

The Rufford Small Grants Foundation

Final Report

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

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. 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. 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.

Thank you for your help.

Josh Cole

Grants Director

Grant Recipient Details

Your name	Andrii Tarieiev
Project title	Conservation of Endemic and Relict Species <i>Betula klokovii</i> Zaverucha on the Territory of Ukraine
RSG reference	15524-1
Reporting period	18 September 2014 – 06 October 2015
Amount of grant	£4800
Your email address	andrii.tarieiev@gmail.com
Date of this report	06.10.2015

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
Complex studying of nature populations of <i>Betula klokovii</i>			yes	The number of birch trees of every species, their hybrids was counted. We also estimate distribution, age, condition and renovation of every population
Developing reasonable strategy for conservation of this species in already created NNP "Kremenets montains"			yes	Hopefully we enhance strategy of <i>B. klokovii</i> conservation on the basis of knowledge, obtained during releasing this project, but we need some time to confirm their efficiency.
Detect the degree of hybridization between <i>B. klokovii</i> and <i>B.pendula</i>			yes	We detect the quantity of trees with hybrid morphotype and pure species.
Increasing <i>B. klokovii</i> population by planting this species from seeds and grafting		yes		We have the successful experience in different kinds of grafting were released during the project, but we will know any results for planting only next year.
Molecular-genetic investigations and phylogenetic techniques		yes		Different approached of molecular-genetic analysis were performed. Some differences between <i>B. klokovii</i> and other birch species were detected, but it need to be confirmed by additional investigations. We plan such activities next year.
Providing activities with staff of NNP "Kremenets montains" and local people		yes		These activities would be continued after project finishing.
Karyological studies of collected material	yes			This approach was not successful and will be repeated next spring in the period of beginning active vegetation.

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

- i. The resolution ability of used molecular markers was lower than expected. We get some evidence that *B. klokovii* is a separate taxon but we'll need to conduct additional experiments to be sure that we are fully correct.

- ii. We did not obtain data for chromosome numbers because of technical troubles and maybe inappropriate time or techniques. We need to analyse all factors and repeat this experimental part next year.

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

- i. Current condition of nature population is determined (trees are identified for three groups – *B. klokovii*, *B. pendula* and their hybrids by morphological traits, counted, mapped and their age were estimated).
- ii. Completely new data connected with carrying molecular-genetic analysis and two different types of grafting of *B. klokovii* scion on *B. pendula* stock were obtained.
- iii. The enhanced strategy for saving *B. klokovii* was developed.

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

N/A

5. Are there any plans to continue this work?

Yes. The monitoring of the populations, collecting seeds from typical individuals, grafting procedures and actions for preventing hybridisation will be continued. Also it will be good to release chromosome number counting next year and applying other molecular markers with involving sampling of the whole population.

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

The results would be shared by publishing in scientific journals and also in popular science issues for broad auditory and local people. This work is partially done and we plan to continue this part of work. Nowadays we published two papers: conference proceeding and popular science article:

Olshanskyi I., Tarieiev A. (2015) *Betula klokovii* Zaverucha (Betulaceae): History of research. *Contribution of amateur naturalists into biological studies. Proceedings of International Scientific Conference devoted to the 200th anniversary of Lajos Vagner's birthday (2015, May 14-16, Beregszasz, Ukraine)*. P.469–474.

With the aim to share it we made this publication is available on-line by the following link:
[https://www.researchgate.net/publication/277142007_Betula_klokovii_Zaverucha_\(Betulaceae\)_History_of_research](https://www.researchgate.net/publication/277142007_Betula_klokovii_Zaverucha_(Betulaceae)_History_of_research)

Popular science article on “My science” electronic resource
Olshanskyi I., Tarieiev A. (2015) Klovov birch – the species which can disappear in nearest 35 years? (originally in Ukrainian) http://my.science.ua/blog/bereza-klokovva--vid-sho-znikne-v-najblizhch-35-rok_v.html#comment2046

7. Timescale: Over what period was the RSG used? How does this compare to the anticipated or actual length of the project?

The grant was used from September 2014 to October 2015, anticipated duration of the project from September 2014 to November 2015. Expeditions to NNP “The Kremenets Mountains”, Ternopil region were released from May 2014 to October 2015. During this time we released GPS mapping of population, trees identification and counting, their age estimation and tried and two different types of grafting of *B. klokovii* scions on *B. pendula* stocks (April-July 2015). In this time several meetings in educational purpose were organised.

Laboratory work was conducted from October 2014 to June 2015 in the Department of Forest Genetics and Forest Tree Breeding, University of Göttingen.

Activities connected with publishing the results were done mainly in August-October 2015

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
Photocamera	£300	£350	-£50	Actual cost higher than estimated
Macro lens	£700	£625	£75	Actual cost lower than estimated
Portative GPS-navigator	£300	£243.5	£56,5	Actual cost lower than estimated
Expedition outfit	£300	£289	£11	Actual cost lower than estimated
Some stocks and consumable laboratory materials (reagents for karyology, DNA isolation, PCR, sequencing, anatomical studies)	£700	£760	-£60	Actual costs of consumables were higher than estimated, some additional techniques were applied
Works on saving the population of this species (felling of another species, minimization of pollination by another species)	£400	£455	-£55	Actual costs of consumables were higher than estimated. This works will be continued next year
Works on repatriation of <i>B. klokovii</i> (grafting, collecting of seeds, planting of trees)	£400	£546	-£146	Actual cost of consumables were higher than estimated, two different techniques of grafting were tried and also gathered some seeds. All activities including trees planting will be continued next spring.
Transport expenses (fuel for car)	£500	£411	£89	We used less fuel for car then planned
Hotel services	£250	£247	£3	
The writing goods (paper, cartridges for printer and	£50	£50	£0	

another)				
Polygraph print of the informational poster	£200	£190	£10	Actual cost lower than estimated
Polygraph print of the informational booklet	£300	£250	£50	Actual cost lower than estimated
Publishing article in open access journal	£400	£0	£400	This item was not in original budget. Publishing article in open access journal is better way to share results in scientific community than writing the monograph.
TOTAL	£4800	£4416,5	£383.5	The difference will be used for publishing article and continuing research activities with <i>B. klokovii</i> in nearest time

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

I think that the most important will be continuing of recent activities with adding some important new ones:

- 1) Continuing monitoring of nature population to detect any trends or damage on time.
- 2) Continuing activities for stabilising and increasing the population of this species by different approaches – seed planting, grafting etc.
- 3) Efficiency estimation of every activity for saving *B. klokovii* population done during this project and will done in future.
- 4) Providing another types of molecular-genetic analysis, desirable on the population level.

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

Yes. Rufford Small Grant Foundation logo was used in all materials related to this project – booklets, banners, conference proceedings and popular science article. The logo was used throughout. Also we publicised the crucial role played by the RSGF in nature investigations on scientific conferences, in conversations with colleagues, local people etc.

11. Any other comments?

All results obtained during this project I plan to use in my PhD thesis. I intend to continue studying *B. klokovii* wild populations and probably will be apply to the 2nd grant from Rufford Foundation