

CEPF FINAL PROJECT COMPLETION REPORT

I. BASIC DATA

Organization Legal Name: Arnold Arboretum of Harvard University

Project Title (as stated in the grant agreement): Mapping the Biodiversity of the Hengduan Mountains Using Historic Plant Collections

Implementation Partners for this Project:

Project Dates (as stated in the grant agreement): October 1, 2005 - September 30, 2007

Date of Report (month/year): 18 December 2007

II. OPENING REMARKS

Provide any opening remarks that may assist in the review of this report.

The report below provides details on discoveries made possible by databasing historic collections in the Harvard University Herbaria. Among the most interesting discoveries is the fact that the Harvard University Herbaria contain many more specimens from this very important biogeographic Hotspot than we had previously estimated. We now suspect that there are well over 100,000 specimens from the Hotspot in the herbarium, which makes the collection here one of the most important for analyzing the past and present distributions of plants, for determining areas of especially high diversity within the Hotspot and for looking at changes in the vegetation over time.

III. ACHIEVEMENT OF PROJECT PURPOSE

Project Purpose Scientific understanding and public awareness of the plant biodiversity increased, dynamic access to data on the plant and fungal diversity of the Hengduan Mountains and maps provided, Chinese partner and researcher capacity enhanced, .

Planned vs. Actual Performance

Indicator	Actual at Completion
Purpose-level:	
Improved understanding of structure and boundaries of the hotspot.	We were able to determine, through the grant from CEPF and from field work in the Hengduan region, that the Hotspot boundary follows closely along the border between Tibet and Myanmar in the south, then continues through eastern Tibet , roughly in a line from Bayi (Nyingchi) to Changdu (Chamdo), then northward along the border of Qinghai and Sichuan to the very southernmost part of Gansu. In Gansu the flora and vegetation are interdigitated with the flora and vegetation of the Qinling Mountains, which characteristic of eastern China and Japan. Further analysis of the date will be needed to discover additional patterns.
Improved coordination and collaboration	In December of 2006 we held a workshop and

between Chinese and U.S. scientists.	symposium in Chengdu to discuss sharing of data. Participants from throughout China (including from Beijing, Qinghai, Gansu, Guangxi, Sichuan, Xizang (Tibet) Yunnan) with an interest in the Hengduan region attended. All participants agreed to share data. We insured the attendees that the data we had acquired, both through our field work and through the grant from CEPF, were freely available to anyone with a legitimate interest.
Improved understanding of environmental trends and conservation implications.	We have not yet had the time or personnel to analyze and compare the data from the specimens entered with CEPF support with data from recent collections made on our NSF funded field project in the Hengduan region. We are, however, willing to provide data from both projects to anyone who has the time and capabilities of making the comparisons and to work with those persons to achieve the best results obtainable.

Describe the success of the project in terms of achieving its intended impact objective and performance indicators.

Were there any unexpected impacts (positive or negative)?

IV. PROJECT OUTPUTS

Project Outputs: Enter the project outputs from the Logical Framework for the project

Planned vs. Actual Performance

Indicator	Actual at Completion
Output 1: Database containing specimens in the Harvard University Herbaria collected within the Hotspot to be publicly available for biogeographical analysis and conservation purposes by 30 September, 2007.	The database of information from specimens in the Harvard University Herbaria is available to the public for biogeographic analysis and conservation purposes. The information can be viewed on-line and is available to users by contacting Dr. James Macklin, Director for Collections and Information Technology at jmacklin@oeb.harvard.edu .
1.1. Database software already in place by 1 February 2005 at Harvard University Herbaria.	A database has been in place since the start of the project.
1.2. 65,000 specimens entered into database by end of project. Data from Harvard Herbaria specimens in one database and publicly available on the web	62,303 specimens have been databased, but we have not yet combined the data from the two databases (Harvard Herbaria database and Hengduan Biodiversity database) into one. We have been discussing the conversion to determine how the data will have to be manipulated to merge them and it should be a relatively easy task once the details have been decided on.
1.3. Label data georeferenced (add latitude and longitude) based on information in gazetteers and on the web	About 70 percent of the databased collections have been georeferenced. The greatest difficulty, as we had anticipated, is interpreting the names on labels of the older collections and correlating them with currently recognized spellings, and even new names. In conjunction with georeferencing, a gazetteer and

	thesaurus of place names and their geographic coordinates was prepared by Susan Kelley and is available to anyone who wishes to use it at http://hengduan.huh.harvard.edu/fieldnotes/gazetteer
1.4. Distribution maps based on combined data sets of Harvard Herbaria and Chinese herbaria of key plant groups will show biogeographic boundaries	Distribution maps of the important genus <i>Pedicularis</i> (Orobanchaceae), with 210 species within the Hengduan region, and of <i>Koenigia</i> (Polygonaceae), a genus with its center of distribution within the Hengduan region, have been prepared.
Output 2. Map of Hotspot showing boundaries based on distribution of endemic plants, show changes in plant distributions over time, and identification of mini Hotspots within overall Hotspot based on distributions of narrowly endemic plants, and identification of poorly known areas within the Hotspot. To be completed and publicly available on the Harvard University Herbaria web site by 30 September, 2007.	A map of the Hotspot boundary has not yet been prepared. Although data from recent and older collections have been databased, we have not had time to analyze them. We have identified mini Hotspots within the Hengduan region and will be published in a paper in the near future. Once the paper is published it will be made available on the Hengduan Biodiversity web site.
2.1. Map of Hotspot showing boundaries based on distribution of endemic plants	The maps of <i>Pedicularis</i> and <i>Koenigia</i> , mentioned above, provide interesting information on the Hotspot boundaries, but additional maps will be needed to further resolve the boundary in some places to the west.
2.2. Maps showing mini-hotspots of plants for conservation priorities produced and available at the Harvard website;	Maps of mini Hotspots within the Hengduan region and will be published in the paper mentioned above under 2. Once the paper is published the maps will be made available on the Hengduan Biodiversity web site.
Output 3. Availability of information about the project database and maps communicated and connected with Information Center via link to Hengduan web site, technology training workshop held with Chengdu Institute of Biology, Kunming Institute of Botany, Beijing Institute of Botany and Sichuan University in China.	We have allowed any who wishes to link to our web site. We have also provided the data to anyone who asks and whose request is reasonable. We also stressed to availability of the data at the workshop in Chengdu in December 2006
3.1. Attending workshops to publicize project and results;	The project is mentioned at workshops and meetings in the U.S. A poster regarding the project was presented at the botany meetings in Chicago in July 2007.
3.2. Technology training workshop held with Chengdu Institute of Biology, Kunming Institute of Botany, Beijing Institute of Botany and Sichuan University in China.	Workshop held in December 2006 with Chengdu Institute of Biology, Kunming Institute of Botany, Beijing Institute of Botany and Sichuan University in China, plus about 10 other institutions from within China with interests in the Hengduan region.
3.3. provide results to www.chinabiodiversity.com hosted at CAS Institute of Zoology and CI China OM team	Data are available and will be freely provided to whomever wishes to have them.
3.4. cross reference with KIB database	We have been unable to provide a cross reference to the KIB database, since the database at KIB is currently unavailable, as far as we have been able to find out.

Describe the success of the project in terms of delivering the intended outputs.

We feel we have been successful in delivering the products we promised, except for a slight shortage in the number of specimens databased.

Were any outputs unrealized? If so, how has this affected the overall impact of the project?

We were 2,697 specimens short of the 65,000 specimen goal we had set for ourselves at the outset of the project, but we will continue to database specimens from the Hengduan region and anticipate exceeding the goal early in 2008.

V. SAFEGUARD POLICY ASSESSMENTS

Provide a summary of the implementation of any required action toward the environmental and social safeguard policies within the project.

Our project had no environmental impact.

VI. LESSONS LEARNED FROM THE PROJECT

Describe any lessons learned during the various phases of the project. Consider lessons both for future projects, as well as for CEPF's future performance.

We found that it was more difficult than we had anticipated to database and georeference data from the older collections because of the wide range of inconsistencies in recording data on labels among collectors, the wide range of nationalities involved and the various ways of transliterating Chinese and Tibetan names into those languages, and the difficult of switching databases midway through a project

Project Design Process: (aspects of the project design that contributed to its success/failure)

The success of the project was largely through the dedication of the people directly involved in overcoming difficulties, their ability to work together and with others in the Harvard Herbaria, and even outside, to resolve issues of place names, the discrepancies of names on specimens because of changes in taxonomy and nomenclature since the specimens were collected and data recorded

Project Execution: (aspects of the project execution that contributed to its success/failure)

VII. ADDITIONAL FUNDING

Provide details of any additional donors who supported this project and any funding secured for the project as a result of the CEPF grant or success of the project.

Donor	Type of Funding*	Amount	Notes
Arnold Arboretum	Computer	\$65,000	A computer programmer

	programming support and hardware		was paid to develop a new database to accommodate the Hengduan specimen data in the Harvard University Herbaria. Computer hardware, software and technical support for networking as also provided through the Arnold Arboretum

***Additional funding should be reported using the following categories:**

- A** *Project co-financing (Other donors contribute to the direct costs of this CEPF project)*
- B** *Complementary funding (Other donors contribute to partner organizations that are working on a project linked with this CEPF funded project)*
- C** *Grantee and Partner leveraging (Other donors contribute to your organization or a partner organization as a direct result of successes with this CEPF funded project.)*
- D** *Regional/Portfolio leveraging (Other donors make large investments in a region because of CEPF investment or successes related to this project.)*

Provide details of whether this project will continue in the future and if so, how any additional funding already secured or fundraising plans will help ensure its sustainability.

Databasing of specimens from the Hengduan region will continue. We will also aim to complete the georeferencing of specimen data and to use that information to plot the distribution of species and genera endemic to the Hengduan region.

VIII. ADDITIONAL COMMENTS AND RECOMMENDATIONS

VIII. INFORMATION SHARING

CEPF aims to increase sharing of experiences, lessons learned and results among our grant recipients and the wider conservation and donor communities. One way we do this is by making

the text of final project completion reports available on our Web site, www.cepf.net, and by marketing these reports in our newsletter and other communications. Please indicate whether you would agree to publicly sharing your final project report with others in this way.

Yes _____

No _____

If yes, please also complete the following:

For more information about this project, please contact:

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