



# XVII IBC 2005

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# ABSTRACTS

resolution, development of SNP markers as well as AFLP and ISSR analyses are in progress.

**P0805. Phylogeographical observations on species complex *Ophrys fuciflora* inferred from nuclear ribosomal ITS sequences**

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In order to clarify the phylogenetic relationship among species from *Ophrys fuciflora* complex nr ITS region of 19 taxa, representing 44 populations from 13 European and North-African countries, was sequenced. We found that the nrITS types were strongly correlated to geographical regions, while they were totally shared by the species in a discrete area. The geographical pattern of the nrITS types is assumed to relate to the primary glacial refugia in Southern-Europe where the different nrITS types had been separated during last glaciation. Surprisingly overlapping sequences were detected north of the Mediterranean peninsulas in the Carpathian-basin, South-Germany and Eastern-France, which could be separated as different paralogue sequences after cloning the PCR products. The paralogues imply recent hybridization in the abovementioned geographical regions, where the expanding postglacial lineages may have met forming hybrid zones. Since paralogue sequences thought to have rapid merging into the domineering ITS type, the hybrid zones seem to be recent ones on postglacial time-scale.

**P0806. Maternal and paternal DNA lineages reveal geographic genetic structuring among the populations of *Rumex acetosa* (Polygonaceae)**

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The weed *Rumex acetosa* is one of the few angiosperm species which have sex chromosomes (XX in females and XY<sub>1</sub>Y<sub>2</sub> in males). The two Y chromosomes are assumed to be of a common origin, and they are believed to recombine during meiosis. Such a homology brings about individual male plants that may be either homozygous or heterozygous in regard to those areas. The presence of Y chromosomes allows investigations of paternal DNA lineages, while analyses of chloroplast DNA allows examinations of maternal DNA. In this study, DNA sequence polymorphisms present in a 850 bp Y-chromosomal section, representing heterochromatin, and in a 409 bp chloroplast section (trnL-trnF spacer) of *R. acetosa* originating from several European locations were investigated. In the chloroplast area only one substitution and two deletions resulting in four haplotypes were detected while in the Y-chromosomal DNA 179 substitution sites and four deletions/insertions were discovered. Concerning 73% of the substitution sites, heterozygous individuals were found among the sampled males. The pattern of sequence variation detected *R. acetosa* revealed considerable geographic structuring.

**P0807. Phylogeography of pantropical sea-drift seed dispersal plants III -- Speciation through sea-drift species: *Canavalia rosea***

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The genus *Canavalia* Adans consists of ca. 50 species mostly distributed in tropics and sub-tropics of the world. Four subgenera are known in the genus: subgen. *Cantodonia* and *Wenderothia* are distributed in the New World, *Maunaloa* is endemic to Hawaii, and *Canavalia* has pantropical distribution because of the presence of the pantropical sea-drift seed dispersal plants, *C. rosea*, in the subgenus. To clarify if the present distribution pattern of the genus was caused by the seed dispersal of *C. rosea*, we performed molecular phylogenetic analysis using extensive samples. Phylogenetic tree constructed by ITS sequences of nrDNA showed a clear clade consisting of members of subgen. *Canavalia* and *Maunaloa*. All the Hawaiian endemic species, as well as, some species that have sea-drift seeds were in the same clade together with numbers of samples of *C. rosea* obtained from vast range of its distribution. This result suggests that the Hawaiian endemic

subgen. *Maunaloa* was derived from *C. rosea* that migrated to Hawaii by sea-drift dispersal, and loss of sea-drift ability occurred in the speciation process.

**P0808. Phylogeography of pantropical sea-drift seed dispersal plants IV --Classification and phylogenetic relationships of *Entada phaseoloides* (Leguminosae; Mimosoideae) and its allies.**

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*Entada phaseoloides* is famous for its gigantic sea-drift seeds, which are sometimes washed ashore in coastal regions distantly apart from its original habitat. *E. koshunensis* is an endemic species to Taiwan and very similar to *E. phaseoloides*, and the systematic treatments of these species have been confused. In order to reveal their relationships in detail, we performed molecular and morphological analyses using extensive samples obtained from the Ryukyus, Taiwan, Vietnam, Samoa, Vanuatu, and Australia including samples obtained from the type locality of *E. koshunensis* in Taiwan. Molecular phylogenetic tree using about 3,700bp sequences of cpDNA was clearly separated into two clades. One is composed of samples from Taiwan, the Ryukyus and south Pacific, for which small convex seeds are common characters. The other clade is composed of samples from Vietnam, Taiwan, and two islands of southern Japan, for which large compressed seeds are common. The difference of the two is conspicuous, and the former will be corresponding to *E. phaseoloides*.

**P0809. Vascular plants of Ukraine as perfect models for phylogeography**

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The rich and diverse vascular flora of Ukraine contains many relict, endemic and otherwise interesting taxa, which are often subjects of taxonomic, phytogeographical, and paleobotanical controversies. Many of these controversies can be efficiently solved by phylogeographical methods. Phylogeography is currently a booming field, especially in Europe, but Ukrainian plants were barely touched by such studies. The author attempted to identify the most interesting and promising groups of Ukrainian plants suitable for phylogeographical studies in cooperation with European botanists: endemic and relict species, taxa with disjunctive ranges, some trees (e.g., taxonomically complicated *Betula* spp., model taxa of *Quercus*), and other plants crucial for understanding the historical patterns of Ukraine's flora (and the European flora in general) in the Pleistocene and Holocene. Geographically such taxa are concentrated in the Carpathians, Crimea, the Volhynian and Podolian area, and some parts of the steppe and forest zones. Phylogeographical data should be correlated with extensive data of paleopalynological studies accumulated in Ukraine.

**P0810. Phylogeography of pantropical sea-drift seed dispersal plants I -- Scope in General and a case of *Ipomoea pes-caprae* (L.) R. Br. (Convolvulaceae)**

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"Pantropical Sea-drift Seed Dispersal Plants" have extremely wide distribution area that spread over the littoral areas of tropics of the five continents. This intriguing distribution pattern is thought to be the results of long distance seed dispersal of their sea-drift seeds. To clarify how this unique distribution pattern has achieved, to estimate the levels of migration among populations to maintain the unity of the species over the world, and to reveal the speciation process through these species, extensive field and molecular works have been done for four representative plants: *Ipomoea pes-caprae*, *Hibiscus tiliaceus*, *Entada phaseoloides*, and *Canavalia rosea*. In this presentation, we introduce a general scope of the study of pantropical sea-drift seed dispersal plants, and a case study on *Ipomoea pes-caprae*. CpDNA analysis showed no nucleotide substitutions over 4kb length among