Checklist of the vascular alien flora of Catalonia (northeastern Iberian Peninsula, Spain)

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Abstract. This is an inventory of the vascular alien flora of Catalonia (northeastern Iberian Peninsula, Spain) updated to 2018, representing 1068 alien taxa in total. 554 (52.0%) out of them are casual and 514 (48.0%) are established. 87 taxa (8.1% of the total number and 16.8% of those established) show an invasive behaviour. The geographic zone with more alien plants is the most anthropogenic maritime area. However, the differences among regions decrease when the degree of naturalization of taxa increases and the number of invaders is very similar in all sectors. Only 26.2% of the taxa are more or less abundant, while the rest are rare or they have vanished. The alien flora is represented by 115 families, 87 out of them include naturalized species. The most diverse genera are Opuntia (20 taxa), Amaranthus (18 taxa) and Solanum (15 taxa). Most of the alien plants have been introduced since the beginning of the twentieth century (70.7%), with a strong increase since 1970 (50.3% of the total number). Almost two thirds of alien taxa have their origin in Euro-Mediterranean area and America, while 24.6% come from other geographical areas. The taxa originated in cultivation represent 9.5%, whereas spontaneous hybrids only 1.2%. From the temporal point of view, the rate of Euro-Mediterranean taxa shows a progressive reduction parallel to an increase of those of other origins, which have reached 73.2% of introductions during the last 50 years. The most important way of introduction is gardening (58.0%), followed by agriculture and commerce, while forestry is marginal. Invasive taxa mainly come from gardening and trade, but the proportion of the latter that become invasive is higher (6.1% and 15.6%, respectively). Most of the established aliens are annual and perennial forbs, while other biological types are less represented. Annual and perennial forbs are also dominant among the invasive alien species, although there is a noticeable increase of trees and climbers.

Keywords: alien plants; Distribution; Western Mediterranean Region.

Catálogo de la flora alóctona vascular de Cataluña (nordeste de la Península Ibérica, España)

Resumen. En este artículo se presenta un inventario de la flora vascular alóctona de Cataluña (noreste de la Península Ibérica, España) actualizada al año 2018. El número de taxones alóctonos es de 1068, de los cuales 554 son casuales y 514 (48.0%) establecidos. 87 taxones (8.1% del total y 16.8% de los establecidos) muestran un comportamiento invasivo. La zona geográfica con más plantas alóctonas es la zona marítima más antropizada, pero las diferencias entre las regiones disminuyen cuando aumenta el grado de naturalización de los taxones y el número de invasores es similar en todos los sectores. Sólo el 26.2% de los taxones son más o menos abundantes, mientras que el resto son raros o han desaparecido. La flora alóctona está representada por 115 familias, 87 de las cuales tienen especies naturalizadas. Los géneros más diversos son Opuntia (20 taxones), Amaranthus (18 taxones) y Solanum (15 taxones). La mayoría de las plantas alóctonas se han introducido desde principios del siglo XX (70.7%), con un fuerte aumento desde 1970 (50.3% del número total). Casi dos tercios de las plantas tienen su origen en el área euromediterránea y Américas, mientras que el 24.6% proviene de otras áreas geográficas. Los taxones originados en el cultivo representan el 9.5%, mientras que los híbridos espontáneos sólo el 1.2%. Históricamente, el porcentaje de taxones euromediterráneos ha mostrado una reducción progresiva paralela a un aumento de los de otras orígenes, que alcanzan el 73.2% en las introducciones de los últimos 50 años. La forma más importante de introducción es la jardinería (58.0%), seguida por la agricultura y el comercio, mientras que la silvicultura es marginal. Los taxones invasores provienen principalmente de la jardinería y el comercio, pero la proporción de estos últimos que se vuelven invasivos es mayor (respectivamente 6.1% frente a 15.6%). La mayoría de los taxones alóctonos establecidos son hierbas anuales y perennes, mientras que otros tipos biológicos están menos representados. Las hierbas anuales y perennes también son dominantes entre las especies exóticas invasoras, aunque se observa un aumento notable de árboles y de plantas trepadoras.

Palabras clave: alien plants; distribución; región mediterránea occidental.

Introduction

Biological invasions are a global phenomenon and comparison of geographically distant regions and their introduced biota is a crucially important methodological approach for elucidation of the determinants of invasiveness and inviability (Pyšek et al., 2004). Our understanding of the general patterns of plant invasions substantially improved by means of comparative studies, such as checklists of exotic floras. Catalonia (northeastern Iberian Peninsula, Spain), has a native flora of 3745 taxa (species and lower taxonomic levels, incl. hybrids) (authors, unpublished data).

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In the Mediterranean region, Catalonia has the singularity of having experienced an important industrialization since the nineteenth century, a factor that favoured intense trade by sea and land and, later, a strong urbanization of some parts of the territory. These changes have favoured conditions for the penetration of non-native flora. Another singularity in the Mediterranean area—also shared with some regions in southern France—is the beginning of botanical studies in the 17th century and its continuity since the 19th century, which has provided a good floristic knowledge over the last 150 years. As a result of these studies, three regional flora compilations have been published (Costa, 1877; Cadevall & Font Quer, 1913–1937; Bolòs & Vigo, 1984–2001). The flora of Catalonia has also been recently covered by *Flora iberica* project (Castroviejo, 1986–2018), which is not yet concluded.

All these floristic works also included data on allochthonous plants, although without any particular attention. Casasayas (1989), in the first and so far only synthetic work on alien plants in Catalonia, listed 461 taxa. Catalonia is also a part of the territory considered in the synthesis of the Spanish alien flora (Sanz et al., 2004), with a number of 845 species (Canary Islands excluded). The interest for allochthonous species has notably increased in the last decade, period in which the knowledge about escaped ornamental species has been noticeably improved. In the last years, the regional administration also promoted a database of exotic species in Catalonia that includes about 700 vascular plant taxa, dated on 14th June 2019 (http://exocatdb.creaef.cat/base_dades/).

In this paper, the checklist of alien plant taxa in Catalonia is updated by incorporating new data accumulated in the last decades, reassessing the status of taxa resulting from improved knowledge. Moreover, the trends in the alien flora of Catalonia are analysed and compared to those of other areas in Europe.

**Methods**

**The study area**

Catalonia is a territory with an area of 32,108 km$^2$ (data from https://www.idescat.cat/) located in the northeastern Iberian Peninsula, Spain (Figure 1), between the Pyrenees Range and the Mediterranean Sea. The resident population is about 7.5 million inhabitants and the most important city is Barcelona. As for the whole of the Mediterranean area, the human influence on the landscape and vegetation is intense and ancient, with a high agricultural land-use for at least 3000 years.

Three major sectors with different natural and anthropic conditions are recognized:

a) **Littoral area**: northeast-southwest strip between the Mediterranean Sea and the Catalan Coastal Range, with a width of 30–50 km and an area of about 14000 km$^2$. The altitudes are generally less than 500 m asl, but they can reach more than 1500 m asl in some mountain areas. The climate and the vegetation are of Mediterranean type, from subarid to humid. The annual rainfall average is 400–600 mm in the southern half and 600–800 mm in the north, and exceeds 1000 mm in some mountains. This is the most populated sector in the studied area, in which the main cities are concentrated, and has a very high population density, c. 2,000 hab./km$^2$ in the central part (metropolitan area of Barcelona) and generally 100–200 hab./km$^2$ in the rest, although in the extreme south it falls to 50 hab./km$^2$. A very large part of the surface is urbanized, but there are still important agricultural extensions and the mountains are mostly covered by woods and bushland. Most of the strict coastal strip was built between 1960 and 2000, for residential and tourist use, and has become an extensive suburban area.

b) **Inland area**: Low and medium altitude lands (100–700 m asl, rarely up to 1000 m asl) located to the west of the Catalan Coastal Range. It is an area of about 10000 km$^2$ that is part of the large river Ebro Depression. The climate is Mediterranean, from subarid to subhumid, with a continental trend and an average rainfall from 350 mm (west) to 700 mm (east). The vegetation is of Mediterranean or sub-Mediterranean type, but historically it dramatically changed as a result of the heavy agricultural use of the territory that, at the moment, still occupies the greater part of the area. The average density of the population is about 70 hab./km$^2$, higher in the eastern sectors (100–150 hab./km$^2$). Urban areas occupy a small percentage of the area.

c) **Pyrenees**: Catalan part of the Pyrenean Range, to the north of the territory and with an area of about 8000 km$^2$. It is a mountain area with an altitude generally higher than 1000 m asl and up to a maximum of 3140 m asl. The climate is of Mediterranean mountain type, with the exception of the NW extreme where it is Atlantic. Rainfall is generally 800–1200 mm (but only 600–700 in some inland valleys). Natural and semi-natural vegetation occupies most of the area and is generally extra-Mediterranean (sub-Mediterranean, Eurosiberian or Alpine). Historically, the valleys were very populated,
but much of the population left in the second half of the 20th century and nowadays the densities are low (5–30 hab./km²), but there is a high residential houses and tourist movements.

**Data source and taxonomic backbone**

The data were obtained between 2013 and 2018, as a result of the process of elaboration of the Checklist of the flora of Catalonia (authors, unpublished data). The basis for the checklist is all published literature on plants from the studied area, which are mostly included in databases (especially the Banc de Dades de Biodiversitat de Catalunya: http://biodiver.bio.ub.es/biocat). In addition, herbarium material was revised and field research undertaken. The Euro+Med PlantBase serves as a taxonomic standard and backbone (with some exceptions) for this study. The taxonomic circumscription of the families follows PPG I (2016) for lycophytes and ferns, Christenhusz et al. (2011) for gymnosperms and APG IV (2016) for angiosperms.

**Relative abundance**

The current frequency of each taxon in Catalonia was assessed according to the following five categories (ranked by increasing order of abundance):

- Vanished (V): taxa not recorded for >50 years.
- Rare (R): <5 known localities.
- Scattered (S): few localities (typically <20) and locally scarce.
- Locally abundant (L): few known localities but locally abundant.
- Common (C): widespread and often locally abundant.

**Definitions and degree of naturalization**

We consider as alien plants those which arrival to Catalonia has been man-mediated, proven or inferred, in any historical time, or which have arrived to our area without the help of people from a nearby area in which they are alien. We do not consider as alien plants those that apparently arrived by natural long-distance dispersal (especially bird-dispersed aquatic plants).

The alien taxa have been differentiated into three groups, depending on the degree of implantation in the studied area:

- Casual: Taxa that do not form self-sustaining populations. Generally they are represented by a few individuals that are observed in a short period of time, but in some cases they can also establish temporary populations that do not have mid-term continuity.
- Naturalised: Taxa that form populations apparently self-sustaining at mid-term, without direct intervention by people, or despite human intervention, in any of these two cases: 1) These populations are limited to anthropogenic habitats; 2) Populations are established in (semi)natural habitats, but much localized and they do not show a significant expansion. This category includes the taxa that usually occur in cultivated fields, some of which have been present for centuries (archeophytes).
- Invasive: Taxa that have become naturalised and, in a second phase, have shown a clear expansive tendency in (semi)natural habitats of the territory, where they compete with the native flora. The attribution of this category is functional-ecological sense does not imply that these plants are invasive species in the sense of IUCN (2000).

The categories of naturalised and invasive taxa form the group of established alien plants which can also be qualified as naturalised in a broad sense. They are already integrated into the flora of the territory or have a high probability of integration at mid-term.

**Residence time**

A period of introduction (well known or inferred) has been assigned to each species:

- Before 1500 AD. Period previous to large intercontinental trade, in which short distance trips predominated and plant imports came basically from Europe, the Mediterranean region and the Near East.

- Between 1500 and 1900 AD. Period during which intercontinental trade became frequent and increased plant imports from overseas countries. The economy was still mostly based on agriculture, but in the 18th and 19th centuries an industrialization process began and there was a significant population increase.

- Between 1900 and 1970 AD. A period of deep transformation of the territory, characterized by a strong industrialization, a very high population increase due to various migratory waves, its gradual concentration in urban areas near Mediterranean sea and the abandonment of the mountain areas.
After 1970 AD. Period in which some previous tendencies have been exacerbated, especially: a) Coastal urbanization, which became a nearly continuous urban-suburban landscape. b) A very high increase in the frequency of long-distance trade and intercontinental voyages.

Considering that the botanical knowledge of the territory is only accessible for the last 100–150 years, information on introduction time is almost nihil for the species arrived before 1900. Between 1900 and 1970 the floristic information much increased, but the attention for alien species was still limited, particularly for the casual taxa and the garden escapes. After 1970 the interest for allochthonous flora increased and data became more precise.

**Geographic origin**

Taxa have been classified according to their geographic origin (native range). One (or more) of these geographic origins are assigned to each alien taxa:

- Mediterranean (ME): Lowlands and mountains of the Mediterranean Basin (S Europe, N Africa, SW Asia).
- Western Palearctic (WP): Europe and W Asia (Mediterranean Basin excluded).
- Eastern and Southern Asia (AS): Temperate, subtropical and tropical areas, from Japan to India.
- Tropical Africa (AF): African continent without Mediterranean and Cape regions.
- South Africa (CA): Mainly plants of the Cape floristic region, but also from other regions of the Republic of South Africa. This group has been separated from the previous (AF) due to its singularity and because it is especially well represented in the studied area.
- Australasia (AU): Mainly Australia and New Zealand.
- (Sub)Tropical Regions (TRO): Taxa widely distributed throughout tropical and subtropical regions in more than one continent.
- North America (NA): North American subcontinent south to Mexican plateau.
- South America (SA): Central and South America.
- Cultivated (Cult): Taxa of anthropogenic origin, domesticated species and artificial hybrids.
- Spontaneous hybrids (Hyb): Hybrids or hybridogenous species that spontaneously originated in Europe with at least one alien parental species.

**Introduction pathways**

Four main introduction pathways are distinguished. The form of introduction is not more concise because in many cases knowledge is limited, especially for plants arrived before 1970.

- Agriculture (A): Plants associated with the crops, introduced voluntarily to cultivate them or involuntarily as weeds.
- Gardening (G): Garden plants. This category also includes some unusual orchard crops and some species used for “environmental restoration” in public works and aquarium species.
- Forestry (F): Trees planted in forested areas, with the aim of timber production or for other purposes.
- Trade (T): Taxa that involuntarily arrived due to the transport of seeds mixed with goods.

**Intentionality of introduction**

A distinction is made between deliberate (D) or accidental (A) introductions. The taxa deliberately introduced are those that have been transported to Catalonia or the neighbouring areas voluntarily by man, usually for their use as crops, ornamental plants or other aims. The taxa accidentally introduced are those that have arrived involuntarily, generally by transport of seeds mixed with goods.

**Life history**

Only for the established alien species, we have assigned the plant growth form according to ten categories: annual grasses (AG), annual forbs (AF), perennial grasses (PG), perennial forbs (PF), bulbous monocots (BU), aquatic plants (AQ), climbers (CL), succulent plants (SU), shrubs (SH) and trees (TR). These categories follow those used in the synthesis of Pyšek et al. (2017), with the addition of the bulbous and the succulent.

**Results and Discussion**

**Diversity of the alien flora, frequency of the taxa and degree of naturalization**

The known alien flora of Catalonia is constituted of 1068 taxa at the species and subspecies levels, including those of hybrid origin (Appendix 1 and Table S1 in Supplementary Material). This represents more than twice that of the first synthesis of the Catalan alien flora (Casasayas, 1989). It also increases by 50 % the number of alien plants officially recognized by the Catalan administration which includes about 700 vascular plant taxa, dated on 14th June 2019 (http://exocatdb.creaf.cat/base_dades/). We excluded from the list uncertain autochthonous taxa, which could be either alien (archaeophytes) or native plants.

In the European context, the number of taxa in Catalonia is situated in the upper range of the alien flora recorded in medium or large administrative territories (Lambdon et al., 2008), but it is far from the 1,969 taxa from Belgium (Verloove, 2006) with an extent similar to that of Catalonia.

Compared to other regions of the Mediterranean basin with a medium extent, the number of aliens detected is clearly higher than in Valencia in the Iberian Peninsula (663 taxa: Sanz et al., 2011), the island of Sardinia (541: Podda et al., 2012) or, in the Italian Peninsula, Lombardy (619: Banfi & Galasso, 2010), Veneto (539: Masin & Scortegagna, 2012) or Tuscany (597: Arrigoni & Viegi, 2011). It also far exceeds the data for Portugal as a whole, with an area three times larger but only 772 alien taxa (Domingues de Almeida, 2018). This result points to a high regional concentration of alien plants, although data from the different territories...
can not be fully compared. High diversity is probably linked with the ecological heterogeneity of the territory, to its intense anthropization and, also, to the relatively good knowledge of the local flora since the nineteenth century. Surprisingly, the number of alien taxa is much higher than that of Eastern Mediterranean countries: 387 in Greece (Bazos, 2017) or 340 in Turkey (Uludağ et al., 2017). This contrast between the two ends of the Mediterranean basin would be explained mainly by three factors: i) many alien taxa of Mediterranean origin found in the western Mediterranean region are native to the eastern Mediterranean, ii) the urbanization intensity of the territory is earlier and higher in the west than in the east, iii) a weaker and more recent floristic prospection in the eastern Mediterranean region.

The relative frequency of most taxa is low or very low. Half of them are rare (536 taxa), that is, they have been observed in less than five sites. Another 197 taxa have been classified as scarce because they have been detected in a higher number of sites but always in low number of individuals. It is assumed that the 55 taxa that are considered vanished were also rare or scarce in the past. The locally abundant species, restricted to few places, are 110 and, finally, 170 are considered common because they have a wide regional distribution and a large number of individuals. Overall, taxa that have achieved a major implantation in the territory (common + locally abundant) are 26.2 % and those that show little colonization success (rare + scarce + vanished) 73.8 %.

Regarding the degree of naturalization, about half of the known taxa (554) are casual aliens, 427 are considered naturalised and 87 invasive. The established aliens (naturalised + invasive) are 513, 48.0 % of the recorded taxa. This percentage is lower than that for the whole of Europe (65% according to data from Lambdon et al., 2008), but very similar to the 49.5% recently obtained in Italy (Galasso et al., 2018). The ratio of established aliens that have become invasive in Catalonia is 16.8 %, lower than in the Italian results (27.9%).

Established alien plants represent 12.0% of the whole currently known flora of Catalonia, which includes 4,259 taxa (at the species and subspecies levels, hybrids included) without taking into account casual alien taxa. This percentage is close to the average of 10% indicated by Pyšek et al. (2017) for temperate and Mediterranean zonobiomes in the continental areas of the Old World, although there are important differences between regions.

Regarding the geographical distribution pattern, the alien taxa are clearly more abundant in the littoral area (933 taxa) than in the inland area (439) and the Pyrenees (407) (Figure 2). This distribution is not surprising because the maritime fringe is the most anthropogenic area and with a more intense trade, factors that favour the arrival of new alien species and their establishment in anthropised environments. But this important difference between regions in the total number of alien taxa decreases if only established aliens are considered and it is very weak if the numbers of invasive species are compared (Figure 2). These data suggest that casual aliens take advantage of the opportunities offered by the most disturbed areas, but that natural and semi-natural habitats show a similar resistance to alien colonization throughout the territory.

**Figure 2.** Number of alien taxa (total, established and invasive) in the geographical regions recognized in this study (Littoral, Inland and Pyrenees).

**Taxonomic diversity**

There are 115 families represented in the alien flora of Catalonia, including 1 lycophyte, 3 fern and 2 gymnosperm families. The number of families is less than half of the 213 registered in Europe (Lambdon et al., 2008).

Thirteen families are represented by 20 or more taxa (Figure 3). The most diverse families are Asteraceae, Poaceae, Fabaceae, Rosaceae and Brassicaceae, same across the whole of Europe: (Lambdon et al., 2008). There are ten genera with 10 or more taxa: *Opuntia* (20), *Amaranthus* (18), *Solanum* (15), *Agave* (14), *Euphorbia* (12), *Cotoneaster* (11), *Vitis* (11, 7 out of them are artificial hybrids), *Aloe* (10), *Cyperus* (10) and *Vicia* (10). Some of these genera, such as *Amaranthus* and *Solanum*, are among the most diversified in the whole European alien flora (Lambdon et al., 2008), but the
high diversity of *Opuntia* or *Agave* is a peculiarity that is related to the dry climate. On the other hand, the most diverse alien genus in temperate Europe, *Cotoneaster* (75 taxa), is scarcely represented in Catalonia.

The established aliens (naturalised + invaders) are included in 87 families. The most diversified families, with 10 or more taxa, are fourteen (Figure 4). These families and their order largely coincide with those that are most represented in the whole Catalan alien flora, but Euphorbiaceae, Aizoaceae and Onagraceae are included in the top ranking of those established, while Lamiaceae and Amaryllidaceae are not. The most diversified genera within the established aliens, with 5 or more taxa, are: *Opuntia* (15), *Amaranthus* (10), *Euphorbia* (10), *Cyperus* (8), *Agave* (7), *Erucastrum* (7), *Cotoneaster* (6), *Senecio* (6), *Solanum* (6), *Erigeron* (5), *Lepidium* (5), *Vicia* (5) and *Vitis* (5).

If we consider exclusively invasive species, the taxonomic diversity is reduced to 34 families. Only five out of them are represented by at least five taxa: Asteraceae (16), Poaceae (11), Amaranthaceae (7), Cactaceae (6) and Onagraceae (5). There are only three genera with five or more invasive taxa: *Amaranthus* (6), *Opuntia* (5) and *Erigeron* (5).

**Residence time**

The introduction time of the alien plants is estimated to be earlier than 1500 AD for 106 taxa. 207 taxa were introduced during the period 1500–1900, 218 taxa in the period 1900–1970 and 537 after 1970. A clear increase of introductions is observed after 1900, and especially in the last 50 years, with a temporary pattern similar to that for the whole of Europe (Pyšek et al., 2009). Taxa introduced after 1900 represented 70.7 % and that introduced after 1970 represent 50.3 %. This increase is probably genuine, but its extent is not well known, because the data prior to 1900 are deficient and the introductions could be underestimated, especially for casual aliens.

The percentage of taxa introduced in ancient times (archaeophytes) is 9.9 %. This rate is almost the same...
to that obtained for Italy, 9.8 % (Galasso et al., 2018). If we consider that there are 30 doubtful archaeophytes not incorporated into the list of alien plants, their percentage could rise to 12.7 %.

**Geographic origin**

The geographical origin of the alien flora is diverse (Figure 5). One third comes from geographically nearby areas, located in the Mediterranean basin (19.7% of taxa) and other regions in Western Palearctic (12.4%). Another third is of American origin (17.5% in South America, 15.1% in North America). The plants from Asia and South Africa (10.8 and 7.5%) also have an outstanding participation, while those from tropical Africa, Australasia and Pantropics do not reach 5%. The group of taxa artificially generated as crops or garden plants in different areas and times (9.5%) is also well represented. The taxa with spontaneous hybrid origin are negligible (1.2%).

The relative importance of each origin changes when the degree of naturalization is considered (Figure 5). If only established taxa are considered, species from the Western Palearctic, South Africa and America increase their percentage, while those from Mediterranean and Asian origin decrease. The percentage reduction is even more marked for cultivated plants and spontaneous hybrids. In the transition between established to invasive there are further important changes. More than half (59.0%) of the invasive species are of American origin, and the most successful are those from North America. Their relative representation doubles (from 15.1% of the
established to 36.0% of the invasives). The percentage of Asian plants also increases among invasive aliens, while for taxa with other origins it decreases.

Taxa of anthropogenic origin show very little capacity to become invasive, as they pass from 9.5% of the total to only 1.1% of the invasive aliens. Conversely, natural hybrids increase their representation (from 1.2% to 4.6%) thanks to the invasive behaviour of three *Oenothera* taxa and *Symphytum uplandicum*.

As it is predictable, temporal changes in the origin of the introduced plants are observed (Table 1, Figure 6). Until 1500 AD the allochthonous plants came from nearby geographical regions or were domesticated taxa. In the period 1500–1900, as a result of intercontinental trade, alien flora diversified with species coming from all continents, apparently with the exception of Australasian plants. This tendency intensifies between 1900 and 1970, a period in which Australasian species are already detected, and the total number of plants of distant geographical areas (outside Western Palearctic) reaches more than half of the aliens (62.0%). In the most recent period, after 1970, the rate of new species arrivals becomes higher and those of distant origin has increased to 73.2%.

Table 1. Proportional contribution (%) of the introduced plants in Catalonia according to their origin in different temporal periods. ME: Mediterranean; WP: Western Palearctic; AS: Eastern and Southern Asia; NA: North America; SA: South America; AF: Tropical Africa; CA: South Africa; TRO: Tropical and Subtropical regions; AU: Australasia; CUL: Cultivated; Hyb: Spontaneous hybrids.

| Period   | ME  | WP  | AS  | NA  | SA  | AF  | CA  | TRO | AU  | CUL | Hyb |
|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <1500    | 41.0| 31.4| 0.9 | 0   | 0   | 0   | 0   | 0   | 0   | 26.7| 0   |
| 1500–1900| 32.5| 18.4| 9.2 | 9.2 | 13.6| 1.5 | 2.4 | 3.9 | 0   | 8.8 | 0.5 |
| 1900–1970| 16.4| 11.3| 15.4| 1.8 | 2.7 | 1.8 | 2.7 | 17.7| 19.5| 7.7 | 3.2 |
| >1970    | 12.0| 7.1 | 11.6| 2.1 | 12.9| 3.7 | 2.1 | 19.1| 21.7| 6.9 | 0.9 |

In all the periods after 1500, the species of distant regions come basically from America and Asia. The only exception are the South African plants, that reach a percentage of 12.9% in the post-1970 period, which must be attributed to the rise of the xerogardening in the urbanized areas of the Mediterranean coastline. The taxa from tropical Africa, Australasia or the pantropics always remained unimportant representations of less than 5%. The relative importance of the arrival of Mediterranean and Western Palearctic taxa has gradually decreased, being reduced to less than 20% in recent times. Anthropogenic taxa also decreased their representation after 1500, but then they maintained percentages of 6–9%, which can be explained by the new introductions of agricultural species and garden cultivars.

Means of introduction

By far, the most common way of introduction has been gardening (Figure 7), with 620 taxa or 58.0%, a percentage very close to that obtained in Valencia, also in the Iberian Mediterranean area, by Sanz *et al.* (2011). Garden introductions have become even more common in recent times, as it is the origin of 68.5% of taxa detected after 1970. This was a predictable result, because gardening has already been pointed out as the most important introduction way in Europe (Lambdon *et al.*, 2008) and also at global scale (Bell *et al.*, 2003). Other means of introduction have been agriculture (229 taxa), closely followed by trade (198 taxa). Agriculture was the main way by which the majority of plants (85%) arrived before 1500 AD. However, this way was progressively reduced and represents only 6.8% of introductions in the post-1970. Forestry has a marginal role as an introduction way, with just 21 taxa.

If we consider the intentionality of the introductions, 767 taxa (71.9%) have arrived deliberately and 299 (28.1%) accidentally (spontaneous hybrids in situ originated are excluded). The rates are very similar to those obtained for the whole of Europe (Lambdon *et al.*, 2008). Usually, plants associated with gardening and forestry have been deliberately introduced and the species that arrived by trade accidentally, while those associated with agriculture are found in both categories.

Differences are observed in the degree of naturalization achieved by taxa introduced through different ways (Figure 7). The relative importance of the plants introduced by gardening decreases in the established aliens and more among invasives, while in those arrived by trade the tendency is all the opposite. The relative frequency of those related to agriculture somewhat increases among the established plants, but decreases among invasives.

Around 40–60% of the taxa introduced by agriculture, gardening and trade establish viable mid-term populations (54.6%, 43.1 and 59.1%, respectively), while the proportion is lower among forestry species (19.0%). Regarding invasive capacity, the trade plants are more successful (15.6% of the total number are invasive) than those of agriculture and gardening (7.0 and 6.1%), while those of forestry show an intermediate success (9.5%).

Life history of the established alien plants

The growth type has been taken into account only for established (naturalised + invasive) alien taxa. Figure 8 shows the percentage of each category among the total number of established aliens and among invasives.
For established alien taxa, the most common forms are the annual and perennial forbs, which together reach nearly half of the total number (45.0%). These two groups (and in the same order: annual-perennial) are also the most frequent on a global scale in continental regions (Pyšek et al., 2017). All other categories represent less than 10% of non-native taxa, and in the case of aquatic and bulbous plants they do not reach 5%. The frequency of succulent plants is outstanding because it is unusual in Europe, but has also been observed in the adjacent region of Valencia (Sanz et al., 2011) and is due to the important modern use of these plants in gardens of the Mediterranean coast.

Some changes in the percentages of diverse growth types are observed among invasive plants. Two categories (climbers and trees) clearly increase their relative frequency, so these growth forms seem to have more invasive capacity, probably because they are more competitive in the regional semi-natural habitats. On the contrary, the annual grasses, bulbous monocots, shrubs and succulents show a decrease. The low invasive fitness of bulbous and succulents is probably related to their weak dispersal capacity, since in the local context, it is very frequent that they only spread vegetatively. In the case of annual grasses and shrubs, the cause could be the heavy competition of native taxa, as these growth types are very common in the Mediterranean habitats.

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Appendix 1. Checklist of the Catalonian vascular alien flora. Data are presented in the table with the following information fields: taxon (arranged alphabetically, incl. hybrid taxa), which are also organized alphabetically; family; degree of naturalisation (Nat. D.; C: casual; N: naturalised; I: invasive); geographic origin (Origin; ME: Mediterranean; AU: Australasia; AF: Tropical Africa; CA: South Africa; NA: North America; SA: South America; Cult: Cultivated; Hyb: Spontaneous hybrids); abundance (Abun.; R: rare; S: scattered; L: locally abundant; C: common; V: vanished) and regional distribution (Pyr: Pyrenees; In: inland; Lit: littoral; +: presence confirmed; ?: uncertain presence). See also Table S1 in Supplementary material for information on residence time, introduction pathway and intentionality of introduction.

| Scientific name | Family | Nat. D. | Origin | Abun. | Regional Distribution |
|-----------------|--------|---------|--------|-------|-----------------------|
| *Abelia* × grandiflora (André) Rehder | Caprifoliaceae | C | Cult | R | + + + |
| *Abies pinsapo* Boiss. subsp. pinsapo | Pinaceae | C | ME | R | + + + |
| *Abutilon grandifolium* (Willd.) Sweet | Malvaceae | N | SA | S | . + + |
| *Abutilon theophrasti* Medik. | Malvaceae | N | AS | C | + + + |
| *Acacia dealbata* Link | Fabaceae | N | AU | C | . + + |
| *Acacia decurrens* Willd. | Fabaceae | C | AU | R | . + + |
| *Acacia longifolia* (Andrews) Willd. | Fabaceae | N | AU | S | . + + |
| *Acacia melanoxylon* R. Br. | Fabaceae | N | AU | R | . + + |
| *Acacia retinodes* Schltdl. | Fabaceae | C | AU | S | . + + |
| *Acacia rostellifera* Benth. | Fabaceae | C | AU | R | . + + |
| *Acacia saligna* (Labill.) Wendl. | Fabaceae | N | AU | S | . + + |
| *Acanthus mollis* L. | Acanthaceae | N | ME | C | + + + |
| *Acca sellowiana* (O. Berg) Burret | Myrtaceae | C | SA | R | . + + |
| *Acer cappadocicum* Gled. subsp. cappadocicum | Sapindaceae | C | WP | R | + + . |
| *Acer negundo* L. | Sapindaceae | I | NA | C | + + + |
| *Acer pseudoplatanus* L. | Sapindaceae | I | WP | L | + + + |
| *Acer saccharinum* L. | Sapindaceae | C | NA | R | . + . |
| *Achillea arabica* Kotschy | Asteraceae | C | ME | R | . + . |
| *Achillea filipendulina* Lam. | Asteraceae | C | WP | S | + + + |
| *Achillea ligustica* All. | Asteraceae | C | ME | R | . + + |
| *Achillea roseo-alba* Ehrend. | Asteraceae | N | WP | L | + + + |
| *Acoras calamus* L. | Acoraceae | C | WP | R | . + + |
| *Adonis aestivalis* L. subsp. aestivalis | Ranunculaceae | N | WP, ME | R | . + + |
| *Adonis aestivalis* subsp. *squarrosa* (Steven) Nyman | Ranunculaceae | N | WP, ME | S | ? + + |
| *Adonis annua* L. | Ranunculaceae | N | WP, ME | C | + + + |
| *Adonis flammea* Jacq. | Ranunculaceae | N | WP, ME | C | + + + |
| *Aegilops cylindrica* Host. | Poaceae | N | WP | R | + + . |
| *Aeonium arboresum* (L.) Webb & Berthel. | Crassulaceae | N | ME | S | . + + |
| *Aeonium canariense* (L.) Webb & Berthel. | Crassulaceae | C | ME | R | . + + |
| *Aeonium haworthii* Webb & Berthel. | Crassulaceae | C | ME | R | . + + |
| *Aeonium lindleyi* Webb & Berthel. | Crassulaceae | C | ME | R | . + + |
| *Aesculus hippocastanum* L. | Sapindaceae | N | WP | L | + + + |
| *Agapanthus praecox* Willd. | Amaryllidaceae | C | CA | R | . + + |
| *Agave americana* L. | Asparagaceae | I | NA | C | + + + |
| *Agave angustifolia* Haw. | Asparagaceae | C | NA | R | . + + |
| *Agave beaumeriana* Jacob | Asparagaceae | C | Cult | R | . + + |
| *Agave decipiens* Baker | Asparagaceae | C | Cult | R | . + + |
| *Agave distormis* A. Berger | Asparagaceae | N | NA | R | . + + |
| *Agave fourcroydes* Lem. | Asparagaceae | N | Cult | R | . + + |
| *Agave ingens* A. Berger | Asparagaceae | N | Cult | S | . + + |
| *Agave lechuguilla* Torr. | Asparagaceae | N | NA | R | . + + |
| *Agave salmiana* Salm-Dyck subsp. *salmiana* | Asparagaceae | N | NA | R | . + + |
| *Agave salmiana* subsp. *tehuacanensis* (Salm-Dyck) García-Mend. | Asparagaceae | C | NA | R | . + + |
| *Agave sinalana* Perrine | Asparagaceae | N | Cult | R | . + + |
| *Agave univittata* Haw. | Asparagaceae | C | NA | R | . + + |
| *Agave vera-cruz* Mill. | Asparagaceae | C | NA | R | . + + |
| *Agave weberi* J. Poiss. | Asparagaceae | C | NA | R | . + + |
| *Ageratum houstonianum* Mill. | Asteraceae | C | NA | V | . + + |
| *Agrostemma githago* L. | Caryophyllaceae | N | ME | L | + + + |
| *Alfius altissima* (Mill.) Swingle | Simaroubaceae | I | AS | C | + + + |
| *Albizia julibrissin* Durazz. | Fabaceae | C | AS | R | + + + |
| *Albuca bracteata* (Thunb.) J.C. Manning & Goldblatt | Asparagaceae | C | CA | R | . + |
| *Alcea rosea* L. | Malvaceae | C | Cult | S | + + + |
| Scientific name                           | Family             | Nat. D. | Origin | Abun.     | Regional Distribution |
|------------------------------------------|--------------------|---------|--------|-----------|-----------------------|
| Allium cepa L.                           | Amaryllidaceae     | C       | Cult   | R         | + + +                 |
| Allium dentiferum Webb & Berthel.        | Amaryllidaceae     | N       | ME     | C         | + + +                 |
| Allium fistulosum L.                     | Amaryllidaceae     | C       | AS     | R         | + .                   |
| Allium flavum L.                         | Amaryllidaceae     | C       | ME     | R         | . .                   |
| Allium fascum Waldst. & Kit.             | Amaryllidaceae     | C       | ME     | R         | . .                   |
| Allium neapolitanum Cirillo              | Amaryllidaceae     | N       | ME     | C         | + + +                 |
| Allium nigrum L.                         | Amaryllidaceae     | C       | ME     | V         | .         |
| Allium porrum L.                         | Amaryllidaceae     | N       | ME     | W         | + + +                 |
| Allium sativum L.                        | Amaryllidaceae     | C       | Cult   | S         | + + +                 |
| Allium trilobatum L.                     | Amaryllidaceae     | N       | ME     | C         | . + +                 |
| Albus alnobotula (Ehrh.) K. Koch subsp. alnobotula | Betulaceae | I       | WP     | R         | . + .                 |
| Albus cordata (Loisell.) Duby             | Betulaceae         | C       | ME     | V         | . + +                 |
| Aloe arborescens Mill.                   | Asphodelaceae      | N       | CA     | S         | . + +                 |
| Aloe ferox Mill.                          | Asphodelaceae      | C       | CA     | R         | . + +                 |
| Aloe francesii L. Bolus                  | Asphodelaceae      | N       | CA     | R         | . + +                 |
| Aloe maculata All.                       | Asphodelaceae      | N       | CA     | L         | . + +                 |
| Aloe officinalis Forssk.                 | Asphodelaceae      | N       | AS     | L         | . + +                 |
| Aloe perfoliata L.                       | Asphodelaceae      | C       | CA     | R         | . + +                 |
| Aloe vera (L.) Burm. f.                   | Asphodelaceae      | C       | AF     | R         | . + +                 |
| Aloe ×delaeufl Radl.                     | Asphodelaceae      | C       | Cult   | R         | . + +                 |
| Aloe ×nobilis Haw.                       | Asphodelaceae      | C       | Cult   | R         | . + +                 |
| Aloe ×spinosissima Jahan.                | Asphodelaceae      | C       | Cult   | R         | . + +                 |
| Aloiamapelos ciliaris (Haw.) Klopper & Gideon F. Sm. | Asphodelaceae | N       | CA     | R         | . + +                 |
| Aloisia cyrtidora Palau                  | Verbenaceae        | C       | SA     | R         | . + +                 |
| Alternanthera caracasana Kunth            | Amaranthaceae      | N       | SA     | L         | . + +                 |
| Alternanthera pungens Kunth              | Amaranthaceae      | N       | SA     | S         | . + +                 |
| Amaranthus albus L.                      | Amaranthaceae      | I       | NA     | C         | + + +                 |
| Amaranthus bitoides S. Watson             | Amaranthaceae      | I       | NA     | C         | + + +                 |
| Amaranthus caudatus L.                   | Amaranthaceae      | C       | Cult   | V         | .         |
| Amaranthus cruentus L.                   | Amaranthaceae      | N       | SA     | C         | + + +                 |
| Amaranthus deflexus L.                   | Amaranthaceae      | N       | SA     | C         | + + +                 |
| Amaranthus emarginatus Uline             | Amaranthaceae      | N       | SA     | L         | + + +                 |
| Amaranthus hybrida L.                    | Amaranthaceae      | I       | NA     | C         | + + +                 |
| Amaranthus hypochondriacus L.             | Amaranthaceae      | C       | Cult   | R         | . + +                 |
| Amaranthus maricatus Moq.                | Amaranthaceae      | I       | SA     | C         | + + +                 |
| Amaranthus palmeri S. Watson             | Amaranthaceae      | N       | NA     | L         | . + +                 |
| Amaranthus powelli S. Watson             | Amaranthaceae      | I       | NA     | C         | + + +                 |
| Amaranthus retroflexus L.                | Amaranthaceae      | I       | NA     | C         | + + +                 |
| Amaranthus spinosus L.                   | Amaranthaceae      | C       | SA     | R         | . + .                 |
| Amaranthus tricolor L.                   | Amaranthaceae      | C       | Cult   | R         | . + +                 |
| Amaranthus virido L.                     | Amaranthaceae      | C       | AS     | L         | . + +                 |
| Amaranthus ×ozanoffii Prisateral         | Amaranthaceae      | C       | Hyb    | R         | . + .                 |
| Amaranthus ×sporoniensis Prisateral & Kárpáti | Amaranthaceae | C       | Hyb    | R         | . + .                 |
| Amaranthus ×tarrassconensis Sennen & Pau | Amaranthaceae      | C       | Hyb    | R         | . + .                 |
| Ambrosia artemisiifolia L.               | Asteraceae         | C       | NA     | R         | . + +                 |
| Ambrosia psilostachya DC.                | Asteraceae         | N       | NA     | C         | + + +                 |
| Ambrosia tenifolia Spreng.               | Asteraceae         | N       | SA     | S         | . + +                 |
| Amelichloa brachychaeta (Godr.) Arriaga & Barkworth | Poaceae  | N       | SA     | R         | . + +                 |
| Amelichloa caudata (Trin.) Arriaga & Barkworth | Poaceae  | I       | SA     | L         | . + +                 |
| Anamnna bacccifera L.                    | Lythraceae         | C       | AS, AF | V         | .         |
| Anamnna coccinea Rothb.                  | Lythraceae         | N       | NA, SA | S         | . + +                 |
| Anamnna robusta Heer & Regel             | Lythraceae         | N       | NA, SA | L         | . + +                 |
| Amorpha fruticosa L.                     | Fabaceae           | N       | NA     | R         | . + +                 |
| Anacyclus radiatus Loisel. subsp. radius | Asteraceae         | C       | ME     | R         | + + +                 |
| Anagriso foetida L.                      | Fabaceae           | N       | ME     | S         | . + +                 |
| Anemone coronaria L.                     | Ranunculaceae      | N       | ME     | R         | . + +                 |
| Anethum graveolens L.                    | Apiaceae           | N       | ME     | S         | . + +                 |
| Anredera cordifolia (Ten.) Steenis        | Basellaceae        | N       | SA     | C         | . + +                 |
| Anthriscus cerefolium (L.) Hoffm.         | Apiaceae           | N       | WP     | R         | . + +                 |
| Araujia sericifera Brot.                 | Apocynaceae        | N       | SA     | C         | . + +                 |
| Arctotheca calendula (L.) Levyns         | Asteraceae         | N       | CA     | S         | . + +                 |
| Aristolochia sempervirens L.             | Aristolochiaceae   | N       | ME     | R         | . + +                 |
| Armoracia rusticana P. Gaertn., B. Mey. & Scherb. | Brassicaceae | N       | WP     | R         | . + +                 |
| Scientific name                               | Family          | Nat. D. | Origin | Abun. | Regional Distribution |
|----------------------------------------------|-----------------|---------|--------|-------|-----------------------|
| *Artemisia abrotanum* L.                     | Asteraceae      | C       | ME     | R     | +. +                  |
| *Artemisia annua* L.                         | Asteraceae      | N       | WP     | L     | + + +                 |
| *Artemisia arborescens* (Vaill.) L.          | Asteraceae      | N       | ME     | L     | . + +                 |
| *Artemisia dracunculus* L.                   | Asteraceae      | C       | WP     | R     | . + +                 |
| *Artemisia thascula* Cav.                    | Asteraceae      | N       | ME     | R     | . + +                 |
| *Artemisia verticillata* Lamotte             | Asteraceae      | I       | AS     | C     | + + +                 |
| *Arundo donax* L.                            | Poaceae         | I       | AS     | C     | + + +                 |
| *Asclepias curassavica* L.                   | Apocynaceae     | C       | SA     | R     | . + +                 |
| *Asparagus aethiopicus* L.                   | Asparagaceae    | C       | CA     | S     | . + +                 |
| *Asparagus asparagoides* (L.) Druce           | Asparagaceae    | C       | CA     | R     | . + +                 |
| *Asparagus officinalis* L.                   | Asparagaceae    | C       | WP     | C     | + + +                 |
| *Asparagus setaceus* (Kunth) Jessop          | Asparagaceae    | N       | CA     | S     | . + +                 |
| *Aspidistra eliator* Blume                   | Asparagaceae    | C       | AS     | R     | . + +                 |
| *Astragalus boeticus* L.                     | Fabaceae        | N       | ME     | R     | . + +                 |
| *Astragalus scorpioides* Willd.              | Fabaceae        | C       | ME     | V     | . + +                 |
| *Atriplex hortensis* L.                      | Amaranthaceae   | N       | WP     | S     | + + +                 |
| *Atriplex micrantha* Ledeb.                  | Amaranthaceae   | N       | WP     | S     | + + +                 |
| *Atriplex semibaccata* R. Br.                | Amaranthaceae   | N       | AU     | R     | . + +                 |
| *Atriplex tatarica* L.                       | Amaranthaceae   | N       | WP     | L     | . + +                 |
| *Aubrieta columnae* Guss.                    | Brassicaceae    | N       | ME     | R     | . + +                 |
| *Aucuba japonica* Thunb.                     | Garryaceae      | C       | AS     | R     | . + +                 |
| *Austrocylindropappus subulata* (Muehlenpf.) Backeb. | Cactaceae   | N       | SA     | S     | . + +                 |
| *Avena fatica* L. subsp. *fatica*            | Poaceae         | N       | WP     | C     | + + +                 |
| *Avena sativa* L. subsp. *hyzantina* (C. Koch) Romeo Zarco | Poaceae         | C       | WP     | R     | . + +                 |
| *Avena sativa* L. subsp. *sativa*            | Poaceae         | C       | WP     | C     | + + +                 |
| *Axonopus compressus* (Sw.) P. Beauv.        | Poaceae         | C       | SA     | R     | . + +                 |
| *Azolla filiculoides* Lam.                   | Salviniaeeae    | I       | NA, SA | L     | . + +                 |
| *Baccharis halimioula* L.                    | Asteraceae      | C       | NA     | R     | . + +                 |
| *Baccharis salicina* Torr. & A. Gray         | Asteraceae      | C       | NA     | R     | . + +                 |
| *Ballota hirsuta* Benth.                     | Lamiaceae       | C       | ME     | R     | . + +                 |
| *Bassia scoparia* (L.) Voss subsp. *scoparia* | Amaranthaceae   | N       | WP     | C     | + + +                 |
| *Bauhinia forficata* Link subsp. *prainou* (Vogel) Fortunato & Wanderlin | Fabaceae         | C       | SA     | R     | . + +                 |
| *Begonia ×*semperflorens* Link & Otto         | Bignoniaceae    | C       | Cult   | R     | + + +                 |
| *Belleviluia romanu* (L.) Sweet              | Asparagaceae    | C       | ME     | V     | . + +                 |
| *Berberis vulgaris* L.                       | Berberidaceae   | N       | WP     | R     | + + +                 |
| *Berberis ×ottawensis* C.K. Schneider        | Berberidaceae   | C       | Cult   | R     | + + +                 |
| *Bergenia crassifolia* (L.) Fritsch         | Saxifragaceae   | C       | AS     | R     | + + +                 |
| *Bergia capensis* L.                         | Elatitaceaen    | N       | AS, AF | L     | . + +                 |
| *Berteroa incana* (L.) DC.                   | Brassicaceae    | N       | WP     | R     | . + +                 |
| *Beta vulgaris* L.                           | Amaranthaceae   | N       | WP     | C     | + + +                 |
| *Bidens areca* (Aiton) Sherff                | Asteraceae      | N       | NA     | C     | + + +                 |
| *Bidens frondosus* L.                        | Asteraceae      | I       | NA     | C     | + + +                 |
| *Bidens pilosus* L.                          | Asteraceae      | N       | SA     | S     | . + +                 |
| *Bidens subalternans* DC.                    | Asteraceae      | I       | SA     | C     | + + +                 |
| *Bifora radians* M. Biebe                   | Apiaceae        | N       | ME     | L     | + + +                 |
| *Bifora testiculata* (L.) Spreng.            | Apiaceae        | N       | ME     | L     | + + +                 |
| *Bothriochloa barbinodis* (Lag.) Herter      | Poaceae         | N       | NA, SA | R     | . + +                 |
| *Bothriochloa saccharoides* (Sw.) Rydbr.      | Poaceae         | C       | SA     | S     | . + +                 |
| *Bouganvillaea glabra* Choisy               | Nyctaginaceae   | C       | AS     | R     | + + +                 |
| *Bouteloua dactyloides* (Nutt.) Columbus     | Poaceae         | N       | NA     | R     | . + +                 |
| *Bouteloua gracilis* (Kunth) Griffiths       | Poaceae         | C       | NA     | R     | . + +                 |
| *Brachtiaria platyphylla* (C. Wright) Nash   | Poaceae         | C       | NA     | R     | . + +                 |
| *Brachyhyton populneus* (Schott & Endl.) R. Br. | Sterculiaceae | C       | AU     | R     | . + +                 |
| *Brassilopuntia schickendantzii* (F.A.C. Weber) R. Puente & Majure  | Cactaceae     | C       | SA     | S     | . + +                 |
| *Brassica barrelieri* (L.) Janka             | Brassicaceae    | C       | ME     | R     | + + +                 |
| *Brassica juncea* (L.) Czern.                | Brassicaceae    | C       | WP     | V     | ? + +                 |
| *Brassica napus* L.                          | Brassicaceae    | C       | Cult   | S     | + + +                 |
| *Brassica nigra* (L.) Koch                   | Brassicaceae    | C       | ME     | C     | + + +                 |
| *Brassica oleracea* L.                       | Brassicaceae    | C       | WP     | C     | + + +                 |
| *Brassica rapa* L.                           | Brassicaceae    | C       | ME     | S     | + + +                 |
| *Brassica tournefortii* Guon                 | Brassicaceae    | C       | ME     | R     | . + +                 |
| *Bromus arvensis* L. subsp. *arvensis*       | Poaceae         | N       | WP     | S     | + + +                 |
| *Bromus catharticus* Vahl                    | Poaceae         | I       | SA     | C     | + + +                 |
| Scientific name                                                                 | Family          | Nat. D. | Origin | Abun. | Regional Distribution |
|--------------------------------------------------------------------------------|----------------|---------|--------|-------|-----------------------|
| Bromus inermis Leyss. subsp. inermis                                           | Poaceae         | C       | WP     | S     | +                     |
| Bromus secalinus L. subsp. secalinus                                            | Poaceae         | C       | WP     | S     | +                     |
| Broussonetia papyrifera (L.) Vent.                                              | Moraceae        | N       | AS     | L     | +                     |
| Brugmansia suaveolens (Willd.) Bercht. & J. Presl                             | Solanaceae      | C       | SA     | R     | +                     |
| Buddleja davidii Franch.                                                        | Scrophulariaceae | I       | AS     | C     | +                     |
| Bullbine frutescens (L.) Willd.                                                 | Asphodelaceae   | C       | CA     | R     | +                     |
| Bunias orientalis L.                                                            | Brassicaceae    | N       | WP     | R     | +                     |
| Bunium pachydomum P.W. Ball                                                    | Apiaceae        | C       | ME     | V     | +                     |
| Buglelurum rotundifolium L.                                                     | Apiaceae        | N       | ME     | C     | +                     |
| Buglelurum subovatum Spreng.                                                    | Apiaceae        | N       | ME     | L     | +                     |
| Calendula officinalis L.                                                        | Asteraceae      | N       | C      | Cult  | +                     |
| Calocedrus decurrens (Torr.) Florin                                             | Cupressaceae    | C       | NA, SA | R     | +                     |
| Camelina microcarpa DC.                                                         | Brassicaceae    | N       | WP     | C     | +                     |
| Camellina rumelica Velen.                                                       | Brassicaceae    | N       | WP     | R     | +                     |
| Camellina sativa (L.) Crantz                                                  | Brassicaceae    | C       | WP     | V     | +                     |
| Campanula portenschlagiana Schultz.                                            | Campanulaceae   | N       | ME     | R     | +                     |
| Campsis radicans (L.) Seem.                                                     | Bignoniaceae    | N       | NA     | S     | +                     |
| Campsis 'tagliabuana (Vis.) Rehder                                           | Bignoniaceae    | C       | C      | Cult  | +                     |
| Canna indica L.                                                                | Cannaceae       | C       | SA     | R     | +                     |
| Canna 'generalis L.H. Bailey & E.Z. Bailey                                     | Cannaceae       | N       | Cult   | S     | +                     |
| Cannabis sativa L.                                                              | Cannabaceae     | C       | WP     | S     | +                     |
| Cardamine occulta Hornem.                                                       | Brassicaceae    | N       | AS     | R     | +                     |
| Cardiospermum grandiflorum Sw.                                                  | Sapindaceae     | N       | SA     | R     | +                     |
| Cardiospermum halscactum L.                                                     | Sapindaceae     | C       | SA     | R     | +                     |
| Cardunculus caeruleus (L.) C. Presl                                           | Asteraceae      | C       | ME     | R     | +                     |
| Carpinus betulus L.                                                             | Betulaceae      | C       | WP     | R     | +                     |
| Carposbrotus acinaciformis (L.) L. Bolus                                        | Aizoaceae       | C       | CA     | R     | +                     |
| Carposbrotus edulis (L.) N.E. Br.                                              | Aizoaceae       | I       | CA     | C     | +                     |
| Carthamus tinctorius L.                                                         | Asteraceae      | C       | Cult   | V     | +                     |
| Cary a lilloinensis (Wangenh.) K. Koch                                         | Juglandaceae    | C       | NA     | R     | +                     |
| Castanea sativa Mill.                                                           | Fagaceae        | N       | WP     | C     | +                     |
| Casuarina cunninghamiana Miq.                                                   | Casuarinaceae   | C       | AU     | S     | +                     |
| Catalpa bignoniioides Walter                                                   | Bignoniaceae    | C       | NA     | S     | +                     |
| Catharanthus roseus (L.) G. Don                                                 | Apocynaceae     | C       | AF     | R     | +                     |
| Cedrus atlantica (Endl.) Carrière                                              | Pinaceae        | C       | ME     | S     | +                     |
| Cedrus deodara (Lamb.) G. Don.                                                  | Pinaceae        | C       | AS     | R     | +                     |
| Celosia argentea L.                                                             | Amaranthaceae   | C       | AS     | R     | +                     |
| Celtis australis L. subsp. australis                                            | Cannabaceae     | I       | ME     | C     | +                     |
| Celtis occidentalis L.                                                          | Cannabaceae     | C       | NA     | R     | +                     |
| Cenchrus ciliaris L.                                                            | Poaceae         | N       | ME, AS, AF | R     | +                     |
| Cenchrus clandestinus (Chios.) Morrone                                         | Poaceae         | N       | AF     | S     | +                     |
| Cenchrus flaccidus (Grieseb.) Morrone                                         | Poaceae         | C       | AS     | R     | +                     |
| Cenchrus longisetus M.C. Johnst.                                               | Poaceae         | N       | AF     | C     | +                     |
| Cenchrus orientalis (Rich.) Morrone                                          | Poaceae         | N       | WP, AS, | R     | +                     |
| Cenchrus setaceus (Forssk.) Morrone                                           | Poaceae         | N       | ME, AF | R     | +                     |
| Cenchrus spinifex Cav.                                                          | Poaceae         | N       | NA, SA | L     | +                     |
| Centaurea castillanooides Talavera subsp. talaverae E. López & Devesa          | Asteraceae      | C       | ME     | V     | +                     |
| Centaurea cyanus L.                                                            | Asteraceae      | N       | ME     | C     | +                     |
| Centaurea depressa M. Bib.                                                      | Asteraceae      | C       | WP     | R     | +                     |
| Centaurea dilita Aiton                                                        | Asteraceae      | C       | ME     | R     | +                     |
| Centranthus macrosporn Boiss.                                                  | Caprifoliaceae  | C       | ME     | V     | +                     |
| Cephalaria syriaca (L.) Roem. & Schult.                                        | Dipsaceae       | C       | ME     | R     | +                     |
| Cerastium dichotomum L.                                                        | Caryophyllaceae | N       | ME     | S     | +                     |
| Cerastium tomentosum L.                                                        | Caryophyllaceae | N       | ME     | S     | +                     |
| Ceratonia siliosa L.                                                            | Fabaceae        | I       | ME     | L     | +                     |
| Ceratostigma plumaginoides Bunge                                                | Plumbaginaceae  | C       | AS, AF | R     | +                     |
| Cercis silisquastrum L.                                                        | Fabaceae        | N       | ME     | S     | +                     |
| Ceres hildmannianus K. Schum.                                                   | Cactaceae       | C       | SA     | R     | +                     |
| Cestrum nocturnum L.                                                            | Solanaceae      | C       | SA     | R     | +                     |
| Cestrum parqui L'Herit.                                                        | Solanaceae      | C       | SA     | S     | +                     |
| Chaenomeles speciosa (Sweet) Nakai                                             | Rosaceae        | C       | AS     | R     | +                     |
| Charybdis numidica (Jord. & Fourt.) Speta                                      | Asparagaceae    | C       | ME     | S     | +                     |
| Charybdis pancration (Steinh.) Speta                                           | Asparagaceae    | C       | ME     | R     | +                     |
| Scientific name | Family | Nat. D. | Origin | Abun. | Regional Distribution |
|-----------------|--------|---------|--------|-------|-----------------------|
| Chenopodium nutans (R. Br.) S.Fuentes & Borsch | Amaranthaceae | I | AU | L | . . + |
| Chenopodium strictum Roth | Amaranthaceae | N | WP | R | . . + |
| Chloris gayana Kunth | Poaceae | N | AS, AF | L | . . + |
| Chloris truncata R. Br. | Poaceae | N | AU | R | . . + |
| Chloris virgata Sw. | Poaceae | N | AS, AF | R | . . + |
| Chlorophyllum comosum (Thunb.) Jacques | Asparagaceae | C | CA | R | . . + |
| Chrysanthemum indicum L. | Asteraceae | C | AS | V | . . + |
| Cicer arrietinum L. | Fabaceae | C | Cult | S | . . + |
| Cichorium endivia L. | Asteraceae | C | Cult | R | . . + |
| Citrullus colocynthis (L.) Schrad. | Cucurbitaceae | C | ME, AS, AF | R | . . + |
| Citrullus lanatus (Thunb.) Matsum. & Nakai | Cucurbitaceae | C | AF | S | + + + |
| Citrus ×aurantium L. | Rutaceae | C | Cult | R | . . + |
| Citrus ×limon (L.) Burm. | Rutaceae | C | Cult | R | . . + |
| Clarkia unguiculata Lindl. | Onagraceae | C | NA | R | . . + |
| Cleistocactus hylacanthus (K. Schum.) Rol.-Goss. | Cactaceae | C | SA | R | . . + |
| Cleistocactus straussii (Heese) Backeb. | Cactaceae | C | SA | R | . . + |
| Cleome violacea L. | Cleomeae | C | ME | R | . . + |
| Clerodendrum hungei Steud. | Lamiaceae | C | AS | R | . . + |
| Clerodendrum trichotomum Thunb. | Lamiaceae | C | AS | R | . . + |
| Colocasia esculenta (L.) Schott | Araceae | N | AS | L | . . + |
| Commelina communis L. | Commelinaceae | C | AS | R | . . + |
| Commelina erecta L. | Commelinaceae | C | NA, SA | R | . . + |
| Convolvulus orientalis (L.) Dumort. | Brassicaceae | N | WP | L | . . + |
| Convolvulus betonicifolius Mill. | Convolvulaceae | N | ME | R | . . + |
| Convolvulus farinosus L. | Convolvulaceae | N | AF | R | . . + |
| Convolvulus sabatius Viv. | Convolvulaceae | N | ME | R | . . + |
| Convolvulus tricolor L. subsp. tricolor | Convolvulaceae | C | ME | R | . . + |
| Coreopsis lanceolata L. | Asteraceae | C | NA | R | . . + |
| Coreopsis tinctoria Nutt. | Asteraceae | C | NA | R | . . + |
| Coriandrum sativum L. | Apiaceae | C | ME | R | . . + |
| Cornus mas L. | Cornaceae | N | WP | R | . . + |
| Coronilla valentina L. subsp. glauca (L.) Batt. | Fabaceae | I | ME | C | . . + |
| Crotalaria selloana (Schult. & Schult. f.) Asch. & Graebn. | Poaceae | I | SA | L | . . + |
| Corylus colurna L. | Betulaceae | C | WP | R | . . + |
| Cosmos bipinnatus Cav. | Asteraceae | C | NA | R | . . + |
| Cotinus coggygria Scop. | Anacardiaceae | C | ME | R | . . + |
| Cotoneaster affinis Lindl. | Rosaceae | N | AS | R | . . + |
| Cotoneaster apiculatus Rehder & E.H. Wilson | Rosaceae | N | AS | R | . . + |
| Cotoneaster bulbatus Bois | Rosaceae | C | AS | R | . . + |
| Cotoneaster duchesnii E. Pritz. | Rosaceae | N | AS | R | . . + |
| Cotoneaster coriaceus Franchet | Rosaceae | N | AS | L | . . + |
| Cotoneaster divaricatus Rehder & E.H. Wilson | Rosaceae | C | AS | R | . . + |
| Cotoneaster franchetti Bois | Rosaceae | C | AS | R | . . + |
| Cotoneaster horizontalis Deane. | Rosaceae | C | AS | R | . . + |
| Cotoneaster pannosus Franch. | Rosaceae | N | AS | L | . . + |
| Cotoneaster salicifolius Franch. | Rosaceae | C | AS | R | . . + |
| Cotoneaster simonsii Baker | Rosaceae | N | AS | R | . . + |
| Cotula australis (Spreng.) Hook. f. | Asteraceae | N | AU | S | . . + |
| Cotula coronopifolia L. | Asteraceae | N | CA | R | . . + |
| Cotyledon orbiculata L. | Crassulaceae | N | CA | R | . . + |
| Crassula arborescens (Mill.) Wild. | Crassulaceae | C | CA | R | . . + |
| Crassula multicava Lem. | Crassulaceae | C | CA | S | . . + |
| Crassula muscosa L. | Crassulaceae | N | CA | S | . . + |
| Crassula nudicaulis L. | Crassulaceae | C | CA | R | . . + |
| Crassula ovata (Mill.) Druce | Crassulaceae | C | CA | S | . . + |
| Crassula pubescens Thunb. subsp. radicans (Haw.) Toelken | Crassulaceae | N | CA | R | . . + |
| Crassula tetragona L. subsp. robusta (Toelken) Toelken | Crassulaceae | N | CA | S | . . + |
| Crataegus azarolus L. | Rosaceae | C | ME | V | . . + |
| Crepis bellidifolia Loisel. | Asteraceae | C | ME | V | . . + |
| Crepis bursifolia L. | Asteraceae | N | ME | C | . . + |
| Crepis sancta (L.) Bornm. subsp. sancta | Asteraceae | N | ME | C | . . + |
| Crepis zacynthina (L.) Loisel. | Asteraceae | C | ME | V | . . + |
| Crocosmia ×crocosmiiflora (Lemoine) N. E. Br. | Iridaceae | N | Cult | S | . . + |
| Scientific name | Family | Nat. D. | Origin | Abun. | Regional Distribution |
|-----------------|--------|---------|--------|-------|-----------------------|
| *Crocus sativus* L. | Iridaceae | C | Cult | S | + + + |
| *Cucumis melo* L. | Cucurbitaceae | C | AS | S | . . + |
| *Cucumis sativus* L. | Cucurbitaceae | C | AS | S | + + + |
| *Cucurbita maxima* Duchesne | Cucurbitaceae | C | Cult | S | + + + |
| *Cucurbita moschata* Duchesne | Cucurbitaceae | C | SA | R | + . + |
| *Cucurbita pepo* L. | Cucurbitaceae | C | Cult | S | + . + |
| *Cupressus sempervirens* L. | Cupressaceae | C | ME | S | + + + |
| *Cuscuta campestris* Yunck. | Convolvulaceae | N | NA | C | + + + |
| *Cuscuta epithymum* Boenn. | Convolvulaceae | C | ME | V | . . + |
| *Cyclamen hederifolium* Aiton | Primulaceae | N | ME | R | + . + |
| *Cyclamen persicum* Mill. | Primulaceae | C | ME | R | . . . |
| *Cycloperspermum leptophyllum* (Pers.) Sprague | Apiaceae | C | SA | L | . . + |
| *Cydonia oblonga* Mill. | Rosaceae | N | WP | C | + + + |
| *Cyanthillium littorale* (Engl.) F.M. Knuth | Cactaceae | C | NA | C | . . + |
| *Cynara cardunculus* L. | Asteraceae | N | ME | S | . + + |
| *Cynara scolymus* L. | Asteraceae | C | Cult | R | . + + |
| *Cyperus alternifolius* L. subsp. *flabelliformis* (Rottb.) Kük. | Cyperaceae | N | AF | S | . . + |
| *Cyperus congestus* Vahl | Cyperaceae | N | CA | S | . . + |
| *Cyperus difformis* L. | Cyperaceae | N | AS, AF, SA | L | . + + |
| *Cyperus eragrostis* Lam. | Cyperaceae | N | IA, NA, SA | C | + + + |
| *Cyperus esculentus* L. | Cyperaceae | N | ME, AS, AF, NA | C | . + + |
| *Cyperus esculentus* L. | Cyperaceae | N | AS, AF | S | . . + |
| *Cyperus glomeratus* L. | Cyperaceae | N | WP | R | . . + |
| *Cyperus odoratus* L. | Cyperaceae | N | AS, AF, SA | S | . . + |
| *Cyperus papyrus* L. | Cyperaceae | C | AF | R | . . + |
| *Cyperus striigosus* L. | Cyperaceae | C | NA | V | . . . |
| *Cytisus bacatum* (L. fil.) C. Presl | Fabaceae | N | AS | R | . . + |
| *Cytisus purpureus* L. | Fabaceae | N | AS | R | . . + |
| *Cytisus striatus* (Hill) Rothm. | Fabaceae | N | ME | R | + . + |
| *Dactylocentrum aegyptium* (L.) Willd. | Poaceae | C | AS, AF | R | . + + |
| *Delphinium orientale* L. | Ranunculaceae | N | NA | R | . . + |
| *Datisca congesta* L. | Solanaceae | N | AS | S | . + + |
| *Datisca irioxa* Mill. | Solanaceae | N | SA | R | . ? + |
| *Datisca steammonium* L. | Solanaceae | N | SA | C | + + + |
| *Datisca wrightii* Regel | Solanaceae | N | NA | S | + + + |
| *Daucus carota* L. subsp. *sativus* (Hoffm.) Schübl. & G. Martens | Apiaceae | C | Cult | S | . . + |
| *Daucus murcatus* (L.) L. | Apiaceae | C | ME | R | . . + |
| *Delairea odorata* Lem. | Asteraceae | I | CA | C | . . + |
| *Delosperma cooperi* (Hook f.) L. Bolus | Aizoaceae | C | CA | R | . . + |
| *Delosperma ecklonis* (Salm-Dyck) Schwantes | Aizoaceae | N | CA | R | . . + |
| *Delphinium japicis* L. | Ranunculaceae | C | ME | S | + + + |
| *Delphinium orientale* J. Gay | Ranunculaceae | C | ME | R | . . + |
| *Dianthus caryophyllus* L. subsp. *caryophyllus* | Caryophyllaceae | C | ME | R | . . + |
| *Dichondra micrantha* Urb. | Convolvulaceae | C | AS | S | . . + |
| *Digitaria ciliaris* (Retz.) Koeler | Poaceae | C | AS | S | . . + |
| *Digitaria sanguinalis* (L.) Scop. subsp. *pectiniformis* Henrard | Poaceae | C | WP | V | . . + |
| *Digitaria sanguinalis* (L.) Scop. subsp. *sanguinalis* | Poaceae | N | WP | C | + + + |
| *Digitaria violascens* Link | Poaceae | C | AS | S | . . + |
| *Dimorphotheca fruticosa* (L.) DC. | Asteraceae | C | CA | R | . . + |
| *Diospyros kaki* L. | Ebenaceae | C | AS | S | . . + |
| *Diospyros lotus* L. | Ebenaceae | N | WP | R | + + + |
| *Diospyros virginiana* L. | Ebenaceae | N | CA | R | . . + |
| *Diplachne fasca* (L.) Roem. & Schult. subsp. *uinervia* (J. Presl) | Poaceae | N | NA, SA | L | . . + |
| Scientific name | Family               | Nat. D. | Origin | Abun. | Regional Distribution |
|-----------------|----------------------|---------|--------|-------|-----------------------|
| Diploptaxis tenufolia (L.) DC. | Brassicaceae | N | ME | S | . . + |
| Dipsacus sativus (L.) Honck. | Dipsacaceae | C | Cult | R | . . + |
| Disphyma crassifolium (L.) L. Bolus | Aizoaceae | N | CA | S | . . + |
| Dolichandra ungui-cati (L.) L.G. Lohmann | Bigoniaceae | C | SA | R | . . + |
| Dracunculus vulgaris Schott | Araceae | C | ME | V | . . + |
| Drosanthemum floribundum (Haw.) Schwantes | Aizoaceae | N | CA | R | . . + |
| Dysphania ambrosioides (L.) Mosyakin & Clemants | Amaranthaceae | N | SA | C | + + + |
| Dysphania anthropitica (L.) Mosyakin & Clemants | Amaranthaceae | N | SA | R | . . + |
| Dysphania multifida (L.) Mosyakin & Clemants | Amaranthaceae | N | SA | C | . . + |
| Dysphania pumilio (R. Br.) Mosyakin & Clemants | Amaranthaceae | C | AU | C | . . + |
| Echinochloa colonum (L.) Link | Poaceae | N | AS, AF | C | + + + |
| Echinochloa crus-galli (L.) P. Beauv. subsp. hispidula (Retz.) Honda | Poaceae | C | AS, AF | S | . . + |
| Echinochloa oryzicola (Vasiger) Vasinger | Poaceae | C | AS | L | . + + |
| Echinochloa oryzoides (Arnd.) Fritsch | Poaceae | C | AS, AF | L | . + + |
| Echinosis eyriesii (Turpin) Pfeiff. & Otto | Cactaceae | C | SA | R | . . + |
| Echinosis oxygona (Link) Zucc. | Cactaceae | C | SA | R | . . + |
| Eclipta prostrata (L.) L. | Asteraceae | N | SA | L | . + + |
| Egeria densa Planch. | Hydrocharitaceae | N | SA | R | + . + |
| Ehrharta calycina Sm. | Poaceae | C | CA | R | . . + |
| Ehrharta erecta Lam. | Poaceae | C | CA | R | . . + |
| Ehrharta longiflora Sm. | Poaceae | N | CA | R | . . + |
| Eichhornia crassipes (Mart.) Solms. | Pontederiaceae | N | SA | R | . . + |
| Elaeagnus angustifolia L. | Elaeagnaceae | C | WP | R | . . + |
| Elymus canadensis Michx. | Poaceae | C | SA | R | . . + |
| Elymus hispidus (Opiz) Melderis subsp. barbulatus (Schar) Melderis | Poaceae | C | WP | R | . . + |
| Elymus obtusiflorus (DC.) Conert | Poaceae | N | WP | S | + + + |
| Enneapogon cenchroides (Roem. & Schult.) C.E. Hubb. | Poaceae | C | AF, AS | R | . . + |
| Epilobium brachycarpum C. Presl | Onagraceae | N | NA | R | + . + |
| Epilobium ciliatum Raf. subsp. ciliatum | Onagraceae | I | NA | L | + . . |
| Eragrostis curvula (Schrad.) Nees | Poaceae | N | CA | C | + + + |
| Eragrostis mexicana (Hornem.) Link | Poaceae | N | NA, SA | S | . . + |
| Eragrostis pectinacea (Michx.) Nees | Poaceae | C | NA, SA | R | . . + |
| Eriogonum annuum (L.) Desf. | Asteraceae | I | SA | C | + + + |
| Eriogonum bonariensis L. | Asteraceae | I | SA | C | + + + |
| Eriogonum canadensis L. | Asteraceae | I | NA | C | + + + |
| Eriogonum floribundum (Kunth) Sch. Bip. | Asteraceae | N | SA | C | + + + |
| Eriogonum harvianskiius DC. | Asteraceae | I | SA | L | + + + |
| Eriogonum primonialis (Lam.) Greuter | Asteraceae | C | SA | V | . + + |
| Eriogonum satureniensis Retz. | Asteraceae | I | SA | C | + + + |
| Eriobotrya japonica (Thunb.) Lindl. | Rosaceae | C | AS | S | . . + |
| Eriochæphalus africanus L. | Asteraceae | C | CA | R | . . + |
| Erodium botrys | Geraniaceae | C | ME | S | . . + |
| Erodium articulata (L.) Schott | Fabaceae | N | ME | S | + + + |
| Erodium sativa Link | Fabaceae | C | ME | S | + + + |
| Erysimum cheiri (L.) Crantz | Brassicaceae | N | ME | S | + + + |
| Erysimum repandum L. | Brassicaceae | C | WP | R | . . + |
| Erythranthe gutatta (DC.) G.L. Nesom | Phrymaceae | N | NA | R | . + + |
| Erythrostemon gilliisii (Hook.) Klotzsch | Fabaceae | C | SA | R | . + + |
| Eschscholzia californica Cham. | Papaveraceae | N | NA | S | + + + |
| Eucalyptus camaldulensis Dehnh. | Myrtaceae | C | AU | S | . + + |
| Eucalyptus dalrympleana Maiden | Myrtaceae | C | AU | R | . . + |
| Eucalyptus globulus Labill. | Myrtaceae | C | AU | S | . . + |
| Eucalyptus gunnii Hook. f. | Myrtaceae | C | AU | R | . . + |
| Eucalyptus viminalis Labill. | Myrtaceae | C | AU | R | . . + |
| Euonymus japonicus Thunb. | Celastraceae | C | AS | R | . + + |
| Euphorbia chamaesyce L. subsp. chamaesyce | Euphorbiaceae | N | ME | L | + + + |
| Euphorbia davidii Subl | Euphorbiaceae | N | NA | R | . . + |
| Euphorbia glyptosperma Engel. | Euphorbiaceae | N | NA | R | . + . |
| Scientific name | Family | Nat. D. | Origin | Abun. | Regional Distribution |
|-----------------|--------|---------|--------|-------|-----------------------|
| Euphorbia hamifusa | Euphorbiaceae | N | AS | R | . . + |
| Euphorbia hypericifolia | Euphorbiaceae | C | SA | R | . . + |
| Euphorbia lathyris | Euphorbiaceae | N | ME | C | + + + |
| Euphorbia maculata | Euphorbiaceae | I | NA | C | + + + |
| Euphorbia marginata | Euphorbiaceae | C | NA | S | + + + |
| Euphorbia nutans | Euphorbiaceae | I | NA | C | + + + |
| Euphorbia prostrata | Euphorbiaceae | I | NA | C | + + + |
| Euphorbia saratovi | Euphorbiaceae | N | WP | R | . + + |
| Euphorbia serpens | Euphorbiaceae | N | SA | C | + + + |
| Euryops pectinatus (L.) Cass. × E. chrysanthemoides (DC.) B. Nord. | Asteraeae | | | | |
| Fagonia cretica | Zygoiphylaceae | N | ME | R | . . + |
| Fagopyrum esculentum | Polygonaceae | C | AS | S | + + + |
| Fagopyrum tataricum (L.) Gaertn. | Polygonaceae | C | AS | S | + + + |
| Fallopia baldschuanica (Regel) Holub | Polygonaceae | I | AS | C | + + + |
| Fallopia japonica (Houtt.) Ronse Dece. | Polygonaceae | N | AS | R | + + + |
| Felicia filifolia (Vent.) Burt Davy | Asteraceae | C | CA | R | . . + |
| Ferula communis L. subsp. communis | Apiaceae | N | ME | R | . . + |
| Festuca stricta Host subsp. trachyphylla (Hack.) Joch. Müll. | Poaceae | C | WP | R | . + . |
| Festuca valesiaca Gaudin | Poaceae | N | WP | R | . . + |
| Ficus carica | Moraceae | I | ME | C | + + + |
| Ficus elasticas Horm. | Moraceae | C | AS | R | . . + |
| Ficus rubiginosa Vent. | Moraceae | C | AU | R | . . + |
| Fimbristylis bisambellata (Forsk.) Bubani | Cyperaceae | C | AF, AS | V | . . + |
| Forsythia intermedia Zabel | Oleaceae | C | AS | R | + . |
| Forsythia suspensa (Thum.) Vahl | Oleaceae | C | AS | R | . + . |
| Fragaria ×ananassa (Weston) Duchesne | Rosaceae | C | Cult | R | + + + |
| Fragaria ×intermedia (Bach) Beck | Rosaceae | C | Cult | R | . . + |
| Fraxinus americana L. | Oleaceae | N | NA | R | + + ? |
| Fraxinus ornus L. | Oleaceae | I | ME | L | + + + |
| Fraxinus pennsylvanica Marshall | Oleaceae | N | NA | R | . + + |
| Freesia leichtlinii Klatt subsp. alba (G.L. Mey.) J.C. Manning & Goldblatt | Iridaceae | N | CA | S | . . + |
| Freesia leichtlinii Klatt × F. corymbosa (Burm. f.) N.E. Br. | Iridaceae | C | Cult | R | . . + |
| Gagea villosa (M. Bieb.) Sweet | Liliaceae | N | WP | C | + + + |
| Gaillardia aristata Pursh | Asteraceae | C | NA | R | + + + |
| Galega officinalis | Fabaceae | N | ME | R | + + + |
| Galtisoga parviflora Cav. | Asteraceae | N | SA | C | + + + |
| Galtisoga quadriradiata Ruiz & Pav. | Asteraceae | N | SA | C | + + + |
| Galium tricornutum Dandy | Rubiaceae | N | ME | C | + + + |
| Gamochaeta coarctata (Wild.) Kerguelien | Asteraceae | N | NA, SA | L | . + |
| Gamochaeta subfulvata (Cabrera) Cabrera | Asteraceae | N | SA | S | . . + |
| Gasteraloe behnii (Radl.) Guillaumin | Asphodelaceae | C | Cult | R | . . + |
| Gasteria carinata (Mill.) Duval | Asphodelaceae | C | CA | R | . . + |
| Gazania rigens (L.) Gaertn. | Asteraceae | N | CA | L | . + |
| Gladiolus italicus M. Bieb. | Iridaceae | N | ME | C | + + + |
| Glandularia aristigera (S. Moore) Tronc. | Verbenaceae | C | SA | R | . . + |
| Glebionis segetum (L.) Fourn. | Asteraceae | N | ME | C | + + + |
| Gleditsia tricangulata | Fabaceae | N | NA | S | + + + |
| Glostophyllum longum (Haw.) N.E. Br. | Aizoaceae | N | CA | S | . . + |
| Glycine max (L.) Merr. | Fabaceae | C | AS | R | . . + |
| Gomphocarpus fruticosus (L.) W.T. Aiton | Apocynaceae | N | CA | C | + + + |
| Graptopterulum paraguayense (N.E. Br.) E. Walther | Crassulaceae | N | NA | R | . + + |
| Guazuma abyssinica (L.) Cass. | Asteraceae | N | Cult | S | + . |
| Gypsophila elegans M. Bieb. | Caryophyllaceae | C | WP | R | . . |
| Gypsophila paniculata L. | Caryophyllaceae | C | WP | V | . . + |
| Halogoton savitus (L.) Moq. | Amaranthaceae | C | ME | V | . . + |
| Haworthiopsis attenuata (Haw.) G.D. Rowley | Asphodelaceae | C | AF | R | . . + |
| Hedera hibernica (G. Kirch.) Carrière | Araliaceae | N | WP | S | + + + |
| Hedera maroccana McAll. | Araliaceae | N | ME | L | + + + |
| Hedysarum coronarium L. | Fabaceae | C | ME | S | . . + |
| Helianthus annus L. | Asteraceae | C | NA | C | + + + |
| Helianthus tuberosus L. | Asteraceae | I | NA | C | + + + |
| Helianthus ×laeitiflorus Pers. | Asteraceae | N | NA | R | . . . |
| Helichrysum orientale (L.) Vail. | Asteraceae | C | ME | R | . + + |
| Scientific name                          | Family              | Nat. D. | Origin | Abun. | Pyr. | In | Lit | Regional Distribution |
|-----------------------------------------|---------------------|---------|--------|-------|------|----|----|-----------------------|
| Heliotropium amplexicaulis Vahl         | Boraginaceae        | C       | SA     | R     | .    | .  | + |                      |
| Heliotropium curassavicuim L.           | Boraginaceae        | N       | SA     | L     | .    | .  | + |                      |
| Helleborus niger L.                     | Ranunculaceae       | C       | WP     | R     | .    | + |   |                      |
| Hemerocallis fulva (L.) L.              | Asphodelaceae       | N       | AS     | L     | +    | + | + |                      |
| Heracleum mantegazzianum Sommier & Levier | Apiaceae           | N       | WP     | S     | +    | .  |   |                      |
| Hermadactylus tuberosus (L.) Mill.      | Irideae             | C       | ME     | R     | .    | .  | + |                      |
| Hesperis matronalis L. subsp. matronalis| Brassicaceae        | N       | WP     | S     | +    | + |   |                      |
| Hesperopraspis arizonica (Greene) Bartel | Cupressaceae       | N       | NA     | R     | +    | + |   |                      |
| Hesperopraspis macrocarpa (Harv.) Bartel | Cupressaceae       | C       | NA     | R     | +    | + |   |                      |
| Heteranthera limosa (Sw.) Willd.        | Pontederiaceae      | N       | SA     | L     | +    |   |   |                      |
| Heteranthera reniformis Ruiz & Pav.     | Pontederiaceae      | N       | SA     | L     | +    |   |   |                      |
| Hibiscus trionum L.                    | Malvaceae           | N       | AS, AF | S     | .    | + | + |                      |
| Hippophae vitatum (L’Hér.) Herb.       | Amaryllidaceae      | C       | SA     | R     | +    | .  |   |                      |
| Hordeum vulgare L. subsp. distichon (L.) Körn. | Poaceae           | N       | Cult   | S     | +    | + |   |                      |
| Hordeum vulgare L. subsp. vulgare       | Poaceae             | N       | Cult   | S     | +    | + |   |                      |
| Hyacinthoides × massartiana Geerinck    | Asparagaceae        | C       | Cult   | R     | .    | .  |   |                      |
| Hyacinthus orientalis L.                | Asparagaceae        | C       | ME     | S     | .    | + |   |                      |
| Hydrocotyle verticillata Thumb.         | Araiaceae           | N       | SA     | R     | .    | .  | + |                      |
| Hylotroes undatus (Haw.) Britton & Rose | Cactaceae           | C       | SA     | R     | .    | .  | + |                      |
| Hylotelephium spectabile (Boreau) H. Ohba | Crassulaceae       | C       | AS     | R     | .    | + |   |                      |
| Hypericum calycinum L.                  | Hypericaceae        | N       | ME     | R     | .    | + |   |                      |
| Hypericum canariense L.                 | Hypericaceae        | C       | WP     | R     | .    |   | + |                      |
| Hypericum hircinum L. subsp. majus (Aiton) N. Robson | Hypericaceae     | C       | ME     | V     | .    |   | + |                      |
| Hypericum triquetrifolium Turra         | Hypericaceae        | C       | ME     | V     | .    | + |   |                      |
| Impatiens balfourii Hook. f.            | Balsaminaceae       | I       | AS     | C     | +    | + |   |                      |
| Impatiens balsamina L.                  | Balsaminaceae       | I       | AS     | C     | +    | + |   |                      |
| Impatiens glandulifera Royle            | Balsaminaceae       | I       | AS     | C     | +    | + |   |                      |
| Inula helenium L. subsp. helenium       | Asteraceae          | N       | WP     | S     | +    | + |   |                      |
| Ipomeoa hederaeaca Jacq.               | Convolvulaceae      | N       | SA     | R     | .    |   | + |                      |
| Ipomeoa indica (Burm.) Merr.            | Convolvulaceae      | N       | SA     | C     | .    | + |   |                      |
| Ipomeoa purpurea (L.) Roth              | Convolvulaceae      | N       | SA     | C     | +    |   | + |                      |
| Ipomeoa sagittata Poir.                 | Convolvulaceae      | I       | SA     | L     | +    |   |   |                      |
| Iris albicans Lange                    | Irideae             | C       | ME     | R     | .    |   | + |                      |
| Iris × germanica L.                     | Irideae             | I       | Cult   | C     | +    | + |   |                      |
| Iris × sambucina L.                     | Iridaceae           | C       | Cult   | R     | .    | + |   |                      |
| Isatis tinctoria L. subsp. tinctoria    | Brassicaceae        | N       | WP     | L     | +    | + |   |                      |
| Jacaranda mimosifolia D. Don.           | Bignoniaceae        | C       | SA     | R     | .    | + |   |                      |
| Jarava plumosa (Spreng.) S.W.L. Jacobs & J. Everett | Poaceae           | N       | SA     | L     | +    |   |   |                      |
| Jasminum nudiflorum Lindl.             | Oleaceae            | N       | AS     | R     | .    | + |   |                      |
| Jasminum officinale L.                 | Oleaceae            | N       | AS     | S     | +    |   | + |                      |
| Juglanis nigra L.                      | Juglandaceae        | C       | NA     | R     | .    | + |   |                      |
| Juglans regia L.                       | Juglandaceae        | I       | WP     | C     | +    | + |   |                      |
| Juncus temuis Willd.                   | Juncaceae           | N       | NA     | C     | +    |   | + |                      |
| Juniperus chinensis L.                  | Cupressaceae        | C       | AS     | R     | .    | + |   |                      |
| Juniperus macroporpa Sm.               | Cupressaceae        | C       | ME     | R     | .    | + |   |                      |
| Kalanchee fedtschenkoi Raym.-Hamet & H. Perrier | Crassulaceae     | C       | AF     | R     | .    | + |   |                      |
| Kalanchee sexangularis N.E. Br.        | Crassulaceae        | C       | AF     | R     | .    | + |   |                      |
| Kalanchee tubiflora (Harv.) Raym.-Hamet | Crassulaceae        | C       | AF     | R     | .    | + |   |                      |
| Kalanchee ×boughtonii D.B. Ward         | Crassulaceae        | N       | Cult   | L     | +    |   | + |                      |
| Kerria japonica (L.) DC.                | Rosaceae            | C       | AS     | R     | +    |    |   |                      |
| Kleinia mandralisciae Tineo             | Asteraceae          | C       | CA     | R     | .    | + |   |                      |
| Kleinia repens (L.) Haw.                | Asteraceae          | C       | CA     | R     | .    | + |   |                      |
| Kniphofia praecox Baker                 | Asphodelaceae       | C       | CA     | R     | .    | + |   |                      |
| Koeleria paniculata Laxm.               | Sapindaceae         | C       | AS     | S     | +    |   | + |                      |
| Kundmannia sicula (L.) DC.             | Apiaceae            | C       | ME     | R     | .    | + |   |                      |
| Laburnum anagyroides Medik.             | Fabaceae            | N       | WP     | S     | +    | + |   |                      |
| Lactuca sativa L.                      | Asteraceae          | C       | Cult   | S     | +    |   | + |                      |
| Lamium galeobdolon (L.) Crantz subsp. argentatum (Smeekj) J. Duvig. | Lamiaeae           | C       | WP     | R     | .    | + |   |                      |
| Lampranthus aureus (L.) N.E. Br.        | Aizoaceae           | C       | CA     | R     | .    | + |   |                      |
| Lampranthus multiradiatus (Jacq.) N.E. Br. | Aizoaceae         | N       | CA     | S     | .    | + |   |                      |
| Lantana camara L. aggr.                | Verbenaceae         | N       | Cult   | L     | .    |   | + |                      |
| Lantana montevidensis (Spreng.) Briq.  | Verbenaceae         | C       | SA     | R     | .    |   | + |                      |
| Larix ×marschinsii Coaz                | Pinaceae            | C       | Cult   | R     | .    | + |   |                      |
| Scientific name                  | Family       | Nat. D. | Origin          | Abun. | Regional Distribution Pyr. | In Lit |
|----------------------------------|--------------|---------|-----------------|-------|-----------------------------|--------|
| Laburnum odoratum L.             | Fabaceae     | C       | ME              | R     | +                           | +      |
| Laburnum olereceus Lam. subsp. olereceus | Fabaceae     | C       | Cult            | R     | +                           | +      |
| Laburnum sativum L.              | Fabaceae     | C       | Cult            | S     | +                           | +      |
| Laburnum tingitanus L.           | Fabaceae     | I       | ME              | C     | +                           | +      |
| Laburnum tuberosum L.            | Fabaceae     | N       | WP              | L     | +                           | +      |
| Lavandula dentata L.             | Lamiaceae    | C       | ME              | S     | +                           | +      |
| Legosia pentagonia (L.) Druce     | Campanulaceae| C       | ME              | R     | +                           | +      |
| Lema minuta Kunth                | Araceae      | N       | NA, SA          | S     | +                           | +      |
| Lema validiana Phil.             | Araceae      | N       | NA, SA          | L     | +                           | +      |
| Leonotis leonurus (L.) R. Br.     | Lamiaceae    | C       | CA              | R     | +                           | +      |
| Leonurus cardiaca L.             | Lamiaceae    | C       | WP              | V     | +                           | +      |
| Lepidium bonariense L.           | Brassicaceae | N       | SA              | L     | +                           | +      |
| Lepidium densiflorum Schrad.     | Brassicaceae | C       | NA              | R     | +                           | +      |
| Lepidium didymum L.              | Brassicaceae | N       | SA              | C     | +                           | +      |
| Lepidium draba L. subsp. draba   | Brassicaceae | N       | ME              | C     | +                           | +      |
| Lepidium latifolium L.           | Brassicaceae | N       | ME              | S     | +                           | +      |
| Lepidium perfoliatum L.          | Brassicaceae | C       | WP              | V     | +                           | +      |
| Lepidium sativum L.              | Brassicaceae | C       | ME              | V     | +                           | +      |
| Lepidium virginicum L. subsp. virginicum | Brassicaceae | I       | NA              | L     | +                           | +      |
| Leucena leucocephala (Lam.) de Wit subsp. glabrata (Rose) Zárate | Fabaceae     | N       | SA              | R     | +                           | +      |
| Lecocymum aestivum L. subsp. aestivum | Amaryllidaceae| N     | ME              | R     | +                           | +      |
| Levisticum officinale W.D.J. Koch | Apiaceae     | C       | ME              | V     | +                           | +      |
| Ligustrum lucidum W.T. Aiton     | Oleaceae     | I       | AS              | L     | +                           | +      |
| Ligustrum ovalifolium Hassk.      | Oleaceae     | C       | AS              | R     | +                           | +      |
| Ligustrum sinense Lour.           | Oleaceae     | C       | AS              | R     | +                           | +      |
| Lilium candidum L.               | Liliaceae    | N       | ME              | S     | +                           | +      |
| Limonium sinuatum (L.) Mill.     | Plumbaginaceae| C     | ME              | R     | +                           | +      |
| Linaria spathea (L.) Chaz.        | Plantaginaceae| C     | ME              | R     | +                           | +      |
| Linaria viscosa (L.) Chaz. subsp. viscosa | Plantaginaceae| C     | ME              | R     | +                           | +      |
| Linaria versicolor (Jacq.) Chaz.  | Plantaginaceae| C     | Cult            | R     | +                           | ?      |
| Lindernia dubia (L.) Pennell      | Scrophulariaceae| N   | NA              | L     | +                           | +      |
| Linum grandiflorum Desf.         | Linaceae     | C       | ME              | R     | +                           | +      |
| Linum usitatissimum L.           | Linaceae     | C       | Cult            | S     | +                           | +      |
| Liquidambar styraciflua L.        | Altingiaceae | C       | NA              | R     | +                           | +      |
| Lobelia laxiflora Karth subsp. angustifolia (A. DC.) Eakes & Lammers | Campanulaceae| C   | NA              | R     | +                           | +      |
| Lolium multiflorum Lam.          | Poaceae      | N       | WP              | C     | +                           | +      |
| Lolium temulentum L.             | Poaceae      | N       | ME              | C     | +                           | +      |
| Lonicera fragrantissima Lindl. & Paxton | Caprifoliaceae| N | AS              | R     | +                           | +      |
| Lonicera japonica Thumb.         | Caprifoliaceae| I     | AS              | C     | +                           | +      |
| Lotus cretics L.                 | Fabaceae     | N       | ME              | R     | +                           | +      |
| Ludwigia hexapetala (Hook. & Arn.) Zardini, H.Y. Gu & P.H. Raven | Onagraceae    | N       | SA              | R     | +                           | +      |
| Ludwigia peploides (Kunth) P.H. Raven subsp. montevidensis (Spreng.) P.H. Raven | Onagraceae    | I       | SA              | L     | +                           | +      |
| Lupinus albus L.                 | Brassicaceae | N       | ME              | C     | +                           | +      |
| Lupinus ×regalis Bergmans        | Fabaceae     | C       | Cult            | V     | +                           | +      |
| Lycianthes rantonnetii (Carrière) Bitter | Solanaceae    | C     | SA              | R     | +                           | +      |
| Lycium barbarum L.               | Solanaceae   | C       | AS              | R     | +                           | +      |
| Lycium chinense Mill.            | Solanaceae   | C       | AS              | R     | +                           | +      |
| Lycium cinereum Thumb.           | Solanaceae   | C       | CA              | R     | +                           | +      |
| Lycopis orientalis L.            | Boraginaceae | C       | ME              | R     | +                           | +      |
| Macleura pomifera (Raf.) C.K. Schneid. | Moraceae     | C       | NA              | R     | +                           | +      |
| Mahonia ×decumbens Stace          | Berberidaceae| N       | Cult            | S     | +                           | +      |
| Mahonia japonica (Thunb.) DC.     | Berberidaceae| C       | AS              | R     | +                           | +      |
| Malcolmia maritima (L.) R. Br.    | Brassicaceae | C       | ME              | R     | +                           | +      |
| Malephora purpureo-croceae (Haw.) Schwantes | Aizoaceae    | N       | CA              | S     | +                           | +      |
| Malephora uitenhagensis (L.) Bolk. Jacobsen & Schwantes | Aizoaceae    | N       | CA              | R     | +                           | +      |
| Malope trifida Cav.               | Malvaceae    | C       | ME              | R     | +                           | +      |
| Malus domestica (Borkh.) Borkh.   | Rosaceae     | C       | Cult            | C     | +                           | +      |
| Malva hispanica L.               | Malvaceae    | C       | ME              | V     | +                           | +      |
| Malva longiflora (Boiss. & Reut.) B. Bock | Malvaceae    | C       | ME              | V     | +                           | +      |
| Malva punctata (All.) Alef.       | Malvaceae    | C       | ME              | R     | +                           | +      |
| Malva trimestris (L.) Salisb.     | Malvaceae    | C       | ME              | V     | +                           | +      |
| Scientific name | Family | Nat. D. | Origin | Abun. | Regional Distribution |
|-----------------|--------|---------|--------|-------|-----------------------|
| Malva verticillata L. | Malvaceae | C | AS | V | . | . | + |
| Mammillaria elongata DC. | Cactaceae | C | NA | R | . | + | . |
| Manihot graminifolia Hook. | Euphorbiaceae | C | SA | R | . | + | . |
| Matricaria discoidea DC. subsp. discoidea | Asteraceae | N | AS, NA | C | + | + | + |
| Matthiola incana (L.) R. Br. subsp. incana | Brassicaceae | N | ME | C | + | + | . |
| Matthiola lunata DC. | Brassicaceae | C | ME | R | + | . | . |
| Medicago arborea L. | Fabaceae | C | ME | L | . | + | . |
| Medicago falcata L. | Fabaceae | N | ME | L | + | + | . |
| Medicago intertexta (L.) Mill. | Fabaceae | C | ME | V | . | ? | . |
| Medicago sativa L. subsp. sativa | Fabaceae | N | Cult | C | + | + | . |
| Medicago × varia Martyn | Fabaceae | C | Hyb | R | . | + | . |
| Melia azedarach L. | Meliaceae | C | AS | S | . | + | + |
| Melica chilensis J. Presl | Poaceae | N | SA | R | . | . | + |
| Melissa officinalis L. | Lamiaceae | N | ME | C | + | + | . |
| Melophis arabica (L.) Raf. | Asparagaceae | C | ME | S | + | + | . |
| Mentha spicata L. | Lamiaceae | N | WP | S | + | + | . |
| Mentha × gracilis Sole | Lamiaceae | C | Cult | R | . | + | . |
| Mentha × piperita L. | Lamiaceae | N | Cult | R | + | + | . |
| Mercurialis annua L. | Euphorbiaceae | N | WP | C | + | + | . |
| Mesembryanthemum cordifolium L. | Aizoaceae | N | CA | L | . | + | . |
| Mesembryanthemum crystallinum L. | Aizoaceae | C | CA | R | . | + | . |
| Mesembryanthemum lacinifolium (L. Bolus) Klak | Aizoaceae | C | CA | R | . | + | . |
| Mesembryanthemum cordifolium L. × M. hauckelianum A. Berger | Aizoaceae | N | Cult | L | . | + | + |
| Mesopis germanica L. | Rosaceae | N | WP | L | + | + | . |
| Minuartia montana L. subsp. montana | Caryophyllaceae | C | ME | V | . | ? | + |
| Mirabilis jalapa L. | Nyctaginaceae | N | SA | C | + | + | . |
| Moricandia moricandoides (Boiss.) Heywood subsp. moricandoides | Brassicaceae | C | ME | R | . | + | . |
| Morus alba L. | Moraceae | N | AS | L | + | + | . |
| Morus kagayamae Koidz. | Moraceae | C | AS | R | . | + | . |
| Morus nigra L. | Moraceae | C | AS | S | . | + | + |
| Muehlenbeckia sagittifolia (Ortega) Meisn. | Polygonaceae | N | SA | R | . | + | . |
| Muhlenbergia schreberi J. F. Gmel. | Poaceae | N | NA | R | . | + | . |
| Muscaria armeniacum Baker | Asparagaceae | C | ME | R | . | + | . |
| Muscaria latifolium J. Kink | Asparagaceae | C | ME | R | . | + | . |
| Myagrum perfoliatum L. | Brassicaceae | C | ME | V | . | + | . |
| Myoporum laetum G. Forst. | Scrophulariaceae | N | AU | L | . | + | . |
| Myriophyllum aquaticum (Vell.) Verde. | Haloragaceae | N | SA | R | . | + | . |
| Najas gracillima (Engelm.) Magnus | Hydrocharitaceae | N | AS | R | . | + | . |
| Narcissus jonquilla L. | Amarillidaceae | C | ME | R | . | + | . |
| Narcissus × cyclazetta Chater & Stace | Amarillidaceae | C | Cult | R | . | + | . |
| Narcissus × medioluteus Mill. | Amarillidaceae | C | Cult | R | . | + | . |
| Nassea neesiana (Trin. & Rupp.) Barkworth | Poaceae | N | SA | C | . | + | . |
| Nassea tenissima (Trin.) Barkworth | Poaceae | N | NA, SA | R | . | + | . |
| Nassea trichotoma (Nees) Arechav. | Poaceae | N | SA | L | . | + | . |
| Nemophila menziesii Hook. & Arn. | Boraginaceae | C | NA | R | . | + | . |
| Nepeta cataria L. | Lamiaceae | N | ME | C | + | + | . |
| Nepeta racemosa Lam. | Lamiaceae | N | WP | R | . | + | . |
| Nephrolepis cordifolia (L.) C. Presl | Nephrolepisidaceae | N | AS, AU, AS, SA | R | . | + | . |
| Neslia paniculata (L.) Dess. subsp. thracica (Velen.) Bornm. | Brassicaceae | N | ME | C | + | + | + |
| Nicandra physalodes (L.) Gaertn. | Solanaceae | C | SA | R | . | + | . |
| Nicotiana glauca Graham | Solanaceae | N | SA | L | + | + | . |
| Nicotiana longiflora Cav. | Solanaceae | C | SA | R | . | + | . |
| Nicotiana rustica L. | Solanaceae | C | NA | R | + | + | . |
| Nicotiana tabacum L. | Solanaceae | C | Cult | R | . | + | . |
| Nonea lutea (Desr.) DC. | Boraginaceae | C | WP | R | . | + | . |
| Nothocordum gracile (Dryand.) Stearn | Amarillidaceae | N | SA | C | + | + | . |
| Nymphaceae marlattiana Lat.-Marl. | Nymphaceae | N | Hyb | R | . | + | . |
| Oenanthe crocata L. | Apiaceae | C | WP | R | . | + | . |
| Oenothera biennis L. | Onagraceae | I | NA | C | + | + | . |
| Oenothera fallax Rennet | Onagraceae | I | Hyb | L | . | + | . |
| Oenothera indicara Cambess. | Onagraceae | N | SA | R | . | + | . |
| Oenothera lacinjati Hill | Onagraceae | C | NA | R | . | + | . |
| Oenothera lindheimeri (Engelm. & A. Gray) W.L. Wagner & Hoch | Onagraceae | C | NA | R | . | + | . |
| Scientific name | Family | Nat. D. | Origin | Abun. | Regional Distribution |
|-----------------|--------|---------|--------|-------|-----------------------|
| Oenothera oehikersi Kappus | Onagraceae | I | Hyb | L | + . + |
| Oenothera rosea Aiton | Onagraceae | N | SA | C | + + + |
| Oenothera speciosa Nutt. | Onagraceae | N | NA | R | + . + |
| Oenothera glazioviana Micheli | Onagraceae | I | Hyb | C | + + + |
| Onobrychis vicifolia Scop. | Fabaceae | N | WP | C | + + + |
| Ononis mitissima L. | Fabaceae | N | ME | R | . . . |
| Opilismenas undatulifolius (Ard.) Roem. & Schult. | Poaceae | N | WP, AS | R | . . + |
| Opuntia aurantia Lindl. | Cactaceae | I | SA | S | . . + |
| Opuntia chlorotica Engelm. & J.M. Bigelow | Cactaceae | C | NA | R | . . + |
| Opuntia dejecta Salm-Dyck | Cactaceae | C | SA | R | . + + |
| Opuntia elata Salm-Dyck | Cactaceae | N | SA | R | . + + |
| Opuntia elatior Mill. | Cactaceae | C | SA | R | . . + |
| Opuntia engelmannii Salm-Dyck subsp. engelmannii | Cactaceae | N | NA | S | + + + |
| Opuntia engelmannii Salm-Dyck subsp. lindheimeri (Engelm.) U. Guzman & Mandujano | Cactaceae | N | NA | S | + + + |

| Scientific name | Family | Nat. D. | Origin | Abun. | Regional Distribution |
|-----------------|--------|---------|--------|-------|-----------------------|
| Opuntia fucis-indica (L.) Mill. | Cactaceae | I | NA | C | + + + |
| Opuntia leucotricha DC. | Cactaceae | C | NA | S | . . + |
| Opuntia mesacantha Raf. subsp. mesacantha | Cactaceae | I | NA | L | + + + |
| Opuntia microdasya (Lehm.) Pfeiff. | Cactaceae | N | NA | S | . + + |
| Opuntia monacantha Haw. | Cactaceae | N | SA | R | . . + |
| Opuntia phaeacantha Engelm. | Cactaceae | I | NA | R | . + + |
| Opuntia puberula Pfeiff. | Cactaceae | N | NA | R | . . + |
| Opuntia rohasta J.C. Wendl | Cactaceae | C | NA | R | . . + |
| Opuntia scheeri F.A.C. Weber | Cactaceae | N | NA | S | + + + |
| Opuntia stricta (Haw.) Haw. | Cactaceae | I | NA | L | . . + |
| Opuntia tomentosa Salm-Dyck | Cactaceae | N | NA | R | . . + |
| Opuntia tortispina Engelm. & J.M. Bigelow | Cactaceae | N | NA | R | . + . |
| Opuntia tomentosa Salm-Dyck × O. fucis-indica (L.) Mill. | Cactaceae | N | Cult | R | . . + |
| Orbea variegata (L.) Haw. | Apocynaceae | C | CA | R | . . + |
| Origanum majorana L. | Lamiaceae | C | ME | R | . . + |
| Ornithopus sativus Brot. | Fabaceae | C | ME | V | ? ? ? |
| Oryza sativa L | Poaceae | C | AS | S | . . + |
| Osleospermum ecklonis (DC.) Norl. | Asteraceae | C | CA | S | . . + |
| Oxalis articulata Savigny | Oxalidaceae | N | SA | C | + + + |
| Oxalis bowiei G. Don | Oxalidaceae | C | CA | R | . . + |
| Oxalis corniculata L. | Oxalidaceae | N | AS | C | + + + |
| Oxalis debilis Kunth | Oxalidaceae | N | SA | C | + + + |
| Oxalis dilleni Jacq. | Oxalidaceae | N | NA | R | . + + |
| Oxalis latifolia Kunth | Oxalidaceae | N | NA, SA | C | + + + |
| Oxalis per-caprae L. | Oxalidaceae | N | CA | C | . . + |
| Oxalis vallicola (Rose) R. Kunth | Oxalidaceae | N | NA | C | . . + |
| Pallenis maritima (L.) Greuter | Asteraceae | N | ME | R | . . + |
| Panicum antidotale Retz. | Poaceae | C | AS | S | + + + |
| Panicum capillare L. subsp. capillare | Poaceae | N | NA | C | + + + |
| Panicum capillare L. subsp. hillmani (Chase) Freckmann & Lelong | Poaceae | C | NA | R | . . + |
| Panicum dichotomiflorum Michx. | Poaceae | N | NA | C | . + + |
| Panicum maximum Jacq. | Poaceae | N | AF | R | . . + |
| Panicum miliaceum L. subsp. miliaceum | Poaceae | N | Cult | C | + + + |
| Panicum philadelphicum Trin. | Poaceae | C | NA | R | . + . |
| Papaver somniferum L. subsp. somniferum | Papaveraceae | C | Cult | S | + + + |
| Paraserianthes lophanta (Wild.) I.C. Niels. | Fabaceae | N | AU | R | . . + |
| Parkinsonia aculeata L. | Fabaceae | N | SA | S | . . + |
| Parthenocissus inserta (A. Kern.) Fritsch | Vitaceae | I | NA | C | + + + |
| Parthenocissus tricuspidata (Siebold & Zucc.) Planch. | Vitaceae | C | NA | R | . . + |
| Passalora glauca Ortega | Asteraceae | C | SA | R | . . + |
| Paspalum dilatatum Poir. | Poaceae | I | SA | C | . + + |
| Paspalum distichum L. subsp. distichum | Poaceae | I | SA | C | + + + |
| Paspalum saurae (Parodi) Parodi | Poaceae | N | SA | R | + . + |
| Paspalum vaginatum Sw. | Poaceae | I | SA | C | . . + |
| Passiflora caerulea L. | Passifloraceae | N | SA | S | . . + |
| Passiflora ×belotii Pépin | Passifloraceae | C | Cult | R | . . + |
| Paulownia tomentosa (Thunb.) Steud. | Paulowniaceae | C | AS | R | + . + |
| Scientific name                          | Family              | Nat. D. | Origin | Abun. | Regional Distribution |
|-----------------------------------------|---------------------|---------|--------|-------|-----------------------|
| *Pelargonium grandiflorum* Andrews      | Geraniaceae         | C       | CA     | R     | .                     | +                     |
| *Pelargonium pelatum* (L.) L’Hér.       | Geraniaceae         | C       | CA     | S     | .                     | +                     |
| *Pelargonium zonale* (L.) L’Hér.        | Geraniaceae         | C       | CA     | S     | .                     | +                     |
| *Pelargonium ×hybrida* (L.) L’Hér.      | Geraniaceae         | C       | CA     | R     | .                     | +                     |
| *Perilla frutescens* (L.) Britton       | Lamiaceae           | C       | AS     | R     | .                     | +                     |
| *Periplaca graeca* L.                   | Arecaceae           | I       | ME     | L     | .                     | +                     |
| *Persicaria capitata* (D. Don) H. Gross | Polygonaceae        | C       | AS     | R     | .                     | +                     |
| *Persicaria orientalis* (L.) Spach      | Polygonaceae        | C       | AS     | S     | .                     | +                     |
| *Petaiites pyrenacicus* (L.) G. López  | Asteraceae          | N       | ME     | C     | +                     | +                     |
| *Petroselinum crispum* (Mill.) Fuss.   | Apiaceae            | N       | ME     | C     | +                     | +                     |
| *Petunia ×hybrida* E. Vilm.             | Solanaceae          | C       | Cult   | S     | +                     | +                     |
| *Phacelia tanacetifolia* Benth.         | Boraginaceae        | C       | NA     | S     | .                     | +                     |
| *Phalaris canariensis* L.               | Poaceae             | N       | ME     | C     | +                     | +                     |
| *Phalaris stenoptera* Hack.             | Poaceae             | N       | ME     | L     | .                     | +                     |
| *Phaseolus vulgaris* L.                 | Fabaceae            | C       | SA     | S     | .                     | +                     |
| *Phedimus spurius* (M. Bieb.) ’t Hart  | Crassulaceae        | C       | AS     | R     | .                     | .                     |
| *Phelipanche ramosa* (L.) Pneml          | Orobanchaceae       | C       | WP     | S     | .                     | +                     |
| *Philadelphus coronarius* L.            | Hydrangeaceae       | C       | WP     | S     | .                     | +                     |
| *Philomis fruticosa* L.                 | Lamiaceae           | C       | ME     | R     | .                     | +                     |
| *Philomis purpurea* L.                  | Lamiaceae           | C       | ME     | R     | .                     | +                     |
| *Phoenix canariensis* Chabaud           | Arecaceae           | C       | AF     | S     | .                     | +                     |
| *Phoenix dactyliftera* L.               | Arecaceae           | C       | ME     | S     | .                     | +                     |
| *Photinia serratifolia* (Desf.) Kalkman | Rosaceae            | C       | AS     | V     | .                     | +                     |
| *Phyla canescens* (Kenth) Greene        | Verbenaceae         | N       | SA     | L     | .                     | +                     |
| *Phyllistachys aurea* Rivière & C. Rivière | Poaceae         | N       | AS     | S     | .                     | +                     |
| *Phyllistachys bambusoides* Siebold & Zucc. | Poaceae         | N       | AS     | R     | .                     | +                     |
| *Phyllistachys flexuosa* Rivière & C. Rivière | Poaceae         | N       | AS     | R     | .                     | +                     |
| *Physois umbellata* (Cav.) Kearney     | Malvaceae           | C       | NA     | R     | .                     | +                     |
| *Physalis tiocarpa* Hornem.             | Solanaceae          | C       | NA     | S     | .                     | +                     |
| *Physalis peruviana* L.                 | Solanaceae          | C       | SA     | S     | .                     | +                     |
| *Physalis philadelphica* Lam.           | Solanaceae          | C       | NA     | R     | .                     | +                     |
| *Physalis riscosa* L.                   | Solanaceae          | C       | SA     | R     | .                     | +                     |
| *Phytolacca americana* L.               | Phytolaccaceae      | I       | NA     | C     | +                     | +                     |
| *Phytolacca dioica* L.                  | Phytolaccaceae      | C       | SA     | R     | .                     | +                     |
| *Picea abies* (L.) H. Karst.            | Pinaceae            | N       | WP     | S     | .                     | +                     |
| *Pimpinella anisum* L.                  | Apiaceae            | C       | ME     | V     | .                     | +                     |
| *Pinus brutia* Ten.                     | Pinaceae            | C       | ME     | R     | .                     | +                     |
| *Pinus canariensis* C. Sm.              | Pinaceae            | C       | ME     | R     | .                     | +                     |
| *Pinus nigra* J.F. Arnold subsp. nigra | Pinaceae            | C       | WP     | C     | +                     | +                     |
| *Pinus pinus* L.                        | Pinaceae            | I       | ME     | C     | +                     | +                     |
| *Pinus ponderosa* Douglas subsp. ponderosa | Pinaceae          | C       | NA     | R     | .                     | +                     |
| *Pinus radiata* D. Don                  | Pinaceae            | C       | NA     | C     | +                     | +                     |
| *Pinus strobus* L.                      | Pinaceae            | C       | NA     | R     | .                     | +                     |
| *Pinus wallichiana* A.B. Jacks.         | Pinaceae            | C       | AS     | R     | .                     | +                     |
| *Pittosporum heterophyllum* Franch.     | Pittosporaceae      | C       | AS     | R     | .                     | +                     |
| *Pittosporum tobira* (Thunb.) W.T. Aiton | Pittosporaceae      | C       | AS     | L     | .                     | +                     |
| *Platanus orientalis* L. var. acerifolia Aiton | Platanaceae      | N       | ME     | S     | +                     | +                     |
| *Platylepalus orientalis* (L.) Franco   | Cupressaceae        | C       | AS     | S     | .                     | +                     |
| *Plumbago auriculata* Lam.              | Plumbaginaceae      | N       | CA     | S     | .                     | +                     |
| *Poa pratensis* L. subsp. irrigata* (Lindm.) H. Lindb. | Poaceae          | N       | WP     | R     | .                     | +                     |
| *Podranea ricasoliana* (Tanfani) Sprague | Bignoniaceae       | C       | CA     | R     | .                     | +                     |
| *Polygala myrtifolia* L.                | Polygalaceae        | C       | CA     | R     | .                     | +                     |
| *Pontederia cordata* L.                 | Pontederiaceae      | C       | SA     | R     | .                     | +                     |
| *Populus balsamifera* L.                | Salicaceae          | C       | NA     | R     | .                     | +                     |
| *Populus deltoides* Marshall            | Salicaceae          | C       | NA     | S     | +                     | +                     |
| *Populus trichocarpa* Torrey & A. Gray  | Salicaceae          | C       | NA     | R     | .                     | +                     |
| *Populus ×canadensis* Moench            | Salicaceae          | C       | Cult   | C     | +                     | +                     |
| *Populus ×canescens* (Aiton) Sm.         | Salicaceae          | C       | Hyb    | R     | +                     | +                     |
| *Poporhyllum ruderale* (Jacq.) Cass.    | Asteraceae          | C       | NA, SA | R     | .                     | +                     |
| *Portulaca grandiflora* Hook.           | Portulacaceae       | C       | SA     | S     | .                     | +                     |
| *Portulacaria afra* Jacq.               | Portulacaceae       | C       | CA     | R     | .                     | +                     |
| *Potentilla indica* (Andrews) Th. Wolf   | Rosaceae            | C       | AS     | R     | .                     | +                     |
| *Potentilla norvegica* L.               | Rosaceae            | N       | WP     | R     | .                     | +                     |
| Scientific name               | Family             | Nat. D. | Origin | Abun. | Regional Distribution |
|------------------------------|--------------------|---------|--------|-------|-----------------------|
| **Propoosecia louisiana** (Mill.) Thell. | Martyniaceae | C       | NA     | R     | +                     |
| Prunus armeniaca L.          | Rosaceae           | C       | AS     | S     | +                     |
| Prunus cerasifera Ehrh.       | Rosaceae           | I       | WP     | L     | +                     |
| Prunus cerasus L.             | Rosaceae           | C       | WP     | R     | +                     |
| Prunus domestica L.           | Rosaceae           | C       | WP     | L     | +                     |
| Prunus dulcis (Mill.) D.A. Webb | Rosaceae         | C       | WP     | S     | +                     |
| Prunus insititia L.           | Rosaceae           | N       | WP     | R     | +                     |
| Prunus laurocerasus L.        | Rosaceae           | N       | WP     | R     | +                     |
| Prunus persica (L.) Batsch.   | Rosaceae           | C       | AS     | S     | +                     |
| Prunus virginiana L.          | Rosaceae           | N       | NA     | R     | +                     |
| Pseudosasa japonica (Steed.) Nakai | Poaceae         | C       | AS     | R     | +                     |
| Pseudotsuga menziesii (Mirb.) Franco | Pinaceae   | C       | NA     | S     | +                     |
| Ptelea trifoliata L.          | Rutaceae           | C       | NA     | R     | +                     |
| Pteris cretica L.             | Pteridaceae        | C       | ME, AS, AU | V   | +                     |
| Pteris vittata L.             | Pteridaceae        | C       | ME, AS, AU | R   | +                     |
| Puccinellia distans (Jacq.) Parl. subsp. distans | Poaceae   | C       | WP     | R     | +                     |
| Punica granatum L.            | Lythraceae         | N       | WP     | C     | +                     |
| Pyracantha angustifolia (Franch.) C.K. Schneid. | Rosaceae      | N       | AS     | L     | +                     |
| Pyracantha coccinea M. Roem.  | Rosaceae           | N       | WP     | L     | +                     |
| Pyracantha fortuneana (Maxim.) H.L. Li | Rosaceae       | N       | AS     | L     | +                     |
| Pyrus communis L.             | Rosaceae           | N       | WP     | L     | +                     |
| Quercus rubra L.              | Fagaceae           | C       | NA     | R     | +                     |
| Raphanus raphanistrum L. subsp. sativus (L.) Domin | Brassicaceae | C       | Cult   | R     | +                     |
| Reseda odorata L.             | Resedaceae         | C       | ME     | V     | +                     |
| Retama monosperma (L.) Boiss. | Fabaceae           | N       | ME     | S     | +                     |
| Rhaponticum repens (L.) Hidalgo | Asteraceae       | N       | WP     | R     | +                     |
| Rhodalsine geniculata (Poir.) F.N. Williams | Caryophyllaceae | C       | ME     | V     | +                     |
| Rhus coriaria L.              | Anacardiaceae      | C       | ME     | S     | +                     |
| Rhus typhina L.               | Anacardiaceae      | N       | NA     | R     | +                     |
| Ribes rubrum L.               | Grossulariaceae    | C       | WP     | R     | +                     |
| Ricinus communis L.           | Euphorbiaceae      | N       | AF     | C     | +                     |
| Ridolphia segetum (L.) Moris  | Apiiaceae          | N       | ME     | S     | +                     |
| Robinia pseudoacacia L.       | Fabaceae           | I       | NA     | C     | +                     |
| Rosa gallica L.               | Rosaceae           | N       | WP     | S     | +                     |
| Rosa moschata Herrm.          | Rosaceae           | N       | WP     | L     | +                     |
| Rosa multiflora Thunb.        | Rosaceae           | N       | AS     | R     | +                     |
| Rosa ×scholarum L.            | Rosaceae           | C       | Hyb    | R     | +                     |
| Rosa ×suarezii L.             | Rosaceae           | C       | Hyb    | R     | +                     |
| Rubia tinctorum L.            | Rubiaceae          | I       | WP     | L     | +                     |
| Rudbeckia hirta L.            | Asteraceae         | C       | NA     | R     | +                     |
| Rudbeckia laciniata L.        | Asteraceae         | C       | NA     | R     | +                     |
| Rumex crispatus DC.           | Polygonaceae       | N       | ME     | L     | +                     |
| Rumex patientia L.            | Polygonaceae       | N       | WP     | L     | +                     |
| Ruschia caroli (L. Bolus) Schwantes | Aizoaceae     | N       | CA     | R     | +                     |
| Ruscus ×microglossus Bertol.  | Asparagaceae       | N       | Cult   | R     | +                     |
| Ruta chalepensis L.           | Rutaceae           | C       | ME     | L     | +                     |
| Ruta graveolens L.            | Rutaceae           | C       | ME     | R     | +                     |
| Sagittaria montevidensis Cham. & Schltdl. subsp. calycina (Engelm.) Bogin | Alismataceae | N       | SA     | R     | +                     |
| Salix babylonica L.           | Salicaceae         | C       | AS     | S     | +                     |
| Salix pentandra L.            | Salicaceae         | C       | WP     | R     | +                     |
| Salix viminalis L.            | Salicaceae         | C       | WP     | R     | +                     |
| Salix ×fragilis L.            | Salicaceae         | N       | Cult   | C     | +                     |
| Salix ×vibra Huds.            | Salicaceae         | C       | Hyb    | R     | +                     |
| Salix ×spalacra Simon.        | Salicaceae         | C       | Hyb    | S     | +                     |
| Salmipontia salmiana (Pfeiff.) Guiggi | Cactaceae | N       | SA     | R     | +                     |
| Salpichroa origanifolia (Lam.) Baill. | Solanaceae | N       | SA     | S     | +                     |
| Salvia fruticosa Mill.        | Lamiaceae          | C       | ME     | R     | +                     |
| Salvia hispánica L.           | Lamiaceae          | C       | NA     | R     | +                     |
| Salvia lavandulifolia Vahl subsp. gallica W. Lippert | Lamiaceae | C       | ME     | R     | +                     |
| Salvia leucantha Cav.          | Lamiaceae          | C       | NA     | R     | +                     |
| Scientific name                        | Family         | Nat. D. | Origin | Abun. | Regional Distribution |
|---------------------------------------|----------------|---------|--------|-------|-----------------------|
| Salvia microphylla Kunth              | Lamiaceae      | C       | NA     | S     | + + +                 |
| Salvia officinalis L. subsp. officinalis | Lamiaceae      | N       | ME     | S     | + + +                 |
| Salvia sclarea L.                     | Lamiaceae      | N       | ME     | L     | + + +                 |
| Salvia splendens Roem. & Schult.      | Lamiaceae      | C       | SA     | V     | . . +                 |
| Salvia sylvestris L.                  | Lamiaceae      | N       | WP     | R     | + . .                 |
| Salvia verticillata L.                | Lamiaceae      | C       | WP     | R     | + . +                 |
| Santolina chamaecyparissus L.         | Asteraceae     | C       | ME     | S     | . . +                 |
| Satureja hortensis L.                 | Lamiaceae      | C       | ME     | S     | . . +                 |
| Saxifraga stolonifera Curtis          | Saxifragaceae  | N       | AS     | R     | . . +                 |
| Schinus molle L.                      | Anacardiaceae  | N       | SA     | R     | . . +                 |
| Schkuhria pinnata (Lam.) Thell.       | Asteraceae     | C       | SA     | R     | . . +                 |
| Scilla hyacinthoides L.               | Asparagaceae   | N       | ME     | R     | . + +                 |
| Scilla luciliae (Boiss.) Speta        | Asparagaceae   | N       | WP     | R     | + . .                 |
| Scilla persiaviana L.                 | Asparagaceae   | C       | ME     | R     | . . +                 |
| Secale cereale L. subsp. cereale      | Poaceae        | N       | WP     | R     | + + +                 |
| Sedum palmeri S. Watson               | Crassulaceae   | C       | NA     | R     | . + +                 |
| Sedum praetatum A. DC.                | Crassulaceae   | N       | NA     | S     | + + +                 |
| Sedum rubrotinctum R.T. Clausen       | Crassulaceae   | C       | Cult   | R     | + . +                 |
| Sedum sarmentosum Bunge               | Crassulaceae   | N       | AS     | R     | + . .                 |
| Sedum spathulifolium Hook.            | Crassulaceae   | C       | NA     | R     | . . +                 |
| Selaginella kraussiana (L.) Spring.   | Selaginellaceae| C       | AF     | R     | . . +                 |
| Senecio angulatus L. f.               | Asteraceae     | N       | CA     | C     | . . +                 |
| Senecio crassissimus Humbert          | Asteraceae     | C       | AF     | R     | . . +                 |
| Senecio deltoides Less.               | Asteraceae     | N       | CA     | R     | . . +                 |
| Senecio inaequidens DC.               | Asteraceae     | I       | CA     | C     | + + +                 |
| Senecio pseudolongifolius J. Calvo    | Asteraceae     | N       | CA     | R     | . . +                 |
| Senecio pterophorus DC.               | Asteraceae     | I       | CA     | C     | . + +                 |
| Senecio tamooides DC.                 | Asteraceae     | N       | CA     | R     | . . +                 |
| Senna corymbosa (Lam.) H.S. Irwin & Barneby | Fabaceae   | C       | SA     | R     | . . +                 |
| Senna obtusifolia (L.) H.S. Irwin & Barneby | Fabaceae   | C       | SA     | R     | . . +                 |
| Sesamum indicum L.                    | Pedaliaceae    | C       | Cult   | R     | . . +                 |
| Sisymbrium herbaeae (Mill.) McVaugh   | Fabaceae       | C       | NA     | R     | . . +                 |
| Setaria faberi Herrm.                 | Poaceae        | C       | AS     | R     | . + +                 |
| Setaria italica (L.) F. Beauv. subsp. italica (L.) Beauv. | Poaceae | N       | Cult   | S     | + + +                 |
| Setaria parviflora (Poir.) Kerguélén  | Poaceae        | N       | SA     | C     | . + +                 |
| Silicos angulatus L.                  | Cucurbitaceae  | I       | NA     | L     | + + +                 |
| Sida rhombifolia L.                   | Malvaceae      | C       | SA     | R     | . . +                 |
| Sida spinosa L.                       | Malvaceae      | N       | AS, AF | R     | . + +                 |
| Silene armeria L.                     | Caryophyllaceae| C       | WP     | R     | . . +                 |
| Silene coronaria (L.) Clairv.         | Caryophyllaceae| I       | WP     | L     | + + +                 |
| Silene cretica L.                     | Caryophyllaceae| C       | ME     | R     | . . +                 |
| Silene dichotoma Ehrh. subsp. dichotoma | Caryophyllaceae| C       | WP     | V     | + . .                 |
| Silene noctiflora L.                  | Caryophyllaceae| I       | WP     | L     | + . .                 |
| Silene pendula L.                     | Caryophyllaceae| C       | ME     | R     | . + +                 |
| Silene pseudosatencion Desf.          | Caryophyllaceae| N       | ME     | S     | . + +                 |
| Silene stricta L.                     | Caryophyllaceae| C       | ME     | R     | . . +                 |
| Silene viscaria (L.) Jess.             | Caryophyllaceae| C       | WP     | R     | + . +                 |
| Sinapis alba L. subsp. alba           | Brassicaceae   | C       | Cult   | R     | . + +                 |
| Sinapis alba L. subsp. maineri (H. Lindb.) Maire | Brassicaceae   | N       | ME     | C     | . + +                 |
| Sinapis arvensis L. subsp. arvensis   | Brassicaceae   | N       | ME     | C     | + + +                 |
| Sinapis flexuosa Poir.                | Brassicaceae   | C       | ME     | V     | . . +                 |
| Siphonostylis unguicularis (Poir.) Wern. Schulze | Iridaceae | N       | ME     | R     | . . +                 |
| Styrax balsamum altissimum L.         | Brassicaceae   | N       | NA     | S     | . + +                 |
| Styrax chinensis platense L.M. Johnst. | Iridaceae      | N       | SA     | R     | . + +                 |
| Solanum angustifolium (Sessé & Moc.) P.S. Green | Solanaceae | C       | SA     | R     | . . +                 |
| Solanum bonariense L.                 | Solanaceae     | N       | SA     | R     | . . +                 |
| Solanum carolinense L.                | Solanaceae     | N       | NA     | R     | . . +                 |
| Solanum chenopodioides Lam.           | Solanaceae     | N       | SA     | C     | . + +                 |
| Solanum chrysotrichum Schltdl.        | Solanaceae     | C       | SA     | R     | . . +                 |
| Solanum elaeagnifolium Cav.           | Solanaceae     | C       | SA     | L     | . + +                 |
| Solanum lacinatum Aiton               | Solanaceae     | C       | AU     | R     | . . +                 |
| Solanum laxum Spreng.                 | Solanaceae     | C       | SA     | R     | . . +                 |
| Scientific name | Family | Nat. D. | Origin | Abun. | Regional Distribution |
|-----------------|--------|---------|--------|-------|-----------------------|
| Solanum linnaei | Solanaceae | C | CA | CA | L | + |
| Solanum lycopersicum L. | Solanaceae | N | SA | C | + | + |
| Solanum mauritianum Scop. | Solanaceae | N | SA | R | + | + |
| Solanum nitidibaccatum Bitter | Solanaceae | N | SA | R | + | + |
| Solanum pseudocapsicum L. | Solanaceae | C | SA | S | + | + |
| Solanum rostratum Dunal | Solanaceae | C | NA | S | + | + |
| Solanum sisybriifolium Lam. | Solanaceae | C | SA | R | + | + |
| Solanum tuberosum L. | Solanaceae | C | SA | C | + | + |
| Soleirolia soleirolii (Req.) Dandy | Urticaceae | N | ME | S | + | + |
| Solidago altissima L. subsp. altissima | Asteraceae | I | NA | L | + | + |
| Solidago canadensis L. | Asteraceae | N | NA | C | + | + |
| Solidago gigantea Aiton | Asteraceae | N | NA | R | + | + |
| Soliva sessilis Ruiz & Pav. | Asteraceae | N | SA | R | + | + |
| Sorbaria tomentosa (Lindl.) Rehder | Rosaceae | C | AS | R | + | + |
| Sorghum bicolor (L.) Moench | Poaceae | C | Cult | S | + | + |
| Sorghum halepense (L.) Pers. | Poaceae | I | ME | C | + | + |
| Spinacia oleracea L. | Amaranthaceae | C | Cult | S | + | + |
| Spirea cantoniensis Loour. | Rosaceae | C | AS | R | + | + |
| Spirea ×vanhouttei (Briq) Carrière | Rosaceae | C | Cult | R | + | + |
| Sporobolus cryptandrus (Torr.) A. Gray | Poaceae | C | NA | R | + | + |
| Sporobolus indicus (L.) R. Br. | Poaceae | I | SA | C | + | + |
| Sporobolus pusillus (Roth) P.M. Peterson & Saarela | Poaceae | I | NA | L | + | + |
| Sporobolus vaginiflorus (Gray) Alph. Wood | Poaceae | N | NA | R | + | + |
| Stachys byzantina K. Koch | Lamiaceae | C | WP | S | + | + |
| Stenotaphrum secundatum (Walter) Kuntze | Poaceae | N | SA | S | + | + |
| Sternbergia lutea (L.) Spreng. | Amaryllidaceae | N | ME | S | + | + |
| Styrpholobium japonicum (L.) Schott | Fabaceae | C | AS | R | + | + |
| Symphoricarpos albus (L.) S.F. Blake | Caprifoliaceae | N | NA | R | + | + |
| Symphyotrichum lanceolatum (Willd.) G.L. Nesom | Asteraceae | N | NA | L | + | + |
| Symphyotrichum novae-angliae (L.) G.L. Nesom | Asteraceae | C | NA | R | + | + |
| Symphyotrichum pilosum (Willd.) G.L. Nesom | Asteraceae | I | NA | C | + | + |
| Symphyotrichum squamatum (Spreng.) G.L. Nesom | Asteraceae | I | NA | C | + | + |
| Symphyotrichum ×salignum (Willd.) G.L. Nesom | Asteraceae | N | Cult | S | + | + |
| Symphytum officinale L. | Boraginaceae | N | WP | R | + | + |
| Symphytum ×uplandicum Nyman | Boraginaceae | I | Hyb | L | + | + |
| Syringa vulgaris L. | Oleaceae | N | ME | C | + | + |
| Tagetes minuta L. | Asteraceae | N | SA | C | + | + |
| Tagetes patula L. | Asteraceae | C | SA | S | + | + |
| Tagetes terniflora Kunth | Asteraceae | C | SA | V | + | + |
| Tamarix parviflora DC. | Tamaricaceae | C | ME | S | + | + |
| Tamarix ramosissima Ledeb. | Tamaricaceae | C | WP | R | + | + |
| Tanacetum balsamita L. | Asteraceae | C | WP | R | + | + |
| Tanacetum cinerariifolium (Trevir.) Sch. Bip. | Asteraceae | I | ME | L | + | + |
| Tanacetum parthenium (L.) Sch. Bip. | Asteraceae | N | ME | C | + | + |
| Tara spinosa (Feuillée) Britton & Rose | Fabaceae | C | SA | R | + | + |
| Tecoma capensis (Thunb.) Lindl. | Bignoniaceae | C | CA | R | + | + |
| Tenueria fruticans L. | Lamiaceae | C | ME | R | + | + |
| Thlaspi arvense L. | Brassicaceae | N | WP | C | + | + |
| Thymus mastichina (L.) subsp. mastichina | Lamiaceae | C | ME | R | + | + |
| Tilia tomentosae Moench | Malvaceae | C | WP | R | + | + |
| Tipuana tipu (Benth.) Kuntze | Fabaceae | C | SA | R | + | + |
| Trachycarpus fortunei (Hook.) H. Wendl. | Arecales | N | AS | R | + | + |
| Tradescantia fluminensis Vell. | Commelinaceae | I | SA | L | + | + |
| Tradescantia pallida (Rose) D.R. Hunt | Commelinaceae | C | SA | R | + | + |
| Tradescantia sillamontana Matuda | Commelinaceae | C | NA | R | + | + |
| Tradescantia zebrina Bosse | Commelinaceae | C | SA | R | + | + |
| Tragopogon porroflorus L. subsp. eriospermus (Ten.) Greuter | Asteraceae | C | Cult | R | + | + |
| Tribulus terrestris L. | Zygophyllaceae | N | ME | C | + | + |
| Trichloris crinita (Lag.) Parodi | Poaceae | N | NA, SA | R | + | + |
| Trichocereus macrogonus (Salm-Dyck) Riccob. | Cactaceae | C | SA | R | + | + |
| Trichocereus schickendantzii (F.A.C. Weber) Britton & Rose | Cactaceae | C | SA | R | + | + |
| Trichocereus spachianus (L.) Riccob. | Cactaceae | C | SA | R | + | + |
| Trichocereus taquimbalensis Cárdenas | Cactaceae | C | SA | R | + | + |
| Scientific name | Family       | Nat. D. | Origin | Abun. | Regional Distribution |
|-----------------|--------------|---------|--------|-------|-----------------------|
| Tricorys hirta  | Liliaceae    | C       | AS     | R     |                      |
| Trifolium alexandrinum | Fabaceae | C     | Cult | R   |                      |
| Trifolium incarnatum subsp. incarnatum | Fabaceae | N | WP | L |                      |
| Trifolium vesiculosum Savi | Fabaceae | C | ME | R |                      |
| Trigonella foemum-graecum L. | Fabaceae | C | ME | S |                      |
| Trigonella procumbens (Besser) Rehb. | Fabaceae | C | ME | V |                      |
| Triticum uniflorum (Lindl.) Traub. | Amaryllidaceae | C | SA | R |                      |
| Triticum aestivum | Poaceae | C | Cult | S |                      |
| Triticum durum (Desf.) Husn. | Poaceae | C | Cult | S |                      |
| Triticum turgidum subsp. durum | Poaceae | C | Cult | R |                      |
| Tropaeolum majus | Tropaeolaceae | N | SA | S |                      |
| Tulipa chaladisi DC. | Liliaceae | N | ME | V |                      |
| Tulipa fosteriana | Liliaceae | C | WP | R |                      |
| Tulipa gesneriana | Liliaceae | C | WP | R |                      |
| Ulex europaeus subsp. europaeus | Fabaceae | N | WP | R |                      |
| Ulmus laevis L. | Ulmaceae | N | WP | R |                      |
| Ulmus pamela L. | Ulmaceae | N | AS | L |                      |
| Ursinia nana DC. subsp. nana | Asteraceae | N | CA | R |                      |
| Vaccaria hispanica | Caryophyllaceae | N | ME | L |                      |
| Vetchella caven | Fabaceae | C | SA | R |                      |
| Vetchella farnesiana | Fabaceae | C | SA | R |                      |
| Vetchella karroo (Hayne) Banfi & Galasso | Fabaceae | N | AF | R |                      |
| Verbena bonariensis | Verbenaceae | C | SA | R |                      |
| Verbena brasilensis | Vell. | Verbenaceae | N | SA | S |                      |
| Verbena incompta P.W. Michael | Verbenaceae | N | SA | R |                      |
| Veronica filiformis Sm. | Plantaginaceae | C | WP | V |                      |
| Veronica longifolia | Plantaginaceae | C | WP | R |                      |
| Veronica peregrina subsp. peregrina | Plantaginaceae | N | NA | L |                      |
| Veronica persica Poit | Plantaginaceae | N | WP | C |                      |
| Verbena triloba L. | Plantaginaceae | N | WP | C |                      |
| Viburnum odoratissimum Ker-Gawl. | Adoxaceae | C | AS | R |                      |
| Vicia faba L. | Fabaceae | C | Cult | S |                      |
| Vicia lens (L.) Coiss. & Germ. subsp. lens | Fabaceae | C | Cult | R |                      |
| Vicia melanop Sibth. & Sm. | Fabaceae | N | ME | L |                      |
| Vicia narbonensis L. | Fabaceae | N | ME | S |                      |
| Vicia pannonica | Fabaceae | N | WP | R |                      |
| Vicia pannonica Crantz subsp. sibirica (M. Bieb.) Ponert | Fabaceae | N | WP | C |                      |
| Vicia sativa L. | Plantaginaceae | N | ME | R |                      |
| Vicia sativa subsp. macrorupa (M. Bieb.) Arcang. | Fabaceae | N | Cult | C |                      |
| Vicia serratifolia Jacq. | Fabaceae | C | ME | V |                      |
| Vicia villosa Roth | Fabaceae | C | WP | S |                      |
| Viola arvensis Murray | Violaceae | N | ME | C |                      |
| Viola tricolor subsp. tricolor | Violaceae | C | WP | R |                      |
| Viola ×wittrockiana Gams | Violaceae | C | Cult | R |                      |
| Viola ×wittrockiana Gams | Violaceae | C | Cult | R |                      |
| Vinca major | Apiaaceae | N | ME | C |                      |
| Vitis acerifolia Raf. × V. riparia | Vitaceae | N | Cult | S |                      |
| Vitis berlandieri Planch. × V. vinifera | Vitaceae | C | Cult | R |                      |
| Vitis labrusca L. | Vitaceae | C | NA | R |                      |
| Vitis riparia Michx. | Vitaceae | I | NA | L |                      |
| Vitis rupestris Scheele | Vitaceae | N | NA | C |                      |
| Vitis vinifera L. | Vitaceae | C | Cult | S |                      |
| Vitis ×bacoii Ardenghi, Galasso, Banfi & Lastrucci | Vitaceae | C | Cult | R |                      |
| Vitis ×goldii Ardenghi, Galasso & Banfi | Vitaceae | N | Cult | R |                      |
| Vitis ×instabilis Ardenghi, Galasso, Banfi & Lastrucci | Vitaceae | N | Cult | L |                      |
| Vitis ×koberi Ardenghi, Galasso & Banfi | Vitaceae | N | Cult | S |                      |
| Vitis ×ruggeri Ardenghi, Galasso, Banfi & Lastrucci | Vitaceae | C | Cult | R |                      |
| Volutaria tubuliflora (Murb.) Sennen | Asteraceae | C | ME | R |                      |
| Washingtonia filifera (André) de Bary | Arecaecoae | C | NA | S |                      |
| Watsonia borbonica (Poir.) Goldblatt | Iridaceae | N | CA | R |                      |
| Westringia fruticosa (Willd.) Druce | Lamiaceae | C | AU | R |                      |
| Wignaria urens (Ruiz & Pav.) Kunth | Boraginaceae | C | SA | R |                      |
| Wisteria sinensis (Sims) Sweet | Fabaceae | C | AS | R |                      |
| Xanthium orientale | Asteraceae | I | NA, SA | C |                      |
| Scientific name                           | Family       | Nat. D. | Origin | Abun. | Regional Distribution |
|------------------------------------------|--------------|---------|--------|-------|-----------------------|
| Xanthium spinosum L.                     | Asteraceae   | N       | SA     | C     | + + +                 |
| Xeranthemum annuum L.                    | Asteraceae   | N       | WP     | V     | + + +                 |
| Youngia japonica (L.) DC.                | Asteraceae   | C       | AS     | R     | . . +                 |
| Yucca aloifolia L.                       | Asparagaceae | N       | NA     | S     | . + +                 |
| Yucca gigantea Lem.                      | Asparagaceae | C       | SA     | S     | . . +                 |
| Yucca gloriosa L.                        | Asparagaceae | N       | NA     | C     | + + +                 |
| Zantedeschia aethiopica (L.) Spreng.     | Araceae      | N       | CA     | S     | . . +                 |
| Zea mays L. subsp. mays                  | Poaceae      | C       | Cult   | C     | + + +                 |
| Zea mays L. subsp. mexicana (Schrad.) Ilitis | Poaceae   | N       | NA     | L     | . + .                 |
| Zephyranthes candida (Lindl.) Herb.      | Amaryllidaceae | C       | SA     | R     | . . +                 |
| Ziziphus jujuba Mill.                    | Rhamnaceae   | N       | WP     | L     | + + +                 |
| Zygophyllum fabago L.                    | Zygophyllaceae | N     | ME     | S     | . . +                 |

**Supplementary Material**

**Table S1.** Checklist of the Catalonian vascular alien flora. Data are presented in the table with the following information fields: taxon (arranged alphabetically, incl. hybrid taxa, which are also organized alphabetically); family; residence time (1: Before 1500 AD; 2: Between 1500 and 1900 AD; 3: Between 1900 and 1970 AD; 4: After 1970 AD); introduction pathway (A: Agriculture; G: Gardening; F: Forestry; T: Trade) and intentionality of introduction (A: accidental; D: deliberate).