

## The Rufford Foundation Final Report

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Congratulations on the completion of your project that was supported by The Rufford Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other format. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to [jane@rufford.org](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

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| Grant Recipient Details |   |
|-------------------------|---|
| Your name               | Korana Kocić  |
| Project title           | Aphid parasitoids (Hymenoptera: Braconidae: Aphidiinae) of high mountains in Serbia |
| RSG reference           | 19085-1   |
| Reporting period        | March – December 2016   |
| Amount of grant         | £5000   |
| Your email address      | koranabg@yahoo.com  |
| Date of this report     | 24. 12. 2016.   |

**1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.**

| Objective   | Not achieved | Partially achieved | Fully achieved | Comments   |
|---|--------------|--------------------|----------------|--|
| Create a checklist of Aphidiinae species and plant-aphid-parasitoid associations in high mountain region (Kopaonik, Tara, Golija, Stara and Suva mountains) |              |                    |                | We successfully collected the plant, aphid and parasitoid material from all the locations, determined the material, and created a checklist of all species with geographical coordinates, habitat description, and plant-aphid-parasitoid associations. We collected 91 samples, with 33 species belonging to 10 parasitoid genera. Also we recorded 87 different plant-aphid-parasitoid associations. |
| Identify possible unknown locations of occurrence of these species within above mentioned mountains   |              |                    |                | During the 7 field trip days on each mountain, we surveyed many different locations, and recorded multiple species from several genera for which the previous occurrence was not known.  |
| Check and record possible threatening factors.  |              |                    |                | By collecting samples in the sites that are under the human influence and, also, undisturbed ones, we concluded that the biggest threat for our tritrophic associations and parasitoid species is destruction of habitat, deforestation, pastures affected by overgrazing and high traffic pollution (on Tara and Kopaonik).   |
| Compare obtained results with previous studies, if available.   |              |                    |                | Previous data for Suva and Stara planina are scarce, with only few species documented. Kopaonik, Tara and Golija were more covered during the past decade. Yet, we recorded additional genera and  |

|                                      |  |  |  |   |
|--------------------------------------|--|--|--|---|
|                                      |  |  |  | species in all investigated mountains.  |
| Raise public awareness and education |  |  |  | We held the presentations at the Faculty of Biology, at the public library, elementary school and also we presented our work and the importance of aphid parasitoids to students of biology and agriculture. During our trip we talked to rangers and locals, trying to raise awareness of protecting habitats and ecosystems, and presented all the benefits that local communities can have by protecting the habitat of aphid parasitoids. |

**2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).**

We were very surprised by the fact that we could not buy sampling tubes and stereomicroscope from companies in Serbia, since we were not legal entities. Therefore, we had to travel to Slovenia, and there without any difficulty purchase both, tubes and stereomicroscope. Also, we ordered entomological nets, handles and insect aspirators from Czech Republic.

Briefly, we had a problem with transportation, but our Faculty of Biology kindly offered us a faculty vehicle. Furthermore, we slightly shifted the dates for fieldtrip, because this year the peak of season came a bit later. An at last, we lost some amount of funds because the transaction rate dropped from 170 RSD per GBP when we applied for funds, to 142-147 RSD per GBP in July-August 2016, when we exchanged the money for field trips.

**3. Briefly describe the three most important outcomes of your project.**

1. We created a check-list of *Aphidiinae* species and plant - aphid - parasitoid associations, together with habitat description, and geographical coordinates. This list is considerably more complete than one that previously existed, with several additional species and genera recorded for each mountain.

2. We estimated threatening factors, and mapped areas that have higher number of these factors. We consider destruction of habitat (due to expansion of tourism) the biggest threatening factor to our unique tritrophic interactions.
3. We raised awareness of importance of preserving habitat and aphid parasitoids. These species are somewhat neglected and completely unknown to local communities, so education was necessary.

**4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).**

The local community was willing to participate, and even helped us during the trip, since they know the mountains and the roads quite well. One of the park rangers also participated in one fieldtrip with us. After talking to the locals, some of them agreed to refrain from overgrazing in certain areas. By doing this, we leave more habitat intact and that could help in preservation of these unique insects. Also, locals were familiar with native plant species, but were unaware of their endemism and rareness. Furthermore, nobody knew about the existence of aphid parasitoids and their importance in ecosystem. We explained them the role of these insects in biological control of pest aphids, and illustrated how to reduce use of insecticides and still control the aphid populations with the help of *Aphidiinae* in their gardens and orchards.

**5. Are there any plans to continue this work?**

Yes, we do have plans to continue. This year we did a project during peak season. But, also, it will be needed to do the field research during April/May, to see if there are some species that occur earlier. Some samples are very unusual. If there is a possibility, DNA analysis should be done. Also, on the territory of Serbia there are other high mountain areas, that should be investigated as well (Zlatibor, Ozren, Rtanj, Homoljske planine).

**6. How do you plan to share the results of your work with others?**

The results will be presented on the next congress of entomologists in Serbia. At the moment, we are also writing a short paper about the results of our research. Samples are stored at Faculty of Biology, Belgrade and are available for other researchers, as well as obtained data.

**7. Timescale: Over what period was The Rufford Foundation grant used? How does this compare to the anticipated or actual length of the project?**

Actual length of the project is in concordance with anticipated length. Preparation for the project started in April. During April and May, all the necessary equipment was bought. May and June were used for promoting our work. During those two months, we used funds for printing the posters, badges and t-shirts. The most of the funds were used in July - August, for our field trip. After that, the rest of the work (classification, determination, writing papers) did not require any funds.

**8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.**

| Item   | Budgeted Amount | Actual Amount | Difference | Comments  |
|--|-----------------|---------------|------------|---|
| Entomological nets and handles (20 GBP x 2 persons)  | 40              | 73            | -33        | The price was higher and we had to order them from Czech Republic, so we had to pay for the shipping expenses.                  |
| Disposable equipment (1000 tubes for aphid and parasitoid samples, 4 bottles of 96% ethanol) | 175             | 169           | +6         | The tubes were bought in Slovenia together with the stereomicroscope, so we didn't have to pay shipping costs.                  |
| Plastic containers 150 pcs   | 30              | 49            | -19        | We needed 100 additional containers.  |
| Insect aspirator x 2   | 40              | 76            | -36        | The price was higher and we had to order aspirators from Czech Republic, so shipping expenses were paid.                        |
| Promotional material (T-shirts, posters and fliers)  | 70              | 70            | 0          | Instead of fliers for the same price we made badges, since as though they are more permanent and can have greater public reach. |
| Portable GPS   | 150             | 150           | 0          |   |
| Fuel and travelling cost   | 1100            | 1015          | +85        | Travelling costs were cheaper than estimated.   |

|                   |      |      |      |   |
|-------------------|------|------|------|---|
| Accommodation     | 1400 | 1322 | +78  | Accommodation on one location was cheaper than estimated.   |
| Daily allowance   | 1050 | 1050 | 0    |   |
| Stereo microscope | 900  | 770  | +130 | The price of a stereomicroscope was 550 GBP, but we had to travel to Slovenia to buy it, since no company from Serbia could sell it to us. Because we were in a price range, we decided to spend additional 220 GBP for travel expenses to Slovenia and back. |
| <b>Total</b>      | 4955 | 4744 | +251 |   |

The amount we got from RSGF was 5000 GBP, so the actual difference is 256 GBP.

### 9. Looking ahead, what do you feel are the important next steps?

There are two important steps.

First, it would be interesting to see what kind of species occur in late spring (April/May) since the composition of tritrophic associations may vary depending on the time of the year. We found some unusual samples, and are curious to see will some other species emerge so early. Also, we recorded the occurrence of *Lysiphlebus testaceipes*, the invasive species introduced from South America. We would like to follow the distribution of this species and establish whether it is spreading further to the North or to other un-investigated mountains.

Second, there are other high mountain areas in Serbia, also with unique ecosystems and plant composition. Unfortunately, this year we had time to visit just five of them. But, in the future, we aspire to visit Zlatibor, Ozren, Rtanj, and Homoljske planine, and, like this time, map the habitats and create a check list. We are expecting some interesting results, especially from Homoljske planine and Rtanj.

### 10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the RSGF receive any publicity during the course of your work?

The Rufford logo was used in all promotional material (posters, badges, t-shirts) as well as on the presentations. We gave the material, posters and badges, to both, local community during our field work and scientists and students, during the presentations of our work.

Also, Rufford Foundation will be acknowledged in all future work with material and results obtained during our research.

Rufford Foundation received publicity during all our presentations, field work and conversations with the students, public, local community and scientists.

#### **11. Any other comments?**

We would like to thank The Rufford Foundation for giving us the opportunity to do our research. Without the Rufford Small Grant, this would be impossible. We are now closer to our goal that is protection of vulnerable areas and their insect communities in Serbia.