



Brief report outlining the main achievements of the expedition to Greece/Bulgaria to study the natural flora of the Rodhopi Mountains

WORK PLAN

The project is scheduled for three years from 1 April 1999. Fieldwork for two vegetative seasons in 1999 and 2000 had been planned. This report covers fieldwork for the 1999 vegetation season on the Greek side of the Rodhopi.

Beginning in June (spring came late to the Rodhopi in 1999), a series of detailed field surveys were carried out. Herbarium collections totalling c. 1500 numbers were made, often in three duplicate sets. All the collections were given geographical coordinates by means of a GPS field device so that occurrences of all species could be mapped. Biological diversity of this area is extremely high. Special attention was given to local, rare and phytogeographically interesting species (see Fig. 2), several of which bear the name of the mountain range, "Rodhopi". The following are some examples.

Haberlea rhodopensis Friv. (Fig. 2: 7) is considered a Tertiary relict belonging to the Gesneriaceae, a large and mainly tropical family with only five species in Europe (four in the Balkan peninsula, one in the Pyrenees). It grows generally on limestone, on damp, shady rock walls in the mountains up to 1900 m, or in ravines, near sea level. It is a distinct and attractive species in a monotypic genus and has been chosen by Bulgarian botanists as the floral emblem of the Rhodopi.

Viola rhodopeia W. Becker (Fig. 2: 9) was previously known only from the Bulgarian Rodhopi and described from material collected there in July 1905 by the Bulgarian botanist K. Urumoff. It has now been discovered on the Greek side of the range.

Soldanella rhodopaea F.K. Meyer (Fig. 2: 10) in the Primulaceae differs from *S. carpatica* Vierh. (endemic to the Carpathians) in leaf and capsule characters and may merit subspecific ranking. It grows in damp, rocky places, by streams in *Picea abies* forest, on schist and other non-calcareous soils.

What is *Geum rhodopeum* Stoj. & Stef. (Fig. 2: 11)? It looks like a hybrid between *G. rivale* L. and ? There is possibly a hint of *G. coccineum* Sm. in it (see Fig. 2: 8). The flowers in *G. rhodopeum* are erect as in *G. coccineum* and not nodding as in *G. rivale*.

Lilium rhodopeum Delip. (Fig. 2: 12) is a spectacularly beautiful lily first collected in June 1951 in the central Rodhopi mountains close to the Greek-Bulgarian border, above the village of Sivino. The collector, Dmiter Delipavlov (now retired), whom I had the honour to meet in 1993 in Bulgaria was out on a management survey of alpine pastures when he found this attractive lily growing at c. 1300 m on non-calcareous soil. I found it in scattered groups in the Rodhopi, on rocky schistose slopes at the edge of *Picea abies-Fagus sylvatica* forests and in alpine meadows in the Zagradenia area at 1600-1800 m, and also near the village of Livaditis. The flowers on the Bulgarian side are usually solitary but on the Greek side of the range, 2-5-flowered plants and even an 8-flowered individual were noted. *L. rhodopeum* is most closely

related to the Caucasian *L. monadelphum*, *L. szovitsianum* and *L. kesselringianum*. It has much horticultural potential because of its bright yellow flowers and strong scent.

Crocus veluchensis Herbert (Fig. 2: 13) has a wide distribution on the Greek mainland, extending to Albania, S Yugoslavia and Bulgaria. In the Rodhopi, the flower colour ranges from pale lilac to deep violet.

Bruckenthalia spiculifolia (Salisb.) Reichenb. (Fig. 2: 14) is a dwarf ericoid shrub with linear, revolute leaves and bright, reddish-pink, campanulate flowers. It is calcifugacious and forms gregarious clumps on acid soils in damp to wet alpine and subalpine meadows.

Hypericum cerastoides (Spach) Robson (Syn: *H. rhodopeum* Friv.) grows on siliceous and granitic soils in the mountains. It is a regional endemic, restricted to S Bulgaria, NE Greece and NW Turkey and superficially resembles *H. olympicum* which is a very variable species presently divided into a number of forms.

The process of identifying the collected plant material began in the winter of 1999. This task continues. After identification the specimens are entered into a database and labelled. Floristic data, published and unpublished information, is in the process of collation. A preliminary checklist of species has been drawn up and several areas with a particularly high biodiversity identified.

One of them is Haindou, also called Drimos. The peak is Haindou from which the whole group of mountains takes the name. More than 200 species have been identified from this peak alone during the preliminary investigation and 12 species may be considered to belong to the endemic, rare and threatened category.

In this area there are cultivated and fallow fields and pastures with hedgerows of self-sown native trees up to elevations of c. 600 m. The slopes from 250-1000 m had previously been covered by small forests of deciduous oaks, mainly *Quercus frainetto*. Above 1000 m, the forests are denser with deciduous oaks intermixed with other broad-leaved trees. *Alnus glutinosa*, *Salix purpurea*, *S. alba*, *Populus tremula* and *P. nigra*, etc., form clumps in the torrent beds of streams and gorges. Growing on the banks are hygrophilous herbs such as *Telekia speciosa* and *Petasites hybridus*. Forest clearings have a rich ground flora (Fig. 1: 3). *Fagus sylvatica*, *Pinus sylvestris*, *Betula pendula*, *Abies boris-regiis* and *Picea abies* still form extensive forests (Fig. 1: 1, 2) but around inhabited villages the forests are replaced by summer grazing pastures created by burning as has taken place for hundreds of years. With the decline in cattle raising after 1940 and abandonment of settlements many parts of these mountains have reverted to *Pinus sylvestris* and *Betula pendula* forest.

NEXT STEP

We need to continue our investigation of the plant communities unique to this area in order to obtain our inventory. So we plan fieldwork for the next vegetation season for the year 2000. We will start in late summer and continue in the autumn in order to obtain seed and the autumn-flowering taxa.

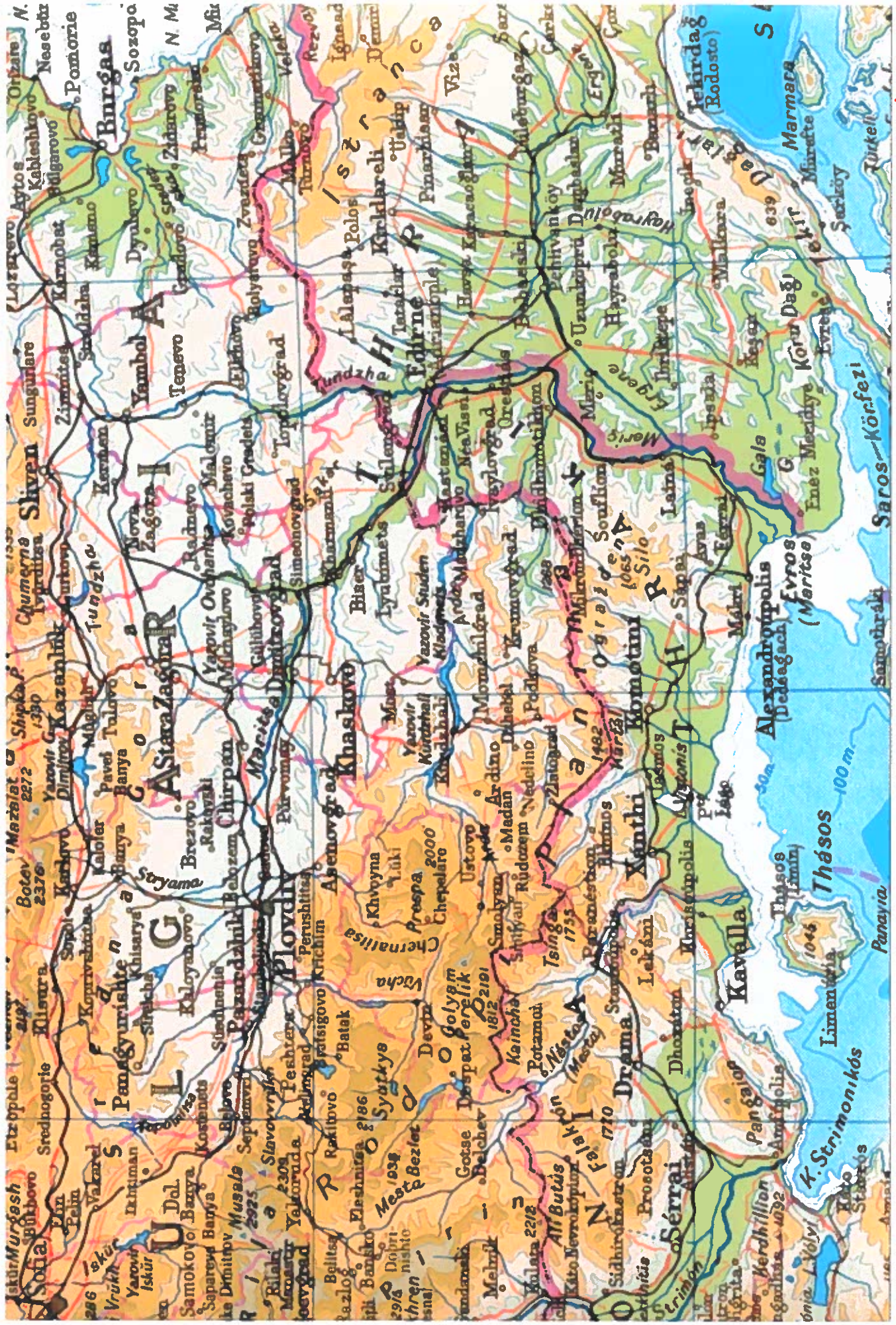
We will also study the traditional forms of land use in the Rhodopi. Economically, this is one of the least developed areas in Europe. Nevertheless, it has a rich and unique heritage and there are possibilities for ecologically sustainable development, including eco-tourism. The inhabitants at the little village of Sarakini (Fig. 1: 5) and at Dimario still carry out the traditional way of stacking their hay in trees for drying (Fig. 1: 6) not only just to avoid hungry goats.

Eco-tourism, according to the tourist industry and academics, is expected to grow rapidly over the next twenty years. It is one of the more appropriate means of livelihood available to local people living in relatively undisturbed areas in order to combine conservation and the use of bioresources with sustainable economic development. The Rodhopi Mountains of Bulgaria with their unique landscape, flora, vegetation and fauna, serve as one of the richest mountain areas in Europe in terms of biodiversity and therefore is a popular tourist site. We have identified four areas according to the degree of tourism development.

1. Trigrad-Jagodino region (Fig. 1: 4) is well-known and still one of the most visited places in the Rodhopi.
2. Shiroka Luka region is a relatively new, unexplored site.
3. Choudnite Mostove region was much favoured in the past but now abandoned.
4. Momchilovtsi region is very recently discovered and much favoured.

As a side project some methods will be used to assess the human impact on species and their communities, e.g., a 6-fold scale, ranging from 6 (plant population in excellent condition without human influence) to 1 (population going to be extinct due to very strong human pressure ...). However, this is a sideline to the main object of the study which is to obtain as complete an inventory of the botanical diversity as possible, with special emphasis on the endemic, rare, endangered and phytogeographically interesting species.

Summary: No complete inventory of the Rodhopean flora exists at the moment. Preliminary data gives an estimate of c. 2000 species of vascular plants. In comparison, the number of vascular plants in the whole of Great Britain is c. 1800. In the Rodhopi, 11% of the species can be classified as Balkan, Bulgarian, Greek or local endemics. The five largest families are Asteraceae, Fabaceae, Poaceae, Rosaceae and Caryophyllaceae. The forests in the Rodhopi Mountains constitute c. 23% of the total forest area in Bulgaria. Four-fifths of the Rhodopi Mountains lie within the boundaries of Bulgaria. The Rhodopi accounts for nearly 60% of the total flora of Bulgaria.



LOOK AT THE RODHOPI MOUNTAINS, stretching from Rila (highest peak Musala, 2925m) to the Saros Körfezi, serpentine outcrops at Silo (1065m), covering an area of c. 12,000 km².



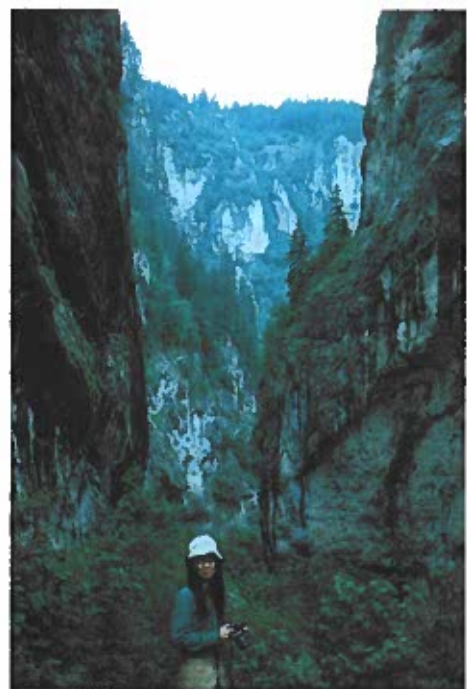
1. The wet and misty Elatia forest in C Rhodopi (*Picea abies*)



2. Partheno Dasos at the Greek-Bulgarian border



3. Partheno Dasos, forest clearing



4. Trigrad gorge, Bulgaria (limestone)



5. Village of Sarakini



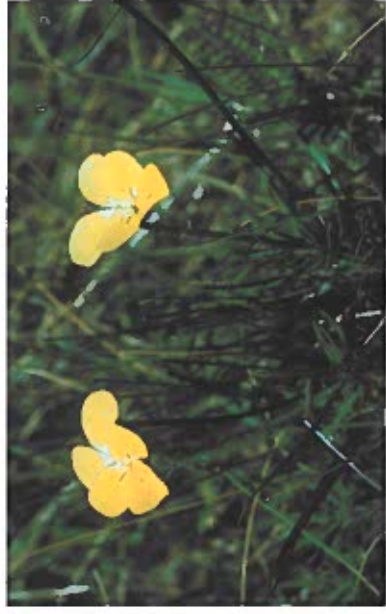
6. Hay stacked on trees for drying, near village of Dimario



7. *Haberlea rhodopensis*



8. *Geum coccineum*



9. *Viola rhodopeia*



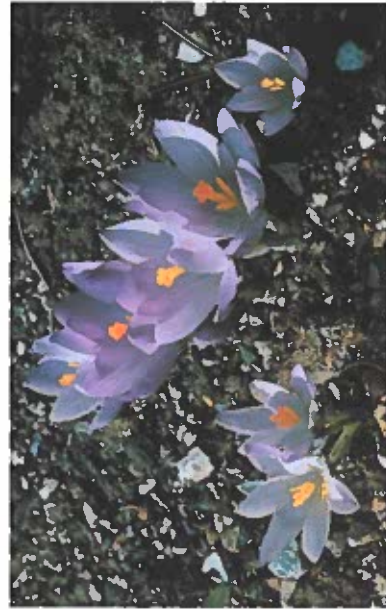
10. *Soldanella rhodopaea*



11. *Geum rhodopeum*



12. *Lilium rhodopeum*



13. *Crocus veluchensis*



14. *Bruckenthalia spiculifolia*



15. *Hypericum cerastoides*