

## 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	
<b>Your name</b>	Karma Tshering
<b>Project title</b>	Ecological and Adaptation of Tertiary relic plant of <i>Tetracentron sinense</i> with climate change in Bhutan Himalaya
<b>RSG reference</b>	18496-1
<b>Reporting period</b>	January 2016 to January 2017
<b>Amount of grant</b>	£5000
<b>Your email address</b>	Karmarxtshering@gmail.com
<b>Date of this report</b>	1 <sup>st</sup> January, 2017

**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
Investigate on adaptation of <i>Tetracentron sinense</i> through dendroclimatology				Species adaptability were documented with climate change
Determine the regeneration status of <i>Tetracentron sinense</i> , environment attributes and its associated floristic diversity				Regeneration status, environment attributes and its associated spices diversity were well established.
Conservation of <i>Tetracentron sinense</i> with artificial means				Due to coincidence of activities, conservation programmes are not achieved fully. In-situ and ex-situ conservation will be done in next phase of the project.
Awareness education of this species survival				Conservationist, educationist and community were well aware of this species.
Production and distribution of Leaflets and Pamphlets				Leaflets and pamphlets are produced and distributed.

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

As coring was done for first time for this species without much knowledge on wood anatomy, two increment borers was ruined and has to resort to College of Natural Resources for replacement. Tree ring analysis with annual ring measurement with J2X device was most difficult, which demand utmost patience and vast experience. My referee played a vital role in acquainting me. Lack of long meteorological data in respective habitat of *Tetracentron sinense* hindered to correlate with annual tree ring performance, however, interpolation has done, which may not be so realistic as of having data from respective site. Due to many parameters for one year project was little challenging and revalidation in other area and ex situ conservation with community involvement are planned in next phase with identified community in Habitat area of *T sinense*.

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

1. Documented with scientific standard of relic species not pronouncing with emerging issues of climate change awakening all stakeholders. Preparedness by relevant stakeholder/agencies are reminded to formulate the management option in reviving the declining species with climate change.
2. *Tetracentron sinense* habitat ecology is well known with its associate species. Environment factors of elevation, aspects, slope, soil types, and preferred habitat are well established in Bhutan. Recommended the department for conservation of its associated species for *T sinense* rehabilitation and habitat restoration.
3. First ever project of climate study with tool of dendroclimatology was made aware with community involvement with taxonomical significant of this declining species. Conservationists/educationist/communities were aware of this monotypic species in Bhutan, leading to save from extinction through conservation programs in their own way.

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

Awareness participants were imparted with this species conservation in their locality, and thus gear to motivate toward its rare and endemism. Student of CNR and UWICE were also made aware of this species existence and will communicated back at village for capturing large section of community.

About 15 community member were hired for field activity in two study sites with daily allowances and service charges. During awareness campaign in village, catering was done from five community members with payment basis, which has helped their socio economy in small little way.

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

The project documented with habitat ecology with environmental factors with climate change adaptability alone will not gear for vigorous conservation programme. To reach to larger section of community, the project has to be continuing with requesting second phase from RSG. Revalidation of *T sinense* population in potential habitat zones in Bhutan need to assessed. On site conservation (in-situ) and off site conservation (ex-situ) need to undertake involving mass local community. Nursery raising, artificial propagation and stump cutting need to undertake as it was unable to carry out within past 1 year due to coincidence of other field activities. Thus, revalidation of population status of this

monotypic species is very significant in Bhutan Himalaya as it is considered as biodiversity hotspot country.

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

Awareness campaign to relevant stakeholders, production of leaflets and pamphlets and scientific paper has been submitted to the Bhutan Journal of Natural Resources Development for wider publicity and to share the research output. I am having close link with research centres in Bhutan and when ever, conference and seminar are underway, I deliver presentation about the outcome of my project. I have requested to Director to allow me to do presentation in department conference, which is going to schedule very shortly.

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

As Rufford Foundation Grant has clear set of criteria and procedures in place, I have received fund in right time without any problem in the planning process of my project in January, 2016. Immediately, I procured the field equipment as estimated in the proposal and then sequentially executed my activities against the fund layout. Since, I have good planning process in the project, the fund were sustainably utilised as per the estimated over the entire length of my project without any hindrances. The fund of £5000 was utilised from January 2016 to January 2017 for conducting my 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
Community awareness	1200	1200	00	
Ex situ conservation	860	500	+360	Couldn't undertake much activities
production of leaflets, pamphlets and awareness materials	500	600	-100	Cost was high for quality maintaining
Equipment's	950	1150	-200	Cost was increased
DSA	400	460	-60	Living cost has increased
Vehicle transportation and	350	350	00	

maintenances				
Extension kits	380	380	00	
Food and refreshment	360	360	00	
<b>Total</b>	£5000	£5000	00	

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

Revalidating the population status in potential habitat zone in Bhutan Himalaya is imperative with in-situ and ex-situ conservation programme with community involvement. The first phase with simply documentation will not captured with realisation of practical conservation, thus declaring of *T sinense* protection area is crucial after detail assessing of its population. Sensitisation activities through publication of paper, book, and seminars will be pursued further. Media may be engaged at some point of time, especially discussion in national newspaper and TV programmes to cover mass audience.

**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?**

Yes, to exhibit the source of funding for the project, Rufford logo has been widely used for any educational outreach/awareness programme on the banners, leaflets and pamphlets. Rufford logo has been also sent to publication of journal. Different stakeholders and community are aware of Rufford logo with depiction of endangered flagship species of tiger, of which Bhutan is also one of the tiger range countries. Rufford logo was also used for presentation slides and more conservationists are aware about RSGF, leading to increased in application from Bhutan.

**11. Any other comments?**

Rufford grant to me was very prestigious and blessing enabling to initiate such neglected species translating into more conservation programme for reviving such rare and endemic species. It has built promising baseline information about this unique species in taxonomy and I personally offer heartfelt gratitude to Rufford for funding for nature conservation project across 156 countries.

In general, my project was successful with positive acceptance by relevant stakeholders with new science of dendroclimatology tools. However, it is very necessity to reach at every corner of potential habitat of *T sinense* in our country to revive the declining species with in-situ and ex-situ conservation of this monotypic and endangered species.

Simply documentation will never translate into conservation programme and thus, I am fully confident that, RSGF will fund me to undertake second phase project for this endemic plant conservation with participatory approach in onsite and offsite conservation to continue its existence in taxonomy, which may otherwise get extinct.