

Distribution of Resource Plants in Mt. ManRoi(ChungBuk), Korea

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ABSTRACT

This study was performed to investigate the resources flora of Mt. ManRoi(611.7m; 37° 51' N, 127° 20' E), during April 1995 to September 1998. The vascular plants, which were collected from the mountain were composed of all 382 taxa including cultivated species, and classified into 1 phylum, 4 classes, 34 orders, 87 families, 254 genera, 323 species, 1 subspecies, 55 varieties and 4 forms. There were not rare and endangered species, while 7 taxa of Korean endemic plants, that is, *Tricytis dilatata*, *Clematis trichotoma*, *Deutzia coreana*, *Spiraea prunifolia* var. *simpliciflora*, *Forsythia koreana*, *Weigela subsessilis* and *Patrinia sanicalaefolia* were distributed in this mountain. The vegetation of this investigated area is regarded as the boundary of the temperate middle part and temperate southern part in floral zone of the Korean Peninsula.

INTRODUCTION

Mt. ManRoi(611.7m; 37° 51' N, 127° 20' E) is located on the boundary between ChungNam Province, ChonAn City and ChungBuk Province, JinChon County. Ministry of Environment(1988) reported 300 taxa of Mt. Muje(573.7m) for the flora of JinChon County. The flora of all territory of JinChon County was reported 423 and 421 taxa by Ministry of Environment(1994a) and Office of JinChon County(1994), respectively. However, the surveyed area of past investigations was not Mt. ManRoi but another area far from this Mountain.

On the other hand, the reduction of natural resource caused by population increase is one of the world's

greatest problems. Therefore, it is important that research for the protection and conservation of natural resources must be done (Kang et al., 1999; 2000). To set bounds for useful resources is very difficult. Plant uses are enormous. Hence, it is imperative to explore plants' utilization as a resource.

The purpose of this study was to examine and present the composition of resources vascular plants and provide an information for conservation and preservation of resource plants in Mt. ManRoi, Korea.

MATERIALS AND METHODS

This study was conducted in Mt. ManRoi (611.7 m; 37° 51' N, 127° 20' E) in ChungBuk Province, Korea. The field survey of resource plants composition was

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Table 1. The annual summary of climates.

		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Ave.
Temp. (°C)	Mean	11.2	12.0	11.7	12.6	12.9	12.0	12.3	11.9	13.3	12.0	12.2
	Max.	35.0	34.0	35.4	35.1	36.8	34.4	34.5	32.8	37.8	35.7	35.2
	Min.	-18.6	-16.7	-15.3	-12.6	-19.3	-17.2	-11.3	-13.6	-15.9	-13.9	-15.4
Prec. (mm)	Total	1157.5	1656.2	878.9	1280.3	1473.7	1143.6	990.1	1301.8	1012.0	1339.8	1223.4
	Greatest	100.5	224.7	67.7	110.3	91.5	88.4	97.1	112.2	107.1	293.0	129.3

conducted from April 1995 to August 1998.

The yearly average temperature of study area was 12.2°C, 37.8°C as maximum and 19.3°C as Minimum. The range of a thermometer was 57.1°C. Annual precipitation average was 1,223.4mm in resent 10 years (Korea Meteorological Administration, 1998; Table 1).

Korean endemic and cultivated plants were marked '(E)' and '(C)' in their scientific name, respectively. The classification and scientific name were based according to Lee (1980). Korean endemic plants (Lee, 1984), rare and endangered plants (KACN, 1981; Ministry of Environment, 1994b) and usage of each plant (Kim, 1995; Yoon, 1995; Kim, 1996; Lee, 1996a; Lee, 1996b; Tae, 1998) were examined.

RESULTS AND DISCUSSION

1. Composition of resource plants

Vascular plants were identified in this study 382 taxa

with 87 families 254 genera 323 species 1 subspecies 55 varieties and 4 forms (Appendix). Such data represented 9.1% of Korean vascular plants of which 4,191 taxa were identified (Nakai, 1952). The flora of Mt. ManRoi consisted of 8 families Pteriophyta with 14 genera 20 taxa; 3 families Gymnospermae with 7 genera 9 taxa and 76 families Angiospermae with 233 genera 353 taxa, respectively (Table 2, 3).

2 Composition of plants for each use

The usefulness of plants was classified as edible 208 taxa (54.3%), medical 170 taxa (44.4%), pasture 112 taxa (29.2%), ornamental 50 taxa (13.1%), industrial 10 taxa (2.6%) and fiber 2 taxa (0.5) in this study. It revealed that plants identified could be grouped in terms of their usefulness such as edible, Medical, Ornamental, and so on. Significant finding showed that 45 taxa (11.7%) of plants in this mountain (Table 3) whose value is not yet known. With these data, more plants'

Table 2. The abridged list of the plants in Mt. ManRoi

Taxa	Families	Genera	Species	Varieties	Forms	Subspecies	Total
Pteriophyta	8	14	19	1	0	0	20
Gymnospermae	3	7	9	0	0	0	9
Angiospermae	76	233	295	54	4	1	354
Monocotyledons	11	54	58	13	0	0	71
Dicotyledons	65	179	237	41	4	1	283
Total	87	254	323	55	4	1	383

Table 3. Number of plants for each use in Mt. ManRoi (E: edible, M: Medical, O: Ornamental, I: Industrial, P: Pasture, F: Fiber, U: Unknown use).

Use	E	P	M	O	T	I	F	U
No. of species	208	112	170	50	19	10	2	45
%	54.3	29.2	44.4	13.1	5.0	2.6	0.5	11.7

Table 4. List of the Korean endemic plants in Mt. Man Roi.

Family	Scientific name
Liliaceae	<i>Tricyrtis dilatata</i> Nakai
Ranunculaceae	<i>Clematis trichotoma</i> Nakai
Saxifragaceae	<i>Deutzia coreana</i> Lev.
Rosaceae	<i>Spiraea prunifolia</i> var. <i>simpliciflora</i> Nakai
Oleaceae	<i>Forsythia koreana</i> Nakai
Caprifoliaceae	<i>Weigela subsessilis</i> L.H. Bailey
Valerianaceae	<i>Patrinia sanicalaefalia</i> Hemsl.

utilization could be identified in the future.

3. Remarkable plants in Mt. ManRoi

Korean endemic plants were 642 species, 40 varieties and 74 forms totally 1,118 taxa of endemic plants identified (Nakai, 1952). Likewise, Lee (1984) reported that there were 61 families, 172 genera, 339 species, 46 varieties and 22 forms totally 407 taxa, which are endemic. There were no rare and endangered species, while 7 taxa of Korean endemic plants, that is, *Tricyrtis dilatata*, *Clematis trichotoma*, *Deutzia coreana*, *Spiraea prunifolia* var. *simpliciflora*, *Forsythia koreana*, *Weigela subsessilis* and *Patrinia sanicalaefalia* were distributed in this mountain (Table 4).

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Appendix. The list of natural resource plants of Mt. ManRoi

NO.	Scientific Name	Uses
	Phylum Tracheophyta	
	Subphylum Sphenopsida	
	Class Equisetineae	
	Order Equisetales	
	Family Equisetaceae	
1	<i>Equisetum arvense</i> L.	E,P
2	<i>E. pratense</i> Ehrh.	E,P
3	<i>E. hyemale</i> L.	M,P
4	<i>E. ramosissimum</i> Desf.	U
	Subphylum Pteropsida	
	Class Filicineae	
	Order Filicales	
	Family Osmundaceae	
5	<i>Osmunda japonica</i> Thunb.	E
	Family Pteridaceae	
6	<i>Dennstaedtia wilfordii</i> (Moore) Christ.	U
7	<i>Pteridium aquilinum</i> var. <i>latiusculum</i> (Desv.) Underw.	E,M
	Family Aspidiaceae	
8	<i>Athyrium niponicum</i> (Mett.) Hance.	E
9	<i>A. yokoscense</i> (Fr. et Sav.) H. Christ	E
10	<i>Cyrtomium fortunei</i> J. Smith	U
11	<i>Dryopteris bissetiana</i> (Bak.) C. Christ.	U
12	<i>D. crassirhizoma</i> Nakai	M,E
13	<i>Polystichu tripterion</i> (Kunze) Presl	U
14	<i>Woodsia subcordata</i> Turcz.	U
	Family Aspleniaceae	
15	<i>Asplenium incisum</i> Tunb.	U
	Family Polypodiaceae	
16	<i>Lepisorus ussuriensis</i> (Regel et Maack.) Ching	U
17	<i>pyrrosia linearifolia</i> (Hook.) Ching	U
18	<i>P. petiolosa</i> (Chr. et Bar.) Ching	U
	Family Marsileaceae	
19	<i>Marsilea quadrifolia</i> L.	U
	Family Salviniaceae	
20	<i>Salvinia natans</i> (L.) All.	U
	Class Gymnospermae	
	Subclass Coniferophytae	
	Order Coniferales	
	Family Taxaceae	
21	<i>Cephalotaxus koreana</i> Nakai	E
22	<i>Taxus cuspidata</i> S. et Z.	M
23	<i>Torreya nucifera</i> S. et Z.	U
	Family Pinaceae	
24	<i>Larix leptolepis</i> (S. et Z.) Gordon (C)	T
25	<i>Pinus koraiensis</i> S. et Z. (C)	E,M,O,T
26	<i>P. densiflora</i> S. et Z.	E,M,T
27	<i>P. rigida</i> Miller (C)	O,T
	Family Cupressaceae	
28	<i>Juniperus rigida</i> S. et Z.	M,O
29	<i>Thuja orientalis</i> L. (C)	O
	Class Angiospermae	
	Subclass Monocotyledoneae	
	Order Helobiales	
	Family Potamogetonaceae	
30	<i>Potamogeton distinctus</i> A. Benn.	U
	Order Graminales	
	Family Gramineae	
31	<i>Agropyron tsukushiense</i> var. <i>transiens</i> (Hack.) Ohwi	P
32	<i>Agrostis clavata</i> var. <i>nukabo</i> Ohwi	P
33	<i>Alopecurus aequalis</i> var. <i>amurensis</i> (Kom.) Ohwi	P
34	<i>Arthraxon hispidus</i> (Thunb.) Makino	P
35	<i>Arundinella hirta</i> (Thunb.) Koidz.	P

36	<i>Bromus japonica</i> Thunb.	P
37	<i>Beckmannia syzigachne</i> (Steud.) Fern.	P
38	<i>Calamagrostis epigeios</i> (L.) Roth	P
39	<i>C. arundinaceae</i>	P
40	<i>Cymbopogon tortilis</i> var. <i>goeringii</i> (Steud.) Hand.-Mazz.	P
41	<i>Dactylis glomerata</i> L.	P
42	<i>Digitaria sanguinalis</i> (L.) Scop.	P
43	<i>Eragrostis ferruginea</i> (Thunb.) Beauv.	P
44	<i>E. japonica</i> Trun.	P
45	<i>Eleusine indica</i> (L.) Gaertner	P
46	<i>Echinochloa crusgalii</i> var. <i>frumentacea</i> (Roxb.) Wight	E,P
47	<i>Fagopyrum esculentum</i>	E
48	<i>Festuca ovina</i> L.	P
49	<i>Imperata cylindrica</i> var. <i>roenigii</i> (Retz.) Durand et Schinz	E,M,P
50	<i>Miscanthus sinensis</i> var. <i>purpurascens</i> Rendle	P
51	<i>Oplismenus undulatifolius</i> (Ard.) Beauv.	P
52	<i>Pennisetum alopecuroides</i> (L.) Spreng	P
53	<i>Poa sphondylodes</i> Trill.	P
54	<i>Phragmites communis</i> Trin.	P
55	<i>P. japonica</i> Steud.	P,M
56	<i>Setaria viridis</i> (L.) Beauv.	E,P
57	<i>S. glauca</i> (L.) Beauv.	E,P
58	<i>Sorghum bicolor</i> Moench	E
59	<i>Spodiopogon sibirica</i> Trin.	E
60	<i>Zizania latifolia</i> Turcz.	E
61	<i>Zoysia japonica</i> Steud.	O
	Family Cyperaceae	
62	<i>Carex amuricus</i> Max.	P
63	<i>C. bostrichostigma</i> Max.	P
64	<i>C. breviculmis</i> R. Br.	
65	<i>C. humilis</i> Leyss.	P
66	<i>C. japonica</i> Thunb.	P
67	<i>C. neurocarpa</i> Max.	P
68	<i>C. siderosticta</i> Hance	P
	Order Arales	
	Family Araceae	
69	<i>Arisaema robustum</i> (Engl.) Nakai	M
70	<i>A. angustatum</i> var. <i>peninsulae</i> Nakai	M
	Family Lemnaceae	
71	<i>Lemna paucicostata</i> Hegelmier	M
72	<i>Spirodela polyrhiza</i> (L.) Schleiden	M
	Order Farinales	
	Family Commelinaceae	
73	<i>Aneilema keisak</i> Hassk	U
74	<i>Commelina communis</i> L.	E,M
	Order Liliales	
	Family Juncaceae	
75	<i>Juncus effusus</i> var. <i>decipiens</i> Buchen.	M
76	<i>Luzula capitata</i> (Miq.) Miq.	U
	Family Liliaceae	
77	<i>Allium thunbergii</i> G. Don	E,M,O
78	<i>Asparagus schobertoides</i> Kunth.	E,M
79	<i>Convallaria keiskei</i> Miquel	M
80	<i>Disporum smilacinum</i> A.Gray.	E,P
81	<i>Erythronium japonicum</i> Decne.	E
82	<i>Hemerocallis fulva</i> L.	E,M
83	<i>Hosta capitata</i> Nakai	E
84	<i>Lilium tsungtauense</i> Gilg.	E,M
85	<i>L. amabile</i> Palibin.	O,M
86	<i>Paris verticillata</i> Bieberst	E,M
87	<i>Polygonatum lasianthum</i> var. <i>coreanum</i> Nakai	E,M
88	<i>P. odoratum</i> (Mill.) Druce var. <i>pluriflorum</i> Ohwi	E,M
89	<i>Scilla scilloides</i> (Lind.) Druce.	E,M
90	<i>S. nipponica</i> Miq.	E,P
91	<i>S. riparia</i> var. <i>ussuriensis</i> Hara et T. Koyama	E,P

92	<i>S. sieboldii</i> Miq.	E,P
93	<i>Tricyrtis dilatata</i> Nakai (E)	E
94	<i>Veratrum maackii</i> var. <i>japonicum</i> T. Shimizu	M
	Family Dioscoreaceae	
95	<i>Dioscorea batatas</i> Decne.	E,M
96	<i>D. quinqueloba</i> Thunb.	E,M
	Family Iridaceae	
97	<i>Iris rossii</i> Bak.	O
	Order Orchidales	
	Family Orchidaceae	
98	<i>Amitostigma gracilis</i> (Bl.) Schlecht.	O
99	<i>Cephalanthera longibracteata</i> Bl.	O
100	<i>Liparis krameri</i> Franchet & Savatier	O
101	<i>Sprianthes sinensis</i> (Pers.) Ames.	O
	Subclass Dicotyledoneae	
	Order Salicales	
	Family Salicaceae	
102	<i>Populus deltoides</i> Marsh.	U
103	<i>P. tomentiglandulosa</i> T. Lee	T
104	<i>P. euramericana</i> Guinier (C)	O
105	<i>P. nigra</i> var. <i>italica</i> (Muench.) Koehne	U
106	<i>Salix korensis</i> Anderss.	U
107	<i>S. gracilistyla</i> Miq.	P
	Order Myricalis	
	Family Juglandaceae	
108	<i>Juglans sinensis</i> Dode (C)	E,M,T
109	<i>Platycarya strobilacea</i> S. et Z.	M
	Order Fagales	
	Family Betulaceae	
110	<i>Alnus hirsuta</i> (Spach) Rupr.	U
111	<i>Betula davurica</i> Pall.	T,M
112	<i>B. platyphylla</i> var. <i>japonica</i> Hara	M,T,I
113	<i>B. schmidtii</i> Regel	T
114	<i>Carpinus cordata</i> Bl.	O,S
115	<i>Corylus heterophylla</i> Fisch.	E,M,P
116	<i>C. heterophylla</i> var. <i>thunbergii</i> Bl.	E,M,P
117	<i>C. sieboldiana</i> Bl.	E,M
	Family Fagaceae	
118	<i>Castanea crenata</i> S. et Z. (C)	E,M,T,S
119	<i>Quercus acutissima</i> Carruth.	E,M
120	<i>Q. aliena</i> Bl.	E,T
121	<i>Q. dentata</i> Thunb.	E,M,T,S
122	<i>Q. mongolica</i> Fisch.	E,T,P
123	<i>Q. variabilis</i> Bl.	E,T,I,M
	Order Urticales	
	Family Ulmaceae	
124	<i>Ulmus davidiana</i> var. <i>japonica</i> Nakai	E,M,T,F
125	<i>Zelkova serrata</i> Makino	U
	Family Moraceae	
126	<i>Morus bombycis</i> Koidz.	E,M,P,S
	Family Canabinaceae	
127	<i>Humulus japonicus</i> S. et Z.	E,M,P
	Family Urticaceae	
128	<i>Boehmeria nevea</i> (L.) Gaudich.	T
	Order Aristolochiales	
	Family Aristolochiaceae	
129	<i>Aristolochia contorta</i> Bunge	M
130	<i>Asarum sieboldii</i> Miq.	M
	Order Polygonales	
	Family Polygonaceae	
131	<i>Persicaria hydropiper</i> (L.) Spach	E
132	<i>P. perfoliata</i> H. Gross	E,M
133	<i>P. senticosa</i> Gross	E,P
134	<i>P. sieboldii</i> Ohwi	P
135	<i>P. thunbergii</i> H. Gross	M,P

136	<i>Polygonum aviculare</i> L.	E,M
137	<i>Rumex acetosa</i> L.	E,M
138	<i>R. acetocella</i> L.	E
139	<i>R. crispus</i> L.	E,M,P
	Order Centrospermales	
	Family Chenopodiaceae	
140	<i>Chenopodium album</i> var. <i>centrorubrum</i> Makino	E,P
141	<i>C. ficifolium</i> Smith	E
142	<i>Kochia scoparia</i> Schrad.	E,M
	Family Amaranthaceae	
143	<i>Achyranthes japonica</i> (Miq.) Nakai	E,M
144	<i>Amaranthus mangostanus</i> L.	E,M
	Family Portulacaceae	
145	<i>Portulaca oleracea</i> L.	E,M,P
	Family Caryophyllaceae	
146	<i>Arenaria serpyllifolia</i> L.	E
147	<i>Cerastium holosteoides</i> var. <i>hallaisanense</i> Mizushima	E
148	<i>Dianthus sinensis</i> L.	O,M
149	<i>Melandryum firmum</i> (S. et Z.) Rohrb.	M,E,P
150	<i>Pseudostellaria heterophylla</i> (Miq.) Pax	E,M
151	<i>P. palibiniana</i> (Takeda) Ohwi	E
152	<i>S. alsine</i> var. <i>undulata</i> Ohwi	E
	Order Ranales	
	Family Ranunculaceae	
153	<i>Aconitum pseudo-laeve</i> var. <i>erectum</i> Nakai	M
154	<i>A. ciliare</i> DC.	M
155	<i>A. jaluense</i> Komar.	M
156	<i>Caltha palustris</i> var. <i>membranacea</i> Turcz.	M
157	<i>C. apiifolia</i> A. P. DC.	E,M
158	<i>C. mandshurica</i> Rupr.	E,M
159	<i>C. trichotoma</i> Nakai (E)	E
160	<i>Hepatica asiatica</i> Nakai	M
161	<i>Puylsatilla koreana</i> Nakai	M
162	<i>Ranunculus japonicus</i> Thunb.	U
163	<i>R. chinensis</i> Bunge	U
164	<i>Thalictrum filamentosum</i> Max.	E
165	<i>T. aquilegifolium</i> L.	E,M
	Family Lardizabalaceae	
166	<i>Akebia quinata</i> Decaisne	E,M,1
	Family Menispermaceae	
167	<i>Cocculus trilobus</i> DC.	M
168	<i>Menispermum dahuricum</i> DC.	M
	Family Magnoliaceae	
169	<i>Schizandra chinensis</i> Baill. (C)	E,M
	Family Lauraceae	
170	<i>Lindera obtusiloba</i> Bl.	E,M,O,1
171	<i>L. glauca</i> Blume	U
	Order Papaverales	
	Family Papaveraceae	
172	<i>Chelidonium majus</i> var. <i>asiaticum</i> (Hara) Ohwi	M
	Family Fumariaceae	
173	<i>Corydalis turtshchaninovii</i> Bess.	M
174	<i>C. ochotensis</i> Turcz.	P
175	<i>C. speciosa</i> Max.	P
	Family Cruciferae	
176	<i>Arabis grabra</i> Bornhardi	E
177	<i>Cardamine flexuosa</i> With.	E
178	<i>C. leucantha</i> O. E. Schulz	E
179	<i>Capsella bursa-pastoris</i> (L.) Medicus	E
180	<i>Draba nemorosa</i> var. <i>hebecarpa</i> Lindb.	E
181	<i>Lepidium apetalum</i> Willd.	E,M
182	<i>Rorippa islandica</i> (Oed.) Borb.	U
183	<i>Thalspi arvense</i> L.	E
	Order Rosales	
	Family Crassulaceae	

184	<i>Sedum kamtschaticum</i> Fisch.	E
185	<i>S. sarmentosum</i> Bunge	E
	Family Saxifragaceae	
186	<i>Astilbe chinensis</i> var. <i>dauidii</i> Fr.	M,P
187	<i>Deutzia parviflora</i> Bunge	O
188	<i>D. coreana</i> Lev. (E)	O
189	<i>D. prunifolia</i> Rehder	O
190	<i>Hydrangea serrata</i> for. <i>acuminata</i> (S. et Z.) Wils.	O
191	<i>Philadelphus schrenckii</i> Rupr.	E,O,P
192	<i>P. tenuifolius</i> Rupr. et Max.	E
	Family Rosaceae	
193	<i>Agrimonia pilosa</i> Ledeb.	E,M,P
194	<i>Duchesnea chrysantha</i> (Zoll. et Morr.) Miq.	E
195	<i>Geum japonicum</i> Thunb.	E
196	<i>Potentilla chinense</i> Seringe	E,M,P
197	<i>P. fragarioides</i> var. <i>major</i> Max.	E,M
198	<i>P. freyniana</i> Bormmuller	E,P
199	<i>P. kleiniana</i> Wight et Arnott.	E
200	<i>P. davuduana</i> Fr.	E
201	<i>P. leveilleana</i> Koehne	E,M,O
202	<i>P. serrulata</i> var. <i>spontanea</i> (Max.) Wils. (C)	E,M
203	<i>Rubus crataegifolius</i> Bunge.	E,M
204	<i>R. coreanus</i> Miq.	E,M
205	<i>R. parvifolius</i> L.	E
206	<i>Rosa multiflora</i> Thunb.	E,M,P
207	<i>Spiraea prunifolia</i> var. <i>simpliciflora</i> Nakai (E)	E,M,O
208	<i>Stephanandra incisa</i> Zabel.	U
209	<i>Sanguisorba officinalis</i> L.	E,M
	Family Leguminosae	
210	<i>Albizia julibrissin</i> Durazz.	M,O
211	<i>Amphicarpaea edgeworthii</i> var. <i>trisperma</i> Ohwi	E,P
212	<i>Astragalus membranaceus</i> Bunge	M,O
213	<i>Cassia mimosoides</i> var. <i>nomame</i> Makino	E,M,P
214	<i>Desmodium oxyphyllum</i> Dc.	E,M,P
215	<i>Kummerowia striata</i> (Thunb.) Schindl.	P
216	<i>Lepedeza thunbergii</i> var. <i>intermedia</i> (Nakai) T. Lee (E)	P,O
217	<i>L. bicolor</i> Turcz.	O,P
218	<i>L. maximowiczii</i> Schneid.	O,P
219	<i>L. x tomentella</i> Nakai	O,P
220	<i>Lathyrus davidii</i> Hance	E,M
221	<i>Lycine soja</i> S. et Z.	M
222	<i>Maackia amurensis</i> Rupr. et Max.	U
223	<i>Pueraria thunbergiana</i> Benth.	E,M,S,P
224	<i>Robina pseudoacacia</i> L.	T,P
225	<i>Sophora flavescens</i> Aiton	M
226	<i>Trifolium repens</i> L.	P
227	<i>Vicia amoena</i> Fisch.	E,P
228	<i>V. amurensis</i> Oettingen	E,P
229	<i>V. unijuga</i> A. Br.	E,P
	Order Geraniales	
	Family Geraniaceae	
230	<i>Geranium wilfordii</i> Max.	M
231	<i>G. nepalense</i> subsp. <i>thunbergii</i> (S. et Z.) Hara.	M,P
	Family Oxalidaceae	
232	<i>Oxalis corniculata</i> L.	E
	Family Rutaceae	
233	<i>Dictamnus dasycarpus</i> Turcz.	M
234	<i>Zanthoxylum piperium</i> A. P. DC.	E,M
235	<i>Z. schinifolium</i> S. et Z.	E,M
	Family Simaroubaceae	
236	<i>Picrasma quassioides</i> (D. Don) Benn.	M,F
	Family Euphorbiaceae	
237	<i>Euphorbia sieboldiana</i> Morr. et Decne.	M
238	<i>Securinega suffruticosa</i> Rehder.	U
	Order Sapindales	

	Family Anacardiaceae	
239	<i>Rhus chinensis</i> Mill.	E,M,R
240	<i>R. trichocarpa</i> Miq.	M
241	<i>R. verniciflora</i> Stokes	E,M,I
	Family Celastraceae	
242	<i>Celastrus orbiculatus</i> Thunb.	E,O,R
243	<i>Enonymus alatus</i> (Thunb.) Sieb.	E,M,P,I
244	<i>E. alatus</i> for. <i>ciliato-dentatus</i> Hiyama.	E
245	<i>E. oxyphyllus</i> Miquel	M,P
246	<i>E. sachalinensis</i> (Fr.Schm) Max.	U
	Family Staphyleaceae	
247	<i>Staphylea bumalda</i> Dc.	E
	Family Aceraceae	
248	<i>Acer ginnala</i> Max.	O,I
249	<i>A. mono</i> Max.	O,M,P
250	<i>A. pseudo-sieboldianum</i> (Paxton) Kom.	O
	Family Balsaminaceae	
251	<i>Impatiens textori</i> Miq.	M
252	<i>I. noli-tangere</i> L.	P
	Order Rhamnales	
	Family Rhamaceae	
253	<i>Z. jujuba</i> var. <i>inermis</i> Rehder (C)	E,M
	Family Vitaceae	
254	<i>Vitis amurensis</i> Rupr.	E,M
255	<i>V. coignetiae</i> Pulliat	E,M
256	<i>Parthenocissus tricuspidata</i> (S. et Z.) Planch.	O
	Order Malvales	
	Family Tiliaceae	
257	<i>Tilia amurensis</i> Rupr.	T,P
	Order Parietales	
	Family Actinidiaceae	
258	<i>Actinidia kolomikta</i> (Max. et Rupr.) Mak.	E
259	<i>A. arguta</i> Planch.	E,M
	Family Violaceae	
260	<i>Viola dissecta</i> var. <i>chaerophylloides</i> (Regel) Makino	U
261	<i>V. acumunata</i> Ledeb.	E
262	<i>V. collina</i> Bess.	U
263	<i>V. grypoceras</i> A. Gray	U
264	<i>V. mandshurica</i> W. Becker.	E,M,P
265	<i>V. orientalis</i> W.Becker.	U
266	<i>V. rossi</i> Hemsley	E,M,P
267	<i>V. variegata</i> Fisch.	O,E
	Order Myrtales	O,E
	Family Elaeagnaceae	
268	<i>Elaeagnus umbellata</i> Thunb.	E
	Family Alangiaceae	
269	<i>Alangium platanifolium</i> var. <i>macrophyllum</i> Wanger	E
270	<i>A. platanifolium</i> for. <i>veoutinum</i> T. Lee	E
	Family Onagraceae	
271	<i>Oenothera odorata</i> Jacq.	O,P
	Order Umbellales	
	Family Araliaceae	
272	<i>Aralia elata</i> Seem.	E,M
273	<i>Kalopanax pietus</i> (Thunb.) Nakai	E,M
274	<i>Oplopanax elatus</i> (Non Decne.) Seem.	M
	Family Umbelliferae	
275	<i>Angelica cartilagino-marginata</i> (Max. et Yabe) Nakai	U
276	<i>A. anomala</i> Lallemant.	U
277	<i>A. decursiva</i> (Miq.) Fr. et Sav.	E
278	<i>Oenanthe stolonifera</i> (Roxburgh) DC.	E,P
279	<i>Peucedanum terebinthaceum</i> Fischer	E,M
280	<i>Pimpinella biachycarpa</i> (Kom.) Nakai	E
281	<i>Torilis japonica</i> (Houtt.) Dc.	E,M
	Family Cornaceae	
282	<i>Cornus controversa</i> Hemsl.	O

283	<i>C. kousa</i> Bueg	E
	Order Ericales	
	Family Ericaceae	
284	<i>Rhododendron mucronulatum</i> Turcz.	E,O
285	<i>R. yedoense</i> var. <i>poukhanense</i> (Lev.) Nakai	O
286	<i>R. schlippenbachii</i> Max.	O
	Family Pyrolaceae	
287	<i>Pyrola japonica</i> Koidz.	M
	Order Primulales	
	Family Primulaceae	
288	<i>Androsace umbellata</i> (Lour.) Merrill	U
289	<i>Lysimachia barystachys</i> Bunge	E
290	<i>L. clethroides</i> Duby	E
	Order Ebenales	
	Family Ebenaceae	
291	<i>Diospyros kaia</i> var. <i>domestica</i> Makino (C)	E,M
	Family Symplocaceae	
292	<i>Symplocos chinensis</i> for. <i>pilosa</i> (Nakai) Ohwi	U
	Family Styracaceae	
293	<i>Styrax obassia</i> S. et Z.	O,P
294	<i>S. japonica</i> S. et Z.	U
	Order Gentiales	
	Family Oleaceae	
295	<i>Fraxinus mandshurica</i> Rupr.	T,P
296	<i>F. rhynchophylla</i> Hance	M
297	<i>Ligustrum obtusifolium</i> S. et Z.	O
298	<i>Forsythia koreana</i> Nakai (E)	M,O
	Family Gentianaceae	
299	<i>Gentiana squarrosa</i> Ledeb.	U
	Family Asclepiadaceae	
300	<i>Metaplexis japonica</i> (Thunb.) Makino	E,M,P,1
301	<i>Cynanchum ascyrifolium</i> (Fr. et Sav.) Matsu.	E,M
	Order Tubiflorales	
	Family Convolvulaceae	
302	<i>Calystegia japonica</i> (Thunb.) Chois.	E,P
303	<i>C. hederacea</i> Wallich	E,M
	Family Borraginaceae	
304	<i>Trigonotis nakaii</i> Hara	U
305	<i>T. peduncularis</i> Bentham	E,M
	Family Verbenaceae	
306	<i>Callicarpa japonica</i> Raeusch.	U
307	<i>Clerodendron trichotomum</i> Thunb.	E,M,O
	Family Labiateae	
308	<i>Ajuga multiflora</i> Bunge	M
309	<i>Clinopodium chinense</i> var. <i>parviflorum</i> (Kudo) Hara	E
310	<i>E. parrini</i> (Lepeckin) Giroke	M
311	<i>Isodon excisus</i> (Max.) Kudo	M
312	<i>Leonurus sibiricus</i> L.	M
313	<i>L. macranthus</i> L.	E
314	<i>Lycopus ramosissimus</i> var. <i>japonicus</i> Kitamura	E,M
315	<i>Meehania urticifolia</i> (Miq.) Makino	E,P
316	<i>Mosla dianthera</i> Maximowicz	E,M
317	<i>Prunella vulgaris</i> var. <i>lilacina</i> Nakai	E,M
318	<i>Scutellaria pekinensis</i> var. <i>transitra</i> Hara	U
319	<i>S. indica</i> L.	M
	Family Solanaceae	
320	<i>Nicotiana tabacum</i> L.	E,M
321	<i>Solanum nigrum</i> L.	E,M
	Family Scrophulariaceae	
322	<i>Mazus japonicus</i> (Thunberg) O. Kuntze	E
323	<i>Melampyrum roseum</i> Max.	U
324	<i>Pedicularis resupinata</i> L.	
	Family Phrymaceae	
325	<i>Phryma leptostachya</i> var. <i>asiatica</i> Hara	M
	Order Plantaginales	

	Family Plantaginaceae	
326	<i>Plantago asiatica</i> L.	E,M,P
	Order Rubiales	
	Family Rubiaceae	
327	<i>Galium verum</i> var. <i>asiaticum</i> Nakai	E,P
328	<i>G. spurium</i> L.	E
329	<i>G. kinuta</i> Nakai et Hara	U
330	<i>Rubia akane</i> Nakai	E,M,I,P
	Family Caprifoliaceae	
331	<i>Lonicera japonica</i> Thunb.	M
332	<i>L. maackii</i> Maximowicz	U
333	<i>Sambucus sieboldiana</i> var. <i>miqlii</i> (Nakai) Hara	E,M
334	<i>Weigela subsessilis</i> L.H. Bailey (E)	O
	Family Valerianaceae	
335	<i>Patrinia sanicalaefolia</i> Hemsl. (E)	E,M
336	<i>P. villosa</i> (Thunb.) Juss.	E
337	<i>Valeriana fauriei</i> Briq.	E,M,I
	Order Campanulales	
	Family Campanulaceae	
338	<i>Adenophora triphylla</i> var. <i>japonica</i> Hara	E,M
339	<i>Codonopsis lanceolata</i> (S. et Z.) Trautv.	E,M,P
340	<i>Platycodon grandiflorum</i> (Jacq.) A. DC.	E,M,O
341	<i>Phyteuma japonicu</i> Miq.	E,M,O
	Family Compositae	
342	<i>Achillea sibirica</i> Ledeb.	E
343	<i>Adenocaulon himalaicum</i> Edgew.	E
344	<i>Ainsliaea acerifolia</i> Sch.-Bip.	E
345	<i>Artemisia capillaris</i> Thunb.	E,M,P
346	<i>A. iwayomogi</i> Kitamura	M,P
347	<i>A. japonica</i> Thunb.	E,P
348	<i>A. keiskeana</i> Miquel	E,M,P
349	<i>A. montana</i> Pampan.	E,M,P
350	<i>A. princeps</i> var. <i>orientalis</i> (Pampan.) Hara	E,M,P
351	<i>A. stolonifera</i> (Max.) Kom.	E,P
352	<i>Aster Yomena</i> Makin	E
353	<i>A. ciliatus</i> Kitamura	E,P
354	<i>A. scaber</i> Thunb.	E,M,P
355	<i>A. tataricus</i>	E
356	<i>Atractylodes japonica</i> Koidz.	E,M
357	<i>Bidens bipinnata</i> L.	E,M
358	<i>Carduus crispus</i> L.	E,M
359	<i>Cephalonoplos segetus</i> (Bunge) Kitamura	E,M
360	<i>Chrysanthemum zawadskii</i> var. <i>latilobum</i> Kitam.	M,O
361	<i>C. zawadskii</i> Herbich	M,O
362	<i>Cirsium japonicum</i> var. <i>ussuriense</i> Kitamura	E,M,P
363	<i>Erigeron annuus</i> (L.) Pers	E,P
364	<i>E. canadensis</i> L.	E,P
365	<i>Eupatorium chinense</i> var. <i>simplicifolium</i> Kitamura	E
366	<i>E. lindleyanum</i> DC.	E,M
367	<i>Gnaphalium affine</i> D. Don	E,M
368	<i>Hemistepta lyrata</i> Bunge	E
369	<i>Indula britannica</i> var. <i>chinensis</i> Regel	E,M
370	<i>Ixeris dentata</i> (Thunb.) Nakai	E,M,P
371	<i>I. chinensis</i> var. <i>strigosa</i> (Lev. et Vnt.) Ohwi	E
372	<i>Lactuca indica</i> var. <i>laciniata</i> (O. Kunze) Hara	E,M,P
373	<i>Leibnitzia anandria</i> (L.) Nakai	E
374	<i>Petasites japonicus</i> (S. et Z.) Max.	E,M,P
375	<i>Picris japonica</i> Thunb.	E,P
376	<i>Senecio integrifolius</i> var. <i>spathulatus</i> (Miq.) Hara	E,M
377	<i>Syneilesis palmata</i> (Thunb.) Max.	E
378	<i>Synurus deltoides</i> (Ait.) Nakai	E,P
379	<i>Taraxacum mongolicum</i> H. Dahlst	E,M
380	<i>Youngia denticulata</i> Kitamura	E,P
381	<i>Y. japonica</i> (L.) DC.	E,P
382	<i>Xanthium strumarium</i> L.	M