

## Project Update: October 2014

Investigation of geographic distribution, ecological features and modern conditions as well as structure of populations of rare aquatic ferns in Ukraine and identification of causes of rarity of these species. Fully Achieved.

- During the period of our project we have investigated the features of rare aquatic ferns' distribution on the territory of Ukraine. *Pilularia globulifera* was known only from the one locality in Ukraine. We have inspected this habitat and haven't found *Pilularia globulifera* there. Also, this species hasn't been found in the other investigated localities, therefore it can be considered as disappeared in Ukraine. *Salvinia natans* in spite of its conservation status (classified as unvalued in The Red Data Book of Ukraine) is widely spread species on the investigated area and isn't threatened. According to the results of our investigation, the larger number of *Salvinia natans* localities are in the valleys of Dnipro, Pivdennyi Bug and Siverskiy Donets rivers and in Transcarpathia region. Almost all of the inspected populations of *Salvinia natans* are stable. Also, we have considered the tendency to increase of quantity of *Salvinia natans* populations because of this species migration from the riversides to the artificial ponds. After analyses of literature sources and herbarium data we have counted 18 localities of *Marsilea quadrifolia* from six regions of Ukraine. After our revision of these localities we set that *Marsilea quadrifolia* saved in four of them, in 14 it disappeared, and we have found new one. All five revealed localities are in Transcarpathia region. *Marsilea quadrifolia* is stenotopic species and saved in bayous of Latorytsia River and meliorative canals. Now three populations are threatened because the reservoirs get dry and only in two localities *Marsilea quadrifolia* formed thickets and its populations are in good condition.

Development, creation and practical realisation of effective methods of conservation of rare aquatic ferns' habitats in Ukraine. Partially Achieved.

- *Salvinia natans* is protected in two biosphere reserves, four natural reserves and many other protected areas. Our investigation showed that this species isn't threatened and doesn't require creation of new protected areas. Three localities of *Marsilea quadrifolia* is protected in the Regional landscape park "Prytesnianskiy", but two others don't protect. In order to improve management of territory we are working out the scientific grounded presentation to Ministry of ecology and natural resources of Ukraine for increasing the conservational status of Regional landscape park "Prytesnianskiy" to National Natural Park. Also, we are preparing necessary documentation for annexation of two areas with localities of *Marsilea quadrifolia* to the territory of future National Natural Park "Prytesnianskiy".
- *Salvinia natans* and *Marsilea quadrifolia* in Ukraine are cultivated in five botanical gardens and arboreta. Their collections are sources for repatriation of the natural populations of these plants, especially of *Marsilea quadrifolia*.
- This objective is partially achieved up to now because it is in progress and our work in this topic isn't finished.

The discussion of conservation problems of rare aquatic ferns' habitats with local population for raising their level of ecological consciousness. Partially Achieved.

- In the framework of the project took place several lessons for children, seminars and conversations with local populations in the different regions of Ukraine. Also, we took part in the international conference for young scientists "Advances in botany and ecology" where was presented oral presentation "*Salvinia natans* on the territory of Ukraine".
- We prepared material for popular scientific articles in the different Ukrainian popular journals and local newspapers.
- Now we are working out the layout of colour information bulletins and posters which we plan to spread to schools, universities and scientific institutions in order to inform our people about importance of rare aquatic ferns' habitats conservation.
- This objective is partially achieved up to now because it is in progress and our work in this topic isn't finished.

The edition of the monograph «Rare aquatic ferns in Ukraine». Partially Achieved.

- Material for the monograph is collected and now we are process this information and preparing the layout of the book. This objective is partially achieved because the planned expeditions are planned to finish recently, and we haven't made opportunity to prepare this book earlier. Up to now we have concluded a contract with publisher and predict to publish monograph on March 2015.

We plan to conduct a few expeditions to the Crimea in order to check reliability of information about presence of *Salvinia natans* there and examine conditions of its populations. But annexation of Russian Federation our territory in Crimea caused overlapping communication with this area and we couldn't get there.

The other difficult connects with unforeseen changes in exchange rates which determine changes of our project budget.

### **Outcomes:**

1. Firstly, the result of our project is collection of scientific data about spreading of rare aquatic ferns in the territory of Ukraine and about conditions of their populations.
2. Based on analyses of the collected information, we have worked out the practical methods of rare aquatic ferns' natural habitats conservation. Also we are working out the scientific grounded presentation to the Ministry of Ecology and natural resources of Ukraine in order to increase protection of natural habitats of *Marsilea quadrifolia* in Transcarpathia region.
3. Our public activity promoted the raise of ecological consciousness of the local population contributes of preservation of water areas, especially of young generation which took actively part in our lessons and seminars.

During the project we have collaborated with local communities and volunteers. We carried out common excursions and conversations about biological and ecological features of rare aquatic ferns species which are growing in the neighbourhood of them. Also, we conducted

lessons and seminars for local people and children where we presented multiply presentations about aquatic ferns and water ecosystems of Ukraine. On the one of the seminars we were awarded of acknowledgement for forming of ecological consciousness of pupils. At the nearest time will be published colour bulletins and posters which we plan to spread to schools, universities, scientific institutions and other communities which are associated with natural research or environmental education of youth.

We plan to investigate the dynamic of *Marsilea quadrifolia* populations which have been found during the project. The concentration of our future investigation will be directed on the conservation presence populations of this fern and repatriation of the extinct ones to their former localities. Also, we plan to continue the studying of Ukrainian rare species of ferns for development of effective methods of their conservation, because majority populations of these species are close to extinction in Ukraine.

The basic information and results of the project will be light out in our monograph «Rare aquatic ferns in Ukraine» and scientific publications. Also, we plan to present results of our investigations in conferences and meetings of the Ukrainian Botanical Society, give some consultations and discussions with the colleagues.

Our project includes all of planned stages but carrying out of them was shifted on the timescale. This is due to discrepancy of planned and actual beginning of the project. We planned to begin our work in August 2013 and the period of work had to include two expeditions' seasons, but we began them only in November 2013 and had to combine both planned parts of expeditions in the one.

1. Expeditions to natural species' habitats for investigation of their modern conditions (was planned: 25<sup>th</sup> August to 30<sup>th</sup> September 2013; 25<sup>th</sup> June to 10<sup>th</sup> October 2014, really: May 2014 – November 2014).
2. Processing the results of expeditions. Preparation of scientific substantiated documentations for creation of protected territories with the subsequent presenting them for approval to the Ministry of ecology and natural resources of Ukraine (was planned: 10<sup>th</sup> October to 15<sup>th</sup> December 2013; 15<sup>th</sup> October to 20<sup>th</sup> December 2014, really: is processing).
3. Conducting of the ecological lessons and seminars with children on the base of nature protect land and water areas. Also, popularization of the environment protection problem and the protection of the water ecosystems in particular (was planned: 25<sup>th</sup> September to 25<sup>th</sup> October 2013; 25<sup>th</sup> March to 25<sup>th</sup> April 2014, really: March 2014 to September 2014).
4. The message about the project and its results in media. Preparation and distribution of the information bulletins about conditions of the species' habitats and necessity of their conservation in public (was planned: 25<sup>th</sup> August 2013 to 30<sup>th</sup> May 2014, really: November 2013 – is processing).
5. 5. The final report. The edition of the monograph «Rare aquatic ferns in Ukraine» (was planned: 5<sup>th</sup> July to 25<sup>th</sup> September 2014, really: March 2015).

Our next work will be connected with finishing of increasing conservation level of Regional landscape park "Prytesnianskiy" to National Natural Park and annexation of two areas with

localities of *Marsilea quadrifolia* to the protected territory. Also, we plan to organise new project dedicated to investigation of other rare ferns species population on the territory of Ukraine in order to work out the appropriate measures of their protection.

We used The Rufford Foundation logo in our multimedia presentations (you had an opportunity to see them at the photos which had been sent to you in my previous letter) when prepared oral performances for lessons and seminars. I plan to use the logo on the bulletins and posters which I'm going to print at the nearest time. Also, The Rufford Foundation logo, of course, will be at the book cover of our future monograph.