



## Conservation update: *Lilium rhodopaeum*

*In Lilies and Related Plants 2013–2014, (in the article: The ‘Odd One Out’ revisited), an interesting collaboration, between Bulgaria’s Ministry of Environment and Waters and Honeyguide Wildlife Holidays, is described. The aim of which is the conservation of the very rare Lilium rhodopaeum. The following report by **Vladimir Trifonov** is an update on how conservation efforts are progressing.*

### **Report on the status of the rhodopean lily in the locality of the village of Stoykite, Smolyan municipality, Bulgaria, 2014.**

The locality of the Rhodopean lily was visited, on 26 June 2014, with a group from Honeyguide Wildlife Holidays, who assisted with ascertaining the status of this lily. Individual plants were counted and the incidence and nature of threats to the population, of the plants found, were observed and recorded.

In total, 53 individual plants were identified, of which 42 were flowering (including three with two blossoms, two with three blossoms and one with four blossoms) and there were 11 non-flowering individuals grouped around the flowering ones.

Compared with 2013, there was a reduction of 10 plants, about 16% of the total population. Also, there was a change in the proportion between flowering and non-flowering individuals, i.e.

**2013** 17 flowering/ 46 non-flowering individuals (63 total);

**2014** 42 flowering/ 11 non-flowering (53 total).

The steady decline, in the total numbers of individuals in the population, is recorded in the table below. The data from the annual census shows that the population's number, in 2014, is only 29% of that for 2008. During the seven years period, the minimum of flowering plants was reached in 2013, with just 17 flowering.

**Results of the annual census studies, 2008–2014**

Rhodopean lily, village of Stoykite: 2008–2014					
Year	Number of flowering plants	No. of non-flowering plants	No. of damaged plants	Total number of plants	increase decrease "—"total number plants by % to previous year
2008	122	66	28	188	–
2010	96	–	19	96	-48.94
2011	145	–	–	145	51.04
2012	78	52	–	132	-8.97
2013	17	46	–	63	-52.27
2014	42	11	15	53	-15.87



**27 July 2014**

There were a great number of plants that had been gnawed and damaged by insects (almost half of the flowering plants) as shown in the photographs above. This could pose a serious threat, with regard to seed propagation of the species in the local population, as it appears that the population failed to form seed capsules during the period the plants were observed.

- Individuals—with flowering parts—that survived insect attack numbered approximately 15.

- Formation of the seed capsules had begun. Fortunately, few of the seed capsules were damaged by insects, i.e. only two or three.

The situation with false hellebores (*Veratrum lobelianum*) and other competing species (like bracken–*Pteridium aquilinum*) appeared to be normal, with grass overgrowth lower than in previous years. This may, or may not, have been due to mowing in 2012. The fact that, in 2014, there was a relatively large increase in the number of flowering plants led me to decide that it was not necessary to organize mowing in 2014.

### 9 August 2014

Another visit was carried out, in the field, in order to identify the success of seed production. No change was found in the status of the seed capsules of the lilies, so there were no additional negative factors detected.

### 23 August 2014

The growing area, near the village of Stoykite, was unchanged from the previous visit, i.e. there were no further developments with regard to the seed capsules. There were, however, dead and rotting stems, of lilies, which had not been able to form seed capsules.

At this time I also visited the nearest locality, to the village of Stoykite, where the Rhodopean lily grows, near the village of Progled. My aim was to make a comparison of developments with the situation near Stoykite. There I found numerous mature seed capsules. This suggested to me that it was most likely, with the Stoykite (i.e. Progled) population of Rhodopean lilies, that they reproduce, via seed capsules, once every few years and during the rest of the period they propagate by vegetative means from the bulbs.

### Conclusions

After four visits, to the Stoykite locality, I think it can be concluded that the total number of the

**Right, top**, The rotting stems of *Lilium rhodopaeum* and **below**, the mature seed capsules of *L. rhodopaeum*.





The beautiful *Lilium rhodopaeum* in full bloom, growing in an alpine meadow in southern Bulgaria.

population, of the Rhodopean lily, remains low. Furthermore, there was a change in the ratio of flowering/vegetative individuals in favour of flowering. In 2014 the most significant negative factor was insect attack, which may be due to external factors like climate change. The local population is not very successful in flower and seed production every year. This particular year, 2014, although the seed capsules remained until the end of August, they did not form seeds and, instead, withered. One reason, for this, may be related to lack of pollination (due to very wet or very dry summers, or lack of suitable pollinators). In respect of this, in such years there is no seed production. Another conclusion, from this study, is that competition from other plant species does not appear to significantly threaten the survival of the Rhodopean lily.

### **Postscript**

The conservation plan, for 2015, is to carry out at least three visits to areas where the Rhodopean lily grows. The first visit will take place before flowering, when plants are beginning to develop, to establish whether there are limiting factors during this period, e.g. early mowing, grazing, insect damage. The second visit will take place when the lilies are in bloom, to count the numbers of flowering and non-flowering plants. The third visit will take place during the period when seed capsules are forming.

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