



Status of the Rodopean lily (*Lilium rhodopeum*)

NEAR STOYKITE, SMOLYAN MUNICIPALITY, BULGARIA, 2018 AND 2019

*In this most recent report **Vladimir Trifonov** provides encouraging updates upon the continuing efforts to conserve the very rare and beautiful *Lilium rhodopeum* in Southern Bulgaria. Since his previous report, in Lilies and Related Plants 2015–2016, the plants have been increasing in both numbers and floriferousness.*

The locality of the Rodopean lily was visited three times in 2018 (2 July, 13 July and 2 August) and on four occasions in 2019 (8 June, 23 June, 30 June and 11 August) with the kind support of Honeyguide Wildlife Holidays. In 2018 a total of 148 individual plants were identified, 117 of them flowering and 31 vegetative (in 2019 the numbers increased to 194, 123 and 71 respectively). Ten of the plants were damaged by insects or cattle in 2018 and 30 in 2019. Amongst the flowering individuals in 2018 there were 106 with single blooms, eight with two blooms and one with three blooms in the inflorescence (109, 10 and 4 in 2019). The ratio of flowering to non-flowering plants was about 3.77 (117F/31V) in favour of flowering plants in 2018 compared to 1.73 (123F/71V) a year later. In the last four years the population has continued to increase. In 2018 there were 39 more plants than the population in 2017, an increase of about 36%, with 46 more individuals in 2019, representing a further rise of approximately 31%.

Opposite, an outstanding group of *Lilium rhodopeum* including an individual carrying three of the glorious yellow blooms for which the species is renowned.

2018 was the tenth year of monitoring this locality. The dynamics of the population over a ten-year period can clearly be seen. In relative terms, a consistently high total number of plants was recorded in the first four years (2008–2012), and then, in the next four years (2013–2016), there was a sharp decline, with the lowest number of plants occurring in 2015—only 45 individuals. Since 2014 there has been a marked increase in the total number of plants. It is believed that this increase in the number of plants is mainly due to natural periods of rest and activity of the species, as well as a variation in climatic conditions. Of course, it is hoped that the increase in the number of individual plants is due to several years of conservation activities. These have included mowing and removing the hay from the area and the clearing of aggressively competitive species from around the

Table 1. Results of census studies 2008–2019

YEAR	2008	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of flowering plants	122	96	145	78	17	42	41	56	75	117	123
Number of non-flowering plants	66	–	–	52	46	11	4	23	34	31	71
Ratio of flowering/non-flowering plants	1.85	–	–	1.5	0.37	3.82	10.25	2.43	2.21	3.77	1.73
Number of damaged plants	28	19	–	–	–	15	14	5	34	10	30
Total number of plants	188	96	145	130	63	53	45	79	109	148	194
Percentage increase/decrease of total number of plants compared to previous year	–	-49	51	-10	-52	-16	-15	76	38	36	31



This photograph was taken in June 2017 and clearly shows the competing *Veratrum album* (False Hellebore) which is being controlled in order to encourage the growth of the lilies.

groups of Rodopean lilies. Perhaps the main reason for this sharp increase is that, in the last three years, the pasture where the Rhodope lily grows has been used for its intended purpose. The entire area was grazed, thus eliminating competing taxa which were suppressing the development of the target species. This year we can see the results of traditional methods of pasture management (intensive grazing) where all competing species such as bracken, false hellebore etc. have been removed, and the grass is kept low. It is now clear that this way of managing the area will benefit the population in the long run but only if it is carried out outside of the growing season.

The most significant negative factor upon the population is damage by cattle. In 2018 the percentage of damaged plants was very low, about 7% of the total, due to the fact that the Regional Inspectorate of Environment and Waters in Smolyan took measures to erect a fence around the area, thus protecting the species from trampling and grazing. Fortunately the Rhodopean lilies successfully formed fruit capsules in 2018. This year the population of *Lilium rhodopaeum* was not impacted by grazing until the end of the flowering season. Grazing started late, in August, which is very favourable for the species.

The lilies did not form fruit capsules in 2019.