Concerns About the Impacts of the Bujagali Dam Project On Endangered Fishes and Fisheries in the Victoria Nile

by Les Kaufman*

April 20, 2007

1) A report on sampling for this project (Nov. 2001 Haplochromine Habitat Study for Bujagali Hydropower Project) has identified, on river sections above and below the proposed dam site, the occurrence of species listed as extinct, critically endangered, or endangered. It also listed species never before recorded in Uganda. The discovery of range extensions of recently described taxa, and the recovery of vulnerable, threatened, and endangered taxa from the Victoria Nile should not be interpreted to mean that these fishes are more secure in the wild than previously thought. Rather, it is an indication that the Victoria Nile offers a refugium for these taxa that should be carefully safeguarded as insurance against extinction.

   With regard to all haplochromine species, there is an inadequate database from which to draw precisely the kinds of conclusions that the Bujagali report aspires to reach. The scientific community has long appreciated the need for a thorough survey with particular focus on the haplochromine cichlids, and has pushed for it for many years, but to date there is very sparse sampling effort (the Bujagali study notwithstanding) in the Lake Victoria Region.

   Another important consideration is that haplochromine taxonomy is currently sufficiently in flux that the scientist responsible for every identification should be listed along with other scientists consulted in making this determination. Furthermore, voucher specimens should be in a proper museum archival system, referred to by specimen and lot number and should be available for taxonomic confirmation on request. In addition, voucher photographs should be made available on the Internet and DNA material archived for species confirmation, a procedure that can in theory be carried out at Makarere University (qualified Ugandan scientists exist; funding is absent).

   The most appropriate interpretation of the Bujagali results to date, is that the Victoria Nile is an important refugium for certain endangered haplochromine cichlid species, and activities that might negatively impact these populations should be avoided.

2) While the data presented in the Nov. 2001 Haplochromine Habitat Study is the product of a well designed and implemented study, that effort alone is inadequate to rule out a likelihood of negative impacts to the survival of endangered species caused by dam construction. The discovery of other populations of threatened or endangered haplochromines downstream and/or upstream of the proposed dam site is welcome information, but does not by

itself assure that the remaining populations are secure or that the metapopulation impacts of losing the Bujagali sub-populations will be negligible. Furthermore, no comprehensive dataset exists to provide a baseline for the biological diversity of the surrounding Nile and Lake Victoria systems. Thus, while the IUCN Red List provides the best available information, a comprehensive baseline study and continued monitoring are required to adequately assess and document the effects on aquatic wildlife and food fishes of the proposed Bujagali dam. Indeed, a solid commitment of the resources necessary to generate a sufficient database and analytical basis for rigorous conservation decisionmaking would itself constitute an immense positive step for the region. It is even possible that this work alone could ultimately do more good for environmental sustainability in the Nile basin than any harm brought upon the ecosystem by a thoughtfully and responsibly executed Bujagali dam. Local and international scientists advised that a thorough biodiversity study be conducted of the Victoria Nile and adjacent waters in lake Victoria and Lake Kyoga, with emphasis on haplochromines, as a key part of the Bujagali EIA. A groundbreaking region-wide biodiversity survey was one of the major components of LVEMP as originally conceived. For whatever reason, neither has come to pass, leaving us in our current predicament.

3) While the potential impacts to species diversity and ecosystem services from the proposed dam are extremely high, we recognize the intense need for affordable electricity that avoids greenhouse gas emissions. If significant additional measures were taken to better monitor, design the proposed dam, and mitigate its impacts, the result could be a positive dam development project rather than an ecological tragedy. Proper monitoring requires a comprehensive study to establish baseline conditions and monitor changes during and after project construction. Additional design measures should be considered, their efficacy assessed, and a best practice put in place. These should include more serious consideration of the idea of a fish ladder or other provisions for conservation of anadromous fishes (including *Barbus altianalis* and the endangered *Labeo victorianus*), the gazetting and proper enforcement of aquatic reserves for known critical habitats of endangered haplochromines and other wildlife, afforestation (using native vegetation) of the steep and erosion-prone banks and islands, and possibly even restoration programs for endangered species such as the mbiru, *Oreochromis variabilis,* which may still be present at low density. Rather than being limited to the immediate vicinity of Bujagali, these mitigative and restorative measures should be carried out as part of a comprehensive plan for sustainability from end to end along the short but ecologically, economically, and culturally important stretch of river that is the Victoria Nile.

** Les Kaufman is a Professor of Biology at Boston University's Marine Program and a Senior PI in Marine Management Area Science for Conservation International. He can be reached by email at lesk@bu.edu.*