

# An inventory of Korean living collections in the Arnold Arboretum of Harvard University, USA

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As part of a study to understand the current status of Korean plant species propagated in foreign countries, we conducted extensive surveys on Korean living collections in the Arnold Arboretum of Harvard University, the oldest public arboretum in North America. Specifically, we collected and identified the voucher specimens of the living collections and further examined the collection databases to understand the history of how Korean plants were introduced to the Arboretum. We found that a total of 154 Korean taxa (belonging to 49 families and 81 genera) have been planted in the arboretum. Most plants originated from seeds that were directly collected in Korea or obtained via seed exchanges with botanical gardens in Asia, Europe, and U.S.A. Of the 154 taxa, 16 are Korean endemic species, and three are listed as endangered species. In addition, 62 taxa are as floristic regional indicator species of Korea used by the Ministry of Environment.

Keywords: Arnold Arboretum, endangered species, endemic species, floristic regional indicator species, Korean living collection

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## INTRODUCTION

Since the 19<sup>th</sup> century, investigations on Korean flora were carried out to explore unrecorded flora for further systematic research and to broaden the genetic pool of known species by Japanese botanists and Western botanists including Europe and North America (Chung *et al.*, 1986; Aiello, 2009).

In North America, the Arnold Arboretum of Harvard University is one of the oldest public arboreta and is located in the Jamaica Plain section of Boston, Massachusetts, U.S.A. (42° 19'N, 71° 05'W). The 107 ha arboretum is a unique blend of research institution and public park, because it was founded as a public-private partnership between the City of Boston and Harvard University (President and Fellows of Harvard College, 2012). After being founded in 1872, domestic and international woody plant exploration and the subsequent evaluation of plant acquisitions have represented important missions of the Arnold Arboretum (Wyman, 1956; President and Fellows of Harvard College, 2012). Thus, the Arnold Arboretum has supported botanical exploration programs to collect germplasm in the floristically rich regions of Eastern Asia and North America since the early 1900s (Sax, 1949; Spongberg and Weaver, 1978; Howard, 1980a; 1980b; President and Fellows of Harvard College, 2012).

In particular, early arboretum staff members of the Arnold Arboretum participated in several collection expeditions to South Korea (Wilson, 1919; Sax, 1949; Spongberg, 1978; Spongberg and Weaver, 1978; Kim *et al.*, 2010). The plant collections assimilated on these expeditions, including seeds, cuttings, scions, and budwood, were brought to the Arnold Arboretum for propagation and subsequent evaluation (Wilson, 1919; Rehder, 1930). As a result of the above activities, many plants from Korea are probably now cultivated in the Arnold Arboretum. Recently, Shim and Seo (1995a; 1995b) conducted an extensive literature review of nursery plant source lists, plant inventories, and plant exploration reports from North American arboreta, including the Arnold Arboretum. However, this study primarily focused on the commercial usage of Korean plants, depending on the existing literature reviews (Seo *et al.*, 1996). Thus, the current list of Korean living collection is required to figure out what kinds of Korean wild plant species were brought to and cultivated in the North America.

Living plant collections, as well as herbaria, have great potential to meet future scientific needs, including taxonomy, ecology, and plant conservation (Medbury, 1991; Havens *et al.*, 2004; Dosmann, 2006). Therefore, an inventory of living collections in arboreta is the necessary first step towards enhancing scientific research, as a

source of raw materials, as well as towards developing a long-term resource management plan (Dosmann, 2007; Ruch *et al.*, 2007). Since being founded in 2007, the National Institute of Biological Resources (NIBR) has obtained the collection information of Korean specimens and living materials deposited in foreign herbaria, arboreta, and museums for biological resource management (NIBR, 2008; 2009; 2010; 2011b; 2012b; 2013). As part of the above-mentioned research project, we visited the Arnold Arboretum of Harvard University, which is one of the oldest arboreta in North America.

In the present study, we collected and identified voucher specimens in the Korean living collections of the Arnold Arboretum to obtain a current inventory. Subsequently, we examined the collection database, including collector, collection date, and location of the living collections, to understand the introduction history of Korean plants to the Arnold Arboretum.

## MATERIALS AND METHODS

The species inventory of Korean plants brought to the Arnold arboretum was made by site visit during May and September 2008. With the property owner's permission, voucher specimens from the Korean living collections were collected or photographs of the Korean living collections were taken. More than 400 specimens were collected at the Arnold Arboretum. Voucher specimens were deposited in the herbarium of the NIBR (KB), South Korea. Plant identification was carried out using the available literature (Chung, 1957; Lee, 1980; 2003; Lee, 1996a; Lee, 1996b). Nomenclature and the list of identified taxa were updated and compiled according to the classification system proposed by the Genera of the Vas-

cular Plants of Korea (Flora of Korea Editorial Committee, 2007).

Korean endemic species and endangered species were checked and arranged according to "Endemic Species of Korea" (NIBR, 2011a) and the "Red Data Book of Endangered Vascular Plants in Korea" (NIBR, 2012a), respectively. To understand the history of Korean plant introduction into the Arnold Arboretum, we examined collection information such as collector, collection date, and location in their databases (President and Fellows of Harvard College, 2012).

## RESULTS AND DISCUSSION

The Korean living collections at the Arnold Arboretum consists of 154 vascular plant taxa (including 16 taxa identified to the level of variety, subspecies, or forma), representing 81 genera and 49 families (Appendix 1). Voucher specimens were designated for all Korean living collections with few exceptions, and deposited in KB (Appendix 1).

In the collection, the most diverse family was the Rosaceae with 17 taxa, followed by Oleaceae (17 taxa), Betulaceae (9 taxa), Aceraceae (8 taxa), and Fabaceae (7 taxa). These 5 families represent 58 of the 154 taxa (37.6%) of the Korean living collections documented at the arboretum. The most diverse genus was *Acer*, with 8 taxa, followed by *Rhododendron* (6 taxa), *Ligustrum* (5 taxa), *Malus* (5 taxa), *Spiraea* (5 taxa), and *Syringa* (5 taxa). In addition, 16 taxa of eleven families were endemic to Korea (Table 1, Appendix 1). Three endangered species of Korea were propagated in the Arnold Arboretum (Table 1, Appendix 1). *Cotoneaster wilsonii* (Rosaceae), which is designated as "Category I" endangered

**Table 1.** List of Korean endemic species and endangered species planted in the Arnold Arboretum, Harvard University, U.S.A.

Family	Taxa	Endemic species	Endangered species
Pinaceae	<i>Abies koreana</i> E.H. Wilson 구상나무	○	
Berberidaceae	<i>Berberis koreana</i> Palib. 매자나무	○	
	<i>Berberis amurensis</i> var. <i>quelpaertensis</i> Nakai 섬매밭톱나무	○	
Celtidaceae	<i>Celtis choseniana</i> Nakai 검팽나무	○	
Theaceae	<i>Stewartia koreana</i> Nakai ex Rehder 노각나무	○	
Ericaceae	<i>Rhododendron aureum</i> Georgi 노랑만병초		Category II
	<i>Rhododendron mucronulatum</i> Turcz. 진달래	○	
Hydrangeaceae	<i>Philadelphus schrenkii</i> Rupr. 고광나무	○	
Rosaceae	<i>Cotoneaster wilsonii</i> Nakai 섬개야광나무	○	Category I
Fabaceae	<i>Maackia fauriei</i> (H. Lévl.) Takeda 솔비나무	○	
Oleaceae	<i>Forsythia koreana</i> (Rehder) Nakai 개나리	○	
	<i>Forsythia ovata</i> Nakai 만리화	○	
	<i>Fraxinus chiisanensis</i> Nakai 물들메나무	○	
	<i>Abeliophyllum distichum</i> Nakai 미선나무	○	Category II
	<i>Ligustrum foliosum</i> Nakai 섬취뽕나무	○	
Diervillaceae	<i>Weigela subsessilis</i> (Nakai) L.H. Bailey 병꽃나무	○	
Caprifoliaceae	<i>Lonicera subsessilis</i> Rehder 청괴불나무	○	

**Table 2.** Floristic regional indicator species listed by the Korean Ministry of Environment that were identified in the Arnold Arboretum, Harvard University, U.S.A.

Category	Family	Taxa	Korean Name	
V	Cupressaceae	<i>Thuja koraiensis</i> Nakai	눈측백	
	Ericaceae	<i>Rhododendron aureum</i> Georgi	노랑만병초	
	Rosaceae	<i>Cotoneaster wilsonii</i> Nakai	섬개야광나무	
	Oleaceae	<i>Abeliophyllum distichum</i> Nakai	미선나무	
		<i>Forsythia ovata</i> Nakai	만리화	
IV	Pinaceae	<i>Tsuga sieboldii</i> Carrière.	솔송나무	
	Ericaceae	<i>Rhododendron weyrichii</i> Maxim.	참꽃나무	
	Leguminosae	<i>Maackia fauriei</i> (H. Lévl.) Takeda	솔비나무	
	Aceraceae	<i>Acer tegmentosum</i> Maxim.	산겨릅나무	
	Oleaceae	<i>Ligustrum folosum</i> Nakai	섬취뽕나무	
		<i>Ligustrum salicinum</i> Nakai	버들취뽕나무	
		<i>Syringa wolfi</i> C.K. Schneid.	꽃개회나무	
Caprifoliaceae	<i>Lonicera chrysantha</i> Turcz. ex Ledeb.	각시괴불나무		
III	Pinaceae	<i>Abies koreana</i> E.H. Wilson	구상나무	
		<i>Abies nephrolepis</i> (Trautv.) Maxim.	분비나무	
		<i>Picea jezoensis</i> (Siebold & Zucc.) Carrière	가문비나무	
		<i>Aristolochiaceae</i>	<i>Aristolochia manshuriensis</i> Kom.	등취
		Berberidaceae	<i>Berberis koreana</i> Palib.	매자나무
	Ulmaceae	<i>Celtis aurantiaca</i> Nakai	산팽나무	
	Betulaceae	<i>Betula costata</i> Trautv.	거제수나무	
		<i>Betula davurica</i> Pall.	물박달나무	
	Theaceae	<i>Stewartia koreana</i> Nakai ex Rehder	노각나무	
	Ericaceae	<i>Rhododendron brachycarpum</i> D. Don ex G. Don	만병초	
	Rosaceae	<i>Sorbaria sorbifolia</i> var. <i>stellipila</i> Maxim.	쉬땅나무	
		<i>Spiraea fritschiana</i> C.K. Schneid.	참조팝나무	
		<i>Spiraea salicifolia</i> L.	꼬리조팝나무	
		<i>Spiraea trichocarpa</i> Nakai	갈기조팝나무	
	Aquifoliaceae	<i>Ilex crenata</i> Thunb.	평팡나무	
	Sapindaceae	<i>Koelreuteria paniculata</i> Lxm.	모감주나무	
	Aceraceae	<i>Acer barbinerve</i> Maxim.	청시닥나무	
		<i>Acer palmatum</i> Thunb.	단풍나무	
	Verbenaceae	<i>Callicarpa mollis</i> Siebold & Zucc.	새비나무	
	Oleaceae	<i>Ligustrum ovalifolium</i> Hassk.	왕취뽕나무	
<i>Syring areticulata</i> var. <i>mandshurica</i> (Maxim.) H. Hara		개회나무		
Caprifoliaceae	<i>Lonicera subsessilis</i> Rehder	청괴불나무		
II	Berberidaceae	<i>Berberis amurensis</i> Rupr.	매발톱나무	
	Ulmaceae	<i>Ulmus laciniata</i> (Trautv.) Mayr	난티나무	
	Aceraceae	<i>Acer mandshuricum</i> Maxim.	복장나무	
	Rutaceae	<i>Phellodendron amurense</i> Rupr.	황벽나무	
	Caprifoliaceae	<i>Weigela florida</i> (Bunge) A. DC.	붉은병꽃나무	
I	Pinaceae	<i>Abies holophylla</i> Maxim.	전나무	
		<i>Pinus koraiensis</i> Siebold & Zucc.	잣나무	
	Cephalotaxaceae	<i>Cephalotaxus harringtonia</i> (Knight ex Forbes) K. Koch	개비자나무	
	Aristolochiaceae	<i>Aristolochia contorta</i> Bunge	취방울덩굴	
	Ulmaceae	<i>Hemiptelea davidii</i> (Hance) Planch.	시무나무	
		<i>Ulmus parvifolia</i> Jacq.	참느릅나무	
	Fagaceae	<i>Quercus variabilis</i> Blume	굴참나무	
	Betulaceae	<i>Betula schmidtii</i> Regel	박달나무	
	Tiliaceae	<i>Grewia parviflora</i> Bunge	장구밥나무	
		<i>Tilia amurensis</i> Rupr.	피나무	
	Rosaceae	<i>Pyrus ussuriensis</i> Maxim.	산돌배나무	
		<i>Rhodotypos scandens</i> (Thunb.) Makino	병아리꽃나무	
		<i>Spiraea pubescens</i> Turcz.	아구장나무	
	Thymeleaceae	<i>Wikstroemia trichotoma</i> (Thunb.) Makino	산닥나무	
	Celastraceae	<i>Euonymus bungeanus</i> Maxim.	좁참빗살나무	
	Buxaceae	<i>Buxus koreana</i> (Nakai ex Rehder) T.H. Chung, P.S. Toh, D.B. Lee & F.J. Lee	회양목	
		<i>Eleutherococcus sessiliflorus</i> (Rupr. & Maxim.) S.Y. Hu	오갈피나무	
	Araliaceae	<i>Chionanthus retusa</i> Lindl. & Paxton	이팝나무	
		<i>Fraxinus mandshurica</i> Rupr.	들메나무	
	Oleaceae	<i>Ligustrum japonicum</i> Thunb.	광나무	
<i>Syringa patula</i> (Palib.) Nakai		털개회나무		
<i>Weigela praecox</i> (Lemoine) L.H. Bailey		소영도리나무		

plant, is endemic to the Ulleung Island and rarely occurs in the natural habitats (NIBR, 2012a). *Rhododendron aureum* and *Abeliophyllum distichum* (Category II) are threatened in Korea by small population size and by excessive collections for its attractive flowers and fruits, respectively (NIBR, 2012a). The floristic regional indicator species were 62 taxa: 5 taxa of category V, 8 taxa of category IV, 22 taxa of category III, 5 taxa of category II, and 22 taxa of category I (Table 2).

Since the early 1900s, staff members of the Arnold Arboretum have conducted several plant explorations to Asia, including trips to Korea, China, and Japan (Rehder, 1930; 1946; Spongberg and Weaver, 1978; Howard, 1980a; 1980b; Kim *et al.*, 2010; President and Fellows of Harvard College, 2012). Based on the collection databases of the Korean living collections, Arnold Arboretum staff participated in three collecting expeditions to South Korea between 1905 and 1977 (Appendix 1). One of the main objectives of their plant exploration is to broaden the genetic pool of known species to extend cold hardiness, increase vigor, and obtain plants with considerable ornamental value (Wilson, 1919; Wyman, 1956; Spongberg, 1993; Seo *et al.*, 1996; Dosmann, 2007). In this regard, their collection was mainly concentrated in outstanding ornamental woody plants, including Rosaceae and Oleaceae (Appendix 1). On these expeditions, seeds and cuttings of Korean vascular plants were collected and brought to the Arnold Arboretum for propagation, the formation of hybrids, and the improvement through breeding to enhance cold resistance, flower size, and flower color (DeWolf, 1968; Dosmann, 2008). Based on the collection information, 62.5% of Korean living collections in the Arnold Arboretum were introduced from 23 Arboreta of Europe, Asia, and North America (NIBR, 2008). Thus, the history of the Korean living collection in the Arnold Arboretum includes acquisitions through seed exchange programs, as well as international plant exploration.

As the current inventory of Korean living collections in the Arnold Arboretum, these results are expected to contribute towards supporting collection-based research using documented wild sources, as well as understanding the history of Korean plant introduction in the Arnold Arboretum.

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**Appendix 1.** The inventory of 462 voucher specimens of Korean living collection (49 Families, 81 Genera, 153 taxa) in the Arnold arboretum is as follows. Korean endemic species are denoted with an asterisk (\*). In the case of the accessions without collection date, their introduction date into the Arnold Arboretum is denoted with a cross (†).

Family Ginkgoaceae 은행나무과

1. *Ginkgo biloba* L. 은행나무

Examined specimens: Korea. Without specific locality: 28 Dec 1904 † (NIBRVP0000283660, NIBRVP0000283661). Gyeonggi-do: Mt. Youngmun, 22 Feb 1993 (NIBRVP0000283685)

Family Pinaceae 소나무과

2. *Abies holophylla* Maxim. 전나무

Examined specimens: Korea. Gyeonggi-do: Gwangneung, 19 Feb 1971 † (NIBRVP0000283634); Pocheon, 22 Jun 1988 † (NIBRVP0000283649), 1 Jan 1987 (NIBRVP0000283635)

3. \**Abies koreana* E.H. Wilson 구상나무

Examined specimens: Korea. Jeju-do: Mt. Halla, 1 Jul 1917 (NIBRVP0000283647, NIBRVP0000283659), 22 May 1986 † (NIBRVP0000283238, NIBRVP0000283638), 22 Jun 1988 † (NIBRVP0000283646, NIBRVP0000283671)

4. *Abies nephrolepis* (Trautv.) Maxim. 분비나무

Examined specimens: Korea. Without specific locality: 1 Jul 1917 (NIBRVP0000283654)

5. *Picea jezoensis* (Siebold & Zucc.) Carrière 가문비나무

Examined specimens: Korea. Chungcheongnam-do: Cheollipo Arboretum, 22. Mar 1977 † (NIBRVP0000283205, NIBRVP0000283587)

6. *Picea koraiensis* Nakai 종비나무

Examined specimens: North Korea. Without specific locality: 20 Dec 1940 † (NIBRVP0000283648), 21 Mar 1988 † (NIBRVP0000283651). Jagang-do: 15 Apr 1980 † (NIBRVP0000283636)

7. *Pinus densiflora* Siebold & Zucc. 소나무

Examined specimens: Korea. Without specific locality: 1 Jul 1917 (NIBRVP0000283637)

8. *Pinus koraiensis* Siebold & Zucc. 잣나무

Examined specimens: Korea. Without specific locality: 1 Jul 1918 (NIBRVP0000283240), 1 Jan 1989 (NIBRVP0000283400, NIBRVP0000283650, NIBRVP0000283665). Gangwon-do: Mt. Yongmun, 24. Oct 1983 † (NIBRVP0000283239, NIBRVP0000283241)

9. *Tsuga sieboldii* Carrière 솔송나무

Examined specimens: Korea. Gyeongsangbuk-do: Is. Ulleung, 24 Oct 1983 † (NIBRVP0000283521, NIBRVP0000283579)

Family Cupressaceae 측백나무과

10. *Thuja koraiensis* Nakai 눈측백

Examined specimens: Korea. Gangwon-do: Mt. Taebaek, 2 Oct 1989 (NIBRVP0000283206), Mt. Seorak, 29 Mar 1997 † (NIBRVP0000283207)

Family Cephalotaxaceae 개비자나무과

11. *Cephalotaxus harringtonia* (Knight ex Forbes) K. Koch 개비자나무

Examined specimens: Korea. Jeollanam-do: Chunchon, 12 Oct 1977 (NIBRVP0000283237)

Family Magnoliaceae 목련과

12. *Magnolia sieboldii* K. Koch 함박꽃나무

Examined specimens: Korea. Gangwon-do: Chuncheon, Cheongpyeongsa Temple, 25 Jun 1987 † (NIBRVP0000283339)

Family Lauraceae 녹나무과

13. *Lindera erythrocarpa* Makino 비목나무

Examined specimens: Korea. Jeollabuk-do: Mt. Naejang, 11 Jun 1984 † (NIBRVP0000283489, NIBRVP0000283490). Jeollanam-do: Mt. Mudeung, 1 Oct 1978 (NIBRVP0000283330); 11 Jun 1984 † (NIBRVP0000283500)

14. *Lindera glauca* (Siebold & Zucc.) Blume 감태나무

Examined specimens: Korea. Gyeonggi-do: Seoul, Forest Research Institute, 5 Oct 1977 (NIBRVP0000283480, NIBRVP0000283481)

15. *Lindera obtusiloba* Blume 생강나무

Examined specimens: Korea. Gangwon-do: Mt. Seorak, 12 Aug 1982 † (NIBRVP0000283675, NIBRVP0000283676); 24 Oct 1983 † (NIBRVP0000283564, NIBRVP0000283565, NIBRVP0000283664). Gyeonggi-do: Yonhwa-ri, 2 Apr 1986 † (NIBRVP0000283674). Jeollabuk-do: Mt. Daedun, 1 Jul 1985 † (NIBRVP0000283562, NIBRVP0000283563, NIBRVP0000283657, NIBRVP0000283658)

Family Aristolochiaceae 쥐방울덩굴과

16. *Aristolochia contorta* Bunge 쥐방울덩굴

Examined specimens: Korea. Jeju-do: Mt. Halla, 1 Jan 2000 (NIBRVP0000283309)

17. *Aristolochia manshuriensis* Kom. 등취

Examined specimens: Korea. Gyeongsangbuk-do: Mt. Juwang, 22 May 1987 † (NIBRVP0000283251, NIBRVP0000283252, NIBRVP0000283253)

Family Schisandraceae 오미자과

18. *Schisandra chinensis* (Turcz.) Baill. 오미자

Examined specimens: Korea. Gangwon-do: Mt. Chiak, 8 May 1989 † (NIBRVP0000283311)

Family Ranunculaceae 미나리아재비과

19. *Clematis terniflora* DC. 참으아리

Examined specimens: Korea. Gyeonggi-do: Mt. Yongmun, 9 Oct 1977 (NIBRVP0000283314, NIBRVP0000283315)

Family Berberidaceae 매자나무과

20. *Berberis amurensis* Rupr. 매발톱나무

Examined specimens: Korea. Gyeongsangbuk-do: Is. Ulleung, 25 Jun 1987 † (NIBRVP0000283188, NIBRVP0000283189, NIBRVP0000283333, NIBRVP0000283334)

21. \**Berberis amurensis* var. *quelpaertensis* Nakai 섬매발톱나무

Examined specimens: Korea. Gyeonggi-do: Seoul, Forest Research Institute, 5 Oct 1977 (NIBRVP0000283219, NIBRVP0000283260, NIBRVP0000283261, NIBRVP0000283262.). Jeju-do: Mt. Halla, Yeongsil, 24 Oct 1983 † (NIBRVP0000283263)

## Appendix 1. Continued.

22. \**Berberis koreana* Palib. 매자나무  
Examined specimens: Korea. Without specific locality: 1 Jan 1904 (NIBRVP0000283187); 5 Aug 1983 † (NIBRVP0000283186, NIBRVP0000283259)
23. *Berberis poiretii* C. K. Schneid. 당매자나무  
Examined specimens: Korea. Chungcheongnam-do: Cheollipo Arboretum, 2 Oct 1977 (NIBRVP0000283342)
- Family Eucommiaceae 두충과
24. *Eucommia ulmoides* Oliv. 두충  
Examined specimens: Korea. Gyeonggi-do: Seoul, Mt. Gwanak, 2 Jun 1989 † (NIBRVP0000283268)
- Family Ulmaceae 느릅나무과
25. *Hemiptelea davidii* (Hance) Planch. 시무나무  
Examined specimens: Korea. Without specific locality: 1 Dec 1904 † (NIBRVP0000283328, NIBRVP0000283329, NIBRVP0000283470), 30 Jul 1992 † (NIBRVP0000283245, NIBRVP0000283246)
26. *Ulmus davidiana* var. *japonica* (Rehder) Nakai 느릅나무  
Examined specimens: Korea. Gangwon-do: Mt. Gyeong, 31 May 1978 (NIBRVP0000283513, NIBRVP0000283514)
27. *Ulmus laciniata* (Trautv.) Mayr 난타나무  
Examined specimens: Korea. Gangwon-do: Mt. Odae, 14 Jun 2001 † (NIBRVP0000283516)
28. *Ulmus parvifolia* Jacq. 참느릅나무  
Examined specimens: Korea. Chungcheongnam-do: Seosan, 4 Apr 1986 † (NIBRVP0000283231). Gyeongsangbuk-do: Daejeon, 19 Dec 1973 † (NIBRVP0000283202). Jeollanam-do: Suncheon, 12 Oct 1977 (NIBRVP0000283232)
29. *Zelkova serrata* (Thunb.) Makino 느티나무  
Examined specimens: Korea. Gyeonggi-do: Mt. Yongmun, 9 Oct 1977 (NIBRVP0000283497, NIBRVP0000283498, NIBRVP0000283499, NIBRVP0000283501, NIBRVP0000283502, NIBRVP0000283503, NIBRVP0000283504)
- Family Celtidaceae 팽나무과
30. *Celtis aurantiaca* Nakai 산팽나무  
Examined specimens: Korea. Jeollanam-do: Seonamsa Temple, 12 Oct 1977 (NIBRVP0000283509)
31. \**Celtis choseniana* Nakai 검팽나무  
Examined specimens: Korea. Gyeonggi-do: Incheon, Is. Daecheong, 12 Oct 1984 (NIBRVP0000283200); Is. Socheong, 2 Apr 1986 † (NIBRVP0000283198, NIBRVP0000283199)
- Family Moraceae 뽕나무과
32. *Broussonetia kazinoki* Siebold 닥나무  
Examined specimens: Korea. Gyeonggi-do: Incheon, Is. Daecheong, 12 Oct 1984 (NIBRVP0000283471, NIBRVP0000283472)
- Family Fagaceae 참나무과
33. *Quercus dentata* Thunb. 떡갈나무  
Examined specimens: Korea. Chungcheongnam-do: Cheollipo Arboretum, 2 Oct 1977 (NIBRVP0000283543)
34. *Quercus variabilis* Blume 굴참나무  
Examined specimens: Korea. Chungcheongnam-do: Uihang-ri, 2 Oct 1977 (NIBRVP0000283360)
- Family Betulaceae 자작나무과
35. *Alnus x mayrii* Callier ex C.k. Schneid. 잔털오리나무  
Examined specimens: Korea. Gyeonggi-do: Incheon, Is. Daeyeonpyeong, 2 Apr 1986 † (NIBRVP0000283510)
36. *Betula costata* Trautv. 거계수나무  
Examined specimens: Korea. Gangwon-do: Mt. Taebaek, 1 May 1979 † (NIBRVP0000283628, NIBRVP0000283629)
37. *Betula dahurica* Pall. 물박달나무  
Examined specimens: Korea. Gangwon-do: Mt. Seorak, 16 Apr 1968 † (NIBRVP0000283626); between Hongcheon and Chuncheon, 5 Oct 1977 (NIBRVP0000283505). Gyeonggi-do: Gwangneung, 15 Mar 1983 † (NIBRVP0000283655, NIBRVP0000283656); Seoul, Hongneung Arboretum, 5 Oct 1977 (NIBRVP0000283518)
38. *Betula ermanii* Cham. 사스래나무  
Examined specimens: Korea. Gangwon-do: Mt. Taebaek, 15 May 1979 † (NIBRVP0000283653); 15 Oct 1978 (NIBRVP0000283600); 1 Oct 1978 (NIBRVP0000283517)
39. *Betula schmidtii* Regel 박달나무  
Examined specimens: Korea. Gangwon-do: Wonju, Mt. Chiak, 14 Jun 2001 † (NIBRVP0000283492, NIBRVP0000283493, NIBRVP0000283494)
40. *Carpinus laxiflora* (Siebold & Zucc.) Blume 서어나무  
Examined specimens: Korea. Gyeonggi-do: Incheon, Ganghwa-gun, Hwado-myeon, 6 Oct 1984 (NIBRVP0000283589, NIBRVP0000283593); Gwangneung, 15 Mar 1983 † (NIBRVP0000283588). Jeollanam-do: Mt. Jiri, 1 Jul 1985 † (NIBRVP0000283591, NIBRVP0000283592).
41. *Carpinus tschonoskii* Maxim. 개서어나무  
Examined specimens: Korea. Jeollanam-do: Mt. Chogye, near Sonamsa-temple, 24 Oct 1983 † (NIBRVP0000283520)
42. *Carpinus turczaninowii* Hance 소사나무  
Examined specimens: Korea. Chungcheongnam-do: Cheollipo Arboretum, 4 Oct 1977 (NIBRVP0000283594). Gyeonggi-do: Incheon, Ganghwa-gun, Hwado-myeon, 6 Oct 1984 (NIBRVP0000283590)
43. *Corylus sieboldiana* Blume 참개암나무  
Examined specimens: Korea. Gangwon-do: Mt. Seorak Daecheong Peak, 22 Mar 1977 † (NIBRVP0000283596, NIBRVP0000283597)
- Family Theaceae 차나무과
44. \**Stewartia koreana* Nakai ex Rehder 노각나무  
Examined specimens: Korea. Gyeongsangnom-do: Mt. Jiri, 17 Nov 1917 (NIBRVP0000283215, NIBRVP0000283216, NIBRVP0000283554). Jeollanam-do: Mt. Mudeung, 24 Oct 1983 † (NIBRVP0000283217)

## Appendix 1. Continued.

## Family Actinidiaceae 다래나무과

- 45.
- Actinidia arguta*
- (Siebold & Zucc.) Planch. ex Miq. 다래

Examined specimens: Korea. Gyeongsangnam-do: Mt. Gaya, 1 Jul 1985 † (NIBRVP0000283312)

- 46.
- Actinidia polygama*
- (Siebold & Zucc.) Maxim. 개다래

Examined specimens: Korea. Gyeonggi-do: Gwangneung, 15 Mar 1983 † (NIBRVP0000283254, NIBRVP0000283255, NIBRVP0000283256, NIBRVP0000283257, NIBRVP0000283258). Gyeongsangbuk-do: Is. Ulleung, 24 Oct 1983 † (NIBRVP0000283308)

## Family Tiliaceae 피나무과

- 47.
- Grewia parviflora*
- Bunge 장구밥나무

Examined specimens: Korea. Chungcheongnam-do: Cheollipo Arboretum, 1 Jul 1985 † (NIBRVP0000283190, NIBRVP0000283269). Gyeonggi-do: Incheon, Is. Baengnyeong, 2 Apr 1986 † (NIBRVP0000283267); Is. Daechong, 2 Apr 1986 † (NIBRVP0000283270, NIBRVP0000283274)

- 48.
- Tilia amurensis*
- Rupr. 피나무

Examined specimens: Korea. Chungcheongnam-do: Cheollipo Arboretum, 3 Oct 1976 (NIBRVP0000283278)

- 49.
- Tilia koreana*
- Nakai 연밥피나무

Examined specimens: Korea. Jeollanam-do: Mt. Jiri, 4 Jun 1990 † (NIBRVP0000283247, NIBRVP0000283248)

## Family Malvaceae 아욱과

- 50.
- Hibiscus syriacus*
- L. 무궁화

Examined specimens: Korea. Chungcheongbuk-do: 27 Jul 1981 † (NIBRVP0000283461, NIBRVP0000283630); 9 Mar 1953 † (NIBRVP0000283631)

## Family Ericaceae 진달래과

- 51.
- Rhododendron aureum*
- Georgi 노랑만병초

Examined specimens: Korea. Gangwon-do: Mt. Seorak, 17 Apr 1969 † (NIBRVP0000283331)

- 52.
- Rhododendron brachycarpum*
- D. Don ex G. Don 만병초

Examined specimens: Korea. Gangwon-do: Mt. Odae, 22 Sep 1989 (NIBRVP0000283582, NIBRVP0000283583, NIBRVP0000283584). Gyeongsangbuk-do: Is. Ulleung, 21 Oct 1989 (NIBRVP0000283575, NIBRVP0000283576, NIBRVP0000283577, NIBRVP0000283578).

53. \*
- Rhododendron mucronulatum*
- Turcz. 진달래

Examined specimens: Korea. Chungcheongnam-do: Seosan, 8 Jul 1985 † (NIBRVP0000283340). Gyeonggi-do: Seoul, Mt. Gwanak, 5 Jan 1972 † (NIBRVP0000283204), 11 Aug 2000 † (NIBRVP0000283341, NIBRVP0000283571)

- 54.
- Rhododendron schlippenbachii*
- Maxim. 철쭉

Examined specimens: Korea. Without specific locality: 1 Jan 1918 (NIBRVP0000283581). Gyeonggi-do: Seoul, 15 Dec 1905 † (NIBRVP0000283580),

- 55.
- Rhododendron weyrichii*
- Maxim. 참꽃나무

Examined specimens: Korea. Without specific locality: No collection date (NIBRVP0000283572)

- 56.
- Rhododendron yedoense*
- f.
- poukhanense*
- (H. Lévl.) M. Sugim. 산철쭉

Examined specimens: Korea. Jeollanam-do: Mt. Wolchul, 11 Jun 1984 † (NIBRVP0000283208, NIBRVP0000283585)

## Family Styracaceae 매죽나무과

- 57.
- Styrax japonicus*
- Siebold & Zucc. 매죽나무

Examined specimens: Korea. Gangwon-do: Mt. Seorak, 7 Oct 1977 (NIBRVP0000283633)

- 58.
- Styrax obassia*
- Siebold & Zucc. 쪽동백나무

Examined specimens: Korea. Gangwon-do: Mt. Seorak, 17. May. 1977 † (NIBRVP0000283598). Gyeonggi-do: Incheon, Ganghwa-gun, 2 Apr 1986 † (NIBRVP0000283682, NIBRVP0000283683). Gyeongsangbuk-do: Mt. Toham, 24. Oct. 1983 † (NIBRVP0000283669).

## Family Symplocaceae 노린재나무과

- 59.
- Symplocos sawafutagi*
- Nagam. 노린재나무

Examined specimens: Korea. Gyeonggi-do: Gwangneung, 15 Mar 1983 † (NIBRVP0000283672)

- 60.
- Symplocos tanakana*
- Nakai 검노린재

Examined specimens: Korea. Without specific locality: 9 Dec 1968 † (NIBRVP0000283525). Jeollanam-do: Mt. Wolchul, 11 Jun 1984 † (NIBRVP0000283495, NIBRVP0000283496)

## Family Hydrangeaceae 수국과

61. \*
- Philadelphus schrenkii*
- Rupr. 고광나무

Examined specimens: Korea. Without specific locality: No collection date (NIBRVP0000283454). Gangwon-do: Mt. Seorak, 4 Nov 1969 (NIBRVP0000283224, NIBRVP0000283407)

- 62.
- Philadelphus schrenkii*
- var.
- jackii*
- Koehne 털고광나무

Examined specimens: Korea. Gangwon-do: Mt. Gyeong, 8 Oct 1977 (NIBRVP0000283443, NIBRVP0000283444, NIBRVP0000283445). Gyeonggi-do: Seoul, Mt. Bukhan, 20 Jul 1992 † (NIBRVP0000283465, NIBRVP0000283466)

- 63.
- Philadelphus tenuifolius*
- Rupr. ex Maxim. 얇은잎고광나무

Examined specimens: Korea. Jeju-do: Mt. Halla, 1 Jan 1987 (NIBRVP0000283430, NIBRVP0000283431, NIBRVP0000283432). Jeollanam-do: Mt. Mudeung, 22 Jun 1988 † (NIBRVP0000283433, NIBRVP0000283434, NIBRVP0000283435)

## Family Grossulariaceae 까치밥나무과

- 64.
- Ribes fasciculatum*
- var.
- chinense*
- Maxim. 까마귀밥나무

Examined specimens: Korea. Chungcheongnam-do: Cheollipo Arboretum, 2 Oct 1977 (NIBRVP0000283422). Jeollanam-do: Mt. Mudeung, 22 Jun 1988 † (NIBRVP0000283437)

- 65.
- Ribes triste*
- Pall. 눈까치밥나무

Examined specimens: Korea. Gangwon-do: Mt. Seorak, 15 Jun 1994 † (NIBRVP0000283438)

## Family Rosaceae 장미과

- 66.
- Aria alnifolia*
- (Siebold & Zucc.) Decne. 팔매나무

Examined specimens: Korea. Gyeonggi-do: Incheon, Is. Socheong, 4 Apr 1986 † (NIBRVP0000283519)



## Appendix 1. Continued.

67. \**Cotoneaster wilsonii* Nakai 섬개야광나무  
Examined specimens: Korea. Gyeongsangbuk-do: Is. Ulleung, 25 Jun 1987 † (NIBRVP0000283221, NIBRVP0000283387, NIBRVP0000283388)
68. *Malus asiatica* Nakai 능금나무  
Examined specimens: Korea. Without specific locality: 1 Jul 1918 (NIBRVP0000283569, NIBRVP0000283644)
69. *Malus baccata* (L.) Borkh. 야광나무  
Examined specimens: Korea. Jeollanam-do: Mt. Wolchul, 11 Jun 1984 † (NIBRVP0000283697). Gyeonggi-do: Seoul, 20 Aug 1953 † (NIBRVP0000283698); 18 Mar 1987 † (NIBRVP0000283702, NIBRVP0000283704)
70. *Malus baccata* var. *mandshurica* (Maxim.) C. K. Schneid. 털야광나무  
Examined specimens: Korea. Jeollabuk-do: Jeonju, Korea Expressway Corporation Arboretum, 11 Jun 1984 † (NIBRVP0000283452)
71. *Malus micromalus* Makino 개아그배나무  
Examined specimens: Korea. Jeju-do: Mt. Halla, 24 Oct 1983 † (NIBRVP0000283693)
72. *Malus sieboldii* (Regel) Rehder 아그배나무  
Examined specimens: Korea. Jeju-do: Mt. Halla, 22 Jun 1988 † (NIBRVP0000283382, NIBRVP0000283383)
73. *Pourthiaea villosa* (Thunb.) Decne. 윤노리나무  
Examined specimens: Korea. Jeollabuk-do: Buan-gun, Jinseo-myeon, 3 Oct 1985 (NIBRVP0000283368, NIBRVP0000283369, NIBRVP0000283370). Jeollanam-do: Mt. Wolchul, 11 Jun 1984 † (NIBRVP0000283376); Mt. Jiri, 1 Jul 1985 † (NIBRVP0000283377, NIBRVP0000283378, NIBRVP0000283379); Wando-gun Gunoe-myeon, 21 Oct 1985 (NIBRVP0000283371, NIBRVP0000283372)
74. *Pyrus ussuriensis* Maxim. 산돌배나무  
Examined specimens: Korea. Jeollanam-do: Mt. Wolchul, 11 Jun 1984 † (NIBRVP0000283540, NIBRVP0000283541)
75. *Rhodotypos scandens* (Thunb.) Makino 병아리꽃나무  
Examined specimens: Korea. Is. So-chona: 1 Jul 1982 (NIBRVP0000283389)
76. *Rosa rugosa* Thunb. 해당화  
Examined specimens: Korea. Gyeonggi-do: Incheon, Is. Baengnyeong, 17 Oct 1984 (NIBRVP0000283385). Pyeongannam-do: Pyeongyang, Yellow Sea shore, 6 May 1985 † (NIBRVP0000283386)
77. *Sorbaria sorbifolia* var. *stellipila* Maxim. 쉬땅나무  
Examined specimens: Korea. Gangwon-do: Mt. Seorak, 15 Mar 1983 † (NIBRVP0000283361); Mt. Odae, 15 Mar 1983 † (NIBRVP0000283363). Yanggang-do: Gaema Plateau and Mt. Baekdu, 6 May 1985 † (NIBRVP0000283364)
78. *Spiraea fritschiana* C.K. Schneid. 참조팝나무  
Examined specimens: Korea. Without specific locality: 12 Sep 1977 † (NIBRVP0000283381). Gangwon-do: Mt. Seorak, 15 Mar 1983 † (NIBRVP0000283362)
79. *Spiraea prunifolia* var. *simpliciflora* (Nakai) Nakai 조팝나무  
Examined specimens: Korea. Without specific locality: 1 Jan 1905 (NIBRVP0000283307); 19 Jul 1999 † (NIBRVP0000283428); 14. Jun. 2002 † (NIBRVP0000283249, NIBRVP0000283250)
80. *Spiraea pubescens* Turcz. 아구장나무  
Examined specimens: Korea. Gangwon-do: Mt. Seorak, 15 Mar 1983 † (NIBRVP0000283302); 16 Jun 1999 † (NIBRVP0000283303, NIBRVP0000283304, NIBRVP0000283367)
81. *Spiraea salicifolia* L. 꼬리조팝나무  
Examined specimens: Korea. Yanggang-do: Gaema Plateau and Mt. Baekdu, 6 May 1985 † (NIBRVP0000283375)
82. *Spiraea trichocarpa* Nakai 갈기조팝나무  
Examined specimens: Korea. Yanggang-do: Gaema Plateau and Mt. Baekdu, 6 May 1985 † (NIBRVP0000283365, NIBRVP0000283366)
- Family Fabaceae 콩과
83. *Albizia julibrissin* Durazz. 자귀나무  
Examined specimens: Korea. Without specific locality: 1 Jul 1919 (NIBRVP0000283408, NIBRVP0000283570). Gyeonggi-do: Mt. Yongmun, 9 Oct 1977 (NIBRVP0000283338)
84. *Gleditsia japonica* Miq. 주엽나무  
Examined specimens: Korea. Chungcheongnam-do: 4 Oct 1977 (NIBRVP0000283236, NIBRVP0000283678); Cheollipo Arboretum, 1 Jan 1995 (NIBRVP0000283680); Taean, 24 Jun 1996 † (NIBRVP0000283235, NIBRVP0000283679)
85. *Indigofera kirilowii* Maxim. ex Palib. 땅비짜리  
Examined specimens: Korea. Gyeonggi-do: near Seoul, 13 Jul 2004 † (NIBRVP0000283300, NIBRVP0000283301)
86. *Lepedeza maximowiczii* C.K. Schneid. 조록짜리  
Examined specimens: Korea. Without specific locality: 1 Jul 1917 (NIBRVP0000283399)
87. *Maackia amurensis* Rupr. & Maxim. 다릅나무  
Examined specimens: Korea. Gangwon-do: 17 Apr 1978 † (NIBRVP0000283524, NIBRVP0000283686, NIBRVP0000283687)
88. \**Maackia fauriei* (H. Lévl.) Takeda 솔비나무  
Examined specimens: Korea. Jeju-do: Mt. Halla, 9 Jul 1987 † (NIBRVP0000283220)
89. *Sophora japonica* L. 회화나무  
Examined specimens: Korea. Without specific locality: 4 Jun 1920 † (NIBRVP0000283410). Jeollanam-do: Haenam, 24 Oct 1983 † (NIBRVP0000283568, NIBRVP0000283668)
- Family Elaeagnaceae 보리수나무과
90. *Elaeagnus umbellata* Thunb. 보리수나무  
Examined specimens: Korea. Without specific locality: 28 Dec 1904 † (NIBRVP0000283242); 3 Aug 1990 † (NIBRVP0000283601)
- Family Thymelaeaceae 팔꽃나무과
91. *Wikstroemia trichotoma* (Thunb.) Makino 산닥나무  
Examined specimens: Korea. Jeollabuk-do: Jeonju, Korea Expressway Corporation Arboretum, 11 Oct 1977 (NIBRVP0000283295, NIBRVP0000283296)

## Appendix 1. Continued.

## Family Cornaceae 층층나무과

- 92.
- Cornus kousa*
- F. Buerger ex Miq. 산딸나무

Examined specimens: Korea. Jeollabuk-do: Mt. Deogyu, 9 Dec 1968 † (NIBRVP0000283401). Gyeonggi-do: Incheon, Ganghwa, 2 Apr 1986 † (NIBRVP0000283696)

- 93.
- Cornus macrophylla*
- Wall. 곰의말채나무

Examined specimens: Korea. Jeju-do: 16 Jun 1994 † (NIBRVP0000283264, NIBRVP0000283265); Mt. Halla, 1 Oct 1993 (NIBRVP0000283266, NIBRVP0000283530)

- 94.
- Cornus officinalis*
- Siebold & Zucc. 산수유

Examined specimens: Korea. Gyeonggi-do: Seoul, Namdaemun Market, 24 Oct 1984 † (NIBRVP0000283293, NIBRVP0000283526, NIBRVP0000283527, NIBRVP0000283528). Gyeongsangnam-do: Mt. Gaya, 1 Jul 1985 † (NIBRVP0000283529)

- 95.
- Cornus walteri*
- Wangerin 말채나무

Examined specimens: Korea. Chungcheongnam-do: Cheollipo Arboretum, 2 Oct 1977 (NIBRVP0000283423)

## Family Celastraceae 노박덩굴과

- 96.
- Euonymus alatus*
- f.
- apterus*
- (Regel) Rehder. 당회잎나무

Examined specimens: Korea. Pyeongannam-do: Pyeongyang, 1 Dec 1905 † (NIBRVP0000283625)

- 97.
- Euonymus bungeanus*
- Maxim. 쯤참빗살나무

Examined specimens: Korea. Jeollanam-do: Mt. Jiri, 1 Jul 1985 † (NIBRVP0000283632)

- 98.
- Euonymus hamiltonianus*
- Wall. 참빗살나무

Examined specimens: Korea. Chungcheongnam-do: Cheollipo Arboretum, 2 Nov 1984 (NIBRVP0000283695). Jeju-do: Mt. Halla, 24 Oct 1983 † (NIBRVP0000283688)

- 99.
- Tripterygium regelii*
- Sprague & Takeda 미역줄나무

Examined specimens: Korea. Gangwon-do: 6 Oct 1977 (NIBRVP0000283294, NIBRVP0000283357, NIBRVP0000283384). Gyeonggi-do: Seoul, Mt. Bukhan, 30 Dec 1905 † (NIBRVP0000283624); 15 Jun 1995 † (NIBRVP0000283623, NIBRVP0000283627)

## Family Aquifoliaceae 감탕나무과

- 100.
- Ilex crenata*
- Thunb. 팽나무

Examined specimens: Korea. Jeju-do: Mt. Halla, 29 Nov 1988 † (NIBRVP0000283618, NIBRVP0000283619, NIBRVP0000283620)

## Family Buxaceae 회양목과

- 101.
- Buxus koreana*
- (Nakai ex Rehder) T.H. Chung, P.S. Toh, D.B. Lee & F.J. Lee 회양목

Examined specimens: Korea. Without specific locality: 1 Jul 1919 (NIBRVP0000283218)

## Family Euphorbiaceae 대극과

- 102.
- Securinega suffruticosa*
- (Pall.) Rehder 광대싸리

Examined specimens: Korea. Gangwon-do: Mt. Seorak, 7 Oct 1977 (NIBRVP0000283535, NIBRVP0000283536, NIBRVP0000283537, NIBRVP0000283538, NIBRVP0000283539, NIBRVP0000283621, NIBRVP0000283622). Pyeongannam-do: Pyeongyang, 22. Jun. 1999 † (NIBRVP0000283533, NIBRVP0000283534)

## Family Rhamnaceae 갈매나무과

- 103.
- Hovenia dulcis*
- Thunb. 헛개나무

Examined specimens: Korea. Gangwon-do: Mt. Seorak, 17 Oct 1977 (NIBRVP0000283652)

## Family Sapindaceae 무환자나무과

- 104.
- Koelreuteria paniculata*
- Laxm. 모감주나무

Examined specimens: Korea. Academy of Forest Sciences, North Korea, 1 Jul 2001 (NIBRVP0000283352, NIBRVP0000283353). Chungcheongnam-do: Taean, 2 Oct 1977 (NIBRVP0000283316, NIBRVP0000283317, NIBRVP0000283351)

## Family Aceraceae 단풍나무과

- 105.
- Acer barbinerve*
- Maxim. 청시닥나무

Examined specimens: Korea. Gangwon-do: Mt. Seorak, Daecheong Peak, 22 Mar 1977 † (NIBRVP0000283354)

- 106.
- Acer buergerianum*
- Miq. 중국단풍

Examined specimens: Korea. Jeollanam-do: Forest Research station, 18 Oct 1977 (NIBRVP0000283406, NIBRVP0000283560)

- 107.
- Acer mandshuricum*
- Maxim. 북장나무

Examined specimens: Korea. Gangwon-do: Mt. Odae, 8 May 1989 † (NIBRVP0000283403)

- 108.
- Acer palmatum*
- Thunb. 단풍나무

Examined specimens: Korea. Jeollabuk-do: Mt. Naejang, 22 Jun 1988 † (NIBRVP0000283359, NIBRVP0000283395, NIBRVP0000283396)

- 109.
- Acer pseudosieboldianum*
- (Pax) Kom. 당단풍나무

Examined specimens: Korea. Without specific locality: 1 Jan 1919 (NIBRVP0000283213). Gangwon-do: Mt. Seorak, 7 Oct 1977 (NIBRVP0000283356, NIBRVP0000283391, NIBRVP0000283392). Gyeonggi-do: Gwangneung, 21 Feb 1995 † (NIBRVP0000283192). Gyeongsangbuk-do: Is. Ulleung, 24 Oct 1983 (NIBRVP0000283214, NIBRVP0000283355); 25 Jun 1987 (NIBRVP0000283193, NIBRVP0000283211). Jeollabuk-do: Mt. Naejang, 22 Jun 1988 † (NIBRVP0000283212)

- 110.
- Acer tataricum*
- ssp.
- ginnala*
- (Maxim.) Wesm. 신나무

Examined specimens: Korea. Jeollanam-do: Mt. Jiri, 1 Jul 1985 † (NIBRVP0000283402)

- 111.
- Acer tegmentosum*
- Maxim. 산겨릅나무

Examined specimens: Korea. Gangwon-do: Mt. Gyeong, 8 Oct 1977 (NIBRVP0000283398); Mt. Odae, 22 Mar 1977 † (NIBRVP0000283532)

- 112.
- Acer triflorum*
- Kom. 복자기

Examined specimens: Korea. Gangwon-do: Mt. Seorak, 13 Aug 1982 † (NIBRVP0000283463, NIBRVP0000283556). Gyeonggi-do: Gwangneung, 16 Dec 1987 † (NIBRVP0000283358, NIBRVP0000283404)

## Family Anacardiaceae 율나무과

- 113.
- Rhus javanica*
- L. 붉나무

Examined specimens: Korea. Gyeonggi-do: Incheon, Is. Baengnyeong, 4 Apr 1986 † (NIBRVP0000283703)

**Appendix 1.** Continued.

## Family Simaroubaceae 소태나무과

- 114.
- Picrasma quassioides*
- (D. Don) Benn. 소태나무

Examined specimens: Korea. Gyeonggi-do: Seoul, 1 Jan 1947 (NIBRVP0000283346, NIBRVP0000283347, NIBRVP0000283348, NIBRVP0000283349, NIBRVP0000283350)

## Family Rutaceae 운향과

- 115.
- Euodia daniellii*
- Hemsl. 쉬나무

Examined specimens: Korea. Gyeonggi-do: Incheon, Ganghwa, 4 Jun 1990 † (NIBRVP0000283344, NIBRVP0000283345)

- 116.
- Phellodendron amurense*
- Rupr. 황벽나무

Examined specimens: Korea. Gangwon-do: Mt. Gyeong, 1 Jan 1979 † (NIBRVP0000283291). Gyeongsangbuk-do: Is. Ulleung, 25 Jun 1987 † (NIBRVP0000283292)

- 117.
- Zanthoxylum simulans*
- Hance

Examined specimens: Korea. Gyeonggi-do: Seoul, Korea Forest Research Institute, 5 Oct 1977 (NIBRVP0000283343)

## Family Araliaceae 두릅나무과

- 118.
- Aralia elata*
- (Miq.) Seem. 두릅나무

Examined specimens: Korea. Jeollabuk-do: Mt. Naejang, 22 Jun 1988 † (NIBRVP0000283424, NIBRVP0000283425)

- 119.
- Eleutherococcus sessiliflorus*
- (Rupr. & Maxim.) S. Y. Hu 오갈피나무

Examined specimens: Korea. Gangwon-do: Mt. Gyeong, 8 Oct 1977 (NIBRVP0000283233, NIBRVP0000283234). Jeollabuk-do: Iksan, 18 May 1980 † (NIBRVP0000283426)

## Family Verbenaceae 마편초과

- 120.
- Callicarpa dichotoma*
- (Lour.) K. Koch 죽작살나무

Examined specimens: Korea. Chungcheongnam-do: Seosan, 1 Nov 1984 (NIBRVP0000283551, NIBRVP0000283552, NIBRVP0000283553, NIBRVP0000283670). Gangwon-do: Mt. Geumgang, 17 Feb 1990 † (NIBRVP0000283326). Jeollanam-do: Mt. Madung, 22 Jun 1988 † (NIBRVP0000283522)

- 121.
- Callicarpa japonica*
- Thunb. 작살나무

Examined specimens: Korea. Without specific locality: 15 Dec 1905 (NIBRVP0000283297, NIBRVP0000283298). Gyeonggi-do: Incheon, Is. Daecheong, 12 Oct 1984 (NIBRVP0000283305, NIBRVP0000283306, NIBRVP0000283700, NIBRVP0000283701). Jeollanam-do: Mt. Duryun, 25 Oct 2004 † (NIBRVP0000283462, NIBRVP0000283523)

- 122.
- Callicarpa japonica*
- var.
- luxurians*
- Rehder 왕작살나무

Examined specimens: Korea. Gyeongsangbuk-do: Is. Ulleung, 24 Oct 1983 † (NIBRVP0000283689, NIBRVP000028369, NIBRVP0000283691)

- 123.
- Callicarpa mollis*
- Siebold & Zucc. 새비나무

Examined specimens: Korea. Jeollanam-do: Mt. Duryun, 25 Oct 2004 † (NIBRVP0000283299)

- 124.
- Clerodendrum trichotomum*
- Thunb. 누리장나무

Examined specimens: Korea. Gangwon-do: Mt. Seorak, 7 Oct 1977 (NIBRVP0000283409). Jeolla-do: Mt. Jiri, 15 Mar 1983 † (NIBRVP0000283662, NIBRVP0000283663)

## Family Oleaceae 물푸레나무과

125. \*
- Abeliophyllum distichum*
- Nakai 미선나무

Examined specimens: Korea. Without specific locality: No collection date (NIBRVP0000283420); 20 Jun 1951 † (NIBRVP0000283421); 17 Feb 1951 † (NIBRVP0000283203, NIBRVP0000283243, NIBRVP0000283244, NIBRVP0000283419)

- 126.
- Chionanthus retusus*
- Lindl. & Paxton 이팝나무

Examined specimens: Korea. Gyeonggi-do: Seoul, Seodaemun, 22 May 1987 † (NIBRVP0000283566, NIBRVP0000283586). Jeollanam-do: Haenam, 24 Oct 1983 † (NIBRVP0000283486, NIBRVP0000283512, NIBRVP0000283573)

127. \*
- Forsythia koreana*
- (Rehder) Nakai 개나리

Examined specimens: Korea. Gyeonggi-do: Suwon, 11 Feb 1968 † (NIBRVP0000283455)

128. \*
- Forsythia ovata*
- Nakai 만리화

Examined specimens: Korea. Without specific locality: No collection date (NIBRVP0000283222). Gangwon-do: 4 Dec 1986 † (NIBRVP0000283442); Mt. Geumgang, 1 Jul 1918 (NIBRVP0000283230, NIBRVP0000283441)

129. \*
- Fraxinus chiisanensis*
- Nakai 물들메나무

Examined specimens: Korea. Gangwon-do: Mt. Geumgang, 6 May 1985 † (NIBRVP0000283453)

- 130.
- Fraxinus mandshurica*
- Rupr. 들메나무

Examined specimens: Korea. Gangwon-do: Mt. Seorak, 17 May 1977 † (NIBRVP0000283449, NIBRVP0000283450, NIBRVP0000283451)

- 131.
- Fraxinus rhynchophylla*
- Hance 물푸레나무

Examined specimens: Korea. Without specific locality: 28 Dec 1906 † (NIBRVP0000283677); 4 Mar 1982 † (NIBRVP0000283448). Gangwon-do: Mt. Seorak, 17 May 1977 † (NIBRVP0000283515)

132. \*
- Ligustrum foliosum*
- Nakai 섬취뽕나무

Examined specimens: Korea. Gyeonggi-do: Seoul, Forest Research Institute, 17 Oct 1977 † (NIBRVP0000283229, NIBRVP0000283459, NIBRVP0000283460)

- 133.
- Ligustrum japonicum*
- Thunb. 광나무

Examined specimens: Korea. Jeollanam-do: Is. Daeheuksan, 23 Sep 1985 (NIBRVP0000283558, NIBRVP0000283559)

- 134.
- Ligustrum obtusifolium*
- Siebold & Zucc. 쥐뽕나무

Examined specimens: Korea. Gyeonggi-do: Seoul, 21 Sep 1905 † (NIBRVP0000283456, NIBRVP0000283457, NIBRVP0000283458); Forest Research Institute, 5 Oct 1977 (NIBRVP0000283446, NIBRVP0000283447, NIBRVP0000283467, NIBRVP0000283468, NIBRVP0000283469)

- 135.
- Ligustrum ovalifolium*
- Hassk. 왕취뽕나무

Examined specimens: Korea. Jeju-do: Samgumburi, 22 Jun 1988 † (NIBRVP0000283464)

## Appendix 1. Continued.

136. *Ligustrum salicinum* Nakai 버들취뽕나무  
Examined specimens: Korea. Gyeonggi-do: Seoul, Forest Research Institute, 5 Oct 1977 (NIBRVP0000283684)
137. \**Syringa oblata* var. *dilatata* (Nakai) Rehder 수수꽃다리  
Examined specimens: Korea. North Korea. Without specific locality: 1 Jul 2001 (NIBRVP0000283477, NIBRVP0000283487). Gangwon-do: Mt. Geumgang, 23 Feb 1987 † (NIBRVP0000283418). Hamgyeongbuk-do: 1 Jul 1917 (NIBRVP0000283488, NIBRVP0000283417)
138. *Syringa patula* (Palib.) Nakai 털개회나무  
Examined specimens: Korea. Gangwon-do: Mt. Seorak, 13 Aug 1982 † (NIBRVP0000283482)
139. *Syringa reticulata* var. *mandshurica* (Maxim.) H. Hara 개회나무  
Examined specimens: Korea. Without specific locality: 1 Jul 1917 (NIBRVP0000283223)
140. *Syringa wolfii* C.K. Schneid. 꽃개회나무  
Examined specimens: Korea. Yanggang-do: Gaema Plateau and Mt. Baekdu, 6 May 1985 † (NIBRVP0000283436, NIBRVP0000283479)
141. *Syringa wolfii* var. *hirsuta* (C. K. Schneid.) Hatus. 털꽃개회나무  
Examined specimens: Korea. Jella-do: Mt. Jiri, 22 Mar 1977 † (NIBRVP0000283228, NIBRVP0000283440, NIBRVP0000283694)
- Family Scrophulariaceae 현삼과
142. *Paulownia tomentosa* (Thunb.) Steud. 참오동나무  
Examined specimens: Korea. Gangwon-do: Mt. Seorak, 7 Oct 1977 (NIBRVP0000283225, NIBRVP0000283226)
- Family Bignoniaceae 능소화과
143. *Catalpa ovata* G. Don 개오동  
Examined specimens: Korea. Jeollabuk-do: Mt. Moak, 17 May 2002 † (NIBRVP0000283473, NIBRVP0000283474, NIBRVP0000283478)
- Family Diervillaceae 병꽃나무과
144. *Weigela florida* (Bunge) A. DC. 붉은병꽃나무  
Examined specimens: Korea. Without specific locality: 21 Jun 1984 † (NIBRVP0000283318). Gyeonggi-do: Incheon, Is. Daecheong, 10 Aug 1992 † (NIBRVP0000283483). Gangwon-do: Mt. Odae, 16 Jun 1994 † (NIBRVP0000283320, NIBRVP0000283327)
145. *Weigela praecox* (Lemoine) L. H. Bailey 소영도리나무  
Examined specimens: Korea. Gyeonggi-do: Incheon, Is. Baengnyeong, 17 Oct 1984 (NIBRVP0000283699)
146. \**Weigela subsessilis* (Nakai) L. H. Bailey 병꽃나무  
Examined specimens: Korea. Gangwon-do: Mt. Gyeong, 8 Oct 1977 (NIBRVP0000283544, NIBRVP0000283545); 22 Mar 1983 † (NIBRVP0000283546). Gyeonggi-do: Mt. Yongmun, 9 Oct 1977 (NIBRVP0000283321, NIBRVP0000283322, NIBRVP0000283323, NIBRVP0000283210, NIBRVP0000283194, NIBRVP0000283324, NIBRVP0000283325, NIBRVP0000283547). Jeju-do: Mt. Halla, 4 May 1993 † (NIBRVP0000283319); 1 Jan 2000 (NIBRVP0000283191, NIBRVP0000283209, NIBRVP0000283485). Jeollanam-do: Jindo, 5 Sep 1985 (NIBRVP0000283195, NIBRVP0000283196)
- Family Caprifoliaceae 인동과
147. *Lonicera chrysantha* Turcz. ex Ledeb. 각시피불나무  
Examined specimens: Korea. Gangwon-do: Mt. Gyeong, 8 Oct 1977 (NIBRVP0000283271, NIBRVP0000283273)
148. *Lonicera maackii* (Rupr.) Maxim. 괴불나무  
Examined specimens: Korea. Gangwon-do: Mt. Gyeong, 8 Oct 1977 (NIBRVP0000283279, NIBRVP0000283280, NIBRVP0000283281, NIBRVP0000283282, NIBRVP0000283283, NIBRVP0000283284, NIBRVP0000283285, NIBRVP0000283286, NIBRVP0000283287)
149. \**Lonicera subsessilis* Rehder 청괴불나무  
Examined specimens: Korea. Hamgyeongnam-do: 2 Aug 1917 (NIBRVP0000283602, NIBRVP0000283603, NIBRVP0000283604)
- Family Viburnaceae 산분꽃나무과
150. *Viburnum carlesii* Hemsl. 분꽃나무  
Examined specimens: Korea. Chungcheongnam-do: Cheollipo Arboretum, 1 Jan 1977 † (NIBRVP0000283609, NIBRVP0000283610), Taean, 2 Oct 1977 (NIBRVP0000283607, NIBRVP0000283608). Jeollanam-do: Mt. Wolchul, 15 Mar 1983 † (NIBRVP0000283612)
151. *Viburnum dilatatum* Thunb. 가막살나무  
Examined specimens: Korea. Jeollanam-do: Mt. Mudeung, 13 Oct 1977 (NIBRVP0000283413, NIBRVP0000283414, NIBRVP0000283415, NIBRVP0000283416, NIBRVP0000283605, NIBRVP0000283606). Gyeonggi-do: Incheon, Is. Baengnyeong, 19 Oct 1984 (NIBRVP0000283411, NIBRVP0000283412)
152. *Viburnum erosum* Thunb. 덜꿩나무  
Examined specimens: Korea. Without specific locality: no collection date (NIBRVP0000283197). Chungcheongnam-do: Taean, 2 Oct 1977 (NIBRVP0000283611). Gyeonggi-do: Incheon, Is. Daecheong Satandong, 13 Oct 1984 (NIBRVP0000283614); Is. Baengnyeong, 19 Oct 1984 (NIBRVP0000283615, NIBRVP0000283616, NIBRVP0000283617). Jeollanam-do: Mt. Wolchul, 15 Mar 1983 † (NIBRVP0000283613)
153. *Viburnum opulus* var. *calvescens* (Rehder) H. Hara 백당나무  
Examined specimens: Korea. Jeollabuk-do: Buan, 9 Oct 1985 (NIBRVP0000283542, NIBRVP0000283567)
- Family Smilacaceae 청미래덩굴과
154. *Smilax sieboldii* Miq. 청가시덩굴  
Examined specimens: Korea. Without specific locality: 6 Jul 2000 † (NIBRVP0000283310)