

Ornamental Bulbous Plants of Brazil

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Abstract

Plants with true bulbs in Brazil can be found in the families Amaryllidaceae, Alliaceae and Iridaceae. Of these, Amaryllidaceae is the family with a greater variety of ornamental species, and hybrids and varieties of species of one of its genera, *Hippeastrum*, is already commercially explored under the name *Amaryllis*. Other genera have ornamental potencial, like *Worsleya*, *Griffinia*, *Habranthus* and *Zephyranthes*. Alliaceae has few species in Brazil, some *Nothoscordum* and *Ipheion*. Iridaceae has some unexplored, little known bulbous species with very attractive flowers, as *Calydorea*, *Cypella* and *Herbertia*.

INTRODUCTION

Bulbous plant is a category many times used in a broad sense, comprehending plants with many forms of nutrient and water storage linked to geophytic habit.

These storage organs appear in many different groups of plants, in the angiosperms in basal and true dicotyledons, and mostly in monocotyledons.

One of the most common of these structures, appearing in different angiosperm groups is the tuber, which can be of stem or root origin. A very ornamental dicotyledon family in Brazil where stem tubers are widespread is the Gesneriaceae.

Corms and bulbs are more common in the monocotyledons, specially the Asparagales and the Liliales. These groups have had a great taxonomical rearrangement in recent years, due to macromolecular research, and many families, mainly the Liliaceae of Cronquist, were split into smaller, morphologically more homogeneous groups. Of these two groups we have in Brazil the Alstroemeriaceae, Smilacaceae and Agavaceae of the Liliales and Alliaceae, Amaryllidaceae (according to APG, 2003, these two now grouped in one family), Anthericaceae, Herreriaceae, Hypoxidaceae, and Iridaceae of the Asparagales.

In these families root tubers appear in almost all Alstroemeriaceae, and corms in most Iridaceae. The true bulb appears in all species of Brazilian Alliaceae and Amaryllidaceae, the last family having the most ornamental species.

In this article we are going to discuss mostly the former Amaryllidaceae, the group with most ornamental true bulbous plants.

PLANTS OF BRAZIL

Worsleya

The queen of the Brazilian Amaryllidaceae is the monoespecific *Worsleya*, also called the “blue amaryllis”, which is in great danger of extinction, with only one natural population in the middle of the town of Petrópolis. It grows on a big rock outcrop, in an area that was surrounded by forests, with high humidity the year round, cold winters and warm summers with heavy rainfall. Its bulbs grow on the rock or in crevices with more organic matter, in full sun, and the population may have flowers from spring to summer, each bulb producing two scapes with several bluish flowers. Deforesting, continuous arsoning during the dryer winter, and overcollecting, has reduced the population. It is also very ornamental vegetatively, with interesting leaves, but a slow grower that takes many years to flower. Individuals of the species are being cultivated, especially abroad, but no breeding has been successful until now. It has $2n = 42$ chromosomes and is most related to species of the genus *Griffinia*.

Griffinia

Griffinia is a little known group, endemic in Brazil, found in dryer or more humid forests. It generally appears in small populations, and is very sensitive to environmental disturbances. It can be divided in two subgenera, with great morphological differences. The subgenus *Hylina* is found in drier areas of Brazil, the savannah or caatinga forests of the Northwest or Northeast. It has generally two white flowers on the scape that last just one night. Subgenus *Griffinia* has plants that grow in Atlantic forests from Northeastern São Paulo to Pernambuco, with ornamental petioled leaves and bluish and/or white flowers. The two scapes, produced in spring or summer, have more than three flowers each, up to about twelve, that open consecutively and last several days. The genus is characterised by $2n = 20$ chromosomes with some polyploid populations. The plants are easy to cultivate, prefer half shade, but almost no breeding has been done with the genus until now. *Griffinia hyacinthina* Ker Gawler is the species with the biggest plants of the genus and has the biggest blue/violet flowers.

Hippeastrum

Hippeastrum, also commercially known as *Amaryllis*, has many ornamental species in Brazil, with great variation of flower colours, from white to yellowish to orange and red. The species of this genus appear in many different environments, as in marshes, in meadows, near the beach, on trees, on rocks, on high mountains, etc. Most species are also interfertile, simplifying the breeding of different morphological forms and adaptations to different environmental conditions. There are probably also differences in resistance to many diseases of these plants that could be useful for breeding. The species of the genus have mostly $2n = 22$ chromosomes, but a variety of polyploid populations are found, from triploids up to hexaploids.

The type species, *Hippeastrum puniceum* (Lam.) Kuntze, can be found in a variety of environments, in half shade or full sun, on rock outcrops or periodically flooded areas or woods. It is the species with the widest ploidy range, commonly from $2n=22$ chromosomes to 44 chromosomes, up to one population having 66 somatic chromosomes. It is very easy to cultivate and produces two scapes with generally two flowers each spring. The flowers have a typical narrow nectar tube generally more than 2 cm long, vary from light to darker orange, to rose coloured. Some Andean related species have cream coloured or yellowish flowers. With somewhat similar flowers, but shorter and broader nectar tube, *H. reginae* (L.) Herb. may be found generally in areas of calcareous rocky outcrops and generally has two flowers. Another morphologically related, mostly unknown species with small geographical distribution, *H. leucobasis* (Ravenna) Dutilh has a four-flowered scape with very pretty deep red flowers with long stamens and style. It also flowers in spring, in savannahs of Goiás State, with buried bulbs, but is not very easy to cultivate.

Some species are native to marshy areas, as *Hippeastrum breviflorum* Herb., with many flowered scapes and flowers with short nectar tubes and relatively isomorphic tepals of various tones of rose. *H. santacatarina* (Traub) Dutilh, is very similar to the previous species but has dark red flowers, and *H. angustifolium* Pax, with up to about ten flowered scapes has red and green flowers, in form very similar to the ones of genus *Sprekelia*.

Hippeastrum morelianum Lem. is found with more superficially growing bulbs on granite like rock outcrops in Southeast Brazil, in full sun. It produces scapes with generally two big, very open flowers, orange to red, many times with darker red and/or white streaks. The tepals are more or less isomorphic, most populations have ornamental upright slightly spiralled leaves, very characteristic and it is a diploid, very easy to cultivate. Most clones are deciduous, but some may be evergreen and the populations have a long flowering period, from autumn to winter.

Hippeastrum psittacinum (Ker Gawler) Herb. is a species with very ornamental flowers, red with green and/or with white, with a longer and broader upper tepal and a smaller lowermost. It flowers in winter, after a colder period, producing two flowers per

scape. It grows mostly in Southeast Brazil, in half shade or almost full sun in more humid areas, on granite like rock outcrops. This species is very much confused with *H. glaucescens* Herb., with similar flower forms, and also a very polymorphic species. But it can be distinguished by the microhabitat as it grows on areas that are more open and drier, with a soil layer, having buried bulbs. It has a rain controlled flowering, about one month after the first rain that marks the end of the dry season.

Several species from the woods are summer flowering, as *Hippeastrum reticulatum* (L'Hérit.) Herb., with very interesting reticulate rose coloured flowers and individuals with white streaked, slightly petiolated leaves, and *H. calyptratum* (Ker Gawler) Herb., a mostly epiphytic species with green, very characteristic flowers. Another frequently epiphytic species, with somewhat similar, but deep red, flowers is *H. aulicum* (Ker Gawler) Herb., an autumn flowering species. All these species are almost always evergreen. Another very polymorphic species from dryer, semideciduous woods, is *H. striatum* (Lam.) Moore. This species is deciduous, producing scapes with two to four flowers in spring, also after the first rains and is very widespread in Brazil. It has a very prolific vegetatively reproducing strategy, generally forming many small roundish bulblets on various parts of the bulb. The flowers are mostly orange, sometimes salmon coloured. This species may present various ploidy levels, but frequently is tetraploid, with 44 somatic chromosomes. A very related tetraploid species, growing near the sea, in more open areas, is *H. blossfeldiae* (Traub and Doran) van Scheepen. It produces generally four but, in cultivation, frequently six orange coloured flowers.

Of the species with trumped form flowers, the best known is *Hippeastrum vittatum* (L'Herit.) Herb. It has white flowers with dark rose streaks inside, and grows in Southern Brazil, mostly in full sun, in areas with rocky outcrops, but with buried bulbs. A common species from savannah areas, mostly in North and Central Western Brazil, is *H. solandriflorum* (Lindl.) Herb., with buried bulbs, greenish cream coloured flowers, sometimes with slight reddish streaks on the outside. This species generally has two flowers on the scape, but a related species, *H. goianum* (Ravenna) Meerow, also from savannahs in Goiás, has three to five somewhat shorter flowers. In Eastern Brazil *H. brasilianum* (Traub and Doran) Dutilh has white flowers and grows superficially on granite-like rock outcrops.

Zephyranthes

Zephyranthes and *Habranthus* are genera with scapes that frequently bear one small flower that lasts about two days. In *Zephyranthes* the inflorescence is always one flowered, the flower more upright and symmetrical. In *Habranthus* the inflorescence may have more than one flower, and the flower is more declinate and zygomorphic. Taxonomy of this group is still in need of a good revision, with some polyphyly revealed by a macromolecular analysis by Meerow et al. (2000).

Rhodophiala

Rhodophiala only has one species in Brazil, *R. bifida* (Herb.) Traub, with about four more commonly deep red flowers on the scape. It has great variation in flower colour, and white and rose coloured flowers are known. In Brazil a population with reticulate rose coloured flowers was also found.

Nothoscordum

Of the Alliaceae, *Nothoscordum* has small flowers, is more characteristic of humid areas in South Brazil, but two species from warm and very dry winter areas in North-eastern Brazil form small plants with continuous flowering in the wet season. *Ipheion* is a genus from South Brazil and the plants with yellow flowers of *I. sellowianum* (Kunth) Traub form a nice ground cover.

***Iridaceae* Family**

The family Iridaceae also has some very ornamental species in Brazil, as *Cypella*, genus with species with true bulbs and mostly yellow flowers, and *Cipura*, one species with blue flowers and also with a true bulb. Other genera as *Kelissa*, *Herbertia*, *Gelasine*, *Calydorea* and *Alophia* also have bulb-like structures. These species have very ornamental, coloured flowers, but are in great need of thorough taxonomical revision with good fieldwork. Other genera of Brazilian Iridaceae, with corms and rhizomes are also very ornamental (Capellari, 2002).

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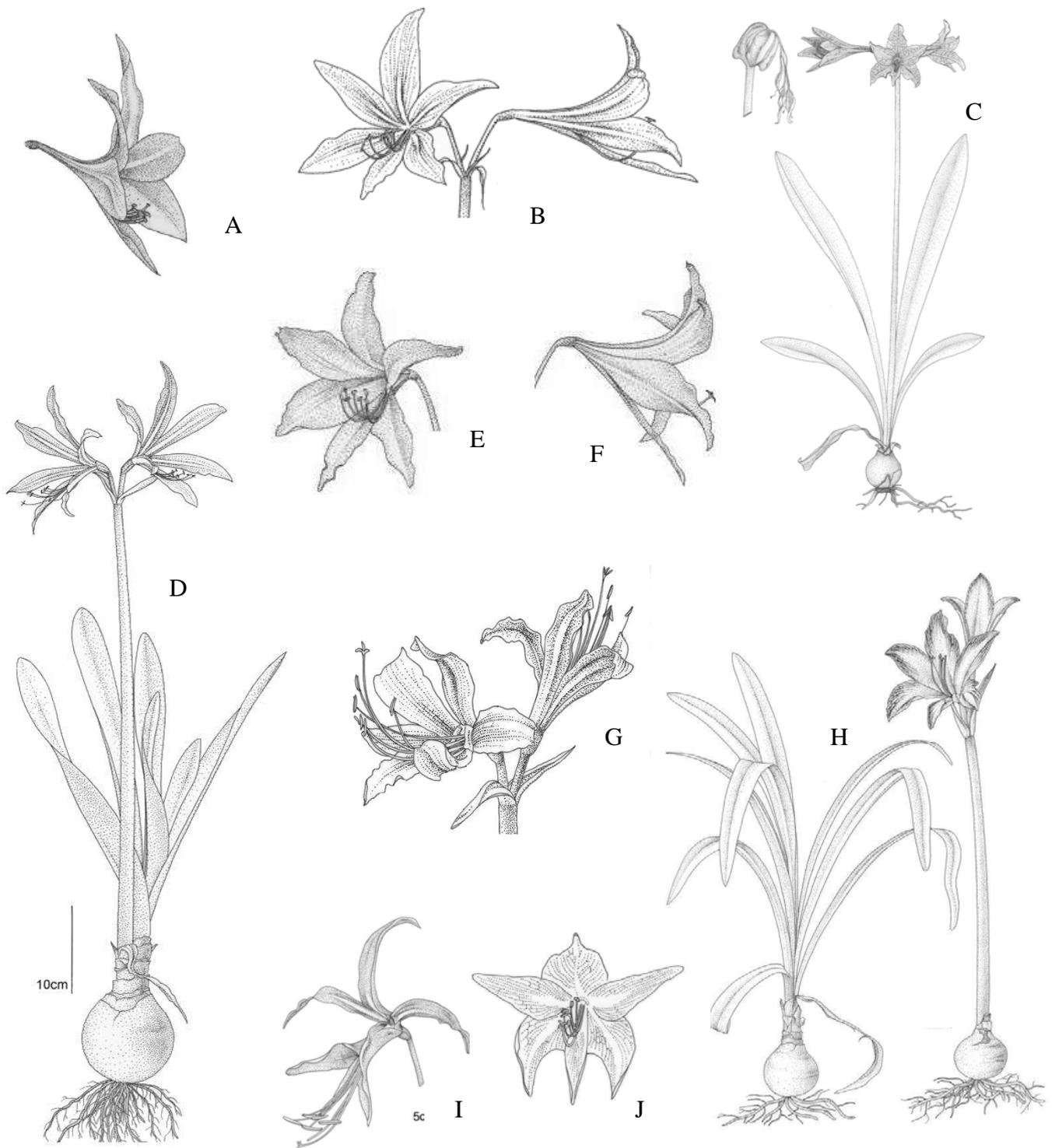


Fig 1. A Flower of *Hippeastrum puniceum*, B – Flowers of *Hippeastrum striatum*, C – Flowering plant of *Hippeastrum reticulatum*, D – Flowering plant of *Hippeastrum morelianum*, E and F – Flowers of *Hippeastrum blossfeldiae*, G – Flower of *Hippeastrum calyptratum*, H – Vegetative and flowering plant of *Hippeastrum psittacinum*, I – Flower of *Hippeastrum angustifolium*, J – Flower of *Hippeastrum glaucescens*.

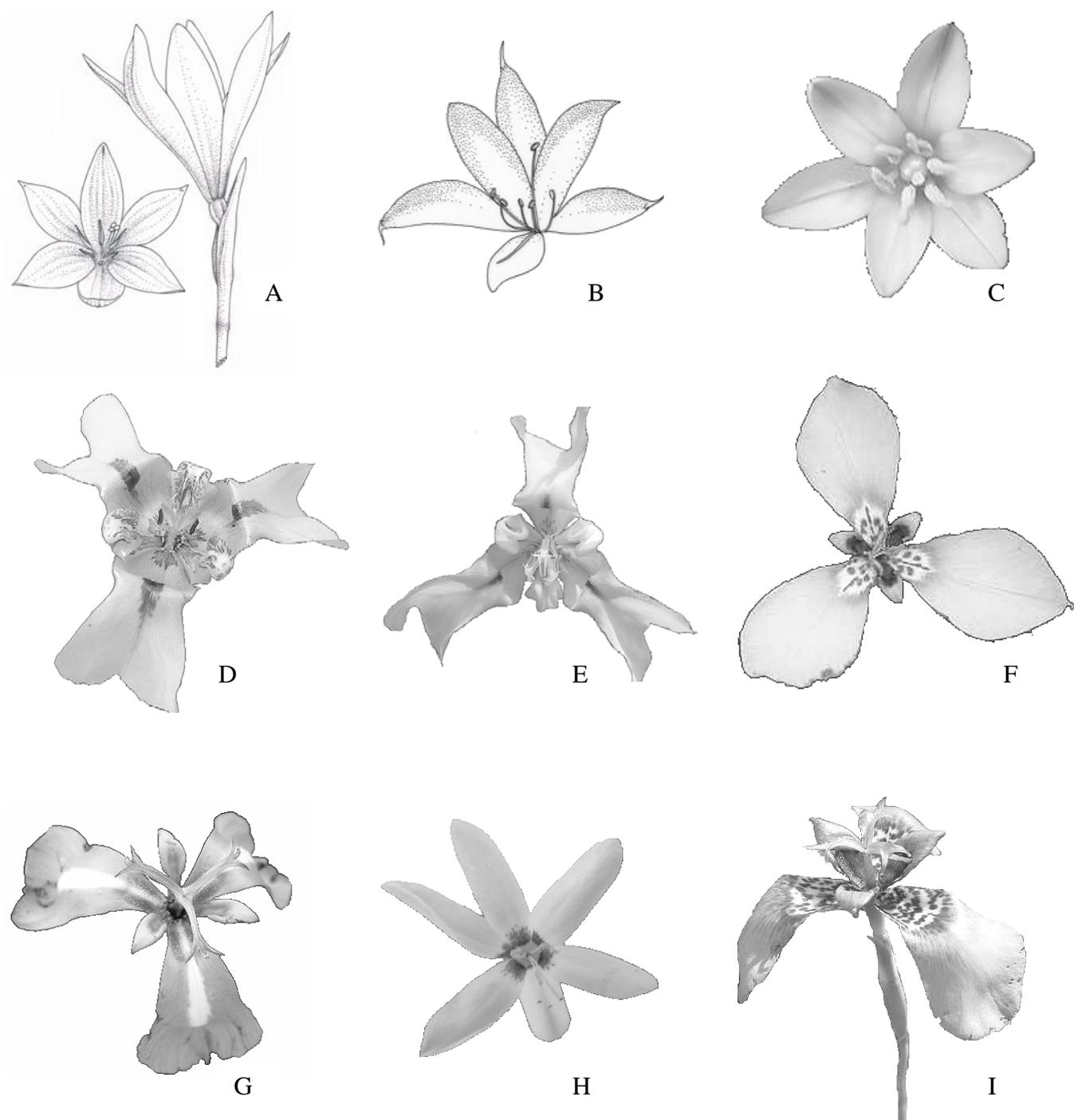


Fig. 2. A *Zephyranthes candida*, B *Griffinia hyacinthina*, C- *Ipheion sellowianum*, D and E- *Cypella* aff. *armorea*, F – *Alophia* sp., G – *Herbertia* aff. *pulchella*, H- *Calydorea* sp., I – *Herbertia* sp.