Beekeeping for restoration of degraded ecosystems and improving livelihoods in East Africa

Beekeeping in East Africa is mostly carried out using traditional methods. In these methods, beehives are made out of logs, bark, reeds, gourds and pots among other materials. The enterprise is quite adaptable to various environments and circumstances although farmers are unable to access better markets due to the poor quality and low quantity of honey produced. Beekeeping is a source of food (e.g. honey, pollen and brood), raw materials for various industries (e.g. beeswax candles, lubricants), medicine (honey, propolis, beeswax, bee venom) and provides income for beekeepers.

Men, women and the youth can all engage in beekeeping if supported through training and provided with necessary inputs. Beekeeping products have various uses and high demand. Honey in particular is used as food, an authentic ingredient in various foods and, its healing qualities are increasingly being realised. Much of the honey produced in Kenya, Tanzania and Uganda is sold locally for honey beer and wine production while some of it is consumed locally as industrial honey in confectioneries and pharmaceutical industries.

In Uganda, according to the Ministry of Agriculture, Animal Industry and Fisheries; about 1.2 million beekeepers are active, with 700,000 beehives colonized countrywide. Many of the beekeepers lack the necessary skills for effective production of honey and do not have resources to acquire better equipment. In spite of this, sizeable quantities of honey are produced in the districts of Bushenyi, Soroti, Gulu, Nakasongola, Kabarole and the West Nile region. On the other hand, Kenya's honey production in the Rift Valley region continued to fall in the past years due to destruction of forests and diminishing land sizes (Africa News Network, 2007)[1]. According to UNDP (2008)[2] however, honey production by trained farmer groups in Kenya increased from 2.0 tonnes in 1997 to 30 tonnes in 2005.

In Tanzania according to the National Beekeeping Programme, there are about 9.2 million honeybee colonies with a production potential of about 138,000 tonnes of honey and 9,200 tonnes of beeswax per annum. Using average prices for the year 2003 of US $ 1 per kg of honey and US $ 2 per kg of beeswax, these are worth US $ 138 million and US $ 18.4 million, respectively. Recent estimates by Mwakatobe and Mlingwa (2005)[3] show that beekeeping generates about US$ 1.7 million each year from sale of honey and beeswax and employs about 2 million rural people. Going by the country's honey and

[1] www.itc.nl/library/papers_2007/msc/nrm/mandara pdf
[2] Mwingi project on potential for apiculture (modern beekeeping) and wild silk farming in Kenya report
[3] www.tanzaniagateway.org/doc/the status of tanzanian honey trade markets Nov 2005 pdf

beeswax production potential, this annual income is far below average and undermines the role of beekeeping in socio-economic development especially for forest and woodland adjacent communities that continue to be trapped in poverty and environmental degradation.

Beekeeping for restoration of a degraded river ecosystem in Tanzania

Degradation of wetlands, river banks, lakeshores and forests (fragile ecosystems) is a serious problem in Tanzania. This is happening despite the existence of legislations providing for buffer zones around these ecosystems. (Buffering capacity of buffer zones is influenced by vegetation density). Encroachment and degradation of the ecosystems with their designated buffer zones continues unabated because of increase in population of the farming community that sees every inch of land as cultivable land. This is compounded by the fact that law enforcement agencies have inadequate capacities to enforce the law. Under these kinds of circumstances, win-win interventions in degraded ecosystems and buffer zones that satisfy both socio-economic demands and maintain the ecosystem's integrity are required.

ASARECA is piloting modern beekeeping through a project 'Promoting sustainable Natural Resources Management (NRM) through effective governance and farmer-market linkages'. Through the intervention, attempts are being made to restore degraded portions of Umba River in Lushoto, Tanzania. Farmers have been trained in the production of better quality honey. The project has mobilized farmers into groups and is in the process of developing a producer-market value chain for honey.

Farmers have been sensitised on beekeeping along water sources in order to conserve the fragile ecosystems. Deliberate campaigns to plant fruit and other useful tree species have been initiated. Selected tree species including *Calliandra* flower and remain green throughout the year providing nectar for bees as well as restoring degraded soils. Farmers have been trained to make beehives and, process and bulk honey. As a result of increased income from sale of honey and beehives, farmers have been motivated to engage in beekeeping and have established a beehive carpentry workshop (see picture).

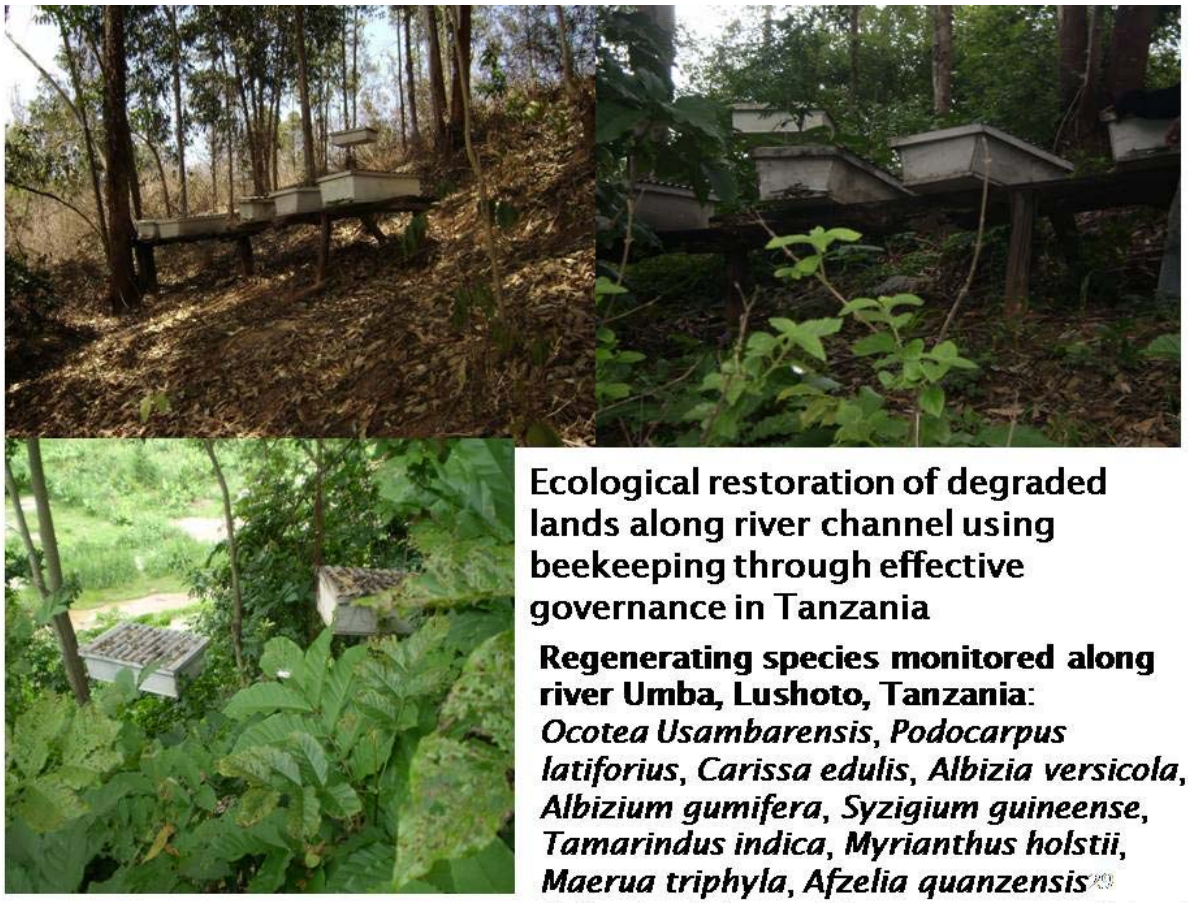
Farmers group beehives carpentry factory

Farmers group marketing beehives at farm gate; 1beehive is sold at US$ 40

The project uses farmer groups as a governance model to guide modern beekeeping. Through farmer groups, the project has set up modern beehives along a degraded one kilometre strip of Umba River. Participating farmers have invested resources towards restoration of this portion of the river bank that had suffered excessive harvesting of trees, bushfires and uncontrolled crop cultivation. Bees in the colonized beehives now police and therefore prevent further degradation of the river bank.

Beekeeping was chosen as an alternative source of livelihoods replacing tree harvesting for income and crop cultivation that degrade the river banks. Farmer groups now harvest and sell honey and related products for household income part of which is reinvested into NRM. The project facilitates farmer market access and value addition for honey and related products. At present, the farm gate price for one kg of honey ranges from US$ 0.6 to US$ 0.9. However, farmers have been linked to markets in Moshi, Arusha and Dar es Salaam where the price ranges from US$ 1.0 to US$ 2.5 per kg of honey. A visit of selected farmers to Bunyangabo Beekeepers Cooperation (BBC) in Kabarole district, Uganda is planned for October this year to enable them learn about honey value addition.

Modern beekeeping in this area has proved to satisfy socio-economic demands and at the same time, restores and conserves the ecosystem's integrity. In other words, it is capable of improving livelihoods while conserving ecosystems and restoring degraded ones through regeneration of different plant species as illustrated in the picture below and therefore, a good candidate for scaling up and out in the region.



Ecological restoration of degraded lands along river channel using beekeeping through effective governance in Tanzania

Regenerating species monitored along river Umba, Lushoto, Tanzania: ***Ocotea Usambarensis***, ***Podocarpus latiforius***, ***Carissa edulis***, ***Albizia versicola***, ***Albizium gumifera***, ***Syzigium guineense***, ***Tamarindus indica***, ***Myrianthus holstii***, ***Maerua triphyla***, ***Afzelia quanzensis*** ***Polyscias fulva*** **and** ***Lantana camara*** **(shrub)**

Lessons learnt so far

- Investing in profitable enterprises under prevailing market conditions through Farmer Group Models (FGMs) of governance is a stimulant towards sustainability of such enterprises and,
- Modern beekeeping is a win-win intervention in buffer zones and degraded ecosystems that satisfies both socio-economic and ecological demands. It can therefore be used for improving household incomes and, conservation of ecosystems and or restoration of degraded ones by conservation agencies in the region.

Article written by James Ateker Okiria
Natural Resources Managment and Biodiversity programme
For further information, contact: j.ateker@asareca.org