

# CONSERVATION ENDOWMENT FUND

CEF Grant Funds Chytrid Fungus Research in Endangered Missouri Salamanders

**T**he hellbender (*Cryptobranchus alleganiensis*), North America's largest salamander, has suffered significant population declines in recent decades. Investigations into the cause are ongoing, and one possible contributing factor is infection with the fungus *Batrachochytrium dendrobatidis* (Bd, or "chytrid") as has been documented in many amphibian species. Saint Louis Zoo has been involved in hellbender conservation for many years, and in 2004 established the Ron Goellner Center for Hellbender Conservation to continue work in captive propagation and management of this species. The ability to accurately identify Bd infection in hellbenders is critical for managing the captive population as well as evaluating animals for release. While protocols using PCR technology have been established for frogs, they had not been validated for aquatic salamanders. The goal of this study funded by AZA's Conservation Endowment Fund was to validate testing protocols and identify significant variables for Bd testing in hellbenders.

Applying established protocols to aquatic salamanders presented some interesting questions. For terrestrial frogs, the ventral abdomen and feet are tested since they are in contact with the ground, the presumed source of the infection. In an aquatic environment, infective spores could contact the body anywhere. In addition, fungal growth may be affected by temperature, and the water temperatures in the hellbender's natural environment vary from 12-to-21degrees C.

The project compared test results from six different collection protocols, at two temperatures, over six months' time, in 16 hellbenders. The results indicate that swabbing the soles of the feet is the most reliable method for identifying the fungus in hellbenders. Presence of Bd in hellbenders was not influenced by time (consistent over six months) or temperature (consistent at 12 and 21°C). This baseline information is a critical first step towards detecting the disease and monitoring treatment protocols that will be vital to the success of this conservation program.

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