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. 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.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Leonid V. Averyanov
Project title	Mapping and assessment of *Xanthocyparis vietnamensis* subpopulations in Cao Bang, Ha Giang and Lang Son provinces (Vietnam)
RSG reference	15666-B
Reporting period	2014-2015
Amount of grant	£6,000
Your email address	av_leonid@mail.ru; av_leonid@yahoo.com
Date of this report	30 June 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
1. Field explorations in territories of expected new localities of golden cypress in Ha Giang, Cao Bang and Lang Son provinces for verification of indirect information received from local peoples and forest rangers.				Data about 16 possible localities of golden cypress in Ha Giang, Cao Bang and Lang Son were obtained on the base of indirect information from local people during wide and extensive talks and interviews all over the area. All these localities were visited and studied personally (Fig. 1-5). Population of golden cypress was newly discovered in one locality in Ha Giang province (Fig. 1, 2); populations in two localities were newly discovered in Cao Bang province (Fig. 1, 3). Golden cypress was not found in all other 13 locations with similar habitats in Ha Giang, Cao Bang and Lang Son provinces during personal field investigations (Fig. 1-5).
2. Field work on mapping and estimation of populations square and approximate numerical strength of newly discovered subpopulations				Mapping and approximate estimation of population square in all three newly discovered populations of golden cypress was made. Numerical estimation of specimen numbers and their age was fulfilled very approximately due to steep inaccessible cliffs and time deficit.
3. Field work around discovered localities for searches of possible additional subpopulations; finding of local people with appropriate knowledge in expected areas of species distribution for more additional information of species distribution, including distribution in the past				All possible information from local people and local administrations was obtained and personally verified by field observations. However, there is no solid guarantee that locals are always honest. Sometime local people keep data about occurrence of golden cypress confidentially as such data has certain

				commercial value and are highly demanded by Chinese dealers having unlimited financial resources. Field observations indicate usual isolation of golden cypress populations on very small area, commonly on mountain tops. Meanwhile, a few small subpopulations of golden cypress were observed in one discovered locality, spaced sporadically along edge of mountain ridge (Ha Giang ppopulation, voucher number – *CPC 7431*).
4. Description of habitats, vegetation and other natural conditions of golden cypress in discovered subpopulations, including description of related endemic species by standard geobotany methodology (when possible/necessary - with detailed description of model plots for future long term observations).			**X**	Basic integral description of vegetation and species composition in habitats of golden cypress based on voucher herbarium collections is fulfilled. Model plots methodology was not used due to steep cliffy landscape not suitable for plot assignment.
5. Estimation of number of trees in discovered subpopulations, their size, structure and expected area of distribution, as well as identification of local subpopulation conservation status				Number of trees and their age in discovered populations were fulfilled very approximately due to steep inaccessible cliffs and time deficit. Structure, "vitality" and expected conservation status are preliminary assessed. Full comprehensive assessment was not possible as some trees grow on inaccessible cliffs or accessible mountain tops which study needs additional time and special equipment.
6. Investigation of species phenology and cone/seed production, identification of optimal time for seed collecting in discovered subpopulation.				Golden cypress phenology and approximate cone/seed production in discovered populations are studied and identified as well as optimal time for seed collecting in the area.
7. Elaboration of appropriate strategy for species protection in cooperation with local village authorities, representatives of Forest Protection Department and international Nurture Protection				Possible strategy for species protection elaborated and discussed with municipal/district authorities and officers of Forest Protection Department. It includes conservation of local habitats of

organizations (in perspective - seed collecting, seed/cuttings propagation for possible reforestation).				remained subpopulations, seed/cutting propagation, plantation and strong control for illegal exploitation and black dealer network.
8. Compilation of appropriate report and illustrated assessment for publication in popular and scientific magazines				Illustrated report with all obtained data are now in preparation. Maun data are prepared in special publication. Some obtained data are published and submitted for publication. They are: Averyanov Leonid V., H.-J. Tillich. 2015. Aspidistra laotica, A. multiflora, A. oviflora and A. semiaperta spp. nov. (Asparagaceae, Convallariaceae s.s.) from eastern Indochina. Nord. Journ. Bot. 33: 366-376. Article first published online: 11 NOV 2014 | DOI: 10.1111/njb.00664. Averyanov L.V., N. Tanaka, K.N. Sinh, T.B. Vuong, D.T. Nghiem, H.T. Nguyen. 2015. New species of Ophiopogon, Peliosanthes and Tupistra (Asparagaceae) in the flora of Vietnam. Nord. J. Bot. 00: 000-000 (in print). Averyanov L.V., J. Ponert, P.T. Nguyen, V.D. Nong, K.S. Nguyen, V.C. Nguyen. 2015. The Survey of Dendrobium sect. Formosae in Cambodia, Laos and Vietnam. Adansonia 00: 000-000 (in print).

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

1. Extremely bad roads and trails in remote mountain area of exploration as well as prolonged rains, which commonly completely stops in November. We have been forced pay more money for car lease and maintenance, as well as pay more for motorbike lease. In addition, we spend more time for travel and exploration routes.

2. High activity of illegal exploration and illegal exploitation of golden cypress by Chinese dealers having actually unlimited budget to purchase of any parts of this plant (including everything items, from whole trees or cuttings, till pieces of timber, bark or roots). It leads to many falsifications of local people whose seek get money for any information on species

occurrences, particularly in remote area needed some of feet trip. We have been forced pay more money for local guides and porters, as well as personally check any obtained data.

3. High attention to our Project activity from state administration, police and FPD (Forest Protection Department) due to wide illegal explorations of Chinese dealers and their Vietnamese agents. We have been forced include one people from each agency, and pay addition costs for meal and their accommodation. In addition we have been prepare short special report about all our activity and results for state administration and District FPD office that increase project time limit.

4. Particularly rocky and cliffy landscape formed deep karstic erosion where some trees of Golden cypress grows on vertical cliffs and mesa tops inaccessible for direct study without special equipment. We should use some extrapolation in estimations of whole populations based on direct studies of available representative specimens. This concerns estimation of number, middle age, structure and population square. Model plots methodology was not used due to steep cliffy landscape not suitable for plot assignment.

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

Final integral detailed dotted map of all hitherto discovered in Vietnam populations of golden cypress is completed. All available indirect information, data and rumours about occurrence of golden cypress in the various areas of the northern Vietnam were personally checked and verified with final elaboration of modern distribution map for golden cypress and its closest coniferous associates. Area of relictual limestone coniferous forests were golden cypress is most rare associate is outlined on the base of collected voucher specimens.

Preliminary assessment of conservation status of all discovered golden cypress populations based on personal observations is fulfilled. Description of vegetation, identification of main associates and plant species composition of habitats in discovered locations of golden cypress is made. All observations and descriptions are based on collected voucher herbarium specimens.

Realistic program of conservation of whole presently available gene pool of golden cypress is elaborated. It based on available information about all existing relictual populations. Main idea of the program consists of propagation (by cuttings and seeds) of some survived specimens from each population in alone (or several) plantations. This can not only protect main genetic diversity, but also will cordially improve fertility and seed production due cross pollination. Local people will be directly involved in such proposed project that additionally disseminate ideas of nature protection and decrease social conflicts.

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

Local people were involved in realisation of the project as extensively. Mainly they were engaged as local guides, forest workers, porters, motorbike drivers, interviewers and collector of information, accommodation hosts etc. Totally around 25% of received budget (£1500) was paid as salary or other benefits to local people in the area of investigations. Largest role of the local peoples in areas of discovered populations will be expected in course of extension of the golden cypress conservation programme.

5. Are there any plans to continue this work?

Yes, we would like continue this work. It is very important to continue activity on golden cypress conservation for protection of its whole presently existing genetic diversity in conditions when some populations are fast and fatally decreasing. Now we have all necessary data basing such work. Main idea of expected conservation programme consists of propagation (by cuttings and seeds) of some surviving specimens from each population in alone (or several) plantations. This can not only protect main genetic diversity, but also will cordially improve fertility and seed production due to cross pollination. Local people will be directly involved in such proposed project that additionally disseminate ideas of nature protection and decrease social conflicts. Budget of the programme may be formed from different foundation with support of national agencies.

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

Dissemination of obtained data and results will be realised by means publications in scientific magazines, placing of report in free access internet resources (Rufford and allies), reports and presentations in national agencies and local administrations. Collected herbaria specimens will be delivered among main international herbaria conducting similar researches.

First publications with some results of completed research:

Averyanov Leonid V., H.-J. Tillich. 2015. Aspidistra laotica, A. multiflora, A. oviflora and A. semiaperta spp. nov. (Asparagaceae, Convallariaceae s.s.) from eastern Indochina. Nord. Journ. Bot. 33: 366-376. Article first published online: 11 NOV 2014 | DOI: 10.1111/njb.00664.

Averyanov L.V., N. Tanaka, K.N. Sinh, T.B. Vuong, D.T. Nghiem, H.T. Nguyen. 2015. New species of Ophiopogon, Peliosanthes and Tupistra (Asparagaceae) in the flora of Vietnam. Nord. J. Bot. 00: 000-000 (in print).

Averyanov L.V., J. Ponert, P.T. Nguyen, V.D. Nong, K.S. Nguyen, V.C. Nguyen. 2015. The Survey of Dendrobium sect. Formosae in Cambodia, Laos and Vietnam. Adansonia 00: 000-000 (in print).

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

January – August 2014 – preparation for grant work, talks, discussions, processing of official permissions for fieldwork, purchase of maps and other documents, coordination dates, collecting of necessary data and information.

8 November – 2 December 2014 – fieldwork survey.

January – June 2015 - processing and analysis of collected materials, preparation of report and publications containing original scientific data of completed project.

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
Local transportation during 10 days of field works (7 persons x 100 GBR)	600	700	+ 100	Local transportation by motorbike hiring on steep rocky trails during rainy weather in remote mountain areas was more expensive as was expected (it was about £1 for 3 km). Totally each person cover during field work about 250 km. It was necessary for successful field exploration of the area. Additionally it was necessary to include into field searches additional participants from Institute of Ecology and Biological resources (Vietnam Academy of Science and Technology) and from local administration of Vietnam Forest Protection Department (FPD) as official supervisors of the team activity.
Vehicle lease, vehicle gas and maintenance: 1 vehicle lease, fuel and driver costs for about 19 days for trips in remote	1000	1330	+ 330	4-wheel vehicle lease for routes on extremely bad rocky mountain roads on rocky limestone was a bit more expensive as was expected before. We could not

mountain areas 19 days x 70 GBR				partially pay this expense from other sources.
Lodging: 7 persons x 19 days x 8 GBR/day	1200	1064	- 136	Less numbers of total days/persons of exploration gave some economy. Additional included persons are representatives of local administration, police and FPD supervisors. Lodging was a bit more expensive particularly for state officers.
Lodging in Hanoi: 1 persons x 6 days x 25 GBR/day	0	150	+ 150	Lodging for 6 days in Hanoi (Leonid Averianov) for principal investigator necessary for preparation of the project activity and preliminary processing of documentation, field work material and preliminary results.
Food during field works: 7 persons x 19 days x 15 GBR	2400	1995	- 405	Less numbers of total days/persons of exploration gave some economy. Additional included persons are representatives of local administration, police and FPD supervisors. Meal supplies were a bit more expensive particularly for state officers.
Guides and porters salary: 5 local guides/porters x 13 days x 8 GBR	500	520	+20	Less numbers of total field work days of exploration gives accordingly some economy in local peoples' salaries.
Field supplies: maps, batteries, herbarium paper, alcohol, sacks, lease of electricity generators for laptops and d-cameras, memory cards, tent, plastic bag etc.	300	214	- 86	Some equipments and supplies used in previous RSG project were exploited again that gave a little budget economy.
Voucher documentation of field studies: Drying and processing of additional voucher herbarium specimens for distribution into world herbaria (have not been budgeted)	0	500	+ 500	It was collected about 1300 herbarium voucher specimens verified our field searches. They will be delivered and housed in K (UK), LE (Russia), MO (U.S.A.) and P (France) Herbaria with special acknowledgement for RSGF as extremely valuable scientific materials of completed investigation.
Total	600	**6473**	+ 473 covered from other sources	

All costs were calculated in GBR. 1 GBP is approximately = 35,081 VND (30 March 2014)

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

1. Preliminary talks with provincial/district state administration and FPD representatives for possible organisation of appropriate territory with adequate natural conditions for golden cypress plantation (Bat Dai Son nature reserve, Dong Van Geopark, or other similar sites). Obtaining principal preliminary decision.

2. Selection of concrete suitable area with optimal nature conditions, preliminary identification of the square of plantation. Preliminary talks with municipal and village authorities, to obtain principal preliminary decision. Selection of possible responsible employers (villagers) for organisation of propagation nursery and further cutting/seedling cultivation and plantation.

3. Searches of financial support for the program realisation.

4. Collecting of seeds and cuttings from trees of all existing populations for artificial propagation and plantation. This work should be urgently done for most decreasing populations, which may extinct in very near future.

5. Cultivation of seedlings and cuttings for 2–3 years and succeeded remove saplings into plantation.

6. Monitoring and control for appropriate conditions of trees plantation.

Proposed programme can not only protect global genetic diversity of golden cypress, but also will cordially improve fertility and seed production of cultivated plants taken from geographically isolated populations due to their successive cross-pollination.

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?

- RSGF logo will be used in unpublished report for this grant delivered by internet with permission of RSGF.

- Acknowledgements for RSGF will be surely presented in unpublished report for this grant and in all publications (scientific and popular) ever issued from this research.

- Acknowledgements for RSGF will be presented in all herbarium labels for herbarium samples delivered for housing in main world Herbaria in Vietnam, UK, U.S.A., France and Russia.