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A Plans for Preservation and Distribution of *Ilex cornuta* Community Mt. Keumsung(Naju, Chollanamdo)

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ABSTRACT

These studies had performed a plans for preservation and distribution of *Ilex cornuta* community Mt. Keumsung(35° 05′ N, 126° 04′ E) in Naju, Chonnam from Arpil, 1997 to October by Braun-Blanquet' method(1964). According to the vegetation table of community, the plant communities of the investigated sites were classified *Ilex cornuta-Trachelospermum asiaticum* var. *intermedium* community. Now there still remains the natural environment to be developed in coast district around the riverside distributing *Ilex cornuta* Lindl., so it has scientifically high value to predict change of the ecosystem and preserve the community distribution. It needs plan for preservation

Key words: *Ilex cornuta* Lindl., vegetation table, Mt. Keumsung, community

INTRODUCTION

Keumsung Mountain(450.3m) extends to Naju-city in Chollanamdo, Noan-myun, Dasi-myun, Munpyung-myun and some Hampyung-kun Nasan-myun regions, and lies on midstream and downstream Youngsan river along the Noryung mountain range (latitude 35° 05`, longitude 126° 04`). As one of the 7 noted mountains in the whole country in the Korye dynasty, it has a great value of existence as representative of Naju(Moksa valley) with a view of Mudeung mountain in Kwangju, Wolchul mountains in Youngam as well as Naju, Dasi, Youngam plains on top of the mountain. However, the ecosystem of this region has been indirectly and directly affected by some reasons such as the cityward drifting of population around Keumsung mountain, increase of environmental pollutant because of industrial development, decrease of farm land and forestland because of various development works, deteriorated disruption of natural environment because of rash collection of wildlife, damaged habitat of wild animals and plants. In result, with the rapid decrease in some important animals and plants due to the indifference, it is very anxious about the extinction of precious treasurehouse of creature that grows naturally in Keumsung mountain. Especially without knowing the distribution of *Ilex cornuta* Lindl.(Aquifoliaceae) growing naturally in this region, community is formed, so it needs to be preserved. *Ilex cornuta* as evergreen broad-leaved shrub tree has sharp thorn leaves turned 4-5 saw teeth which can strongly maintain the life while guarding against the approach of wild animals or human being and protecting the body. And it has seeds which kept for garden tree or hedge due to the fact that the seed is ripe enough red in winter and makes scenery beautiful. In foreign country, it is a popular plant that symbolically used in Christmas decorations and cards. This plant is known to distribute over the southern part of China, Cheju islands, and some coast in south region only. According to region, it is also called holangdunggulki in Byunsan region of Chonbuk, holangibaltopnamu in Wando of Chonnam, derekacinabg in Cheju islands. Especially *Ilex cornuta* community in Dochun-ri, Buan-kun, Chonbuk was designated as the 122th natural monument (in 1962) by the value as scientific research materials, considering the north critical region of natural growth(Yim, 1993). Accordingly this important biomass have been strongly affected by continuous development directly or indirectly, and habitat of *Ilex cornuta* in this region will be changed owing to indifference of executive agencies.

This study is to research the distribution of *Ilex*

cornuta growing naturally around this region and show fundamental information for natural environment conservation in order to effectively cope with the expected change and preserve the natural environment, considering the expected change of natural environment due to the increase of industrial facilities around Keumsung mountain and program for land development.

MATERIALS AND METHODS

This study carried out 10 times through the field trip centering around *Ilex cornuta* community natural growth region distributing in Naju Keumsung mountain from April 1997 to October. In this study, plants of vascular plants were collected and classified them based on documents such as Lee(1990), Makino(1979), Ohwi(1984), etc. The research for growth of plants were carried out by selecting the uniform places with conditions of community location and installing the sam-ple region. By the method of Braun-Blanquet(1964), dominance and sociability of all species and each companions are as follows :

(a) Deciding the conditions of location

(b) Recording height and coverage in species and each layer, according to the hierarchy structure of community (tree layer, subtree layer, shrub layer, herb layer)

(c) Measuring quantity and living conditions regarding comparions species of the each hierarchy.

We expressed the quantity as 7 grades of dominance regarding species putting coverage and number of species together, and the living conditions as 5 grades of sociability.

The above research for growth of plants chose the vegetation unit of character species of community according to tabulation technique(Ellenberg, 1956) and made the vegetation table by classification of community.

RESULTS AND DISCUSSION

Ilex cornuta community of research region made out the vegetation table of *Ilex cornuta - Trachelospermum asiaticum* var. *intermedium* community based on the community vegetation table studied in quadrat (Table 1).

Ilex cornuta-Trachelospermum asiaticum var. *intermedium* community

As a community which is identified by *Ilex cornuta* and *Trachelospermum asiaticum* var. *intermedium*, *Ilex cornuta* distributing in research region formed small community around Younggang-dong in Naju-city and Taepyung temple in Noan-myun. vegetation table and vegetation tablecross section of community were shown to Table 1. The structure of this community had 4 layers and the height of tree layer was 8-10m. The mean number of species of community was 17 species such as *Robinia pseudo - acacia, Pinus densiflora, Diospyros kaki, Pinus thunbergii, Albizzia julibrissim* in tree layer, *Quercus serrata, Robinia pseudo - acacia, Quercus acutissima* in subtree layer, *Ilex cornuta, Symplocis chinensis* for. *pilosa Quercus serrata* in shrub layer, *Trachelospermum asiaticum* var. *intermedium, Lygodium japonicum, Carex humilis, Arundinella hirta, Pteridium aquilinum* var. *latiusculum, Oplismenus undolatifolius, Liriope platyphylla* etc. in herb layer. It is so urgent to preserve *Ilex cornuta* community due to the fact that the habitat was destroyed because of the partly progressed artificial interference, and there was the competition between *Ilex cornuta* and a liana such as *Pueraria thunbergiana, Smilax china*, and the competition for habitat between *Ilex cornuta* and naturalized plants such as *Robinia pseudo - acacia, Erigeron annuus, Elymus sibiricus, Oenothera odorata* was made progress. Because *Ilex cornuta* is evergreen broad-leaved shrub tree, tree layer such as *Pinus thunbergii, Robinia pseudo - acacia, Diospyros kaki, Pinus thunbergii* etc. is believed to be an obstacle to growth of *Ilex cornuta*. Therefore it demands an artificial cutting work and raising plants work in order to preserve community. However, *Ilex cornuta* is 5 meters above the sea level in Korea and it grows in bright place of the base of a mountain in lowlands under 100 meters above the sea level centering around the Byunsan peninsula, Wando, Cheju islands, southern coast district. Especially it energetically grows in deep sounding and fertile earth(Forestry administration,

Table 1. Vegetation table of *Ilex cornuta* - *Trachelospermum asiaticum* var. *intermedium* community in the watershed of Youngsan River

Serial No.		1	2	3	4	5
Releve No.		1	2	3	4	5
Altitude(m)		30	50	40	40	100
Slope aspect		SSE	SSE	SSE	SSE	E
Slope degree(°)		25	30	30	35	10
Quadrat size(m^2)		100	100	100	100	100
Height of tree-1 layer(m)		8	10	8	9	8
Coverage of tree-1 layer(%)		60	70	80	90	90
Height of tree-2 layer(m)		-	-	6	7	5
Coverage of tree-2 layer(%)		-	-	40	90	70
Height of shrub layer(m)		2.5	2.5	2.0	2.5	2.0
Coverage of shrub layer(%)		60	40	70	60	80
Height of herb layer(m)		1.0	1.0 1	.2	1.2	1.5
Coverage of herb layer(%)		90	90	100	95	100
Number of species		24	15	27	15	18
Differential species of community						
Ilex cornuta	S:	1.1	2.2	3.3	2.2	3.3
	H:	.	3.3	.	1.1	1.1
Trachelospermum asiaticum var. *intermedium*	H:	3.3	5.5	5.5	1.1	1.1
Companions						
Quercus serrata	T2:	.	.	.	2.2 .	
	S:	3.3	1.1	1.1	3.3	2.2
Lygodium japonicum	H:	2.2	2.2	1.1	1.1	.
Robinia pseudo - acacia	T1:	.	5.5	1.1	2.2	.
	T2:	.	.	2.2	4.4	3.3
	S:	.	.	2.2	1.1	.
Symplocios chinensis for. *pilosa*	S:	2.2	.	.	2.2	3.3
Carex humilis	H:	3.3	.	1.1	2.2	.
Arundinella hirta	H:	2.2	2.2	1.1	.	.
Pteridium aquilinum var. *latiusculum*	H:	1.1 3	.3	.	.	1.1
Pinus densiflora	T1:	1.1	.	.	2.2	4.4
Diospyros kaki	T1:	1.1	2.2 .	2.2	.	
Oplismenus undolatifolius	H:	1.1	.	1.1	.	3.3
Liriope platyphylla	H:	.	.	1.1	1.1	2.2
Pinus thunbergii	T1:	1.1	.	4.4	.	.
Thea sinensis	S:	.	.	3.3	.	2.2
Styrax japonica	S:	1.1	.	.	.	2.2
Quercus acutissima	T2:	.	.	1.1	1.1	.
	H:	.	.	2.2	1.1	.
Albizzia julibrissin	T1:	1.1	1.1	.	.	.
Smilax china	S:	+.2	.	2.2	.	.
Chrytolacca americana	H:	.	.	1.1	+.2	.
Dioscorea tokoro	H:	.	.	+.1	+	.
Asparagus cochinchinensis	H:	1.1	.	+	.	.
Dioscorea battas	H:	1.1	+	.	.	.
Rubus parvifolius	H:	.	+	1.1	.	.
Cudrania tricuspidata	S:	.	.	+	.	1.1
Lindera glauca	S:	.	.	.	1.1	+
Eurya japonica	S:	+	.	.	.	+
Viola mandshurica	H:	r	.	.	. +	
Scutellaria indica	H:	+	.	.	.	+

Occurrence in one releve 1:*Vaccinium oldhami* S-+ *Zanthoxylum piperitum* S-+ *Trachelospermum asiaticum* var. *intermedium* S-2.2 *Rhododendron mucronulatum* S-3.3 2:*Pueraria thunbergiana* S-+.2 *Vitis amurensis* S-+ *Celastrus orbiculatus* S-1.1 *Pyrus pyrifolia* S-+.2 3:*Oxalis corniculata* H-r *Chrysanthemum boreale* H-r *Clematis trichotoma* H-+ *Paederia scandens* H-+ *Rubia akane* H-+ *Vitis thunberii* var. *sinuata* S-+ *Vlmus davidiana* S-1.1 *Quercus aliena* S-+.2 5:*Zenthaxylum schinifolium* S-+

Serial No.; 1,2,3,4: Naju-si Youngkangdong
5: Naju-si Noan-myon Taepyongsa.

1992). Geographically it distributes in China. In Korea, it has kept as the 122th natural monument(designated in December 1962) and distributed in Dochung-ri, Buan of Byunsan peninsula coast in Chollabukdo as natural growth north critical region of *Ilex cornuta*. In this research region, *Ilex cornuta* distributed over small community in Younggang-dong and Taepyung temple in Noan-myun, Naju-city centering around Youngsan river and it needs further study on the ecological characteristics.

PLANS FOR PRESERVATION

The research region was an inland topographically but it was influenced by the oceanic climate by influx of seawater in the early 80ties, before Youngsan river estuary were completed. Now there still remains the natural environment to be developed in coast district around the riverside distributing *Ilex cornuta*, so it has scientifically high value to predict change of the ecosystem and preserve the community distribution. That' s why it needs plan for preservation as follows :

The first, it requires actions for environment improvement such as designation of reservation, setting up hedge, establishment of nature observation region, etc. by setting up the preservation control and sign around distribution region of *Ilex cornuta* community.

The second, in order to minimize damage of *Ilex cornuta* community, it requires that thorough impact statement over various development works being now under way in this region.

The third, proper countermeasure against the change of the ecosystem should be established by examining the invading species and the inflow species into *Ilex cornuta* community distributing in this region.

The fourth, steady control and research activities should be established considering that the distribution of *Ilex cornuta* has an biomass . educational importance of scientific value and diversity.

The fifth, in order to draw the inhabitants' attention to preservation of *Ilex cornuta* community, educational programs should be prepared.

The sixth, to restore the already damaged ecosystem, it requires that a comprehensive scientific research by examining the dynamic condition of habitat of *Ilex cornuta*.

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