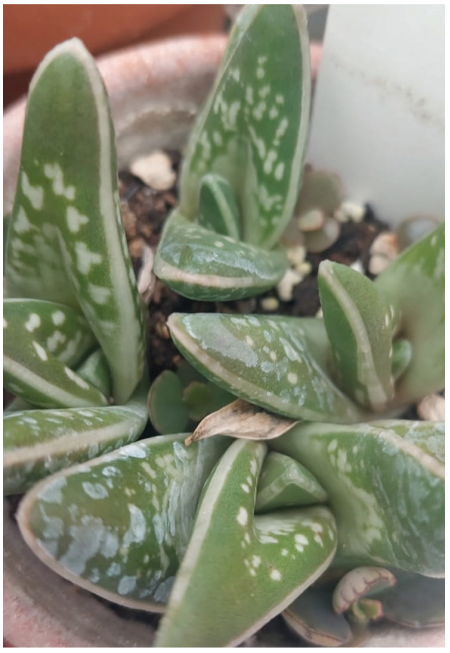
m) *Aloiampelos striatula* (Haw.) Klopper & Gideon F.Sm. (arrived as *Aloe striatula*)



n) *Aloe suprafoliata* Pole-Evans

o) *Aloiampelos ciliaris* (Haw.) Klopper & Gideon F.Sm. (arrived as *Aloe ciliaris*)

p) *Aristaloe aristata* (Haw.) Boatwr. & J.C.Manning

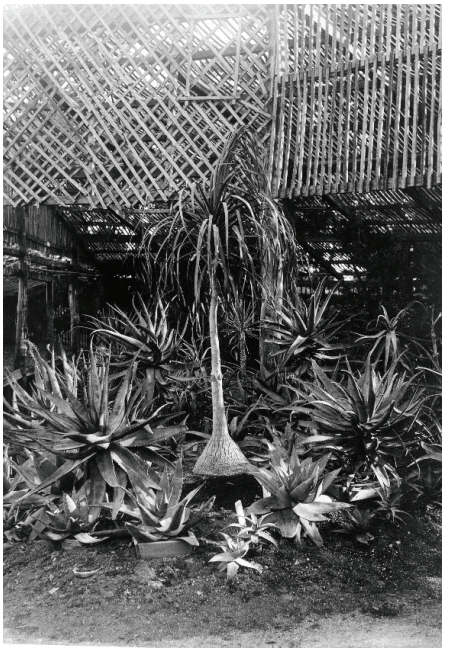


r) *Gonialoe variegata* (L.) Boatwr. & J.C.Manning

s) *Aloidendron dichotomum* (Masson) Klopper & Gideon F.Sm.

t) *Aloe africana* Mill.

Garden bed with succulents; in *Aloe perfoliata* var. *serrulata* and *Aloe suprafoliata* (year 1910)



Garden bed with mostly *Aloe* succulents (year 1920)

Left in pot *Gasteria sp.* (year 1932)

Aloe salm-dyckiana (year 1980)

Aloe arborescens (year 1984)

Garden bed in greenhouse with mostly *Aloe* succulents (year 2000)

Collection of *Haworthia* and *Hawothiopsis* in greenhouse (year 2000)

Aloe arborescens propagated for sale (year 2000)

Garden bed with succulents: *Aloe arborescens*, *Aloe africana*, *Aloe* sp. (year 2000)

Gasteria x *cheilophylla* in flower (year 2000)

Aloe ferox (year 2000)

Aloe arborescens (year 2000)