

AFRICA'S GREAT LAKES

Written by Russell McAndrews

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Deep in the heart of darkest Africa, perhaps 30 million years ago the countryside is being ripped open by the formation of a colossal rift. The preexisting Malagarasi River is severed; the gash begins to fill at a painfully slow rate. Lake Tanganyika has only just begun to form. For perhaps 6 million years, it will remain isolated and stable at a level significantly lower than today's. Late in the Pleistocene the formation of the Bufumbiro Volcanoes causes a small piece of the Victoria basin drainage to back up forming Lake Kivu which overflowed southward over the Ruanda Highlands and into Lake Tanganyika. This additional drainage causes the level to rise again and eventually Lake Tanganyika will overflow through the Lukuga River and on into the Congo River.

To the southeast Lake Malawi forms also in isolation, developing in a cascading fashion southward along a deep rift. The proto-lake that will become Malawi fills in stages overflowing and eroding one wall after another. Again, evidence indicates that the lake remained stable for sometime at a much-reduced level before rising again. Malawi will eventually overflow south by way of the Shire River and is isolated by the Murchison rapids.

North of the Lake Tanganyika on the other side of the Bufumbiro Volcanoes, the land is rolling and warping. During the Pleistocene, the westward flowing rivers of this region were thrown back by the elevation of a rim-like formation of land. (This geologic process is called "ponding".) This delineates the Victoria Basin drainage to the north and west, the resulting backflow will ultimately form Lake Victoria. This lake will be different from any of the others mentioned. It is not confined to nor does it contain a rift. Shaped like a saucer, and a shallow one at that Victoria more than makes up in surface area what it lacks in depth. Over 50 thousand years the lake level fluctuated drastically and with it the surface area. Scientists believe that at one point, approximately 14 thousand years ago Lake Victoria dried up almost completely. A small satellite, Lake Nabugabo was formed as little as 5,000 years ago as the water level dropped to today's position. Victoria overflows via the Victoria Nile toward the north into a flooded valley now called Lake Kioga. Immediately to the west, amid the formation of mountains, volcanoes and recent explosion craters (Lake Edward and Lake George), drain in two directions, east toward Lake Victoria and north into Lake Albert. The Semliki Rapids isolate Albert from Edward and Lake George. Albert also receives the Victoria drainage via Kioga providing headwaters for the Nile River.

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Size Depth

Victoria = 26,500 sq mi 300 ft

Tanganyika = 13,000 sq mi 4,800 ft

Malawi = 11,500 sq mi 2,300 ft

Kivu 1,600 ft

Comparing Lake Victoria and its relatives to the true Rift Lakes, we see many differences. We will also see some interesting parallels. The oldest, Tanganyika was originally colonized by several species. Today it is arguably the least diverse for cichlids and its fauna is comprised of less than 5% cichlids derived from both a haplochromine and a lamprologine ancestor. Malawi and Victoria have been colonized by the very few species each with a single haplochromine derived flock of cichlids. Malawi is 60% cichlids, Victoria 50% even though Malawi has a higher percentage of cichlids (this may be in error as the latest information from Victoria is vague - 500-1,000 spp), it has a lower total of cichlid species count, or it did prior to the Victorian introduction of *Lates niloticus* (Nile Porch). Other lakes in the Victoria Basin are 60-80% cichlids with the exception of Lake Albert, which has less than 3% probably due to its uninterrupted contact with the river Nile.

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Visibility while excellent in the Rift Lakes Tanganyika and Malawi is poor everywhere else. This is because nutrients and debris settle into deeper water where they are useless to plankton and surface vegetation. The affect that the water turbidity has had on the development of coloration is startling. In cloudy Victoria we see longer wavelengths prevalent. In murky water, a red colored individual would be visible at a longer distance than a blue fish simply because the wavelength of red light is longer, less prone to scattering and travels further.