

CEPF SMALL GRANT FINAL PROJECT COMPLETION REPORT

I. BASIC DATA

Organization Legal Name: Wildlife Conservation Society Tanzania

Project Title (as stated in the grant agreement): Chytrid Distribution and Pathogenicity Among Frogs of the Udzungwas

Implementation Partners for This Project: David C. Moyer, Wildlife Conservation Society, Tanzania Program, Dr. Charles Msuya, University of Dar es Salaam and Dr. Ché Weldon, North West University, Potchefstroom, South Africa

Project Dates (as stated in the grant agreement): March 1, 2004 – July 31, 2005

Date of Report (month/year): May 2006

II. OPENING REMARKS

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

Amphibian declines in several locations around the globe are associated with infection by a chytrid fungus, *Batrachochytrium dendrobatidis*. It remains unclear whether this chytrid represents an emerging disease or an organism that commonly co-occurs benignly with amphibians and becomes pathogenic when environmental perturbations increase susceptibility of individuals. However, chytridiomycosis is, at minimum, proximately responsible for rapid extirpations of entire populations. Furthermore, pathogenic infection of frogs by chytrids are leading to massive die-offs in relatively pristine habitats suggesting that chytridiomycosis may indeed be emerging as a disease epidemic ultimately responsible for species extinctions in several areas of the world. Thus, there is a clear and present need to expedite investigations into chytridiomycosis outbreaks when and where they occur. Epidemiological data from such rapid response studies are crucial to identifying species in imminent risk of extinction and developing appropriate countermeasures to stave off further amphibian losses.

This project was conceived following reports of a chytridiomycosis outbreak in several species of amphibians in the Kihansi Gorge, Udzungwa Mountains, Tanzania. Particularly alarming, were reports that the only known population of the critically endangered Kihansi Spray Toad, *Nectophrynoides asperginus*, had virtually disappeared from the gorge. There are no previous reports of *Batrachochytrium dendrobatidis* infection in amphibians in Tanzania and, therefore, likely that there is little resistance built up to this fungus in local populations. The possibility that this Chytrid infection could spread to other populations of endemic amphibians in the Udzungwa Mountains and throughout the Eastern Arc with is a grim one. The aim of this project was to sample amphibian populations from widely scattered localities across the Udzungwa mountains to determine if Chytrid infection was present in other areas and to assess the levels of risk to amphibian populations there.

III. NARRATIVE QUESTIONS

1. What was the initial objective of this project?

Survey amphibians across the Udzungwas to determine the distribution of the chytrid fungus, *Batrachochytrium dendrobatidis* and *chytridiomycosis*.

Expected results

- Identification of Udzungwa endemics in imminent risk of global extinction due to chytridiomycosis
- Identification of species likely to be extirpated within the Udzungwa Mountains
- Mapped distributions of populations likely to be extirpated across the Udzungwas
- Frequency estimates of pathogenic and benign chytrid associations within populations

Deliverables

- Establishment of a scientific team capable of rapidly executing field and laboratory project components.
- Report with details of project findings and proposed actions to prevent species extinctions based on these findings.
- Publication of results in peer-reviewed scientific journals to provide a baseline for future studies in Eastern Arc Region and simultaneously contribute to understanding of how the possible chytridiomycosis epidemic may be advancing globally.
- Updates to Eastern Arc and Coastal Forest Hotspot's Outcomes Database on all amphibian species surveyed during the study.

2. Did the objectives of your project change during implementation? If so, please explain why and how.

The objectives of the project did not change during implementation.

3. How was your project successful in achieving the expected objectives?

During fieldwork, amphibians were sampled from across the Udzungwa Mountains. The samples were screened at the laboratory of North-West University, South Africa to determine the geographic extent and pervasiveness of Chytridiomycosis. This task was successfully completed and the distribution of *B. dendrobatidis* and level of Chytridiomycosis in amphibian populations in the Udzungwa Mountains was mapped. It was not possible to determine the level of risk to the endemic amphibian species with the data gathered during this project. More focused fieldwork will be necessary to arrive at a better understanding of the pathology of Chytridiomycosis and the implications of this for the endemic amphibians of the Udzungwas and Eastern Arc.

4. Did your team experience any disappointments or failures during implementation? If so, please explain and comment on how the team addressed these disappointments and/or failures.

No major disappointments were experienced during project implementation. The early end of the rainy season in April 2004 and unusual temporal distribution of rainfall in the 2004-2005 rainy season did cause unforeseen delays. Field work and histological analysis took longer than planned.

5. Describe any positive or negative lessons learned from this project that would be useful to share with other organizations interested in implementing a similar project.

There were no major lessons to be learned from the fieldwork other than to budget adequate time per field site to try to obtain as large a sample as possible (min. 20) per species. Otherwise fieldwork his was routine and uneventful.

6. Describe any follow-up activities related to this project.

At this point, no further activities are planned. One last batch of specimens from Mugela Stream are still being analyzed and the report will be updated with that data when it becomes available. This site is mid-way between a number of other sites and the results from the laboratory screening will not alter the conclusions of this report in any significant way.

7. Please provide any additional information to assist CEPF in understanding any other aspects of your completed project.

In some cases, it has not possible to identify specimens to species level. At least four species, a Hyperoliid, a Ranid a Bufonid and an Arthroleptid are new to science. Further fieldwork is required on all of these before descriptions can be published.

All specimens have been forwarded to Prof. Alan Channing who will assist with species level identification and descriptions of new species. Recent fieldwork in the Eastern Arc Mountains has brought to light a number of cryptic new species in the genus *Nectophrynoides*. Consequently, it has become very difficult to be confident of species level identifications in this group. Furthermore, species level identifications have long been problematical in the genus *Arthroleptis*. It is hoped that at least some specimens collected in this genus can be identified by comparison with other museum material.

If *B. dendrobatidis* proves to be restricted to the Udzungwa Mountains, strong measures must be taken to prevent its spread throughout the Eastern Arc and elsewhere. Recommendations for this are provided in the attached report.

IV. 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
WCS	Admin support	\$2900	A

***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 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 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.

There are no firm plans to continue with this project. After the final results are in, there will be discussions on potential future sampling of amphibian populations to monitor the spread of Chytridiomycosis in the Udzungwas. If this is determined to be a priority, then funding for this work will be sought from CEPF and other sources.

V. ADDITIONAL COMMENTS AND RECOMMENDATIONS

See the attached report.

VI. 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:

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