



The Great Lakes of Africa

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The Great Lakes of Africa

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In the course of history, people have often failed to recognize times that call for urgent action until some ultimate insult—usually the desecration of a holy place or national treasure—at last pushes the society over the brink. Hallowed waters to all biologists, and treasure to the tens of millions of people who live about them, the Great Lakes of East Africa have for decades showed signs that something is going terribly wrong. Today, the situation has become so pressing that it can no longer be ignored. Unfortunately, the intellectual and physical effort that will be required to rectify years of arrogant experimentation and benign neglect have assumed monumental proportions. In this special section, we highlight the dire threats now facing these lakes and their spectacular endemic faunas. Unlike in the tropical rainforests, however, the threats facing the endemic ecosystems of the Great Lakes have received very little attention among the conservation biology community, let alone the general public. We hope to stimulate the exchange of ideas and resources so necessary to make any headway in understanding and conserving these very special systems.

The section contains nine papers. The first two provide an overview of the three largest lakes, Victoria, Malawi, and Tanganyika. Harvey Bootsma, Bob Hecky, and Rosemary Lowe-McConnell summarize the comparative limnology and ecology of these massive bodies of water in the context of current conservation issues. Following this introduction are three papers on Lake Victoria, one on Lake Malawi, and three on lake Tanganyika. The papers on Lake Victoria are like scenes from a battleground. Frans Witte and Tijs Goldschmidt bear witness to massive shifts in community and faunal structure, and they raise an embarrassing point. The system

has become highly simplified, having collapsed from hundreds of fish and invertebrate species to less than half a dozen of any real importance—yet these half dozen are species about which frightfully little is known. Les Kaufman and Peter Ochumba sift the fragmentary remnants of indigenous fish assemblages for clues to their conservation. Astonishingly, even these greatly reduced faunas include a bewildering array of previously unknown species, some inhabiting a previously unknown microhabitat. Mechanisms of speciation and extinction, normally restricted to the exclusive domain of evolutionary theory, prove relevant in the formulation of conservation strategies. Ogutu-Ohwayo revisits Lake Nabugabo, famous as the postulated site of very recent speciation, now host to Nile perch. He relates that Lake Nabugabo itself is severely disturbed, but that portions of the native fauna remain intact in three tiny lakes nearby—a happy but theoretically perplexing discovery.

Based on his studies of cichlid communities in Lake Malawi, Peter Reinthal tackles the challenging task of assigning taxonomic priorities and fashioning viable conservation strategies in the face of extraordinary fish species richness. He argues that preservation of the entire fauna is an unrealistic goal. Communities exhibiting high endemism, such as isolated islets, are the least complex by several measures. Special consideration must be given to the rock-fish communities on islands, as opposed to the mainland. Once again, the species under greatest threat are of commercial importance, and once again they are among those about which the least is known—the fishes of open water that are the targets of most of the fishery.

Lake Malawi, though overfished, is relatively intact as

an ecosystem. The same was thought to be true of Lake Tanganyika, but as evidenced by Andy Cohen and his co-authors, this is no longer the case. Along the lake's northern coastlines, massive sediment pollution is now affecting the lake's nearshore communities, the result of severe watershed deforestation. Using biological indicators, Cohen et al. argue persuasively for the importance of forest and watershed conservation for the maintenance of biodiversity in adjacent aquatic systems. Through detailed analysis of species interrelationships, Hori et al. offer a clear demonstration of the need to focus conservation efforts on the maintenance of biotic processes, as opposed to individual species, and suggest that complex ecological networks can have a stabilizing influence on the assemblage.

Coulter et al. demonstrate that it is feasible to incorporate both watershed and biotic process perspectives into a coherent conservation approach, while also addressing the critical need for sustainable resource utilization. Throughout their treatments, all of the authors underscore the importance of regional cooperation in implementing any conservation plan.

Read in the wrong mood, any one of these nine papers could be very depressing. Taken as a whole, however, they tell what is really a rather uplifting story. Extinct species cannot be resurrected from the pages of books (especially since more than half never even made it into the books in the first place). But it may be possible, given cooperation and determination, to conserve a great deal of what remains, and this is a very great deal indeed.

