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Changes in the Flora on Islet Pengchiayu across 100 Years

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ABSTRACT: In this study, we attempted to understand changes in the vascular plants of Isl. Pengchiayu, an islet in waters north of the main island of Taiwan. In addition to visiting the islet 3 times to survey the flora, documents regarding floral studies of Isl. Pengchiayu since 1906 and specimens of this islet deposited in 2 local herbaria, TAI and TAIF, were all referenced. Records of species on this islet were divided into 2 periods: the past (1904~1933) and recent (1992~2005) across about 100 years. All the vascular plants known to have existed during this period are listed. Results show that there were 144 species, including infraspecies, inhabiting the islet in the past period. Among them, 53 species have not been found recently. On the other hand, 39 species which apparently did not occur in the past have recently been recorded. In total, 130 species are known to exist on the islets recently. Possible reasons for the changes are also proposed.

KEY WORDS: Taiwan, Isl. Pengchiayu, Flora, Island biogeography.

INTRODUCTION

Isl. Pengchiayu (25°37′45″ N, 122°04′30″ E), called Hokasyo by the Japanese and Agincourt by the early British, is a small volcanic islet about 55 km north off the main island of Taiwan (Fig. 1). It has an area of 114.13 ha, and the highest point is 165 m in elevation. This islet is mainly surrounded by seashore cliffs, and above the cliffs, it is generally a rolling plain. Volcanic activities of this islet are thought to have occurred in the late Pleistocene to Holocene. The shoreline of the islet is being eroded by wave action especially in the east (Hayasaka, 1936; Chen, 1961; Lin and Chou, 1978). Vegetation on the islet is divided into 3 parts: seashore, cliff, and plain (Huang et al., 1992).

Settlement of Isl. Pengchiayu can be traced back to the middle of the 19th century. People are known to have immigrated here from the main island of Taiwan in 1853, and introduced some vegetables, crops, tobacco, and animals. They described some relics of much-earlier inhabitants. They moved back to Taiwan because of the war between China and France in 1884 (Chen, 1961; Wang, 1969). New inhabitants came in 1906, when a lighthouse, finished in 1909, was constructed (Anonymous, 1977). Only personnel maintaining the lighthouse and meteorological station and members of the Coast Guard live on the islet presently.

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K. Ino was possibly the first explorer of the Japanese government to reach this islet in 1900 (Wang, 1969). T. Kawakami and U. Mori made the first floristic survey in September, 1904 (Kawakami, 1906). Thereafter the flora of this islet has been investigated several times (Kawakami, 1908; Yamamoto, 1939; Huang et al., 1992). Information of the flora on Isl. Pengchiayu can also be found in other documents which mainly used previous data, either from earlier publications or herbarium specimens, without carrying out any further investigations (e.g., Sasaki, 1930; Suzuki, 1937; Liu and Yang, 1974).

Species on islands reach an equilibrium at a certain species number when immigration and extinct rates achieve similar rates. However, human activity can possibly shift the equilibrium to a new level (MacArthur and Wilson, 1967). To understand the immigration and extinction of plants of Isl. Pengchiayu, we carried out 3 surveys during 2004 and 2005 and collected all known data from previous documents and specimens of TAI and TAIF, the 2 largest and oldest herbaria in Taiwan. Differences between the 2 periods, before World War II and the most recent 2 decades were compared. Species which had disappeared and those newly recorded were extracted, and possible reasons for these occurrences are discussed.

MATERIALS AND METHODS

To compare the floral differences between the past period (before World War II) and the recent period (the last 2 decades), floral records were

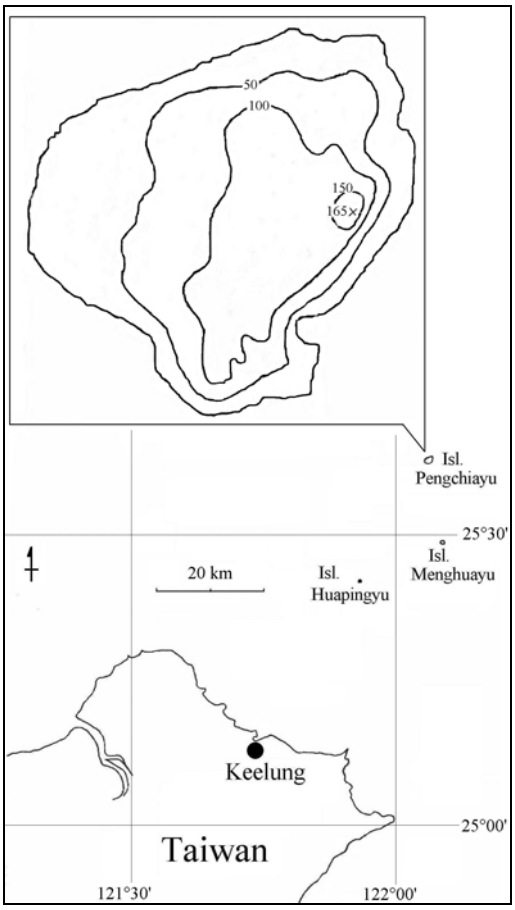

Fig. 1. The map of Isl. Pengchiayu.

grouped into 2 periods, 1904~1933 and 1992~2005. Floral comparisons were based on (1) records in previous reports, (2) specimens in the herbaria TAI and TAIF, and (3) our investigations for this study in 2004~2005. In addition to TAI and TAIF, we did not survey specimens of other herbaria in Taiwan, because they were all built after World War II and almost no collections from the past period were found.

RESULTS AND DISCUSSION

On Isl. Pengchiayu, totally 183 vascular plants have been recorded since the beginning of the 20th century. Among them, 144 and 130 species (including infraspecies) are known from before World War II (past) and after 1992 (recent), respectively. In comparing these 2 periods, 53 (36.81%) species from the past were not seen in the most-recent surveys, and 39 (27.08% of the past species number) recently recorded species had not been recorded before (Appendix). The most species-rich families are the Compositae and Gramineae in both the past and recent periods (Table 1), which are the same results of Kawakami (1906), Yamamoto (1939), and Huang et al. (1992). Other families had much fewer species than these 2 families.

Table 1. Families with more than 5 species on Isl. Pengchiayu.

Family	Past (1904~1933)	Recent (1992~2005)	Total
Compositae	21	26	33
Gramineae	21	16	25
Leguminosae	5	8	9
Cyperaceae	8	5	8
Convolvulaceae	6	4	6
Euphorbiaceae	5	3	6
Verbenaceae	5	4	5
Solanaceae	5	1	5

The disappearance and appearance of plants during different periods might somehow have been caused by habitat changes or human activities. For example, the disappearances of *Centaurium japonicum*, *Sesuvium portulacastrum*, and *Evolvulus alsinoides* are possibly due to a reduction in the sandy-soil habitats; the disappearances of *Ranunculus sceleratus* and *Bacopa monnieri* are possibly related to the loss of wetland areas.

There was a "small woodland" described on the islet before (Kawakami, 1906; Yamamoto, 1939). It no longer exists, and the uplands are almost all covered by a *Miscanthus* grassland with a few trees, such as genera *Ficus*, *Morus*, *Callicarpa*, etc., in small groves or standing alone. This might explain the disappearance of some woody plants, such as *Ficus nervosa*, *Flueggea suffruticosa, Diospyros ferrea, Syzygium taiwanicum,* and *Hibiscus syriacus*. A slightly higher proportion at 44.44% (8 of 18) of woody species disappeared, compared to herbs at 35.71% (45 of 126). On the contrary, only 1 woody species, *Pittosporum tobira*, is newly recorded, and it is only sparsely distributed.

Assuming that Isl. Pengchiayu and the main island of Taiwan belong to the same biogeographic region, 11 of 39 (28.21%) newly recorded species are naturalized plants (defined by Wu et al., 2004) and all of them are herbaceous, such as *Erechtites hieracifolia* and *Ageratum conyzoides*. Other newly recorded species have also been discovered on the northern coast of the main island of Taiwan. The naturalized plants in these two periods arose from 9.03% (13 of 144) to 12.31% (16 of 130). Those newly recorded naturalized plants on Isl. Pengchiayu were mostly found in areas of human habitation. Obviously, human activity significantly affects the spread and inhabitation of plants.

On the other hand, many earlier naturalized plants have now apparently disappeared. Some

plants, probably introduced by earlier settlers for vegetables, medicinal purposes, or handicrafts such as *Xanthium strumarium, Nicotiana tabacum, Ricinus communis, Vigna sesqupedaslis,* etc., were not found either. There is little information on their immigration, naturally or artificially. However, such plants could have adapted to this islet in a relatively short time.

The composition of the flora of this islet before any human activities is unknown. Kawakami (1906) recorded 71 species of vascular plants in 1904 after the settlers had been off the islet for around 20 years. The species number is about 1/2 of that reported by Yamamoto (1939). Many of those species occurring after Kawakami's investigation were weeds, such as *Cyclosorus acuminatus*, *Alternanthera sessilis*, *Stellaria aquatica*, *Chenopodium album*, *Conyza canadensis*, *Pterocypsela indica*, *Youngia japonica*, *Hypericum japonicum*, *Alysicarpus vaginalis*, *Desmodium heterophyllum*, *Solanum americanum*, and *Poa annua*. Human activities and traffic between Taiwan and Isl. Pengchiayu are probably the main reasons for the immigration and spread of those weeds on this islet because the construction of the lighthouse began in 1906, and residents have inhabited the islet since that time.

Kawakami (1906) and Huang et al. (1992) both noted some human-planted species, but produced no voucher specimens. During our investigation, such vegetable or ornamental plants were also found. However, we did not include them in this study because they were restricted to the areas where humans lived and had not yet escaped into the wild gene pool.

A few (24) species recorded before World War II without voucher specimens were also included in this study. This may have caused somewhat discrepant results. However, information gained from this study is significant for long-term monitoring which is fundamental for research of floral fluctuations and vegetative succession.

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Appendix. Checklist of the flora of Isl. Pengchiayu. Years following the plant names represent the year of published documents, i.e., Kawakami (1906, 1908), Suzuki (1937), Yamamoto (1939), Liu & Yang (1974), and Huang et al. (1992). The "No." column represents the species order; [n)] and [w)] represent naturalized (based on the flora of Taiwan mainly according to Wu et al. 2004) and woody plant, respectively. The "P" column represents species appearing in the past (before WWII), and the "R" column represents species appearing recently (after 1992). Meanings of abbreviation in the "cited specimens" column: K & M: T. Kawakami & U. Mori (K or M alone means only one collector was described on the label), May 1907, deposited at TAIF if not especially noted; Ki: Y. Kikuchi, January 1913, deposited at TAIF; Y: Y. Yamamoto et al., August 1933, deposited at TAI; H: T. C. Huang et al., August 1992, deposited at TAI; L: J. H. Li (et al.), October 2004 (1075~1129), June 2005 (1187~1263) and October 2005 (1311~1319), deposited at TAI; C: S. W. Chung (et al.), October 2004 (7638~7678) and June 2005 (7733~7802), deposited at TAIF; Lu: P. F. Lu (et al.), June 2005 (9810~9856), deposited at TAIF. The accession numbers of the herbarium were added to those specimens without a collection number. All specimens cited in Yamamoto (1939), Huang et al. (1992) and collection records in Sasaki (1930) are listed, but brackets were added if they were not found in the herbarium.

No.	Species	Names in former articles	P	R	Cited Specimens
	Pteridophyta				
	Adiantaceae				
1	*Adiantum capillus-veneris* L.: 1906; 1939; 1974; 1992. 鐵線蕨		V	V	*Y 1, H 15735, L 1127, Lu 9845*
	Aspleniaceae				
2	*Asplenium nidus* L.: 1906; 1974; 1992. 臺灣山蘇花	*Neottpteris rigida* Fee: 1939.	V		*[Y 4, 5]* [1)]
	Dennstaedtiaceae				
3	*Pteridium aquilinum* (L.) Kuhn ssp. *latiusculum* (Desv.) Shieh: 1992. 蕨	*Pteridium aquilinum* Kuhn: 1908; 1937. *Pteridium aquilinum* (L.) Kuhn var. *japonicum* Nakai: 1939.	V	V	*K & M 2760* (TAI, TAIF), *Y 10, 11, H 15786, L 1096*
	Dryopteridaceae				
4	*Cyrtomium falcatum* (L.f.) Presl: 1939; 1974; 1992. 全緣貫眾蕨	*Aspidium falcatum* Sw.: 1906. *Polystichum falcatum* Diels: 1937.	V	V	*K & M 2711, 2778, Y 2, 3, 6, H 15733, L 1115, Lu 9844*
	Lindsaeaceae				
5	*Sphenomeris biflora* (Kaulf.) Tagawa 闊片烏蕨			V	*L 1116, Lu 9843*
6	*Sphenomeris chusana* (L.) Copel.: 1992. 烏蕨	*Stenoloma chusana* Ching; 1939.	V	V	*Y 9, H 15734*
	Oleandraceae				
7	*Nephrolepis auriculata* (L.) Trimen: 1974; 1992. 腎蕨	*Nephrolepis cordifolia* Presl: 1906; 1937; 1939.	V		*Y 7, 8*
8	*Nephrolepis multiflora* (Roxburgh) Jarrett et Morton. 毛葉腎蕨	*Nephrolepis auriculata auct. non* (L.) Trimen: 1992. *p. p.*		V	*H 15797, C 7677*
	Pteridaceae				
9	*Pteris fauriei* Hieron.: 1974; 1992. 傅氏鳳尾蕨	*Pteris biaurita* Linn var. *quadriaurita* Retz.: 1906. *Pteris quadriaurita* Retzius: 1937. *Oterus fauriei* Hieron: 1939.	V	V	*K & M 2791, Y 12, 13, 14, H 15731, L 1090*
	Thelypteridaceae				
10	*Cyclosorus acuminatus* (Houtt.) Nakai var. *acuminatus* 毛蕨	*Cyclosorus acuminata* Nakai: 1939. *Christella ensifera auct. non* (Tagawa) Holtt.: 1992.	V	V	*Y 4, 5,* [1)] *H 15781, L 1102, 1247, C 7662*
11	*Cyclosorus parasiticus* (L.) Farw. 密毛毛蕨	*Christella parasitica* (L.) Lev.: 1992.		V	*H 15749*
	Dicotyledons				
	Acanthaceae				
12	*Justicia procumbens* L. var. *procumbens* 爵床	*Justicia procumbens* L.: 1906; 1937; 1939; 1974; 1992.	V	V	*Y 179, H 15792, L 1088, 1111, 1237, C 7646, 1647, 7778, 7781*

Appendix. (*Continued*)

No.	Species	Names in former articles	P	R	Cited Specimens
	Aizoaceae				
13	*Sesuvium portulacastrum* (L.) L.: 1937; 1992. 海馬齒		V		
14	*Tetragonia tetragonoides* (Pall.) Kuntze: 1974; 1992. 番杏	*Tetragonia expansa* Ait.: 1906. *Tetragonia expansa* Murray: 1937; 1939.	V	V	*K & M 2781, Y 104, H 15775,*[2)] *L 1231*
	Amaranthaceae				
15	*Achyranthes aspera* L. 土牛膝	*Achyranthes bidentata auct. non* Bl.: 1906; 1937; 1974. *Achyranthes aspera* L. var. *indica* L.: 1974; 1992. *Achyranthes obtusifolia* Lamarck: 1937; 1939. *Achyranthes japonica auct. non* Nakai: 1939.	V	V	*K & M 2712, Y 98, [99] 100, H 15724, L 1091, 1126, C 7674*
16	*Achyranthes bidentata* Blume 牛膝	*Achyranthes longifolia auct. non* (Makino) Makino: 1939. *Achyranthes aspera* L. var. *rubro-fusca auct. non* Hook. f.: 1992.	V	V	*Y [96], 97, H 15738, C 7652*
17	*Alternanthera sessilis* (L.) R. Brown 蓮子草	*Alternanthera nodiflora* R. Br.: 1939; 1992.	V	V	*Y 101, 102, L 1190, C 7779*
18 n)	*Amaranthus inamoenus* L. 莧菜	*Amaranthus viridis* L.: 1939.	V		*Y 103*
	Araliaceae				
19 w)	*Tetrapanax papyriferus* (Hook.) K. Koch 通脫木	*Tetrapanax papyrifera* C. Koch: 1939.	V		
	Asclepiadaceae				
20	*Cynanchum formosanum* (Maxim.) Hemsl. *ex* Forbes & Hemsl. 臺灣牛皮消			V	*L 1244*
	Boraginaceae				
21 w)	*Tournefortia argentea* L. f.: 1906; 1937; 1939. 白水木	*Messerschmidia argentea* (L. f.) I. M. Johnst.: 1974; 1992.	V	V	*H 15810*
	Campanulaceae				
22	*Wahlenbergia marginata* (Thunb.) A. DC.: 1992. 細葉蘭花參	*Wahlenbergia gracilis* A. DC.: 1908. *Wahlenbergia gracilis* Schrad.: 1937; 1939.	V	V	*K & M 2729, Y 188, 189, L 1189, C 7767, Lu 9835*
	Caryophyllaceae				
23	*Sagina japonica* (Sw. *ex* Steud.) Ohwi 瓜槌草	*Sagina linnaei* Pers. var. *maxima auct. non* Max.: 1908. *Sagina maxima auct. non* A. Gray: 1937; 1939; 1992.	V	V	*K & M 2731, L 1226*
24	*Sagina maxima* A. Gray 大瓜槌草			V	*L 1192, C 7784*
25	*Stellaria aquatica* (L.) Scop.: 1939. 鵝兒腸		V		*Y 107, 108*
	Celastraceae				
26 w)	*Maytenus emarginata* (Willd.) D. Hou: 1974. 蘭嶼裸實	*Gymnosporia trilocularis* Hayata: 1937. *Maytenus diversifolia auct. non* (Maxim.) Ding Hou: 1992.	V		*K & M 2765*
	Chenopodiaceae				
27	*Chenopodium acuminatum* Willd. ssp. *virgatum* (Thunb.) Kitamura 變葉藜	*Chenopodium acuminatum* Willd.: 1906. *Chenopodium acuminatum* Willd. var. *japonicum* Franch. & Savat.: 1939. *Chenopodium virgatum* Thunb.: 1974; 1992. *Atriplex nummularia auct. non* Lindl.: 1939. *Chenopodium acuminatum* Willd. var. *virgatum* Miq.: 1937.	V	V	*M s. n.* (TAI 43149), *K & M 2740, Y 95, H 15746, L 1256, C 7765, Lu 9824*
28	*Chenopodium album* L.: 1939. 藜		V		*[Y 94]*

Appendix. (*Continued*)

No.	Species	Names in former articles	P	R	Cited Specimens
	Compositae				
29 [n)]	*Ageratum conyzoides* L.: 1992. 藿香薊			V	*H 15782,*[3)] *15785*
30	*Artemisia capillaries* Thunb.: 1906; 1937; 1939; 1974; 1992. 茵蔯蒿		V	V	*K & M 2768, H 15726, L 1086, 1220, C 7672, 7750, 7755, Lu 9815*
31	*Bidens pilosa* L. var. *minor* (Blume) Sherff 小白花鬼針			V	*L 1241*
32 [n)]	*Bidens pilosa* L. var. *radiata* Sch. Bip. 大花咸豐草			V	*L 1104*
33	*Blumea hieracifolia* (D. Don) DC.: 1992. 毛將軍	*Conyza aegyptiaca auct. non* (L.) Aiton: 1937; 1992. *Blumea lacera auct. non* (Burm. f.) DC.: 1974.	V	V	*K & M 2748, H 15776,*[4)] *C 7655*
34	*Cirsium japonicum* DC. var. *australe* Kitam. 南國小薊			V	*L 1238*
35 [n)]	*Conyza bonariensis* (L.) Cronq. 美洲假蓬	*Erigeron linifolius* Willd.: 1906; 1937; 1939. *Erigeron bonariensis* L.: 1974; 1992.	V	V	*Y 206, 207, L 1191, C 7777, Lu 9811*
36 [n)]	*Conyza canadensis* (L.) Cronq. var. *canadensis* 加拿大蓬	*Erigeron canadensis* L.: 1939.	V		*Y 204, 205*
37 [n)]	*Conyza sumatrensis* (Retz.) Walker 野茼蒿	*Erigeron bonariensis auct. non* L.: 1992. *p. p.*		V	*H 15771, L 1208, C 7648*
38 [n)]	*Crassocephalum crepidioides* (Benth.) S. Moore 昭和草			V	*L 1246, C 7780*
39	*Crepidiastrum taiwanianum* Nakai: 1937. 臺灣假黃鶴菜	*Crepis integra* Miq.: 1906. *Crepidiastrum lanceolatum* Nakai var. *typicum* Nakai: 1939. *Crepidiastrum lanceolatum auct. non* (Houtt.) Nakai: 1974; 1992.	V	V	*[Y 192], H 15761, L 1081, C 7663*
40	*Crossostephium chinense* (L.) Makino: 1937; 1939; 1974; 1992. 蕲艾	*Crossostephium artemisoides* Less.: 1906.	V	V	*K & M 2770, Y 193, 194, 195, 196, 197, 198, 199, L 1105, C 7665*
41	*Eclipta prostrata* (L.) L.: 1992. 鱧腸			V	*H 15758, C 7785*
42	*Emilia sonchifolia* (L.) DC. var. *javanica* (Burm. f.) Mattfeld 紫背草	*Emilia sonchifolia* (L.) DC.: 1906; 1937; 1939; 1974; 1992.	V	V	*K & M 2726, Ki s. n.* (TAIF 26243), *Y 200, 201, 202, 203, H 15727, L 1078, C 7642*
43	*Glossocardia bidens* (Retz.) Veldkamp 香茹	*Glossogyne tenuifolia* (Labill.) Cass.: 1937; 1992.	V		
44	*Gnaphalium japonicum* Thunb.: 1906; 1937; 1939; 1974; 1992. 父子草		V	V	*K & M 2742, H 15780*
45	*Gnaphalium luteoalbum* L. ssp. *affine* (D. Don) Koster 鼠麴草	*Gnaphalium multiceps* Wall.: 1908; 1939. *Gnaphalium affine* D. Don: 1992.	V		
46	*Gnaphalium purpureum* L. 鼠麴舅			V	*L 1206, 1212, C 7746, 7783, Lu 9817*
47	*Ixeridium laevigatum* (Blume) J. H. Pak & Kawano 刀傷草	*Ixeris laevigata* (Blume) Yamamoto: 1939.	V		*[Y 208]*
48	*Ixeris chinensis* (Thunb.) Nakai: 1939; 1974; 1992. 兔仔菜	*Lactuca vercicolor* DC.: 1906. *Lactuca chinensis* Makino: 1937.	V		
49	*Pterocypsela formosana* (Maxim.) C. Shih 臺灣山苦荬	*Lactuca kawakamii* Hayata *nom. nud.*: 1908. *Lactuca formosana* Maxim.: 1937; 1939.	V	V	*K & M s. n.* (TAIF 26619), *[Y 209], L 1210, 1196*
50	*Pterocypsela indica* (L.) C. Shih 鵝仔草	*Lactuca indica* L.: 1939; 1992.	V	V	*[Y 211], H 15802, L 1259, C 7643, 7753*

Appendix. (*Continued*)

No.	Species	Names in former articles	P	R	Cited Specimens
51	*Sigesbeckia orientalis* L.: 1908; 1992. 豨薟	*Sigesbeckia orientalis* L. var. *angustifolia* Makino: 1939.	V	V	*Y 210, 212, 213, 214, Lu 9821*
52 n)	*Soliva anthemifolia* (Juss.) R. Br. *ex* Less. 假吐金菊			V	*C 7770*
53 n)	*Sonchus oleraceus* L.: 1908; 1939; 1992. 苦滇菜		V	V	*Y 215, 216,*[5] *L 1195, 1198, 1211, 1221, C 7649*
54	*Vernonia cinerea* (L.) Less. var. *cinerea* 一枝香	*Vernonia cinerea* (L.) Less.: 1939; 1992.	V	V	*Y 218, H 15770, C 7768*
55	*Wedelia biflora* (L.) DC. var. *biflora* 雙花蟛蜞菊	*Wedelia biflora* (L.) DC.: 1906; 1939; 1974; 1992. *Wedelia chinensis* Merr.: 1937. *Wedelia chinensis* Merr. var. *robusta* Masamune: 1937.	V		
56	*Wedelia chinensis* (Osbeck) Merr. 蟛蜞菊			V	*L 1122*
57	*Wedelia prostrata* (Hook. & Arn.) Hemsl. var. *prostrata* 天蓬草舅	*Wedelia chinensis auct. non* (Osbeck) Merr.: 1939. *Wedelia biflora auct. non* (L.) DC.: 1992. *p. p.*	V	V	*Y 219, H 15723, L 1313, 1314*
58	*Wedelia prostrata* (Hook. & Arn.) Hemsl. var. *robusta* Makino 大天蓬草舅			V	*L 1121, 1239, 1316*
59 n)	*Wedelia trilobata* (L.) Hitchc. 南美蟛蜞菊			V	*L 1315*
60 n)	*Xanthium strumarium* L.: 1939. 蒼耳		V		*Y 220*
61	*Youngia japonica* (L.) DC. var. *japonica* 黃鵪菜	*Youngia japonica* Babcock et Stebbins: 1939. *Youngia japonica* (L.) DC.: 1992.	V	V	*Y 190, 191, H 15811, L 1117, C 7787*
	Convolvulaceae				
62	*Calystegia soldanella* (L.) R. Br.: 1906; 1937; 1939; 1974; 1992. 濱旋花		V	V	*L 1131*
63	*Dichondra micrantha* Urban: 1974; 1992. 馬蹄金	*Dichondra repens* Forst.: 1906; 1937; 1939.	V	V	*L 1193, C 7802*
64	*Evolvulus alsinoides* (L.) L.: 1937; 1992. 土丁桂	*Evolvulus alsinoides* L. forma *rotundifolia* Yamamoto: 1937.	V		
65	*Ipomoea imperati* (Vahl) Griseb. 厚葉牽牛	*Ipomoea stolonifera* (Cyrill.) J. F. Gmel.: 1937; 1992.	V		
66	*Ipomoea indica* (Burm. f.) Merr.: 1937; 1939. 銳葉牽牛	*Ipomoea congesta* R. Br.: 1906; 1937; 1974. *Ipomoea acuminata* (Vahl) Roem. & Schult.: 1992.	V	V	*M s. n.* (TAIF 20616), *Y 157, H 15730, L 1094, C 7747*
67	*Ipomoea pes-caprae* (L.) R. Br. ssp. *brasiliensis* (L.) Oostst.: 1992. 馬鞍藤	*Ipomoea pes-caprae* Roth.: 1937; 1939; 1974. *Ipomoea biloba* Forst.: 1906.	V	V	*Y 158, 159, H 15808, L 1112, C 7754*
	Crassulaceae				
68	*Sedum formosanum* N. E. Br.: 1906; 1937; 1939; 1974; 1992. 臺灣佛甲草		V	V	*[Y 114], H 15753, C 7657, 7774, Lu 9825*
	Cruciferae				
69	*Cardamine flexuosa* With. 焊菜	*Cardamine parviflora* L.: 1908; 1939. *Cardamine hirsuta* L. var. *formosana auct. non* Hayata: 1937. *Cardamine regeliana* Miq. var. *rotundiloba auct. non* Masamune: 1974. *Cardamine scutata* Thunb. var. *formosana auct. non* (Hayata) Liu & Ying: 1992.	V		*Ki s. n.* (TAIF 10984)

Appendix. (*Continued*)

No.	Species	Names in former articles	P	R	Cited Specimens
70	*Cardamine scutata* Thunb. var. *formosana* (Hayata) Liu & Ying 臺灣碎米薺			V	*L 1194*
	Cucurbitaceae				
71	*Zehneria mucronata* (Blume) Miq. 黑果馬皎兒	*Melothria mucronata* (Blume) Cogn.: 1937; 1992. *Zehneria maysorensis* Arn.: 1906. *Melothria liukiuensis* Nakai: 1939; 1974.	V		*[Y 187]*
	Ebenaceae				
72 w)	*Diospyros ferrea* (Willd.) Bakhuizen 象牙柿	*Diospyros ferrea* (Willd.) Bakh. var. *buxifolia* (Rottb.) Bakh.: 1974.	V		*K & M 2764*
	Euphorbiaceae				
73	*Chamaesyce thymifolia* (L.) Millsp.: 1939. 千根草	*Chamaesyce tashiroi auct. non* (Hayata) Hara: 1992.	V	V	*Y 129, H 15789, L 1077, 1200, C 7644*
74	*Euphorbia jolkini* Boiss. 岩大戟			V	*L 1262, C 7762*
75 w)	*Flueggea suffruticosa* (Pallas) Baillon 白飯樹	*Securinega suffruticosa* (Pallas) Rehder: 1992. *Securinega ramiflora* Mueller -Argua: 1937.	V		
76 w)	*Glochidion rubrum* Blume: 1992. 細葉饅頭果	*Glochidion obovatum* Sieb. & Zucc.: 1939.	V	V	*Y 130, 131, H 15790, L 1106*
77	*Phyllanthus urinaria* L. 1906; 1937; 1939; 1974; 1992. 葉下珠		V		
78 n)	*Ricinus communis* L.: 1906; 1937; 1939; 1992. 蓖麻		V		*Y 132*
	Fumariaceae				
79	*Corydalis koidzumiana* Ohwi 密花黃堇	*Corydalis pallida* (Thunb.) Pers. var. *platycarpa auct. non* Max.; 1906. *Corydalis platycarya auct. non* Makino: 1937; 1939; 1992. *Corydalis pallida auct. non* (Thunb.) Pers.: 1992. *Corydalis formosana auct. non* Hayata: 1939.	V	V	*K & M 2775, Y 110, 111, 112, 113, H 15736, L 1187, 1230, C 7743, Lu 9826*
80	*Corydalis tashiroi* Makino: 1974; 1992. 臺灣黃堇	*Corydalis formosana* Hayata: 1937.	V		*K & M s. n.* (TAIF 10799)
	Gentianaceae				
81	*Centaurium japonicum* (Maxim.) Druce: 1992. 百金	*Erythraea spicata* Pers.: 1937.	V		
	Goodeniaceae				
82 w)	*Scaevola taccada* (Gaertner) Roxb.: 1974. 草海桐	*Scaevola sericea* Vahl: 1992. *Scaevola frutescens* Krause var. *sericea* Merrill: 1939. *Scaevola koenigi* Vahl: 1906. *Scaevola frutescens* Krause: 1937.	V	V	*[H 15809], L 1124*
	Guttiferae				
83	*Hypericum japonicum* Thunb. *ex* Murray: 1939. 地耳草		V		*Y 142*
	Labiatae				
84	*Clinopodium chinense* (Benth.) Kuntze 風輪菜	*Clinopodium umbrosum* (Bieb.) C. Koch: 1992.		V	*H 15788, L 1236, C 7658, 7764*
85	*Leonurus japonicus* Houtt. 益母草	*Leonurus sibiricus* L.: 1906; 1937; 1939; 1974; 1992.	V	V	*Y 171, 172, 173, 174, 175, H 15793, 15807, L 1087, C 7667, 7771, Lu 9812*

Appendix. (*Continued*)

No.	Species	Names in former articles	P	R	Cited Specimens
	Leguminosae				
86	*Alysicarpus vaginalis* (L.) DC. var. *vaginalis* 煉莢豆	*Alysicarpus vaginalis* (L.) DC.: 1992. *Alysicarpus nummularifolius* (L.) DC.: 1939.	V	V	*Y 117, 118, H 15776, L 1079, 1213, C 7651*
87	*Canavalia lineata* (Thunb. *ex* Murray) DC.: 1906; 1937; 1939; 1974; 1992. 肥豬豆		V	V	*Y 119, 120, 121, 122, H 15774, L 1075, 1219, C 7801*
88	*Desmodium heterocarpon* (L.) DC. var. *heterocarpon* 假地豆	*Desmodium heterocarpon* (L.) DC.: 1992.		V	*H 15742, L 1107*
89	*Desmodium heterophyllum* (Willd.) DC.: 1992. 變葉山螞蝗	*Desmodium triflorum auct. non* (L.) DC.: 1939.	V	V	*Y 123, 124, 125B, H 15743, C 7748, Lu 9832*
90	*Kummerowia striata* (Thunb. *ex* Murray) Schindl.: 1992. 雞眼草			V	*H 15775, L 1108*
91 [n)]	*Melilotus indicus* (L.) All. 印度草木樨			V	*L 1209, C 7749, Lu 9819*
92	*Vigna marina* (Burm.) Merr.: 1937; 1992. 濱豇豆	*Vigna lutea* A. Gray: 1906. *Vigna luteola* Benth.: 1937; 1939; 1974.	V	V	*K & M 2786, H 15766,* [6)] *L 1076, 1203, C 7800, Lu 9838*
93	*Vigna minima* (Roxb.) Ohwi & Ohashi var. *minima* 小豇豆	*Vigna minima* (Roxb.) Ohwi & Ohashi: 1992.		V	*H 15769, L 1197, C 7794*
94 [n)]	*Vigna sesqupedaslis* (L.) Fruw.: 1992. 長豇豆		V		*Y 116*
	Malvaceae				
95	*Abutilon indicum* (L.) Sweet var. *guineense* (Schumach.) Feng 畿內冬葵子	*Abutilon indicum* (L.) Sweet ssp. *guineense* (Schumach.) Borss.: 1992. *Abutilon asiaticum* G. Don: 1937. *Abutilon indicum auct. non* G. Don: 1906; 1937; 1939. *Abutilon indicum auct. non* (L.) Sweet: 1974.	V	V	*K & M 2780, Ki s. n.* (TAIF 16359), *Y 139, 140, 141, H 15760, L 1123, 1233, 1312, C 7654, 7733, Lu 9836*
96 [w)]	*Hibiscus syriacus* L. 木槿		V		*Ki s. n.* (TAIF 16417)
97 [w)]	*Hibiscus tiliaceus* L.: 1906; 1937; 1939; 1974; 1992. 黃槿		V	V	*Ki s. n.* (TAIF 16438), *Y 138, H 15799*
98	*Sida rhombifolia* L.: 1906; 1937; 1939; 1974; 1992. 金午時花	*Sida acuta auct. non* Burm. f.: 1939.	V	V	*K & M 2735, Y 133, 134, 135, 136, 137, H 15741, L 1085, C 7763*
	Menispermaceae				
99	*Cocculus orbiculatus* (L.) DC. 木防己	*Cocculus trilobus* (Thunb. *ex* Murray) DC.: 1937; 1992. *Paracyclea insularis auct. non* (Makino) Kudo & Yamamoto: 1939. *Pericampylus incanus auct. non* Miers: 1906; 1937. *Pericampylus formosanus auct. non* Diels: 1939.	V	V	*K & M 2723, Y 109, H 15740, 15750, 15763, L 1089, Lu 9813*
	Moraceae				
100 [w)]	*Ficus nervosa* Heyne *ex* Roth.: 1906; 1937; 1939; 1974. 九重吹		V		
101 [w)]	*Ficus superba* (Miq.) Miq. var. *japonica* Miq.: 1974. 雀榕	*Ficus wightiana* Wall. *ex* Benth.: 1906; 1937; 1939; 1992. *Ficus infectoria* Roxb.: 1939.	V	V	*Y 79, 80, 82, H 15801, L 1261, C 7669*
102 [w)]	*Ficus virgata* Reinw. *ex* Bl.: 1992. 白肉榕	*Ficus tinctoria auct. non* Forst. f.: 1939.	V	V	*Y 81, H 15764*
103 [w)]	*Morus australis* Poir.: 1939; 1992. 小桑樹	*Morus alba* L. var. *indica* Beauv.: 1906. *Morus acidosa* Griffith: 1937.	V	V	*K & M 2719, C 7736*

Appendix. (*Continued*)

No.	Species	Names in former articles	P	R	Cited Specimens
	Myrsinaceae				
104 w)	*Ardisia sieboldii* Miq.: 1906; 1937; 1974; 1992. 樹杞	*Bladhia sieboldii* Nakai: 1939.	V	V	*[Y 147], [H 15803], L 1263, Lu 9846*
	Myrtaceae				
105 w), n)	*Psidium guajava* L.: 1937; 1939; 1974; 1992. 番石榴	*Psidium guyava* Bedd.: 1906.	V	V	*Y 143, L 1097*
106 w)	*Syzygium taiwanicum* Chang & Miau 臺灣棒花蒲桃	*Syzygium claviflorum* (Roxb.) Wall.: 1992. *Eugenia claviflora* Roxb. var. *oblongifolia* Hayata: 1937.	V		*K & M 2759, 2763*
	Nyctaginaceae				
107	*Boerhavia diffusa* L.: 1937; 1939; 1974; 1992. 黃細心	*Boerhavia repens* L. var. *diffusa* Hook. f.: 1906.	V	V	*Y 221, [222, 223], H 15787, L 1082, C 7671, 7756, 7795, Lu 9814*
	Oleaceae				
108 w)	*Ligustrum obtusifolia* Sieb. & Zucc.: 1939.		V		*[Y 164]*
	Onagraceae				
109 n)	*Oenothera laciniata* J. Hill 裂葉月見草			V	*L 1207, C 7772*
	Orobanchaceae				
110	*Aeginetia indica* L.: 1906; 1937; 1939; 1974; 1992. 野菰		V	V	*L 1317, C 7650*
	Oxalidaceae				
111	*Oxalis corniculata* L.: 1906; 1974; 1992. 酢漿草	*Oxalis repens* Thunb.: 1937; 1939.	V	V	*K & M 2769, Y 125, 126, 127, 128 A, H 15737, C 7775*
112 n)	*Oxalis corymbosa* DC. 紫花酢漿草			V	*L 1188*
	Pittosporaceae				
113 w)	*Pittosporum tobira* Ait. 海桐			V	*L 1092*
	Plantaginaceae				
114	*Plantago macronipponica* Yamamoto: 1939. 巨葉車前草	*Plantago major auct. non* L.: 1992.	V		*Y 180, 181, [182], 183*
115	*Plantago major* L. 大車前草			V	*L 1199, C 7776*
	Plumbaginaceae				
116	*Limonium sinense* (Girard) Kuntze: 1974; 1992. 石蓯蓉	*Statice sinensis* Girard: 1937; 1939. *Statice wrightii* Hance: 1906. *Limonium wrightii* (Hance) Kuntze: 1974.	V	V	*Y 152, 153, 154, 155, 156, L 1129, 1227, C 7751*
	Polygonaceae				
117	*Polygonum chinense* L.: 1906; 1939; 1974; 1992. 火炭母草	*Persicaria chinensis* Nakai: 1937.	V	V	*K & M s. n.* (TAIF 8867), *Y 89, 90, 91, 92, 93, H 15805, L 1101*
118 n)	*Rumex crispus* L. var. *crispus* 皺葉酸模	*Rumex crispus* L.: 1906; 1937; 1939; 1974; 1992.	V	V	*K & M 2737, L 1319*
	Portulacaceae				
119	*Portulaca oleracea* L.: 1906; 1937; 1974; 1992. 馬齒莧	*Portulaca formosana* Hayata: 1939.	V	V	*K & M 2792, Y 105, H 15739, L 1084*
120	*Portulaca pilosa* L. ssp. *pilosa* 毛馬齒莧	*Portulaca pilosa* L.: 1992.		V	*H 15725, L 1113, C 7673, 7773*
	Primulaceae				
121	*Anagalis arvensis* L. 琉璃繁縷			V	*Lu 9841*

Appendix. (*Continued*)

No.	Species	Names in former articles	P	R	Cited Specimens
122	*Lysimachia mauritiana* Lam.: 1937; 1939; 1974; 1992. 茅毛珍珠菜	*Lysimachia linearilobа* Hook. et Arn.: 1906.	V	V	*K & M 2772*, *[K & M* (TAIF 19457)*]*, *M s. n.* (TAIF 159565), *Y 148*, *149*, *150*, *151*, *H 15752*, *C 7744*, *Lu 9823*
	Ranunculaceae				
123	*Ranunculus sceleratus* L.: 1937; 1992. 石龍芮		V		
	Rosaceae				
124	*Rubus parvifolius* L. var. *parvifolius* 紅梅消	*Rubus parvifolius* L.: 1906; 1937; 1939; 1974; 1992.	V	V	*K & M 2739* (TAIF, TAI), *Y 115*, *H 15796*, *Lu 9830*
	Rubiaceae				
125	*Hedyotis strigulosa* Bartl. *ex* DC. var. *parvifolia* (Hook. & Arn.) Yamazaki 脈耳草	*Hedyotis coreana* H. Lev.: 1974; 1992. *Oldenlandia paniculata auct. non* L.: 1908. *Oldenlandia biflora auct. non* L.: 1937; 1939.	V	V	*K & M 2711*, *2789*, *Y 184*, *185*, *186*, *H 15757*, *L 1114*, *1228*, *C 7656*, *7737*, *7738*, *Lu 9831*
	Scrophulariaceae				
126	*Bacopa monnieri* (L.) Wettst.: 1937; 1992. 過長沙		V		
	Solanaceae				
127	*Lycianthes biflora* (Lour.) Bitter: 1939. 雙花龍葵	*Solanum biflorum* Lour.: 1992.	V		*Y 176*
128 n)	*Lycium chinense* Mill.: 1937; 1992. 枸杞		V		
129 n)	*Nicotiana tabacum* L.: 1908; 1939; 1992. 煙草		V		*K & M 2774*
130 n)	*Solanum americanum* Miller 光果龍葵	*Solanum alatum* Moench: 1939. *Solanum nigrum auct. non* L.: 1992. *p. p.*	V	V	*Y 177*, *178*, *L 1202*, *1222*, *C 7759*, *H 15773*
131 n)	*Solanum scabrum* Miller 木龍葵	*Solanum nigrum auct. non* L.: 1906; 1937; 1939; 1974; 1992.	V		*K & M 2784*
	Umbelliferae				
132	*Centella asiatica* (L.) Urban: 1937; 1939; 1974; 1992. 雷公根	*Hydrocotyle asiatica* L.: 1906.	V	V	*K & M 2732*, *Y 144*, *H 15762*, *C 7782*
133	*Peucedanum japonicum* Thunb.: 1906; 1937; 1939; 1974; 1992. 日本前胡		V	V	*K & M 2790* (TAI, TAIF), *Y 145*, *[146]*, *H 15722*, *L 1093*, *C 7734*, *Lu 9827*
	Urticaceae				
134	*Boehmeria nivea* (L.) Gaudich. var. *tenacissima* (Gaudich.) Miq. 青苧麻	*Boehmeria nivea* (L.) Gaud.: 1906; 1937; 1974; 1992. *Boehmeria frutescens* Thunb. var. *concolor* Nakai: 1939.	V	V	*K & M 2725*, *Y 84*, *85*,*86*, *87*, *88*, *H 15732*, *L 1243*, *C 7678*
135	*Pilea peploides* (Gaudich.) Hook. & Arn. var. *peploides* 矮冷水麻	*Pilea peploides* (Gaudich.) Hook. & Arn.: 1992.		V	*H 15795*, *L 1128*
	Verbenaceae				
136 w)	*Callicarpa japonica* Thunb. var. *luxurians* Rehd. 朝鮮紫珠	*Callicarpa japonica* Thunb.: 1906; 1937; 1939; 1974; 1992.	V	V	*Y [160]*, *161*, *162*, *163*, *H 15729*, *L 1095*, *C 7675*, *7735*, *Lu 9829*
137	*Clerodendrum inerme* (L.) Gaertn.: 1906; 1937; 1939; 1974; 1992. 苦林盤		V	V	*Y 165*, *166*, *H 15751*, *L 1125*
138	*Phyla nodiflora* (L.) Greene: 1974; 1992. 鴨舌癀	*Lippia nodiflora* Rich.: 1906. *Lippia nodiflora* Rich. var. *sarmentosa* Schauer: 1937; 1939.	V	V	*Y 167*, *168*, *169*, *H 15800*, *L 1083*, *C 7676*, *7766*, *Lu 9828*
139	*Verbena officinalis* L.: 1939. 馬鞭草		V		*Y 170*

Appendix. (*Continued*)

No.	Species	Names in former articles	P	R	Cited Specimens
140	*Vitex rotundifolia* L. f.: 1939; 1974; 1992. 海埔姜	*Vitex trifolia* L. var. *unifoliolata* Schauer: 1906. *Vitex trifolia* L. var. *ovata* Makino: 1937.	V	V	*K & M 2771, H 15791*
	Violaceae				
141	*Viola confusa Champ. ex* Benth 短毛堇菜	*Viola japonica* Langsd.: 1908; 1939; 1992. *Viola stenocentra* Hayata: 1937.	V	V	*K & M 3721, C 7668, 7769, 7790, Lu 9816*
	Monocotyledons				
	Amaryllidaceae				
142 n)	*Zephyranthes candida* (Lindl.) Herb. 蔥蘭			V	*L 1098*
	Commelinaceae				
143	*Commelina auriculata* Blume 耳葉鴨跖草	*Commelina undulata* R. Br.: 1939.	V		*Y 76*
144	*Commelina diffusa* Burm. f.: 1974; 1992. 竹仔菜	*Commelina nudiflora* L.: 1906; 1937; 1939.	V	V	*Y 75, H 15728, L 1103, 1318*
	Cyperaceae				
145	*Cyperus compressus* L.: 1939. 扁穗莎草		V		*Y 54, 55, 56, 57, 58*
146	*Cyperus rotundus* L.: 1939; 1992. 香附子		V	V	*Y 59, C 7645, 7666*
147	*Eleocharis congesta* D. Don. ssp. *japonica* (Miq.) T. Koyama: 1974; 1992. 針蘭	*Heleocharis japonica* Miq.: 1906; 1939. *Eleocharis japonica* Miq.: 1937.	V		
148	*Fimbristylis ferruginea* (L.) Vahl var. *ferruginea* 彭佳嶼飄拂草	*Fimbristylis sieboldii* Miq. *ex* Franch. & Sav.: 1974; 1992. *Fimbristylis ferruginea* Vahl: 1908. *Fimbristylis aginkotensis* Hayata: 1937; 1939.	V		*K & M 2716, s. n.* (TAIF 28484), *K s. n.* (TAIF 28485)
149	*Fimbristylis dichotoma* (L.) Vahl 竹子飄拂草	*Fimbristylis aginkotensis auct. non* Hayata: 1939. *p. p.* *Fimbristylis sieboldii auct. non* Miq. *ex* Franch. & Sav.: 1992. *p. p.*	V	V	*Y 60, 61, H 15784, L 1229, C 7659, 7660, 7661, Lu 9822, 9833*
150	*Fimbristylis tristachya* R. Br. var. *subbispicata* (Nees & Meyen) T. Koyama 水蔥	*Fimbristylis subbispicata* Nees & Meyen: 1992. *Fimbristylis kagiensis auct. non* Hayata: 1939. *Fimbristylis monostachya auct. non* Hassk.: 1939. *Fimbristylis annua auct. non* L.: 1939.	V	V	*Y 62, 63, 64, 65, 66, H 15804, L 1109*
151	*Kyllinga brevifolia* Rottb.: 1937; 1939; 1992. 短葉水蜈蚣	*Kyllinga monocephala auct. non* Rottb.: 1908; 1939. *Cyperus brevifolius* (Rottb.) Hassk.: 1974.	V	V	*K & M 2724, Y [67], 68, 69, H 15783, Lu 9834*
152	*Pycreus polystachyos* (Rottb.) P. Beauv.: 1906. 多枝扁莎	*Pycreus odoratus* Urb.: 1937; 1939. *Cyperus polystachyos* Rottb.: 1974. *Mariscus sumatrensis auct. non* (Retzius) J. Raynal: 1992.	V	V	*K & M 2720* (TAI, TAIF), *Ki s. n.* (TAIF 5168), *Y 70, 71, 72, 73, 74, H 15745, 15759, 15768 L 1311, C 7653, 7664, 7792, 7797, 7798, Lu 9818*
	Dioscoreaceae				
153	*Dioscorea japonica* Thunb. var. *pseudojaponica* (Hayata) Yamamoto: 1939. 基隆野山藥		V		*Y 78*
	Gramineae				
154	*Brachiaria villosa* (Lam.) A. Camus: 1992. 毛臂形草	*Panicum villosum* Lam.: 1908; 1939.	V	V	*L 1253, C 7758*
155	*Calamagrostis epigeios* (L.) Roth: 1974. 拂子茅	*Calamagrostis epigeios* Roth var. *densiflora* Ledeb.: 1906; 1937; 1939. *Polypogon fugax auct. non* Nees *ex* Steud.: 1992.	V	V	*Y 15, H 15778*

Appendix. (*Continued*)

No.	Species	Names in former articles	P	R	Cited Specimens
156	*Cynodon dactylon* (L.) Pers. 狗牙根			V	*L 1204*
157	*Digitaris ciliaris* (Retz.) Koeler 升馬唐			V	*L 1205, 1217, 1223, 1257*
158	*Digitaria henryi* Rendle 亨利馬唐	*Syntherisma formosana auct. Non* Honda: 1939.	V	V	*Y [40], 41, [42], 43, 44, 45, 46, 47, L 1214, 1215, 1216, 1218, 1224, 1255, C 7670, 7741, 7793*
159	*Digitaris mollicoma* (Kunth) Henrard 絨馬唐	*Syntherisma sanguinalis* Dulac var. *ciliaris auct. Non* Honda: 1939. *p. p.*	V		*Y 52*
160	*Digitaris radicosa* (J. Presl) Miq. Var. *hirsute* (Ohwi) C. Hsu 毛馬唐	*Panicum sanguinale* L.: 1906; 1937. *Syntherisma sanguinalis* Dulac var. *ciliaris* Honda: 1939. *p. p.* *Syntherisma formosana* Honda var. *enuine* Honda: 1939. *Digitaria sanguinalis* (L.) Scop.: 1992. *Digitaria henryi auct. Non* Rendle: 1992.	V	V	*K s. n.* (TAIF 159535), *Y [48], 49, 50, 51, H 15747, 15756*
161	*Digitaria ischaemum* (Schreb.) Schreb. *Ex* Muhl.: 1992. 止血馬唐	*Panicum violascens* Kunth: 1908. *Syntherisma ischaemum* Nash.: 1937; 1939. *Digitaria violascens* Link: 1992.	V		*[K & M* (TAIF 4421)*]*
162	*Eleusine indica* (L.) Gaertn.: 1906; 1937; 1939; 1974; 1992. 牛筋草		V	V	*M s. n.* (TAIF 3603), *[Y 16], H 15748, C 7638*
163	*Imperata enuine cal* (L.) P. Beauv. Var. *major* (Nees) C. E. Hubb. *Ex* Hubb. & Vaughan: 1974; 1992. 白茅	*Imperata arundinacea* Cyr. Var. *Koenigii* Benth.: 1906. *Imperata enuine cal* Beauv. Var. *koenigii* Durand & Schinz: 1937; 1939.	V	V	*K & M 2755, Y 17, L 1119, C 7799, Lu 9810*
164	*Miscanthus floridulus* (Labill) Warb. *Ex* Schum. & Laut.: 1992. 五節芒	*Miscanthus japonicus* Anders.: 1906; 1937; 1939.	V	V	*K & M 2767, Y 19, H 15772, L 1240, 1260, C 7760, Lu 9839*
165	*Miscanthus sinensis* Anders.: 1906; 1937; 1974; 1992. 芒		V		
166	*Oplismenus compositus* (L.) P. Beauv.: 1939. 竹葉草		V		*Y 20, 21, 22*
167	*Paspalum conjugatum* Bergius: 1937; 1992. 兩耳草		V		*[K & M* (TAIF 4116)*]*
168	*Paspalum dilatatum* Poir.: 1992. 毛花雀稗			V	*H 15767, L 1201, C 7752, 7791*
169	*Paspalum scrobiculatum* L.: 1939. 鴨草	*Paspalum thunbergii auct. Non* Kunth *ex* Steud.: 1906; 1937; 1974; 1992. *Paspalum formosanum auct. Non* Honda: 1937. *Paspalum commersonii auct. Non* Lam.: 1992.	V	V	*K & M 2718, Y 23, 24, 25, L 1258, C 7639*
170	*Paspalum vaginatum* Sw.: 1992. 海雀稗	*Rottboellia compressa auct. Non* L. f.: 1939.	V	V	*Y 26, 27, H 15744*
171	*Poa annua* L.: 1939. 早熟禾		V		*Y 28*
172	*Saccharum spontaneum* L. 甜根子草	*Saccharum spontaneum* L. ssp. *Indicum* Hack. Var. *genuinum* Hackel: 1939. *Miscanthus sinensis auct. Non* Anders.: 1939.	V	V	*Y 18, 29, L 1130*
173	*Sacciolepis indica* (L.) Chase 囊穎草	*Sacciolepis spicata* Honda: 1939.	V		*Y 30*
174	*Setaria lutescens* Hubbard	*Setaria viridis* Beauv. Var. *enuine auct. Non* Honda: 1939. *Setaria lutescens* Hubbard var. *pygmaea* Yamamoto *nom. Nud.*: 1939. *Setaria lutescens* Hubbard var. *enuine auct. Non* Honda: 1937; 1939. *Setaria glauca auct. Non* (L.) P. Beauv.: 1906; 1974. *Setaria viridis auct. Non* (L.) P. Beauv.: 1992.	V	V	*K & M 2714, Y 31, 32, 33, 34, 35, H 15782, L 1080, 1225, 1232, C 7640, 7739, 7788, 7789, Lu 9820*

Appendix. (*Continued*)

No.	Species	Names in former articles	P	R	Cited Specimens
175	*Sporobolus indicus* (L.) R. Br. var. *flaccidus* (R. & S.) Veldkamp 雙蕊鼠尾粟	*Sporobolus diander* (Retz.) Beauv.: 1992.		V	*H 15765, L 1120*
176	*Sporobolus indicus* (L.) R. Br. var. *major* (Buse) Baaijen 鼠尾粟	*Sporobolus elongates* R. Br.: 1939.	V	V	*Y 38, 39, L 1254, C 7641*
177	*Zoysia japonica* Steud. 結縷草	*Sporobolus virginicus auct. non* (L.) Kunth: 1939.	V		*Y 36, 37*
178	*Zoysia matrella* (L.) Merr.: 1939; 1974. 馬尼拉芝	*Zoysia pungens* Willd.: 1906; 1937; 1992.	V		*Y 53*
	Iridaceae				
179 n)	*Sisyrinchium iridifolium* Kunth 黃花庭菖蒲			V	*C 7757, Lu 9842*
	Liliaceae				
180	*Dianella ensifolia* (L.) DC: 1992. 桔梗蘭			V	*[H 15806], C 7740*
181	*Lilium longiflorum* Thunb. var. *scabrum* Masam. 糙莖麝香百合	*Lilium longiflorum* Thunb.: 1974; 1992.		V	*H 15794, L 1234, C 7796*
	Orchidaceae				
182	*Spiranthes sinensis* (Pers.) Ames 綬草			V	*L 1235, C 7742, Lu 9837*
	Smilacaceae				
183	*Smilax china* L.: 1906; 1939; 1992. 菝契	*Smilax liukiuensis auct. non* Hayata: 1939.	V	V	*Y 77, H 15777, L 1242, C 7745, Lu 9840*
	Unknown Species	*Cyperus* sp.: 1906; 1992.			
		Panicum sp.: 1908.			

[1] Yamamoto (1939) cited specimens *Y 4* and *Y 5* as both *Neottpteris rigida* (*Asplenium nidus*) and *Cyclosorus acuminata* (*Cyclosorus acuminatus*). The former was mis-cited.
[2] The collection number *15775* cited by Huang et al. (1992) has been anonymously changed to *15755* on the label.
[3] The collection number *15782* cited by Huang et al. (1992) has been anonymously changed to *15785* on the label.
[4] The collection number *15776* cited by Huang et al. (1992) has been anonymously changed to *15796* on the label.
[5] Yamamoto (1939) recorded this species without voucher specimens which were found later.
[6] Huang (1992) erroneously cited it as *15769*, which should have been *Vigna minima* var. *minima*.

彭佳嶼近百年來的植物相變化

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摘　　要

為了解彭佳嶼上的維管束植物種類的變化情形，作者三度前往彭佳嶼採集植物，並整合自 1906 年以來的名錄、相關文章等，同時查閱存放在臺灣大學植物標本館 (TAI) 與臺灣林業試驗所標本館 (TAIF) 內的標本。島上植物種類之記錄被區分為昔日 (1904~1933) 與今時 (1992~2005) 兩部分，時間幅度長約百年。比對並列表該小島在這段時期曾存在的植物種類，結果確認昔日存在的 144 種中，有 53 種消失，但另新增 39 種，目前島上存有 130 種。文中對這些種類變化提出可能的原因。

關鍵詞：臺灣、彭佳嶼、植物誌、島嶼生物地理。

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