

Forest-Steppe and Wooded Districts of Ukraine. The species *Sedum* L. have been selected for the use in ornamental gardening and phytoreclamation.

P0972. Umbelliferae of Russia

M. G. Pimenov, T. A. Ostroumova;
Botanical Garden, Moscow State University, Russia, Moscow, Russian Federation.

Russia, world's largest country, occupies the area of 17075 thousand sq. km (~13 % of earth surface) in N & NE Eurasia. Diversity in Russian Umbelliferae (U) is not rich for such territory (109 genera, 298 spp., ~ 2.5% of country flora). In European Russia (50 genera, 87 native spp.; the biggest genera - *Seseli* - 9, *Chaerophyllum* - 6, *Bupleurum* - 5), and W Siberia (38 genera, 57 spp., excluding southern mountains; the biggest genera - *Bupleurum* - 6, *Seseli* - 5) widely distributed boreal Euro-Siberian U taxa prevail. More original U are distributed in N Caucasus (77 genera, 175 spp., the biggest genera - *Heracleum* - 17, *Bupleurum* - 15, *Chaerophyllum* - 11, *Seseli* - 9, *Pimpinella* - 7), Altay-Sayan mountains in Siberia (30 genera, 46 spp.), as well as in S part of Russian Far East, belonging to E Asian floristic region (34 genera, 65 spp.; the biggest genera - *Angelica* - 11, *Bupleurum* - 8, *Ostericum* - 5). The only endemic genus in Russian U is *Magadania*; genera *Arafoe*, *Mandenovia*, *Sajanella*, *Tamamschjanella*, *Symphyloloma* are subendemic; there are only 12 endemic species. Complete compatible descriptions, determination keys and dot maps were compiled for regional monographic treatment.

P0973. Molecular systematics of Campanulaceae subfam. Lobelioideae

A. M. Antonelli;
Botanical Institute, Göteborg, Sweden.

Relationships within Lobelioideae were inferred based on DNA sequence variation in the *rbcL* and *ndhF* genes, the *trnL-F* region including the *trnL* intron, and the *trnL-F* intergenic spacer. *Lobelia* appears as highly paraphyletic, reconfirming earlier studies. Giant lobelioids from Hawaii, Brazil, Africa and Sri Lanka form a strongly supported group. Some species of *Lobelia*, that were earlier referred to the genus *Pratia*, are clustered together with *Isotoma*. In order to make *Lobelia* monophyletic, the genus should only comprise some 30 species native to North America, Europe and the Antilles. Those species are sister to a clade comprising Central American and Antillean species of *Lobelia*, *Heterotoma* and *Hippobroma*. The analysis shows for the first time that the moss-like genus *Lysipomia*, native to the Andean Páramos, is sister to a group comprising the Neotropical shrubs *Burmeistera*, *Centropogon* and *Siphocampylus*. Moreover, *Centropogon* and *Siphocampylus* are not monophyletic. Evolutionary and biogeographical aspects are discussed.

P0974. New Caledonia: A hotspot for dioecy

M. A. Schlessman¹, L. B. Vary¹, J. Munzinger², P. P. Lowry II^{3,4,4};
¹Vassar College, Poughkeepsie, NY, United States, ²Institut de Recherche pour le Développement, Laboratoire de Botanique, Nouméa, New Caledonia, ³Missouri Botanical Garden, St. Louis, MO, United States, ⁴Muséum National d'Histoire Naturelle, Paris, France.

The unusually rich flora of New Caledonia includes over 3,200 indigenous species of seed plants, of which approximately 80% are endemic. It appears to be a distinctive combination of relict Gondwanan lineages and more recently evolved ones. Using the literature, herbarium specimens, and field observations, we determined sexual systems for 98% of the indigenous seed plant flora. We found remarkably high incidences of dioecy. Of the 44 species of gymnosperms, 70% are dioecious and the remaining 30% are monoecious. The distribution of sexual systems among angiosperms (3,095 species) is 19.5% dioecious, 0.7% gynodioecious, 0.4% androdioecious, 13.6% monoecious, 4.1% andromonoecious, and 61.6% hermaphroditic. For angiosperms, dioecy is over-represented among endemics, woody and rainforest species, and the Gondwanan component of the flora. Almost 90% of the dioecious angiosperms have at least three of four ecological traits appear to enhance the success of dioecous lineages. With over 4% of the world's dioecous species, the flora of New Caledonia provides a rich and important new source of information on the origins and maintenance of dioecy.

P0975. Biodiversity of the vascular plants on the Russian Far East

A. E. Kozhevnikov;
Institute of Biology and Soil Science, Vladivostok, Russian Federation.

The natural flora of the Russian Far East (RFE) covers 4347 species of the vascular plants from 979 genera and 176 families (Kozhevnikov, 2003). The indigenous species complex is presented by 3686 species from 789 genera and 169 families. The adventive (alien) species complex includes 661 species from 334 genera and 68 families.

Flora of RFE belongs to floras of Cyperaceae type. The Endemic element includes 470 species from 147 genera and 45 families. There are 7 endemic genera - Microbiota, *Acelidanthus*, *Miyakea*, *Ermania*, *Astrocodon*, *Popoviocodonia* and *Magadania*. The portion of main 10 families in indigenous species complex of RFE varies from 76-78% in arctic zone to 50% in nemoral zone. Adventive index changes from 6.1% in Magadanskaya District to 22.1% in Primorsky Territory.

According to structure of taxonomical spectrums two main groups of administrative areas on RFE were revealed. The first group situated in continental part of RFE and the second - in its maritime parts (Kamchatskaya and Sakhalinskaya Districts). The flora of Magadanskaya District has got intermediate position.

P0976. Two ivy (*Hedera* L., Araliaceae) species from the classic and geometric morphometrics points of view

A. B. Shipunov¹, D. D. Vasjukov², E. A. Kost², V. S. Rudakova²;
¹Institute of Information Technologies, Moscow, Russian Federation,
²Moscow South-West High School, Moscow, Russian Federation.

Two ivy species from Russia and Ukraine, *Hedera helix* and *H. colchica* (Araliaceae), are noticeably different in ploidy and micromorphological characters (hairs), but hardly distinguished in field conditions if only morphological characters used. We employed the simultaneous multivariate analyses of 8 metric leaf characters and three different approaches in geometric morphometry (landmark analysis via thin-plate splines and two variants of the elliptical Fourier analysis of the leaf outlines, totally 810 plants were measured) to test if there is the differences between these species in morphology and which of these methods is most suitable for taxonomic purposes. Our results show that only landmark-based method could clearly distinguish these species. Several of localities contain the forms with intermediate characters, this could be evidence of introgression between these two species. The samples of "*Hedera taurica*" from Crimea do not show any differences from typical *H. helix*.

P0977. A study on the varietal differences in the vegetative morphology of Citrus spp

m. I. igwe;
nnamdi azikiwe university,awka, Along ziks avenue,awka anambra state, Nigeria.

Seven varieties of Citrus spp were sampled for studies to assess varietal differences in their vegetative morphology, and to develop a taxonomic key that will simplify the classification of this angiosperm plants. The seven varieties used included Nigerian Green Orange[Citrus sinensis L. Osbeck], Sasuma[Citrus nobilis Var Unshiu], Shaddock[Citrus maxima], Grape[Citrus paradisi Mact], Tangerine[Citrus reticulata Blanco], Tangelo[tangelo*pomello] and Rough lemon[Citrus limoni]. A twig was cut from the tree of each variety under studies and 10 leaflets were abscised and randomly sampled for biometric analysis. Length, width and petiole length of the leaflets were also measured and the data obtained were statistically analyzed. A taxonomic key was formulated for identification of the species studied using their morphological characters and the measured parameters. It is possible that a more detailed key could evolved with the study of all Citrus species and could be used in taxonomic studies of other angiosperm.

P0978. Genetic differentiation and relationship of populations in the *Aconitum delavayi* complex (Ranunculaceae)

F. Zhang, W. Chen, Q. Yang, S. Ge;
Institute of Botany, Chinese Academy of Sciences, Beijing, China.

RAPD markers were employed to examine the differentiation of 18 populations representing all species of the *Aconitum delavayi* complex distributed mainly in Hengduan Mountains of China. The PCO and UPGMA analyses of RAPD data indicate that the