Modern Achievements in Population, Evolutionary, and Ecological Genetics : **International Symposium**, Vladivostok – Vostok Marine Biological Station, September 6–12, 2009 : Program & Abstracts. – Vladivostok, 2009. –53 p. – Engl.
ISBN 978-5-7442-1483-8

HELD BY:
Vladivostok Public Foundation for Development of Genetics,
Far Eastern Branch of Russian Academy of Sciences,
A.V. Zhirmunsky Institute of Marine Biology FEB RAS,
Institute of Biology and Soil Science FEB RAS,
Far Eastern State University,
Administration of Nakhodka City District

SPONSORS:
Far Eastern Branch of Russian Academy of Sciences,
Russian Foundation for Basic Research
Nakhodka City Territorial Ecological Foundation
Moscow Rep Office of Corporation "Applera International Inc." (USA)

Editor Yuri Ph. Kartavtsev

Современные достижения в популяционной, эволюционной и экологической генетике : Международный симпозиум, Владивосток – Морская биологическая станция "Восток", 6–12 сентября 2009 : Программа и тезисы докладов. – Владивосток, 2009. –53 с. – Англ.

ОРГАНИЗАТОРЫ:
Владивостокский общественный фонд развития генетики,
Дальневосточное отделение РАН,
Институт биологии моря им. А.В. Жирмунского ДВО РАН,
Биолого-почвенный институт ДВО РАН,
Дальневосточный государственный университет,
Администрация г. Находка
Московское представительство Корпорации "Апплера Интернэшнл, Инк." (США)

ФИНАНСОВАЯ ПОДДЕРЖКА:
Дальневосточное отделение РАН,
Российский фонд фундаментальных исследований
Территориальный экологический фонд г. Находка

Ответственный редактор Ю.Ф. Картавцев

ISBN 978-5-7442-1483-8

GENETIC POLYMORPHISM OF THE RARE PLANT *OPLOPANAX ELATUS* (NAKAI) NAKAI (ARALIACEAE)

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Oplopanax elatus (Nakai) Nakai is a member of the Araliaceae, one of the most ancient families of angiosperms, a relict plant of Tertiary flora from the Russian Far East and Korea. This is a deciduous shrub 1.0–1.8 m tall, with spiny stems and large, palmately lobed leaves that form a canopy-like layer. Its distribution is quite limited, occurring only on several high mountains and within small, restricted areas. The species is rare and listed in the Red Book of Russia (1988) and the Red Data Book of Primorsky Krai (2008). *O. elatus* is a valuable medicinal plant, and was one of the first among Far-Eastern plants to be recommended for research as a ginseng-type preparation source (Zhuravlev, Kolyada, 1996). The species is in danger of extinction mainly because of mass collection.

We used allozyme markers to estimate the genetic variability of *O. elatus*. Plant material was collected from the Litovka Mountain (Primorye). Soluble enzymes were isolated from leaf tissues that have been previously frozen in liquid nitrogen.

Electrophoretic analysis of the leaf tissue of 29 *O. elatus* plants was carried out using 10 enzyme systems. A total of 29 alleles in 20 putative loci encoding 10 enzymes were discovered, and 5 loci were polymorphic (*Gpi-3, Lap-1, Mdh-1, Fe-1, Pgm-2*). The results suggested that multilocus systems encode 7 of the studied enzymes, whereas 3 enzymes are under single gene control. Main parameters of genetic variation were calculated on the basis of allele frequencies ($P = 25.0\%$, $A = 1.45$, $H_o = 0.131$, $H_e = 0.113$). The species showed low levels of allozyme diversity commonly characteristic for rare plants, and similar to one of other relict restricted species of Araliaceae family (Koren et al., 2003; Kim et al., 2006). It may be supposed that this refugee population during the glacial epoch has decreased genetic diversity because of the bottleneck state. The observed heterozygosity was higher in *O. elatus* than the expected heterozygosity, so there is a slight excess of heterozygotes that likely indicates the balancing selection in favor of heterozygotes in some loci. In addition, in long-lived plants new allele may be created occasionally by somatic mutation and are subsequently propagated by vegetative reproduction. Taking into account that *O. elatus* has predominantly vegetative reproduction and the other the maximum age of its clones may be prolonged to 300 years (Zhuravlev, Kolyada, 1996), occasional somatic mutation, coupled with clonal reproduction, may play a certain role in maintaining of the heterozygosity level.

We thanks I.L. Katz, scientific researcher with the Laboratory of Biotechnology (IBSS FEB RAS) for the plant collection.