

• 生物多样性与外来入侵物种管理专栏 •

不受欢迎的生物多样性 :香港的外来植物物种

吴世捷^{1*} 高力行²

1(香港嘉道理农场暨植物园)

2(香港大学生态及生物多样性系)

摘要:香港早在 19 世纪中叶开始就有外来植物入侵的记录。迄今为止,已发现多达 238 种已归化的外来或怀疑为外来的植物,其中又以薇甘菊(*Mikania micrantha*)、五爪金龙(*Ipomoea cairica*)、假臭草(*Eupatorium catarium*)、大黍(*Panicum maximum*)等最常见。外来植物最常见于受人为干扰的生境,例如荒废农田及路旁等,而较少在天然林地生境及贫瘠的灌草丛中发现。外来植物对本地生态系统的影响主要局限于低地生境。它们常形成单优种群,减少了生境及动植物的多样性。外来动物对香港原生植物影响最大的是于 20 世纪 70 年代入侵的松树线虫(*Bursaphelenchus xylophilus*)。外来的脊椎动物也有可能对香港的植被演替产生影响。目前香港的外来植物当中,有些在大陆较少分布或没有记录。作为华南最大的港口,香港对外来物种的引入扮演着重要的角色。因此制定控制外来种在香港及华南地区的引入及传播的政策及措施非常重要。

关键词:香港,外来种,入侵种

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The bad biodiversity : alien plant species in Hong Kong

Ng Sai-Chit^{1*}, Richard Corlett²

1 Kadoorie Farm and Botanic Garden, Lam Kam Road, Tai Po, NT, Hong Kong SAR, China

2 Department of Ecology & Biodiversity, The University of Hong Kong, China

Abstract: The flora of Hong Kong has been well-surveyed since the mid nineteenth century and has had a long history of alien plant invasions. To the present day, more than 2130 wild plant species have been recorded, including 238 species that are probably naturalized alien species. Among them, *Mikania micrantha*, *Ipomoea cairica*, *Eupatorium catarium*, and *Panicum maximum* are most abundant. Naturalized alien plants are most prominent in human-disturbed habitats, such as abandoned farmland, wasteland and roadsides, and are rarely important in relatively undisturbed forest habitats, or in fire-maintained impoverished shrubland and grassland. Impacts of naturalized alien plants on local ecosystems are so far limited to lowland habitats, including wetlands and forest margins, where they form monospecific thickets, out-compete native plant species, and reduce local habitat and animal diversity. The biggest impact on the local flora by an alien species, however, was caused by the Pinewood Nematode introduced in the 1970s. Introduction of alien vertebrates may also have an impact on Hong Kong's vegetation. As the biggest port on the southern coast of China, Hong Kong has probably been an important entry point for alien species to China. Among Hong Kong's naturalized alien plants, some have only recently been noticed, and have few or no records from the mainland. The potential for these species to invade the mainland should not be neglected. Appropriate measures to control spread of these plants, both locally and regionally, are essential.

Key words: Hong Kong, exotic species, invasive species

1 外来物种入侵香港简史

香港位于华南沿海,气候属南亚热带季风区,具

有明显的湿热雨季和清凉旱季。虽然本地地带性植被为南亚热带常绿阔叶林,但原生植被大部分早在数世纪前就已被破坏。现今主要山地植被为长期依赖山火维持的灌草丛和较小片的次生阔叶林,而低地环境则主要为城市市区和废弃农地及村庄(Dudgeon & Corlett, 1994)。由于香港毗邻广州,早在19世纪初已有外国人在港定居和经商,后来发展成世界最重要的港口之一,因此香港长久以来一直有外来物种入侵。由于植物学家自19世纪中期开始已在香港采集植物标本并出版植物名录(Bentham, 1842; Seeman, 1857),而香港也是华南第一个出版地方植物志的地区(Bentham, 1861),因此有关外来物种入侵的记录颇为详尽。

归化外来植物物种在香港的首次记录由Seeman(1857)作出,记录了至少44个物种,包括藿香蓟(*Ageratum conyzoides*)、鬼针草(*Bidens pilosa*)以及含羞草(*Mimosa pudica*)。Bentham(1861)在香港岛记录的1200多种维管束植物中,外来物种多达55种,包括银合欢(*Leucaena leucocephala*)、鸡蛋果(*Passiflora foetida*)以及野甘草(*Scoparia dulcis*)。根据过去在香港采集的标本和已经发表的植物志及名录,Corlett(1992a)发表了144种外来植物。而一项最近进行的全香港境内的陆地生物多样性调查(Corlett et al., 2000)发现,在2130多种已经或曾经在香港野外地区生长的维管束植物中,最少有180种外来物种,另外还有50种虽然来源地未能确定但明显不是香港原生的植物物种。

2 香港的外来植物

附录1中列出了59科238种在香港已经或曾经逸为野生的外来或怀疑为外来的维管束植物,其中最主要的是菊科(Asteraceae)、禾本科(Poaceae)、莎草科(Cyperaceae)以及豆科(Fabaceae)。香港野生外来植物当中大部分起源于南美洲或热带美洲,但也有相当部分(78种)属泛热带或全球性分布而来源地未能确定的物种,其中包括很多禾本科和莎草科的农田杂草,例如马唐(*Digitaria ciliaris*)、稗(*Echinochloa crusgalli*)以及多种莎草属植物(*Cyperus* spp.)等。这些农田杂草可能于数世纪前就已经随着农作物分布到全世界。在这些已有记录的外来植物中,薇甘菊(*Mikania micrantha*)、五爪金龙(*Ipomoea cairica*)、马缨丹(*Lantana camara*)、假臭草(*Eupatorium catarium*(*Praxelis clematidea*))及大

黍(*Panicum maximum*)是最常见又最具入侵性的物种;在湿润的低地生境及沿岸地区,巴拉草(*Urochloa mutica*)、象草(*Pennisetum purpureum*)及凤眼莲(*Eichhornia crassipes*)则较常见。

这些外来物种肆虐于近期或长期受人为干扰的市区或农地生境,例如植被经常被修剪的路旁、荒废农田、荒地、鱼塘以及公路和人行道边缘。一些寿命较长的物种如马缨丹、银合欢及象草更能环境受干扰后挣扎求存数年甚至数十年。虽然如此,大部分香港的外来物种对目前香港分布最广、由山火维持的灌草丛生境及较少受干扰的林地生境来说,影响较小。而在上述生境边缘受人为干扰的地方,外来物种才得以蔓延。这种分布或许反映出大部分外来物种未能耐受天然林地生境中激烈的竞争和阴暗的环境及灌草丛生境的贫瘠泥土。由于香港位于热带北端,受大陆性气候影响而导致间中也有颇为严寒的冬天,因此部分源自热带的外来物种在香港的分布多被局限在低地环境。此类物种包括薇甘菊、五爪金龙及马缨丹等(Corlett, 1992b)。一些源自温带的物种如庭菖蒲(*Sisyrinchium rosulatum*)及蒲公英(*Taraxacum officinale*),则只能在气温较低的高海拔地区有分布。

虽然外来植物大多依赖人为干扰来传播及维持,但也有例外情况。如野生牛可以使外来植物尤其是薇甘菊蔓延至未受人为干扰的地区,但此论点至今仍未有实验证明。与牛关系最明显的外来植物是地桃花(*Urena lobata*)及梵天花(*U. procumbens*),它们的果实具有钩状刺,可以依附人的衣服或动物的皮毛得以传播。一些外来植物如仙人掌(*Opuntia dillenii*)、羽芒菊(*Tridax procumbens*)、红毛草(*Melinis repens*)及假臭草也曾成功地在干扰较少的沙滩内陆边缘繁衍。

由于大部分在香港广泛种植的外来树种都有在其他地方逸为野生而具有危害性的例子,这些树种也有可能具入侵性(Randel & Marinelli, 1996)。例如耳果相思(*Acacia auriculiformis*)在太平洋岛屿波多黎各及美国佛罗里达州(Francis & Liogier, 1991; Randall & Marinelli, 1996; Anon., 2001),红胶木(*Lophostemon confertus*)在夏威夷(Wagner et al., 1990),白千层(*Melaleuca quinquenervia*)在佛罗里达州(Di Stefano & Fisher, 1983; Randall & Marinelli, 1996; Turner et al., 1998),曾在当地的植林过程中

逸为野生并对当地生态造成破坏。到目前为止,香港只有木麻黄(*Casuarina equisetifolia*)和银合欢有有限度地蔓延至其他没有种植的地方,例如近郊的废地、花槽和人迹罕至的沙滩。明显为逸为野生的白千层幼树则曾在数个地点被发现有较多的分布(Hau, 2001)。而在香港极为广泛种植的台湾相思(*Acacia confusa*)则暂时只有在一些人工林中发现小苗而未见较大的苗木。这些香港常用的植林树种当中,银合欢及白千层已被列入世界100种最恶性入侵种(IUCN, 2001)。虽然这些树种尚未完全逸为野生,但由于它们在香港被非常广泛地种植为成片的纯林,意味着假如它们逸为野生,有可能带来严重的生态问题。虽然本地负责植树的部门已开始对外来物种的负面影响有所认识,上述的外来树种仍占近年种植的人工林中的很大部分。

此外,与乡村有关的经济树木也不少,它们的原生地都在华南地区,并非香港原生,却在不同程度上蔓延至附近林区。例如樟树(*Cinnamomum camphora*)和牙香树(*Aquilaria sinensis*)已在香港归化野生,并常见于低海拔树林。而龙眼(*Dimocarpus longan*)、荔枝(*Litchi chinensis*)和蒲桃(*Syzygium jambos*)则只是半归化,只局限于古老村落附近。

3 香港近期发现的归化外来植物

由于香港为华南地区最繁忙的港口,在本地归化的外来植物很有可能在邻近地区逸为野生。一些在香港有记录的外来植物在内地极少或从未有发现或记录。例如原产南美的假臭草早在20世纪80年代于香港首次被发现,但一直被误认为熊耳草(*Aggeratum houstonianum*),直到1995年才有人辨认(Corlett & Shaw, 1995; Veldkamp, 1999)。这个物种自80年代起在香港的荒地、路边及市区就已经很常见,到了90年代开始在深圳被发现,现在则已经蔓延到广州附近。

近来在香港发现的另一个外来物种是大含羞草(*Mimosa pigra*),虽然在华南地区非常稀有,在香港目前只有1株能育的个体和数株幼苗,但也有可能给华南生物多样性带来严重威胁。据记录,此物种能适应年降雨量700~2250 mm的热带季风气候,亦即与香港及大部分华南沿海地区类似的气候。在非洲、澳洲北部及泰国,这个物种经已归化为野生。因为它能在湿地、河谷平原及路边形成茂密的有刺灌木丛,使湿地干涸,甚至遏止树林演替(Lonsdale

et al., 1989),使很多原生野生动物不能生存。IUCN(2001)也已经把这一物种列入世界100种最恶性入侵种名单。内地有关方面也应该关注这些有可能在不久将来在内地蔓延的入侵种。

源自北美洲的互花米草(*Spartina alterniflora*)近年也在香港新界西北部具有国际性自然保育价值的米埔自然保护区附近出现。互花米草于60年代起引入中国大陆并在沿海浅滩广泛种植(Xie *et al.*, 2001),近年已在华东以至广西及珠海沿海逸为野生(郑松发等, 1999)。它具有很强的入侵性,能够形成稠密的单优群落,并可由海边入侵红树林生境以至完全改变鸟类赖以生存的环境。IUCN(2001)也已经将其列入世界100种最恶性入侵种。所幸互花米草目前在香港仍然比较稀少,主要在米埔西南方的白泥地区沙质成份较高的泥滩有发现,尚未在米埔自然保护区内出现。有关的管理部门如香港世界自然基金会及香港政府渔农自然护理署,已经对已发现的小片互花米草进行人工清除,但将来仍需在附近地区进行长时期的监测,以防其死灰复燃。

除了互花米草外,米埔自然保护区最近也受到另一外来植物无瓣海桑(*Sonneratia apetala*)的入侵。这种红树林树种源于印度洋孟加拉湾,早年引进到海南岛及深圳作红树林植林用途,并逸为野生。近年本地政府部门还种植少量于米埔附近地区。令人担心的是近年在米埔自然保护区的泥滩也有发现,怀疑是从深圳传播来的无瓣海桑苗木。虽然它是乔木形态,因此没有互花米草的危害性大,但由于它能适应本地环境并且生长迅速,能直接与本地的原生红树林树种形成竞争,有可能影响本地红树的生长以至导致其灭绝。

4 外来物种对本地动植物的影响

除了某些因土地用途改变而在本地继续减少的农地杂草外,大部分在香港值得关注的珍稀或狭域分布的植物通常分布于较少受干扰的树林生境及山间,这些地区都因为人为活动较少及土壤贫瘠而免受外来植物入侵。因此,外来植物为本地植物种群所带来的负面影响暂时只限于低地及湿地生境,包括废弃农地、湿地及树林边缘。但是由于这些生境过去数百年来长期受人为干扰影响,外来植物对这些生境的负面影响实在很难测度。可是,有些外来植物物种已开始入侵未受干扰的天然或半天然生境,例如互花米草及无瓣海桑已开始入侵泥滩及红

树林,而在海滩边缘则有羽芒菊、假臭草及木麻黄等。

外来植物引起的负面影响最为明显的例子要算是薇甘菊。它常在低地树林边缘繁衍,覆盖本地树种的树冠层,导致树木死亡,破坏树林生境,直接影响在树林栖息的动植物。这种情况曾在香港一个重要的鹭林——沙头角丫洲出现,该处是大白鹭(*Casmerodius albus*)、夜鹭(*Nycticorax nycticorax*)、小白鹭(*Egretta garzetta*)及牛背鹭(*Bubulcus ibis*)筑巢的地点(Wong et al., 1999)。薇甘菊亦常与臂形草及凤眼莲在一些湿地生境内蔓延,形成单调环境,不但降低生境的多样性,使动物失去生境,更由于此类物种的产物不适合大部分动物食用,使资源不能被充分利用,从而减低动物多样性。由于香港某些荒废农地及湿地是多种本地或全球珍稀濒危的昆虫、两栖类、鱼类及水鸟的重要湿地生境,外来物种在此类生境生长无疑对生物多样性造成威胁。

对本地植物带来最大影响的外来物种莫过于70年代意外引入的松树线虫(*Bursaphelenchus xylophilus*),它在1982年才被鉴定,是由专吃松树树皮的天牛(Cerambycidae)传播的,最少只需6个月便能杀死松树(Dudgeon & Corlett, 1994)。马尾松(*Pinus massoniana*)曾是香港最重要的造林树种,也是次生林中的优势先锋树种,但在线虫入侵后的10年间几乎完全灭绝。

近年引入的脊椎动物最终也可能影响本地植被。例如栖于树上的泰国赤腹松鼠(*Callosciurus erythraeus thai*)便是于60年代从泰国引入的。自此种松鼠引入后,随即广布于当时并无原生松鼠的香港岛林区。它是数个树种在种子传播前的主要采食者,包括有常见的先锋树种山乌柏(*Sapium discolor*),因此最终可能改变本港地区的植被成份。此松鼠的另一亚种也曾引入新界,但是暂时未有广泛分布。事实上,香港在原始植被未被破坏前,本地也应有赤腹松鼠存在,因此泰国赤腹松鼠的引入可能正好恢复种子遭采食的天然压力。另外,一种体型较大的食果性雀鸟——黑领噪鹛(*Garrulax pectoralis*)在过去10年间亦开始广泛分布于香港,明显是人们有意释放的笼鸟。与泰国赤腹松鼠一样,在香港原始植被未被破坏前,本地是应该有与黑领噪鹛差不多的大型食果性雀鸟的。由于黑领噪鹛能吞下其他本地雀鸟不能吞食的较大果实,因此能帮助这些树

种传播种子(Corlett, 2001),继而让一些不常见而结较大果实的树种如丛花厚壳桂(*Cryptocarya densiflora*)、粗壮润楠(*Machilus robusta*)、广东琼楠(*Beilschmiedia fordii*)和厚边木犀(*Osmanthus marginatus*)等得以繁衍。

5 结论

虽然很多外来植物都能在香港野外蔓延,但真正引起严重问题的却不多。现时这些外来植物的负面影响只局限在个别低地生境,这却不表示外来植物将来不会对本地生态造成重大破坏。很多在外地带来严重问题的入侵种暂时未在香港发现或繁衍,而当它们成功蔓延后也有可能带来严重影响。一些政府部门对外来物种的危害也缺乏认识。由于香港依赖自由贸易,因此实施边境管制以防引入植物难以落实。唯一的解决方案是在物种抵港时及尚未广泛逸为野生前尽快鉴定及评估其侵入性和对本地生态及原生物种的影响,并对恶性入侵种尽快消除,以免广泛蔓延。

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附录 香港有记录逸为野生的外来植物

Appendix Naturalized exotic plant species recorded from Hong Kong

注¹ : P:泛热带分布; C:全世界性分布; Am:美洲; C. Am.:中美洲; T. Am.:热带美洲; N. Am.:北美洲; S. Am.:南美洲; Af:非洲; T. Af:热带非洲; W. Af:非洲西部; S. Af:非洲南部; As:亚洲; MC:中国大陆; E:欧洲; NE:欧亚北部

注² : 见 Corlett et al. (2000)

Note¹ : P: Pantropical; C: Cosmopolitan; Am: America; C. Am: Central America; T. Am: Tropical America; N. Am: North America; S. Am: South America; Af: Africa; T. Af: Tropical Africa; W. Af: West Africa; S. Af: South Africa; As: Asia; E: Europe; NE: Northern Eurasia; MC: Mainland China

Note² : Local abundance follows Corlett et al. (2000)

科 Family	种名 Species	来源地 ¹ Origin	生活型 Growth form	生境 Habitat	数量 ² Local abundance
Pteridophytes					
Adiantaceae	<i>Adiantum capillus-veneris</i> L.	P	Herb	Urban areas	Common
Hemionitidaceae	<i>Pityrogramma calomelanos</i> (L.) Link	T. Am	Herb	On walls and earth banks	Restricted
Dicotyledons					
Acanthaceae	<i>Andrographis paniculata</i> (Burm. f.) Nees	India	Herb	Wasteland	Restricted
Acanthaceae	<i>Barleria cristata</i> L.	India	Subshrub	Shrubland	Restricted
Acanthaceae	<i>Justicia adhatoda</i> L.	C. Am	Shrub	Lowland forest margins	Restricted
Acanthaceae	<i>Thunbergia alata</i> Bojer ex Sims	T. Af	Climber	Wasteland	Restricted
Acanthaceae	<i>Thunbergia grandiflora</i> Roxb.	India	Woody climber	Forest margins	Common
Amaranthaceae	<i>Achyranthes aspera</i> L.	P	Herb	Wasteland	Common
Amaranthaceae	<i>Alternanthera philoxeroides</i> (Mart.) Griseb.	T. Am	Herb	Abandoned cultivation	Common
Amaranthaceae	<i>Alternanthera sessilis</i> (L.) DC.	P	Herb	Wasteland and cultivated areas	Common
Amaranthaceae	<i>Amaranthus spinosus</i> L.	S. Am	Herb	Wasteland	Common
Amaranthaceae	<i>Amaranthus viridis</i> L.	P	Herb	Wasteland	Very common
Amaranthaceae	<i>Celosia argentea</i> L.	P	Herb	Wasteland	Very common
Amaranthaceae	<i>Gomphrena celosioides</i> Mart.	S. Am	Herb	Wasteland	Restricted
Apiaceae	<i>Apium leptophyllum</i> (Pers.) F. Muell.	T. Am	Herb	Roadsides	Restricted
Apiaceae	<i>Eryngium foetidum</i> L.	T. Am	Herb	Wasteland and Grassland	Restricted
Apocynaceae	<i>Catharanthus roseus</i> (L.) G. Don	Af	Herb	Wasteland	Common
Asclepiadaceae	<i>Asclepias curassavica</i> L.	T. Am	Herb	Wasteland	Common
Asteraceae	<i>Acanthospermum hispidum</i> DC.	T. Am	Herb	Wasteland	Very rare
Asteraceae	<i>Ageratum conyzoides</i> L.	T. Am	Herb	Wasteland	Common
Asteraceae	<i>Ageratum houstonianum</i> Mill.	T. Am	Herb	Wasteland	Common
Asteraceae	<i>Artemisia verlotiorum</i> Lamotte	NE	Herb	Grassland	Restricted

附录（续） Appendix (continued)

科 Family	种名 Species	来源地 ¹ Origin	生活型 Growth form	生境 Habitat	数量 ² Local abundance
Asteraceae	<i>Bidens alba</i> (L.) DC.	T. Am	Herb	Wasteland	Very common
Asteraceae	<i>Bidens bipinnata</i> L.	Am	Herb	Wasteland	Common
Asteraceae	<i>Bidens pilosa</i> L.	T. Am	Herb	Wasteland	Very common
Asteraceae	<i>Carpesium abrotanoides</i> L.	MC	Herb		Very rare
Asteraceae	<i>Centipeda minima</i> (L.) A. Braun & Asch.	P	Herb	Wet fields and reservoir margins	Common
Asteraceae	<i>Conyza bonariensis</i> (L.) Cronquist	T. Am	Herb	Wasteland	Very common
Asteraceae	<i>Conyza canadensis</i> (L.) Cronquist	N. Am	Herb	Wasteland	Very common
Asteraceae	<i>Crassocephalum crepidioides</i> (Benth.) S. Moore	Af	Herb	Wasteland	Common
Asteraceae	<i>Elephantopus spicatus</i> Juss. ex Aubl.	T. Am	Herb	Wasteland	Restricted
Asteraceae	<i>Elephantopus tomentosus</i> L.	T. Am	Herb	Grassland and forest margins	Common
Asteraceae	<i>Emelia sonchifolia</i> (L.) DC.	P	Herb	Wasteland and cultivation	Very common
Asteraceae	<i>Erechtites valerianifolia</i> (Wolf) DC.	Am	Herb	Wasteland	Rare
Asteraceae	<i>Erigeron karvinskianus</i> DC.	T. Am	Herb	Roadsides and cultivated areas	Restricted
Asteraceae	<i>Eupatorium catarium</i> Veldkamp	T. Am	Herb	Wasteland	Very common
Asteraceae	<i>Eupatorium odoratum</i> L.	T. Am	Herb	Shrubland	Rare
Asteraceae	<i>Gamochaeta purpurea</i> (L.) Cabrera	Am	Herb	Wasteland and reservoir margins	Common
Asteraceae	<i>Gnaphalium polycaulon</i> Pers.	P	Herb	Wasteland, cultivated areas and reservoir margins	Common
Asteraceae	<i>Mikania micrantha</i> Kunth	T. Am	Climber	Wasteland	Very common
Asteraceae	<i>Sanvitalia procumbens</i> Lam.	T. Am	Herb		Very rare
Asteraceae	<i>Senecio vulgaris</i> L.	NE	Herb	Wasteland	Very rare
Asteraceae	<i>Soliva anthemifolia</i> (Juss.) R. Br.	S. Am	Herb	Wasteland and cultivated areas	Restricted
Asteraceae	<i>Sonchus arvensis</i> L.	NE	Herb	Wasteland	Very common
Asteraceae	<i>Sonchus oleraceus</i> L.	NE	Herb	Wasteland	Very common
Asteraceae	<i>Spilanthes paniculata</i> Wall. ex DC.	P	Herb	Wasteland and streamsides	Common
Asteraceae	<i>Synedrella nodiflora</i> (L.) Gaertn.	T. Am	Herb	Wasteland	Very common
Asteraceae	<i>Taraxacum officinale</i> Weber	E	Herb	Grassland	Restricted
Asteraceae	<i>Tithonia diversifolia</i> (Hemsl.) A. Gray	T. Am	Herb	Wasteland	Common
Asteraceae	<i>Tridax procumbens</i> L.	T. Am	Herb	Wasteland	Very common
Asteraceae	<i>Vernonia cinerea</i> (L.) Less.	P	Herb	Wasteland	Very common
Asteraceae	<i>Wedelia trilobata</i> (L.) Hitchc.	T. Am	Herb	Wasteland and coastal areas	Common
Asteraceae	<i>Xanthium strumarium</i> L.	Am	Herb	Wasteland	Common
Basellaceae	<i>Anredera cordifolia</i> (Ten.) Steenis	S. Am	Climber	Fengshui woods	Restricted
Basellaceae	<i>Basella alba</i> L.	Asia	Climber	Village areas	Restricted
Boraginaceae	<i>Heliotropium indicum</i> L.	P	Herb	Wasteland	Common
Brassicaceae	<i>Capsella bursapastoris</i> Medik.	NE	Herb	Cultivated area and wasteland	Common
Brassicaceae	<i>Cardamine flexuosa</i> With.	NE	Herb	Cultivated areas	Common
Brassicaceae	<i>Coronopus didymus</i> (L.) Sm.	E	Herb	Wasteland and cultivated areas	Common
Brassicaceae	<i>Lepidium virginicum</i> L.	N. Am	Herb	Wasteland	Restricted
Brassicaceae	<i>Rorippa heterophylla</i> (Bl.) Williams	Asia			
Cactaceae	<i>Opuntia dillenii</i> Haw.	T. Am	Herb	Coastal areas	Common
Campanulaceae	<i>Laurentia longiflora</i> (L.) Endl.	T. Am	Herb	Wasteland	Common
Cannabaceae	<i>Humulus scandens</i> (Lour.) Merr.	MC	Climber	Wasteland	Very rare
Capparaceae	<i>Cleome rutidosperma</i> DC.	W. Af	Herb	Wasteland	Restricted
Capparaceae	<i>Cleome viscosa</i> L.	Asia	Herb	Wasteland	Restricted
Caryophyllaceae	<i>Cerastium fontanum</i> Baumg.	NE	Herb	Grassland	Restricted
Caryophyllaceae	<i>Myosoton aquaticum</i> (L.) Moench	NE	Herb	Cultivated areas and streamsides	Common
Caryophyllaceae	<i>Stellaria media</i> (L.) Vill.	C	Herb	Wasteland and cultivated areas	Common
Caryophyllaceae	<i>Stellaria uliginosa</i> Murray	NE	Herb	Wasteland and cultivated areas	Common
Casuarinaceae	<i>Casuarina equisetifolia</i> L.	Australia	Tree	Beaches and reclaimed land	Rare

附录（续） Appendix (continued)

科 Family	种名 Species	来源地 ¹ Origin	生活型 Growth form	生境 Habitat	数量 ² Local abundance
Chenopodiaceae	<i>Chenopodium album</i> L.	NE	Herb	Wasteland	Restricted
Chenopodiaceae	<i>Chenopodium ambrosioides</i> L.	T. Am	Herb	Wasteland	Common
Convolvulaceae	<i>Argyreia acuta</i> Lour.	As	Woody climber	Wasteland	Rare
Convolvulaceae	<i>Argyreia nervosa</i> (Burm. f.) Bojer	India	Woody climber	Shrubland	Rare
Convolvulaceae	<i>Ipomoea alba</i> L.	T. Am	Climber	Wasteland	Restricted
Convolvulaceae	<i>Ipomoea aquatica</i> Forssk.	As	Herb	Cultivated areas and wasteland	Very common
Convolvulaceae	<i>Ipomoea cairica</i> (L.) Sweet	P	Climber	Wasteland	Very common
Convolvulaceae	<i>Ipomoea indica</i> (Burm.) Merr.	T. Am	Climber	Wasteland and Roadsides	Restricted
Convolvulaceae	<i>Ipomoea nil</i> (L.) Roth	T. Am	Climber	Wasteland and cultivated areas	Common
Convolvulaceae	<i>Ipomoea purpurea</i> (L.) Roth	T. Am	Climber	Roadsides and wasteland	Restricted
Convolvulaceae	<i>Ipomoea triloba</i> L.	T. Am	Climber	Wasteland, Roadsides and cultivated areas	Common
Convolvulaceae	<i>Merremia tuberosa</i> (L.) Rendle	T. Am	Woody climber	Wasteland and coastal areas	Restricted
Crassulaceae	<i>Kalanchoe pinnata</i> (Lam.) Pers.	Af	Herb	Lowland forest margins	Common
Crassulaceae	<i>Kalanchoe tubiflora</i> (Harv.) Raym.-Hamet	Af	Herb	Urban areas and villages	Common
Elaeocarpaceae	<i>Muntingia calabura</i> L.	T. Am	Tree, 7 m	Wasteland	Rare
Euphorbiaceae	<i>Chamaesyce hirta</i> (L.) Millsp.	Am	Herb	Wasteland	Very common
Euphorbiaceae	<i>Chamaesyce hypericifolia</i> (L.) Millsp.	Am	Herb	Wasteland	Common
Euphorbiaceae	<i>Chamaesyce prostrata</i> (Aiton) Small	Am	Herb	Wasteland	Restricted
Euphorbiaceae	<i>Chamaesyce thymifolia</i> (L.) Millsp.	P	Herb	Wasteland	Very common
Euphorbiaceae	<i>Euphorbia heterophylla</i> L.	P	Subshrub	Wasteland	Restricted
Euphorbiaceae	<i>Euphorbia tirucalli</i> L.	T. Af	Shrub	Coastal areas	Restricted
Euphorbiaceae	<i>Jatropha curcas</i> L.	T. Am	Shrub	Coastal areas	Restricted
Euphorbiaceae	<i>Phyllanthus amarus</i> Schumach. & Thonn.	P	Herb	Wasteland	Very common
Euphorbiaceae	<i>Ricinus communis</i> L.	Af	Shrub	Wasteland	Restricted
Fabaceae	<i>Abrus precatorius</i> L.	P	Woody climber	Coastal shrubland	Common
Fabaceae	<i>Cajanus cajan</i> (L.) Millsp.	India	Shrub	Wasteland	Restricted
Fabaceae	<i>Crotalaria pallida</i> Aiton	P	Herb	Wasteland and villages	Common
Fabaceae	<i>Desmanthus virgatus</i> (L.) Willd.	T. Am	Herb	Wasteland	Restricted
Fabaceae	<i>Desmodium tortuosum</i> (Sw.) DC.	T. Am	Subshrub	Wasteland	Common
Fabaceae	<i>Indigofera suffruticosa</i> Mill.	P	Subshrub	Wasteland	Restricted
Fabaceae	<i>Lablab purpureus</i> (L.) Sweet	India	Climber	Cultivated areas	Restricted
Fabaceae	<i>Leucaena leucocephala</i> (Lam.) de Wit	T. Am	Tree	Wasteland	Common
Fabaceae	<i>Macroptilium atropurpureum</i> (DC.) Urb.	T. Am	Herb	Wasteland	Common
Fabaceae	<i>Macroptilium lathyroides</i> (L.) Urb.	T. Am	Herb	Wasteland	Common
Fabaceae	<i>Medicago sativa</i> L.	NE	Herb	Abandoned farmland	Restricted
Fabaceae	<i>Mimosa diplosticha</i> C. Wright ex Sauvalle	T. Am	Climber	Wasteland	Rare
Fabaceae	<i>Mimosa pigra</i> L.	T. Am	Shrub	Roadside Wasteland	Very rare
Fabaceae	<i>Mimosa pudica</i> L.	T. Am	Herb	Wasteland	Very common
Fabaceae	<i>Senna hirsuta</i> (L.) Irwin & Barneby	T. Am	Shrub	Near villages	Very rare
Fabaceae	<i>Senna occidentalis</i> (L.) Link	S. Am	Shrub	Wasteland, grassland and villages	Very common
Fabaceae	<i>Senna tora</i> (L.) Roxb.	P	Herb	Wasteland and villages	Common
Fabaceae	<i>Trifolium repens</i> L.	E	Herb	Grassland	Restricted
Fabaceae	<i>Vicia hirsuta</i> (L.) Gray	NE	Herb		Very rare
Fabaceae	<i>Vicia sativa</i> L.	E	Herb		Very rare
Geraniaceae	<i>Erodium cicutarium</i> (L.) L'Hér.	NE	Herb	Wasteland	Very rare
Iridaceae	<i>Sisyrinchium rosulatum</i> E.P. Bicknell	Am	Herb	Grassland	Rare
Lamiaceae	<i>Hyptis rhomboidea</i> MarT. & Galeotti	T. Am	Herb		Very rare
Lamiaceae	<i>Hyptis suaveolens</i> (L.) Poit.	T. Am	Herb	Wasteland and grassland	Restricted
Lamiaceae	<i>Ocimum basilicum</i> L.	As	Herb	Wasteland	Very rare
Lamiaceae	<i>Perilla frutescens</i> (L.) Britton	As	Herb	Villages	Restricted
Lauraceae	<i>Cinnamomum camphora</i> (L.) J. Presl	MC	Tree	Lowland forests and villages	Common

附录（续） Appendix (continued)

科 Family	种名 Species	来源地 ¹ Origin	生活型 Growth form	生境 Habitat	数量 ² Local abundance
Limnocharitaceae	<i>Limnocharis flava</i> (L.) Buchenau	T. Am	Aquatic herb		Very rare
Linaceae	<i>Linum striatum</i> Walter	T. Am	Herb	Grassland	Rare
Malvaceae	<i>Malvastrum coromandelinum</i> (L.) Garecke	P	Herb	Wasteland	Common
Malvaceae	<i>Sida acuta</i> Burm.	P	Subshrub	Wasteland	Common
Malvaceae	<i>Sida cordata</i> (Burm. f.) Borss. Waalk.	P	Subshrub	Wasteland and villages	Common
Malvaceae	<i>Sida rhombifolia</i> L.	P	Subshrub	Wasteland	Common
Malvaceae	<i>Urena lobata</i> L.	P	Subshrub	Wasteland and lowland forests	Common
Malvaceae	<i>Urena procumbens</i> L.	P	Subshrub	Wasteland and lowland forests	Common
Meliaceae	<i>Melia azedarach</i> L.	As	Tree	Villages	Common
Moraceae	<i>Broussonetia papyrifera</i> A. (L.) Vent.	MC	Tree	Wasteland	Very common
Moraceae	<i>Ficus religiosa</i> L.	As	Tree	Urban areas	Restricted
Moraceae	<i>Morus alba</i> L.	MC	Tree	Wasteland and near villages	Common
Myrtaceae	<i>Melaleuca quinquenervia</i> (Cav.) S. T. Blake	Australia	Tree	Shrubland	Rare
Myrtaceae	<i>Psidium guajava</i> L.	T. Am	Tree	Wasteland and abandoned cultivation	Common
Myrtaceae	<i>Syzygium jambos</i> (L.) Alston	As	Tree	Lowland forest	Common
Onagraceae	<i>Ludwigia octovalvis</i> (Jacq.) Raven	P	Herb	Wetlands	Common
Oxalidaceae	<i>Oxalis corniculata</i> L.	C	Herb	Wasteland and cultivated areas	Very common
Oxalidaceae	<i>Oxalis corymbosa</i> DC.	T. Am	Herb	Wasteland and cultivated areas	Common
Passifloraceae	<i>Passiflora foetida</i> L.	T. Am	Climber	Wasteland	Very common
Passifloraceae	<i>Passiflora suberosa</i> L.	T. Am	Climber	Wasteland	Common
Phytolaccaceae	<i>Phytolacca acinosa</i> Roxb.	As	Herb	Wasteland	Rare
Piperaceae	<i>Peperomia pellucida</i> (L.) Kunth	T. Am	Herb	Wet places	Common
Plantaginaceae	<i>Plantago lanceolata</i> L.	NE	Herb	Flower-bed	Very rare
Plantaginaceae	<i>Plantago major</i> L.	C	Herb	Wasteland	Very common
Polygonaceae	<i>Rumex crispus</i> L.	NE	Herb	Cultivated areas and streamsides	Restricted
Portulacaceae	<i>Portulaca oleracea</i> L.	C	Herb	Wasteland and cultivated areas	Very common
Portulacaceae	<i>Talinum paniculatum</i> (Jacq.) Gaertn.	T. Am	Herb		Common
Primulaceae	<i>Anagallis arvensis</i> L.	NE	Herb	Wasteland	Very rare
Rubiaceae	<i>Borreria latifolia</i> (Aubl.) K. Schum.	Am	Herb	Wasteland	restricted
Rubiaceae	<i>Galium aparine</i> L.	NE	Herb	Wasteland	Rare
Rubiaceae	<i>Richardia brasiliensis</i> Gomes	T. Am	Herb	Grassland and wasteland	Common
Sapindaceae	<i>Cardiospermum halicacabum</i> L.	T. Am	Climber	Wasteland	Restricted
Sapindaceae	<i>Dimocarpus longan</i> Lour.	MC	Tree , 10 m	Fengshui woods	Restricted
Sapindaceae	<i>Sapindus mukorossi</i> Gaertn.	MC	Tree , 20 m	Near villages	Restricted
Scrophulariaceae	<i>Bacopa monnieri</i> (L.) Wettst.	P	Herb	Wetlands	Common
Scrophulariaceae	<i>Scoparia dulcis</i> L.	T. Am	Herb	Wasteland	Common
Scrophulariaceae	<i>Siphonostegia laeta</i> S. Moore	MC	Herb	Lowland forest margins	Rare
Scrophulariaceae	<i>Veronica persica</i> Poir.	Af	Herb		Very rare
Scrophulariaceae	<i>Veronica undulata</i> Wall ex Jack.	As	Herb	Cultivated areas	Restricted
Solanaceae	<i>Datura metel</i> L.	T. Am	Herb	Villages	Common
Solanaceae	<i>Physalis angulata</i> L.	P	Herb	Wasteland and near villages	Restricted
Solanaceae	<i>Solanum americanum</i> Mill.	Am	Herb	Wasteland	Very common
Solanaceae	<i>Solanum capsicoides</i> All.	Am	Herb or subshrub	Near villages	Rare
Solanaceae	<i>Solanum erianthum</i> D. Don	T. Am	Shrub	Near villages	Common
Solanaceae	<i>Solanum torvum</i> Sw.	Am	Shrub	Wasteland and near villages	Common
Solanaceae	<i>Solanum wrightii</i> Benth.	T. Am	Shrub		Very rare
Sonneratiaceae	<i>Sonneratia apetala</i> Buch. -Ham.	Bengladesh	Tree	Mangrove	Rare
Sterculiaceae	<i>Firmiana platanifolia</i> (L. f.) Marsili	MC	Tree , 10 m	Forest and shrubland	Restricted
Sterculiaceae	<i>Waltheria indica</i> L.	P	Subshrub	Wasteland	Common
Thymelaeaceae	<i>Aquilaria sinensis</i> (Lour.) Gilg.	As	Tree	Forests	Common

附录（续） Appendix (continued)

科 Family	种名 Species	来源地 ¹ Origin	生活型 Growth form	生境 Habitat	数量 ² Local abundance
Tiliaceae	<i>Triumfetta rhomboidea</i> Jacq.	P	Subshrub	Wasteland	Common
Urticaceae	<i>Pilea microphylla</i> (L.) Liebm.	T. Am	Herb	Villages and urban areas	Very common
Verbenaceae	<i>Clerodendrum japonicum</i> (Thunb.) Sweet	Asia	Shrub	Near villages	Common
Verbenaceae	<i>Lantana camara</i> L.	Am	Shrub	Wasteland	Very common
Verbenaceae	<i>Stachytarpheta jamaicensis</i> (L.) Vahl	Am	Herb	Wasteland	Common
Verbenaceae	<i>Verbena bonariensis</i> L.	S. Am	Herb	Wasteland	Restricted
Verbenaceae	<i>Verbena officinalis</i> L.	NE	Herb	Wasteland	Restricted
Monocotyledons					
Agavaceae	<i>Agave vivipara</i> L.	T. Am	Herb	Coastal areas	Restricted
Araceae	<i>Pistia stratiotes</i> L.	P	Floating herb	Cultivated areas	Common
Cyperaceae	<i>Bulbostylis barbata</i> (Rottb.) C. B. Clarke	P	Herb	Wasteland and sandy beaches	Restricted
Cyperaceae	<i>Cyperus compressus</i> L.	P	Herb	Wasteland	Very common
Cyperaceae	<i>Cyperus corymbosus</i> Rottb.	P	Herb	Abandoned cultivation	Restricted
Cyperaceae	<i>Cyperus cuspidatus</i> Kunth	Am	Herb	Wasteland	Restricted
Cyperaceae	<i>Cyperus difformis</i> L.	P	Herb	Cultivated areas and wetlands	Very common
Cyperaceae	<i>Cyperus distans</i> L. f.	P	Herb	Wasteland , Grassland and near villages	Common
Cyperaceae	<i>Cyperus esculentus</i> L.	C	Herb	Abandoned paddy fields	Restricted
Cyperaceae	<i>Cyperus haspan</i> L.	P	Herb	Wetland and cultivation	Common
Cyperaceae	<i>Cyperus imbricatus</i> Retz.	P	Herb	Wetlands , wasteland and cultivation	Common
Cyperaceae	<i>Cyperus involucratus</i> Rottb.	Af	Herb	Streamsides	Restricted
Cyperaceae	<i>Cyperus odoratus</i> L.	P	Herb	Wasteland and grassland	Restricted
Cyperaceae	<i>Cyperus rotundus</i> L.	C	Herb	Cultivated areas	Very common
Cyperaceae	<i>Eleocharis acicularis</i> (L.) R. Br.	C	Herb	Wetlands	Common
Cyperaceae	<i>Eleocharis acutangula</i> (Roxb.) Schult.	P	Herb	Wetlands	Restricted
Cyperaceae	<i>Eleocharis dulcis</i> (Burm. f.) Trin. ex Hensch. As		Herb	Wetlands	Common
Cyperaceae	<i>Eleocharis geniculata</i> (L.) Roem. & Schult.	P	Herb	Open wet places	Restricted
Cyperaceae	<i>Eleocharis spiralis</i> (Rottb.) Roem. & Schult.	P	Herb	Abandoned paddy fields and coastal areas	Rare
Cyperaceae	<i>Fimbristylis miliacea</i> (L.) Vahl	P	Herb	Wetlands and cultivated areas	Very common
Cyperaceae	<i>Fimbristylis squarrosa</i> Vahl	P	Herb	Grassland and cultivation	Common
Cyperaceae	<i>Fuirena umbellata</i> Rottb.	P	Herb	Wetlands and abandoned cultivation	Common
Cyperaceae	<i>Kyllinga brevifolia</i> Rottb.	P	Herb	Grassland and cultivated areas	Common
Cyperaceae	<i>Kyllinga nemoralis</i> (J. R. & G. Forst.) Dandy ex Hutch. & Dalziel	P	Herb	Wasteland	Very common
Cyperaceae	<i>Kyllinga polypylla</i> Willd. ex Kunth	T. Af	Herb	Wasteland and along paths	Common
Cyperaceae	<i>Pycreus polystachyos</i> (Rottb.) P. Beauv.	P	Herb	Cultivated areas , grassland and wasteland	Very common
Cyperaceae	<i>Rhynchospora corymbosa</i> (L.) Britton	P	Herb	Wetlands	Rare
Cyperaceae	<i>Schoenoplectus mucronatus</i> (L.) Palla	C	Herb	Wetlands and cultivated areas	Very rare
Poaceae	<i>Arundo donax</i> L.	Mediterranean	Herb	Streamsides	Very rare
Poaceae	<i>Axonopus compressus</i> (Sw.) P. Beauv.	T. Am	Herb	Villages and grassland	Common
Poaceae	<i>Axonopus fissifolius</i> (Raddi) Kuhlm.	T. Am	Herb	Roadside grassland	Common
Poaceae	<i>Bromus catharticus</i> Vahl	S. Am	Herb		Very rare
Poaceae	<i>Cenchrus echinatus</i> L.	T. Am	Herb	Wasteland and cultivated areas	Common
Poaceae	<i>Chloris barbata</i> Sw.	T. Am	Herb	Wasteland and sandy shore	Very common
Poaceae	<i>Coix lacryma-jobi</i> L.	T. Am	Herb	Stream sides and cultivated areas	Common
Poaceae	<i>Cynodon dactylon</i> (L.) Pers.	P	Herb	Wasteland and Grassland	Very common
Poaceae	<i>Dactyloctenium aegyptium</i> (L.) P. Beauv.	P	Herb	Cultivated areas	Common
Poaceae	<i>Dichanthium annulatum</i> (Forssk.) Stapf	P	Herb	Wasteland and grassland	Restricted
Poaceae	<i>Digitaria ciliaris</i> (Retz.) Koeler	P	Herb	Wasteland	Very common
Poaceae	<i>Digitaria violascens</i> Link	P	Herb	Grassland , Roadsides and wasteland	Common

附录（续） Appendix (continued)

科 Family	种名 Species	来源地 ¹ Origin	生活型 Growth form	生境 Habitat	数量 ² Local abundance
Poaceae	<i>Echinochloa colona</i> (L.) Link	P	Herb	Cultivated areas	Very common
Poaceae	<i>Echinochloa crusgalli</i> (L.) P. Beauv.	P	Herb	Wasteland	Common
Poaceae	<i>Eleusine indica</i> (L.) Gaertn.	P	Herb	Wasteland	Very common
Poaceae	<i>Eragrostis amabilis</i> (L.) Nees	P	Herb	Wasteland	Very common
Poaceae	<i>Eragrostis perennans</i> Keng	C	Herb	Grassland	Common
Poaceae	<i>Heteropogon contortus</i> (L.) P. Beauv. ex Roem. & Schult.	P	Herb	Grassland	Very common
Poaceae	<i>Leptochloa chinensis</i> (L.) Nees	P	Herb	Cultivated areas	Very common
Poaceae	<i>Leptochloa panicea</i> (Retz.) Ohwi	P	Herb	Cultivation	Common
Poaceae	<i>Melinis minutiflora</i> P. Beauv.	Af	Herb	Wasteland	Restricted
Poaceae	<i>Melinis repens</i> (Willd.) Zizka	Af	Herb	Wasteland and roadsides	Very common
Poaceae	<i>Oplismenus compositus</i> (L.) P. Beauv.	P	Herb	Wasteland and forest margins	Very common
Poaceae	<i>Panicum maximum</i> Jacq.	Af	Herb	Wasteland	Very common
Poaceae	<i>Panicum repens</i> L.	P	Herb	Coastal and cultivated areas	Very common
Poaceae	<i>Paspalum conjugatum</i> Berg	T. Am	Herb	Wasteland	Common
Poaceae	<i>Paspalum dilatatum</i> Poir.	T. Am	Herb	Roadsides	Common
Poaceae	<i>Paspalum distichum</i> L.	T. Am	Herb	Wasteland and roadsides	Common
Poaceae	<i>Paspalum scrobiculatum</i> L. var. <i>bispicatum</i> Hack. ex Merr.	P	Herb	Grassland and wasteland	Common
Poaceae	<i>Paspalum urvillei</i> Steud.	T. Am	Herb	Wasteland	Common
Poaceae	<i>Paspalum vaginatum</i> Sw.	P	Herb	Coastal areas	Common
Poaceae	<i>Pennisetum clandestinum</i> Hochst. ex Chiov.	Af	Herb	Grassland	Restricted
Poaceae	<i>Pennisetum polystachyon</i> (L.) Schult.	T. Am	Herb	Wasteland	Very common
Poaceae	<i>Pennisetum purpureum</i> Schum.	T. Af	Herb	Wasteland and near water	Very common
Poaceae	<i>Poa annua</i> L.	E	Herb	wet places	Very rare
Poaceae	<i>Sacciolepis indica</i> (L.) Chase	P	Herb	Cultivated areas and wetland	Very common
Poaceae	<i>Setaria pumila</i> (Poir.) Roem. & Schult.	Asia	Herb	Grassland	Very common
Poaceae	<i>Setaria viridis</i> (L.) P. Beauv.	E	Herb	Wasteland	Restricted
Poaceae	<i>Sorghum halepense</i> (L.) Pers.	Mediterranean	Herb		Rare
Poaceae	<i>Spartina alternifolia</i> Loisel.	N. Am	Herb	Coastal mudflat	Rare
Poaceae	<i>Sporobolus indicus</i> (L.) R. Br. var. <i>major</i> (Büse) Baaijens	P	Herb	Wasteland and grassland	Very common
Poaceae	<i>Sporobolus virginicus</i> (L.) Kunth	P	Herb	Seashores	Very common
Poaceae	<i>Urochloa mutica</i> (Forssk.) T. Q. Nguyen	P	Herb	Wet places in wasteland and cultivation	Common
Pontederiaceae	<i>Eichhornia crassipes</i> (Mart.) Solms	T. Am	Floating herb	Ponds in cultivated areas	Common
Typhaceae	<i>Typha angustifolia</i> L.	NE	Herb	Wetland	Rare