

The Checklist of the Naturalized Plants in China



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Preface

Naturalized species are defined as those occurring outside their natural range and beyond that into where they have reproduced themselves without human intervention. Most plant species from other parts of the world are likely to find a suitable habitat somewhere in a country like China since various climate and ecosystems exist here.

Plant introductions have a long history in China, especially along the “Silk Road”, “Tea-Horse Road”, and maritime trade routes and inland tributary systems in the past, and in the present since China has opened her door to the West since the 1980s. Some introduced species have become naturalized in China as important grains, medicinal plants, and economic crops, playing a positive role in the development of agriculture, economics, construction, and the improvement of living standards. However, a large number of less useful naturalized plants have become invasive species, bringing with them enormous effects and losses to the local biological diversity, economy, and human health.

Naturalized species have been considered the primary stages of plant invasions; therefore, studies on naturalized plant species could generate insights on possible invaders and invasions. China has suffered from insufficient basic data about naturalized plants for a long time, and the related knowledge of naturalized plants is also very lacking. Therefore, it is necessary to launch a nationwide investigation on naturalized species and compile the basic data to identify the invasive species and put forward effective management strategies. However, the statistical data regarding naturalized plants in China can vary according to the research methods, and the definitions of the word “naturalized” are not in common use. Wu et al. (2010) estimated that China had 420 naturalized species in 273 genera and 84 families, while Jiang et al. (2011) reported 861 species in 465 genera and 110 families. However, data from the former study were incomplete because they did not cover Taiwan in their statistics, and the latter study may have treated some native species as exotic.

The purpose of this book is to provide the basic information for naturalized plants in China. Based on observations during field investigations and identified herbarium specimens, as well as a survey and validated literature, the naturalized plant species are listed as the text. Some native species which have been treated as exotic are listed in Appendix I since they were reported as naturalized before, and some cultivated plants are listed in Appendix II since they are not naturalized yet or just occasionally escaped. A number of species were considered as invasive or naturalized by some references without their exact distributions in China, and they are not included, such as

Ribes uva-crispa, *Persicaria pensylvanica*, *Ipomoea pandurata*, *Knautia arvensis*, *Helianthus petiolaris*, *Mulgedium pulchellum*, *Brachiaria plantaginea*, *Ammi visnaga*, *Petroselinum crispum*, *Iva axillaris*, etc. In total, 933 naturalized plant species (including intraspecific taxa) of 482 genera and 103 families in China have been documented in this work. In addition, 514 native plants and 72 cultivated plants, which were previously identified as naturalized, are listed in appendix I and appendix II respectively.

We tried at our best to include the naturalized plant species in China in this book. We hope that the comprehensive documentation of naturalized alien species in China can provide an important data set for comparative studies of alien floras, and offer new insights to understand of the patterns of plant invasions in this country.

We thank Zhenyu LI (Institute of Botany, Chinese Academy of Sciences), Quanru LIU (Beijing Normal University), Ruijiang WANG (South China Botanical Garden, Chinese Academy of Sciences) for assistance with field investigation and providing information about the regional naturalized plant species. We extend a special thanks for the financial support by Shanghai Municipal Administration of Landscaping and City Appearance (G152432), National Natural Science Foundation of China (31872645), and Ministry of Science Technology of China (2014FY120400).

Guide

1. Content

This book is divided into two parts: text and two appendices. The text includes the naturalized plants in China, and the appendices include the species which have been treated differently in the past. Appendix I includes the native plants originally identified as exotic plants, and appendix II includes the cultivated plants originally identified as naturalized species.

2. Classification system, and arrangement of the taxa

The families are arranged in accordance with the Engler system (1964) in angiosperms, and Ching Ren-Chang system (1978) in ferns, as with most of the Chinese floras. Genera within family are arranged alphabetically by genus name, and species within genus are arranged alphabetically by scientific name.

3. Names and sources

The scientific names in ***bold italics*** are recorded, with their original reference, Synonyms in *italics* with original reference, and Chinese names, both in Pinyin and in Chinese (characters) are recorded. All synonyms are the names used in the collected literature only, not all synonyms for any given plant. The accepted name, synonyms, Chinese name and original reference here used are mainly adopted from *Flora of China* (FOC, 1994 – 2013). References are given for some species that are not included in FOC or possibly disagree with their treatment in FOC. In addition, nomenclatural notes are also given for some misidentifications and scientific misuse if necessary. The abbreviation Syn. stands for synonyms, and auct. non is for misidentification.

The main references and their abbreviations of the scientific name used in this book are listed as follows:

FOC: Flora of China (<http://flora.huh.harvard.edu/china/>)

Tropicos: <http://www.tropicos.org>

FNA: Flora of North America (<http://floranorthamerica.org/>)

TPL: The Plant List (<http://www.theplantlist.org/>)

4. Geographical distribution

Each naturalized plant is recorded with their geographic origin and their distribution information (including cultivation distribution area). The geographical distribution of each naturalized species in China are arranged alphabetically by province name.

In this book, Americas comprise the totality of the continents of North and South America. Other geographical abbreviations are as follows: E, East; W, West; C, Central; S, South; N, North; SE, Southeast; SW, Southwest; NE, Northeast; NW, Northwest.

5. References

Each species recorded in this work are cited with special references (up to December 2018), and all of them are listed alphabetically at the end of this book. References without English titles are translated by the author and are marked with single quotes.

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Naturalized Plants

Pteridophyta

Pityrogramma calomelanos (Linnaeus) Link, Handbuch 3: 20. 1833.

Pteridaceae

粉叶蕨 fen ye jue

Origin: Native to tropical America; widely naturalized in the Old World.

Distribution: Guangdong, Guangxi, Hainan, Hong Kong, Macao, Taiwan, Yunnan

Reference(s): R T Corlett, 1992; T C Huang, 1994; Y Z Chen, 2006; S H Wu et al., 2010a; H Jiang et al., 2011; F S Chou, 2013, 2014, 2015.

Salvinia molesta D. S. Mitchell, Brit. Fern Gaz. 10(5): 251. 1972.

Salviniaceae

Syn. *Salvinia adnata* Desvaux, Mém. Soc. Linn. Paris 6: 177. 1827.

速生槐叶萍 su sheng huai ye ping

Origin: Native to Brazil; widely distributed in tropical and subtropical areas.

Distribution: Hainan, Hong Kong, Jiangsu, Taiwan, Zhejiang

Reference(s): Y Z Chen, 2006; Y Xie, 2008; S H Wu et al., 2010a; H G Xu and S Qiang, 2011; H G Xu et al., 2012; J S Ma, 2013; H Y Shou et al., 2014; H Yan et al., 2014; X L Yan et al., 2014; H Wang et al., 2016.

Azolla caroliniana Willdenow, Sp. Pl. 5(1): 541. 1810.

Azollaceae

美洲满江红 mei zhou man jiang hong

Origin: Native to America; dispersed to the tropics throughout the world.

Distribution: Taiwan

Reference(s): S H Wu et al., 2010a; H Jiang et al., 2011; H Wang et al., 2016.

Azolla filiculoides Lamarck, Encycl. 1(1): 343. 1783.

Azollaceae

Syn. *Azolla japonica* Franchet & Savatier, Enum. Pl. Jap. 2(1): 195. 1877.

细叶满江红 xi ye man jiang hong

Origin: Native to warm temperate and subtropical America (including Alaska); introduced in Europe, N Africa, sub-Saharan Africa, Japan, New Zealand, Australia, the Caribbean and Hawaii.

Distribution: Widely distributed in the Chang Jiang valley, also in S China, including Henan, Hunan, Jiangsu, Taiwan, Yunnan, Zhejiang

Reference(s): Z P Peng et al., 2008; S H Wu et al., 2010a, 2010b; Y X Zhang et al., 2010; H Jiang et al., 2011; J S Ma, 2013; H Y Shou et al., 2014; X L Yan et al., 2014; Z D Jin et al., 2015; J L Chu et al., 2016; H Wang et al., 2016; J Yan et al., 2016; T H Zhou et al., 2016.

Angiospermae

Casuarina equisetifolia Linnaeus, *Amoen. Acad.* 4: 143. 1759.

Casuarinaceae

木麻黄 mu ma huang

Origin: Native to Indonesia, Malaysia, Myanmar, Papua New Guinea, the Philippines, Thailand and Vietnam; introduced in tropical America, Africa and elsewhere in Asia.

Distribution: Chongqing, Fujian, Guangdong, Guangxi, Hainan, Hong Kong, Jiangsu, Macao, Shanghai, Sichuan, Taiwan, Yunnan, Zhejiang

Reference(s): H N Huang et al., 2005a; Y Xie, 2008; S H Wu et al., 2010b; H Jiang et al., 2011; J S Ma, 2013; H Y Shou et al., 2014; H Yan et al., 2014; Y K Bi et al., 2015.

Casuarina glauca Sieber ex Sprengel, *Syst. Veg. (Sprengel)* 3: 803. 1826.

Casuarinaceae

粗枝木麻黄 cu zhi mu ma huang

Origin: Native to the east coast of Australia; naturalized in Florida and the Hawaiian Islands.

Distribution: Cultivated in Fujian, Guangdong, Hainan, Taiwan, Zhejiang; naturalized in Zhejiang (Zhoushan)

Reference(s): Y K Bi et al., 2015.

Salix fragilis Linnaeus, *Sp. Pl.* 2: 1017. 1753.

Salicaceae

爆竹柳 bao zhu liu

Origin: Native to C European, extending from W Europe (Spain and France) to the Balkans and Greece, relatively rare in the Mediterranean area (Sardinia and Corsica), to the northern areas of Asia Minor and Caucasus; naturalized in various parts of the world.

Distribution: Heilongjiang, Liaoning, Nei Mongol, Shanxi, Xinjiang

Reference(s): E Weber et al., 2008; H Jiang et al., 2011; F Bai et al., 2013.

Cannabis sativa Linnaeus, *Sp. Pl.* 2: 1027. 1753.

Moraceae

Syn. *Cannabis sativa* var. *ruderalis* (Janischewsky) S. Z. Liou, *Fl. Liaoningica* 1: 289. 1988.

大麻 da ma

Origin: The exact original distribution uncertain because of long cultivation, probably native to C Asia.

Distribution: Anhui, Beijing, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hong Kong, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Macao, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanghai, Shanxi, Sichuan, Taiwan, Tianjin, Xinjiang, Xizang, Yunnan, Zhejiang

Reference(s): S Qiang and X Z Cao, 2000; Q R Liu et al., 2002; B Qu, 2003; S R Xiao et al., 2003; Y

Zhou, 2003; J Y Tian and C X Lv, 2004; H G Xu and S Qiang, 2004, 2011; Y J Yi et al., 2005; L Ding et al., 2006; Q N Liu et al., 2006; S Y Qi and W D Xu, 2006; B Qu et al., 2006a, 2006b, 2010; N Song et al., 2006; T Wu et al., 2006; H Z Hui, 2007; M K Jiang et al., 2007; B Li et al., 2007; W Wang et al., 2007; Y Z Xie et al., 2007; C S Zhu et al., 2007; H X Li, 2008; Y Luo and A H Liu, 2008; R Long et al., 2008; Z P Peng et al., 2008; E Weber et al., 2008; Y Xie, 2008; X G Zhou et al., 2008; J D Che, 2009; H B Fu et al., 2009; C F Ji et al., 2009; S C Li et al., 2009; D W Ma et al., 2009; L T Su and L J Ma, 2009; L Xu et al., 2009; Y Gao and W Cao, 2010; C Peng et al., 2010; H C Wang et al., 2010; S H Wu et al., 2010b; Y H Zhang and S Z Yuan, 2010; X L Zhang et al., 2010; H Jiang et al., 2011; J W Ju et al., 2011; J Y Lin et al., 2011a, 2011b, 2012; D H Shi and C Li, 2011; D Z Yu et al., 2011; H H Zhao et al., 2011; C Chen et al., 2012; J K Liu et al., 2012; S C Shen et al., 2012; F H Wan et al., 2012; S M Wang et al., 2012; H G Xu et al., 2012; H Zhang et al., 2012; H J Zhao, 2012; B J Zheng and L Pan, 2012; F Bai et al., 2013; G K Jia, 2013; J S Ma, 2013; L F Shen et al., 2013; Q R Zhang et al., 2013; S M Zhang et al., 2013; M L Zheng and W Cao, 2013; H Y Shou et al., 2014; H H Wang et al., 2014; Y J Wang et al., 2014; H Yan et al., 2014; X L Yan et al., 2014; Z X Yang et al., 2014; X F Zeng et al., 2014; Y H Cheng et al., 2015; Z D Jin et al., 2015; T B Qu et al., 2015; Y Ren et al., 2015; Y Wang et al., 2015; J L Chu et al., 2016; X R Luan et al., 2016; H S Shi et al., 2016; J Yan et al., 2016; H Q Zhang et al., 2016; T H Zhou et al., 2016.

Cecropia peltata Linnaeus, Syst. Nat. (ed. 10) 2: 1286. 1759.

Moraceae

号角树 hao jiao shu

Origin: Native to Mexico and South America; introduced in parts of Africa and some Pacific islands.

Distribution: Taiwan

Reference(s): C K Yang et al., 2011.

Ficus religiosa Linnaeus, Sp. Pl. 2: 1059. 1753.

Moraceae

菩提树 pu ti shu

Origin: Native to N India, Nepal and Pakistan; introduced and cultivated around the world.

Distribution: Guangdong, Guangxi, Taiwan, Yunnan

Reference(s): S H Wu et al., 2010a.

Laportea aestuans (Linnaeus) Chew, Gard. Bull. Singapore 21(2): 200. 1965.

Urticaceae

火焰桑叶麻 huo yan sang ye ma

Origin: Native to the West Indies, tropical America and Africa.

Distribution: Taiwan

Reference(s): Y Z Chen, 2006; S H Chen and M J Wu, 2007; S H Wu et al., 2010a; J S Ma, 2013.

Pilea microphylla (Linnaeus) Liebmann, Kongel. Danske Vidensk. Selsk. Skr., Naturvidensk. Math. Afd., ser. 5, 2: 296. 1851.

Urticaceae

小叶冷水花 xiao ye leng shui hua

Origin: Native to tropical America; introduced to various tropical and subtropical regions around the world.

Distribution: Anhui, Beijing, Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hong Kong, Hubei, Hunan, Jiangsu, Jiangxi, Macao, Shanghai, Shanxi, Taiwan, Yunnan, Zhejiang

Reference(s): R T Corlett, 1992; T C Huang, 1996; Z Y Li and Y Xie, 2002; Q R Liu et al., 2002; S C Ng and R T Corlett, 2002; J D Che, 2004; J D Che et al., 2004; W Q He and Z L Huang, 2004; F G Wang et al., 2004; S H Wu et al., 2004, 2010a, 2010b; Y H Yan et al., 2004, 2005; H B Chen, 2005; H N Huang et al., 2005b; J Liu et al., 2005, 2006; Y Z Chen, 2006; X Y Chen et al., 2006; L Ding et al., 2006; Z B Guan et al., 2006; J Ou and C Y Lu, 2006a, 2006b; J L Shan et al., 2006; G R Wu, 2006; F An et al., 2007; M K Jiang et al., 2007; M X Lin et al., 2007; X F Wang et al., 2007; Y Z Xie et al., 2007; M S Chen, 2008; Q X Chen et al., 2008; Z W Fan et al., 2008; Q C Jiang et al., 2008; H S Li et al., 2008, 2015; F Liu et al., 2008; M Y Luo, 2008; X S Qin et al., 2008; S C Tang et al., 2008a; N X Wang, 2008; Z Wang et al., 2008; E Weber et al., 2008; G P C Leung et al., 2009; X M Mei et al., 2009; L C Shi et al., 2009; X L Song et al., 2009; F Wang et al., 2009; L Xu et al., 2009; J Yang and H B Chen, 2009; J C Yang et al., 2009; X F Zeng et al., 2009, 2014; J G Zhang and M R Zhang, 2009; J M Shen et al., 2010; F S Chou, 2011, 2012, 2013, 2014, 2015; B Y Ding and R Y Hu, 2011; J M Feng et al., 2011a, 2011b; L Fu et al., 2011, 2012; R Y Hu et al., 2011; H L Jia et al., 2011; H Jiang et al., 2011; J W Ju et al., 2011; J Y Lin et al., 2011a, 2011b, 2012; H G Xu and S Qiang, 2011; M F Yue et al., 2011; G Hu and Z H Zhang, 2012; D Ma et al., 2012; S C Shen et al., 2012; F H Wan et al., 2012; R H Wu and F Y Li, 2012; G X Xie et al., 2012; H G Xu et al., 2012; F Yu et al., 2012; H Zhu, 2012; F Bai et al., 2013; C L Guo et al., 2013; G K Jia, 2013; J S Ma, 2013; L F Shen et al., 2013; L H Zeng et al., 2013; Q R Zhang et al., 2013; X W Li et al., 2014; H Y Shou et al., 2014; H Yan et al., 2014; X L Yan et al., 2014; Z X Yang et al., 2014; S Y Cheng et al., 2015; Z D Jin et al., 2015; C H Lin et al., 2015; Z S Liu, 2015; Y Wang et al., 2015; X C Wu and J G Lu, 2015; B Zou et al., 2015, 2016; Y K Chen et al., 2016; J Yan et al., 2016; T H Zhou et al., 2016; Y X Tao et al., 2017; M Y Yin et al., 2017.

Pilea nummulariifolia (Swartz) Weddell, Ann. Sci. Nat., Bot., ser. 3, 18: 225. 1852.

Urticaceae

泡叶冷水花 pao ye leng shui hua

Origin: Native to South America and the West Indies.

Distribution: Taiwan

Reference(s): S H Wu et al., 2009, 2010a; H Jiang et al., 2011.

Antigonon leptopus Hooker & Arnott, Bot. Beechey Voy. 308 – 309, t. 69. 1841 [1838].

Polygonaceae

珊瑚藤 shan hu teng

Origin: Native to Mexico; widely cultivated and naturalized as an ornamental in warm tropical climates around the world, including Africa, India, Australia, America, the West Indies, and numerous islands in the Pacific Ocean.

Distribution: Anhui, Fujian, Guangdong, Guangxi, Hainan, Hong Kong, Jiangsu, Macao, Taiwan, Yunnan

Reference(s): T C Huang, 1996; S H Wu et al., 2004, 2010a; Y Z Chen, 2006; Z W Fan et al., 2008; X F Zeng et al., 2009, 2014; F S Chou, 2011, 2013; H Jiang et al., 2011; H Zhu, 2012; J S Ma, 2013; H Y Shou et al., 2014; J Yan et al., 2016.

Homalocladium platycladum (F. J. Muller) L. H. Bailey, Gentes Herbarum 2(1): 58. 1929.

Polygonaceae

竹节蓼 zhu jie liao

Origin: Native to the Solomon Islands; naturalized in other tropical regions, such as Puerto Rico, India, Bolivia, Madagascar, Nicaragua and Pakistan.

Distribution: Anhui, Fujian, Guangdong, Guangxi, Hainan, Macao, Shanghai, Tianjin, Zhejiang

Reference(s): M L Chen et al., 2003; X F Zeng et al., 2009, 2014; H Jiang et al., 2011; H Zhu, 2012; J S Ma, 2013.

Polygonum plebeium R. Brown, Prodr. 420. 1810.

Polygonaceae

铁马鞭 tie ma bian

Origin: Native to India, Madagascar, Pakistan and Sri Lanka; widespread in drier parts of Africa, Madagascar, tropical Asia, Australia and New Zealand.

Distribution: Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang

Reference(s): S H Wu et al., 2010a; F S Chou, 2011, 2012, 2013, 2014, 2015.

Petiveria alliacea Linnaeus, Sp. Pl. 1: 342. 1753.

Polygonaceae

蒜味草 suan wei cao

Origin: Native to America; introduced in India and tropical Africa.

Distribution: Fujian

Reference(s): Q X Tong and M J Chi, 2013.

Phytolacca americana Linnaeus, Sp. Pl. 1: 441. 1753.

Phytolaccaceae

垂序商陆 chui xu shang lu

Origin: Native to North America; widely naturalized in Asia and Europe.

Distribution: Anhui, Beijing, Chongqing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Heilongjiang, Henan, Hong Kong, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Shanghai, Shanxi, Sichuan, Taiwan, Tianjin, Xinjiang, Yunnan, Zhejiang

Reference(s): S F Huang and T C Huang, 1993a; S L Guo and Y H Li, 1995; T C Huang, 1996; S Qiang and X Z Cao, 2000; Z Y Li and Y Xie, 2002; M L Chen et al., 2003; H R Wu and S Qiang, 2003; J D Che, 2004, 2009; J D Che et al., 2004; S X Liu and W Qin, 2004; S Z Shi et al., 2004; W B Sun and Q B Xiang, 2004; H R Wu et al., 2004; S H Wu et al., 2004, 2010a, 2010b; H G Xu and S Qiang, 2004, 2011; H G Xu et al., 2004, 2012; Y H Yan et al., 2004; H B Chen, 2005; J F Fu, 2005; G Hu et al., 2005a, 2005b; J Liu et al., 2005, 2006; C Y Tian et al., 2005; G F Chen, 2006; Y Z Chen, 2006; X Y Chen et al., 2006; X G Deng, 2006; L Ding et al., 2006; Z B Guan et al., 2006; G Y Li et al., 2006; J Ou and C Y Lu, 2006a, 2006b; M Y Wei et al., 2006; G R Wu, 2006; T Wu et al., 2006; C D Xu and S G Lu, 2006; C D Xu et al., 2006; T Y Hu et al., 2007a; M K Jiang et al., 2007; N Li et al., 2007; X W Li et al., 2007; M X Lin et al., 2007, 2008; X F Wang et al., 2007; H Y Xie et al., 2007, 2011; Y Z Xie et al., 2007; Y Zhang, 2007; C S Zhu et al., 2007; M S Chen, 2008; Q X Chen et al., 2008; Z W Fan et al., 2008; J Q He and J L Ge, 2008; Q C Jiang et al., 2008; J D Lang et al., 2008; Y Li et al., 2008; F Liu et al., 2008; R Long et al., 2008; Y Luo and A H Liu, 2008; Y L Peng et al., 2008, 2009; Z P Peng et al., 2008; T Z Shen et al., 2008; S C Tang et al., 2008a; Y Q Teng, 2008; N X Wang, 2008; Z Wang et al., 2008; E Weber et al., 2008; Y Xie, 2008; X G Zhou et al., 2008; C F Ji et al., 2009; G C Jiang et al., 2009; S C Li et al., 2009; D W Ma et al., 2009; X M Mei et al., 2009; L C Shi et al., 2009; M Y Shu et al., 2009; J Sun et al., 2009; L F Wang and Y S Chen, 2009; F Wang et al.,

2009; L Xu et al., 2009; J Yang and H B Chen, 2009; J C Yang et al., 2009; Z X Zhang, 2009; J G Zhang and M R Zhang, 2009; M R Zhang et al., 2009; H Y Dong et al., 2010; G Ge et al., 2010; P Lei et al., 2010; Y Z Qi et al., 2010; J M Shen et al., 2010; N Wang, 2010; X Z Wu et al., 2010; J J Zhao et al., 2010; J Chen et al., 2011; B Y Ding and R Y Hu, 2011; J M Feng et al., 2011a, 2011b; R Y Hu et al., 2011; Y Y Huang et al., 2011; H Jiang et al., 2011; J W Ju et al., 2011; C K Li et al., 2011; R H Li et al., 2011; J Y Lin et al., 2011a, 2011b, 2012; L H Miao et al., 2011; D H Shi and C Li, 2011; G F Xu and Z Y Jian, 2011; F X Yao, 2011; S H Yu and H P Deng, 2011a, 2011b; D Z Yu et al., 2011; M F Yue et al., 2011; L Zhang and E L Liu, 2011; J M Zheng et al., 2011; G Hu and Z H Zhang, 2012; M Lin et al., 2012; S C Shen et al., 2012; F H Wan et al., 2012; S M Wang et al., 2012; H Y Xie and X Q Zhang, 2012; G X Xie et al., 2012; X R Xu et al., 2012; B H Zhu and F M Yang, 2012; F Bai et al., 2013; F S Chou, 2013, 2014, 2015; C L Guo et al., 2013; J L He et al., 2013; G K Jia, 2013; W G Lin, 2013; J S Ma, 2013; S M Zhang et al., 2013; B H Zhu and D Q Zhu, 2013; M Ji et al., 2014; G P Li et al., 2014; H Y Shou et al., 2014; Y Xu et al., 2014; H Yan et al., 2014; X L Yan et al., 2014; X F Zeng et al., 2014; Y Cai et al., 2015; S Y Cheng et al., 2015; Y X Liang et al., 2015; C H Lin et al., 2015; Z S Liu, 2015; X Meng et al., 2015; Y Wang et al., 2015; X C Wu and J G Lu, 2015; L Yang et al., 2015; J Zhang, 2015; H Zhao, 2015; B Zou et al., 2015, 2016; J Y Chen et al., 2016; J L Chu et al., 2016; C S Hu et al., 2016; H Y Huang et al., 2016; Ministry of Environmental Protection and Chinese Academy of Sciences, 2016; X R Luan et al., 2016; H Yan et al., 2016; J Yan et al., 2016; L Wang et al., 2016; H Q Zhang et al., 2016.

Phytolacca icosandra Linnaeus, Syst. Nat. (ed. 10) 2: 1040. 1759.

Phytolaccaceae

二十蕊商陆 er shi rui shang lu

Origin: Native to Mexico and South America; introduced into the Old World tropics.

Distribution: Taiwan

Reference(s): S I Hsieh et al., 2012.

Phytolacca thyrsoiflora Fenzl ex J. A. Schmidt, Fl. Bras. 14(2): 343, t. 80. 1872.

Phytolaccaceae

巴西商陆 ba xi shang lu

Origin: Native to South America.

Distribution: Jiangsu

Reference(s): C S Hu et al., 2016.

Rivina humilis Linnaeus, Sp. Pl. 1: 121 – 122. 1753.

Phytolaccaceae

数珠珊瑚 shu zhu shan hu

Origin: Probably native to tropical America; widely introduced in other countries and naturalized in the Pacific Islands, Africa and Asia.

Distribution: Fujian, Guangdong, Guangxi, Taiwan, Zhejiang

Reference(s): Y Z Chen, 2006; Y H Tseng et al., 2008a; S H Wu et al., 2010a, 2010b; H Jiang et al., 2011; F S Chou, 2013, 2014, 2015; J S Ma, 2013.

Boerhavia coccinea Miller, Gard. Dict. (ed. 8) 4. 1768.

Nyctaginaceae

红细心 hong xi xin

Origin: Origin uncertain, probably originated in an area between S United States and N South America;