To investigate allelopathic potentials in *Artemisia scoparia* as one of the main weed, and their biological activities, seed germination and seedling growth of receptor plants were examined at different concentrations of essential oil of the donor plant. The treatment of the volatile essential oils of the *A. scoparia* caused significant inhibition in the germination, shoot and radicle growth of the receptor plants. The radicle growth of receptor plants was inhibited more severely than shoot growth. The essential oils of *A. scoparia* extracted by Karlsruker's apparatus was significantly inhibited on several bacteria and fungi. The essential oils of *A. scoparia* inhibited the induction and growth of callus of the receptor plants; *Acyranthes japonica, Brassica campestris* subsp. *napus* var. *pekinensis, Oryza sativa* and *Sesamum indicum*. The GC/MS was employed for analysis and identification of allelochemicals from *A. scoparia* leaves, i.e. camphene, n-methyl-2,1-borazarene, a-phellandrene,a-terpinene, p-cymene, 1,8-cineole, g-terpinene, l-camphor, endo-borneol, terpinen-4-ol, trans-ocimene, (-)-b-elemene, trans-caryophyllene and ledene. The bioassay with the four commercial compounds was shown from identified chemical compounds was done. 1,8-cineole showed as the strongest growth inhibitor of the chemicals. The results of this experiment on seed germination seedling growth, anti-microbial test and tissue culture indicated that naturally occurring chemical substances of essential oil from *A. scoparia* would be responsible for the phytotoxic and anti-microbial effects.

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Conservation Genetics and Fine-Scale Spatial Genetic Structure of *Leontice microrhyncha* (Berberidaceae) in Korea.

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Leontice microrhyncha S. Moore (Berberidaceae), a herbaceous perennial occurs in the deciduous forests of Korea, has been endangered because of small population size and anthropogenic activities. Allozyme variation in six populations using 17 enzyme systems, resolved 33 putative loci, seven (21.2%) loci were polymorphic in at least one population. The mean percent of polymorphic loci (P) was 8.58%, the average number of alleles per polymorphic locus (APs) and effective number of allele (Ae) was 2.33 and 1.04 respectively. Genetic diversity (Hes) was 0.024 and this value was very low relatively compared with other rare taxa. About 62.7% of total variation resided among populations, indicating that gene flow (Nm=0.149) among populations was highly restricted. Average genetic identity for all pairs of populations was 0.906, well within the range of values expected for the conspecific population. Populations of *L. microrhyncha* fell into two distinct groups and the genetic similarity of geographically near populations was clearly revealed by a UPGMA phenogram. Spatial autocorrelation analysis was used to explore genetic differentiation at smaller scales; a significant small scale genetic structure was detected in all sampled plots and patch widths were inferred to be approximately 12-14 m. A non-random distribution of genotypes may be a reflection of restricted gene flow, selection and patchy establishment of genetically distinct cohorts. *L. microrhyncha* presented special considerations with respect to conservation because genetic variability was distributed among rather than within populations. Range-wide collections across natural distributions are strongly

recommended for ex situ conservation. To preserve extant variation, all populations must be protected across the small geographic ranges of the species to ensure retention of allelic and genotypic diversity. Sampling 10-20 individuals of *L. microrhyncha* selected from at least 15 m at distance in order to avoid the same genotype within each population from all six populations would be essential in order to maximize the level of genetic variability.

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인공식물섬에 식재된 수생식물의 생장 비교

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침수나 침윤 환경에서 생장하는 수생식물은 부영양화의 원인이 되는 수중의 질소와 인을 다량으로 흡수하여 수질을 정화하는 기능을 수행한다. 또한 수생식물은 호안과 하안의 수변부에서 습지대를 형성하여 다양한 생물의 서식공간을 제공할 수 있다. '부도'로 알려진 인공식물섬은 수생식물을 토양에 식재하지 않고 부력을 가진 재질로 섬을 만들고 그 위에 식물을 착생시키는 생태공학 기술로서, 수변부의 경사가 급하여 식재가 불가능 곳이나 콘크리트 등으로 조성되어 토양이 없는 연못, 호소 및 하안에서 수생삭물이 생육할 수 있는 기반을 제공할 수 있다. 본 연구에 사용된 인공식물섬은 인공부력재를 이용하여 야자섬유로 충진된 매질이 부력을 갖도록 하였다. 갈대, 노랑꽃창포, 애기부들, 줄 등의 수생식물 4종이 식재된 인공식물섬을 콘크리트 수조에 띄우고 수생식물의 생장을 비교하였다. 군집의 피도와 밀도 및 생장량을 비교한 결과 노랑꽃창포, 갈대, 애기부들, 줄의 순서로 우수하였다. 특히 인공식물섬에서 겨울을 넘긴 노랑꽃창포의 피도는 다음해에 80% 이상으로 증대되어 다른 수생식물보다 인공식물섬에서 생장이 우수한 것으로 판단되었다.

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Plant Communities in Estuarine Wetlands of Korea

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Estuarine wetlands are salt and brackish marshes associated with tidal estuaries located along coastal rivers. We tried to classify the estuarine wetlands of Kumkang River, Mankyungkang River, Tongjinkang River, Nakdongkang River, and Somjinkang River with emphasis on their plant communities and soil environments. Major wetland types was estuarine emergent wetlands such as brackish tidal marshes and salt marshes. These wetlands were dominated by grass or grasslike herbaceous plants. In the brackish tidal marshes, *Phragmites australis* and *Carex scabrifolia* were abundant along the water's edge of river. The salt marshes were regularly or irregularly flooded and exposed by the tides. Characteristic plants in this zone included *Phacelurus latifolius* which was usually appeared in brackish water and diverse halophytes such as *Suaeda maritime, Suaeda japonica, Salicornia herbacea* and *Carex scabrifolia.* Detrended canonical correspondence analysis revealed that major environmental factors controlling vegetation structure were particle size, cation exchange capacity, and electric conductivity of soil which were mainly affected by tidal inundation. In Korea a variety of wetlands therefore develop in estuarines because of differences in salinity and duration and frequency of tidal inundation.

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전북 부안댐 어류군집에 관하여

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