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Status of Alien Plant Species in the Seongeup Folk Village in Jeju Island

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Abstract: The study performed flora investigation for 3 times on seasonal basis between April and October 2012 in Seongeup Folk Village, Pyoseon-myeon, Jeju-si designated as No. 188 of the National Major Folk Cultural Asset to analyze distribution and features of alien plants and categorized naturalized plants to calculate the naturalized index and the urbanization index. The tracheophytes of the village is 201 taxa including 80 families, 175 genus, 183 species, 14 varieties, 2 plants and 2 subspecies and the alien plants account for 32.8% with 66 taxa including 37 families, 60 genus, 63 species, 2 varieties and 1 subspecies and the naturalized plants have a total of 27 taxa including 14 families, 24 genus, 26 species and 1 variety. The naturalized index of the 321 taxa of the naturalized plants was 13.4% and the urbanization index was 8.4%. Systematic plans to manage plants in the Seongeup Folk Village are required, as well as gradually eliminate alien and naturalized plants and replace them with indigenes.

Keywords: Alien Plant, Naturalized Index, Urbanization Index, Folk Village

Introduction

The International Union for Conservation of Nature and Natural Resources (IUCN) defined the invasive species as 'species which settles natural or anti-natural ecosystem or habitat, causes changes and threatens native biodiversity' and the naturalized species as 'the alien species which gradually breed, under no direct intervention from human for more than a life cycle or sustain groups despite the intervention'.

Recently, alien plants are frequently flown in due to brisk exchanges among countries or regions and threaten the ecological stability. To this end, the 1992 Convention on the Biodiversity (CBD) stipulated that 'Each member country shall prevent, control or eliminate flowing invasive species which threaten natural ecosystem, habitat or species by possible and proper methods (Article 8.h)'. However, invading alien plants alters structures, functions and physical environment of existing ecosystem and causes to decrease indigenes (Walker and Vitousek, 1991) and the invasion would increase due to climate change and global warming.

The Seongeup Folk Village is a historic place for about 5 centuries with the site of Jeongeui Country since 1423. The village shows slow slopes in the south direction centered from the Mt. Yeongjusan on the north and forms a basin surrounded by Meoreum (137 m) on the south and Mojioreum (300 m) on the west.

The flora studies in the traditional villages designated as cultural properties were performed in Seongju Hangae Village (Shin *et al.,* 2011) and Gyeongju Yangdong Village (Kim *et al.,* 2012) and the study on constructing traditional houses (Park *et al.,* 1999) and the study on the village location and spatial structure on the aspect of landscape (Kim *et al.,* 1998) were performed in the Seongeup village. However, no studies on the flora of the village where Jeju plants, different from inland plants, formed external environment have been performed.

To this end, the purpose of the study is to understand the distribution and the features of alien and naturalized plants after investigating tracheophytes based on the residential areas and streets in the village and use the results as fundamental data to establish management plans for plants.

Material and Method

Study Site

The site, Jeju Seongeup Folk Village (No. 188 of Major Folk Property) is located around Seongeup-ri, Pyoseong-myeon, Seogwipo-si, Jeju. The village was designated as a national cultural property in June 12, 1984 and the area is 794,213.3 m^2.

Method

The study was performed 3 times from April to October, 2012 on houses and roads within the area and the samples were mostly identified at the site and other plants difficult

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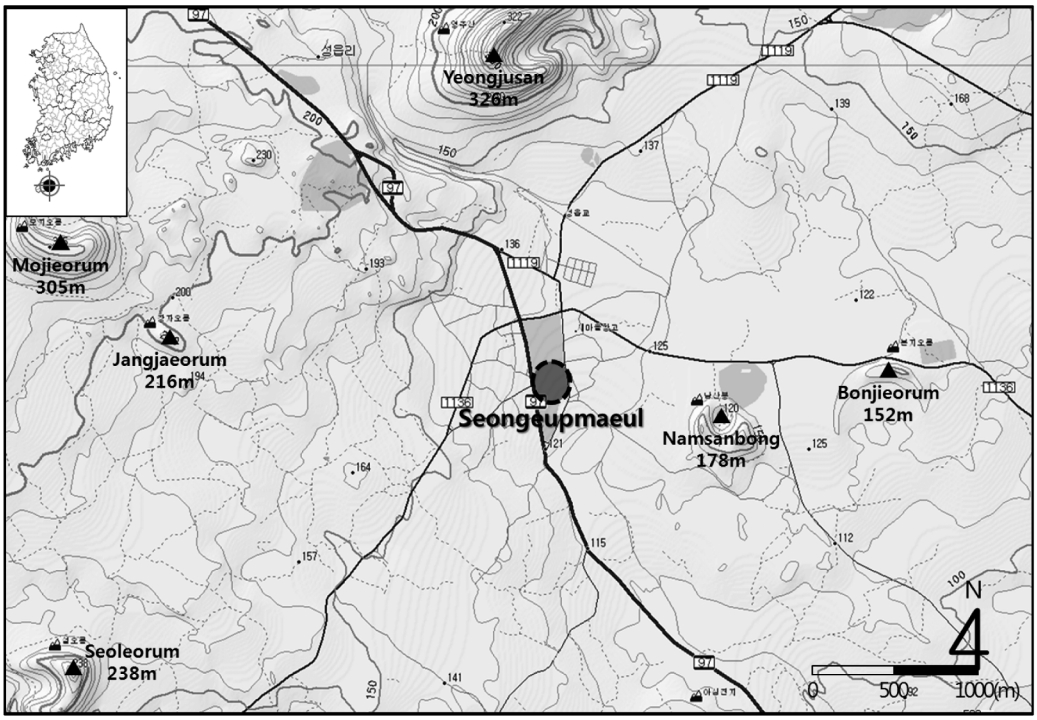

Fig. 1. Map of Seongeup Folk Village in Jeju

for identification were identified based on the Korea Illustrated Plant Book (Lee, 1980; 2003) following the National Arboretum and the Korean Society of Plant Taxonomist, 2007. The alien plants included species with the origins other than Korea and no possibility for natural growth based on the 'Alien Plant Search System' of the National Institute of Environmental Research and the plants for cultivation were excluded from the flora list. The naturalized plants were categorized based on the categorization by Lee *et al* (2011) and the number was 321 species. In addition, the naturalized index (N.I=number of naturalized plant species in the site/number of vascular plant species in the site×100) by Numata and Kotaki (1975) and the urbanization index (U.I=Number of naturalized plant species in the site/ total number of naturalized plant species in the country× 100) by Yim and Jeon (1980) were calculated.

Result and Consideration

Tracheophytes

A total of 201 taxa including 80 families, 175 genus, 183 species, 14 varieties, 2 breeds and 2 subspecies were observed from the vascular plant investigation in the Seongeup Village. Among recorded tracheophytes, the pteridophyta consisted of 8 taxonomical groups including 5 families, 8 genus, 7 species, 1 variety, the gymnosperm consisted of 7 taxonomical groups including 6 families, 7 genus and 7 species, the dicotyledon consisted of 152 taxonomical groups including 57 families, 129 genus, 137 species, 11 varieties, 2 breeds and 2 subspecies and the endogen consisted of 34 taxonomical groups including 12 families, 31 genus, 32 species and 2 varieties (Table 1).

Status of Alien Plants

Flora

The alien plants out of the 201 taxonomical groups in the village accounted for 32.8% with 66 taxonomical groups of 37 families, 60 genus, 63 species, 2 varieties and 1 subspecies. The xylophyte and herbaceous plants had 23 and 43 taxonomical groups, respectively. Among 6 top plants, the chrysanthemum family had 12 taxonomical groups (18.2%), followed by Rosaceous (5 groups, 7.6%), Malvaceae,

Table 1. Taxonomic numbers of vascular plants distributed in Seongeup Folk Village

	Family	Genus	Species	Variety	Forma	Sub species	Total
Pteridophyte	5	8	7	1	-	-	8
Gymnosperm	6	7	7	-	-	-	7
Angiosperm (Dicotyledon)	57	129	137	11	2	2	152
Angiosperm (Monocotyledon)	12	31	32	2	-	-	34
Total	80	175	183	14	2	2	201