

ASSESSMENT OF INVASIVENESS AND ECOLOGICAL IMPACT IN NON-NATIVE PLANTS OF TEXAS

Guy L. Nesom

2925 Hartwood Drive
Fort Worth, Texas 76109, U.S.A.
guynesom@sbcglobal.net

ABSTRACT

An documented account of 812 non-native species reported to grow outside of cultivation in Texas has been developed. About 300 of these have been reported since the 1970 publication of the *Manual of the Vascular Plants of Texas*, and each of the latter taxa has been documented by at least a literature reference. A “Fundamental Invasiveness Index” provides a framework for assessment and ranking of each of the non-native species according to their invasiveness and ecological impact. The Index is based on knowledge of the species from field, herbarium, and literature, according to the following criteria.

F1: Invasive in both disturbed and natural habitats, negatively affecting native species or natural biodiversity by altering native vegetation and habitats or by outcompeting or hybridizing with native species; or, invasive into agricultural habitats and causing significant economic damage; including woody, herbaceous, and aquatic species.

F2: Abundant in number and widespread, commonly invasive in disturbed habitats, much less commonly in natural habitats; subdivided into woody, herbaceous, and aquatic species.

F3: Relatively few in number, known from relatively few localities, usually in disturbed habitats; subdivided into woody and herbaceous species.

F4: Status unknown.

Numbers of species per category are **F1-Woody, Herbaceous, and Aquatic** (51), **F2-Woody** (13), **F2-Herbaceous** (228), **F2-Aquatic** (16), **F3-Woody** (76), **F3-Herbaceous** (348), and **F4** (80). A Watch List includes 52 woody, herbaceous, and aquatic species most likely to warrant F1 ranking.

RESUMEN

Se realiza un informe documentado de 812 especies no nativas que crecen fuera de cultivo en Texas. Unas 300 de ellas se han citado desde la publicación en 1970 del *Manual of the Vascular Plants of Texas*, y cada uno de estos últimos taxa se ha documentado con al menos una referencia bibliográfica. Un “Fundamental Invasiveness Index” ofrece un marco para la evaluación y ordenación de cada una de las especies no nativas de acuerdo a su potencial invasor e impacto ecológico. El índice está basado en el conocimiento de las especies en el campo, herbario, y bibliografía, de acuerdo a los siguientes criterios.

F1: Invasiva tanto en hábitats modificados y naturales, que afecta negativamente a especies nativas o a la biodiversidad natural por alterar la vegetación nativa y hábitats o por competir o hibridar con especies nativas; o, invasoras en hábitats agrícolas causando daños económicos importantes; incluyendo especies leñosas, herbáceas, y acuáticas.

F2: Abundantes en número y extendidas, generalmente invasivas en hábitats alterados, mucho menos en hábitats naturales; subdivididas en especies leñosas, herbáceas, y acuáticas.

F3: Relativamente pocas en número, conocidas de relativamente pocas localidades, usualmente en hábitats alterados; subdivididas en especies leñosas y herbáceas.

F4: Estatus desconocido.

Los números de especies por categoría son **F1-leñosas, herbáceas, y acuáticas** (51), **F2-leñosas** (13), **F2-herbáceas** (228), **F2-acuáticas** (16), **F3-leñosas** (76), **F3-herbáceas** (348), y **F4** (80). Una lista visual incluye 52 especies leñosas, herbáceas, y acuáticas que probablemente justifican una situación en F1.

About 516 non-native species were known 40 years ago to occur outside of cultivation in Texas (as counted from Correll & Johnston 1970)—about 11 percent of the total flora of the state at that time. Since that time, about 300 additional introductions to the state have been reported in various publications (summarized in the PLANTS Database: USDA, NRCS 2009; the PLANTS Database has drawn its information from a variety of sources, including major publications on the Texas flora). The present paper provides a summary account of the currently known non-native Texas flora, with documentation for those species included in

the account since 1970 and a ranking of invasiveness and ecological impact for each species included. The system presented here is simple enough to allow a quick assessment of a large number of species but still to provide a fundamental overview of each species.

Various lists of invasive species have been developed for Texas, but documentation for these lists is not readily available. The most comprehensive list is presented by TexasInvasives.org (2009), which includes 139 species, with a photo for each and a listing of the family, common name, duration, habit, and information on morphology, biology, and distribution, including links to detailed Texas maps. Two lists have state-wide legal standing: the Noxious Plant List of the Texas Department of Agriculture (TDA 2009) with 29 species and a list of Prohibited Exotic Species from the Texas Parks and Wildlife Department (TPWD 2009) with 19 aquatic species. The list of 13 aquatic species from the North Texas Water Garden Society (NTWGS 2009) appears to be a subset of the TDA list. The City of Austin lists 26 species (some listed simply as the genus) of Invasive Plants to Avoid (Austin City Connection 2009).

The Invaders of Texas (2009) program organizes teams of local citizen scientists who seek out and report occurrences of invasive species. This is a very useful program, both practically and scientifically—as of May 2009, more than 7400 detailed field observations have been reported and are available online. Each field report includes precise locality information (with coordinates automatically mapped), an indication of abundance at the locality, and usually a photo of the plant or populations taken at the site of observation. The target species sought by the Invaders of Texas participants are the 139 on the TexasInvasives.org list (2009). For each species, individual field observations are mapped in aggregate to show their total distribution in the state.

Non-native species in Texas—development of a list and documentation.

A preliminary list of non-native species in Texas was developed by the author from the PLANTS Database (USDA, NRCS 2009), using an Advanced Search for Texas taxa introduced to the Lower 48 states. Journals and other literature were reviewed for possible additions, and a number of species have been excluded. Identifications in the Texas list presented here often are not made to infraspecific rank (in contrast to the PLANTS list), because vouchers commonly have not been examined or because the validity of the infraspecific taxonomy is not clear. Only plants that are naturalized have been included (vs. cultivated or persisting from cultivation), though some on the list probably would best be characterized as waifs (Nesom 2000) if follow-up observations were done at sites where they were reported to occur. Whether or not a species is native sometimes may be difficult to judge—generally such instances are discussed in the documentation for the full list (Nesom 2009a).

Documentation for the occurrence of these species in Texas (Nesom 2009a) begins with literature and other records that have been published mostly after 1970, the date of publication of Correll and Johnston's "*Manual of the Vascular Plants of Texas*," which remains the primary floristic resource for the state. In the course of assigning invasiveness rankings, however, the rationale for inclusion of each species on the full list has been examined. For species included in the documentation, at least one full literature reference is provided, with reported Texas counties and other brief notes on the status of the species, as appropriate or as known. Many taxa on the PLANTS list or from elsewhere have been excluded from the Texas flora because of mistaken or faulty documentation (Nesom 2009b for examples from the Asteraceae), and these are specifically noted in the commentaries (Nesom 2009a). A number of species have been reported simply by listing (Johnston 1990; Hatch et al. 1990) or by mapping (Turner et al. 2003); vouchers or other documentation for these are being provided.

Documentation for the full list of non-native taxa is an essential and critical part of both this process and this report. Because the information is complex and completion and supplementation are ongoing, it remains as an online resource (Nesom 2009a). Addition of voucher information and other documentation for species first reported in lists by Johnston (1990) and Hatch et al. (1990) and elsewhere will be a significant advance.

Systems for assessment and ranking of invasiveness.

In developing a protocol for evaluating Texas non-native species for invasiveness and ecological impact, a representative set of other systems toward the same end has been considered and studied.

- * Alien Plants Ranking System (Ver. 5.1) (APRS Implementation Team 2000)
- * Ranking Invasive Exotic Plant Species in Virginia (Heffernan et al. 2001)
- * Criteria for Categorizing Invasive Non-Native Plants that Threaten Wildlands (Warner et al. 2003)
- * An Invasive Species Assessment Protocol: Evaluating Non-native Plants for Their Impact on Biodiversity (Morse et al. 2004)
- * Invasiveness Ranking System for Non-native Plants of Alaska (Carlson et al. 2008)
- * New York State Plant Ranking System for Evaluating Non-Native Plant Species for Invasiveness (DRAFT) (Jordan et al. 2009).

Perhaps the most widely applied (and adapted) of these is Morse et al. (2004), developed by NatureServe, in collaboration with The Nature Conservancy and the U.S. National Park Service. It is a “protocol for assessing and categorizing non-native plants according to their impacts on native biodiversity.” NatureServe Explorer now includes an impact rank (“I-rank”—high, medium, low, or insignificant) for many non-native plant species of the USA.

In each of the systems above, assessment and ranking of an individual species invokes a series of detailed questions grouped into a set of topics, usually including some or all of these:

- * ecological impact and potential for future impact;
- * biological attributes, including dispersal ability and invasiveness potential;
- * ecological amplitude;
- * geographic extent of invasion; and
- * control/management feasibility and cost.

A significant amount of the information required for the ranking criteria is drawn from literature pertinent to the species under consideration. After scoring is complete for the whole set of questions, the species may be ranked numerically by its additive score, or the additive score may translate to a broader category.

The ranking protocol for the Tennessee Invasive Exotic Plant List (Tennessee EPPC 2001) is considerably different from those above. In the Tennessee system, a species is assigned by a committee of biologists to one of the following categories (the number of Tennessee species in each category is indicated):

Rank 1—Severe Threat: Exotic plant species that possess characteristics of invasive species and spread easily into native plant communities and displace native vegetation. (29 species)

Rank 2—Significant Threat: Exotic plant species that possess characteristics of invasive species but are not presently considered to spread as easily into native plant communities as those species listed as Rank 1. (49 species)

Rank 3—Lesser Threat: Exotic plant species that spread in or near disturbed areas; and are not presently considered a threat to native plant communities. (28 species)

Watch List A—Exotic plants that naturalize and may become a problem in the future; includes species that are or could become widespread in Tennessee. At this time more information is needed, and there is no consensus about their status. (24 species)

Watch List B—Exotic plant species that are severe problems in surrounding states but have not been reported in Tennessee. (6 species)

The protocol proposed here for Texas non-native species is very similar to the one developed for Tennessee.

Invasiveness and ecological impact of Texas non-native species.

The system outlined here for use in Texas emphasizes simplicity, allowing assessment of the large number of non-native species (all that are known to occur in the state). Because essential elements of biology and geography are included in the assessments, the system is termed the Fundamental Invasiveness Index. After becoming familiar with the categories of the index and the characteristics of the species under consideration, the species is assigned to one of the categories. The first category (F1) applies to species that have invasive biological characteristics as well as a strong and adverse impact on natural systems and biodiversity (or an adverse economic impact). The other two main categories (F2, F3) include species that are less significant

in ecological or economic impact, with the division between species of F2 and F3 made on the basis of their geographic distribution, abundance, and potential for spread. Within F2 and within F3, slightly different characterizations are given for woody and herbaceous species, as the two growth forms are generally distinct in biology.

The biology of aquatic species is distinct from terrestrial ones, in part because of their potential for extremely rapid dispersal in local aquatic systems. Emergents that grow in open water—sometimes persisting in mud flats or in periodically wet habitats (i.e., *Alternanthera*, *Ludwigia*, *Nasturtium*)—are included as aquatics. Each species has the potential to cause major ecosystem damage, and many of them already are recognized as noxious over wide regions; others are ecologically damaging at least locally in the lake or stream where they occur. Somewhat arbitrarily, aquatic species are recognized here in the category of maximum negative effect if they occur in 10 or more counties (as recorded by herbarium voucher specimens, expert sightings or photos, or other reliable documentation). *Hydrilla verticillata* is vouchered by specimens at TEX for only about six Texas counties but clearly occurs more widely (as do some of the other species). Otherwise, aquatic species known to occur in 9 or fewer counties all are placed in the same category.

A ranking system such as that from NatureServe provides assessments based on array of explicit and detailed criteria. For Texas and its large number of non-native species, contemplation of such an intricate system and the massive amount of time required for its completion perhaps has inhibited even the beginning of one. The system here, however, appears to provide a realistic overview of the situation in Texas, even though many assessments remain to be clarified for species currently included. Further, the current account at least provides a basis from which more detailed assessments may be developed.

For accurate evaluation of an individual species, knowledge is required of the following.

- * **Nativity.** Is the species native or non-native?
- * **Approximate date of introduction in Texas (e.g., pre-1970, 1970s, 1980s, 1990s).** Documentation in the current system does not provide specific information for species introduced before 1970 (those included in Correll & Johnston's Manual of the Vascular Plants of Texas), but for species recorded since that time, dates are evident, as much as possible, in a review posted and periodically updated on the internet (Nesom 2009a).
- * **Current geographic distribution.** Based on distribution maps in Turner et al. (2003), distribution maps generated by data from Invaders of Texas (2009), records from herbaria (primarily those in Texas), and literature.
- * **Ecological/reproductive behavior in Texas and in other regions.** Based on field experience of the author and others, published literature, information from herbarium collections.
- * **Basic habitat and growth form (aquatic or terrestrial, herbaceous or woody).** Based on field experience, published literature, information from herbarium collections.

FUNDAMENTAL INVASIVENESS INDEX

F1—Invasive in both disturbed and natural habitats. Negatively affecting native species or natural biodiversity by altering native vegetation and habitats or by outcompeting or hybridizing with native species; or, invasive into agricultural habitats and causing significant economic damage. Aquatic species known to occur in 10 or more counties. Woody, herbaceous, and aquatic species. Examples: *Arundo donax*, *Bothriochloa ischaemum* var. *songarica*, *Centaurea melitensis*, *Eichhornia crassipes*, *Ligustrum sinense*, *Lonicera japonica*, *Lygodium japonicum*, *Nandina domestica*, *Salvinia molesta*, *Sorghum halepense*, *Triadica (Sapium) sebifera*, *Ulmus pumila*.

F2—Abundant in number and widespread, commonly invasive in disturbed habitats, much less commonly in natural habitats (Table 1).

F2-Woody—Trees, shrubs, subshrubs, and woody vines. Abundant in number and widespread, commonly invasive in disturbed habitats such as roadsides, fencerows, woods edges, and others, sometimes potentially or incipiently damaging in natural habitats (as F1). Examples: *Albizia julibrissin*, *Morus alba*, *Nicotiana glauca*, *Poncirus trifoliata*, *Pyrus calleryana*, *Vitex agnus-castus*.

F2-Herbaceous—Annual and perennial herbs and grasses. Known invasive and/or clearly expanding in geographic range, primarily in lawns, roadsides, and other open, disturbed habitats, sometimes in croplands, widespread and usually abundant but often produc-

TABLE 1. Numbers of non-native species in Texas ranked as F1, F2, F3, and F4. The total is 812 species.

	Woody	Herbaceous	Aquatic	TOTAL
F1	17	25	9	51
F2	13	228	16	258
F3	76	348		424
F4	0	80		80

ing relatively little biomass. Not significantly affecting native species or natural biodiversity or otherwise strongly altering native vegetation and habitats. Examples: *Avena sativa*, *Bellardia trixago*, *Coronilla varia*, *Daucus carota*, *Duchesnia indica*, *Erodium cicutarium*, *Galium aparine*, *Gamochaeta coarctata*, *Hypochaeris microcephala*, *Lamium amplexicaule*, *Medicago lupulina*, *Stachys floridana*, *Stellaria media*, *Taraxacum officinale*, *Torilis nodosa*, *Trifolium repens*, *Veronica arvensis*, *Vicia sativa*.

F2-Aquatic—Aquatic species known to occur in 1 to 9 counties.

F3—Relatively few in number, known from relatively few localities, usually in disturbed habitats.

F3-Woody—Trees, shrubs, subshrubs, and woody vines. Relatively few in number, known from relatively few localities, usually in disturbed habitats, repeatedly introduced or perhaps merely long-persisting at some localities, not showing aggressively invasive tendencies, or perhaps incipiently invasive. Examples: *Ardisia crenata*, *Buddleja lindleyana*, *Cinnamomum camphora*, *Hibiscus syriacus*, *Koeleruteria elegans*, *Manihot esculenta*, *Photinia serratifolia*, *Pistacia chinensis*, *Pyracantha koidzumii*, *Pyrus communis*, *Rosmarinus officinalis*.

F3-Herbaceous—Annual and perennial herbs and grasses. Occurrence outside of cultivation known from only one or a few populations, usually in disturbed habitats. Apparently showing little or no increase of abundance or geographic range since the initial report. Examples: *Cichorium intybus*, *Gomphrena globosa*, *Phyllanthus fraternus*, *Plantago coronopus*. Or in some species, sporadically appearing from repeated introductions and not reproducing. Examples: *Citrullus lanatus*, *Consolida orientalis*, *Ipomoea batatas*, *Luffa aegyptiaca*, *Narcissus pseudonarcissus*, *Tagetes erecta*.

F4—Status unknown.

Watch list: terrestrial non-native species in Texas potentially ranked as F1.

Many of the non-native species in Texas occur only in small areas. Among these are a significant number that have been relatively recently recorded for the state and that are known to be both highly invasive and ecologically destructive in other regions of the United States. These features characterize the species included on the Texas “Watch List” (Appendix 5). These species may be expected to spread in Texas and become ecologically problematic. Some of the woody species, like *Cinnamomum camphora*, *Photinia serratifolia*, *Pistacia chinensis*, and *Vitex agnus-castus* are widely planted and seeds often are nearly ubiquitous around urban areas—each of these species already appears to be spreading into natural habitats. In contrast, species such as *Albizia julibrissin* and *Morus alba* are invasive and occur in large numbers but appear to be more restricted to disturbed habitats or to edges of woods.

An interesting point regarding pantropical maritime species potentially or incipiently invasive in Texas has been raised by Tom Patterson (*South Texas College*, Rio Grande City). “How to classify these new arrivals? For the most part, they have not escaped from cultivation. But they potentially are a threat and I believe they need their own category. After tropical storms South Padre Island receives sea beans, red mangrove fruits, and coconuts. Some of these propagules in the past have produced plants and have been infrequently documented by collections, only later to succumb to a severe freeze. With global warming more of these pantropical maritime species will persist and become naturally adventive to Texas.” In this category Patterson includes *Caesalpinia bonduc*, *Canavalia rosea*, *Cassytha filiformis*, *Conocarpus erectus*, *Laguncularia racemosa*, *Rhizophora mangle*, and *Scaveola plumieri*. These are added as a special category in the Watch List (Appendix 5).

Roadside flora.

The emphasis here on ecological impact to natural habitats is especially significant in Texas, where such a relatively small portion of the land is unaltered and it is critical to protect remaining natural areas. Following

that thought, however, roadsides in Texas are exceptionally significant since they comprise a significant portion of public land in the state and in some places are important in harboring elements of the native flora.

"It's hard to know what to do with roadsides. They're not entirely natural, and sometimes the weediness stops at the fence. Don't you wish you had a time machine and could go back 1000 years (or 100) and see Texas without all of the exotics? I wonder what spring would look like without all the non-native mustards, mints, beans, grasses, etc. What might we have had that is no longer here at all? All that vetch and clover and henbit and shepherd's purse had to replace *something*" (Monique Reed, pers. comm.).

APPENDIX 1

All non-native species known to occur in Texas, with "Fundamental Invasiveness Index" rankings. Species on the "WATCH List" (Appendix 4) are indicated.

ACANTHACEAE

Hygrophila polysperma (Roxb.) T. Anders.—F2-Woody

Nomaphila stricta (Vahl) Nees—F2-Woody

Ruellia caerulea Morong—F3-Herbaceous

syn= *Ruellia brittoniana* Leonard

Thunbergia alata Bojer ex Sims—F3-Herbaceous

ALOACEAE

Aloe vera (L.) Burm. f.—F3-Herbaceous

AMARANTHACEAE

Achyranthes aspera L.—F3-Herbaceous

Alternanthera caracasana Kunth—F2-Herbaceous

Alternanthera philoxeroides (Mart.) Griseb.—F1-Woody

Alternanthera pungens Kunth—F3-Herbaceous

Alternanthera tenella Colla—F3-Herbaceous

syn= *Alternanthera bettzichiana* (Regel.) Standl.

Amaranthus blitum L.—F2-Herbaceous

syn= *Amaranthus viridis* auct. non L.

Amaranthus cruentus L.—F3-Herbaceous

syn= *Amaranthus hybridus* var. *cruentus* (L.) Moq.

Amaranthus hypochondriacus L.—F3-Herbaceous

Amaranthus sessilis (L.) DC.—F4-Herbaceous

Celosia argentea L.—F3-Herbaceous

Gomphrena globosa L.—F2-Herbaceous

AMARYLLIDACEAE

Amaryllis belladonna L.—F3-Herbaceous

Habranthus tubispathus (L'Her.) Traub—F3-Herbaceous

syn= *Habranthus texanus* (-Herbaceousert) Steud.

Narcissus jonquilla L.—F3-Herbaceous

Narcissus pseudonarcissus L.—F3-Herbaceous

Narcissus tazetta L.—F3-Herbaceous

ANACARDIACEAE

Pistacia chinensis Bunge—F3-Woody WATCH

Schinus longifolius (Lindl.) Speg.—F3-Woody

Schinus molle L.—F3-Woody WATCH

Schinus terebinthifolius Raddi—F3-Woody WATCH

APIACEAE

Ammi majus L.—F2-Herbaceous

Ammi visnaga (L.) Lam.—F3-Herbaceous

Anethum graveolens L.—F3-Herbaceous

Bupleurum lancifolium Hornem.—F3-Herbaceous

Bupleurum rotundifolium L.—F2-Herbaceous

Conium maculatum L.—F2-Herbaceous

Coriandrum sativum L.—F3-Herbaceous

Cuminum cyminum L.—F3-Herbaceous

CyclospERM leptophyllum (Pers.) Sprague ex Britt. &

Wilson—F2-Herbaceous

syn= *Apium leptophyllum* (Pers.) F. Muell. ex Benth.

Daucus carota L.—F2-Herbaceous

Foeniculum vulgare P. Mill.—F3-Herbaceous

Hydrocotyle sibthorpioides Lam.—F3-Herbaceous

Pastinaca sativa L.—F3-Herbaceous

Petroselinum crispum (P. Mill.) Nyman ex A.W. Hill—F3-

Herbaceous

syn= *Apium petroselinum* L.

Scandix pecten-veneris L.—F3-Herbaceous

Torilis arvensis (Huds.) Link—F2-Herbaceous WATCH

Torilis nodosa (L.) Gaertn.—F2-Herbaceous

APOCYNACEAE

Catharanthus roseus (L.) G. Don—F3-Woody

syn= *Vinca rosea* L.

Nerium oleander L.—F3-Woody

Vinca major L.—F2-Herbaceous

Vinca minor L.—F4-Herbaceous

ARACEAE

Colocasia esculenta (L.) Schott—F1-Woody

syn= *Colocasia antiquorum* Schott

Cryptocoryne beckettii Thwaites ex Trimen—F2-Woody

Pistia stratioides L.—F1-Woody

Xanthosoma sagittifolium (L.) Schott—F2-Woody

ARALIACEAE

Hedera helix L.—F2-Herbaceous

ASCLEPIADACEAE

Asclepias curassavica L.—F3-Herbaceous

Cryptostegia grandiflora (Roxb. ex R. Br.) R. Br.—F3-Herbaceous WATCH

Periploca graeca L.—F3-Herbaceous

ASTERACEAE Aster Family

Acanthospermum australe (Loefl.) Kuntze—F4-Herbaceous

Acroptilon repens (L.) DC.—F4-Herbaceous

syn= *Centaurea repens* L.

Anthemis cotula L.—F2-Herbaceous

Bidens pilosa L.—F3-Herbaceous

syn= *Bidens odorata* Cav.

Carduus acanthoides L.—F3-Herbaceous

Carduus nutans subsp. *macrocephalus* (Desf.) Nyman—F1-Herbaceous

- SYN= *Carduus macrocephalus* Desf.
 SYN= *Carduus nutans* var. *macrocephalus* (Desf.) Boivin
Carduus pycnocephalus L.—F2-Herbaceous WATCH
Carthamus lanatus L.—F3-Herbaceous
Carthamus tinctorius L.—F3-Herbaceous
Centaurea cyanus L.—F2-Herbaceous
Centaurea melitensis L.—F1-Herbaceous
Centaurea solstitialis L.—F4-Herbaceous
Cichorium intybus L.—F2-Herbaceous
Cirsium vulgare (Savi) Ten.—F2-Herbaceous WATCH
 SYN= *Carduus lanceolatus* L.
Cnicus benedictus L.—F4-Herbaceous
 SYN= *Centaurea benedicta* (L.) L.
Conyza bonariensis (L.) Cronq.—F2-Herbaceous
 SYN= *Erigeron bonariensis* L.
Cosmos bipinnatus Cav.—F3-Herbaceous
Cosmos sulphureus Cav.—F3-Herbaceous
Cotula australis (Sieber) Hook. f.—F3-Herbaceous
Crepis capillaris (L.) Wallr.—F4-Herbaceous
Crepis pulchra L.—F3-Herbaceous
Crepis setosa Haller f.—F4-Herbaceous
Crepis zacintha (L.) Babcock—F4-Herbaceous
Emilia fosbergii D.H. Nicols.—F4-Herbaceous
Facelis retusa (Lam.) Schultz-Bip.—F2-Herbaceous
Galinsoga parviflora Cav.—F2-Herbaceous
 SYN= *Galinsoga parviflora* var. *semicalva* Gray
Gamochaeta antillana (Urb.) Anderb.—F2-Herbaceous
Gamochaeta calviceps (Fern.) Cabrera—F2-Herbaceous
Gamochaeta coarctata (Willd.) Kerg.—F2-Herbaceous
Gamochaeta pennsylvanica (Willd.) Cabrera—F2-Herbaceous
Hedypnois cretica (L.) Dum.-Cours.—F2-Herbaceous
Hypochaeris brasiliensis var. *tweediei* (Hook. & Arn.) Baker—F2-Herbaceous
 SYN= *Hypochaeris tweediei* Hook. & Arn.
Hypochaeris glabra L.—F2-Herbaceous
Hypochaeris microcephala var. *albiflora* (Kuntze) Cabrera—F2-Herbaceous
Hypochaeris radicata L.—F2-Herbaceous
Lactuca saligna L.—F3-Herbaceous
Lactuca serriola L.—F2-Herbaceous
 SYN= *Lactuca scariola* L.
Lapsana communis L.—F3-Herbaceous
Leontodon hispidus L.—F3-Herbaceous
Leontodon taraxacoides (Vill.) Mérat—F4-Herbaceous
Leucanthemum vulgare Lam.—F2-Herbaceous
 SYN= *Chrysanthemum leucanthemum* L.
Matricaria recutita L. Wild Chamomile—F4-Herbaceous
 SYN= *Chamomilla recutita* (L.) Rauschert
 SYN= *Matricaria chamomilla* var. *coronata* (J. Gay) Coss. & Germ.
 SYN= *Matricaria suaveolens* L.
Onopordum acanthium L.—F2-Herbaceous
Pseudognaphalium luteoalbum (L.) Hilliard & Burt—F2-Herbaceous
Sanvitalia angustifolia A. Gray—F3-Herbaceous
Scorzonera laciniata L.—F2-Herbaceous
Senecio vulgaris L.—F2-Herbaceous
Silybum marianum (L.) Gaertn.—F3-Herbaceous
Soliva anthemifolia (Juss.)—F2-Herbaceous
 SYN= *Soliva mutisii* Kunth
Soliva sessilis Ruiz & Pavón—F2-Herbaceous
 SYN= *Soliva pterosperma* (Juss.) Less.
Soliva stolonifera (Brot.) Sweet—F2-Herbaceous
 SYN= *Gymnostyles stolonifera* (Brot.) Tutin—
 SYN= *Gymnostyles nasturtiifolia* Juss.
Sonchus asper (L.) Hill—F2-Herbaceous
Sonchus oleraceus L.—F2-Herbaceous
Sphagneticola trilobata (L.) Pruski—F3-Herbaceous
 SYN= *Wedelia trilobata* L.
Symphotrichum squamatum (Spreng.) Nesom—F4-Herbaceous
 SYN= *Aster subulatus* var. *sandwicensis* A. Gray
Tagetes erecta L.—F4-Herbaceous
Taraxacum laevigatum (Willd.) DC.—F2-Herbaceous
 SYN= *Taraxacum erythrospermum* Andr. ex Bess.
Taraxacum officinale L. subsp. *officinale*—F2-Herbaceous
Tragopogon dubius Scop.—F2-Herbaceous
Tragopogon porrifolius L.—F2-Herbaceous
Tridax procumbens L.—F3-Herbaceous
Xanthium spinosum L.—F2-Herbaceous
 SYN= *Xanthium spinosum* var. *inerme* Bel.
Youngia japonica (L.) DC.—F2-Herbaceous
Zinnia violacea Cav.—F3-Herbaceous
BASELLACEAE
Anredera cordifolia (Ten.) Steenis—F3-Herbaceous
 SYN= *Boussingaultia gracilis* Miers
BERBERIDACEAE
Nandina domestica Thunb.—F1-Woody
BIGNONIACEAE
Macfadyena unguis-cati (L.) A.H. Gentry—F3-Woody
WATCH
Paulownia tomentosa (Thunb.) Sieb. & Zucc. ex Steud.—F3-Woody
BORAGINACEAE
Anchusa azurea P. Mill.—F3-Herbaceous
 SYN= *Anchusa italica* Retz.
Buglossoides arvensis (L.) I.M. Johnston—F2-Herbaceous
 SYN= *Lithospermum arvense* L.
Cynoglossum zeylanicum (Vahl) Thunb. ex Lehm.—F3-Herbaceous
Echium vulgare L.—F3-Herbaceous
Heliotropium amplexicaule Vahl—F2-Herbaceous
Heliotropium europaeum L.—F3-Herbaceous
Heliotropium indicum L.—F2-Herbaceous
Lappula squarrosa (Retz.) Dumort.—F4-Herbaceous
BRASSICACEAE Mustard Family
Arabidopsis thaliana (L.) Heynh.—F2-Herbaceous
Brassica juncea (L.) Czern.—F3-Herbaceous
Brassica nigra (L.) W.D.J. Koch—F3-Herbaceous
Brassica oleracea L.—F3-Herbaceous
Brassica rapa L.—F2-Herbaceous
 SYN= *Brassica campestris* var. *rapa* (L.) Hartman

syn= *Brassica rapa* var. *campestris* (L.) W.D.J. Koch

Brassica tournefortii Gouan.—F3-Herbaceous

Cakile maritima Scop.—F4-Herbaceous

Camelina microcarpa DC.—F2-Herbaceous

syn= *Camelina sativa* subsp. *microcarpa* (DC.) E. Schmid

Camelina rumelica Velen.—F3-Herbaceous

Capsella bursa-pastoris (L.) Medik.—F2-Herbaceous

Cardamine debilis D. Don.—F2-Herbaceous

Cardamine hirsuta L.—F2-Herbaceous

Cardaria draba (L.) Desv.—F3-Herbaceous

Chorispura tenella (Pallas) DC.—F2-Herbaceous

Conringia orientalis (L.) Dumort.—F2-Herbaceous

Coronopus didymus (L.) Sm.—F2-Herbaceous

Descurainia sophia (L.) Webb ex Prantl.—F2-Herbaceous

Diplotaxis muralis (L.) DC.—F2-Herbaceous

Diplotaxis tenuifolia (L.) DC.—F3-Herbaceous

Eruca vesicaria subsp. *sativa* (P. Mill.) Thellung.—F2-Herbaceous

syn= *Brassica eruca* L.

syn= *Eruca sativa* P. Mill.

syn= *Raphanus eruca* (L.) Crantz

Erucastrum gallicum (Willd.) O.E. Schulz.—F2-Herbaceous

Erysimum repandum L.—F2-Herbaceous

Lepidium campestre (L.) R. Br.—F3-Herbaceous

Lepidium latifolium L.—F3-Herbaceous

Lepidium ruderales L.—F3-Herbaceous

Lobularia maritima (L.) Desv.—F3-Herbaceous

syn= *Alyssum maritimum* (L.) Lam.

Matthiola incana (L.) Ait. f.—F3-Herbaceous

Matthiola longipetala (Vent.) DC.—F3-Herbaceous

syn= *Matthiola longipetala* subsp. *bicornis* (Sibthorp & Sm.) P.W. Ball

Myagrum perfoliatum L.—F3-Herbaceous

Nasturtium officinale W.T. Ait.—F1-Woody

syn= *Rorippa nasturtium-aquaticum* (L.) Hayek

Raphanus rapistrum L.—F3-Herbaceous

Raphanus sativus L.—F3-Herbaceous

syn= *Raphanus raphanistrum* var. *sativus* (L.) G. Beck

Rapistrum rugosum (L.) All.—F1-Herbaceous

Sinapis alba L.—F4-Herbaceous

Sinapis arvensis L.—F2-Herbaceous

syn= *Brassica kaber* (DC.) L.C. Wheeler

Sisymbrium altissimum L.—F2-Herbaceous

Sisymbrium irio L.—F2-Herbaceous

Sisymbrium officinale (L.) Scop.—F2-Herbaceous

Sisymbrium orientale L.—F3-Herbaceous

syn= *Brassica kaber* var. *orientalis* (L.) Scoggan

Sisymbrium polyceratum L.—F3-Herbaceous

Thlaspi arvense L.—F2-Herbaceous

CACTACEAE

Opuntia ficus-indica (L.) P. Mill.—F3-Woody

syn= *Opuntia compressa* J.F. Macbr.

Pereskia aculeata P. Mill.—F3-Woody

CAMPANULACEAE

Campanula rapunculoides L.—F3-Herbaceous

Wahlenbergia marginata (Thunb.) A. DC.—F3-Herbaceous

CANNABACEAE

Cannabis sativa L. var. *sativa*—F3-Woody

CANNACEAE

Canna xgeneralis Bailey [glauca x indica]—F3-Herbaceous

syn= *Canna xorchiodes* Bailey

Canna indica L.—F3-Herbaceous

syn= *Canna coccinea* P. Mill.

CAPPARACEAE

Cleome gynandra L.—F3-Herbaceous

syn= *Cleome pentaphylla* L.

Cleome hassleriana Chod.—F4-Herbaceous

syn= *Cleome pungens* auct. non Willd.

syn= *Cleome spinosa* auct. non Jacq.

CAPRIFOLIACEAE

Lonicera fragrantissima Lind. & Paxton—F3-Woody

Lonicera japonica Thunb.—F1-Woody

Lonicera maackii (Rupr.) Herder—F3-Woody WATCH

CARYOPHYLLACEAE

Agrostemma githago L.—F3-Herbaceous

Arenaria serpyllifolia L.—F2-Herbaceous

Cerastium fontanum Baumg.—F2-Herbaceous

syn= *Cerastium holosteoides* auct. non Fries

syn= *Cerastium holosteoides* var. *vulgare* (Hartman) Hyl.

Cerastium glomeratum Thuill.—F2-Herbaceous

syn= *Cerastium viscosum* auct. non L.

Cerastium pumilum W. Curtis—F2-Herbaceous

Dianthus armeria L.—F3-Herbaceous—

Dianthus barbatus L.—F4-Herbaceous

Gypsophila elegans M. Bieb.—F3-Herbaceous

Holosteum umbellatum L.—F2-Herbaceous

Petrorhagia dubia (Raf.) López & Romo—F2-Herbaceous

syn= *Petrorhagia velutina* (Guss.) P.W. Ball & Heywood

Polycarpon tetraphyllum (L.) L.—F2-Herbaceous

Sagina procumbens L.—F4-Herbaceous

Saponaria officinalis L.—F3-Herbaceous

Silene conoidea L.—F3-Herbaceous

Silene dichotoma Ehrh.—F4-Herbaceous

Silene gallica L.—F2-Herbaceous

Spergula arvensis L.—F3-Herbaceous

Spergularia echinosperma (Celak.) Aschers. & Graebn.—F3-Herbaceous—

Spergularia platensis (Camb.) Fenzl—F3-Herbaceous

Stellaria media (L.) Vill.—F2-Herbaceous

Stellaria pallida (Dumort.) Crépin—F2-Herbaceous

syn= *Stellaria media* subsp. *pallida* (Dumort.) Aschers. & Graebn.

Stellaria parva Pedersen—F3-Herbaceous

Vaccaria hispanica (P. Mill.) Rauschert—F2-Herbaceous

Vaccaria pyramidata Medic.—F2-Herbaceous

CASUARINACEAE

Casuarina equisetifolia L.—F3-Woody WATCH

CELASTRACEAE

Euonymus fortunei (Turcz.) Hand.-Mazz.—F3-Herbaceous

CHENOPODIACEAE

Atriplex holocarpa F. Muell.—F3-Woody

Atriplex rosea L.—F3-Herbaceous
Atriplex semibaccata R. Br.—F1-Herbaceous
Bassia hyssoipifolia (Pallas) Kuntz—F3-Herbaceous
syn= Kochia hyssoipifolia (Pallas) Schrad.
Bassia scoparia (L.) A.J. Scott—F1-Herbaceous
syn= Kochia scoparia (L.) Schrad.
Beta vulgaris L.—F3-Herbaceous
syn= Beta vulgaris subsp. maritima (L.) Arcang.
Chenopodium album L.—F2-Herbaceous
Chenopodium ambrosioides L.—F2-Herbaceous
Chenopodium botrys L.—F3-Herbaceous
Chenopodium glaucum L.—F3-Herbaceous
Chenopodium murale L.—F2-Herbaceous
Chenopodium opulifolium Schrad. ex Koch & Ziz—F4-Herbaceous
syn= Chenopodium album var. viride (L.) Moq.
syn= Chenopodium viride L.
Chenopodium pumilio R. Br.—F3-Herbaceous
syn= Chenopodium carinatum auct. non R. Br.
Chenopodium vulvaria L.—F4-Herbaceous
Salsola collina Pallas—F4-Herbaceous
Salsola kali L. subsp. **pontica** (Pallas) Mosyakin—F1-Herbaceous
syn= Salsola kali var. pontica Pallas
syn= Salsola pontica (Pallas) A. Degen
Salsola tragus L.—F1-Herbaceous
syn= Salsola iberica (Sennen & Pau) Botsch. ex Czerepanov
syn= Salsola kali subsp. tragus (L.) Celak.
syn= Salsola pestifer A. Nels.
Spinacia oleracea L.—F3-Herbaceous
CLUSIACEAE
Hypericum perforatum L.—F2-Woody WATCH
COMBRETACEAE
Conocarpus erectus L.—F3-Woody
Laguncularia racemosa (L.) Gaertn.—F3-Woody
COMMELINACEAE
Commelina communis L.—F2-Herbaceous
Gibasis pellucida (Mart. & Gal.) D.R. Hunt—F2-Herbaceous
Murdannia nudiflora (L.) Brenan—F2-Herbaceous
syn= Aneilema nudicaule (Burm. f.) G. Don
syn= Aneilema nudiflorum (L.) Sweet
CONVOLVULACEAE
Convolvulus arvensis L.—F2-Herbaceous
Ipomoea alba L.—F3-Herbaceous
Ipomoea batatas (L.) Lam.—F4-Herbaceous
Ipomoea cairica (L.) Sweet—F3-Herbaceous
Ipomoea capillacea (Kunth) G. Don—F3-Herbaceous
Ipomoea carnea Jacq.—F2-Herbaceous
syn= Ipomoea crassicaulis (Benth.) B.L. Robins.
syn= Ipomoea fistulosa Mart. ex Choisy
Ipomoea fistulosa Mart.—F4-Herbaceous
Ipomoea hederifolia L.—F4-Herbaceous
syn= Ipomoea coccinea var. hederifolia (L.) Gray
Ipomoea indica (Burm. f.) Merr.—F3-Herbaceous
syn= Ipomoea acuminata (Vahl) Roemer & J.A. Schultes
Ipomoea nil (L.) Roth—F3-Herbaceous

Ipomoea quamoclit L.—F3-Herbaceous
Ipomoea setosa Ker-Gawl.—F4-Herbaceous
Ipomoea tricolor Cav.—F3-Herbaceous
Ipomoea turbinata Lag.—F4-Herbaceous
syn= Ipomoea muricata (L.) Jacq.
Ipomoea violacea L.—F4-Herbaceous
Ipomoea wrightii Gray—F4-Herbaceous
syn= Ipomoea heptaphylla (Roxb.) Voigt
CRASSULACEAE
Kalanchoe daigremontana Raym.-Hamet & Perrier—F3-Herbaceous
Kalanchoe delagoensis Ecklon & Zeyh.—F4-Herbaceous
syn= Kalanchoe tubiflora (Harvey) Hamet
syn= Kalanchoe verticillata Ell.
Kalanchoe fedtschenkoi Raym.-Hamet & H. Perrier—F4-Herbaceous
CUCURBITACEAE
Citrullus colocynthis (L.) Schrad.—F4-Herbaceous
Citrullus lanatus var. **citroides** (Bailey) Mansf.—F4-Herbaceous
syn= Citrullus vulgaris var. citroides Bailey
Citrullus lanatus (Thunb.) Mansf. var. **lanatus**—F4-Herbaceous
syn= Citrullus vulgaris Schrad.
Coccinia grandis (L.) Voigt—F4-Herbaceous
syn= Coccinia cordifolia sensu Correll & Johnston
Cucumis anguria L.—F3-Herbaceous
Cucumis dipsaceus C.G. Ehrenb. ex Spach—F3-Herbaceous
Cucumis melo L.—F2-Herbaceous
Cucumis melo var. **dudain** Naud.—F4-Herbaceous
Lagenaria siceraria (Molina) Standl.—F3-Herbaceous
Luffa aegyptiaca P. Mill.—F3-Herbaceous
syn= Luffa cylindrica (L.) M. Roemer
Momordica balsamina L.—F4-Herbaceous
Momordica charantia L.—F4-Herbaceous
CUSCUTACEAE
Cuscuta japonica Choisy—F3-Herbaceous
Cuscuta suaveolens Ser.—F3-Herbaceous
CYPERACEAE
Bulbostylis barbata (Rottb.) C.B. Clarke—F3-Herbaceous
Cyperus difformis L.—F2-Herbaceous
Cyperus entrerianus Bockeler—F1-Herbaceous
Cyperus eragrostis Lam.—F3-Herbaceous
syn= Cyperus vegetus Willd.
Cyperus involucratu Rottb.—F2-Herbaceous
Cyperus iria L.—F2-Herbaceous
Cyperus phaeolepis Cherm.—F4-Herbaceous
Cyperus prolixus Kunth—F3-Herbaceous
Cyperus rotundus L.—F2-Herbaceous
Rhynchospora debilis Gale—F3-Herbaceous
DIOSCOREACEAE
Dioscorea bulbifera L.—F4-Herbaceous
DIPSACACEAE
Scabiosa atropurpurea L.—F2-Herbaceous
Dipsacus fullonum L.—F3-Herbaceous

DRYOPTERIDACEAE

Cyrtomium falcatum (L. f.) K. Presl—F3-Herbaceous
syn= Polystichum falcatum (L. f.) Diels

ELAEAGNACEAE

Elaeagnus angustifolia L.—F3-Woody WATCH
Elaeagnus commutata Rydb.—F3-Woody
Elaeagnus pungens Thunb.—F3-Woody

EUPHORBIAEAE

Croton argenteus L.—F2-Herbaceous
Chamaesyce hirta (L.) Millsp.—F3-Herbaceous
Euphorbia cyparissias L.—F4-Herbaceous
Euphorbia exigua L.—F3-Herbaceous
Euphorbia helioscopia L.—F3-Herbaceous
Euphorbia lathyris L.—F3-Herbaceous
Manihot esculenta Crantz—F3-Woody
Phyllanthus fraternus G.L. Webster—F3-Herbaceous
Phyllanthus tenellus Roxb.—F3-Herbaceous
Phyllanthus urinaria L.—F2-Herbaceous
Ricinus communis L.—F2-Herbaceous
Triadica sebifera (L.) Small—F1-Woody
syn= Sapium sebiferum (L.) Roxb.

FABACEAE

Aeschynomene evenia C. Wright—F3-Herbaceous
Albizia julibrissin Durazz.—F2-Woody
Albizia lebeck (L.) Benth.—F3-Woody
Alhagi maurorum Medik.—F3-Herbaceous
syn= Alhagi camelorum Fisch.
Alysicarpus vaginalis (L.) DC.—F3-Herbaceous
Arachis hypogaea L.—F3-Herbaceous
Caesalpinia gilliesii (Hook.) Wallich ex D. Dietr.—F3-Woody
syn= Poinciana gilliesii Wallich ex Hook.
Caesalpinia mexicana Gray—F3-Woody
syn= Poinciana mexicana (Gray) Britt. & Rose
Caesalpinia pulcherrima (L.) Sw.—F3-Woody
syn= Poinciana pulcherrima L.
Clitoria ternatea L.—F3-Herbaceous
Coronilla varia L.—F2-Herbaceous
Crotalaria retusa L.—F3-Herbaceous
Crotalaria spectabilis Roth—F3-Herbaceous
syn= Crotalaria retzii A.S. Hitchc.
Kummerowia stipulacea (Maxim.) Makino—F3-Herbaceous
syn= Lespedeza stipulacea Maxim.
Kummerowia striata (Thunb.) Schindl.—F2-Herbaceous
syn= Lespedeza striata (Thunb.) Hook. & Arn.
Lathyrus aphaca L.—F3-Herbaceous
Lathyrus hirsutus L.—F2-Herbaceous
Lathyrus latifolius L.—F3-Herbaceous
Lespedeza bicolor Turcz.—F3-Herbaceous
Lespedeza cuneata (Dum.-Cours.) G. Don—F2-Herbaceous WATCH
Leucaena leucocephala (Lam.) de Wit—F3-Woody WATCH
Lotus corniculatus L.—F3-Herbaceous
Macroptilium gibbosifolium (Ortega) A. Delgado—F4-Herbaceous
Medicago arabica (L.) Huds.—F2-Herbaceous

Medicago lupulina L.—F2-Herbaceous
Medicago minima (L.) L.—F2-Herbaceous
Medicago orbicularis (L.) Bartalini—F2-Herbaceous
Medicago polymorpha L.—F2-Herbaceous
Medicago sativa L.—F2-Herbaceous
syn= Medicago xvaria Martyn
Melilotus albus Medik.—F1-Herbaceous
Melilotus indicus (L.) All.—F1-Herbaceous
Melilotus officinalis (L.) Lam.—F1-Herbaceous
Neptunia plena (L.) Benth.—F3-Herbaceous
Oxyrhynchus volubilis Brandeg.—F4-Herbaceous
Prosopis laevigata (Humb. & Bonpl. ex Wil—Id.) M.C. Johnston—F3-Woody
Pueraria montana var. *lobata* (Willd.) Maesen & Almeida—F2-Woody WATCH
syn= Pueraria lobata (Willd.) Ohwi
Senna corymbosa (Lam.) Irwin & Barneby—F3-Woody
syn= Cassia corymbosa Lam.
Senna occidentalis (L.) Link—F2-Herbaceous
syn= Cassia occidentalis L.
Sesbania emerus (Aubl.) Urb.—F2-Herbaceous
Sesbania punicea (Cav.) Benth.—F3-Herbaceous
Sesbania sericea (Willd.) Link—F3-Herbaceous
Spartium junceum L.—F3-Woody
Sphaerophysa salsula (Pallas) DC.—F3-Herbaceous
Trifolium arvense L.—F3-Herbaceous
Trifolium campestre Schreb.—F3-Herbaceous
Trifolium dubium Sibthorp—F2-Herbaceous
Trifolium incarnatum L.—F2-Herbaceous
Trifolium lappaceum L.—F3-Herbaceous
Trifolium polymorphum Poir.—F2-Herbaceous
syn= Trifolium amphianthum Torr. & Gray
Trifolium pratense L.—F3-Herbaceous
Trifolium repens L.—F2-Herbaceous
Trifolium resupinatum L.—F2-Herbaceous
Trifolium subterraneum L.—F3-Herbaceous
Trifolium vesiculosum Savi—F2-Herbaceous
Vicia grandiflora Scop.—F3-Herbaceous
Vicia hirsuta (L.) S.F. Gray—F3-Herbaceous
Vicia lathyroides L.—F3-Herbaceous
Vicia lutea L.—F3-Herbaceous
Vicia sativa subsp. *nigra* (L.) Ehrh.—F2-Herbaceous
syn= Vicia angustifolia L.
syn= Vicia sativa var. angustifolia (L.) Ser.
syn= Vicia sativa var. nigra L.
syn= Vicia sativa var. segetalis (Thuill.) Ser.
Vicia sativa L. subsp. *sativa*—F3-Herbaceous
syn= Vicia sativa var. linearis Lange
Vicia tetrasperma (L.) Schreb.—F2-Herbaceous
Vicia villosa Radzhi subsp. *varia* (Host) Corb.—F3-Herbaceous
syn= Vicia dasycarpa Ten.
Vicia villosa Radzhi subsp. *villosa*—F2-Herbaceous
Vigna unguiculata (L.) Walp.—F3-Herbaceous
syn= Vigna sinensis (L.) Savi
Wisteria sinensis (Sims) DC.—F1-Woody

FUMARIACEAE

Fumaria densiflora DC.—F3-Herbaceous

Fumaria officinalis L.—F3-Herbaceous

Fumaria parviflora Lam.—F4-Herbaceous

GERANIACEAE

Centaureum pulchellum (Sw.) Druce—F2-Herbaceous

Centaureum muhlenbergii (Griseb.) Piper—F2-Herbaceous

GERANIACEAE

Erodium botrys (Cav.) Bertol.—F3-Herbaceous

Erodium malacoides (L.) Willd.—F3-Herbaceous

Erodium cicutarium (L.) L'Hér. ext Ait.—F2-Herbaceous

Geranium dissectum L.—F2-Herbaceous

GOODENIACEAE

Scaveola plumieri (L.) Vahl—F3-Herbaceous

HALORAGACEAE

Myriophyllum aquaticum (Vell.) Verdc.—F1-Woody

syn= *Myriophyllum brasiliense* Camb.

syn= *Myriophyllum proserpinacoides* Gillies ex Hook. & Arn.

Myriophyllum spicatum L.—F1-Woody

HYDROCHARITACEAE

Egeria densa Planch.—F2-Woody

syn= *Elodea densa* (Planch.) Caspary

Hydrilla verticillata (L. f.) Royle—F1-Woody

Ottelia alismoides (L.) Pers.—F2-Woody

IRIDACEAE

Belamcanda chinensis (L.) DC.—F3-Herbaceous

Crocsmia xrocrosmiiflora (V. Lemoine) N.E. Br.—F4-Herbaceous

Iris pallida Lam.—F4-Herbaceous

Iris pseudacorus L.—F3-Herbaceous

Romulea rosea (L.) Eckl.—F3-Herbaceous

Tritonia crocosmifolia Lem.—F3-Herbaceous

JUNCACEAE

Juncus capitatus Weigel—F2-Herbaceous

LAMIACEAE

Ajuga reptans L.—F3-Herbaceous

Glechoma hederacea L.—F4-Herbaceous

Hyptis mutabilis (Rich.) Briq.—F3-Herbaceous

Lamium amplexicaule L.—F2-Herbaceous

Lamium purpureum L.—F2-Herbaceous

Leonotis nepetifolia (L.) Ait. f.—F2-Herbaceous

Leonurus cardiaca L.—F3-Herbaceous

Leonurus sibiricus L.—F3-Herbaceous

Marrubium vulgare L.—F1-Herbaceous

Mentha arvensis L.—F3-Herbaceous

Mentha x piperita L.—F3-Herbaceous

Mentha x rotundifolia (L.) Huds.—F3-Herbaceous

Mentha spicata L.—F3-Herbaceous

Mentha suaveolens Ehrh.—F3-Herbaceous

Moluccella laevis L.—F3-Herbaceous

Nepeta cataria L.—F3-Herbaceous

Perilla frutescens (L.) Britton—F2-Herbaceous WATCH

Prunella vulgaris L.—F2-Herbaceous

Rosmarinus officinalis L.—F3-Woody

Salvia hispanica L.—F4-Herbaceous

Salvia tiliifolia Vahl—F3-Herbaceous

Scutellaria minor Hudson—F3-Herbaceous

Scutellaria racemosa Pers.—F3-Herbaceous

Sideritis lanata L.—F3-Herbaceous

Stachys floridana Shuttlew. ex Benth.—F2-Herbaceous
WATCH

LAURACEAE

Cinnamomum camphora (L.) J. Presl—F3-Woody WATCH

LEMNACEAE

Landoltia punctata (G. Mey.) Les & Crawford—F2-Woody

syn= *Spirodela punctata* (G. Mey.) C.H. Thompson

LILIACEAE

Allium ampeloprasum L.—F3-Herbaceous

Allium porrum L.—F3-Herbaceous

Alstroemeria pulchella L.f.—F3-Herbaceous

Asparagus officinalis L.—F3-Herbaceous

Asphodelus fistulosus L.—F3-Herbaceous

Crinum bulbispermum (Burm.f.) Milne-R. & Schweick.—F3-Herbaceous

syn= *Crinum longifolium* (L.) Thunb.

Hemerocallis fulva (L.) L.—F3-Herbaceous

Hemerocallis lilioasphodelus L.—F3-Herbaceous

syn= *Hemerocallis flava* (L.) L.

Hyacinthus orientalis L.—F3-Herbaceous

Lilium longiflorum Thunb.—F3-Herbaceous

Muscari comosum (L.) Mill.—F3-Herbaceous

Muscari neglectum Guss. ex Ten.—F3-Herbaceous

syn= *Muscari racemosum* (L.) Lam. & DC.

Ornithogalum umbellatum L.—F4-Herbaceous

Tristagma uniflorum (Lindl.) Traub—F3-Herbaceous

syn= *Ipheion uniflorum* (Lindl.) Raf.

Zephyranthes candida (Lindl.) -Herbaceousert—F3-Herbaceous

syn= *Atamosco candida* (Lindl.) Small

Zephyranthes grandiflora Lindl.—F3-Herbaceous

LIMNOCHARITACEAE

Hydrocleys nymphoides (H. & B. ex Willd.) Buch.—F2-Woody

LINACEAE

Linum grandiflorum Desf.—F3-Herbaceous

Linum usitatissimum L.—F3-Herbaceous

LOGANIACEAE

Buddleja lindleyana Fort.—F3-Woody

LYGODIACEAE

Lygodium japonicum (Thunb. ex Murr.) Sw.—F1-Herbaceous

LYTHRACEAE

Cuphea carthagenensis (Jacq.) J.F. Macbr.—F2-Herbaceous

Cuphea glutinosa Cham. & Schlecht.—F3-Herbaceous

Cuphea viscosissima Jacq.—F3-Herbaceous

Lagerstroemia indica L.—F2-Woody

Lythrum salicaria L.—F3-Herbaceous

MAGNOLIACEAE

Liriodendron tulipifera L.—F3-Woody

MALVACEAE**Abutilon theophrasti** Medik.—F3-Herbaceous**Alcea rosea** L.—F3-Herbaceoussyn= *Althaea rosea* (L.) Cav.**Hibiscus esculentus** L.—F3-Herbaceous**Hibiscus syriacus** L.—F3-Woody**Hibiscus trionum** L.—F3-Herbaceous**Krapovickasia physaloides** (Presl) Fryxell—F3-Herbaceous**Lavatera trimestris** L.—W2**Malva neglecta** Wallr.—F2-Herbaceous**Malva parviflora** L.—F2-Herbaceous**Malva rotundifolia** L.—F3-Herbaceoussyn?= *Malva pusilla* Sm.**Malva sylvestris** L.—F3-Herbaceous**Malvastrum coromandelianum** (L.) Garcke—F2-Herbaceous**Malvaviscus penduliflorus** DC.—F4-Herbaceoussyn= *Malvaviscus aboreus* var. *penduliflorus* (DC.) Schery**Pavonia hastata** Cav.—F3-Herbaceous**MELIACEAE****Melia azedarach** L.—F1-Woody**MENYANTHACEAE****Nymphoides indica** (L.) Kuntze—F2-Woody**Nymphoides peltata** (Gmel.) Kuntze—F2-Woody**MOLLUGINACEAE****Glinus lotoides** L.—F3-Herbaceous**Mollugo cerviana** (L.) Ser.—F2-Herbaceous**MORACEAE****Broussonetia papyrifera** (L.) L'Hér. ex Vent.—F2-Woody**Fatoua villosa** (Thunb.) Nakai—F2-Herbaceous**Ficus carica** L.—F3-Woody**Ficus pumila** L.—F3-Woody**Morus alba** L.—F2-Woody**MYRSINACEAE****Ardisia crenata** Sims—F3-Woody WATCH**MYRTACEAE****Myrtus communis** L.—F3-Woody**NYCTAGINACEAE****Bougainvillea glabra** Choisy—F3-Herbaceous**Mirabilis jalapa** L.—F3-Herbaceous**OLEACEAE****Jasminum mesnyi** Hance—F3-Woody**Ligustrum japonicum** Thunb.—F3-Woody**Ligustrum lucidum** Ait. f.—F1-Woody**Ligustrum quihoui** Carr.—F1-Woody**Ligustrum sinense** Lour.—F1-Woody**ONAGRACEAE****Ludwigia erecta** (L.) H. Hara—F3-Herbaceous**Ludwigia grandiflora** (M. Micheli) Greuter & Burdet subsp. **grandiflora**—F2-Woodysyn= *Ludwigia uruguayensis* (Camb.) Hara**Ludwigia grandiflora**subsp. *hexapetala* (Hook. & Arn.) Nesom & Kartesz—F2-Woodysyn= *Ludwigia hexapetala* (Hook. & Arn.) Zardini et al.**Oenothera cordata** J.W. Loudon—F2-Herbaceous**ORCHIDACEAE****Zeuxine strateumatica** (L.) Schlechter—F3-Herbaceous**OROBANCHACEAE****Orobanche minor** Sm.—F3-Herbaceous**Orobanche ramosa** L.—F1-Herbaceous**OXALIDACEAE****Oxalis corniculata** L.—F3-Herbaceous**Oxalis debilis** Kunth—F2-Herbaceoussyn= *Oxalis corymbosa* DC.**Oxalis articulata** Savigny—F2-Herbaceoussyn= *Oxalis rubra* St. Hil.**PAPAVERACEAE****Eschscholzia californica** Cham.—F3-Herbaceous**Glaucium corniculatum** (L.) J.H. Rudolph—F3-Herbaceous**Papaver rhoeas** L.—F3-Herbaceous**Papaver somniferum** L.—F3-Herbaceous**PARKERIACEAE****Ceratopteris thalictroides** (L.) Brongn.—F2-Woody**PEDALIACEAE****Sesamum orientale** L.—F4-Herbaceoussyn= *Sesamum indicum* L.**PINACEAE****Pinus elliottii** Engelm.—F3-Woody**PIPERACEAE****Peperomia pellucida** (L.) Kunth—F3-Herbaceous**PLANTAGINACEAE****Plantago coronopus** L.—F3-Herbaceous**Plantago lanceolata** L.—F2-Herbaceous**Plantago major** L.—F2-Herbaceous**POACEAE** Grass Family**Achnatherum clandestinum** (Hack.) Barkworth—F3-Herbaceoussyn= *Stipa clandestina* Hack.**Aegilops cylindrica** Host—F2-Herbaceoussyn= *Triticum cylindricum* (Host) Ces., Pass., & Gib.**Agropyron cristatum** (L.) Gaertn.—F3-Herbaceoussyn= *Agropyron* subsp. *pectinatum* (Bieb.) Tzvelevsyn= *Agropyron* *cristatiforme* Sarkarsyn= *Agropyron* *pectiniforme* Roemer & Schultessyn= *Agropyron* *desertorum* (Fisch. ex Link) J.A. Schultes**Agrostis avenacea** J.F. Gmel.—F3-Herbaceous**Agrostis stolonifera** L.—F3-Herbaceoussyn= *Agrostis alba* auct. non L.syn= *Agrostis gigantea* Rothsyn= *Agrostis stolonifera* subsp. *gigantea* (Roth) Schuebl. & Martens**Aira caryophyllea** L.—F2-Herbaceoussyn= *Aira elegans* Willd. ex Kunthsyn= *Aira capillaris* Hostsyn= *Aira caryophyllea* var. *capillaris* (Host) Mutel**Alopecurus geniculatus** L.—F4-Herbaceous**Alopecurus myosuroides** Huds.—F3-Herbaceous

- syn= *Alopecurus agrestis* L.
- Anthoxanthum aristatum** Boiss.—F3-Herbaceous
syn= *Anthoxanthum odoratum* var. *puelii* (Lecoq & Lamotte) Coss. & Durieu
- Anthoxanthum odoratum** L.—F2-Herbaceous
- Arthraxon hispidus** (Thunb.) Makino—F3-Herbaceous
syn= *Arthraxon hispidus* var. *cryptatherus* (Hack.) Honda
- Arundo donax** L.—F1-Woody
- Avena fatua** L.—F2-Herbaceous
- Avena sativa** L.—F3-Herbaceous
- Bothriochloa bladhii** (Retz.) S.T. Blake—F3-Herbaceous
syn= *Andropogon caucasicus* Trin.
syn= *Bothriochloa caucasica* (Trin.) C.E. Hubbard
- Bothriochloa ischaemum** var. *songarica* (Rupr. ex F. & M.) Celarier & Harlan—F1-Herbaceous
syn= *Andropogon ischaemum* var. *songaricus* Rupr. ex Fisch. & Mey.
- Bothriochloa pertusa** (L.) A. Camus—F3-Herbaceous
- Brachiaria eruciformis** (Sm.) Griseb.—F3-Herbaceous
- Brachypodium distachyon** (L.) Beauv.—F3-Herbaceous
- Briza maxima** L.—F3-Herbaceous
- Briza minor** L.—F2-Herbaceous
- Bromus arvensis** L.—F2-Herbaceous
syn= *Bromus japonicus* Thunb. ex Murr.—
- Bromus catharticus** Vahl—F2-Herbaceous
syn= *Bromus unioloides* Kunth
syn= *Bromus willdenowii* Kunth
- Bromus commutatus** Schrad.—F3-Herbaceous
- Bromus diandrus** Roth—F3-Herbaceous
syn= *Bromus rigidus* Roth
- Bromus hordeaceus** L.—F2-Herbaceous
syn= *Bromus hordeaceus* L. subsp. *molliformis* (Lloyd) Maire & Weiller.
syn= *Bromus hordeaceus* subsp. *divaricatus* (Bonnier & Layens) Kerg.
- Bromus inermis** Leyss.—F3-Herbaceous
syn= *Bromopsis inermis* (Leyss.) Holub
- Bromus japonicus** Thunb. ex Murr.—F2-Herbaceous
- Bromus lanceolatus** Roth—F3-Herbaceous
- Bromus rubens** L.—F2-Herbaceous
- Bromus secalinus** L.—F2-Herbaceous
- Bromus sterilis** L.—F3-Herbaceous
- Bromus tectorum** L.—F2-Herbaceous
- Chloris cantherae** Arechav.—F2-Herbaceous
- Chloris divaricata** R. Br.—F3-Herbaceous
syn= *Chloris cynodontioides* Balansa
- Chloris gayana** Kunth—F2-Herbaceous
- Coix lacryma-jobi** L.—F3-Herbaceous
- Cortaderia selloana** (J.A. & J.H. Schultes) Aschers. & Graebn.—F3-Woody
- Cynodon aethiopicus** Clayton & Harlan—F3-Herbaceous
- Cynodon dactylon** (L.) Pers.—F1-Herbaceous
- Cynodon magennisii** Hurcombe—F4-Herbaceous
- Cynodon nlemfuensis** Vanderyst—F3-Herbaceous
- Cynodon transvaalensis** Burt-Davy—F4-Herbaceous
- Cynosurus echinatus** L.—F3-Herbaceous
- Dactylis glomerata** L.—F2-Herbaceous
- Dactyloctenium aegyptium** (L.) Willd.—F2-Herbaceous
syn= *Cynosurus aegyptius* L.
- Desmazeria rigida** (L.) Tutin—F2-Herbaceous
syn= *Catapodium rigidum* (L.) Hubbard ex Dony
- Dichanthium annulatum** (Forsk.) Stapf—F1-Herbaceous
syn= *Andropogon annulatus* Forsk.
- Dichanthium aristatum** (Poir.) C.E. Hubbard—F1-Herbaceous
- Dichanthium sericeum** (R. Br.) A. Camus—F1-Herbaceous
syn= *Andropogon sericeus* R. Br.
- Digitaria ischaemum** (Schreb.) Schreb. ex Muhl.—F2-Herbaceous
- Digitaria milanijana** (Rendle) Stapf—F4-Herbaceous
- Digitaria sanguinalis** (L.) Scop.—F2-Herbaceous
- Digitaria violascens** Link—F2-Herbaceous
syn= *Digitaria ischaemum* var. *violascens* (Link) Radford
- Echinochloa colona** (L.) Link—F2-Herbaceous
- Echinochloa crus-galli** (L.) Beauv.—F2-Herbaceous
syn= *Echinochloa frumentacea* Link
syn= *Echinochloa crus-galli* var. *frumentacea* (Link) W. Wight
- Echinochloa paludigena** Wiegand—F4-Herbaceous
- Ehrharta calycina** Sm.—F3-Herbaceous
- Eleusine indica** (L.) Gaertn.—F2-Herbaceous
- Elymus hispidus** (P. Opiz) Meldris—F2-Herbaceous
- Elymus ponticus** (Podp.) Meldris—F3-Herbaceous
- Elymus repens** (L.) Gould—F3-Herbaceous
syn= *Agropyron repens* (L.) Beauv.
- Eragrostis airoides** Nees—F3-Herbaceous
- Eragrostis amabilis** (L.) Wight & Arnolt ex Nees—F3-Herbaceous
syn= *Eragrostis tenella* (L.) Beauv. ex Roemer & Schultes
- Eragrostis barrelieri** Daveau—F2-Herbaceous
- Eragrostis cilianensis** (All.) Vign. ex Janchen—F2-Herbaceous
- Eragrostis curvula** (Schrad.) Nees—F2-Herbaceous
- Eragrostis lehmanniana** Nees—F1-Herbaceous
- Eragrostis minor** Host—F3-Herbaceous
- Eragrostis pilosa** var. *perplexa* (Harvey) S. Koch—F3-Herbaceous
syn= *Eragrostis tenella* (L.) Beauv. ex Roemer & Schultes
- Eragrostis pilosa** (L.) P. Beauv. var. *pilosa*—F2-Herbaceous
- Eragrostis superba** Peyr.—F3-Herbaceous
- Eremochloa ophiuroides** (Munro) Hack.—F3-Herbaceous
- Eriochloa pseudoacrotricha** (Stapf ex Thellung) Hubbard ex Blake—F3-Herbaceous
- Eustachys caribaea** (Spreng.) Herter—F3-Herbaceous
- Eustachys retusa** (Lag.) Kunth—F2-Herbaceous
- Gastridium pleioides** (Nees & Meyen) C.E. Hubbard—F3-Herbaceous
- Hainardia cylindrica** (Willd.) Greuter—F3-Herbaceous
syn= *Rottboellia cylindrica* Willd.
syn= *Moneria cylindrica* (Willd.) Coss. & Dur.
- Hemarthria altissima** (Poir.) Stapf & Hubbard—F3-Herbaceous
syn= *Manisuris altissima* (Poir.) A.S. Hitchc.
- Heteropogon melanocarpus** (Ell.) Benth.—F3-Herbaceous
- Holcus lanatus** L.—F3-Herbaceous
- Hordeum murinum** L. subsp. *glaucum* (Steud.) Tzvelev—F4-Herbaceous
syn= *Hordeum glaucum* Steud.

- Hordeum murinum** subsp. *leporinum* (Link) Arcang.—F2-Herbaceous
 SYN= *Critesion murinum* subsp. *leporinum* (Link) A. Löve
 SYN= *Hordeum leporinum* Link
- Hordeum vulgare** L.—F3-Herbaceous
- Imperata cylindrica** (L.) Beauv.—F3-Herbaceous WATCH
- Ixophorus unisetus** (J. Presl) Schldl.—F3-Herbaceous
- Lamarckia aurea** (L.) Moench—F3-Herbaceous
- Leptochloa chloridiformis** (Hack. ex Stuck.) Parodi—F3-Herbaceous
- Lolium arundinaceum** (Schreb.) S.J. Darbyshire—F2-Herbaceous
 SYN= *Festuca arundinacea* Schreb.
- Lolium perenne** L.—F1-Herbaceous
 SYN= *Lolium multiflorum* Lam.
 SYN= *Lolium perenne* subsp. *multiflorum* (Lam.) Husnot
 SYN= *Lolium perenne* var. *multiflorum* (Lam.) Parnell
 SYN= *Lolium perenne* subsp. *italicum* (A. Braun) Husnot
- Lolium pratense** (Huds.) S.J. Darbyshire—F3-Herbaceous
 SYN= *Festuca elatior* L. p.p.
 SYN= *Festuca pratensis* Huds.
- Lolium rigidum** Gaudin—F4-Herbaceous
 SYN= *Lolium perenne* subsp. *rigidum* (Gaudin) Löve & Löve
- Lolium temulentum** L.—F2-Herbaceous
 SYN= *Lolium temulentum* var. *arvense* (With.) Lilja
- Luziola peruviana** Juss. ex J. F. Gmel.—F3-Herbaceous
- Melinis repens** (Willd.) Zizka—F2-Herbaceous
 SYN= *Rhynchelytrum repens* (Willd.) C.E. Hubbard
- Mnesithea granularis** (L.)—F4-Herbaceous
 SYN= *Hackelochloa granularis* (L.) Kuntze
- Microstegium vimineum** (Trin.) A. Camus—F3-Herbaceous WATCH
- Oryza sativa** L.—F2-Herbaceous
- Panicum antidotale** Retz.—F2-Herbaceous
- Panicum bergii** Arech.—F2-Herbaceous
- Panicum coloratum** L.—F2-Herbaceous
- Panicum miliaceum** L.—F3-Herbaceous
- Panicum repens** L.—F3-Herbaceous
- Panicum trichoides** Sw.—F3-Herbaceous
- Parapholis incurva** (L.) C.E. Hubbard—F2-Herbaceous
 SYN= *Pholurus incurvus* (L.) Schinz & Thellung
- Paspalum alnum** Chase—F3-Herbaceous
- Paspalum convexum** Humb. & Bonpl. ex Flueggé—F3-Herbaceous
- Paspalum dilatatum** Poir.—F2-Herbaceous
- Paspalum hydrophilum** Henr.—F4-Herbaceous
- Paspalum malacophyllum** Trin.—F3-Herbaceous
- Paspalum notatum** Alain ex Flugge—F2-Herbaceous
 SYN= *Paspalum notatum* var. *latiflorum* J. Döll
 SYN= *Paspalum notatum* var. *saurae* Parodi
- Paspalum scrobiculatum** L.—F4-Herbaceous
- Paspalum urvillei** Steud.—F2-Herbaceous
- Pennisetum ciliare** (L.) Link—F1-Herbaceous
 SYN= *Cenchrus ciliaris* L.
- Pennisetum glaucum** (L.) R. Br.—F3-Herbaceous
 SYN= *Pennisetum americanum* (L.) Leeke
 SYN= *Setaria glauca* (L.) Beauv.
- Pennisetum nervosum** (Nees) Trin.—F3-Herbaceous
 SYN= *Cenchrus nervosus* (Nees) Kuntze
- Pennisetum purpureum** Schumacher—F3-Herbaceous
- Pennisetum villosum** R. Br. ex Fresen.—F2-Herbaceous
 SYN= *Cenchrus longisetus* M.C. Johnston
- Phalaris arundinacea** L.—F3-Herbaceous
- Phalaris brachystachys** Link—F3-Herbaceous
- Phalaris canariensis** L.—F3-Herbaceous
- Phalaris minor** Retz.—F3-Herbaceous
- Phleum pratense** L.—F3-Herbaceous
- Phyllostachys aurea** Carr. ex A. & C. Rivière—F2-Woody
- Poa annua** L.—F2-Herbaceous
- Poa bulbosa** L.—F4-Herbaceous
- Poa compressa** L.—F3-Herbaceous
- Poa trivialis** L.—F4-Herbaceous
- Polygogon monspeliensis** (L.) Desf.—F2-Herbaceous
- Polypogon viridis** (Gouan) Breistr.—F2-Herbaceous
- Psathyrostachys juncea** (Fisch.) Nevski—F4-Herbaceous
 SYN= *Elymus junceus* Fisch.
- Rostraria cristata** (L.) Tzvelev—F3-Herbaceous
 SYN= *Koeleria gerardii* (Vill.) Shinners
 SYN= *Koeleria phleoides* (Vill.) Pers.
- Rottboellia cochinchinensis** (Lour.) W.D. Clayton—F3-Herbaceous
 SYN= *Aegilops exaltata* L.
 SYN= *Manisuris exaltata* (L.) Kuntze
 SYN= *Rottboellia exaltata* (L.) L. f.
- Saccharum officinarum** L.—F3-Herbaceous
- Sacciolepis indica** (L.) Chase—F3-Herbaceous
- Schismus barbatus** (Loefl. ex L.) Thellung—F3-Herbaceous
- Sclerochloa dura** (L.) Beauv.—F2-Herbaceous
- Secale cereale** L.—F3-Herbaceous
 SYN= *Triticum cereale* (L.) Salisb.
- Setaria italica** (L.) Beauv.—F2-Herbaceous
- Setaria pumila** (Poir.) Roem. & Schult.—F2-Herbaceous
- Setaria verticillata** (L.) Beauv.—F2-Herbaceous
- Setaria viridis** (L.) P. Beauv.—F2-Herbaceous
 SYN= *Setaria viridis* var. *major* (Gaudin) Pospichal
- Sorghum alnum** Parodi—F4-Herbaceous
- Sorghum bicolor** (L.) Moench—F2-Herbaceous
 SYN= *Sorghum saccharatum* (L.) Moench
- Sorghum halepense** (L.) Pers.—F1-Herbaceous
- Stenotaphrum secundatum** (Walter) Kuntze—F3-Herbaceous
- Themeda triandra** Forssk.—F3-Herbaceous
- Thinopyrum intermedium** (Host) Barkworth & Dewey—F4-Herbaceous
 SYN= *Agropyron intermedium* (Host) Beauv.
 SYN= *Elytrigia intermedia* (Host) Nevski
 SYN= *Thinopyrum intermedium* subsp. *barbulatum* (Schur) Barkworth & Dewey
- Thinopyrum ponticum** (Podp.) Liu & Wang—F4-Herbaceous
 SYN= *Agropyron elongatum* (Host) Beauv.
 SYN= *Elymus elongatus* (Host) Runemark
 SYN= *Elytrigia elongata* (Host) Nevski
 SYN= *Elytrigia pontica* (Podp.) Holub
- Thinopyrum pycnanthum** (Godr.) Barkworth—F4-Herbaceous

syn= *Agropyron pycnanthum* (Godr.) Godr. & Gren.

syn= *Elymus pungens* auct. non (Pers.) Melderis

syn= *Elymus pycnanthus* (Godr.) Melderis

syn= *Elytrigia pycnanthes* (Godr.) A. Löve

Triraphis mollis R. Br.—F3-Herbaceous

Triticum aestivum L.—F3-Herbaceous

Urochloa brizantha (Hochstetter ex A. Rich.) R. Webster—F3-Woody

syn= *Brachiaria brizantha* (Hochstetter ex A. Rich.) Stapf

Urochloa maxima (Jacq.) R. Webster—F1-Herbaceous

Urochloa mosambicensis (Hack.) Dandy—F3-Woody

Urochloa mutica (Forsk.) T.Q. Nguyen—F3-Herbaceous

syn= *Brachiaria mutica* (Forsk.) Stapf

syn= *Panicum muticum* Forsk.

Urochloa panicoides Beauv.—F3-Herbaceous

Urochloa plantaginea (Link) R. Webster—F3-Herbaceous

syn= *Brachiaria plantaginea* (Link) A.S. Hitchc.

Urochloa ramosa (L.) Nguyen—F3-Herbaceous

syn= *Brachiaria ramosa* (L.) Stapf

Urochloa reptans (L.) Stapf.—F2-Herbaceous

syn= *Panicum reptans* L.

syn= *Brachiaria reptans* (L.) Gard. & Hubb.

Vulpia bromoides (L.) S.F. Gray—F3-Herbaceous

syn= *Festuca bromoides* L.

syn= *Vulpia dertonensis* (All.) Gola

Vulpia myuros (L.) K.C. Gmel.—F2-Herbaceous

syn= *Festuca myuros* L.

syn= *Vulpia myuros* var. *hirsuta* Hack.

Zea mays L.—F3-Herbaceous

Zea perennis (Hitchc.) Reeves & Manglesdorf—F3-Herbaceous

syn= *Euchlaena perennis* Hitchc.

POLYGONACEAE

Antigonon leptopus Hook. & Arn.—F3-Herbaceous

Emex spinosa (L.) Campd.—F3-Herbaceous

syn= *Rumex spinosus* L.

Fagopyrum esculentum Moench—F3-Herbaceous

Polygonum arenastrum Jord. ex Boreau—F2-Herbaceous WATCH

syn= *Polygonum aviculare* var. *arenastrum* (Jord. ex Boreau) Rouy

Polygonum argyrocoleon Steud. ex Kunze—F3-Herbaceous

Polygonum aviculare L.—F2-Herbaceous

Polygonum caespitosum Blume—F3-Herbaceous

Polygonum caespitosum var. *longisetum* (Bruijn) A.N. Steward—F3-Herbaceous

Polygonum convolvulus L.—F2-Herbaceous

Polygonum hydropiper L.—F3-Herbaceous

syn= *Persicaria hydropiper* (L.) Opiz

Polygonum orientale L.—F3-Herbaceous

syn= *Persicaria orientalis* (L.) Spach

Polygonum meisnerianum var. *beyrichianum* (C. & S.) Meisn.—F3-Herbaceous

Polygonum scandens L.

Polygonum persicaria L.—F2-Herbaceous WATCH

Rumex acetosella L.—F3-Herbaceous

Rumex conglomeratus Murr.—F3-Herbaceous

Rumex crispus L.—F2-Herbaceous

Rumex obtusifolius L.—F3-Herbaceous

Rumex paraguayensis Parodi—F3-Herbaceous

Rumex pulcher L.—F2-Herbaceous

POLYPODIACEAE

Nephrolepis exaltata (L.) Schott—F3-Herbaceous

PONTERIDIACEAE

Eichhornia crassipes (Mart.) Solms—F1-Woody

POTAMOGETONACEAE

Potamogeton crispus L.—F2-Woody

PRIMULACEAE

Anagallis arvensis L.—F2-Herbaceous

PSILOTACEAE

Psilotum nudum (L.) P. Beauv.—F3-Herbaceous

PTERIDACEAE

Cheilanthes notholaenoides (Desv.) Maxon ex Weatherby—F3-Herbaceous

Pteris multifida Poir.—F3-Herbaceous

Pteris vittata L.—F3-Herbaceous

RANUNCULACEAE

Adonis annua L.—F3-Herbaceous

Clematis terniflora DC.—F2-Herbaceous WATCH

syn= *Clematis dioSCOREIFOLIA* Levl. & Vaniot

Consolida ajacis (L.) Schur.—F2-Herbaceous

syn= *Delphinium ajacis* L.

syn= *Delphinium ambiguum* L.

Consolida orientalis (J. Gay) Schroedinger—F4-Herbaceous

syn= *Delphinium orientale* J. Gay

Ranuncus ficaria L.—F3-Herbaceous

Ranunculus marginatus var. *trachycarpus* (Fisch. & Mey.) Arn.—F3-Herbaceous

syn= *Ranunculus trachycarpus* Fisch. & Mey.

Ranunculus muricatus L.—F2-Herbaceous

Ranunculus parviflorus L.—F2-Herbaceous

Ranunculus platensis Spreng.—F3-Herbaceous

Ranunculus repens L.—F2-Herbaceous

Ranunculus sardous Crantz—F2-Herbaceous

syn= *Ranunculus parvulus* L.

Ranunculus trilobus Desf.—F3-Herbaceous

RHAMNACEAE

Hovenia dulcis Thunb.—F3-Woody

Paliurus spina-christi P. Mill.—F3-Woody

Ziziphus zizyphus (L.) Karst.—F3-Woody

syn= *Ziziphus jujuba* P. Mill.

ROSACEAE

Aphanes microcarpa (Boiss. & Reut.) Rothm.—F3-Herbaceous

syn= *Alchemilla microcarpa* Boiss. & Reut.

Duchesnea indica (Andr.) Focke—F2-Herbaceous

Photinia serratifolia (Desf.) Kalkm.—F3-Woody WATCH

Potentilla recta L.—F3-Herbaceous

Prunus domestica L.—F3-Woody

Prunus persica (L.) Batsch—F3-Woody

Pyracantha coccinea M. Roemer—F3-Woody

Pyracantha fortuneana (Maxim.) H.L. Li—F3-Woody

Pyracantha koidzumii (Hayata) Rehder—F3-Woody
Pyrus calleryana Dcne.—F2-Woody
Pyrus communis L.—F3-Woody
Rosa bracteata J.C. Wendl.—F1-Woody
Rosa eglanteria L.—F3-Woody
Rosa laevigata Michx.—F2-Woody
Rosa micrantha Borrer ex Sm.—F3-Woody
Rosa multiflora Thunb. ex Murr.—F1-Woody
Rosa tomentosa Sm.—F3-Woody
Rubus bifrons Vest ex Tratt.—F3-Herbaceous

RUBIACEAE

Asperula arvensis L.—F3-Herbaceous
Cruciata pedemontana (Bellardi) Ehrend.—F2-Herbaceous
syn= Galium pedemontanum (Bellardi) All.
Galium anglicum Hudson—F3-Herbaceous
Galium aparine L.—F2-Herbaceous
Paederia foetida L.—F3-Woody
syn= Paederia scandens (Lour.) Merr.
Richardia scabra L.—F2-Herbaceous
Sherardia arvensis L.—F2-Herbaceous
Spermacece verticillata L.—F3-Herbaceous
syn= Borreria verticillata (L.) G.F.W. Mey.

RUTACEAE

Citrus aurantium L.—F3-Woody
Poncirus trifoliata (L.) Raf.—F2-Woody
Ruta chalapensis L.—F3-Herbaceous
Ruta graveolens L.—F3-Herbaceous
Triphasia trifolia (Burm. f.) P. Wilson—F3-Woody

SALICACEAE

Populus alba L.—F3-Woody
Populus nigra L.—F3-Woody
syn= Populus italica (Du Roi) Moench
Salix xpendulina Wenderoth—F3-Woody
syn= Salix babylonica auct. non L. p.p.

SALVINIACEAE

Salvinia molesta Mitchell—F1-Woody
Salvinia minima Baker—F2-Woody

SAPINDACEAE

Cardiospermum halicacabum L.—F2-Herbaceous
Cupaniopsis anacardioides (A. Rich.) Radlk.—F3-Woody
Koelreuteria elegans (Seem.) A.C. Smith—F3-Woody
syn= Koelreuteria paniculata Laxm.

SCROPHULARIACEAE

Bacopa repens (Sw.) Wettst.—F3-Herbaceous
Bellardia trixago (L.) All.—F2-Herbaceous
Chaenorhinum minus (L.) Lange—F3-Herbaceous
Kickxia elatine (L.) Dumort.—F3-Herbaceous
Limnophila sessiliflora (Vahl) Blume—F2-Woody
Linaria vulgaris P. Mill.—F3-Herbaceous
Lindernia crustacea (L.) F. Muell.—F3-Herbaceous
Mazus pumilus (Burm. f.) Steenis—F2-Herbaceous
syn= Mazus japonicus (Thunb.) Kuntze
Parentucellia viscosa (L.) Caruel—F2-Herbaceous
Verbascum blattaria L.—F2-Herbaceous
Verbascum thapsus L.—F2-Herbaceous

Verbascum virgatum Stokes—F3-Herbaceous
Veronica agrestis L.—F4-Herbaceous
Veronica arvensis L.—F2-Herbaceous
Veronica persica Poir.—F2-Herbaceous
Veronica polita Fries—F2-Herbaceous

SIMAROUBACEAE

Ailanthus altissima (P. Mill.) Swingle—F1-Woody

SOLANACEAE

Cestrum diurnum L.—F3-Woody
Cestrum nocturnum L.—F3-Woody
Cestrum parqui L'Hér.—F3-Woody
Datura innoxia P. Mill.—F3-Herbaceous
Datura stramonium L.—F2-Herbaceous
Lycianthes asarifolia (Kunth & Bouché) Bitter—F3-Herbaceous
Lycium barbarum L.—F3-Woody
Nicotiana glauca Graham—F2-Woody
Nicotiana longiflora Cav.—F4-Herbaceous
Nicotiana tabacum L.—F3-Herbaceous
Nierembergia hippomanica Miers—F3-Herbaceous
Petunia integrifolia (Hook.) Schinz & Thellung—F3-Herbaceous
syn= Petunia violacea Lindl.

Physalis philadelphica Lam.—F4-Herbaceous

syn= Physalis ixocarpa Hornem.

Salpichroa organifolia (Lam.) Baill.—F3-Herbaceous

syn= Salpichroa rhomboidea (Gillies & Hook.) Miers

Schizanthus pinnatus Ruiz & Pavón—F4-Herbaceous

Solanum capsicastrum Link ex Schauer—F3-Herbaceous

Solanum capsicoides All.—F3-Herbaceous

Solanum diphyllum L.—F3-Herbaceous

Solanum erianthum D. Don—F3-Herbaceous

Solanum lycopersicum var. *cerasiforme* (Dunal) Spooner et al.—F3-Herbaceous

syn= Lycopersicon esculentum var. cerasiforme (Dunal) Alef.

Solanum lycopersicum Lam. var. *lycopersicum*—F3-Herbaceous

syn= Lycopersicon esculentum P. Mill.

Solanum pseudocapsicum L.—F3-Herbaceous

Solanum sarrachoides Sendt.—F3-Herbaceous

Solanum sisymbriifolium Lam.—F3-Herbaceous

Solanum viarum Dunal—F1-Herbaceous

SPHENOCLEACEAE

Sphenoclea zeylanica Gaertn.—F3-Herbaceous

STERCULIACEAE

Firmiana simplex (L.) W. Wight—F3-Woody

Melochia corchorifolia L.—F2-Herbaceous

TAMARICACEAE

Tamarix aphylla (L.) Karst.—F1-Woody

Tamarix chinensis Lour.—F1-Woody

including *T. pentandra* Pallas, *T. ramosissima* Ledeb.

Tamarix gallica L.—F1-Woody

including *T. canariensis* Willd., *T. africana* Poir.

Tamarix parviflora DC.—F1-Woody

THELYPTERIDACEAE

Macrothelypteris torresiana (Gaud.) Ching—F3-Herbaceous

syn= *Dryopteris uliginosa* (Kunze) C. Christens.

syn= *Thelypteris torresiana* (Gaud.) Alston

THYMELAEACEAE

Thymelaea passerina (L.) Coss. & Germ.—F3-Herbaceous

ULMACEAE

Ulmus parvifolia Jacq.—F3-Woody WATCH

Ulmus pumila L.—F1-Woody

URTICACEAE

Boehmeria nivea (L.) Gaud.—F4-Herbaceous

Parietaria judaica L.—F4-Herbaceous

Pilea microphylla (L.) Lieb.—F3-Herbaceous

Urtica urens L.—F3-Herbaceous

VALERIANACEAE

Valerianella locusta (L.) Betcke—F3-Herbaceous

VERBENACEAE

Clerodendrum bungei Steud.—F3-Woody

Clerodendrum indicum (L.) Kuntze—F3-Woody

Duranta erecta L.—F3-Woody

syn= *Duranta repens* L. var. *alba* (Mast.) Bailey

syn= *Duranta repens* var. *repens*

Glandularia xhybrida (Grönland & Rümpler) Nesom & Pruski—F4-Herbaceous

syn= *Verbena hybrida* Grönland & Rümpler

Glandularia pulchella (Sweet) Troncoso—F2-Herbaceous

syn= *Verbena pulchella* Sweet

syn= *Verbena tenuisecta* Briq.

Lantana camara L.—F2-Woody

Lantana montevidensis (Spreng.) Briq.—F3-Woody

syn= *Lantana sellowiana* Link & Otto

syn= *Lippia montevidensis* Spreng.

Verbena bonariensis L.—F2-Herbaceous

Verbena brasiliensis Vell.—F2-Herbaceous WATCH

Verbena litoralis Kunth—F4-Herbaceous

Verbena rigida Spreng.—F2-Herbaceous

Vitex agnus-castus L.—F2-Woody WATCH

Vitex negundo L.—F3-Woody

VIOLACEAE

Viola tricolor L.—F3-Herbaceous

VITACEAE

Cayratia japonica (Thunb.) Gagnepain—F3-Herbaceous

ZYGOPHYLLACEAE

Kallstroemia maxima (L.) Hook. & Arn.—F3-Herbaceous

Peganum harmala L.—F2-Herbaceous

Tribulus cistoides L.—F4-Herbaceous

Tribulus terrestris L.—F2-Herbaceous

Zygophyllum fabago L.—F3-Herbaceous

APPENDIX 2

Non-native species in Texas ranked as F1. For aquatic species, the number of counties of occurrence is indicated in square brackets.

F1-WOODY (Trees, shrubs, subshrubs, and woody vines)

Ailanthus altissima

Arundo donax

Ligustrum lucidum

Ligustrum quihoui

Ligustrum sinense

Lonicera japonica

Melia azedarach

Nandina domestica

Rosa bracteata

Rosa multiflora

Tamarix aphylla

Tamarix chinensis (incl. *T. pentandra*,
T. ramosissima)

Tamarix gallica (incl. *T. canariensis*, *T. africana*)

Tamarix parviflora

Triadica sebifera

Ulmus pumila

Wisteria sinensis

F1-HERBACEOUS (Annual and perennial herbs and grasses)

Atriplex semibaccata

Bassia scoparia

Bothriochloa ischaemum var.
songarica

Carduus nutans subsp. *macrocephalus*

Centaurea melitensis

Cynodon dactylon

Cyperus entrerianus

Dichanthium annulatum

Dichanthium aristatum

Dichanthium sericeum

Eragrostis lehmanniana

Lolium perenne

Lygodium japonicum

Marrubium vulgare

Melilotus albus

Melilotus indicus

Melilotus officinalis

Orobanche ramosa

Pennisetum ciliare

Rapistrum rugosum

Salsola kali subsp. *pontica*

Salsola tragus

Solanum viarum

Sorghum halepense

Urochloa maxima

F1-AQUATIC

Alternanthera philoxeroides [20+]

Colocasia esculenta [11]

Eichhornia crassipes [25]

Hydrilla verticillata [6]

Myriophyllum aquaticum [18]

Myriophyllum spicatum [10]

Nasturtium officinale [35]

Pistia stratiotes [10 or more]

Salvinia molesta [10]

APPENDIX 3

Non-native species in Texas ranked as F2. For aquatic species, the number of counties of known occurrence is indicated in square brackets.

F2-WOODY (Trees, shrubs, subshrubs, and woody vines)

<i>Albizia julibrissin</i>	<i>Morus alba</i>	<i>Pyrus calleryana</i>
<i>Broussonetia papyrifera</i>	<i>Nicotiana glauca</i>	<i>Rosa laevigata</i>
<i>Hypericum perforatum</i>	<i>Phyllostachys aurea</i>	<i>Vitex agnus-castus</i>
<i>Lagerstroemia indica</i>	<i>Poncirus trifoliata</i>	
<i>Lantana camara</i>	<i>Pueraria montana</i> var. <i>lobata</i>	

F2-HERBACEOUS (Annual and perennial herbs and grasses)

<i>Aegilops cylindrica</i>	<i>Conringia orientalis</i>	<i>Gamochoeta pensylvanica</i>
<i>Aira caryophyllea</i>	<i>Consolida ajacis</i>	<i>Geranium dissectum</i>
<i>Alternanthera caracasana</i>	<i>Convolvulus arvensis</i>	<i>Gibasis pellucida</i>
<i>Amaranthus blitum</i>	<i>Conyza bonariensis</i>	<i>Glandularia pulchella</i>
<i>Ammi majus</i>	<i>Coronilla varia</i>	<i>Gomphrena globosa</i>
<i>Anagallis arvensis</i>	<i>Coronopus didymus</i>	<i>Hedera helix</i>
<i>Anthemis cotula</i>	<i>Croton argenteus</i>	<i>Hedypnois cretica</i>
<i>Anthoxanthum odoratum</i>	<i>Cruciata pedemontana</i>	<i>Heliotropium amplexicaule</i>
<i>Arabidopsis thaliana</i>	<i>Cucumis melo</i>	<i>Heliotropium indicum</i>
<i>Arenaria serpyllifolia</i>	<i>Cuphea carthagenensis</i>	<i>Holosteum umbellatum</i>
<i>Avena fatua</i>	<i>Cyclosporum leptophyllum</i>	<i>Hordeum murinum</i> subsp. <i>leporinum</i>
<i>Bellardia trixago</i>	<i>Cyperus difformis</i>	<i>Hypochaeris brasiliensis</i> var. <i>tweediei</i>
<i>Brassica rapa</i>	<i>Cyperus involucratu</i>	<i>Hypochaeris glabra</i>
<i>Briza minor</i>	<i>Cyperus iria</i>	<i>Hypochaeris microcephala</i> var. <i>albiflora</i>
<i>Bromus arvensis</i>	<i>Cyperus rotundus</i>	<i>Hypochaeris radicata</i>
<i>Bromus catharticus</i>	<i>Dactylis glomerata</i>	<i>Ipomoea carnea</i>
<i>Bromus hordeaceus</i>	<i>Dactyloctenium aegyptium</i>	<i>Juncus capitatus</i>
<i>Bromus japonicus</i>	<i>Datura stramonium</i>	<i>Kummerowia striata</i>
<i>Bromus rubens</i>	<i>Daucus carota</i>	<i>Lactuca serriola</i>
<i>Bromus secalinus</i>	<i>Descurainia sophia</i>	<i>Lamium amplexicaule</i>
<i>Bromus tectorum</i>	<i>Desmazeria rigida</i>	<i>Lamium purpureum</i>
<i>Buglossoides arvensis</i>	<i>Digitaria ischaemum</i>	<i>Lathyrus hirsutus</i>
<i>Bupleurum rotundifolium</i>	<i>Digitaria sanguinalis</i>	<i>Leonotis nepetifolia</i>
<i>Camelina microcarpa</i>	<i>Digitaria violascens</i>	<i>Lespedeza cuneata</i>
<i>Capsella bursa-pastoris</i>	<i>Diploctaxis muralis</i>	<i>Leucanthemum vulgare</i>
<i>Cardamine debilis</i>	<i>Duchesnea indica</i>	<i>Lolium arundinaceum</i>
<i>Cardamine hirsuta</i>	<i>Echinochloa colona</i>	<i>Lolium temulentum</i>
<i>Cardiospermum halicacabum</i>	<i>Echinochloa crus-galli</i>	<i>Malva neglecta</i>
<i>Carduus pycnocephalus</i>	<i>Eleusine indica</i>	<i>Malva parviflora</i>
<i>Centaurea cyanus</i>	<i>Elymus hispidus</i>	<i>Malvastrum coromandelianum</i>
<i>Centaureum muhlenbergii</i>	<i>Eragrostis barrelieri</i>	<i>Mazus pumilus</i>
<i>Centaureum pulchellum</i>	<i>Eragrostis cilianensis</i>	<i>Medicago arabica</i>
<i>Cerastium fontanum</i>	<i>Eragrostis curvula</i>	<i>Medicago lupulina</i>
<i>Cerastium glomeratum</i>	<i>Eragrostis pilosa</i> var. <i>pilosa</i>	<i>Medicago minima</i>
<i>Cerastium pumilum</i>	<i>Erodium cicutarium</i>	<i>Medicago orbicularis</i>
<i>Chenopodium album</i>	<i>Eruca vesicaria</i> subsp. <i>sativa</i>	<i>Medicago polymorpha</i>
<i>Chenopodium ambrosioides</i>	<i>Erucastrum gallicum</i>	<i>Medicago sativa</i>
<i>Chenopodium murale</i>	<i>Erysimum repandum</i>	<i>Melinis repens</i>
<i>Chloris cantherae</i>	<i>Eustachys retusa</i>	<i>Melochia corchorifolia</i>
<i>Chloris gayana</i>	<i>Facelis retusa</i>	<i>Mollugo cerviana</i>
<i>Chorispora tenella</i>	<i>Fatoua villosa</i>	<i>Murdannia nudiflora</i>
<i>Cichorium intybus</i>	<i>Galinsoga parviflora</i>	<i>Oenothera cordata</i>
<i>Cirsium vulgare</i>	<i>Galium aparine</i>	<i>Onopordum acanthium</i>
<i>Clematis terniflora</i>	<i>Gamochoeta antillana</i>	<i>Oryza sativa</i>
<i>Commelina communis</i>	<i>Gamochoeta calviceps</i>	
<i>Conium maculatum</i>	<i>Gamochoeta coarctata</i>	

<i>Oxalis articulata</i>	<i>Richardia scabra</i>	<i>Thlaspi arvense</i>
<i>Oxalis debilis</i>	<i>Ricinus communis</i>	<i>Torilis arvensis</i>
<i>Panicum antidotale</i>	<i>Rumex crispus</i>	<i>Torilis nodosa</i>
<i>Panicum bergii</i>	<i>Rumex pulcher</i>	<i>Tragopogon dubius</i>
<i>Panicum coloratum</i>	<i>Scabiosa atropurpurea</i>	<i>Tragopogon porrifolius</i>
<i>Parapholis incurva</i>	<i>Sclerochloa dura</i>	<i>Tribulus terrestris</i>
<i>Parentucellia viscosa</i>	<i>Scorzonera laciniata</i>	<i>Trifolium dubium</i>
<i>Paspalum dilatatum</i>	<i>Senecio vulgaris</i>	<i>Trifolium incarnatum</i>
<i>Paspalum notatum</i>	<i>Senna occidentalis</i>	<i>Trifolium polymorphum</i>
<i>Paspalum urvillei</i>	<i>Sesbania emerus</i>	<i>Trifolium repens</i>
<i>Peganum harmala</i>	<i>Setaria italica</i>	<i>Trifolium resupinatum</i>
<i>Pennisetum villosum</i>	<i>Setaria pumila</i>	<i>Trifolium vesiculosum</i>
<i>Perilla frutescens</i>	<i>Setaria verticillata</i>	<i>Urochloa reptans</i>
<i>Petrorhagia dubia</i>	<i>Setaria viridis</i>	<i>Vaccaria hispanica</i>
<i>Phyllanthus urinaria</i>	<i>Sherardia arvensis</i>	<i>Vaccaria pyramidata</i>
<i>Plantago lanceolata</i>	<i>Silene gallica</i>	<i>Verbascum blattaria</i>
<i>Plantago major</i>	<i>Sinapis arvensis</i>	<i>Verbascum thapsus</i>
<i>Poa annua</i>	<i>Sisymbrium altissimum</i>	<i>Verbena bonariensis</i>
<i>Polycarpon tetraphyllum</i>	<i>Sisymbrium irio</i>	<i>Verbena brasiliensis</i>
<i>Polygonum arenastrum</i>	<i>Sisymbrium officinale</i>	<i>Verbena rigida</i>
<i>Polygonum aviculare</i>	<i>Solivia anthemifolia</i>	<i>Veronica arvensis</i>
<i>Polygonum convolvulus</i>	<i>Soliva sessilis</i>	<i>Veronica persica</i>
<i>Polygonum persicaria</i>	<i>Soliva stolonifera</i>	<i>Veronica polita</i>
<i>Polypogon monspeliensis</i>	<i>Sonchus asper</i>	<i>Vicia sativa</i> subsp. <i>nigra</i>
<i>Polypogon viridis</i>	<i>Sonchus oleraceus</i>	<i>Vicia tetrasperma</i>
<i>Prunella vulgaris</i>	<i>Sorghum bicolor</i>	<i>Vicia villosa</i> subsp. <i>villosa</i>
<i>Pseudognaphalium luteoalbum</i>	<i>Stachys floridana</i>	<i>Vinca major</i>
<i>Ranunculus muricatus</i>	<i>Stellaria media</i>	<i>Vulpia myuros</i>
<i>Ranunculus parviflorus</i>	<i>Stellaria pallida</i>	<i>Xanthium spinosum</i>
<i>Ranunculus repens</i>	<i>Taraxacum laevigatum</i>	<i>Youngia japonica</i>
<i>Ranunculus sardous</i>	<i>Taraxacum officinale</i>	

F2-AQUATIC

<i>Ceratopteris thalictroides</i> [3]	<i>Limnophila sessiliflora</i> [2]	<i>Nymphoides indica</i> [1]
<i>Cryptocoryne beckettii</i> [1]	<i>Ludwigia grandiflora</i> subsp. <i>grandiflora</i> [3]	<i>Nymphoides peltata</i> [2]
<i>Egeria densa</i> [3]	<i>Ludwigia grandiflora</i> subsp. <i>hexapetala</i> [9]	<i>Ottelia alismoides</i> [1]
<i>Hydrocleys nymphoides</i> [2]	<i>Nomaphila stricta</i> [1]	<i>Potamogeton crispus</i> [8]
<i>Hygrophila polysperma</i> [2]		<i>Salvinia minima</i> [2]
<i>Landoltia punctata</i> [6]		<i>Xanthosoma sagittifolium</i> [1]

APPENDIX 4

Watch List: non-native species in Texas potentially ranked as F1. All F2 aquatic species are included.

From F2-WOODY:

<i>Hypericum perforatum</i>	<i>Pyrus calleryana</i>	<i>Vitex agnus-castus</i>
<i>Pueraria montana</i> var. <i>lobata</i>		

From F3-WOODY:

<i>Ardisia crenata</i>	<i>Leucaena leucocephala</i>	<i>Pistacia chinensis</i>
<i>Casuarina equisetifolia</i>	<i>Lonicera maackii</i>	<i>Schinus molle</i>
<i>Cinnamomum camphora</i>	<i>Macfadyena unguis-cati</i>	<i>Schinus terebinthifolius</i>
<i>Elaeagnus angustifolia</i>	<i>Photinia serratifolia</i>	<i>Ulmus parvifolia</i>

From F2-HERBACEOUS:

<i>Carduus tenuiflorus</i>	<i>Perilla frutescens</i>	<i>Torilis arvensis</i>
<i>Cirsium vulgare</i>	<i>Polygonum arenastrum</i>	<i>Verbena brasiliensis</i>
<i>Clematis terniflora</i>	<i>Polygonum persicaria</i>	
<i>Lespedeza cuneata</i>	<i>Stachys floridana</i>	

	From F3-HERBACEOUS:	
Cryptostegia grandiflora	Imperata cylindrica	Microstegium vimineum
	from F2-AQUATIC:	
Ceratopteris thalictroides	Limnophila sessiliflora	Nymphoides indica
Cryptocoryne beckettii	Ludwigia grandiflora subsp. gran-	Nymphoides peltata
Egeria densa	diflora	Ottelia alismoides
Hydrocleys nymphoides	Ludwigia grandiflora subsp. hexa-	Potamogeton crispus
Hygrophila polysperma	petala	Salvinia minima
Landoltia punctata	Nomaphila stricta	Xanthosoma sagittifolium
	Potential and expanding new arrivals with global warming in south and coastal Texas:	
Caesalpinia bonduc	Conocarpus erectus	Rhizophora mangle
Canavalia rosea	Laguncularia racemosa	Scaveola plumieri
Cassytha filiformis		

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Postscript.—Since preparation of this report, various minor changes have been made to the lists. The whole set of information on Texas non-native plants, including these changes and additional commentary, is posted on the internet—see “Non-natives” at <<http://www.guynesom.com/Texasplantsweb.htm>>. The internet information is frequently updated as new data become available and as reassessments are made. In order to reflect the input of Texas botanists to the genesis and development of the information, the set of online data is cited as below.

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The total number of non-native plants species in Texas now is 820 and a relatively small number of rankings have been modified. The Watch List has been expanded with additions of these: *Acroptilon repens*, *Carduus acanthoides*, *Cayratia japonica*, *Colocasia esculenta*, *Cortaderia selloana*, *Dioscorea bulbifera*, *Elymus repens*, *Gibasis pellucida*, *Lespedeza bicolor*, *Lolium arundinaceum*, and *Pyracantha koidzumii*. As with many of the F1 and F2 species, some of the Watch List species already are so widespread that it is unlikely that they can be eradicated or even controlled except by sustained efforts on local levels. From among the Watch List species, a subset is indicated as a “**Super Watch List**,” those species that perhaps can be removed from the Texas landscape before they become impossible to control. A newly added **Expected List** records species not currently known with certainty in Texas but that occur in nearby areas—each of these is aggressively invasive and ecologically damaging, and there is a high probability that each soon will reach Texas: *Alliaria petiolata*, *Ampelopsis brevipedunculata*, *Berberis thunbergii*, *Celastrus orbiculatus*, *Centaurea stoebe* ssp. *micranthos*, *Centaurea solstitialis*, *Cirsium arvense*, *Dioscorea alata*, *Elaeagnus pungens*, *Elaeagnus umbellata*, *Euonymus alatus*, *Euonymus fortunei*, *Euphorbia esula*, *Halogeton glomeratus*, *Lonicera morrowii*, *Lygodium microphyllum*, *Melaleuca quinquenervia*, *Miscanthus sinensis*, *Phalaris aquatica*, *Pennisetum setaceum*, *Polygonum cuspidatum*, *Schismus arabicus*, *Setaria faberi*, *Typha angustifolia*, and *Wisteria floribunda*.