

An emic approach, representation and clasification of mosquitoes among the cuiva people

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Abstract: Emic research demonstrates subjective meaning as it coheres in human awareness and thinking, whereas in etic research anthropologists use a set of measures external to the phenomenon for the purpose of analysing and explaining it. The intention of this paper is to explore traditional perceptions of mosquitoes in the Caño Mochuelo Cuivan settlement located on the Colombian plains. On this topic we argue from both etic and emic perspectives - 'a two-dimensional approach to the study of one specific culture' (Watson 1981:443). We examine Cuivan perceptions pertinent to their classification of mosquitoes and the link between mobility and a hunter-gatherer form of economy. Although the Cuiva have been exposed to, and affected by, the mosquito as a disease transmitter over a long period of time, they do not identify the mosquito as the transmitter. Rather, they have their own system of classifying mosquitoes. The information used in this article is based on taped interviews, participant observation, mosquitoes capture and entomological identification.

Key words. Cuiva people. Mosquitoes classification. Venezuela.

Resumen: La intención de este artículo es explorar las percepciones tradicionales que tienen de los mosquitos los Cuiva del asentamiento de Caño Mochuelo, localizado en los llanos colombianos.

En este tópico argumentamos desde ambos puntos de vista o perspectivas, el etic y el emic. 'Una perspectiva de doble dimensión para el estudio de una cultura específica' (Watson, 1981:443). Examinamos la percepción cuiva relacionada a su clasificación de mosquitos y la relación entre movilidad y la economía de cazadores y recolectores.

A pesar de que los Cuiva por un largo periodo de tiempo han estado expuestos y afectados por enfermedades transmitidas por mosquitos, ellos no identifican el mosquito como un trasmisor de estas. Sin embargo, ellos tienen un sistema propio de clasificación de mosquitos. La información utilizada en este artículo esta basada en entrevistas, observación participativa, y captura y clasificación entomológica de mosquitos.

Palabras clave. Cuivas. Clasificación de mosquitos. Venezuela

The Etic and the Emic Theoretical Approach to Mosquitoes Interpretation:

The cultural study of mosquitoes may be approached from two distinct perspectives i.e. the etic and the emic. The etic or scientific imposed viewpoint, focuses on the employment of 'concepts and distinctions that are meaningful and appropriate to the observers' (Harris 1985:124). The emic reflects how 'observers employ ncepts and distinctions that are meaningful

and appropriate to the participants' (*Ibidem*). The emic approach in mosquitoes studies focuses mainly on the explanation of the interpretation of mosquitoes provided by the people of a specific ethnic group or community.

The etic approach has been variously utilised for the study of mosquito-borne diseases. However, there is a paucity of documentation reflecting the emic (or native) perspective despite the fact that peoples' perceptions of a specific insects can determine methods of characterization and classification. In the past, emic or 'folk' strategies generally tend to have been underused. '[T]he failure to identify emic indicators of constructs will by definition reduce the scope of cultural differences uncovered' (Church & Katigbak 1988:141). The native language - the language of personality - and the locations of language used must be taken into account when considering emic personality concepts. Language interaction among the Cuiva is likely to take place within their own group, with neighbouring ethnic groups, health workers, white and *mestizo* cattle ranchers, on street corners, in market places and in rural and 'town' areas. 'It is at the ... (behavioural) level that cultural differences may be most extensive' (Church & Katigbak 1988:146). The essence of the emic point of view lies in its reflection of the native's habits which in turn reflects the behavioural patterns - conscious or unconscious - of a specific individual or group.

In order to gain insight into emic perceptions and the native understanding of mosquitoes, formal methods of enquiry were employed. Additional information (elaborating the etic viewpoint) was gathered using formal surveys designed to collect economic data and to make an inventory of group activities. Methodological strategies to gathering the emic perception included the use of two important tools: interviews, and participant observation, aided and advised by three indigenous assistants. The methodological strategies to gathering the etic perception of mosquitoes involve mosquito capture and entomological classification.

The Cuiva Ethnography

The Cuiva are a sub-group of the Guahibo linguistic family called Hiwi. In 2001 the total number of Cuiva was approximately 1050 individuals, who may be either settled or peripatetic in the Llanos (border plains) area between Colombia and Venezuela (specifically in the Casanare and Arauca Departments of Colombia and in the Apure State of Venezuela).

Our particular field of study extended over a population of 467 members of the Caño Mochuelo settlement (including the people from the Cravo Norte settlement known as the Casa Indígena) on the Colombia side. The population of this settlement is in a constant state of flux due to mobility, mortality and natality rates, and urban migration.

The Colombian Cuiva have been described by several authors as either hunter-gatherers with a high level of mobility, or as temporary nomads

(Arcand 1972; Ortiz Gómez 1984; Sumabila 1985, 2000). Critical to their existence is the search for food resources which are dispersed over an extensive geographical area encompassing the savannas, several rivers and along the banks of these rivers. During the rainy season, the Cuiva use canoes on the river as a means of travel. On the Colombian side, the main rivers included in the Cuivan 'area' are the Meta, the Casanare, Ariporo, and the Cravo Norte. During the wet season, when the savannas often become waterlogged the Cuiva mainly utilise the rivers and their banks because it is here that the animals seek refuge from the rising waters.

In more recent times, some among the Mochuelo natives have undertaken more sedentary activities (cheap labour in local farmhouses, constructing fences or clearing bush, working as cleaners or cooks in farmhouses, as washerwomen, or as cleaners in the small shops in the Cravo Norte townships, teachers, and health workers). Because of the nature of their activities, this particular group became sedentarised. The majority of the Cuiva continue to hunt and gather in a territory formerly deemed their own, a territory which over the last four decades has been considerably reduced in size. This is due to the encroachment of white and mestizo cattle ranchers who, as well as sequestering native land, have commercialised the resources vital to the natives including the wild animals. Those Cuiva who have no regular source of income or goods continue to maintain their life-style of temporary mobility, searching for food in the age-old hunter-gatherer tradition.

The Colombian Cuiva have been exposed to a sedentary western life-style. In 1996 and 2001 we noted that approximately 40% of the Colombian Cuiva had maintained 'permanent' residence for a period of three to six months. This may also be attributed to the fact that they are subject to Christian influences.

In Caño Mochuelo missionary priorities included the conversion of the native peoples and, by extension, their sedentarisation. Those Cuiva who declared themselves to be Christian gained access to permanent jobs as teachers, health workers and farm workers. Only 23% moved every nine to 12 days in search of food. The high mobility rate of the Cuiva doesn't invite a high rate of transmission of mosquito diseases. Conversely, when the Cuiva become sedentarised, there is a higher diseases risk-factor due to longer periods of close physical contact. 98% of the cases of mosquito diseases (malaria and dengue fever) contracted during the time that we worked within the community, occurred among the sedentarised community members. The more sedentary Caño Mochuelo natives who fell victim to the malaria *vivax* and *falciparum* strains had left the community two or three months previously, had moved through the Meta River region, contracted malaria, then returned to their regular community on the Colombian side of the border.

Mobility has protected the Cuiva against some diseases (such as malaria), and parasites. In the case of malaria, the Cuiva mobility cycle is

opposite to the cycle of the malaria vector reproduction. It involves the use of open huts, which can be an excellent way to reduce mosquito resting-places and to evade mosquitoes that bite indoors. To maintain open temporary huts for a few days in different places helps prevent swamp places being produced by cleaning the vegetation of one area to build permanent houses, to rear animals or to cultivate land. *Cuiva* practice mobility in bands, which reduces the population concentration and prevents the fast spread of malaria. When there are more hosts (individuals), the possibility of a vector to transmit malaria between host will be higher. When there are fewer hosts the possibility of transmission is reduced. Mobility allows the *Cuiva* to use different microenvironments, over a large territory at different times of the year. During the rainy season, *Cuiva* people can select areas where there are fewer mosquitoes and where there are also accessible resources.

Over the past forty years (from approximately 1967-2007) the fauna and flora in the area under consideration in this article have been subject to threat by intensive human encroachment. There has been an increase in the numbers of cattle ranchers in the area. Farmhouses are frequently constructed along the banks of rivers and have become part of the plains environment in Colombia. Cattle ranches have expanded into the savannas areas. An increase in cattle numbers has coincided with a decrease in numbers or total extinction of some varieties of local fauna due to a marked reduction in food and space. The incursion of foreigners has resulted in the depletion of Cuivan food resources (especially protein) and has predetermined native mobility and settlement patterns.

The Cuivan Environment

The Venezuela- Colombia plains (*llanos*), also know as savannas, conform the natural environment where the *Cuiva* people live. The savannas environment has 'high average annual temperatures (>22 C), very little annual temperature variation, and average annual precipitation ranging from 800-2000mm with a strongly seasonal distribution' (Medina 1980: 298). A further common characteristic is that the savannas are all located in a tropical area subject to alternating dry and wet seasons. There are about six to eight months of wet season and between four to six months of dry season. The latter usually commences around November-December and finishes between April and May, by which time the rainy season has started and the savannas area becomes flooded. During this time of the year only the high areas are habitable.

Another feature of the plains area is the system of rivers, lakes and streams which form part of the Arauca, Ariporo, Capanaparo, Cravo Norte, Cinaruco, Casanare, Meta, Agua Clara and Orinoco river systems. During

the wet season the river levels rise, flooding many areas of the savannas and forests. Several varieties of fish are found in the lakes and streams during the wet season. Between December and April to mid-May, the climate becomes hot and the savannas, lakes and streams become dry. During the transition period between the dry to wet and wet to dry seasons, the number of small ponds increases and the mosquito numbers increase accordingly.

Several forms of both animal and insect life are clearly distinguishable in two specific areas - along the banks of the rivers and in the savannas. Insects in these areas are diverse and abundant. They are part of the savannas ecosystem. We observed that most of the mosquitoes were concentrated along the river banks during the rain season. Also we detected that mosquito fauna is abundant in the Capanaparo, Meta, Cinaruco, Agua Clara, Casanare, Cravo and Arauca river regions, areas through which the Cuiva habitually move.

The Caño Mochuelo Cuiva Settlement

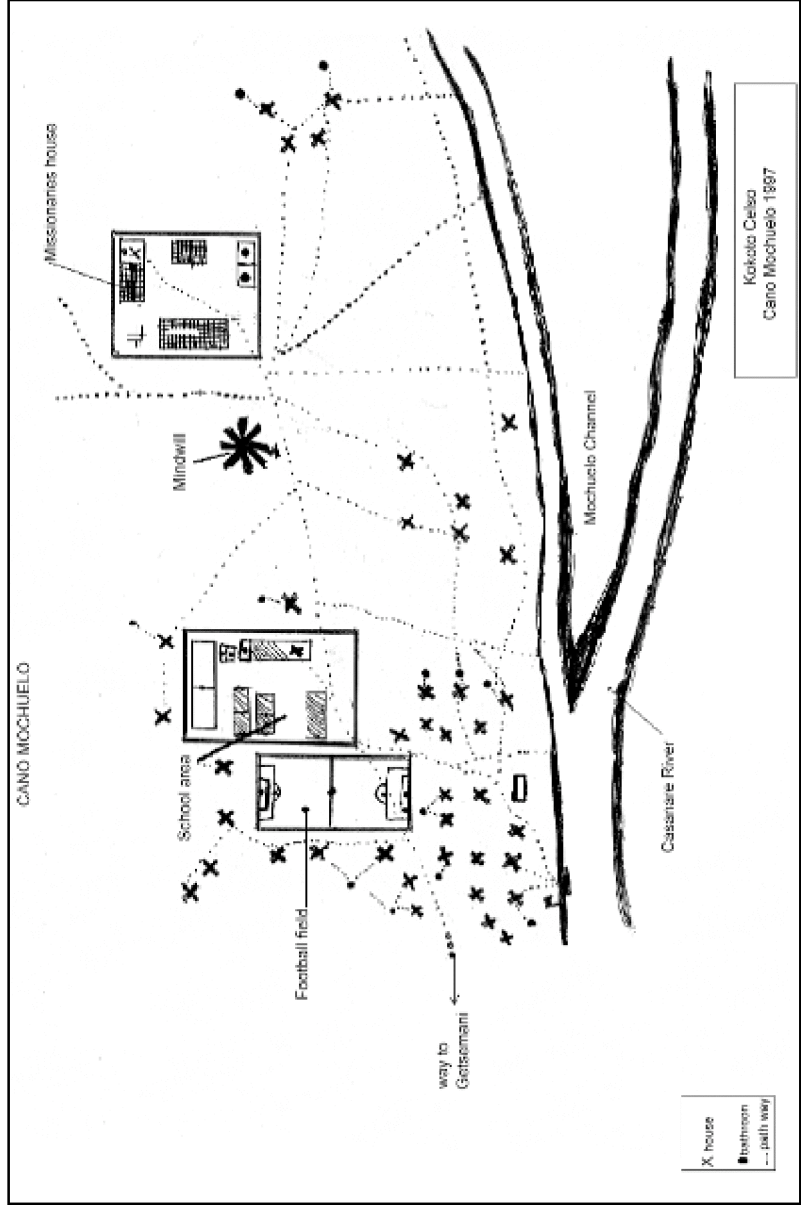
The Caño Mochuelo Cuiva are settled on the banks of the Casanare River. This settlement is the most extensive permanent Cuivan settlement. Caño Mochuelo lies about 30 kilometres from the Cravo Norte township which belongs to the Arauca Department. However, the Caño Mochuelo settlement itself comes under the political administration of the Casanare Department (Hato Corozal municipality). This Cuiva settlement is part of the Caño Mochuelo indigenous reserve. Here they share the area with other ethnic groups including the *Sikuani*, *Amorua*, and the *Salivas*.

In 1997, the Caño Mochuelo settlement (figure 1) comprised some 40 huts, was divided basically into five areas and situated customarily on a river bank where bathing took place, water for cooking was drawn, clothes were washed and canoe travel. The Casanare River could be accessed by four paths and the Caño Mochuelo River by three.

The characteristics of this settlement and the community members' activities are determined by seasonal changes. During the dry season vegetation becomes withered and sparse. The Casanare River water levels drop exposing areas of sandy beach. The path to Cravo Norte can be traversed by foot, by car, bicycle, horse and motorcycle. During the transition from the wet to dry season, small pools of water lie scattered throughout the savannas. Morning breezes are a feature of the hot and sunny days, affecting mosquito flying and resting times.

During the rainy season the river levels rise; the beaches and the steps which had been cut into the embankment providing access from the river's edge up to the settlement temporarily disappear under the water. The vegetation covering the bank on the eastern side of the river also disappear under the river waters. All the vegetation growing along the banks of the Casanare River turns green again, and the stream that flows along the

Figure 1
Caño Mochuelo Settlement, Kokoto Celso, 1997



eastern side of the settlement deepens and wideness. Throughout both seasons the Cuiva attend to the maintenance of their canoes, securing them with wooden stakes driven into the embankment.

In March 2002 we observed that adjacent to the Caño Mochuelo settlement (only 20 minutes walk in an easterly direction) there were four blocks of land which, at that time, were under cultivation by the Cuiva. About 25 minutes' walk in an easterly direction there was a Sikuani settlement, and about ten minutes walk from this settlement is a Salivan settlement. Members of these two communities were frequently visited by the Cuiva from Mochuelo. In all these settlements mosquito breeding places caused by living conditions were widespread and contributed to an abundant mosquito population.

Cuiva Emic Explanations for the Origin of Mosquitoes

During our field experience among different indigenous people of the Venezuelan and Colombian plains (Cuiva, Sikuani, Pume, Guajibos, Curripacos among others), we found many traditional myths, legends, and beliefs related to explaining the origin of animals and insects of the natural environment where these indigenous people live.

Traditional Cuiva stories of animals and insects which include mosquitoes tales have been collected by Ortiz (1994). Cuiva had no trouble incorporating mosquitoes myths and legends into their traditional knowledge and way of thinking. The origin of mosquitoes is recounted in fascinating stories that often have moral connotations and are helpful to the indigenous in explaining their social relationship system and their reality.

One of the older more important male members of the Caño Mochuelo community narrated a traditional mosquito story. In this legend, he describes and explains the origins of the mosquito as follows:

One day, a man met with a woman who didn't love him. The woman was afraid and didn't want to sleep with him, so the man changed into a mosquito and sucked her blood. The woman became thin and nearly died as a result of the *yunu*. (a substance, which gives power to the shaman) man eating her. The man had a tube (*carrizo*) made of bamboo in which he kept mosquitoes. When the mosquitoes were full they returned and he closed it. As the woman's older brother lay in his hammock resting, he noticed that there were mosquitoes heading for his sister. He also saw the tube moving as the mosquitoes entered it. Realising what was happening, the brother sealed the tube. Then the man went hunting. While the owner of the *carrizo* was hunting, his brother-in-law burned the *carrizo* so that all the mosquitoes were charred and became ashes.

A short time later, the man returned. He put the fish that he had caught on the floor. The people said to him: 'Brother-in-law, we have burned the *carrizo* that you left while you were hunting.' When the man heard this, he climbed into his hammock and died. Because all the mosquitoes were dead, their owner had to die too. However, as a consequence of someone blowing on the ashes, the mosquitoes became reconstituted. This is the reason that they are scattered throughout the world today. Maybe we wouldn't have mosquitoes if someone hadn't fanned the ashes with the bellows.

The mosquito produces *dome* (diseases) but it doesn't produce *japa* (fever). They produce *dome* because they have *yunu*. Now that the man no longer existed, the woman became fat again, despite nearly dying from exhaustion because of the mosquito. Through the *carrizo*, the brother of the woman killed his brother-in-law. By burning the eating mosquitoes, he was also burning his brother-in-law. (Yeri Lorenzo 1984: 67-68).

Cuiva mythology commonly includes the transformation of human beings into animals and animals into human beings. This mythology also includes the belief that humans and animals can have temporal modifications in their bodies a belief that is common to many South American indigenous societies. From the Cuiva point of view the process where humans change both their physical and psychological structure into animals is an attribute of those who are believed to possess shamanic powers.

In this tale the special powers of the shaman is described. It becomes evident upon reading this myth that disease origins are perceived to be located in the power of the shaman, or rather the power of the *yunu*. The *yunu* is a substance that permeates the flesh of shamans giving them the power to induce disease in others. The shaman has the ability to change his human form into that of insects and revert again to a human form. This process of metamorphosis permitted the shaman in the above account to exercise indirect control over his woman by using the power of the mosquitoes. In a similar way, the shaman can use the power of certain animals to control human beings.

There is a consistent pattern of human behaviour in Cuiva mosquito stories - a logical structure and sequence of details relating to Cuiva experience of life. Interviews demonstrate that the story tellers are not consciously aware of this logic.

This story also illustrates, in a metaphoric way, existing Cuiva kinship relationships. The role of the older brother is to guard his younger sisters and to control his brother-in-law's behaviour. Thus in the myth the man

symbolically killed his brother-in-law to protect his sister, by sealing the mosquito tube.

Also in this context, actions of mosquitoes appear as the result of human behaviour. The one way that a Cuiva man has to control his wife is by debilitating her and reducing her abilities to survive and to make decisions by herself.

Most Cuiva people believe that good function of the human body is related to the internal bodily equilibrium between dry and wet. In the Cuiva emic perception the mosquito blood-sucking process debilitates humans because it dries the body. It produces disequilibrium of bodily fluids. When an individual loses fluid his body becomes dry and he gets sick or dies. Contrary to this interpretation the etic perception maintains that the mosquito blood-sucking process can introduce micro organisms into the human body causing debilitating diseases.

In addition, this story justifies the presence of mosquitoes on earth. In this society mosquitoes are part of every day life, a part of the environment where the Hiwi people live, an integral element of the savannas environment that underpins the traditional knowledge - a knowledge that includes the classification and characterization of mosquitoes behaviour.

The Cuiva Emic Classification of Mosquitoes

The relationship between mosquitoes, the Cuiva and the environment is determined by two important factors, specifically Cuivan traditional knowledge of their environment and Cuivan mobility. The latter is associated with the economic activities practised by the Cuiva as hunters and gatherers.

An abundance of mosquitoes is considered to be but one ingredient in the Cuiva environment, which is the savanna. The Cuiva in general see mosquitoes as noisy flying insects which have the potential to bite exposed areas of the body and cause painful and itching sensations. They recognize that mosquitoes can be good food supply for frogs and birds. They also observe that mosquito infestations keep white settlers and strangers out of their territory.

Mosquitoes only make people unwell because they extract fluid from the human body and dry it. Interviews revealed that approximately 87 % of the adult Cuiva interviewed didn't equate mosquitoes with diseases such as malaria, dengue or yellow fever. The fact that mosquitoes, through a biting process, can inflict skin lesions but not diseases appears to be a common understanding among the Cuiva. Only the indigenous teachers and health workers of Caño Mochuelo, who had been exposed to western influences, were aware of the relationship between these diseases and mosquitoes.

In terms of numbers, according to the Cuiva there are fewer mosquitoes in the settled urban areas than in the traditional savannas settlements. However, their appreciation of a more mosquito-free environment has little

to do with the spread of diseases by the insects. Rather it is a perception that the bush attracts mosquitoes. The Cuiva see the mosquito as peculiar to their natural bush habitat, and not as part of the modern urban world. This has given rise to a perception that the mosquito is part of the savannas world.

Berg & Kerr (1973) and Ortiz (1991a, 1991b) in their dictionaries about the Cuiva language (showing the vocabulary that Cuiva people use for mosquitoes) make clear that Cuiva use more than one term for mosquitoes. However, they fail to identify clearly the emic classification of mosquitoes used by Cuiva people.

Although the Cuiva classify the insects largely according to their behaviour and physiological characteristics, additional factors such as environment and the time of abundant mosquito proliferation are taken into consideration.

The traditional classification of the mosquitoes (emic) is as follows:

The *Weaso* appear in great numbers in the house during the night, are slim and white, are usually found living and reproducing in water holes in the savannas areas, and are in evidence all year round.

The *Oroso* is larger than the *Weaso*, is large in numbers, and bites during the night. It is black in colour and is found in elevated places in the savannas. It appears in the settlement during the rainy season. Our own research suggests that the *Weaso* belong to the *Anopheles* group, and the *Oroso* to the *Culex* and *Aedes*.

The *Topepei* live in the bushlands. They are found during both the night and daylight hours, and are very small and white. Their numbers increase during the rainy season. It is categorised as the 'white termite' (Ortiz 1991a: 67-8).

The *Wacope* are very small and black in colour, live all year round in the bushlands, are found during the daylight hours, and invade dwellings in June and July. They are also categorised as the 'white termite' (Ibidem).

The *Coreteito* are large and brown and found only in the savannas.

This *Cuiva* classification of mosquitoes is similar to the entomological classification (etic classification or Western scientific classification) of the mosquitoes plains area.

The Etic Classification of Mosquitoes

Several scientific studies of mosquitoes have been undertaken in the Colombian plain area (Faran 1980; Herrera *et al.* 1987; Olano *et al.* 2001). Most of these etic studies has been taken in order to create mosquito control programs and reduce disease incidence. The etic point of view focuses on understanding mosquito behaviour and classification, during specific periods of time and in specific settlements which included the Cuiva territory and especially the Caño Mochuelo community.

The etic approach always involves scientific entomological assessment, which follows three steps: first observe the mosquitoes behaviour in the area of study, second capture the mosquitoes, third identify and classify them.

The capture of mosquitoes was undertaken daily over a period of approximately 36 days of field work during the transition period between the wet and dry seasons. Mosquito specimens were collected using human landing catches (both indoors and out) between 18 to 22 hours. Specimens were collected from two localities (Cravo Norte and Caño Mochuelo indigenous reserve) in the Department of Arauca and Casanare respectively, Central-East Colombia. In these two areas mosquitoes were collected in different sites including the land on the periphery of the Casa Indigena (Cravo Norte) community, from the river area adjacent to the Caño Mochuelo community, from the closets creeks and lakes and from the two settlements. Collection was undertaken at different times during the night, both inside and outside the Cuivan dwellings. Efforts to collect from all the areas were thwarted by ongoing civil conflict.

During the mosquito capture period, the number of mosquitoes increased for the duration of the rain season and their peak time was between 18 and 20 hours. Following the capture process mosquitoes were identified and classified by the entomologist.

After we captured, identified and classified the mosquitoes from the etic perspective, we compared the entomological (etic) classification with the Cuiva (emic) classification, with the intention of identifying possible differences and similarities.

In the genus *Culex* the following mosquitoes were identified: *Culex quinquefasciatus*, *Culex inflicus*, *Culex brevispinosus*. Among the species belonging to the genus *Aedes* we located: *Aedes aegypti*, *Aedes taeniorhynchus*. There was only one specimen from the genus *Aedomyia*: *Aedomyia squamipennis*. The *Anopheles oswaldoi* is considered a possible malaria vector in Brazil (Rosa-Freitas *et al.* 1998; Pova *et al.* 2001); the *Aedes aegypti* is the vector of dengue and yellow fever. The *Culex quinquefasciatus* is a house mosquito, the larvae of which can develop in waters with a high content of organic material (e.g. septic tanks). It prefers to feed on birds. It is believed by the native people to only take 'leisure' time on humans. The rest of the *Anopheles* are characteristic of the region under review. The Cuiva refer to them as the Weaso (the *Anopheles*), the Oroso (the *Culex* and the *Aedes*); the *Tipulidae* is known to the Colombian Cuiva as the Coreteito.

Evidence proved that the Cuiva clearly differentiate between mosquito types. It became evident also that their system of classification is fashioned by their own life experiences and their knowledge of the environment. The indigenous knew that mosquitoes' habitats are more suited to breeding during the rainy season than during the dry season. They recognised also that the *Anopheles* predominate in certain areas such as the bank of the

rivers. They were able to identify endofilic (which bite inside the house) and exofilic (which bite outside the house) mosquito behaviour, and maintained that the increase in the volume of mosquitoes and assorted insects is related to the transition period between the dry and wet seasons. For this reason, they have developed a diversity of ways to prevent mosquito bites.

The Emic Objection to and Protection Against Mosquitoes

The Cuiva's main objection to the mosquito is the whining sound that disturbs their sleep and the itching which accompanies the bite. When the numbers increase in the settlement areas, the techniques used to prevent mosquito bite intensify accordingly. The Cuiva knew, for instance, that during the early part of the day in the dry season, the dry wind diminishes the mosquito presence and by extension, their capacity to fly and bite.

Five different methods of mosquito prevention were identified. These included the use of prayer, of body paint, the burning of plants or termite nests and the burning of mosquito coils (available only to the few Cuiva who have the money to purchase them), the use of mosquito netting (the latter introduced as a result of relatively recent western contact) and the utilisation of protective clothing.

The Mosquito Prayer: The prayer for protection against mosquito bite is well known amongst the older Colombian Cuiva. The following prayer, composed specifically to rid the area of mosquitoes, is considered efficacious by the elderly Cuiva for whom it is full of meaning.

Plague of white teeth
teeth that have sound
it comes from the ant
teeth that produce sound.
(Yeri Lorenzo, 1997)

The Cuiva believe that when a person prays, he-she will invoke imagery that is thin and small, like ants and grains of sand. Sand and ants cannot be bitten by mosquitoes. In addition, ants cannot bite in the way that mosquitoes bite. The prayer is a bi-polar model demonstrating both the qualities of the mosquitoes and of the ants and sand that protect the one who offers the prayers against the mosquitoes. The Cuiva also invoke animals or natural elements in their prayers.

The Use of Body Paint: The Cuiva of Caño Mochuelo use body paint to protect themselves against mosquito bites. Paints are made from plants such as the *Bixa orellana* or the *Bignonia chica* which are obtained from the neighbouring Amorua people through a process of exchange. (Ortiz 1985: 46) The technique is well known to the native people and is still used by some of the older members of the communities today.

The Use of Burnt Plants or Termite nests: To rid the area of mosquitoes, the Mochuelo community uses a variety of fern known as wesowa (*Adiantum* sp.) or a particular variety of termite-nest. When these are burned slowly, the smoke repels the mosquitoes. The two varieties of termite nests are drawn from different environments and are burned under or adjacent to the patient's hammock, or in the place where the natives are either resting or working. In the *Cuivan* (Hiwi) language it is called *macipanto*; it is found between the branches of the trees that grow along the river banks, and is known to the native people as the 'white termite nest'. The second is the *topoto* (or 'black termite nest') which is found in the roots of any large tree.

Each nest has its own traditional history. The *jajanto*, a termite nest distinguished by its darkish brown colour, is not popular with all of the Cuiva. A traditional history tells of a man who was alone in the house and, having become very cold, he laid down in his hammock next to a *jajanto* tree. The man is said to have disappeared, and all that remained was a piece of *jajanto* found under his hammock. (Bochy 1997).

Participant observation and interviews undertaken in Caño Mochuelo revealed that the traditional techniques employed to repel mosquitoes have become redundant, and that the mosquito net is now the most commonly used form of protection against mosquito bite.

The use of mosquito netting: As a result of prolonged contact with western influences, the Cuiva have selectively adjusted to certain amenities which bring a degree of comfort into their lives. The adoption of the protective mosquito net marks a progressive step toward the utilisation of new and introduced technologies. As well as being a superior form of protection, the netting is light and not difficult for a nomadic people to transport. Its main drawback is its price, and how to find the funds necessary to purchase the net.

To combat this financial impediment, the Cuiva are learning to make their own netting out of old clothes and materials which are given to them by the townspeople, or from materials they collect from the town rubbish tip. Some of the Cuiva work for days in the local farmhouses in order to earn sufficient money to buy the protective netting. The jungle life of a mosquito net fluctuates between a few weeks to one year. Its survival depends upon the degree of care afforded it. One net commonly serves several people at one time. Two hammocks might share one net, plus those who enjoy its benefits from sleeping below the hammock on the floor. It is common to find three people sharing one net, although six have been recorded sharing a single net. This close body contact, which is part of this form of sharing, could prove conducive to the spread of diseases such as tuberculosis (commonly found among the Cuiva) and skin diseases such as scabies. The maintenance of a mosquito-net involves the use of soap, needle and thread, all of which are products belonging to the capitalist market; all can be obtained only through a process of sale of labour. The Cuiva are required to find work which will enable them to earn sufficient money to buy these products. Finding work is not always easy for the native people.

Because the mosquito net was introduced by outsiders some thirty years ago, it has no place in the traditional histories of the Cuiva. In the process of contact with western society, articles like the mosquito-net, which are considered important by the Cuiva, became the subject of manipulative tactics aimed at engineering the Cuiva into an agricultural and sedentary life-style. The mosquito-net was also destined to become an important element of commercial exchange between the Cuiva and their indigenous neighbours.

The Cuiva have no equivalent or more effective form of protection. The indigenous people carry the nets with them at all times, more particularly in the wet season. They have learned how to care for their nets, to wash and repair them. As in the local Llanero community, responsibility for the maintenance of the nets falls to the women. Cuivan informants suggested that when mosquito-netting was introduced into their community, they didn't understand how to maintain it. As a consequence of their traditional practices, some were burned by the small fires which were lit under the hammocks and spoiled by the smoke. Others became dirty but continued to be used until they had to be thrown away. For the Cuiva, in the final analysis of mosquito protection agencies, the mosquito net symbolised their introduction to the west society. The use of the mosquito net has intensified since the 1970s.

The use of clothing as protection: Some of the Cuiva commented that before they commenced wearing clothing, they suffered considerably from mosquito bites. Upon adopting the practice of wearing clothing and exposing less skin, they were bitten less frequently. (Yeri Lorenzo 1997) The wearing of clothing among the Cuiva accelerated from the late 1950s through to the 60s and early 70s.

Missionaries and white cattle ranchers introduced the wearing of apparel among the aborigines under the pretext of appropriation of an indigenous labour force. The Cuiva were inserted into a system of exchanging clothes for labour, and were encouraged to use commodities that were not traditionally part of their culture. During the last thirty years, most employed Cuiva have traded both traditional products and the fruits of their long hours of work for clothing. The few of them who are salaried spend a considerable proportion of their income on the acquisition of clothes.

Initially as a direct consequence of wearing clothes, the Cuiva contracted skin diseases, a health problem which arose due to the fact that the indigenes had scant knowledge of how to maintain their clothes. Mosquito bites which were scratched became infected by contact with abrasive, air-inhibiting, or simply unclean clothing. It was common for white locals and missionaries to donate used clothing as a charitable exercise. Good intentions were undeniable, but donations were made automatically, devoid of thoughtful consideration. Today all of the Cuiva wear clothes.

With the passage of time, the Cuiva have learned how to maintain standards of clothing cleanliness. The youthful Cuiva believe clothing to be of no small importance in their lives.

Conclusions

For generations the primary activity among the Cuiva has been hunting and gathering. Nowadays, some of the natives are employed by either whites or mestizos on either a permanent or temporary basis. Their mobility patterns continue to be determined by food requirements and other resources essential to native survival.

Mobility level could be related to mosquito diseases prevalence among Cuiva people. The progressive Cuiva sedentarization process can be an important factor in the increase of mosquito breeding places and mosquito population in the Cuiva territory.

Cuiva mosquito tales demonstrate that mosquitoes have not only been part of the traditional Cuiva environment but also of the Cuiva social system and way of thinking. Knowledge of Cuivan mobility patterns combined with access to Cuivan knowledge of mosquito habits will benefit the organisers of health control programs. However Cuivan perceptions about the origins of mosquito diseases may prove to have little bearing upon scientific health control. It is however worthy of note that control programs do, in fact, consider these perceptions in their prevention programs.

The health control services in the area need to promote intensive mosquito identification programs and provide information pertinent to mosquitoes. This could be implemented by incorporating native knowledge both of the environment and of mosquito behaviour patterns.

A better understanding of the relationship between the Cuivan belief system and of mosquitoes diseases could possibly lead to a reduction in the incidence of diseases.

Data collected by anthropologists using structured interviews and participant observation may not always be able to adequately describe and record the behavioral practices and susceptibilities of the community under scrutiny. 'Ultimately, the etic and emic approaches represent significantly different starting points.' (Watson 1981: 443) In our own case, Sumabila has been associated with the Cuiva for 25 years, more than ten of which were spent living in the Venezuelan savannas within the community. This field experience has allowed her to undertake an extensive in-depth cultural analysis from a bias-free standpoint.

'Emic propositions ... depend upon the ascription of a certain complex of motives, beliefs, intentions, and purposes to the native.' (Oakes 1981:1) Community members express emic verbal attitudes when referring to themselves as individuals and to the 'others'. Non-verbal indicators i.e impressions gained by observers of the immediate social environment of the natives, of their incessant search for resources, of the incidence of diseases among them and a life expectancy less than that of the average white person or mestizo is the domain of etic observers. In the words of Guy Oakes, 'The ultimate referent of an etic proposition is socio-cultural reality itself, independent of any perspective or interpretation.' (*sup. cit.*:2). We believe that

our research has demonstrated that it is necessary to combine the emic and etic approaches in order to understand the traditional classification and characterisation of mosquitoes which continue to be employed by the Cuivan people today.

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Bibliography

- ARCAND, B.
1972 *Contribution to Cuiva ethnography*. Ph D. Cambridge, England: University of Cambridge.
- BERG, M. L. & I. KERR,
1973 *The Cuiva Language Grammar*, California: Summer Institute of Linguistics.
- CHURCH, T. & M. S. KATIGBAK,
1988 The Emic Strategy in the Identification and Assessment of Personality Dimensions in a Non-Western Culture. *Journal of Cross-Cultural Psychology*, 19: 140-63.
- FARAN, M.E.
1980 Mosquito studies (Diptera, Culicidae) XXXIV. A revision of the *Albimanus* section of the subgenus *Nyssorhynchus* of *Anopheles*. *Contribution American Entomologist Institute*, 15: 1-215.
- HARRIS, M.
1985 *Culture People and Nature*, London: Harper and Row.
- HERRERA, S.; M.F. SUÁREZ; G.I. SÁNCHEZ; M.L. QUIÑONES & M. de HERRERA,
1987 Uso de la técnica radioinmunoensayo IRMA en *Anopheles* de Colombia para la detección de esporozoitos de *Plasmodium*. *Colombia Médica*, 18: 2-6.
- MEDINA, E.
1980 Ecology of Tropical American Savannas: an Eco-physiological Approach. In *Human Ecology in Savannas Environments*, pp 297-319. Edited by David Harris, London: Academic Press,
- OAKES, G.
1981 The Epistemological Foundations of Cultural Materialism, *Dialectical Anthropology*, 6: 1-21.
- OLANO, V.A.; H.L. BROCHERO; R. SÁENZ; M. L. QUIÑONES & J. MOLINA,
2001 Mapas preliminares de la distribución de especies de *Anopheles* vectores de malaria en Colombia. *Biomédica*, 21:402-408.

- ORTIZ GÓMEZ, F.
 1984 Evolución Sanitaria de la Comunidad Cuiba de Mochuelo. *Primera Reunión sobre Atención Médica, Investigación Social y Medicina Tradicional en Arauca, Colombia*, 1-10. (unpublished document).
 1985 Condiciones de Salud y Medicina Tradicional entre los Cuibas de Mochuelo. Informe presentado ante el *Congreso de Medicina Indígena, Arauca*, 31-57. (unpublished document).
 1991a *Diccionario Cuiba Castellano* (versión preliminar) Marzo, Bogotá: Fundación Segunda Expedición Botánica COLCIENCIAS.
 1991b *Relatos Cuiba de Caño Mochuelo*, Bogotá: Fundación Segunda Expedición Botánica COLCIENCIAS.
 1994 *El caribe que se comió así mismo y otras historias de Caño Mochuelo*. Santa fe de Bogotá: Fundación Segunda Expedición Botánica COLCIENCIAS.
- POVOA, M.; R. WIRTZ; R. LACERDA; M. MILES & D. WARHURST,
 2001 Malaria vectors in the municipality of Serra do Navio, State of Amapá, Amazon Region, Brazil. *Memórias do Instituto Oswaldo Cruz*. 96 (2): 179-84.
- ROSA-FREITAS, M. G.& R. LOURENÇO-DE-OLIVEIRA; C. J. de CARVALHO-PINTO; C. FLORES-MENDOZA & T. FERNANDES SILVA-DO-NASCIMENTO,
 1988 Anopheline Species Complexes in Brazil. Current Knowledge of Those Related to Malaria Transmission, *Memórias do Instituto Oswaldo Cruz*, 93(5): 651-655.
- SUMABILA, A.
 1985 *Reconstrucción Etnohistórica de los Cuivas en los Siglos XVI y XVII*. Facultad de Ciencias Económicas y Sociales. Universidad Central de Venezuela. Unpublished Thesis.
 2000 Percepcao e Prevencao de Malaria entre os Cuivas da Venezuela. En *Doenças Endemicas Abordagens Sociais, Culturais e Comportamentais*, pp 63-82. Editado por Rita Barradas Barata y Roberto Briceño León. Fundacao Oswaldo Cruz, Rio de Janeiro: Grafica Ltda.
- WATSON, L. C.
 1981 "Etic" and "Emic" Perspectives on Guajiro Urbanization', *Urban Life*, 9 (4): 441-68.
- YERI, L.
 1984 El zancudo. En 'El caribe que se comió así mismo y otras historias de Caño Mochuelo'. Editado por Francisco Ortiz, (Santa fe de Bogotá: COLCIENCIAS, (1994), 67-8.

Informants

Fari, Caño Mocuelo, personal communication, Caño Mocuelo, 1997
Kanchauri, personal communication, Caño Mochuelo, 1997, 2002.
Rosalba, personal communication, Caño Mochuelo, 1997, 2002.
Selso Kokoto, personal communication, Caño Mochuelo, 1997, 2002.
Yeri Lorenzo, personal communication, Caño Mochuelo, 1997.
Bochy, Caño Mochuelo 1997.

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