Shrinking papyrus swamps in Kenya

Papyrus *Cyperus papyrus* is a large sedge, renowned for its use as the first paper by early Egyptian civilisations, thus playing an important role in human cultural evolution. It is largely confined to Africa, where it grows in flooded swamps, forming a distinctive habitat type that supports a suite of specialist bird species. In East Africa these include five restricted-range endemics: Papyrus Yellow Warbler *Chloropeta gracilirostris*, White-winged Warbler *Bradypterus carpalis*, Carruthers's Cisticola *Cisticola carruthersi*, Papyrus Gonolek *Laniarius mufumbiri* and Papyrus Canary *Serinus koliensis*. All five are confined to swamps in the western arm of the Rift Valley and around Lake Victoria, spending most, if not all of their time in papyrus swamps. Both the Papyrus Yellow Warbler and the Papyrus Gonolek are listed as Threatened.

Like most wetland habitats worldwide, papyrus swamps are under increasing human pressure. People live in high densities around wetlands because of the availability of water and resources such as fish. Papyrus is harvested for thatching and making mats, and papyrus beds are burned and cleared for agriculture, such as the development of rice paddies, and used for grazing in times of drought. The total area of papyrus swamp habitat in Africa is thought to be around 4 000 square kilometres, but this is probably decreasing. Conservation biology student Alfred Owino, seconded for a year from the Ornithology Department at the National Museums of Kenya, elected to study the rate of swamp loss in Kenya and the impact of habitat degradation on the specialist birds of papyrus swamps.

In Kenya, the most important papyrus swamps for birds are confined to the eastern shores of Lake Victoria, where they occur patchily at river mouths and along the lakeshore. The three main swamp areas, at Dunga, Koguta and Kusa, are all identified as Important Bird Areas, yet although they are situated in areas with a rapidly increasing human population, none of the Kenyan swamps is formally protected. Owino conducted bird surveys along both the lakeward and shoreward edges of the swamps to assess how important swamp structure is for the endemic birds. He found too few Papyrus Yellow Warblers to draw any meaningful conclusions for this species, but the abundance of the other four papyrus specialists was directly related to the height and density of papyrus. Although he could not detect any direct impact of human disturbance on bird abundance, human activities such as the construction of footpaths, harvesting of papyrus, burning, grazing and farming, all reduce the density and height of papyrus, thus rendering the swamps less suitable for birds. Pressure on the swamps is being exacerbated by the heavy infestation of alien water hyacinth *Eichhornia crassipes* on Lake Victoria, forcing former fishers to seek other ways to support themselves.

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The threatened Papyrus Gonolek, one of five species confined to papyrus swamps in East Africa.

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Owino used a series of aerial photographs to estimate the rate of swamp loss. He found that the three swamps have lost 34 to 50 per cent of their area over the past 30 years, resulting in many small, fragmented patches. Further work is needed to assess whether fragmentation will lead to local extinctions, but for now the priority is to gain some form of effective protection for the remaining large blocks of swamp. Based on models of local human population growth, the smaller swamps at Dunga and Koguta are likely to disappear entirely by 2020, and Kusa will be reduced to less than 20 per cent of its 1969 extent. □

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