XV WORLD FORESTRY CONGRESS
Building a Green, Healthy and Resilient Future with Forests
2–6 May 2022 | Coex, Seoul, Republic of Korea

Flora of vascular plants on exposed reclaimed area of Saemangeum region

Jeong Hwa Song[1], Jae Kwon Shin[2], Yu Jin Song[2], Changho Shin[2], Chunghee Lee[1]

[1]Department of Arboretum Development Project, Korea Forest Service, Daejeon City, Korea (the Republic of), jhssong@korea.kr
[2]Korea Arboreta and Gardens Institute, Sejong City, Korea(the Republic of), baumwald@koagi.or.kr

Abstract

▪ This study was carried out to investigate flora of vascular plants in Saemangeum National Arboretum that will be opened in 2027, where has been changing from ocean floor to reclaimed land slowly. Fieldwork was conducted ever from March to October in 2019. Result of research, vascular plants were summarized as 101 taxa, including 25 families, 72 genera, 91 species, 8 subspecies, 2 varieties. Floristic special plants were totally 5 taxa, which were grade I of 3 taxa, grade III of 1 taxon, and grade IV of 1 taxon. Rare and endangered plants of designated by Korea Forest Service was 1 taxon, *Phacelurus latifolius* (Steud.) Ohwi. Naturalized plants were 29 taxa, urbanization index (UI) was 9.0%, and naturalization index (NI) was 28.7%, which is more than twice the average NI of South Korea (10.5%). 76% of naturalized plants were annual plants (11 taxa) and biennial plants (11 taxa), which means flora is rapidly changing as affected by changes of aerial and soil environment. We need to conduct ecological monitoring continuously, and accumulated researches of floral changes in reclaimed area help us infer ecological succession

Objective

▪ To investigate flora of vascular plants in development site of Saemangeum National Arboretum

Location & Methods

▪ Location : Development site of Saemangeum National Arboretum, where has been changing from ocean floor to reclaimed land slowly over 10 years

▪ Investigation Period : From March to October in 2019

▪ Research Data : plants, evidence specimens, photos, GPS coordinates

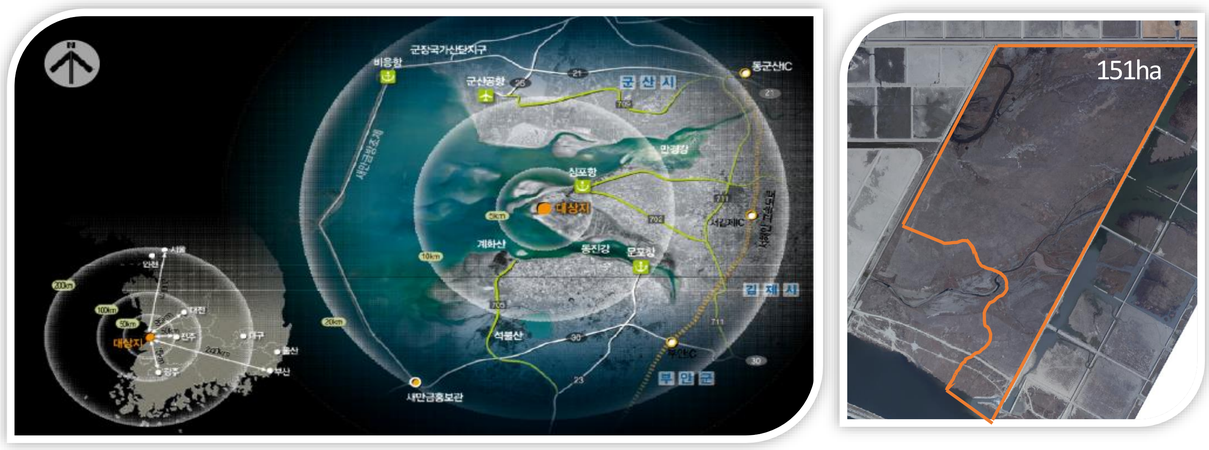

Fig. 1. Location of survey site (left) and current status of development site of Saemangeum National Arboretum (right)

Results

▪ Vascular plants were summarized as 101 taxa, including 25 families, 72 genera, 91 species, 8 subspecies, 2 varieties (Table 1).

▪ Floristic special plants were totally 5 taxa, which were grade I of 3 taxa, grade III of 1 taxon, and grade IV of 1 taxon (Table 2).

▪ Rare and endangered plants of designated by Korea Forest Service was 1 taxon, *Phacelurus latifolius* (Steud.) Ohwi (Fig. 2).

▪ Naturalized plants were 29 taxa, 76% of naturalized plants were annual and biennial plants (Table 3). And urbanization index (UI) was 9.0%, and naturalization index (NI) was 28.7%, which is more than twice the average NI of South Korea 10.5% (Table 4).

Table 1. Vascular plants of development site of Saemangeum National Arboretum.

Division	Family	Genus	Species	Variety	Form	Total
Pteridophyte	1	1	-	1	-	1
Gymnosperm	1	1	1	-	-	1
Angiosperm	23	70	90	7	2	99
Dicotyledon	(18)	(46)	(59)	(1)	(1)	(61)
Monocotyledon	(5)	(24)	(31)	(6)	(1)	(38)
Total	25	72	91	8	2	**101**

Fig. 2. Major angiosperms observed in development site of Saemangeum National Arboretum

Table 2. Floristic special plants* of development site of Saemangeum National Arboretum.

Division	Family	Scientific name	Korean name
IV	Polygonaceae	*Polygonum bellardii* All.	큰옥매듭풀
III	Chenopodiaceae	*Suaeda malacosperma* H. Hara	기수초
	Caryophyllaceae	*Silene aprica* var. *oldhamiana* (Miq.) C.Y.Wu	갯장구채
I	Verbenaceae	*Vitex rotundifolia* L.f.	순비기나무
	Poaceae	*Phacelurus latifolius* (Steud.)Ohwi	모새달

* Refer to Kim (2009), phytogeographical special plants were evaluated from grade I to V, which represents Korean floristics

Fig. 3. Floristic special plants observed in development site of Saemangeum National Arboretum

Table 3. Naturalized plants of development site of Saemangeum National Arboretum.

Life Form	Family	Scientific name	Korean name
Annual plants (11taxa)	Caryophyllaceae	*Spergularia rubra* (L.) J.Presl. & *C.*Presl.	유럽개미자리
	Chenopodiaceae	*Atriplex hastata* L.	창명아주
		Chenopodium glaucum L.	취명아주
	Brassicaceae	*Sisymbrium officinale* (L.) Scop.	유럽장대
	Malvaceae	*Abutilon theophrasti* Medik	어저귀
	Scrophulariaceae	*Veronica arvensis* L.	선개불알풀
	Asteraceae	*Symphyotrichum subulatum* (Michx.) G.L.Nesom	비짜루국화
		Bidens frondosa L.	미국가막사리
		Crepis tectorum L.	나도민들레
		Galinsoga ciliata (Raf.) S.F.Blake	털별꽃아재비
	Poaceae	*Aegilops cylindrica* Host	염소풀
Biennial plants (11taxa)	Caryophyllaceae	*Cerastium glomeratum* Thuill.	유럽점나도나물
	Brassicaceae	*Lepidium virginicum* L.	콩다닥냉이
	Rosaceae	*Potentilla supina* L.	개소시랑개비
	Fabaceae	*Vicia villosa* Roth	벳지
	Onagraceae	*Oenothera laciniata* Hill	애기달맞이꽃
	Asteraceae	*Centaurea cyanus* L.	수레국화
		Conyza bonariensis (L.) Cronquist	실망초
		Conyza canadensis (L.) Cronquist	망초
		Erigeron annuus (L.) Pers.	개망초
		Gamochaeta calviceps (Fernald) Cabrera	선풀솜나물
	Poaceae	*Lolium multiflorum* Lam.	쥐보리
Perennial plants (6taxa)	Polygonaceae	*Rumex acetosella* L.	애기수영
		Rumex dentatus L.	좀소리쟁이
	Plantaginaceae	*Plantago lanceolata* L.	창질경이
	Poaceae	*Alopecurus pratensis* L.	큰뚝새풀
		Paspalum dilatatum Poir.	큰참새피
		Poa compressa L.	좀포아풀
Woody plants (1taxon)	Fabaceae	*Amorpha fruticosa* L.	족제비싸리

Table 4. Urbanization index (UI) and naturalization index (NI)

Division	Evaluation Criteria	Percentage of the investigation site
Urbanization Index (UI)	Numbers of naturalized plants of site / Total naturalized plants of Korea x 100	**9.0**
Naturalization Index(NI)	Numbers of naturalized plants of site / Total observed plants of site x 100	**28.7**

Conclusion

▪ Flora of Saemangeum National Arboretum is rapidly changing as affected by changes of aerial and soil environment by active reclamation around the site

▪ Master plan of the Arboretum should include study site of natural succession to conduct ecological monitoring continuously, and accumulated researches of floral changes in reclaimed area help us infer ecological succession.