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PHYLOGENY OF HOLARCTIC GROUND SQUIRRELS. MOLECULAR—GENETIC STUDY

E.A. Lyapunova

Summary

The presented paper is a self-review of forty—years research on karyology, polymorphism of protein system, and comparative analysis of mtDNA (cyt b) of Holarctic ground squirrels. The author makes a short evaluation, resolution, and range of use for molecular methods applied for studying *Spermophilus*. The concrete data on karyosystematics of Eurasian *Spermophilus* were presented: species specificity of *S. xanthoprymnus* ($2n = 42$) and *S. citellus* ($2n = 40$), division of *S. suslicus* to two species with $2n = 36$ and $2n = 34$; separation of long-tailed ground squirrels to two species: *S. parryi* ($2n = 32$) and *S. undulatus* ($2n = 34$). A scheme of karyotype evolution for modern Holarctic ground squirrels was drawn out. According to comparative study of chromosome sets triple different time migrations from North America to Eurasia were demonstrated for ground squirrels. This hypothesis got clean-cut confirmation by comparative study of cyt b nucleotide sequence. Patterns of transferrins distribution among species range of *S. undulatus* confirmed the common origin for Yakutian and Amur isolates of this species. Wide interspecific hybridization was stated for fulvus—pygmaeus—major, major—erythrogeus, pallidicauda—alashanicus. The phylogenetic tree based on cyt b nucleotide sequence is represented for Holarctic squirrels. The tree is divided to four clusters: one for Eurasian ground squirrels and three for North American ground squirrels. *C. parryi* and *C. undulatus* are situated inside the cluster of North American ground squirrels.

THE BEETLES OF THE GENUS HOLOSTROPHUS HORN, 1888 (COLEOPTERA, TETRATOMIDAE, EUSTROPHINAE, HOLOSTROPHINI) OF THE WORLD FAUNA

N.B. Nikitsky

Summary

A morphological description and diagnosis of the genus *Holostrophus* Horn, 1888 are given, based on the examination of adult characters of all the 19 species of the genus known in the world fauna. A key (detailed) to all the species of the genus is provided for the first time. A new subgenus is recognized in the genus *Holostrophus*: *Paraholostrophus* Nikitsky, subgen. nov. (type species *Holostrophus orientalis* Lewis, 1895); two species new to science are described in the new subgenus, *Holostrophus* {*Paraholostrophus*} *sulawesiensis* Nikitsky, sp. nov., and *Holostrophus* (*Paraholostrophus*) *duplicatus* Nikitsky, sp. nov. (both from material collected on the island of Sulawesi).

The subgenus *Holostrophus* (s. str.) includes the species: *Holostrophus bifasciatus* (Say, 1824), *H. lewisi* Csiki, 1924, *H. unicolor* Lewis, 1895, *H. diversefasciatus* Pic, 1921, *H. dux* Lewis, 1895, *H. morimotoi* Sasaji, 1974, and, most probably, also *H. aureofasciatus* (Pic, 1954), known to us only from the short and incomplete original description. The subgenus *Paraholostrophus* Nikitsky, subgen. nov., comprises the species: *Holostrophus orientalis* Lewis, 1895 (= *H. multinotatus* Pic, 1911 = *H. multinotatus* var. *tonkineus* Pic, 1917, syn. nov.), *H. vitalisi* Pic, 1953 (possibly, junior synonym of *Holostrophus orientalis* Lewis, 1895; unfortunately, known to us only from two female specimens), *Holostrophus sulawesiensis* Nikitsky, sp. nov., *H. fruhstorferi* Pic, 1912, *H. similis* Nikitsky, 1998, *Holostrophus duplicatus* Nikitsky, sp. nov., *H. minimus* Nikitsky, 1998, *H. philippinus* Champion, 1916, *H. borneensis* Pic, 1912, *H. multisignatus* Pic, 1953, *H. brittoni* Pic, 1953, *H. rouyeri* Pic, 1917.

Lectotypes of the following species are examined and designated: lectotype, female *Holostrophus unicolor* Lewis, 1895; lectotype, male *H. quadrimaculatus* Lewis, 1895 (= *H. lewisicsiki*, 1924); lectotype, male *H. dux* Lewis, 1895; lectotype, male *H. philippinus* Champion, 1916; lectotype, male *H. multisignatus* Pic, 1953; lectotype, male *H. fruhstorferi* Pic, 1912; lectotype, female *H. vitalisi* Pic, 1953; lectotype, male *Holostrophus orientalis* Lewis, 1895; lectotype, female *H. multinotatus*, Pic, 1911; lectotype, female *H. multinotatus* var. *tonkineus* Pic, 1917; lectotype, male *H. brittoni* Pic, 1953; lectotype, female *H. rouyeri* Pic, 1917.

INFLORESCENCE MORPHOLOGY IN *TALINUM* L. (PORTULACACEAE)

A.C. Timonin

Summary

Closed thyse instead of solitary flower is worth being considered a floral unit of monotelic synflorescences in both investigated *Talinum* species. The thyse is annexing uppermost paracladia and reshaping them into its additional partial florescences (multistages dichasia). Therefore, the thyse can be uncertainly delimited from the subtending zone of paracladia (*T. paniculatum*). The whole synflorescence is indistinctly segregated from the plant vegetative body (firstly in *T. triangulare*), the trait might be typical of any undershrub. As synflorescence and vegetative body are, occasionally a bit mingled, the shoot system of investigated *Talinum* species is to be considered with architectural unit concept while synflorescence morphology and architectural model concept being inappropriate for this purpose either. The architectural unit is recognized to be a shoot of leafy base and terminal bracteate closed thyse. The unit is either an innovation shoot or a (frondose bracteate) paracladium due to its position on a mother shoot and perhaps environmental influences. It combines occasionally characters of both innovation shoot and paracladium. When many innovation shoots, the units constitute by parts of their bases the perennial axial skeleton of a plant.

COMPARATIVE BARK ANATOMY OF REPRESENTATIVES OF THE SUBFAMILIES CAESALPINIOIDEAE AND MIMOSOIDEAE (LEGUMINOSAE)

L.I. Lotova, M.V. Nilova

Summary

The anatomic analysis has not revealed essential distinctions in a bark structure, which can be used as diagnostic features at the subfamily level. Difference between genera is in topography of histological elements, of secondary phloem, the type of the phellogen appearance, the structure of stereome, the presence of idioblasts, degree and type of dilatation of secondary phloem.

The bark structure of annual stems, perennial branches and trunks of 13 species from 8 genera from the subfamily *Caesalpinioideae* and 5 species from 3 genera from the subfamily *Mimosoideae* were investigated.

According to bark structure both subfamilies occupy approximately the same position in system of the *Leguminosae*, though simple sieve-plates were detected only in the *Caesalpinioideae*. This feature usually considered as more evolutionary advanced in comparison with complex sieve plates.

FERTILIZATION AND IRRIGATION IN AN ALPINE GERANIUM-HEDYSARUM MEADOW: SHOOT NUMBER AND FLORISTIC RICHNESS RESPONSES

O.V. Cherednichenko, A.A. Akhmetzhanova, V.G. Onipchenko

Summary

Differential nutrient and water limitation of plant abundance were studied in 7-year experiment in an alpine *Geranium gymnocaulon*-*Hedysarum caucasicum* meadow, the Teberda Reserve, the Northwest Caucasus. There were 6 treatments in the experiment: control, irrigation during periods of low precipitation (H₂O), N (90 kg/ha), P (60 kg P₂O₅/ha), NP and Ca (to reduce soil acidity). Shoot number of *Hedysarum caucasicum* and *Phleum alpinum* reacted positively on P treatment, shoot number of *Matricaria caucasica* increased on H₂O. Shoot number of *Festuca brunnescens* and *Euphrasia ossica* reacted positively on Ca. Number of generative shoots was more related to nutrient addition than the total shoot number. NP treatment led to decrease of abundance of plants with rosette and creeping life-forms. Floristic richness in NP treatment was lower in comparison to control plots.

LOCAL TREE SPECIES RICHNESS

**OF CAUCASIAN AND MADAGASCARE FOREST COMMUNITIES:
TESTING HISTORICAL HYPOTHESIS BY ANALYSIS
OF SPECIES-ABUNDANCE DISTRIBUTIONS**

V.V. Akatov, S.G. Chefranov

Summary

According to historical hypothesis differences in the tree species richness between regions are not a direct consequence of a difference in physical conditions. In particular, the relatively low diversity of trees in temperate regions can reflect a physiological barrier to colonization of temperate zones or can be resulted from extinction of taxa during period of cooling climate and glaciations (late-Pliocene and Pleistocene). However, the evidences that local tree species richness of forests (0,01- to 10-ha plots) depends on the historical processes are weak due to inadequate sampling in different regions and method problems. We tested historical hypothesis by determining the level of local tree species saturation in low land and mountain forests of Western Caucasus relatively a tropical low land rain and mid-altitude moist forests of island Madagascar. The analysis of species-abundance distributions of communities was used for this goal. We find that, level of the local tree species saturation in Madagascar forests due to mass-effect is higher than in Caucasian forests. Moreover, forest communities of Western Caucasus located in low-, middle- and high-mountain zones are characterized by a different saturation level. These results are well concordant with the published historical reconstruction and allow us to assume that the tree species richness of the forest communities in the 1 ha plots is essentially determined by the historical processes.

**THE SYNTAXONOMY OF THE BASHKORTOSTAN VEGETATION:
25 YEARS OF DEVELOPMENT (1979-2004)**

B.M. Mirkin, S.M. Yamalov, V.B. Martinenko

Summary

The history and modern state of the vegetation syntaxonomy of the Bashkortostan Republic are described. The input of the Ufimian geobotanics to development of the Braun-Blanquet approach and spreading in the USSR is shown. The modern syntaxonomy of Bashkortostan vegetation include 35 classes, 57 orders, 90 alliances, 329 associations.

**BRANCHING PATTERNS OF INFLORESCENCE
IN SEDGES (THE GENUS *CAREX* L.)**

Yu.E. Alexeev

Summary

The structure of inflorescence in *Carex* L. is described in the light of the following characteristics: the compounded inflorescence, the paracladial (or enrichment) zone, the cladoprophyll; at the proximal end of paraclades (spikes), the prophyll branching in the inflorescence, collateral branching, the spikelet and the flower.

***ECHINOCHLOA TZVELEVII* –
A NEW SPECIES FROM THE EUROPEAN RUSSIA**

E.V. Mavrodiev, H. Scholz, A. P. Sukhorukov

Summary

Echinochloa tzelevii Mosyakin ex Mavrodiev et Scholz is established as a new for science. *E. tzelevii* sp. nova differs from both *E. crusgalli* and *E. caudata* by flexuous or curved (frequently coiled) awns and shorter fertile flowers. New species is a widespread alluvial plant of European Russia (Volga, Don and Ural basins).

ON SPECIES OF GENUS *POTERIUM* IN EASTERN EUROPE

A.K. Skvortsov

Summary

Materials of the author: Observations in the nature of the Crimea 1966—1975; herbarium studies (YALT, KW, MW, MHA, partly LE). Results: In Crimea there are 2 species of *Poterium*. They are veritable siblings, still they can be confidently told apart by the presence (or absense) of very delicate and intricate rufous hairs on the axis of the capitulae (inflorescences), and the figure and surface sculpture of the ripe fruits, they also differ in flowering time and distribution. *P. sanguisorba* L. is common throughout the Crimea up to 1200 m, also in nearly whole Ukraine and significant part the European Russia. *P. polygamum* W.K. is limited to the southernmost coast of Crimea up to 400—500 m, and absent from the rest of Eastern Europe.

AN ADVENTIVE BIOTYPE OF CIRCAEA LUTETIANA

A.K. Skvortsov

Summary

An unusual biotype, much divergent from the native representatives of this species, had been noticed in 1990 along a road through the forested grounds of the Main Botanic Garden in Moscow. Since then, it has expanded considerably. In morphology, the aboriginal plants possess essentially the features of the Far Eastern subsp. *quadrisulcata*, but the biotype in question has purely Western traits, particularly in the fruit structure, and, being quite uniform, is fully and profusely autofertile. Appearance of the adventive biotype is regarded as an episode of the microevolution of the species.