

Ecological Studies on the Vegetation of Pyeong-il Island

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平日島 植物相에 關한 生態學의 研究

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ABSTRACT

The vegetation of Pyeongil island was ecologically investigated four times from July, 1979 to May, 1981. The vegetation of this island consisted of 80 families, 172 genera, 173 species, 21 varieties and 4 forma. Evergreen, broad-leaved trees comprised a total of 11 species including *Eurya japonica* Thunb. and *Trachelostermum asiaticum* var. *intermedium* Nakai. The distribution of evergreen, broad-leaved trees was very sparse in this island as a whole. It may also be considered that evergreen, broad-leaved trees, such as *Camellia japonica* Linné (30cm-35cm in diameter at breast height), *Pittosporum fobira* Aiton, *Eurya japonica* Thunb. and *Trachelostermum asiaticum* var. *intermedium* Nakai which might have been dominant species on this island, have undergone artificial succession caused by the planting of *Pinus thunbergii* Parl. dominant species of today. This was due to human interferences for fuel, building, grazing and farmland use. Especially, the vegetation of this island seems to have been severely destroyed by high population density, farming rate and by rapid increase in the area of cultivated land. However, the forest of *Pinus thunbergii* Parl. at Wolsong-ri is worthy of conservation. The five species of seaside plants (*Ixeris dentata*(Thunb.) Nakai, *Rosa rugosa* Thunb., *Carex laticeps* Clarke, *Calystergia soldanella* Reom. et Schult. and *Phellolaterus littoradis*) were distributed in the vicinity of sand beaches leading to Wolsong-ri, Dongbaeg-ri and Sadong-ri.

INTRODUCTION

It is an undeniable fact that the study of island vegetation, inspite of its importance in many aspects, has been nearly neglected. M. Gorman (1979) described in his "Island Ecology" that island vegetation played the leading role in the development of ecology and evolution, and that the composition of its species varied according to the size of the island and the distance between island and inland area and that its uniqueness was also remarkable from a biogeographical point of view.

Miyawaki (1977) indicated that the forest vegetation of Japanese was destroyed by human influences. Oh (1977) pointed out that the destruction of forest vegetation was rapidly enhanced by population increase, shortage of resources, environmental pollution and development of transportation means. In addition to these factors indicated by Oh (1977), Lee (1973, 1979, 1980, 1981) maintained that island vegetation was also influenced by religious practices and occupations of the islanders.

In view of these significant factors, it is felt imperative to investigate the vegetation of our country ecologically which faces the sea on three sides and

has 3418 islands off its south, east and west coasts. However, no one has ever attempted ecological investigations of the island vegetation in our country.

C. Wilfor collected the plants from Geomun island and around the Busan area and for the first time introduced the plant resources of our country in 1858. Plant surveys were carried out by R. Oldhan in 1863 and E. Taqwet *et al.* during 1906~1907. Nakai (1914) and Mori (1928) investigated the vegetation of Jeju (Quelpart) island. Nakai (1919) also investigated the vegetation of Ulnung (Dagelet) island and Chong (1964) reported on the vegetation of Huksan Island. Chung *et al.* (1954, 1971) also reported on the vegetation of islands in the western sea (Soheugsan, Ganghwa). The vegetation of Anmyeon island was reported by Lee (1957), Jeju and Ulnung islands by Lee (1957, 1958), and Jin and Kojae islands by Yang (1958, 1969). However, these researches may not be considered to represent ecological investigations.

Oh (1977) dealt ecologically with plant resources based on "The climate and the vegetation of the Yellow Sea Gaoje islands lying off the Korean west coast". Lee *et al.* (1973) reported their ecological studies of Dolsan island. Lee *et al.* (1979, 1980, 1981) also reported upon the vegetation of 58 inhabited and desert islands of our country. Mac Arthur and Wilson (1967) indicated a significant effect of the diversity of plant species on the island. in 'The Theory of Island Biogeography'.

This study was carried out in order to provide data and materials necessary for the more effective conservation of natural vegetation of these island areas, which were threatened increasingly by severe destruction due to frequent human interference.

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GEOGRAPHICAL CONDITIONS IN GENERAL

Historically, Pyeongil island had belonged to Gwansan-myeon, Jangheung-bu, since the Goryo period until it was put under the jurisdiction of Geomundojin in 1890. Along with the establishment of Wando-gun (country) in 1896, Pyeongil-myeon (township), Saengilmyeon and Gumtang-myeon were established. In 1916 these three myeons (townships) were merged in a single gun, renamed "Gumilmyeon" which it is called today. It consists of 23 natural villages in terms of administrative jurisdiction. Pyeongil island is situated at 126°59' E., 34°10' N., 15.5 km from Wando island. The geological features of this island are similar to those of neighboring Saengil island, consisting mainly of alluvial soil with neutral and basic rocks. The extension of coast line is 51.0 km and most of them are inclined slowly. As table 1 shows, the arable land is 55% of the whole island and there is no ground higher than 200 M.

The climate of this island belongs to the sphere of mild oceanic climate and the lowest temperature throughout the year rarely declines below -4.5°C. The temperature of midsummer, June-July, when plants begin to grow is in the range of 25°C to 34°C and the precipitation (1508.3mm, 1972~1979) is also

Table 1. A comparison of the human geographical outline in Pyeong-il Island (1973*, 1979*)

Years	Village		Area (ha)					Family				Popu- lation	Density of popula- tions
	Legal	Natural	Arable area		Forest	Other	Total	Farmer and fishery	Comm- ercial	Other	Total		
			Field	Rice field									
1979	23	26	1014	390.62	404.48	80.9	1890	1896	9	17	1922	11986	631
1973	14	14	398.0	217.8	1208.4	71.7	1890	1539		204	1843	11565	612

relatively abundant for the growth of plants. This island is affected by the northwest wind in winter and by the southwester in summer.

As is seen from Table 1, 1,922 households or 11,986 persons inhabiting this island are engaged in both farming and fishing; therefore, they are related closely to its natural vegetation.

METHOD OF INVESTIGATION

Twelve areas of Dongbaeg-ri, Sadong-ri, Wolsong-ri, Yonghang-ri, Sinpyeong-ri, Gunghang-ri, Dong-song-ri, Gudong-ri, Cheugchi, Dojang-ri, Whajeun-ri, and Ilgeong-ri, centering around Gammog-ri, the seat of myeon office, were selected for this investigation. We investigated the vegetations in twelve areas and along the coasts of the island. The diameter at breast and the height of old trees were measured. In the case of *Pinus*, 5 plots (10m²) were established in each area and its appearing frequency was also measured. The surveyed courses are as shown in Fig. 1.

FLORA OF PYEONGIL ISLAND

1. List of plants

Plants investigated in this island consisted of 80 families, 172 genera, 173 species, 21 varieties and 4 forma as shown in Table 2.

2. Vegetation of each area

(1) The first area

This area extending from Gammog-ri, to Wolsong-ri along the south coast the seat of myeon office, showed poor vegetation in general. Ten-fifteen year old *Pinus thunbergii* were the dominant species in this area and woody plants, such as *Cryptomeria japonica* D. Don, *Elaeagnus glabra* Thunb. and *Zanthoxylum schinifolium* S. et Z. were occasionally found and observed. *Euphorbia helioscopia* L., *Senecio argunensis* Turcz., *Viola mandshurica* W. Becker, *Erigeron canadensis* Linné, *Capsella brusa-pastoris* (L.) Medicus, *Carex bostry-chostigima* Max., *Agri-monica pilosa* Ledeb., *Petasites japonica* (S. et Z.) Max., *Lonicera maackii* Max., *Cephalonoplos segetum* (Bunge) Kitamura and *Pseudosasa japonica* Makino were distributed as the undergrowth of a forest.

Table 2. The list of the plants from Pyeong-il Island

Family name	Scientific name	Korean name
1. Equisetaceae 속새과	1. <i>Equisetum arvense</i> L.	쇠뜨기
2. Pteridaceae 고사리과	2. <i>Pteridium aquilinum</i> var. <i>latiusculum</i> (Desv.) Underw.	고사리
3. Davalliaceae 넉줄고사리과	3. <i>Davallia mariesii</i> Moore	넉줄고사리
4. Aspidiaceae 먼마과	4. <i>Woodsia manchuriensis</i> Hook.	만주우두물
5. Polypodiaceae 고란초과	5. <i>Lemmaphyllum microphyllum</i> Presl.	콩짜개명굴
6. Ginkgoaceae 은행과	6. <i>Ginkgo biloba</i> L.	은행나무
7. Pinaceae 소나무과	7. <i>Pinus rigida</i> Miller	리기다소나무
	8. <i>Pinus thunbergii</i> Parl.	곰솔
8. Taxodiaceae 낙우송과	9. <i>Cryptomeria japonica</i> D. Don	삼나무
9. Cupressaceae 측백나무과	10. <i>Thuja orientalis</i> L.	측백나무
10. Gramineae 벼과	11. <i>Arundinella hirta</i> (Thunb.) Tanaka	새
	12. <i>Digitaria sanguinalis</i> (L.) Scopoli	바랭이
	13. <i>Hordeum vulgare</i> var. <i>hexastichon</i> Aschers	보리
	14. <i>Miscanthus sinensis</i> var. <i>purpurascens</i> Rendle	억새
	15. <i>Pseudosasa japonica</i> Makino	이대
	16. <i>Sectaria viridis</i> (L.) Beauv.	강아지풀

	17. <i>Spodiopogon cotulifer</i> (Thunb.) Hack.	기름새
	18. <i>Zoysia japonica</i> Steud.	잔디
11. Cyperaceae 사초과	19. <i>Carex bostrychostigima</i> Max.	길뚝사초
	20. <i>Carex laticeps</i> C.B. Clarke	갯보리사초
	21. <i>Cyperus amuricus</i> Max.	방동사니
	22. <i>Fimbristylis pierotii</i> Miq.	틀하늘지기
12. Araceae 천남성과	23. <i>Pinellia ternata</i> (Thunb.) Breit.	반 하
13. Commelinaceae 닭의장풀과	24. <i>Commelina communis</i> L.	닭의장풀
14. Juncaceae 갈대과	25. <i>Juncus krameri</i> Friet et Sav.	비너갈대
15. Liliaceae 백합과	26. <i>Asparagus schoberioides</i> Kunth	비짜루
	27. <i>Hosta longipes</i> (Fr. et Sav.) Matsumura	비비추
	28. <i>Lilium tigrinum</i> Ker-Gawl.	참나리
	29. <i>Liriope platyphylla</i> Wang et Tang	맥문동
	30. <i>Polygonatum odoratum</i> var. <i>pluriflorum</i> Ohwi	둥글레
	31. <i>Smilax china</i> L.	칭미레덩굴
	32. <i>Smilax nipponica</i> Miq.	신밀나물
16. Salicaceae 버드나무과	33. <i>Salix koreensis</i> Andersson	버드나무
17. Betulaceae 자작나무과	34. <i>Alnus japonica</i> Steud.	오리나무
	35. <i>Betula platyphylla</i> var. <i>japonica</i> Hara	자작나무
	36. <i>Carpinus laxiflora</i> Bl.	서나무
18. Fagaceae 참나무과	37. <i>Quercus dentata</i> Thunb.	떡갈나무
	38. <i>Quercus mongolica</i> Fisch.	신갈나무
	39. <i>Quercus variabilis</i> Bl.	굴참나무
19. Ulmaceae 느릅나무과	40. <i>Celtis jessoensis</i> Koidz.	풍계나무
	41. <i>Celtis sinensis</i> Pers.	팽나무
	42. <i>Ulmus davidiana</i> Planch var. <i>japonica</i> Nakai	느릅나무
	43. <i>Zelkova serrata</i> Makino	느티나무
20. Moraceae 뽕나무과	44. <i>Cudrania tricuspidata</i> Bureau	구지뽕나무
	45. <i>Ficus erecta</i> Thunb.	천신파나무
	46. <i>Morus bombycis</i> for. <i>kase</i> Uyeki	가세뽕나무
21. Cannabinaceae 삼 과	47. <i>Humulus japonicus</i> S. et Z.	환삼덩굴
22. Urticaceae 켄기풀과	48. <i>Bohemeria nivea</i> (L.) Gaudichaud.	모시풀
	49. <i>Bohemeria tricuspis</i> Makino	거북꼬리
23. Polygonaceae 마디풀과	50. <i>Persicaria hydropiper</i> (L.) Spach	여 귀
	51. <i>Persicaria perfoliata</i> H. Gross	머느리배꼽
	52. <i>Persicaria senticosa</i> Gross	머느리밀씻개
	53. <i>Polygonum aviculare</i> L.	마디풀
	54. <i>Rumex crispus</i> L.	소리쟁이
24. Chenopodiaceae 명아주과	55. <i>Chenopodium album</i> var. <i>centrorubrum</i> Makino	명아주
	56. <i>Kochia scoparia</i> Schrader	땃싸리
25. Amaranthaceae 비름과	57. <i>Achyranthes japonica</i> (Miq.) Nakai	쇠무름
	58. <i>Amaranthus mangostanus</i> L.	비름
26. Phytolaccaceae 자리공과	59. <i>Phytolacca esculenta</i> V. Houtte	자리공
27. Portulacaceae 쇠비름과	60. <i>Portulaca oleracea</i> L.	쇠비름

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| 28. Caryophyllaceae 석죽과 | 61. <i>Dianthus sinensis</i> L. | 패랭이꽃 |
| | 62. <i>Gypsophila oldhamiana</i> Miq. | 대나물 |
| 29. Ranunculaceae | 63. <i>Clematis appiifolia</i> A.P. DC. | 사위질빵 |
| 미나리아재비과 | 64. <i>Clematis fusca</i> var. <i>violacea</i> Max. | 종덩굴 |
| | 65. <i>Clematis mandshurica</i> Rupr. | 으다리 |
| | 66. <i>Pulsatilla koreana</i> Nakai | 할미꽃 |
| 30. Menispermaceae 방기과 | 67. <i>Cocculus trilobus</i> DC. | 맹맹이덩굴 |
| | 68. <i>Sinomenium acutum</i> Rehder et Wils. | 방기 |
| 31. Lauraceae 녹나무과 | 69. <i>Lindera erythrocarpa</i> Makino | 비목나무 |
| | 70. <i>Lindera obtusiloba</i> Bl. | 생강나무 |
| | 71. <i>Machilus thunbergii</i> S. et Z. | 후박나무 |
| 32. Papaveraceae 양귀비과 | 72. <i>Chelidonium majus</i> var. <i>asiaticum</i> (Hara) Ohwi | 애기뿔꽃 |
| 33. Fumariaceae 현호색과 | 73. <i>Corydalis ochotensis</i> Turcz. var. <i>raddeana</i> Nakai | 가느다란볼주머니 |
| 34. Cruciferae 십자화과 | 74. <i>Capsella bursa-pastoris</i> (L.) Medicus | 냉이 |
| | 75. <i>Dontostemon dentatus</i> (Bunge) Ledeb. | 가느다란대 |
| | 76. <i>Lepidium apetalum</i> Willd. | 다닥냉이 |
| 35. Crassulaceae 돌나물과 | 77. <i>Sedum polystichoides</i> Hemsl. | 바위괘송화 |
| 36. Pittosporaceae 돈나무과 | 78. <i>Pittosporum tobira</i> Aiton | 돈나무 |
| 37. Rosaceae 장미과 | 79. <i>Agrimonia pilosa</i> Ledeb. | 괴실나물 |
| | 80. <i>Potentilla chinensis</i> Seringe | 딱지꽃 |
| | 81. <i>Prunus serrulata</i> var. <i>spontanea</i> (Max.) Wils | 벚나무 |
| | 82. <i>Rosa multiflora</i> Thunb. | 질레꽃 |
| | 83. <i>Rosa rugosa</i> Thunb. | 해당화 |
| | 84. <i>Sanguisorba officinalis</i> L. | 오이풀 |
| | 85. <i>Sorbus alnifolia</i> (S. et Z.) K. Koch. | 팔배나무 |
| | 86. <i>Spirea microgyna</i> Nakai | 줄조팝나무 |
| | 87. <i>Stephanandra incisa</i> Zabel | 국수나무 |
| 38. Leguminosae 콩과 | 88. <i>Albizzia julibrissin</i> Durazzini | 자귀나무 |
| | 89. <i>Amphicarpaea edgeworthii</i> var. <i>trisperma</i> Ohwi | 새콩 |
| | 90. <i>Indigofera kirilowii</i> Max. | 방티짜리 |
| | 91. <i>Lathyrus japonicus</i> Willd. | 갯완두 |
| | 92. <i>Lespedeza bicolor</i> Turcz. | 싸리 |
| | 93. <i>Pueraria ihunbergiana</i> Benthamn | 쥬 |
| | 94. <i>Robina pseudo-acacia</i> L. | 약짜시나무 |
| | 95. <i>Vicia unijuga</i> A. Br. | 나비나물 |
| 39. Rutaceae 운향과 | 96. <i>Poncirus trifoliata</i> Rafinesque | 맹자나무 |
| | 97. <i>Zanthoxylum planispinum</i> S. et Z. | 개산초 |
| | 98. <i>Zanthoxylum schinifolium</i> S. et Z. | 산초나무 |
| 40. Oxalidaceae 켈이밥과 | 99. <i>Oxalis corniculata</i> L. | 켈이밥 |
| 41. Meliaceae 털구슬나무과 | 100. <i>Melia azedarach</i> var. <i>japonica</i> Makino | 털구슬나무 |
| 42. Euphorbiaceae 대극과 | 101. <i>Daphniphyllum macropodum</i> Miq. | 들거리나무 |
| | 102. <i>Euphorbia helioscopia</i> L. | 등머풀 |
| | 103. <i>Euphorbia pekinensis</i> Rupr. | 대극 |
| | 104. <i>Ricinus communis</i> L. | 아주까리 |

43. Anacardiaceae	웃나무과	105. <i>Rhus chinensis</i> Miller	붉나무
		106. <i>Rhus verniciflua</i> Stokes	웃나무
44. Celastraceae	노박덩굴과	107. <i>Celastrus orbiculatus</i> Thunb.	노박덩굴
		108. <i>Euonymus alatus</i> (Thunb.) Sieb.	화살나무
		109. <i>Euonymus alatus</i> for. <i>ciliatodentatus</i> Hiyama	회잎나무
		110. <i>Euonymus japonica</i> Thunb.	사철나무
45. Aceraceae	단풍과	111. <i>Acer palmatum</i> Thunb.	단풍나무
46. Balsaminaceae	봉선화과	112. <i>Impatiens textori</i> Miq.	물봉선
		113. <i>Impatiens textori</i> Miq. for. <i>pallescens</i> Hara	흰물봉선
47. Rhamnaceae	갈매나무과	114. <i>Berchemia berchemiacifolia</i> (Max.) Koidz.	망개나무
		115. <i>Rhamnus davurica</i> Pallas	갈매나무
48. Vitaceae	포도과	116. <i>Ampelopsis brevipedunculata</i> var. <i>heterophylla</i> (Thunb.) Hara	새머루
		117. <i>Parthenocissus tricuspidata</i> (S. et Z.) Planchon.	담쟁이덩굴
		118. <i>Vitis flexuosa</i> Thunb.	새머루
49. Malvaceae	아욱과	119. <i>Hibiscus syriacus</i> L.	무궁화
50. Sterculiaceae	빅오동과	120. <i>Firmiana simplex</i> W.F. Wight	빅오동
51. Theaceae	자나무과	121. <i>Camellia japonica</i> L.	동백나무
		122. <i>Eurya emarginata</i> (Thunb.) Makino	우묵사스레피나무
		123. <i>Eurya japonica</i> Thunb.	사스레피나무
52. Hypericaceae	물레나물과	124. <i>Hypericum ascuron</i> L.	물레나물
		125. <i>Hypericum erectum</i> Thunb.	고추나물
53. Violaceae	재비꽃과	126. <i>Viola mandshurica</i> W. Becker.	재비꽃
54. Elaeagnaceae	보리수나무과	127. <i>Elaeagnus glabra</i> Thunb.	보리수나무
		128. <i>Elaeagnus umbellata</i> Thunb.	보리수나무
55. Alangiaceae	박쥐나무과	129. <i>Alangium platanifolium</i> var. <i>macrophyllum</i> (S. et Z.) Wangerin	박쥐나무
56. Onagraceae	말뺌꽃과	130. <i>Oenothera odorata</i> Jacq.	달맞이꽃
57. Araliaceae	두릅나무과	131. <i>Aralia elata</i> Seemann	두릅나무
		132. <i>Hedera rhombea</i> Bean	송악
		133. <i>Kalopanax pictus</i> (Thunb.) Nakai	읍나무
58. Umbelliferae	산형과	134. <i>Glehnia littoralis</i> Fr. Schm.	갯방풍
		135. <i>Ostericum sieboldii</i> (Miq.) Nakai	뿔미나리
		136. <i>Peucedanum terebinthaceum</i> Fisch	기름나물
		137. <i>Torilis japonica</i> (Houttuyn) DC.	사상자
59. Ericaceae	진달래과	138. <i>Rhododendron mucronulatum</i> Turcz.	진달래
		139. <i>Rhododendron schlippenbachii</i> Max.	철쭉
60. Myrsinaceae	자금우과	140. <i>Ardisia japonica</i> Bl.	자금우
61. Ebenaceae	감나무과	141. <i>Diospyros kaki</i> Thunb.	감나무
62. Symplocaceae	노린재나무과	142. <i>Symplocos chinensis</i> for. <i>pilosa</i> (Nakai) Ohwi	노린재나무
63. Styracaceae	매죽나무과	143. <i>Styrax japonica</i> S. et Z.	매죽나무
64. Oleaceae	물푸레나무과	144. <i>Chionanthus retusa</i> Lindl. et Paxton	이팝나무
		145. <i>Fraxinus rhynchophylla</i> Hance	물푸레나무
65. Primulaceae	앵초과	146. <i>Ligustrum japonicum</i> Thunb.	광나무

	147. <i>Ligustrum obtusifolium</i> S. et Z.	취뽕나무
	148. <i>Lysimachia barystachys</i> Bunge	까지수염
66. Apocynaceae 협죽도과	149. <i>Trachelospermum asiaticum</i> var. <i>intermedium</i> Nakai	마삭솔
67. Convolvulaceae 메꽃과	150. <i>Calystegia japonica</i> (Thunb.) Choisy	메 꽃
	151. <i>Calystegia soldanella</i> Roem. et Schult.	갯메꽃
	152. <i>Cuscuta japonica</i> Choisy	새 삼
68. Verbenaceae 마편초과	153. <i>Callicarpa japonica</i> Thunb.	작살나무
	154. <i>Clerodendron trichotomum</i> Thunb.	누리장나무
	155. <i>Vitex rotundifolia</i> L. fil.	순비기나무
69. Borraginaceae 지치과	156. <i>Cynoglossum asperrimum</i> Nakai	십꽃마리
70. Labiatae 꿀풀과	157. <i>Isodon inflexus</i> (Thunb.) Kudo	산박하
	158. <i>Leonurus sibircus</i> L.	익모초
	195. <i>Prunella vulgaris</i> var. <i>lilacina</i> Nakai	꿀 풀
71. Solanaceae 가지과	160. <i>Lycium chinense</i> Miller	구기자나무
	161. <i>Datura stramonium</i> L.	독말풀
	162. <i>Physalis alkekengi</i> var. <i>francheti</i> Hort	과 리
	163. <i>Solanum nigrum</i> L.	까마중
72. Scrophulariaceae 현삼과	164. <i>Melampyrum ciliare</i> Miq.	머느리밥풀
73. Bignoniaceae 능소화과	165. <i>Catalpa ovata</i> G. Don	개오동
74. Plantaginaceae 절경이과	166. <i>Plantago asiatica</i> L.	절경이
75. Rubiaceae 쪽두서니과	167. <i>Calium tracypermum</i> A. Gray	내잎갈퀴
	168. <i>Damnacanthus indicus</i> Gaert.	호자나무
	169. <i>Paederia scandens</i> (Lour.) Merr.	계요동
	170. <i>Rubia akane</i> Nakai	쪽두서니
76. Caprifoliaceae 인동과	171. <i>Lonicera japonica</i> Thunb.	인동덩굴
	172. <i>Lonicera maackii</i> Max.	괴불나무
	173. <i>Sambucus williamsii</i> var. <i>coreana</i> Nakai	팍총나무
	174. <i>Viburnum erosum</i> Thunb.	덜꿩나무
	175. <i>Weigela florida</i> (Bunge) A. DC.	붉은병꽃나무
77. Valerianaceae 마타리과	176. <i>Patrinia scabiosaefolia</i> Fisch.	마타리
	177. <i>Patrinia villosa</i> (Thunb.) Juss.	뚝 갈
78. Cucurbitaceae 박과	178. <i>Trichosanthes kirilowii</i> Max.	하늘타리
79. Campanulaceae 초롱꽃과	179. <i>Adenophore radiatifolia</i> Nakai	충충잔대
	180. <i>Platycodon grandiflorum</i> (Jacq.) A. DC.	도라지
80. Compositae 국화과	181. <i>Artemisia keiskeana</i> Miq.	맑은대쑥
	182. <i>Aster fastigiatus</i> Fischer	웅긋나물
	183. <i>Atractylodes japonica</i> Koidz.	삼 주
	184. <i>Bidens bipinnata</i> L.	도깨비바늘
	185. <i>Cacalia auriculata</i> var. <i>matsumurana</i> Nakai	박취나물
	186. <i>Cephalonoplos segetum</i> (Bunge) Kitamura	조뱅이
	187. <i>Cirsium japonicum</i> var. <i>ussuriens.</i> Kitamura	영경취
	188. <i>Erigeron canadensis</i> L.	망 초
	189. <i>Ixeris dentata</i> (Thunb.) Nakai	씀바귀
	190. <i>Lactuca raddeana</i> Max.	산씀바귀

191. <i>Petasites japonica</i> (S. et Z.) Max.	머 위
192. <i>Senecio argunensis</i> Turcz.	쑥방망이
193. <i>Sigesbeckia glabrescens</i> Makino	진득찰
194. <i>Synelleis palmatas</i> (Thunb.) Max.	우산나물
195. <i>Taraxacum platycarpum</i> H. Dahlst.	민들레
196. <i>Xanthium strumarium</i> L.	도꼬마리
197. <i>Youngia sonchifolia</i> Max.	고들빼기
198. <i>Zinnia elegans</i> Jacq.	백일홍

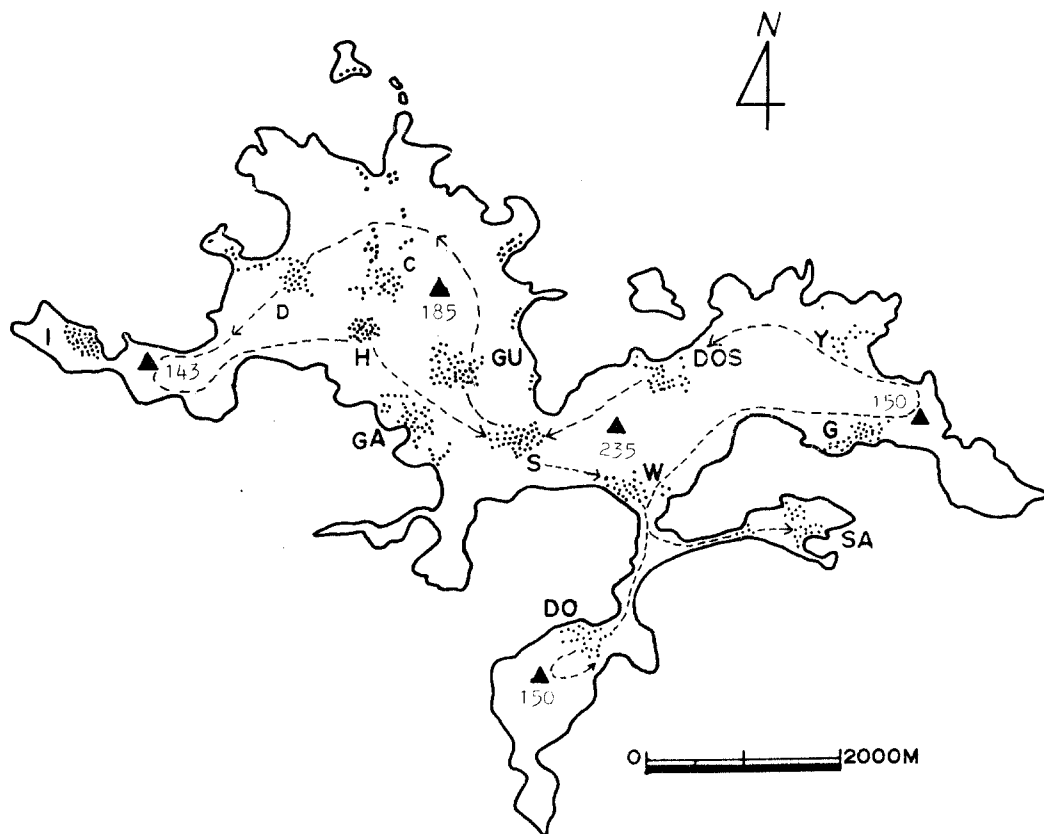


Fig. 1. The map of Pyeong-il Island and the surveyed courses(.....→).

D: Dojang-ri, I: Iljeong-ri, C: Cheugchi, H: Whajeon-ri, W: Wolsong-ri, GA: Gammog-ri, GU: Gudong-ri, S: Sinpyeong-ri, DOS: Dongsong-ri, DO: Dongbaeg-ri, SA: Sandong-ri, G: Gunghang-ri, Y: Yonghang-ri

Evergreen broad-leaved trees were very sparsely distributed and *Zanthoxylum planispinum* S. et Z., *Euonymus japonica* Thunb., *Camellia japonica* Linné, *Eurya japonica* Thunb. and *Hedera rhombea* Bean were infrequently observed.

(2) The second area

This area covers a region extending to Dongbaeg-ri along the forest of *Pinus thunbergii* which form a coastal shelter belt of Wolsong-ri. There were encountered at the seaside of this area the communities of *Rosa rugosa* Thunb., *Vitex rotundifolia* Linné. fil.

and *Carex laticeps* C.B. Clarke. In addition, woody plants, such as *Rosa multiflora* Thunb., *Robinia pseudo-acacia* Linné, *Alnus japonica* Steudal, *Poncirus trifoliata* Rafinesque, *Elaeagnus glabra* Thunb. and *Rhododendron mucronulatum* Turcz. were distributed around the coast with herbaceous plants, such as *Capsella brusa-pastoris* (L.) Medicus, *Cephalonoplos segetum* (Bunge) Kitamura, *Erigeron canadensis* L. and *Euphorbia helioscopia* L.

As shown in Fig. 2 it was especially significant to encounter about 10 stumps of big *Camellia japonica* Linné within the fence of a shrine and the biggest of them was 30~35cm in diameter at breast height.

According to the inhabitants of this area, *Camellia japonica* Linné was in abundance about 15 years ago at Dongbaeg-ri, but now only about 10 stumps remained with a similar number of *Robinia pseudo-acacia* Linné and *Poncirus trifoliata* Rafinesque around the wall of a shrine was cutted by the neighboring inhabitants for fuel. Evergreen broad-leaved trees were also sparsely distributed in this area while *Trachelospermum asiaticum* var. *intermedium* Nakai and *Damnacanthus indicus* Gaer T. were sighted. The distribution of *Pinus thunbergii* parl. was also extremely sparse.

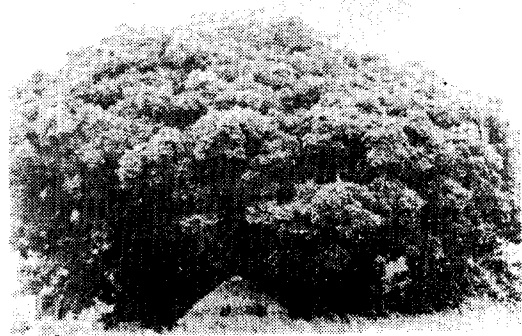


Fig. 2. The aspect of the vegetation at Dongbaeg-ri

(3) The third area

This area is located about 2 km north of Dongbaeg-ri and characterized by its rocky geological features compared with other areas. There could not be found such seaside plants on its 500m long sandy beach as observed on the coast of Dongbaeg-ri.

Woody plants of this area consisted mainly of *Ficus erecta* Thunb. var. *sieboldii* King, *Rhododendron mucronulatum* Turcz. and *Elaeagnus glabra* Thunb., *Pinus thunbergii* Parl. of more than 10-years old was infrequently sighted and such evergreen broad-leaved tree as *Euonymus japonica* Thunb. were distributed. In addition, this area was dotted with herbaceous plants, such as *Prunella vulgaris* var. *lilacina* Nakai, *Synnellesis palmata* (Thunb.) Max., *Pulsatilla koreana* Nakai, *Smilax nipponica* Miq., *Sanguisorba officinalis* Linné, *Erigeron canadensis* Linné, *Capsella brusa-pastoris* (L.) Medicus and *Carex bostrychostigima* Max..

(4) The fourth area

This area includes two villages, Gunghang-ri and Yonghang-ri. Though the vegetation of this area was the most diversified in Pyeongil island, it still remained in diminutive condition due to reckless deforestation.

Woody plants observed in this area were *Betula platyphylla* var. *japonica* Hara, *Carpinus laxiflora* Bl., *Rhododendron mucronulatum* Turcz., *Alnus japonica* Steud., *Quercus dentata* Thunb. and *Quercus variabilis* Bl. Herbaceous plants sighted were *Atractylodes japonica* Koidz., *Melampyrum ciliare* Miq., *Lilium tigrinum* Ker-Gawl, *Cacalia auriculata* var. *matsumurana* Nak., *Sanguisorba officinalis* Linné, *Lysimachia barystachys* Bunge, *Syneilesis palmata* (Thunb.) Max. and *Erigeron canadensis* Linné.

Evergreen broad-leaved trees distributed in this area were *Elaeagnus glabra* Thunb., *Trachelospermum asiaticum* var. *intermedium* Nakai, *Eurya emarginata* (Thunb.) Makino, *Hedera rhombica* Bean and *Pittosporum tobira* Aiton. A windbreak forest with trees of 25~30cm in diameter at breast height and 10~15m in tree height, were observed at the seaside.

According to the inhabitants of this area, the windbreak forest was formed by *Pinus thunbergii* Parl. around Yonghang-ri about 15 years ago, but now they have only about 100 stumps left because of random cutting by the inhabitants for fuel.

(5) The fifth area

This area covers a region reaching Dongsong-ri and Mt. Mangsan through the north coast of Yong-

hang-ri. The vegetation of this area was similar to that of the area between Yonghang-ri and Wolsong-ri. As Fig. 3 shows, it is noticeable that *Celtis sinensis* Pers., 35~50cm in diameter at breast height with 15~20m in tree height, formed a community at the seaside of Dongsong-ri village. Plants distributed in this area were *Celtis sinensis* Pers., *Commelina communis* Linné, *Rosa multiflora* Thunb., *Pittosporum fobira* Aiton, *Poncirus trifoliata* Rafinesque and *Cryptomeria japonica* D. Don.



Fig. 3. The aspect of the vegetation at Dongsong-ri.

(6) The sixth area

This area connects Dongsong-ri with Gammog-ri through Sinpyeong-ri. As in the case of other areas of the island, the vegetation of this area was in unexceptionally poor condition. As shown in Fig. 4 however, there could be observed the mixed distribution of *Camellia japonica* Linné, *Ficus erecta* Thunb., *Elacagnus glabra* Thunb. and *Celtis sinensis* Pers. on hilly districts 80m above the sea between Dongsong-ri and Sinpyeong-ri. Especially *Celtis*



Fig. 4. The aspect of the vegetation at Synpyeong-ri.

sinensis Pers. of this area, 112cm in diameter at breast height with 15m in tree height, was designated and conserved as a tree-monument of Gumil-myeon. In addition to these plants, *Aralia elata* Seemann, *Euonymus alatus* for. *ciliato-dentatus* Hiyama, *Patrinia scabiosaefolia* Fisch, *Patrinia villosa* (Thunb.) Juss, *Plantago asiatica* Linné and *Peucedanum terbinthaceum* Fisch were also sighted.

According to the village elders, *Camellia japonica* Linné and *Celtis sinensis* Pers. once formed communities in this area for several years after the end of World War II, but now they were in danger of extinction due to reckless deforestation.

(7) The seventh area

This area starts from Sinpyeong-ri and reaches Sinpyong-ri through Gudong-ri, 185m upland, Cheogsa-ri, Dojang-ri, 143m upland of Iljeong-ri and Hwa-jeon-ri. Though *Pinus thunbergii* Parl. predominated in this area, the condition of its growth was very poor. Only a few stumps of *Euonymus japonica* Thunb. and *Camellia japonica* Linné could be sighted in some household yards of the village. The vegetation of this area was also severely destroyed due to human interferences, almost similar to that of the preceding areas.

3. Distribution of seaside plants (Fig. 5)

The area where seaside plants in this island were distributed most abundantly was the vicinity of sandy beaches extending to Wolsong-ri, Dongbaeg-ri and Sadong-ri. *Vitex rotundifolia* Linné fil., *Rosa rugosa* Thunb., *Carex laticeps* Clarke, *Calystegia soldanella* Reom. et Schult. and *Glehnia littoralis*

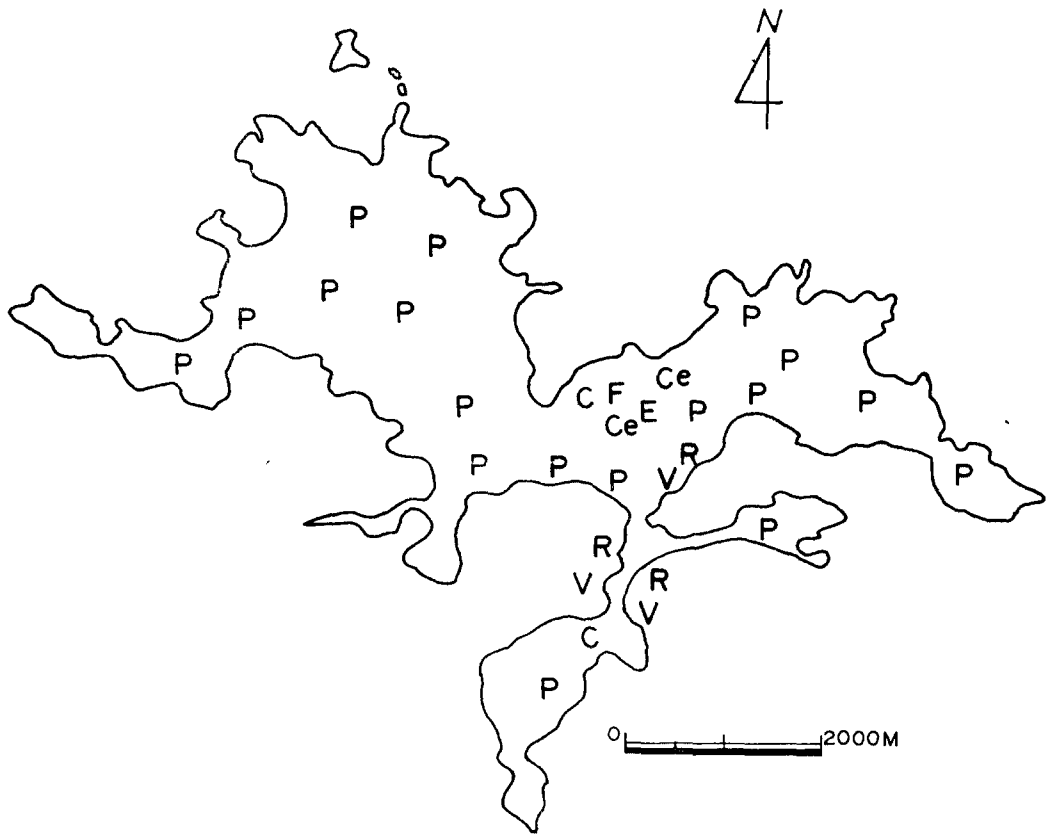


Fig. 5. Distribution of *Pinus thunbergii* (P), *Ficus erecta* (F), *Elaeagnus glabra* (E), *Celtis sinensis* (Ce), *Rosa rugosa* (R), *Vitex rotundifolia* (V), and *Camellia japonica* (C) in Pyeongil island.

Fr. Schm formed the communities of seaside plants. The distribution of these seaside plants was relatively diversified compared with that of the neighboring Saengil island.

4. Distribution of road plants

Plantago asiatica Linné, *Chenopodium album* var. *centrorubrum* Makino, *Rumex crispus* Linné, *Capsella brusa-pastoris* (L.) Medicus, *Erigeron annuus*, *Taraxacum platycarpum*, *Artemisia asiatica*, *Oenothera odorata* Jacq. and *Ixeris dentata* (Thunb.) Nakai could be sighted in the vicinity of villages. However, *Portulaca oleracea* Linné, *Setaria viridis* (L.) Beauv., *Digitaria sanguinalis* (L.) Scopoli, *Achyranthes japonica* (Miq.) Nakai, *Solanum nigrum* Linné and *Amaranthus mangostanus* Linné were not encountered at all.

5. Distribution of evergreen broad-leaved trees

5 plots (10m²) were established in each area and the appearing frequency of *Pinus* in these plots was measured.

It was almost impossible to confirm the distribution of *Pinus densiflora* and *Pinus rigida*. As shown in Fig. 5, *Pinus thunbergii* Parl. (10~20 years old) was considered to be the dominant species of the investigated island, but its growth was in poor condition. As Fig. 6 shows, however, the excellent forest of *Pinus thunbergii* Parl. at the seaside of Wolsong-ri is considered worth of conservation.

The seaside of Wolsong-ri at about 30min. distance on foot from the seat of Gumil-myeon office was covered with silvery sand and stretched out more than 4km, literally forming a beautiful sandy beach. More

than 1,000 stumps of *Pinus thunbergii* Parl. 30~40cm in diameter at breast height, formed a shelter belt.

6. Distribution and conservation of evergreen broad-leaved trees

The distribution of evergreen broad-leaved trees on this island is as shown in Table 3. *Eurya japonica* Thunb., *Trachelosternum asiaticum* var. *intermedium* Nakai and 11 other species of evergreen broad-leaved trees were sparsely sighted. They did not form a community and still remained short and small in growth.

According to the village elders, *Camellia japonica* Linné once formed its community centering around Sinpyeong-ri and Dongbaeg-ri, but now only a few could be found due to reckless deforestation for fuel. They further explained that the geographical name of this area 'Dongbaeg-ri' (*Camellia* Village) is closely related to the wide distribution of this tree. The vegetation of this island was very sparse as a whole compared with neighboring Saengil island' where 24 species of evergreen broad-leaved trees were distributed.

Table 3. The distribution of evergreen broad-leaved trees at 6 sites in Pyeong-il Island

Scientific name	Korean name	Surveying courses					
		1	2	3	4	5	6
<i>Zanthoxylum planispinum</i> Sieb. et Zucc.	개 산 초	○	○			○	
<i>Euonymus japonicus</i> Thunb.	사 철 나 무	○		○			
<i>Camellia japonica</i> Thunb.	동 백 나 무	○		○			○
<i>Eurya japonica</i> Linné	사스헤피나무	○			○	○	
<i>Hedera rhombe</i> Sieb. at Zucc.	송 약	○			○		
<i>Vitex rotundifolia</i> Linné	순 비 기	○	○	○			
<i>Elaeagnus glabra</i> Sieb. et Zucc.	보 리 장 나 무		○	○	○		
<i>Trachelosternum asiaticum</i> var. <i>intermedium</i> Nakai	마 삭 줄		○		○		
<i>Mitchella undulata</i> Sieb. et Zucc.	호 자 덩 굴		○				
<i>Pittosporum tobira</i> Aiton	돈 나 무				○	○	
<i>Ficus erecta</i> Thunb.	천 선 과 나 무						○

1. Gammog-Ri↔Wolsong-Ri, 2. Wolsong-Ri↔Dongbaeg-Ri, 3. Sadong-Ri, 4. Wolsong-Ri↔Yonghang-Ri, 5. Dongsong-Ri↔Yonghang-Ri, 6. Dongsong-Ri↔Gammog-Ri

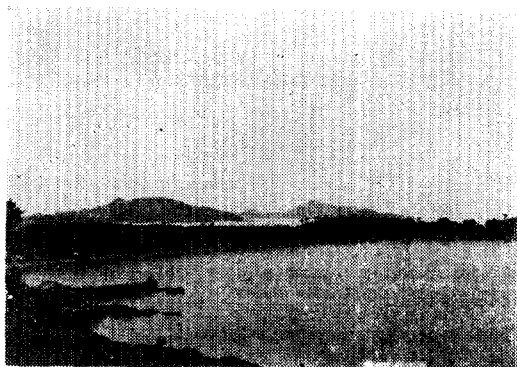


Fig. 6. The aspect of the *Pinus thunbergii* community at Wolsong-Ri.

ECOLOGICAL CONSIDERATION OF PYEONGIL ISLAND VEGETATION

As seen from Table 4, the vegetation of this island is very poor compared with that of other islands in the southwestern sea and even in the state of complete destruction in a strict sense. In the case of neighboring Saengil island, a total of 242 plant species was distributed while only 186 species were distributed in the investigated island. Pyeongil island also showed extremely poor condition in the distribution of evergreen broad-leaved trees with only 11

Table 4. Comparison for the species number of evergreen broad-leaved trees and other seed plants on Pyeong-il Island with other island

	Bi.	Ui.	Ho.	Wa.	Ji.	Bo.	Do.	No.	Ch.	Sa.	Py.
Evergreen broad-leaved trees	9	33	42	55	30	64	24	7	11	25	12
Other seed plants	148	197	231	278	213	247	164	101	119	242	189

Bi.: Bigeum-do, Ho.: Hong-do, Wa.: Wan-do, Ji.: Jin-do, Bo.: Bogil do, Do.: Dolsan-do, No.: Nohwa do, Ch.: Chungsan-do, Sa.: Saeng-il-do, Py.: Pyeong-il-do.

species, less than half of the 24 species distributed in Saengil island.

As indicated by Lee (1980, 1981) and Miyawaki (1977), the destruction of vegetation is largely attributed to the conversion of forests and fields into farmlands. This can be fully justified by the fact that, as shown in Table 1, the area of forests and fields decreased from 1208.4 ha in 1973 to 404.48 ha in 1977 while the area of cultivated land increased from 615.8 ha (paddy fields 217.8 ha, dry fields 398.0 ha) in 1973 to 1404.62 ha (paddy fields 390.62 ha, dry fields 1014 ha) in 1977. Also the use of trees for fuel and building over a long period of time may also be considered to have resulted in the destruction of vegetation. In addition, it is not difficult to presume that *Camellia japonica* and evergreen broad-leaved trees might have been taken out of the island to inland areas by taking advantage of the convenient marine transportation between Pyeongil island and inland areas, thereby resulted in the destruction of the island's vegetation. However, judging from the fact that vegetation around shrines in Dong baeg-ri and ancestral tombs in Sinpyeong-ri are well conserved, religious practices may be considered to have a significant effect on the conservation of vegetation. *Camellia japonica* of 30~35cm in diameter at breast height is distributed in the investigated islands, and therefore it is believed that evergreen broad-leaved trees once predominated in this island in the past. And also the culture of 10~20 year old *Pinus thunbergii* parl. is suggested that succession had taken place through human interference.

要 約

本 研 究 은 1979年 6月 부터 1981年 5月 까지 4回(10日)

에 걸쳐 平日島의 植生을 生態學的으로 調査한 것으로 本島의 植物은 總 80科 172屬 173種 21變種 4品種, 199種이었으며 常綠闊葉樹는 사스래피나무, 마삭줄을 비롯하여 總 11種으로 該 全體의 常綠闊葉樹의 分布狀態는 極히 貧弱하였다. 또한 本島도 동백나무(흉고 직경 30cm~35cm), 둔나무, 사스래피나무, 마삭줄과 같은 常綠闊葉樹가 優占種이었던 것이 人爲的인 干渉(薪炭用, 建築用, 放牧, 農地利用)에 의해 現在와 같은 10~20年生 崙松林을 優占種으로 하는 人爲的인 遷移가 일어난 것으로 생각된다. 특히 높은 인구밀도와 就農率, 耕作面積의 增加로 因하여 植生이 심하게 破壞된 것으로 생각되며 한편 月松里의 崙松林은 保護해야 할 價値가 있다고 생각된다. 해안가 植物은 5種(순미기, 해당화, 갯보리사초, 갯벚꽃, 갯방풍)으로 月松里 동백리 사동리에 이르는 백사장 부근에 分布되고 있었다.

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