Maintaining Resources for Traditional Medicine: A Global Overview and a Case Study from Buganda (Uganda)

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Abstract: Presentations at a session of the 13th Congress of the International Society for Ethnobiology (ISE, May 2012) provided a global overview of ‘maintaining resources for traditional medicine’. Two themes received special attention, transmission of traditional medical knowledge and conservation of medicinal plants. The consensus at the well-attended session was that traditional medicine can play a useful role in primary healthcare, including for chronic complaints and spiritual problems. However, the use of traditional medicine is declining in many places. Some practical efforts at maintaining resources for traditional medicine are described. A case study for Buganda (Uganda), given in greater detail, shows that progress in maintaining resources for traditional medicine can be impeded by forces not directly related to its intrinsic merits. The value of making efforts to maintain resources for traditional medicine is discussed in relation to its contribution to biocultural conservation, much needed today to counter-balance the homogenising and ecologically destabilising influences of globalisation.

Key words: Traditional medicine; Biocultural conservation; Buganda


Abbreviations: CIDA; Canadian International Development Agency; FAO; Food and Agricultural Organization of the United Nations; IMF; International Monetary Fund; ISE; International Society for Ethnobiology; NFA; National Forest Authority (Uganda); NGO; Non-governmental organisation; PROMETRA; Promotion de la Medicine Traditionnelle; RBG; Royal Botanic Gardens, Kew; TAWG; Tanga Aids Working Group; UK; United Kingdom; US; United States of America

Introduction

Indigenous knowledge embodied in more traditional societies constitutes a resource still useful for the development of the same societies today, as well as for society generally. A large part of this knowledge can be about plants. Almost all food plants currently grown were originally developed through the powers of observation and experimentation of our ancestors. Plants are the principle ingredients in traditional medicines with evidence that many are efficacious (Holmstedt and Bruhn, 1995; Leaman et al., 1995; Lewis, 2003). However, traditional medicine is concerned with much more than herbal remedies. It tends to be more holistic in its approach to healing than is the case with western medicine, based on recognition of the oneness of body, mind and spirit, and the close ties existing between the health of the individual and the social and natural worlds. The practices and philosophies of traditional medicine carry important insights into the meaning of healthy living, beyond just the treatment of disease.

This paper contains a summary of points made in presentations at a session on Maintaining Resources for Traditional Medicine held in May 2012 as part of the 13th Congress of the International Society for Ethnobiology (ISE) at Montpellier (France). It also includes a more detailed account of a particular case (not discussed at ISE) familiar to one of the

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authors (AH) – Buganda in Uganda. The well attended ISE session provided a glimpse of the worldwide situation, while the Buganda example allows a more detailed exploration of some of the issues.

Global overview

Two sub-themes were selected for special attention at ISE, transmission of traditional medical knowledge and conservation of medicinal plants. These themes are interconnected. Continuing transmission of traditional medical knowledge will depend greatly on continuing use, which, in turn, will depend on the continuing availability of the plants. For its part, conservation of plant species will depend greatly on the attitudes of people living close to where the plants grow liable to be more positive towards plant diversity if this is useful to them.

Twenty-nine presentations and strong participation at ISE provided an opportunity for comparisons between different parts of the world (Fig. 1). ISE is a scholarly organisation with an ethical calling based on recognition of the close relationships that exist between cultural and biological diversity and the imperative of fostering biocultural diversity for the benefit of future generations and the planet. The research described at the session varied along a spectrum from more ‘objective academic’ to more ‘applied participatory’.

Use of traditional medicine and medicinal plants today

The term ‘traditional medicine’ refers to local to regional medical traditions known or believed to be of long-standing duration. Sub-categories include scholarly medicine (with written traditions, including pharmacopoeias, and institutionalized ways of training doctors), folk medicine (orally transmitted and associated with households, communities or ethnic groups) and shamanistic medicine (with a strong spiritual element and which can only be applied by specialist practitioners-shamans) (Pei, 2001, 2002). Presentations at ISE made it clear that traditional medicine is further identified by what it is not, that

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Fig. 1  Locations of field sites of work presented at a session on ‘Maintaining Resources for Traditional Medicine’ , part of the 13th Congress of the International Society for Ethnobiology held at Montpellier (France) in May 2012

is it not ‘western’ medicine (variously called allopathic, biomedicine, conventional or modern in the presentations). The dichotomy between traditional and western medicine proved to be a useful one for discussing many issues, such as the extent of use of traditional versus western medicine, the relative values of traditional versus western medicine for treating specific medical conditions and whether and how practitioners of traditional and western medicine can collaborate. While the general impression of western medicine conveyed at the session was of a more or less standardised international system, in fact (as actually delivered), it can fall far short of any ideal. There can be severe shortages of doctors, drugs and other essential facilities, and drugs can be prone to misuse, as found in rural Ecuador (Giovannini, 2012).

Plants contribute to both traditional and western medicine in major ways, even more so if their wider roles in maintaining health are included, such as their dietary contributions to food. However, there are also contrasts, especially with regard to folk medicine, with implications for approaches to the conservation of medicinal plants. Traditional medicine tends to use locally growing plants, often collected directly by household members or herbalists. In contrast, western medicine uses comparatively few species (whether used in the preparation of pharmaceutical or standardised herbal preparations) and these tend to be marketed widely as branded products with their botanical ingredients potentially originating from anywhere. Collecting wild medicinal plants to feed this market is part of a major industrial process. The harvesters and local traders may have little idea of the final destiny of the plant materials that they are supplying, as reported for Morocco (Ouarghidi et al., 2012). Approaches to conservation of medicinal plants in such a context are much the same as those used to combat threats to any overharvested wild plant resource in commercial demand.

Several presenters described the extent of present-day use of medicinal plants in traditional medicine. Widespread continuing use of medicinal plants was reported for Kenya (Kariuki and Kibet, 2012) and the Pamirs, Tajikistan (Akobirshoeva and Oudenhoven, 2012), while their use is more extensive in remoter rural communities in Ecuador and Nepal compared with those closer to urban centres (Byg et al., 2012; González et al., 2012). Relative poverty is mentioned as a major reason for choosing traditional rather than western medicine in Brazil (Hoefel et al., 2012), but no such connection was found in a study in Nepal (Byg et al., 2012).

Several presenters provided information on the patterning of medical knowledge within and between communities, carrying implications for those concerned with fostering biocultural diversity. Strong patterning was reported for Vanuatu (McCarter, 2012; McCarter and Gaving, 2011), while, in Indonesia, a very high degree of species specificity was found in five communities studied, three on the island of Seram (Moluccas) and two on Borneo (Ellen and Puri, 2012). Communities even on one island were found to use remarkably different medicinal floras. However, more detailed analysis revealed that species used to treat everyday medical needs tended to be relatively widely used. These are typically domesticated or cultivated plants or else found in disturbed areas, and their conservation was considered not to be of any special concern. In contrast, higher proportions of species used at only one or a few sites were found to be forest plants, often with closely related species substituting for one another between communities. The conclusion reached was that this particular ‘resource pool’ should be the one at which efforts at species-specific conservation should be directed and where the loss of indigenous knowledge is most likely. Another contribution, on Mallorca (Spain) (Carrió and Vallès, 2012a), presented a new statistic for prioritizing species of medicinal plants. This ‘Index of Medicinal Importance’ (MI) is calculated as the total number of use-reports cited for a specific use-category, divided by the total number of plant taxa used for that condition (Carrió and Vallès, 2012b).
Studies in Mallorca and the Pamirs revealed that substantial parts of their medicinal floras are similar to those of other regions, in the former case with other Catalan-speaking areas and with the Mediterranean generally (Carrió and Vallès, 2012b) and in the latter case with neighbouring Afghanistan (Akobirshoeva and Oudenhoven, 2012). However, there are specific local elements in both instances, suggesting long-standing indigenous traditions. Research at two sites in south-east Brazil and among ten communities in Colombia revealed notably high percentages of exotics (47% and 55% of 181 and 80 identified species respectively) (González et al., 2012; Hoeffel et al., 2012). This is probably related to immigrants, especially from Europe, bringing their ethnobotanical knowledge and medicinal plants with them.

**Declines in traditional medicine and medicinal plants**

Presentations for various parts of the world noted a decline in the use of traditional medicine. This was universally seen as related to global cultural and socio-economic change, for instance greater contact between rural societies and the outside, growing urbanisation, increasing availability of western medicine and declining interest in indigenous traditions by the young (Carrió and Vallès, 2012b; Giovannini, 2012; Hoeffel et al., 2012). Reduced family and community cohesion was mentioned as a critical factor in Morocco (Montanari, 2012, 2013). A graph of perceptions of loss of traditional ecological knowledge for Vanuatu shows a major decline dating back to at least 1900 (McCarter, 2012). Traditional medicine in Kenya is reported to be threatened by a decline in traditional cultural practices, such as marriage and initiation ceremonies, at which knowledge was traditionally passed down between the generations (Kariuki and Kibet, 2012). The precarious state of traditional medicine in Mallorca and southern Portugal is demonstrated by the high average age of those interviewed in studies of the use of medicinal plants ~77 and >50 years old respectively (Carrió and Vallès, 2012b; Póvoa and Farinha, 2012b). Despite this, one of the presenters pointed out that Europe still offers outstanding opportunities for studies of traditional medicine, urging more European ethnobotanists to undertake research nearer to home (Carrió and Vallès, 2012b).

A major threat to the survival of some medicinal species (noted for Brazil, Kenya, Morocco, Nepal and Tajikistan) is the unsustainable harvesting of medicinal plants for the commercial market; habitat destruction and climate change were among other threats reported (Akobirshoeva and Oudenhoven, 2012; Bista et al., 2012; Hoeffel et al., 2012; Kariuki and Kibet, 2012; Ouarghidi et al., 2012). Depopulation of the countryside, combined with a lack of interest among the young in traditional medicine, is regarded as a major cause of endangerment to medicinal species and landraces in Portugal (Póvoa and Farinha, 2012b). This conclusion was reached after careful documentation of the fate of populations of three plant taxa used in food seasoning in traditional Alentejo dishes. A baseline survey in 2002–2003 and a repeat survey at the same sites in 2011 revealed greater loss of cultivated than wild populations (33% versus 11%). The causes of loss of the populations could be specified case-by-case (very unusual in studies of medicinal plant endangerment). The major reason for decline in the cultivated populations was the death or out-migration of those elderly people who formerly cared for the plants. Causes of loss of wild populations were found to be habitat conversion, the mechanisation of agriculture and the use of herbicides.

One reason for concern about the loss of indigenous medical knowledge is because this forecloses opportunities for using such knowledge for the development of new pharmaceutical drugs or formulaised herbal preparations. Where local traditions of indigenous medical knowledge are critically endangered, as reported for parts of Brazil and Portugal, then there is urgency in documenting indigenous medical knowledge before it is lost (Carrió and Vallès, 2012b; Hoeffel et al., 2012).
Two presenters gave examples of research aimed at discovering new drugs based on traditional knowledge. One was a bibliographic study to identify potential sources of anti-malarial drugs in the plant family Annonaceae (Frausin et al., 2012); the other was research with traditional doctors in Thailand to discover leads for the development of drugs to treat mild cognitive impairment of the elderly (Offringa, 2012). The former study required no legal or ethical clearance because the information used was already in the public domain, while the later required meticulous preparation involving complicated processes of applying for research and ethical clearance from a variety of bodies before field work could begin. The results of the Annonaceae study were that some species have indeed been used to treat symptoms of malaria, that the bark is the plant part most used and that the genera Annona and Xylopia have the highest number of species with records of use. The study on leads for cognitive therapy drugs resulted in the identification of one particularly promising species, whose scientific identity is currently not being divulged to protect intellectual property rights.

Transmission of traditional medical knowledge

Mechanisms for the transmission of traditional medical knowledge were investigated among a Berber community in the High Atlas Mountains of Morocco (Montanari, 2012). It was found that family connections were major ways that such knowledge is passed on to the younger generation, women being the vectors of transmission in the home and garden, and men mostly in the mountains and at the river. Findings such as this can have practical implications for the development of national health systems in societies of all types. Western medicine has made remarkable advances over recent years in treating some medical conditions, but the standard of healthcare in western societies also has deficiencies, some related to the inadequate transfer of health-giving knowledge and practices between generations and within communities.

Several presentations dealt with mechanisms of knowledge transmission and legitimation in Sowa Rigpa (Tibetan Medicine) (Fig. 2) (Bista et al., 2012; Blaikie, 2011; Blaikie and Gurmet, 2012; Nicolas, 2012). Sowa Rigpa is a scholarly medical tradition associated with specialist healers (amchis), whose knowledge and practices are transmitted from master to pupil along lineage lines and also in formal medical schools. Education in Sowa Rigpa involves a process of listening to a teaching, memorizing the teaching using memorizing tools such as ‘trees of medicine’ in order to meditate on it (that is, to become accustomed to it and to incorporate the knowledge within wider religious concepts), understanding the teaching and then putting it into practice (Nicolas, 2012). Intuitively, this would seem to have similarities (though less formalised) to the ways in which healthcare knowledge and practices are transmitted within families, thus providing a specific instance where research into the transmission of traditional healthcare knowledge could have useful lessons for wider society.

The future of traditional medicine

Many presentations dealt with the future of traditional medicine. From the perspective of the ISE,
the continuing existence of systems of traditional medicine tied to local biodiversity is a powerful reason for wishing such traditions to continue. However, not all ethnobotanists accept all aspects of traditional medicine uncritically and, in any event, systems of traditional medicine are not static phenomena, but continuing to change. Amchis in Nepal are researching substitutes for endangered species of medicinal plants (Ghimire and Bista, 2012). One reason for encouraging support for traditional medicine, mentioned at ISE, is its importance for delivering healthcare in places where replacement by western medicine is considered unlikely (Hoefel et al., 2012; Kariuki and Kibet, 2012). Encouraging the continuing use of traditional medicine can help reduce dependency on external resources and safeguard against the misuse of pharmaceuticals drugs (Giovannini, 2012).

Decision-making in healthcare is a matter not only for planners of national medical services, but also for individuals. It is common nowadays for people to have at least some access to both traditional (or at least ‘alternative’) and western medicine. A survey of 62 households in a Moroccan community, involving monthly recording over a 6-month period, revealed a high degree of rationality in choices made by those seeking treatment (King, 2012). By rationality was meant that the decisions reached were found to be in close agreement with the predictions of a decision-making model earlier advanced (Young and Garro, 1982). Elements of this model include: (1) if the illness is not serious, then the cheapest choice is generally taken; (2) for milder conditions, self-treatment is the usual choice, but, if this is not known, then a healer is usually consulted; (3) if the illness is serious, then the ‘probability of a cure’ becomes a significant factor—in most cases a physician is consulted, with alternatives (such as healers) only approached if this is unsuccessful.

Some presenters mentioned specific medical conditions for which traditional medicine tends to be preferred (Akohirshoeva and Oudenhoven, 2012; Byg et al., 2012; Carrió and Vallés, 2012b; Póvoa and Farinha, 2012b). There is general agreement that herbal medicine is often sought for milder or chronic complaints, including digestive disorders. Herbal medicine can be seen as useful for correcting imbalances caused by modern diets and lifestyles. Traditional medicine has a major role to play in treating spiritually-related diseases, which typically have strong associations with local culture and language. The lack of a common language between patients and physicians can be a barrier to effective treatment by western medical practitioners, as reported for Morocco (King, 2012). The consensus at the session was that traditional medicine can often make a valuable contribution to national healthcare systems, especially at the primary level.

According to one presentation, government recognition would be useful for Sowa Rigpa in Nepal, because this would lead to government support (currently minimal) and reduced dependency on foreign sponsorship (Bista et al., 2012). Currently, Ayurveda is officially recognised in Nepal, but not Sowa Rigpa. Official recognition of traditional medicine was also considered desirable for Kenya, where a draft ‘National Policy on Traditional Medicines and Medicinal Plants’ exists, but has yet to be enacted (Kariuki and Kibet, 2012). In contrast to Nepal, Sowa RIPA has been officially recognised in India, though only recently (2010), thus joining the already officially recognised and long-established medical systems of Ayurveda, Siddha, Unani and Yoga, as well as more recently arrived Homeopathy. However, concerns were expressed by one presenter (Blakie) during a talk on Ladakh (India) (Blakie and Gurmet, 2012) that official recognition could result in a great expansion of industries producing standardised herbal products, marketed through branding and sold internationally. There is a danger of greatly increased pressure on wild-collected and already threatened species of plants, many difficult to cultivate in the demanding Himalayan environment. The price of medicines is predicted to rise to
levels beyond the reach of those local people whose primary healthcare needs are most acute and who currently depend upon traditional medicine. More than this, official recognition is seen as a threat to the maintenance of biocultural diversity through severing links between practitioners, plants and the practice of pharmacy, through replacing local medical lineages with standardized institutionalised training and undermining the pharmaceutical adaptability and local experimentation inherent in traditional medicine.

Several efforts to promote the transmission of traditional medical knowledge at community-level were reported. In Australia, the Land and Learning Program of Tangentyere Council has been promoting the passing on of traditional knowledge about plant medicines for 13 years (Mooney, 2012). A very effective educational formula has been found, involving elders and indigenous teachers taking students on bush trips to teach them how to collect and prepare medicines, with teachers taking photographs of the activities. These trips are followed up by using the photos to prompt students in the classroom to write accounts of their experiences in their own languages. Booklets are produced containing the photos, as well as typed versions of the students’ accounts, the booklets then serving as teaching resources in schools and records of indigenous knowledge. Another case is Lo Kunphen Mentsikhang and School in Mustang (Nepal) providing education in local healthcare and medicine-making for pupils of Sowa Rigpa (Bista et al., 2012). Two avenues have been taken to support traditional medicine in Vanuatu, a ‘bottom-up’ approach involving locally-based ‘traditional units’ around the country and a ‘top-down’ approach, which includes the development of curriculum modules in vernacular languages for schools (McCarter, 2012). In Ecuador, research aimed at documenting medicinal species used by the indigenous Achuar people was followed by the production of a manual on medicinal plants for use in primary health care (Giovannini, 2012). Originally intended for 15 communities, this manual proved so popular that it has now been distributed within all 72 Achuar communities in Ecuador and by the Ministry of Health.

Activities aimed at developing effective working relationships between traditional and western medicine were described by some presenters. Traditional doctors can be open to the incorporation of elements of western medicine in their practices, as described for Sowa Rigpa in Nepal, where consideration is being given to their inclusion in the training of practitioners (Bista et al., 2012). Phytochemical and pharmacological studies of some major medicinal plants used in traditional medicine are being carried out in Kenya, the results of which are considered likely to be useful for providing more effective treatments in traditional medicine (Kariuki and Kibet, 2012). In Tanga District (Tanzania), the Tanga Aids Working Group (TAWG) has been developing a dual system of traditional and western medicine for the treatment of patients presenting with HIV/AIDS. Successful collaboration is reported, marrying traditional and western systems of knowledge and involving three parties—western-trained doctors, traditional doctors and research scientists (Mtullu et al., 2012). Field and in vitro analyses have been used to determine the efficacy of herbal treatments, with good results reported. The life expectancies of some patients with HIV/AIDS has been prolonged by 5–10 years.

**Conservation of medicinal plants**

Some presenters described community-based conservation practices, referring to measures taken by individuals or communities on their own initiative that contribute to the conservation of medicinal plants. Practices reported include the gifting of seeds and cuttings between neighbours in Alentejo (Portugal), which has saved some populations from disappearing (Póvoa and Farinha, 2012a), the development of substitutes for endangered species by amchis in Nepal (Ghimire and Bista, 2012) and the protection of populations of a high-value wild medici-
national species close to villages in the High Atlas of Morocco (Ouarghidi et al., 2012). The latter study further reported various adaptive management measures taken to help conserve the resources. Some collectors harvest only at 5-year intervals, allowing the roots to reach a large size and permitting seed to spread, and some replant small pieces of freshly harvested roots, which they subsequently care for by watering. Such protection has its limitations, because it was also reported that some collectors harvest the plants before the optimal harvest time to limit loss through poaching.

Some presenters reported deliberate attempts to promote the conservation of medicinal plants. These included educational programmes, for instance interpretative walks to observe medicinal plants in Brazil (Hoeffel et al., 2012), and ex situ measures, mostly involving the growing of medicinal plants in gardens (Bista et al., 2012; Glenn, 2012; Kariuki and Kibet, 2012). ‘Sacred Seeds’ is the name of an expanding international network of gardens, centred on the William L. Brown Center of Missouri Botanical Garden (USA), dedicated to preserving biodiversity and plant knowledge, especially concerning medicinal plants. Applications for inclusion in the network were invited.

An international programme of action-orientated research was described in one presentation, the aim being to find answers to the question ‘How can communities best conserve their medicinal plants?’ (Hamilton, 2011). This work involved an international conservation charity (Plantlife International) forming partnerships with botanical institutes or NGOs in six countries in East Africa and the Himalayas, which, in turn, worked with local communities to try and produce practical results (Fig. 3). Analysis of the results of twelve field projects, combined with lessons learnt during four events to share experiences, led to the construction of a model of best practice. The model consists of three social groups (community groups, project teams and policy makers) and suggestions for actions by each group and for the forms of relationships between them. The existence of community groups interested in improving

Fig. 3 View of Ludiang, Yunnan Province, China. This is a project site of the Kunming Institute of Botany, Chinese Academy of Sciences, in association with Plantlife International. Participatory research was undertaken to find ways in which the community could conserve their medicinal plants. The project included support for the establishment of a community organisation, the Ludiang Medicinal Plants Conservation and Development Association, and two community conservation areas in parcels of forest rich in medicinal plants (Pei et al., 2010). Photo: Alan Hamilton 2008
the management of medicinal plants is key. The principal motivations of the groups involved in the programme were found to be fairly evenly divided between concern to maintain resources for local healthcare and concern for on-going financial income based on the sale of sustainably collected medicinal plants.

The case of Buganda (Uganda)

Introduction: Buganda and Uganda

Traditional medicine varies in detail along with the diversity of more traditional societies worldwide and its future will be influenced by diverse local political, economic and cultural variables. The case of Buganda in Uganda is taken as an example here for a more detailed exploration of issues influencing its maintenance. Uganda is a culturally and ecologically diverse country with 42 indigenous languages belonging to 4 language families and with natural vegetation ranging from tropical forest to semi-arid savannah. Attention is accordingly directed at just one of the ethnic groups, selected for its relative familiarity to one of the authors (AH). This ethnic group is the Baganda, whose land is Buganda, language Luganda and with associated attributes known as Kiganda.

Table 1 in Annex 1 provides some facts and health indicators for Uganda. Equivalent data are given for the UK, enabling comparison with an economically prosperous country with a well developed national healthcare system based on western medicine. The UK is especially pertinent to Uganda because it was the occupying power during the age of European imperialism, guided the early development of its national health system and continues to hold influence. Table 1 shows that Uganda is a financially poor country with scant provision of western medical services, but many traditional doctors (though traditional medicine is not officially recognised). Rural people tend to have a good knowledge of their local plants, whether wild or cultivated, related to close livelihood dependency. Social security is provided overwhelmingly by the family, not the state, and religion, with its various connections to healthcare, plays a prominent part in many people’s lives. Achievement of good governance has proved to be an intractable problem in Uganda, as indicated by an almost complete failure to transfer power constitutionally, high levels of perceived corruption and > 600 000 people killed in internal armed conflict since 1962.

Traditional Kiganda healthcare and an effort to foster traditional medicine

The following passage by Dr. Adam Kimala, a surgeon (in the western medicine tradition) provides a glimpse into the practice of traditional healthcare in Buganda, as still widely practiced today (Kimala, 2005): “Parents discovered long ago that in order to keep the culture of a society, the children must be taught how to keep it and pass it over to the next generation. The mothers are the primary and most effective teachers. Once a woman is pregnant, she is prepared to be ready to give birth and breastfeed her child. They get a midwife called a muzalita... who collects different herbs for the expectant mother to bathe, drink and steam. The midwife psychologically prepares the expectant mother to be ready to deliver. By the time she delivers the baby, she is already given all the tips of breastfeeding, washing and nurturing the newborn baby. The mother is responsible for the growth and behaviour of the child. When the child behaves badly, the mother is squarely blamed. Fathers are known to relate well with only well behaved children. Three cardinal pillars are inculcated in Baganda children; these are nsanyi, i.e. to be ashamed of wrong-doing, obwesigwa, being trustworthy, and bantubulanu, a special human behaviour in inter-personal relationships not found in the western world.”

This passage illustrates the fundamental importance of tradition in Kiganda traditional healthcare, the major part played by the social environment in fostering health and the emphasis placed on ascribed social roles for determining how individuals should behave. The herbs mentioned are used together in a concoction called ekogoro, believed to provide
physiological and spiritual protection to the child. The emphases given to the social and spiritual environments in traditional healthcare practices in Buganda place people in a somewhat different psychological position with respect to healthcare treatments than in the west. Public discourse on healthcare in the UK tends to emphasise the rights of the individual to receive state-supplied healthcare services, with less attention to the duty of individuals to care for themselves and others.

PROMETRA-Uganda is a non-governmental organisation engaged in practical efforts to maintain resources for traditional medicine (PROMETRA, 2013). Founded in 2000, PROMETRA runs a school for traditional doctors at Buyijja, a rural location 60 km from the capital Kampala. Around 100–150 traditional doctors attend classes once a week to exchange knowledge on their practices (Fig. 4). A three-year course covers identification of plants and preparation of medicines, with five specialisations offered in the final year—herbalism, traditional birth attendance, traditional bone-setting, traditional mental treatments and spiritualism. A total of 861 traditional doctors had received training at the school by 2013. PROMETRA readily cooperates with scientific organisations (for instance, supplying samples of herbal medicines for laboratory testing) and with the western medical sector (for instance, encouraging patients who cannot be treated by traditional medicine to visit western clinics). Traditional healers have been found to be open to collaboration with the western medical sector in this part of Uganda (Lwanga, 1992). Demonstrations of fish-farming, bee-keeping, organic farming and forest restoration at Buyijja encourage villagers to adopt these health-supporting practices. A herbal processing plant is being constructed to produce packaged medicines, thus serving a wider public and providing an income for local farmers through an out-growers’ scheme. PROMETRA recognises that poverty is a major underlying cause of ill-health in this region. PROMETRA has no ethnic or religious affiliation (but many of the students are practising Christians or Muslims), but is necessarily strongly influenced by the culture of that part of the country in which it is situated, that is Buganda.

Fig. 4 Forest School of PROMETRA-Uganda at Buyijja. This is a second year class, learning about preparation of herbal medicines. Photo: Alan Hamilton 2011
Problems of access to medicinal plants and of forest governance

One of the challenges faced by traditional doctors around Buhijja is a growing shortage of medicinal plants, related in part to the destruction of forest and other more natural habitats. The rate of forest loss in Uganda at 2.72% per annum (FAO, 2010) is one of the highest in the world. Forested land is being taken for agriculture and trees are being cut for the manufacture of bricks and charcoal. As a response, PROMETRA launched a plant nursery at Buhijja in 2010 to grow seedlings of endangered medicinal species, with the intention of distributing them to surrounding villages through a network of 22 community groups. A major problem then encountered was a difficulty in obtaining seeds of indigenous species to grow. There is a National Tree Seed Centre in Uganda (part of the National Forest Authority—see below), but it stocks mainly exotic species, such as eucalyptus and pine, offering few indigenous plants. This is symptomatic of the way in which forestry policy has evolved in Uganda since the date of its first formulation in 1929. At that time, the primary purpose of forestry was declared to be the safeguarding of the environment (climate, water supplies, prevention of soil erosion) with a strong emphasis on conservation of indigenous forest (Nicholson, 1929). Subsequent revisions of forest policy have downgraded attention on environmental protection and indigenous forest, instead making the planting of fast-growing exotic trees a conspicuous aim. The following passage from a 1974 revision to forest policy gives a flavour of the casual way in which environmental protection has come to be seen; “There are some secondary objectives such as the protection of water catchments, soils, wildlife and amenity of land. These however cannot be measured are dependent on responsible behaviour by (Forest) Department officials in their provision” (Lockwood Consultants Ltd., 1973).

It is known that small patches of forest have long been protected in Uganda for spiritual reasons (Sembajwe, 1995), but otherwise little has been recorded about how forests were managed during pre-colonial times. This may give the impression that there was little forest management before the arrival of the British, but this is unlikely to be the case judging by evidence from better-studied traditional societies elsewhere in the world, for instance China (Pei, 2010; Pei et al., 2009). In any event, when the British created Uganda, uniting Buganda with neighbouring territories, they chose a federal structure for forestry, with larger forests administered by a Central Forest Department and smaller forests and plantations coming under local governments. Local government at that time was organised broadly along ethnic lines, which, in the case of Buganda, included a traditional monarch (kabaka) and a parliament (lukiiko). This federal structure persisted after political independence (1962) until 1966, when a military coup resulted in the abolition of local governments (including their forestry units) and the centralisation of all political power (Karani, 1994).

Various foreign countries have been influential in the development of forestry in Uganda since independence. The Canadian International Development Agency (CIDA) funded Lockwood Consultants, which was centrally involved in the 1974 formulation of forestry policy. In 2004, several development agencies, including that of the UK, were among external parties supporting a further radical reorganisation of forestry, with the Forest Department itself being dissolved and replaced by a National Forest Authority (NFA). This development was in line with the economic policies of the World Bank and International Monetary Fund (IMF) to which Uganda had become indebted, emphasising shrinkage of the public sector and empowerment of private enterprise. A great reduction in staffing resulted, with many fewer forest officers being posted in the field, and much practical work in the forests being contracted out to private operators.

Indigenous forests and trees are in serious trouble in Uganda today. If the current rate of loss con-
continues, all forest will be gone by 2050 (National Forestry Authority, 2013). The widening circle of tree destruction for charcoal now stands at a distance of about 100 km from Kampala. A study of deforestation published in 1984 showed that there were few infringements of forestry regulations prior to 1972, when they began to increase, often instigated by politicians rather than ordinary citizens (Hamilton, 1984). The 2004 re-organisation of forestry stimulated even greater illegality, again with benefits accruing especially to the relatively wealthy (Jagger, 2008). The level of perceived corruption in Uganda reached such a high level by late 2012 that the UK, along with several other European countries, decided to withdraw its direct development aid (Stanners, 2012; Tran and Ford, 2012).

The struggles of the Ugandan state to achieve good governance of its forests is disheartening from the perspective of the history of Buganda. Buganda was a well governed feudal kingdom at the time of its ‘discovery’ by Europeans in 1862 (Hill, 1961). The British rulers were so impressed by the governmental system that they imposed it on the diverse tribes which they incorporated into their Protectorate of Uganda. Kiganda chiefs were posted around the country to occupy chieftainships, thereby contributing to resentment against the Buganda, still an underlying ingredient fuelling political instability (Fallers, 2009; Kigongo, 2005). During the first 4 years after independence (1962–1966), when Uganda continued to be a federal state, the local administration of Buganda demonstrated its awareness of forest values by adding over 135 000 ha to its local forestry estate (Hamilton, 1984). A continuing interest in forest conservation still remains among the Buganda, as apparent from a powerful wave of opposition that greeted an announcement by the President of Uganda in 2007 that a quarter of the largest remaining forest left in southern Uganda (Mabira Forest Reserve, 30 000 ha) would be given to a private company to be cleared for sugar production (BirdLife International, 2008; Nakkazi, 2011). The Buganda king—the kabaka (by now only a cultural figure in Uganda’s affairs) declared that he would find an equivalent area of non-forested land elsewhere for the sugar estate to prevent the forest’s loss.

Progress with maintaining resources for traditional medicine in Buganda has been impeded by chronic political problems related, in part, to the ethnically and culturally heterogeneous character of the Ugandan state (Fallers, 2009; Kigongo, 2005). Other factors have played a hand. Christianity, a powerful force in Ugandan society and strongly linked historically with western medicine (Orach, 2009), has tended to be uneasy with traditional medicine, especially its spiritual aspects. The advice on forestry given by foreign development agencies has sometimes been deficient, judging by its connection with the unsatisfactory revisions of forest policy in 1974 and 2004. A similar problem is known from neighbouring Tanzania (Hamilton et al., 1989). A contributing factor in the case of the UK could be a decline in the availability of British expertise in tropical forestry. The prestigious Oxford Forestry Institute, teaching an undergraduate course incorporating tropical forestry, was closed during the 1980s, later followed by closure of the Forest Research Programme of the UK’s Department for International Development (Mills, 2006). Additional to these impediments, the task of managing natural resources in Uganda has become much harder over recent decades, related to a huge increase in the size of the population (from 7 million in 1962 to 35 million in 2013) and much greater demands for wild-collected natural resources, including medicinal plants (Hamilton, 2008; Ssegawa and Kasenene, 2007).

Discussion

The two topics selected for special attention at ISE were transmission of traditional medical knowledge and conservation of medicinal plants. Here, we mention the relevance of these processes to the promotion of biocultural diversity, a major challenge of our time (Pei, 2010). Efforts to maintain or restore
biocultural diversity are needed to counterbalance the homogenising and ecologically destabilising forces of globalisation, so prominent today. Destabilisation of the entire global ecosystem is now occurring (as shown by climate change and ocean acidification), fuelled by the demands for resources and pollution produced by a huge human population and a drive for economic expansionism associated with globalisation.

The desirability of pursuing conservation of biodiversity is apparent at various temporal and spatial scales. There are various connections with health. It is estimated that 22 per cent of plant species are in danger of extinction (RBG, 2010). Many species known to be medicinal are included (Schippmann et al., 2006) and it is probable that many of the remainder will prove to have medicinal uses too, provided that they continue to exist and so available for research. Benefits will be maximised as much as possible if the geographically-based genetic variation of all these actually or potentially useful species is conserved. Although conservation of some genetic diversity is possible in ex situ collections, the conservation or medicinal plants at the level of detail desirable can only be approached through in situ means.

More or less all ecosystems today are influenced in their species composition and functioning by people. Even so, it is vital to conserve examples of more natural types of ecosystems, not just to conserve species diversity, but also to allow them to continue to supply those provisioning and regulating ecosystem services with which they are associated and that are so vital to human health. These services include habitats for insects that pollinate nearby crops, local climatic moderation (important for agriculture), control over the quantity and quality of water supplies, and protection from soil erosion and landslides.

Actions at many geographical and social levels are needed to counteract the problems of botanical and ecosystem conservation outlined above. One is the local level, which is where practical management of the environment is actually effected. People are needed at every place, who, as a group, are knowledgeable about its special natural features, understand how these are connected to ecosystems on wider spatial and temporal scales and are prepared to put effort into their maintenance. The use of plants in traditional medicine represents by far the biggest category of use of the natural world in terms of number of species (50–70 000 plant species out of a global total of 380 000) (RBG, 2013; Schippmann et al., 2006). It connects people with the details of their local natural worlds in an unusually intricate way. Alliances are possible between environmentalists, concerned with maintaining the functioning of ecosystems for longer-term advantage (including human health) and local people, concerned with their own health right now.

Conclusion

Traditional medicine is declining in many places. This represents a loss of medical and philosophical knowledge that the world can ill afford to lose. It reduces the interest of people in the diversity of their local plants, weakening the foundation for community-based conservation. The case study of Buganda shows that there can be obstacles to making progress in maintaining resources for traditional medicine extrinsic to its intrinsic worth. Making efforts to maintain resources for traditional medicine at the local level can be a hard struggle. Nevertheless, activists are urged to continue their efforts, in view of the services that traditional medicine can offer to primary healthcare, the value to humanity of the health-related wisdom that can be associated with traditional medicine and the urgency of accelerating efforts to conserve biodiversity in the face of climate change.

The Kiganda case study and presentations at ISE draw attention to the role of tradition in healthcare. The passing down of health-promoting knowledge and customs through the generations relies on the existence of reasonably stable social structures, for example those connecting lineages of traditional doctors in Sowa Rigpa. The most fundamental social
institution for passing on health-promoting knowledge and practices is the family. Today, the forces of globalisation are changing the world at a remarkably rate. From the perspective of human health, the counterbalancing advantages of stability and tradition also need to be emphasised. The health-sapping effects of over-rapid social change are evident in the UK, where large-scale changes in family structures over the last 40 years has contributed to upsurges in deficient parenting, antisocial behaviour among the young and heightened incidences of stress and depression among school teachers (Benson, 2013; Scott et al., 2010, 2012).

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Table 1 Facts and health indicators for Uganda with comparative data for the UK. Sources

<table>
<thead>
<tr>
<th>AREA, POPULATION AND ECONOMY</th>
<th>Uganda</th>
<th>UK</th>
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<tbody>
<tr>
<td>Country area (km²)</td>
<td>236,040</td>
<td>243,610</td>
</tr>
<tr>
<td>Population (millions) (Uganda 2012; UK 2011)</td>
<td>35,873,253</td>
<td>63,181,775</td>
</tr>
<tr>
<td>Growth rate of population (2012) (World Bank figures)</td>
<td>3.27</td>
<td>0.70</td>
</tr>
<tr>
<td>Gross Domestic Product at Purchasing Power Parity (2012) (US $)</td>
<td>1,414</td>
<td>36,728</td>
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<tr>
<th>PEOPLES RELATIONSHIPS WITH PLANTS</th>
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<tr>
<td>Primary occupation agriculture (% labour force) (2006–2009)</td>
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<tr>
<td>Knowledge of useful wild plants (qualitative comparison)</td>
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<tr>
<td>Annual change in forest cover (%) (2005–2010)</td>
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<tr>
<th>DIVERSITY AND CULTURE</th>
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<tr>
<td>Number of indigenous languages</td>
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<td>Traditional family structures maintained (qualitative comparison)</td>
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<tr>
<td>Regular church attendance by Christians (qualitative comparison)</td>
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<tr>
<td>Self-declared no religious faith (census figures, 2001–2) (% population)</td>
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<th>HEALTH AND SOCIAL SECURITY</th>
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<tr>
<td>Deaths&gt;1 year old per 1000 births (2011)</td>
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<tr>
<td>Access to piped water in capital city (2012)</td>
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<tr>
<td>Annual health expenditure per capita (2009) (US $)</td>
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<tr>
<td>Western-trained doctors per 1000 people (2008–12)</td>
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<td>Traditional doctors per 1000 people (1992)</td>
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<tr>
<th>POLITICS AND GOVERNANCE</th>
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<tr>
<td>Number of heads of government (1962–2012)</td>
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<tr>
<td>Number of constitutional transfers of power (1962–2012)</td>
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<tr>
<td>Corruption Perceptions Index (2011)</td>
</tr>
<tr>
<td>Deaths in internal armed conflict (1962–2013)</td>
</tr>
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1 (Wikipedia, 2013); 2 (UIОС, 2011); 3 (FAO, 2010); 4 (Water org, 2013); 5 (Iwanga, 1992); 6 (Transparency International, 2013)
Annex 1  Background to traditional medicine and healthcare in Uganda

Table 1 provides some facts and health indicators for Uganda, a country where traditional medicine is widely practiced, but not officially recognised. Comparative data are provided for the UK, where western medicine is strongly dominant.

Population and economy. Uganda is one of the world’s poorest countries. Unemployment is rife, a problem hard to tackle given the very high population growth rate. Fortunately for livelihood security, the majority of people belong to families retaining connection to the land through ownership of small farms. The UK is a country of similar size, but much richer financially. Half of the food consumed is imported and much of the rest produced on large mechanised farms.

People’s relationships with plants. Many people in Uganda have close dependency on plants through their engagement in agriculture and their use of wild plant resources, including medicinal plants. Deforestation is rife, contributing to the degradation of some ecological services relevant to health, such as a favourable agricultural climate and adequate water supplies.

Culture and diversity. Uganda is a linguistically much more diverse country than the UK, with 42 indigenous languages belonging to 4 language families, compared with figures of 7 and 1 for the UK. Many people in both Uganda and the UK are self-declared Christians (85.2% and 71.6% respectively–2001-2 censuses), but regular church attendance is much higher in Uganda. Churches and mosques are important community institutions in Uganda, providing measures of livelihood security and health support to many people.

Health and social security. Many health indicators are lower for Uganda than the UK and the way in the list of social security is provided by the state. There is no universal state pension (S 8 840 per year in the UK). Health expenditure per capita and the number of western-trained doctors per 1 000 people are both about 30 times higher in the UK than Uganda. The low doctor to population ratio in Uganda is exacerbated by large-scale emigration of doctors from Uganda to richer countries including the UK (Mulumba, 2009). An accurate figure is hard to find, but experienced doctors in Uganda estimate that at least 70% of doctors leave Uganda within 4 years of graduation. The figure in Table 1 for the number of traditional doctors in Uganda comes from research at Gomba, close to PROMETRA’s Forest School at Bukijja. The number found of 3.2 traditional doctors per 1 000 people is similar to that reported elsewhere in tropical Africa (Cunningham, 1993). The figure given for the number of traditional doctors in the UK is low because little remains of long-standing indigenous traditions of folk medicine (Hatfield, 1999), although ‘alternative’ medicine of various origins is popular.

Politics and governance. The indicators in Table 1 show the great difficulties that Uganda has faced in achieving good governance. The Corruption Perception Index is scored from 0 (highly corrupt) to 10 (not corrupt) (Transparency International, 2013). The figure of >600 000 given for the number of people killed in internal armed conflict is a minimal estimate; the true count could be much higher.

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