

# ВЕСТНИК ТВЕРСКОГО ГОСУДАРСТВЕННОГО УНИВЕРСИТЕТА

Научный журнал

Основан в 2003 г.

№ 8(36), 2007

ПИ № 5-0914

Серия «Биология и экология»

Выпуск 4

2007

## Учредитель

ГОСУДАРСТВЕННОЕ ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ  
ВЫСШЕГО ПРОФЕССИОНАЛЬНОГО ОБРАЗОВАНИЯ  
«ТВЕРСКОЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ»

### Редакционный совет:

А.Н. Кудинов (*председатель*), В.П. Гавриков, В.А. Городецкий,  
Т.А. Жалагина, Е.А. Лурье, М.Л. Макаров, Ю.Г. Папулов,  
Б.Б. Педько, В.А. Петрищев, Б.В. Петров, И.Г. Серегина,  
Л.Н. Скаковская (*зам. председателя*), Т.Н. Славко, А.А. Ткаченко,  
Г.А. Толстихина, Л.В. Туварджиев, Л.В. Туманова, А.Н. Цирулев,  
В.Г. Шеретов, А.В. Язенин

«Сохранение биоразнообразия орхидных»  
Материалы VIII международной конференции  
«Охрана и культивирование орхидей»  
и 4 международного совещания по динамике популяций орхидных  
(Тверь, Россия, 5-10 июня 2007)

«Orchid Biodiversity Conservation»  
Proceedings of the VIII International Conference  
«Orchid Conservation and Cultivation» and IV International Orchid  
(Workshop, Tver, Russia, 5-10 June 2007)

### Редакционная коллегия серии:

М.Г. Вахрамеева (к.б.н., МГУ им. М.В. Ломоносова, Москва),  
Т.Н. Варлыгина (к.б.н., Ботанический сад МГУ, Москва),  
С.М. Дементьева (проф., к.б.н., Тверской госуниверситет, Тверь).  
Г.Л. Коломейцева (д.б.н., Главный Ботанический сад РАН, Москва),  
И.В. Татаренко (к.б.н., Московский педагогический госуниверситет,  
Москва), Е.С. Пушай (к.б.н., Тверской госуниверситет, Тверь)

### Адрес редакции:

Россия, 170100, Тверь, ул. Желябова, 33.  
Тел. РИУ: (4822) 35-60-63

*Все права защищены. Никакая часть этого издания не может быть  
репродуцирована без письменного разрешения издателя.*

© Тверской государственной университет, 2007

RARE NATIVE ORCHIDACEAE OF RUSSIA  
IN BOTANIC GARDENS  
M.L. Orlenko, Y.N.Gorbunov

The Rare and Endangered Plant Species Committee at the Botanical Gardens of Russia has compiled the data base on rare plant species cultivated in 55 botanical gardens in Russia. According to the data base 17 out of 44 species of Orchidaceae from the Russian Red Data Book are cultivated in botanical gardens. Those 17 species from 9 genera are represented by 87 samples. The greatest number of orchids is cultivated in St-Petersburg, Tvier, Irkutsk, Gunib and Yuzhno-Sachalinsk.

**CURRENT STATE OF *EPIPACTIS HELLEBORINE* (L.) CRANTZ.  
AND *DACTYLORHYZAINCARNATA* (L.) SOO POPULATIONS IN  
KYIV AND ITS VICINITIES, UKRAINE**

**Parnikoza I. Yu., Shevchenko M. S.**

Taras Shevchenko Kyiv National University, Ukraine, 03022, Kyiv,  
Volodymirska Str. 64, e-mail: Parnikoza@gmail.com

**Introduction**

Most of 34 Orchidaceae species registered in the Middle Dnipro region were found in Kyiv City and its vicinities: *Traunshiteinera globosa* (L.) Reinchenb. (Чопик, 1998), *Cypripedium calceolus* L., *Malaxis monophyllos* (L.) Sw., *Hammarbia paludosa* (L.) O. Kuntze, *Corallorhiza trifida* Chatel., *Gymnadenia conopsea* (L.) Br., *G. odoratissima* (L.) Rich., *Neottianthe cucullata* (L.) Schlechter, *Platanthera chlorantha* (Cust.) Reichenb., *Orchis morio* L., *O. militaris* L., *Dactylorhiza sambucina* (L.) Soo (Бордзіловський, 1950), *D. fuchsii* (Druce) Soo (Андрієнко, 2006), *D. incarnata* (L.) Soo, *O. coriophora* L., *Epipactis palustris* (L.) Crantz., *E. helleborine* (L.) Crantz., *E. atrorubens* (Hoffm. Ex Bernh.) Schult., *P. bifolia* (L.) Rich., *Neottia nidus-avis* (L.) Rich., *Liparis loeselii* (L.) Rich., *Listera ovata* (L.) R. Br., *Cephalanthera longifolia* (L.) Fritsch. However, after the middle of the XX century only the last 11 species were found in the Kyiv region (Любченко, 1985; Собко, 1989; Падун, 2001; Цуканова, 2003; Parnikoza, 2006; Шевченко, 2006) and only populations of *D. incarnata* and *E. helleborine* are not infrequent, whereas other species are scarcely found at all. The fact probably arising from relatively high ecological lability of both species, they are sometimes proposed to be excluded from the Red Data Book of Ukraine. To clarify the subject, it is needed to accurately measure the state of their populations in the context of altered environment. This was the goal of the study.

## Methods

To compare the state of three populations of *D. incarnata* and five of *E. helleborine* (Fig.) and their tolerance to the anthropogenic impact in the region, we studied population age structure, performed phytosociological surveys and measured 20 flowering plants (if present) according to the length and width of the third (usually the largest) leaf, the number of flowers or/and fruits, and height of plants. Also, damage of caused by fungi and insect was taken into consideration as it affected a real seed production. Population I of *E. helleborine* (Golosiiv forest) is situated in a deciduous forest where the amount of woody plant species increases progressively. Population II has been studied since 2001. It is located in the deciduous forest (Lysa gora), and it experiences the succession changes of the coenosis as well as trampling. Population III has been studied since 1999 in the mixed Svyatoshin forest. Undergrowth was cut off there several times, and the site is quite trampled. Population IV has been studied since 2002 in Pokal, which is a transition site between the overgrown water-meadow and the deciduous forest. Population V studied since 2001 in impacted floodland forest of Vyshgorod, which is trampled and contaminated with cement dust. *D. incarnata* populations 1 in Svyatoshin ponds and 3 in Trukhaniv Island have been studied since 2001 and 2004 respectively; local people burn the dry grass litter in those meadows every spring. Population 2 in Lesniki water-meadow has been studied since 2006; the meadow is mown every year.



Fig. Map of Kyiv and its vicinities with studied *E. helleborine* localities: I - Golosiiv forest, II - Lysa gora, III - Svyatoshin forest, IV - Pokal, V - Vyshgorod; and *D. incarnata* localities: 1 - Svyatoshin ponds, 2 - Lesniki water-meadow, 3 - Trukhaniv Island

## Results and discussion

Comparative study of 5 populations of *E. helleborine* didn't reveal that the species has any particular dependence on a certain phytocoenosis; it tended to adapt to a wide range of humidity, soil richness, and insolation (the most developed generative plants were found in moderately lit humid sites). In populations II, III we observed germination, while in population IV the generative plants were bigger and their flowers were usually more numerous. That is why we could not choose the only criterion that would indicate the species ecological optimum. The lack of germination *in situ* may well be caused by the successional changes in the coenosis. At the same time, seeds produced by mature plants that established at an earlier succession stage could be blown (or carried) away and germinate in the more suitable habitats. This is perhaps how the populations II and IV originated. Usually there was no significant influence of herbivorous insects or fungi on the overall seed production in population. We did not find *E. helleborine* in significantly trampled central parks of the city where the degree of recreation digression exceeded III (Костюшин, 1997). The quantity of potentially favourable for *E. helleborine* sites decreases as more and more parks become overtrampled. The plant, therefore, should be quite dependent on both habitat availability and quality.

Comparison of human impact in 3 sites of *D. incarnata* showed that the orchid is relatively tolerant to it, though it is susceptible to the moisture (in population I we observed significant heterogeneity in the morphometry of generative plants depending on soil humidity). The species is not infrequent in the region. The edges of the populations and some other localities are being overgrown with shrubs, and we didn't find germination there; it probably confirms that anthropogenic blockade of succession supports their existence, though even slight changes in the moisture cause the decrease in generative plants' size and productability, while crucial modifications eliminate populations. Germination was found in all studied sites. The most developed generative plants were found in the mown meadow, and we consider the factor is the more tolerable among the succession-blocking ones. Unfortunately, the species, unlike *E. helleborine*, attracts much more attention and significant number of the flowering plants is eliminated in some populations.

## Conclusions

Either species tolerates human impact to some extent, though in most cases it is changed beyond their capacities. Considering the increase of human impact is common for both Kyiv and its vicinities and Ukraine as well as the fact that most of studied populations are not protected by a reservation status, it is unreasonable to exclude the species from the Red Data Book of Ukraine.

## References

- Андрієнко Т. Л. Фіторизноманіття Українського Полісся та його околиць. Київ, 2006. 316с.
- Борділовський Є. І. Родина Зозулинцеві - Orchidaceae Lindl. // *Флора УРСР*. Київ, 1950. Т. 3. 312-405 с.
- Костюшин В. А. Воздействие рекреации на живую природу. - Национальный экологический центр Украины, 1997. 42 с.
- Любченко В. М., Падун І. М. Сучасний стан рослинності Голосіївського лісу // *Укр. бот. журн.* 1985. Т. 42. №1. С. 66-70.
- Падун І. М., Огороднік Л. Є., Діденко В. І. Про деякі раритетні види території зеленої зони м. Києва. // *Вісник Київського ун-ту. Інтродукція та збереження рослинного різноманіття*. Київ, 2001. № 33. С. 39—41.
- Parnikozha I. Yu., Shevchenko M. S., Poltorak D. V., Inozemtseva D. M. Present-day state of rare plants populations of the Svyatoshin forestry in Kyiv // 36. матеріалів Міжнародної конференції молодих вчених-ботаніків «Актуальні проблеми ботаніки, екології та біотехнології», 27-30 вересня 2006 р. Київ, 2006. С. 93.
- Собков П. Орхідеї України. Київ, 1989. 190с.
- Цуканова Г. О. Солологічна характеристика рослинного світу островів Дніпра та прилеглої частини заплави в межах м. Києва. // *Укр. ботан. журн.* 2003. Т. 60. №4. С. 397-403.
- Чопик В. І., Бортняк М. М. та ін. Конспект флори Середнього Придніпров'я. Київ, 1998. 140с.
- Шевченко М. С., Парнікоза І. Ю., Тимченко І. А., Шевчик В. Л. Нове місцезнаходження *Liparis loeselii* (L.) R. Rich. в м. Києві. // Перша Міжнародна конференція молодих учених "Біологія: от молекули до біосфери", 21-23 октябрю 2006 . Харків, 2006. С. 55

СОСТОЯНИЕ ПОПУЛЯЦИЙ *EPIPACTIS*  
*HELLEBORINE* (L.) CRANTZ. AND *DACTYLORHYZA*  
*INCARNATA* (L.) SOO В КИЕВСКОЙ ОБЛАСТИ УКРАИНЫ И.Ю.  
Парникоза, М.С. Шевченко

Представлены результаты изучения популяций *Epipactis helleborine* и *Dactylorhiza incarnata* в городе Киеве и окрестностях в 2000-2006 годах. Оба вида проявили некоторую толерантность к антропогенному изменению среды; семенное возобновление *E. helleborine* наблюдалось редко, несмотря на ежегодное плодоношение, тогда как *D. incarnata* возобновляется во всех изученных популяциях. Учитывая то, что виды исчезают при превышении 3-ей степени рекреационной депрессии, и таким образом не встречаются в большинстве обследованных зеленых массивов города, а также то, что большинство местопроизрастаний не защищены запоедным статусом, мы считаем, что оба вида не следует исключать из Красной книги Украины.