

Conservation news

Cotton buds—corporate change leads the way in the UK and Europe

The issue of plastic pollution in the seas, and of its potential to affect marine life through ingestion and toxic transfer, is now increasingly recognized (Rochman et al., 2013, *Scientific Reports*, 3, 3263). The plastic stems from cotton buds are a pervasive item of marine litter, reported from beach surveys across the UK and worldwide (e.g. Duhec et al., 2015, *Marine Pollution Bulletin*, 96, p.76–86; Poeta et al., 2016, *Marine Pollution Bulletin*, 113, 266–270; Nelms et al., 2017, *Science of the Total Environment*, 579, 1399–1409). Numbers may be underestimated, as stems are not included in all survey methodologies and are regularly misidentified (e.g. as lollipop sticks) by untrained volunteers during surveys (Tudor & Williams, 2003, *Journal of Coastal Research*, 19, 1104–1115). There is evidence of cotton buds being ingested by marine life; for example, fragments of cotton buds have been reported from analysis of stomach contents of fulmars (J.A. Van Franeker, pers. comm.) and whole stems have been found in loggerhead turtles, and cited as the cause of death for one individual following piercing of the intestine (J. Tomàs, pers. comm.).

Cotton bud stems reach the sea as a result of inappropriate disposal: they are often flushed into the sewage system, and their small diameter means they are not removed in sewage treatment plants. Public awareness campaigns (such as Don't Flush It messages) are a vital means to address the issue and have had some impact in reducing such sewage-related debris, but effectiveness may be limited temporally to when campaigns are active. Although improving the appropriate disposal of such items is still imperative, there is a chance to reduce the impact of cotton buds through redesign of the materials used, to ensure they are biodegradable. Rolled paper stems are one such option, and some well-known brands have only ever produced paper-stemmed cotton buds (such as QTips in the USA). These become waterlogged and begin to disintegrate if flushed, making them far less likely to escape waste water streams.

Over the last 4 years the UK environmental charity Fidra has actively engaged with companies to make the case for moving from plastic to paper stems in the sourcing and/or production of cotton buds. Johnson & Johnson Ltd., the UK market leader for cotton buds, was the first manufacturer to agree to replace their brand-defining blue plastic cotton bud stems with paper. This was announced publicly in March 2016, and paper-stemmed cotton buds went on sale in the UK in early 2017. Their sale will transition across Europe, the Middle East and Africa during 2017. Contacts established behind the scenes with nine other companies in the

UK (including leading supermarkets such as Waitrose) have resulted in commitments from them to change their sourcing and/or production in favour of paper-stemmed cotton buds.

The success of driving corporate change in this situation has been attributed to the growing reputational risk associated with plastics, intervention at senior levels of key companies, a track record of raising awareness on parallel marine plastic topics, and growing interest in the issue from other NGOs. We hope the leadership shown by major business in the UK and Europe will be replicated in other parts of the world, as pollution by cotton buds is a global issue.

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The Serengeti will die if Kenya dams the Mara River

The Serengeti ecosystem hosts the annual wildlife migration of up to 2 million animals (mainly wildebeests, zebras and other species of the plains). It is a World Heritage site, important to the Tanzania tourism industry, and an ecosystem living laboratory. It comprises the Serengeti National Park, the Masai Mara National Reserve in Kenya, and several Conservation, Game, and Wildlife Management areas. The Serengeti has one perennial river, the Mara, which is the only source of water for migrating wildlife in a drought year. The Mara River is formed by the confluence of the Amala and Nyangores Rivers, which drain the Mau forest in the Kenyan highlands; it is a transboundary river shared between Kenya upstream and Tanzania downstream (Fig. 1).

Under the framework of the Nile Equatorial Lakes Subsidiary Action Programme, and with the technical support of UNESCO-IHE, the Kenya Water Resource Management Authority has developed a water allocation plan for the Kenyan side of the basin (<http://nelsap.nilebasin.org/index.php/en/>). This includes plans for constructing (1) the 10 m high Norera dam on the Mara River, mainly for irrigation c. 30 km upstream of the Serengeti, (2) the 65 m Amala High dam in the Mau forest, with provision for water transfer through a tunnel from the Amala River to the Ewaso Ngiro River for hydroelectricity generation by three dams (Oletukat Olenkulo, Leshoto and Oldorko; 140, 57 and 30 m high, respectively) and discharge of that water to Lake Natron in Tanzania, and (3) one or two dams (Mungango and Silibwet, 30 and 70 m high, respectively) on the Nyangores River, mainly for irrigation (Fig. 1). None of these dams have yet been constructed, but the feasibility studies, except that for the Amala High dam, were completed by 2016. Tanzania is proposing the Borenga



FIG. 1 The Serengeti ecosystem, comprising the Serengeti National Park in Tanzania, the Masai Mara National Reserve in Kenya, and several Conservation, Game, and Wildlife Management areas, with the locations of eight proposed dams (seven in Kenya and one in Tanzania), the catchment boundary of the Mara River formed by the confluence of the Amala and Nyangores Rivers that drain the Mau forest of the Transmara Forest Reserve and other areas, and the typical wildebeest migration routes and their timing during non-drought years. The Amala transfer would divert Amala River water impounded behind the proposed Amala High dam through a tunnel to the Ewaso Ng'iro River. Protected area boundaries are from the World Database on Protected Areas (<http://protecedplanet.net>) of June 2017.

dam. The feasibility study is completed but the dam has not yet been built; it is located downstream from the Serengeti and thus creates no water threat to this ecosystem.

The Kenya dams pose a direct threat to the Serengeti: (1) The Norera dam would release a minimum environmental flow (MEF) of 100 litres per second, only 1/3 of the Mara River MEF recommended by the Lake Victoria Basin Commission of the East African Community. (2) That same water would then flow through 30 km of intensive irrigation farming, and thus the Mara River would be dry on entering the Serengeti. (3) The Norera dam would receive 39% of its water from the Nyangores River; the two irrigation dams on the Nyangores (Mungango and Silibwet) would decrease the low flow by 100 litres per second, but this impact was not included in the Norera dam proposal and doubles the chances that this dam will not release the

MEF. (4) The Norera proposal is based on a mean annual flow calculated over 22 years of data, but in a dry year the annual flow is only 51% of the mean flow and thus in such a year the operator has only half of the water expected. Being short of water, the Kenyan operator has either to release the MEF for the Serengeti and kill the irrigation fields and hurt the local community, or retain the water for irrigation and kill the Serengeti. This becomes a local political decision, with Tanzania having no say. (5) The World Bank Safeguard Policies have been breached twice by the proposal, which states incorrectly that the Mara River is not an International Waterway and that the development does not affect the forests. (6) The total annual storage and use would be 115–185% of the annual flow in a drought year, and hence the dams require more water for irrigation than is available, leaving nothing for MEFs. (7) The Amala High

dam would destroy the Mau forest, and this would further decrease the Mara River dry season flows (Mango et al., 2011, *Hydrology and Earth System Sciences*, 15, 2245–2258). (8) During the dry season in a drought year there would be zero MEF for the Masarua swamp. (9) Seventy-five percent of the world's lesser flamingos are born around Lake Natron. The diversion of Mara River water to the lake will flood their nesting sites.

If the wildebeests cannot use the Mara River (their only water resource in the dry season in a drought year), modeling studies suggest that 80% may die (Gereta et al., 2009, *Ecohydrology & Hydrobiology*, 9, 115–124), leaving behind a much-impooverished ecosystem. To save the Serengeti ecosystem an international effort is needed to enable Tanzania to be involved as an equal partner with Kenya in the decision-making about managing the Mara and Ewaso Ngiro Rivers and, if that is not possible, to prevent the financing of these dams.

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Hunting for the wealthiest threatens migrating cranes in Afghanistan

Hunting during migration is a significant threat to birds relying on the Central Asian flyway for their journeys between wintering and breeding grounds. Cranes in particular suffer losses when passing across certain areas of Pakistan and Afghanistan, where hunting them for sport is a traditional pastime. The loss of adult and young birds during migration through these areas is thought to have been the leading factor behind the decline and extinction of the Central Asian population of Siberian cranes *Leucogeranus leucogeranus*. Although crane hunting and offtake levels have been studied in Pakistan, very little is known about crane hunting in Afghanistan.

The National Environmental Protection Agency and the Wildlife Conservation Society carried out a joint assessment of crane hunting in Kapisa and Parwan provinces of Afghanistan in April 2015, 2016 and 2017. The surveys concluded that the demoiselle crane *Anthropoides virgo* and Eurasian crane *Grus grus* are the main objects of hunting activity between the last week of March and mid April, but many species of waterfowl and waders are also taken, such as 120 pelicans (*Pelecanus* spp.) in spring 2017. Nowadays hunters no longer use traditional methods such as sling-propelled rocks, and use firearms only. They shoot

cranes opportunistically or after luring them with tame cranes, or sometimes after netting them. In contrast to what has been described in Pakistan the vast majority of cranes currently taken in Afghanistan are hunted for meat, a few for the pet trade, and some to be used as lures to attract conspecifics. Most of the cranes are taken in spring and only a few in autumn, which is the high season for black-bellied sandgrouse *Pterocles orientalis* and lark (*Melanocorypha* spp.) harvesting. Numbers of harvested cranes in spring may vary between years. In Barik Aab, Parwan Province, known to be a hotspot for crane hunting, we estimated that 15–20 hunting camps harvested 1,600–2,000 cranes during spring 2015, but less than half that level in 2016 and even fewer in 2017 because, according to hunters, good weather conditions allowed birds to pass the Hindu Kush without stopping. However, even in 2017 the 16 hunting camps operating in the area succeeded in capturing 200–300 cranes for the pet trade.

Crane hunting is a lucrative activity. A crane is sold for meat for USD 30–40, a much higher price than mutton/beef meat (USD 5–7 kg⁻¹) because of its alleged aphrodisiac properties. A live couple of demoiselle cranes can fetch USD 2,500 and a couple of Eurasian cranes up to USD 4,000, prices that only the wealthiest can afford. This hunting is so profitable that it brings hunters into fierce competition, and in the last few years it is alleged that at least seven have died in hunting disputes. The modernization of hunting techniques, weakening of cultural traditions of restraint, and attractiveness of high profits raise concerns that kill rates of cranes in Afghanistan no longer remain below the recruitment rate and may jeopardize the survival of populations migrating through the country.

In spite of the formal opposition of the National Environmental Protection Agency to the hunting or capture of protected bird species, people continue to hunt all species of birds, and merchants to buy and sell them for meat or the pet trade. Curbing illegal bird hunting in Kapisa and Parwan provinces is a challenging task because of insufficient support from law enforcement authorities, the widespread availability of firearms and ammunition, and the growing demand for crane meat and pet birds from wealthy customers. In general the impact of subsistence hunting is likely to become increasingly acute as human populations grow and habitat continues to be lost. However, in the case of cranes in Afghanistan the demand comes mainly from wealthy customers who do not consume the meat for subsistence. In such circumstances a determined government commitment against a handful of powerful people generating the demand and sometimes organizing the supply chain, listing the Eurasian and demoiselle cranes as legally protected, implementing public awareness campaigns, and educating the wealthiest could prove efficient actions to decrease hunting pressure on cranes and other migratory bird species in Afghanistan.