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Indigenous use, nomenclature and classification of plants in a Nahuatl-speaking village in the Balsas-Basin, Guerrero, Mexico

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As farmers and fishermen, the Nahua of Totolcintla, Mexico, traditionally have a profound knowledge of their natural environment. However, different social and economic changes have had (and still have) an influence on their botanical knowledge. In the past few years, Totolcintla got amongst others a small electricity-network, a draw-well, an access route/road, a daily bus service to the nearest cities, and a healthcare centre.

At the same time the main source of income, i.e. small-scale agriculture, went downhill because of severe droughts. The resulting migration flow in search of work, created a hiatus in the population.

The positive aspects of these evolutions cannot be denied; nonetheless, they eroded many old practices and wisdom.

- The creation of a medical centre has facilitated access to formal health services, which seems to have influenced knowledge and use of medicinal species.
- The construction of a road (though not paved, and thus not 'all-weather') has broadened the possibilities to travel to urbanised areas and has created a better access to all kinds of goods. Several products that were formerly of botanical origin can now be purchased in the cities. However, it still takes between two and six hours (single journey) by bus to reach the nearest cities.
- In addition, it is literally easier to migrate. Due to a decrease in agricultural employment many people are forced to search for work in other areas, sometimes even in the United States. Moreover, those who return, bring with them new habits and customs, which undeniably affect the 'home front'.

As a result, new consumption patterns emerge. It may be assumed that this has an important influence on local botanical knowledge. Generally, villages that have been connected by roads to the broader world, change their habits more quickly than those that can only be reached on foot (Weimann and Heinrich 1997). Traditional knowledge tends to 'survive' much easier where it has an important role in subsistence (Benz et al. 2000).

Central Research Question: How does this form of cultural erosion affect traditional botanical knowledge?

Rationale

The research presented here was conducted in collaboration with the Nahuatl Learning Environment Project, based in San Augustín Oapan, that endeavours to document and preserve the Nahuatl language and traditional Nahua knowledge in the Alto Balsas region. Data on uses and names of the previously not studied village San Juan Totolcintla were added to the project's database, in order to contribute to the documentation of the 'genetic diversity' of Mexican wild species. The results of this investigation were also brought together in a Dutch MSc thesis in Development Studies (University of Ghent 2004).

Fact Sheet of the Research Setting

- Location: San Juan Totolcintla, State of Guerrero (municipio Martir de Cuilapan)
- Located in the Depresión del Balsas in the Sierra Madre del Sur (99°21'-99°23'W and 18°04-18°06' N)

- Altitude: 500 - 650 m
- Climatologically: *'muy cálida, semiseca'* (Meza and López-Garcia 1997) average annual temperature: 29° C
- Average annual rainfall between 600 and 900 mm
- Rainy season starts in May/June, with a peak in July/August
- Vegetation: tropical deciduous forest (Burseraceae), mesquite grassland, tropical shrubs and palm wood (Rzedowski 1978)
- Population: Rural community of approximately 2200 inhabitants
- Language: Nahuatl, most inhabitants are fluent in Spanish
- Economic basis: subsistence, small-scale agriculture (beans, chilli), for autoconsumption
- Traditional farming, based on the *'milpa'* system, a polyculture of maize, beans, squash and edible greens (*quelites*)
- Some own livestock, like goats, pigs, donkeys, horses, chickens
- Occasional gathering of wild foods can fill up potential 'food gaps'
- *'Cinta de palma'* or the twining of palm leaves (*Brahea dulcis* (HBK) Mart.) is a poorly paid, but welcome 'off-farm' income opportunity for most women (Casas, Luis-Viveros, and Caballero 1994).

Research methodology

Fieldwork was conducted during January – April 2004. A permit to work in the area was obtained from the *comisario* of the village, with the help of Prof. Jonathan Amith and Dra. Nelly Diego of the UNAM.

Plants were collected during field trips, organised for this purpose or while accompanying informants during their everyday activities, varying from picking plums or other wild food to gathering firewood (participant observation). Sometimes interviews were conducted in homegardens, which apparently led to a good atmosphere to discuss diverse botanical themes.

Dried specimens were sent to UNAM 'Laboratorio de Plantas Vasculares' for identification. Species that were mentioned during interviews, but that were not flowering during the period of field work, were determined using the existing database of Jonathan Amith. Voucher specimens were left with the national herbarium in Mexico City, while a second collection was deposited at the Nahuatl School in San Augustin Oapan (Guerrero).

A range of different open-ended interview techniques was used in order to set up an inventory of local botanical knowledge. Informants were selected by the so-called snowball method. A total of twenty people participated actively at one or more stages of the research, while twelve key-informants of different ages, social backgrounds and both sexes were interviewed profoundly. Of this group, five persons were regular guides on field trips. Considering this small number of informants, the aim of the project was obviously qualitative rather than quantitative. Interviews continued using the 'free-listing' method, where interviewees were asked to list all plants they knew within local use categories.

Results

- 11 use categories, presented in Table 1, were evidenced from the field work
- 51% of all 'useful' species, is used for only one purpose according to the classification system, most of these are food plants
- Most 'useful' species belong to the Fabaceae (32 species), Asteraceae (11 species) and Poaceae (11 species) while 'multifunctional' species often belong to the Burseraceae (Cfr. Table 2)
- Food and medicinal plants are classified according to the same hot/cold classification system
- No general agreement on classification basis of humoral (hot/cold) values of plants
  - potential medicinal effects?
  - flowering time?
  - list of typical properties associated with either hot/ cold
- Local nomenclature of plant names is predominantly based on:
  - morphology
    (size; colour or shape: i.e. similarity to animals, plant parts, body parts)
  - ecology (habitat)
  - functionality
- Uses of medicinal and edible wild species seem more susceptible to so-called cultural erosion or to social stigmatisation? Knowledge on those species appears to be 'passive'. People still know a lot of uses and names but do not necessarily apply that wisdom in their daily lives.

Table 1. Use categories in Totolcintla and number of species

Code	*Use category*	*Species #*
A	Wild-food	62
B	Food for animal consumption	44
C	Medicinal use	35
D	Religious and symbolic use	19
E	Firewood	36
F	Construction material	28
G	Fences and Ornaments	43
H	Material	39
I	Arts and crafts	7
J	Cosmetics and Hygiene	5
K	Poisonous and Dangerous Plants	21

Table 2. Comparison of families with 'useful' species

Family: Plant families with the highest number of useful species in Mexico according to Caballero and Cortés (2001)

A: Number of useful species among the Nahua of *Totolcintla*

B: Number of useful species among the Nahua of the Sierra Norte de Puebla (Caballero and Cortés 2001)

C: Abundance in the area: Number of species per family in the Balsas basin (Martínez-Gordillo et al. 1997)

Family	A	B	C
Fabaceae (total)	32	45	100
Mimosoideae	14	/	/
Papilionoideae	13	/	/
Caesalpinioideae	5	/	/
Asteraceae	11	47	94
Poaceae	11	n.n.	41
Anacardiaceae	7	n.n.	6
Solanaceae	7	28	12
Cactaceae	5	18	20
Euphorbiaceae	5	22	41

Plant families with the highest number of useful species in Mexico according to Caballero and Cortés (2001).

A: Number of useful species among the Nahua of *Totolcintla*.

B: Number of useful species among the Nahua of the *Sierra Norte de Puebla* (Caballero and Cortés 2001).

C: Abundance in the area: Number of Species per family in the Balsas basin (Martínez-Gordillo, Valencia-Ávalos, and Calónico-Soto 1997).

Conclusion

Both medicinal and food uses seem to be influenced by so-called 'cultural erosion', through modernisation (Benz et al. 2000). Since the village has a health care centre, 'old' botanical remedies seem to be replaced by formal medicines. Aspirins and other common drugs can be easily purchased in local groceries. Likewise, the consumption of wild edible species is no longer indispensable, since people have the opportunity to buy imported food, or to travel themselves to go shopping in the city, which does not necessarily mean they have an adequate income. Still, the considerably low purchasing-power is reflected in use and consumption of wild and semi-domesticated food plants. The idea that imported crops have replaced consumption of local wild foods is thus inaccurate.

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