

Indigenous genera in North Korean Flora

by

Koh Kyoung Shik¹

特記할 北韓 植物의 屬

高 庚 式¹

Introduction

The purpose of this study is to determine plant genera indigenous to North Korea but not found in South Korea. It is based on the literature and survey reports on Korean flora already published.

T. Nakai in A Synoptical Sketch of Korean Flora (1952), a compendium of his study of Korean flora since 1906, enumerated the Korean flora as comprising 3,176 species and 841 varieties, classified into 968 genera and 223 families. His systematics of Korean vascular plants, however, is controversial, inviting much criticism for having classified the taxon groups in extreme detail by methodology based on gross morphology.

On the other hand, Korean students who have studied plants by biyosystematic, cytotaxonomical, and other current methods, present many differing views and problemes concerning the natural classification of Korean plants.

T. Lee, in Bulletin of the Kwanak Arboretum No. 1 (1976), enumerated indigenous Korean plants as 170 families, 2,898 species, 7 subspecies and 924 varieties.

In this paper a North Korean genus is defined as one whose plants in the Korean peninsula are found only north of the Demilitarized Zone (DMZ), i. e., it is not distributed in areas South of the DMZ.

North Korean Genera

The genera of Korean plants which are not found South of the DMZ, the families to which they belong and the species and varieties belonging to these genera are shown in the following table:

Genera Indigenous to North Korea

Taxon	Family	Genus	Species and Variety
Pteridophyta	—	—	—
Gymnospermae	—	—	—

¹ Present address; 30-18, Jangwi-dong, Seongbuk-ku, Seoul 131, Korea.

Taxon	Family	Genus	Species and Variety
Angiospermae Dicotyledoneae	Salicaceae	<i>Chosenia</i>	<i>C. bracteosa</i> Nakai
	Polygonaceae	<i>Oxyria</i>	<i>O. dygyna</i> Hill.
		<i>Rheum</i>	<i>R. coreanum</i> Nakai
	Chenopodiaceae	<i>Kochia</i>	<i>K. sieversiana</i> Meyer
		<i>Corispermum</i>	<i>C. pubeaulum</i> var. <i>lissocarpum</i> Kitagawa
			<i>C. stauntonii</i> Miq.
	Caryophyllaceae	<i>Honkenya</i>	<i>C. elongatum</i> Blume
			<i>H. peploides</i> var. <i>major</i> Hooker
		<i>Minuartia</i>	<i>M. asiatica</i> var. <i>major</i> Nakai
			<i>M. biflora</i> Schinz. et Thell.
	Ranunculaceae	<i>Callianthemum</i>	<i>M. laricina</i> Nakai
			<i>C. insigne</i> Nakai
		<i>Trollius</i>	<i>T. hondoensis</i> Nakai
			<i>T. japonica</i> Miquel
	Berberidaceae	<i>Leontice</i>	<i>T. macropetalus</i> F. Schmidt
			<i>L. macrorhyncha</i> Moore
	Papaveraceae	<i>Papaver</i>	<i>P. anomalum</i> Fedde.
			<i>P. coreanum</i> Nakai
	Fumariaceae	<i>Adlumia</i>	<i>A. asiatica</i> Ohw
	Cruciferae	<i>Isatis</i>	<i>I. japonica</i> Miquel
	Crassulaceae	<i>Rhodiola</i>	<i>R. elongata</i> Fischer et Meyer
			<i>R. tachiroei</i> Nakai
	Droseraceae	<i>Aldrovanda</i>	<i>A. vesiculosa</i> L.
	Saxifragaceae	<i>Bergenia</i>	<i>B. pacifica</i> Komarov
			<i>Mitella</i>
		<i>M. nuda</i> L.	
	Spiraeaceae	<i>Pentactina</i>	<i>P. rupicola</i> Nakai
	Rosaceae	<i>Chamaerhodos</i>	<i>C. erecta</i> Bunge
			<i>D. octopetala</i> var. <i>asiatica</i> Nakai
	Leguminosae	<i>Dryas</i>	<i>A. pauciflora</i> Kitagawa
			<i>H. hedysaroides</i> Schinzl. et Thell.
		<i>Ambryotropis</i>	<i>H. setigerum</i> Turcz.
<i>H. sibiricum</i> Poir.			
<i>Hedysarum</i>		<i>O. anertii</i> Nakai	
Geraniaceae	<i>Oxytropis</i>	<i>O. koreana</i> Nakai	
		<i>O. strobilacea</i> Bunge	
	<i>Thermopsis</i>	<i>T. lupinoides</i> (L.) Link.	
	<i>Erodium</i>	<i>E. stephanianum</i> Willdenow	
	<i>Diarthron</i>	<i>D. limifolium</i> Turcz.	
Thymeleaceae	<i>Stellerai</i>	<i>S. rosea</i> Nakai	
		<i>A. alpestre</i> Ledebour	
Umbelliferae	<i>Aegopodium</i>	<i>C. virosa</i> L.	
		<i>H. nakaiana</i> Kitagawa	
	<i>Cicuta</i>	<i>A. polifolia</i> L.	
Ericaceae	<i>Homopterix</i>	<i>A. polifolia</i> var. <i>acerosa</i> Hartman	
		<i>Andromeda</i>	

Taxon	Family	Genus	Species and Variety	
Monocotyledoneae		<i>Chamaedaphne</i>	<i>C. calyculata</i> Moench.	
		<i>Ledum</i>	<i>L. palustre</i> var. <i>diversipilosum</i> Nakai <i>L. palustre</i> var. <i>decumbens</i> Hulten <i>L. palustre</i> var. <i>latifolium</i> Michaux <i>L. palustre</i> var. <i>maximum</i> Nakai <i>L. palustre</i> var. <i>minus</i> Nakai <i>L. palustre</i> var. <i>nipponicum</i> Nakai <i>L. palustre</i> var. <i>yessoense</i> Nakai	
		<i>Ohycoccus</i>	<i>O. microcarpus</i> Turcz. <i>O. quadripetalus</i> Gilib.	
		<i>Phyllodoce</i>	<i>P. caerulea</i> Babington	
		<i>Therorhodium</i>	<i>T. redowskianum</i> Hutchinson	
		Pyrolaceae	<i>Moneses</i>	<i>M. uniflora</i> A. Gray
		Primulaceae	<i>Cortusa</i>	<i>C. pekinensis</i> A. Richter
			<i>Glaux</i>	<i>G. maritima</i> var. <i>obtusifolia</i> Fernald
		Polemoniaceae	<i>Naumburgia</i>	<i>N. thyrsiflora</i> Reichend.
			<i>Polemonium</i>	<i>P. racemosum</i> Kitamura <i>P. racemosum</i> var. <i>leucanthum</i> Nakai
		Boraginaceae	<i>Eritrichium</i>	<i>E. pectinatum</i> DC.
			<i>Hackelia</i>	<i>H. deflexa</i> Opiz.
			<i>Lappula</i>	<i>L. deflexa</i> Garcke <i>L. echinata</i> Gilib. <i>L. heteracantha</i> Garcke
			<i>Myosotis</i>	<i>M. sylvatica</i> Hoffm.
		Orobanchaceae	<i>Boschniakia</i>	<i>B. rossica</i> Fedtsch et Flerov
		Lentibulariaceae	<i>Pinguicula</i>	<i>P. vulgaris</i> L.
		Caprifoliaceae	<i>Linnaea</i>	<i>L. borealis</i> L.
		Dipsacaceae	<i>Dipsacus</i>	<i>D. japonicus</i> Miq.
		Compositae	<i>Filifolium</i>	<i>F. sibiricum</i> Kitamura
			<i>Maulgedium</i>	<i>M. sibiricum</i> (L.) Lessing
		Scheuchzeriaceae	<i>Scheuchzeria</i>	<i>S. palustris</i> L.
		Gramineae	<i>Lastagrostis</i>	<i>L. mongolica</i> Trim.
		Haemodoraceae	<i>Anemarrhena</i>	<i>A. asphodeloides</i> Bunge
		Liliaceae	<i>Fritillaria</i>	<i>F. ussuriensis</i> Maxim.
			<i>Lloydia</i>	<i>L. triflora</i> Baker <i>L. serotina</i> Sweet
		Orchidaceae	<i>Coeloglossum</i>	<i>C. viride</i> var. <i>bracteatum</i> Richter <i>C. coreanum</i> Schltr.
			<i>Epipogium</i>	<i>E. aphyllum</i> Swartz
			<i>Listera</i>	<i>L. major</i> Nakai
			<i>Microstylis</i>	<i>M. monophylla</i> (L.) Lindley <i>M. monophylla</i> var. <i>diphylla</i> Nakai

Some Noteworthy plants

1) *Chosenia bracteosa* Nakai

A monotypic species this willow three grows along highland streams in South Hamgyong Province and part of Kangwon Province. Its distribution extends to the central area of Honshu of Japan, Hokkaido, Sakhalin, Kamchatka Peninsula and East Siberia.

Part of Kangwon Province South of the DMZ is a possible area of distribution of this tree due to the anemochory of the disseminule.

2) *Rheum coreanum* Nakai

The only species of this genus autochthonous to Korea, it grows between rocks in the alpine zone on Mt. Paektu, Mt. Kwanmobong and Mt. Chailbong on the Pujon Plateau, in association with such other alpine plants as *Salix rotundifolia* and *Aquilegia flabella*. A typical genus of discontinuous distribution, plants of the same genus are found in Yunnan Province of China and in the Himalayas.

3) *Dryas octopetala* L. var. *asiatica* Nakai

This species, a typical alpine plant and a living relic of the glacial flora of the quaternary diluvium, is believed to have remained in some alpine areas of North Korea and Japan, growing there in isolation after the glaciers withdrew. This species has been differentiated from the mother species growing in high latitude areas of Northern Europe.

4) *Pinguicula vulgaris* L.

Like *Drosera rotundifolia*, this unique species is an insectivorous plant grasping minute insects with the adhesion of the secretion on the mucilaginous leaves. The species is a circumpolar plant of high latitude areas in the Northern Hemisphere. In Korea it has been reported only on Mt. Paektu.

5) *Scheuchzeria palustris* L.

Like *Linnaea borealis*, this is the only species in the genus and is also a circumpolar plant of the Northern Hemisphere, growing in fasciculation in marshes and swamps on the plateaus of North and South Hamgyong Provinces. This is the only North Korean family belonging to the monocotyledons as well as Polemniaceae of dicotyledons which is not found in the flora on the Southern side of the DMZ.

6) *Lasiagrostis mongolica* (Turcz et Trim.) Trim.

This grass is a genus found only in North Korea, although it belongs to the Gramineae having more than 70 genera on the Korean peninsula. It is distributed on Mt. Paektu and on the Kaema plateau. Some students do not recognize the independency of this grass as a genus and treats it in genus *Stipa*.

Discussion and Conclusions

In Pteridophyta and Gymnospermae, there are many elements which cannot be found as species or

varieties in South Korea, such as *Lycopodium selage*, *Cheilanthes kuhni*, *Crystopteris fragilis* and *Picea pungsanensis*. But unlike Angiospermae, there is no indigenous genus growing in North Korea only. Assuming that there are 285 kinds of Filicales in Korea according to M. Park(1961), the Pteridophyte coefficient (Ptp-Q) will be 1.9. This value would be much lower if only North Korean elements were considered.

There are 60 indigenous genera of Angiospermae in North Korea: 51 dicotyledonous and 9 monocotyledonous. In the determination of genus and species there is much difference of opinion depending on methodologies and viewpoints but assuming that there are between 900 and 930 genera in Korea after excluding such questionable genera as *Coreanomecon*, *Shibateranthis*, *Mukudenia*, *Gueldenstaedtia*, *Miricacalia*, *Patis*, etc, exclusively North Korea genera account for only 6.7 per cent of the entire Korean flora.

Ericaceae is the family to which the largest number of North Korean indigenous genera belong. *Andromeda*, *Chamaedaphne*, *Ledum*, *Oxycoccus*, *Phyllodoce*, and *Therorhodion* are circumpolar genera of common distribution in the high latitudes of the Northern Hemisphere. The fourteen North Korean species and varieties belonging to these genera are all alpine plants and are considered living relics or differentiated elements of the glacial flora.

Of the indigenous vascular plants in Korea, only two families are found exclusively in North Korea: Polemoniaceae of dicotyledons and Scheuchzeriaceae of monocotyledons. Each is represented by a single genus *Polemonia* and *Scheuchzeria* respectively.

Of the North Korean genera shown in the table, *Chosenia*, *Eritrichium*, *Glaux* and *Dipsacus* are considered the ones having the highest possibility of being found in area south of the DMZ.

要 約

韓半島에 分布하는 植物中 北韓에만 自生하고 南韓에서 發見할 수 없는 植物에 對해 屬을 基準하여 調査하였다.

韓國產 自生 植物에서 現軍事分界線 以北에 分布하는 屬은 60屬으로 雙子葉類에서 51屬, 單子葉類에서 9屬인데 全體 自生屬에 對한 占有比는 6.7%에 不遇하며 羊齒類와 裸子植物에는 北韓에만 自生하는 屬은 없다.

韓國產 羊齒植物을 朴萬奎(1961)에 따라 285종류로 볼 때, 韓半島의 羊齒係數는 1.2이나, 北韓 식물만으로 解析할 때 Ptp- α 는 더 낮아지리라 여겨진다.

Ericaceae에 屬하는 6屬 14種類는 모두가 北半球 高緯度地域과 共通되는 周極要素로서 가장 많은 北韓屬이 이 科에 屬하고 있다.

꽃고비科 Polemoniaceae와 장치채科 Scheuchzeriaceae는 韓國 自生 植物 중 北韓에서만 볼 수 있는 科로서 各科에 *Polemonia*와 *Scheuchzeria*의 單一屬이 屬한다.

*Chosenia bracteosa*는 北韓分布식물 중 DMZ 以南에서 그 自生이 확인될 수 있는 可能性이 가장 많은 식물로 여겨진다.

Bibliography

- An, H. S. & Lee, C. N. (1963) *Nomina Planarum Koreanum*, Seoul, Korea.
- Chung, T. H. (1965) *Illustrated Encyclopedia of Fauna & Flora of Korea*, Vol. 5: Tracheophyta; Seoul, Korea
- Hutchinson, J. (1959) *Families of Flowering Plants I*, (2nd ed) Oxford Univ. Press.
- Hutchinson, J. (1959) *Families of Flowering Plants II*, (2nd ed) Oxford Univ. Press.
- Kitamura, S. (1964-66) *Coloured Illustrations of Herabaceous Plants of Japan*, Vol. I: Sympetalae; Vol. II: Choripetalae; Vol. III. Monocotyledoneae; Hoikusha, Osaka, Japan.
- Lee, T. B. (1966) *Illustrated Woody Plants of Korea*, Seoul, Korea.
- Lee, T. B. (1976) *Bulletin of the Kwanak Arboretum*, No.1 College of Agriculture, Seoul National University Suwon, Korea.
- Lee, Y. N. (1966) *Manual of the Korean Grass*, Ewha Womans University Press, Seoul, Korea.
- Lee, Y. N. (1969) *Swamp Plants on Mt. Taeam in the Central Part of Korea*, *Journal Korea Plant Taxonomy*, 1: 7-14.
- Lee, W. C. (1975) *The Vegetation of Mt. Taeryong*, *Bulletin Kangwon National University* 309-324.
- Lee, W. C. (1976) *Report on the Vegetation of Mt. Chiak*, *Bull. Kangwon National University* 259-275.
- Nakai, T. (1909) *Flora Koreana, Pars Prima*, *Journal, College of Science Tokyo University*.
- Nakai, T. (1911) *Flora Koreana, Pars Secunda*, *Journal, college of Science Tokyo University*.
- Nakai, T. (1911-35) *Natulae ad Plantae Janponica et Koreae*, *Bot. Mag. Tokyo* Vol. 25-49.
- Nakai, T. (1913) *Terauchia*, a new genus of Liliaceae found in Korea, *Bot. Mag. Tokyo* 27:441-443.
- Nakai, T. (1916) *Report on vegetation Mt. Waigalbong, Northern Corea, Chosen*. *Bull. Extra Number*: 1-39.
- Nakai, T. (1918) *Flora of Mt. Paik-tu-san*.
- Nakai, T. (1918) *Report on the vegetation of Diamond Mountains, Corea*.
- Nakai, T. (1920) *Chosenia*, a new genus of Salicaceae, *Bot. Mag. Tokyo* 34:66-69
- Nakai, T. (1935) *Eastern Asiatic Plants*, Iwanami, Tokyo, Japan.
- Nakai, T. (1952) *A Synoptical Sketch of Korean Flora*, *Bull. Nat. Sci. Mus. (Tokyo)* Vol. 31.
- Ohwi, J. (1953) *Flora of Japan, Shibundo*, Tokyo, Japan.
- Osada, T. (1943) *Flora Hamhungensis*, Fukuoka, Japan.
- Park, M. K. (1949) *An Enumeration of Korean Plants*, Seoul, Korea.
- Park, M. K. (1961) *Flora of Korean Pteridophyta*, Seoul, Korea.
- Park, M. K. (1974) *Keys to the Aerbaseous Plants in Korea (Dicotyledoneae)*, Seoul, Korea.
- Takhtajan, A. (1969) *Flowering Plants: Origin and Dispersal*, (English Edition) Oliver & Boyd, Edinburgh.
- (1969) *Report of the Academic Survey of Mt. Sorak*, Ministry of Education Seoul, Korea 85-145.