

## ISE Newsletter Volume 4, Issue 1 (December 2012)

fundamental source of information for biologists. The Sentimiel initiative advocates in favor of a greater involvement of local communities into the process of assessing the poorly visible impact of climate change on tropical forests. Through their extensive traditional ecological knowledge and know-how, local communities could play a determining role as sentinels by providing first-hand and accurate observations and supplying databases that dramatically fail at incorporating anthropological data into the elaboration of predictive models on climate change (Salick and Byg 2007).

On the margins of the 13<sup>th</sup> edition of the ISE Congress (20-25 May 2012 in Montpellier, France), the Sentimiel initiative held a two-day 'by invitation only' pre-congress workshop. This workshop was hosted in the Darwin's house located at the Montpellier zoo, and included a fieldtrip in the Cévennes National Park. The goal of this workshop was to initiate a dialogue between researchers in ethnobiology, traditional beekeepers and honey hunters, and representatives of NGOs. 32 participants attended the workshop, including 13 beekeepers from Cameroon, Mozambique, Morocco, Indonesia, Colombia, two regions of India, and three regions of France.

Each beekeeper participating in the workshop actively contributed to the development of 5 thematic discussions. Each discussion was organized as a round table, and the workshop was concluded by a debate on the dynamics and future of traditional beekeeping. Thematic discussions focussed successively on i) individual experience of beekeeping or honey harvesting practices, ii) detailed descriptions of the biocultural context, iii) perceived emerging threats, iv) adaptive responses to these threats, and v) intergenerational transmission processes.

Besides building on an open access database online, the network will go on expanding, taking advantage of various major events to come like the 10<sup>th</sup> Conference on Hunting and Gathering Societies (Liverpool, UK, June 2013) and the 43<sup>rd</sup> International Apimondia Congress (Kiev, Ukraine, September 2013).

### Further readings

Dounias E. 2011. [Escuchando a los insectos : acercamiento etnoentomológico al cambio climático entre pueblos indígenas africanos de bosques húmedos tropicales](#). In Ulloa A. ed. *Perspectivas culturales del clima*. Bogotá, Universidad Nacional de Colombia, ILSA: pp 223-245.

Salick J., Byg A. eds. 2007. [Indigenous peoples and climate change](#). Oxford, Tyndall Centre for Climate Change Research, 32 p.

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## Research Reports from the Field

### Present scenario of user knowledge and availability of Wild Edible Plants in Male Mahadeshwara Hills, South India

Contributed by Harisha Ranganahalli Puttahariyappa

I have been chronicling the use of Wild Edible Plants (WEPs) species in the Male Mahadeshwara (MM) Hills Reserve Forest region since 2009. The motivation for this study came through interactions with the community, which time and again returned to the subject of disappearing useful species. MM Hills communities, being in a reserve forest area, have always had access to forest land. This too was useful in ATREE's (Ashoka Trust for Research in Ecology and the Environment) continuing perusal of the role of forests in the lives and livelihoods of forest dwelling communities. I tried to contextualize what this

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resource of wild edible plants (WEPS) means for poor rural households of the Soliga and Lingayat communities. How the knowledge concerning WEPS availability, seasonality, phenology, use and recipes is now part of traditional knowledge. And also how agriculture intensification and economic development are undermining the importance of wild edible plants in food culture and nutritional security of these communities. Research shows that while WEPS do not bridge the existing gaps in nutrition, without them, this gap would be much wider.

An inventory of WEPS that these communities have traditionally used lists a diverse 92 wild plant species, belonging to 68 genera, spread across 38 families. These include leaves, fruits and tubers. Plants from the *Amaranthus*, *Cleome*, *Solanum* and *Dioscoria* genera: *annesoppu* (*Celosia argentea* L.), *kaddisoppu* (*Jasminum pubescens* Willd.), *sundekai* (*Solanum* species), *sodlihanu* (*Scutia myrtina* (N. Burman) Kurz, J.), *murkihannu* (*Buchanania lanzan* Sprengel, J.) and *noregenasu* (*Dioscorea pentaphylla* L.) are particularly popular.

These plants are collected from surrounding areas of natural forest, farm lands (where farmers often classify these plants as weeds), fallow lands, grazing lands, roadsides and backyards. A household typically uses 12 to 130 kg of wild plants in its diet per annum, using as many as 25 species collected from the wild per household (Harisha et al 2011). Grazers, away from home for the entire day, used to live off the land, on WEPS only.

### Key findings are:

1. Less intensively cultivated areas harbor more WEP species; usage of wild edibles is also higher in such areas.
2. Certain wild species are more preferred than others. Households switch to other species in times of species scarcity. Collection behavior favors proximate availability: species found closer are preferred. The continued consumption of WEPS food that are not particularly palatable and that are used primarily as drought foods may also have important implications for availability.
3. The relative importance of WEPS species was higher for poorer households than richer one. The poorer the family, the greater the dependency (unpublished data).
4. More WEPS are consumed in times of agriculture production decline.
5. Knowledge regarding use of WEPS is decided usually by gender, age or social role.
6. Both communities reported a decline in the use of WEPS. The reasons vary:
  - Reliance on store-bought foods and a moving away from land-based livelihoods (like grazing, farming etc.). School education has replaced traditional apprenticeships, displacing knowledge about indigenous food plants. 80% of younger generation are migrating to cities and neighboring states in search of jobs. Knowledge of WEPS is confined to elders (above 35 years of age); especially women who have been residents of forest fringe areas throughout their lives.
  - Post Veerapan, the forest brigand who terrorized the region, women's earnings from NTFP sales (e.g. firewood) have increased, NTFP collection itself is now driven by an established local market, women and men receive equal wage in the Rural Employment Guarantee Scheme. So women are now spending fewer hours cooking or gathering wild plants, and choose to invest time and effort in economically rewarding activities instead of subsistence level activities. A well-established public distribution system has also provided an alternative buffer against loss in nutrition and food security.
  - Changes in agricultural and land use policy, infrastructure development and better access to markets has been a driver of land use change in this region. Shift to market driven commercial crops (maize,

tapioca, sunflower, etc.) has significantly affected wild edible plants' diversity, availability and use.

- In addition, natural forest, grazing land, fallows and roadsides, which were a rich source of wild edible plants, are now filled with invasive such as Lantana (*Lantana camara* L.) and Eupatorium (*Chromolaena odoratum* L.) Lantana cover is very high in natural forest and fallow land— 60% and 58% respectively— when compared to other land use categories (Aravind et al 2010).

A resource mapping exercise with Soliga and Lingayaths participants revealed that in the course of a decade, more than a dozen collection locations have been abandoned due to inaccessibility and loss of wild edible plants in these locations. Research studies reveal that allopathic property of Lantana impact growth of native plants.

7. One hedging mechanism to preserve dietary diversity has been in the form of attempts to transplant select wild species that are disappearing, particularly perennial shrubs and climber species, despite issues regarding water availability.

WEPs play an important role during droughts and food shortages for rural agricultural households. Such plants are innately resistant and adaptive to micro climatic change such as low rainfall, high temperature etc., especially in comparison to introduce or exotic plant species. This has been proven in several ecology, conservation and restoration studies. However since wild plants fulfill a subsistence need and occupy fallow lands and forests, both of which are open accessed and poorly managed (except farm lands), these wild plants are underestimated and not captured in national economic assessments.

WEPs use is more like a living link with the surrounding habitat and a keystone of culture, but not just food and income. Therefore, the decline of traditional ways of life and decreased use of WEPs are interlinked. This is vital when we talk about households that work in near- subsistence circumstances.

## **References**

Aravind N.A, Dinesh Rao, K.N Ganeshiah, R. Uma Shaankar, & Johng Pulsen 2010. Impact of the invasive plant, Lantana camara, on bird assemblages at Male Mahadeshwara Reserve Forest, South India. *Tropical Ecology* 51(2S): 325-338, 2010

Harisha R.P., Ramesh Knnan, N.A. Aravind N.A & G. Ravikanth 2011. Ethnobotanical studies of the two forest dwelling communities in Southern As Special Publication of Society of Earth Scientists by 'Springer' is under peer review.

### **Wild edible plants in Ethiopia: a review on their potential to combat food insecurity**

Contributed by Ermias Lulekal<sup>1</sup>; Co-authors: Zemedede Asfaw<sup>2</sup>, Ensermu Kelbessa<sup>2</sup>, Patrick Van Damme<sup>1,3</sup>

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This work reviews literature on ethnobotanical knowledge of wild edible plants and their potential role in combating food insecurity in Ethiopia. Information on a total of 413 wild edible plants belonging to 224 genera and 77 families was compiled in this review. Shrubs represented 31% of species followed by trees (30%), herbs (29%) and climbers (9%). Families Fabaceae (35 species), Tiliaceae (20) and Capparidaceae (19) were found to be represented by the highest number of edible species. About 56% (233) of species have edibility reports from more than one community in Ethiopia.

Fruits were reported as the commonly utilized edible part in 51% of species. It was found that studies on wild edible plants of Ethiopia cover only about 5% of the country's districts which indicates the need for more ethnobotanical research addressing all districts. Although there have been some attempts to conduct nutritional analyses of wild edible plants, available results were found to be insignificant when compared to the wild edible plant wealth of the country.