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The Relationship between a Western Amazonian Society and Domesticated Sedges (*Cyperus* spp.)

MONIKA KUJAWSKA^{*,1}, FERNANDO ZAMUDIO², JOAQUINA ALBÁN-CASTILLO³, AND JOANNA SOSNOWSKA⁴

¹University of Lodz, Institute of Ethnology and Cultural Anthropology, Lodz, Poland

²Instituto Multidisciplinario de Biología Vegetal (CONICET-UNC), Córdoba, Argentina

³Universidad Nacional Mayor de San Marcos. Museo de Historia Natural, Lima, Peru

⁴Museum of Ethnography in Krakow, Krakow, Poland

*Corresponding author; e-mail: monika.kujawska@uni.lodz.pl

The article discusses the relationships between the Ashaninka people from Peruvian Amazonia and the domesticated sedges (*Cyperus* spp.) cultivated in almost every Ashaninka home garden, and mostly exchanged within family circles. An over-differentiation phenomenon is observed, in which four species of *Cyperus* correspond to 86 folk species. The names of folk species are formed by secondary lexemes, composed of a semantically active constituent and a generic suffix (*ibenki*). The names contain mnemonic cues to differentiate otherwise morphologically similar plants, and their meanings correspond to Ashaninka ontological categories, thus revealing many levels of connectivity between them and non-humans. The wide scope of specific uses (approx. 60 registered) assigned to *Cyperus* spp. is only partly supported by phytochemicals and ergot alkaloids in the fungus-infested sedges. The key to understanding the *ibenki*'s (*Cyperus*) agency lies in local cosmologies, in which domesticated sedges are viewed as plant-persons and kin. The Ashaninka are engaged in producing the bodies of their kin, the *ibenki*. Simultaneously, *ibenki* are powerful allies in restoring harmonious social relations and protecting people against the intentional actions of other humans and non-humans.

El presente artículo analiza las relaciones entre el grupo asháninka de la Amazonía peruana y las juncias domesticadas (*Cyperus* spp.). Estas son plantas cultivadas en casi todos los huertos hogareños asháninka, y son mayormente intercambiadas dentro de los círculos familiares. Se observa un fenómeno de sobrediferenciación, en el que cuatro especies de *Cyperus* corresponden a 86 taxones vernáculos (etnoespecies). Los nombres de los taxones vernáculos están formados por lexemas secundarios, compuestos por un componente semánticamente activo y un sufijo genérico (*ibenki*). Los nombres contienen señales mnemotécnicas para diferenciar plantas morfológicamente similares, y sus significados corresponden a categorías ontológicas asháninka, revelando diversos niveles de conectividad entre los asháninkay no humanos. La amplia gama de usos específicos (aprox. 60 registrados) asignados a *Cyperus* spp. sólo están parcialmente respaldados por factores fitoquímicos propios de los alcaloides del cornezuelo de centeno que se encuentran en los hongos que infestan las juncias domesticadas. La clave para entender la agencia de los *ibenki* (*Cyperus*) se encuentra en las cosmologías locales, en las que las juncias domesticadas se consideran personas-plantas y parientes de los asháninka. En este sentido los asháninka se dedican a producir los cuerpos de sus parientes, los *ibenki*. Simultáneamente, los *ibenki* son aliados poderosos necesarios para restaurar relaciones sociales armoniosas y proteger a las personas contra las acciones intencionales de otros humanos y no humanos.

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Key Words: *Cyperus*, More-than-utility approach, Ethnobotany, Ontological perspective, Ashaninka, Peruvian Amazon.

Introduction

Native Amazonian groups rely on a great number of medicinal plants in their home medicine, midwifery, and complementary healing such as mini-saunas (Giovannini 2015; Luziatelli et al. 2010; Milliken et al. 1999; Shepard 1998; Valadeau et al. 2010). They often resort to home garden plants, where a diversity of domesticated species is notably present (e.g., *Cyperus* spp., *Justicia* spp., *Zingiber* spp.) (Bennett, 1992; Caballero-Serrano et al. 2019; Díaz-Reviriego et al. 2016; Shepard 1998; Valadeau et al. 2010; Wezel and Ohl 2005). The agency of these plants from the perspective of local cosmologies still poses a challenge for anthropology and ethnobotany. This article addresses the entanglement between the indigenous Ashaninka people from Peruvian Amazonia and one particular group of plants—domesticated sedges (*Cyperus* spp.) from the Cyperaceae family. We use a more-than-utility approach in arguing that domesticated sedges are kin and powerful allies of the Ashaninka people, and participate in maintaining the bodies (persons) connected.

Sedges are one of the most widely used and yet least studied elements of the Amazonian pharmacopeia. The relationship between several western Amazonian societies and domesticated sedges (Cyperaceae) has long intrigued travelers, missionaries, anthropologists, and ethnobotanists (Bennett 1992; Caballero-Serrano et al. 2019; Ferrero 1966; Giovannini 2015; Lewis et al. 1987; Luziatelli et al. 2010; Milliken et al. 1999; Shepard 1998; Tessmann 1930; Valadeau et al. 2010; Vickers 1976; Weiss 1969). Called *piri-piri* in local Amazonian Spanish and *priprioca* in local Amazonian Portuguese (Almeida 2010), sedges have been domesticated by native groups in Western Amazonia for non-dietary reasons (Lewis et al. 1987; Milliken et al. 1999; Plowman et al. 1990; Tournon et al. 1998). In many indigenous Amazonian groups the domestication process is entangled with the mythical origins of these plants (Cipolletti 1988; Rojas 1997, 2014; Tournon et al. 1998). *Cyperus* species have been used medicinally to inhibit or stimulate women's fertility or induce abortion, as well as against snakebite, migraine headache, fever, cuts, diarrhea, vomiting, hemorrhages during childbirth, and others. (Lewis et al. 1987; Milliken et al. 1999;

Shepard 1998; Valadeau et al. 2010). They also act to restore harmonious relations within the realm of human society and protect people against the intentional actions of other humans and non-humans (Caballero-Serrano et al. 2019; Cipolletti 1988; Shepard 1998; Tournon et al. 1998).

The Cyperaceae are a monocotyledonous graminoid group of flowering plants. The Cyperaceae family accounts for 27 genera and 230 different species in Peruvian Amazonia (Vasquez and Rojas 2016). The *Flora of Peru* registered 30 *Cyperus* species distributed in Peruvian Amazonia. The inflorescences and flowers of *Cyperus* spp. are crucial to their botanical identification, although on occasions vegetative characteristics are used too (Tucker 1983). In domesticated sedges, inflorescences are often aborted, underdeveloped, or malformed by a fungus (Plowman et al. 1990; Stovall and Clay 1988; Tournon et al. 1998), which not only poses a challenge for their identification but also means that *Cyperus* spp. gain more morphological similarity.

In their local systems of classification, Western Amazonian groups usually recognize a greater number of folk species within the folk genus *ibenki* (Ashaninka), *ivenkiki* (Matsigenka) *huaste* (Shipibo-Conibo), and *numi* (Secoya), than a corresponding number of *Cyperus* spp. occurring in a given region (Cipolletti 1988; Shepard 1998; Tournon et al. 1998). Western Amazonians can be considered splitters in respect to domesticated sedges (Berlin 1992). This phenomenon, identified in ethnosciences as over-differentiation, happens when local taxonomies recognize more species within one botanical genus or botanical family than botanical taxonomy does (Boster 1986). Does this over-identification indicate a privileged position of *Cyperus* among Western Amazonian societies in general, and among the Ashaninka in particular?

Until the 1990s, when phytochemical studies for the presence of secondary compounds on sedges began, it was assumed that the plants from this botanical family characteristically lacked pharmacological properties (Tournon et al. 1998). The medicinal popularity of *Cyperus* spp. among Western Amazonian people was linked to the presence of the fungus *Balansia cyperi* (Clavicipitaceae), which infested North and South American species of *Cyperus* (Plowman et al. 1990). The closely related

B. cyperi and *B. cyperaceum* are known to produce different ergot alkaloids (Lewis and Elvin-Lewis 1990; Plowman et al. 1990; Stovall and Clay 1988). These authors observed that *Cyperus* spp. have mostly been applied by native groups to induce labor, as a homeostatic medicine, and as a hallucinogenic additive, which is consistent with the pharmacological action of ergot alkaloids. Moreover, the fungus occurs on rhizomes, young leaves, and aborted inflorescences, with the highest concentration found on rhizomes (Plowman et al. 1990). In the process of domestication, native Amazonians have practiced vegetative propagation of *pepas* (pieces of rhizome in local Amazonian Spanish), contributing to the maintenance of the parasite in the cultivated host; rhizomes are reported as prevalently used by indigenous groups (Luziatelli et al. 2010; Shepard 1998; Valadeau et al. 2010). On the basis of the use and plant parts employed, Plowman and colleagues conclude that “the uses of *piripiri* by native South American people have a biological basis in compounds produced by the fungus not the host plant” (1990: 453). In the obstetric use of infected *Cyperus*, Lewis and Elvin-Lewis saw yet another “sophisticated example of human ingenuity using empirical methodology” (1990: 133). Recent phytochemical studies on different species of *Cyperus* show that *Cyperus rotundus*, *C. odoratus* especially, but also *C. prolixus*, *C. luzulae*, *C. diffusus*, *C. articulatus*, which occur in Amazonia, contain allelochemicals, such as alkaloids, coumarins, flavonoids, saponins, tannins, and terpenoids, among other compounds (Babu and Savithamma 2014; Desmarchelier et al. 1996; Dhillon et al. 1993; Kilani et al. 2008; Udari 2018; Velásquez-Pérez and Galeano-García 2012; Zoghbi et al. 2008). These findings may shed new light on the wide medicinal use of *Cyperus* spp. in Western Amazonia. However, the diversity of uses outstretches the boundaries of what is considered “medicinal” in orthodox Western thinking (Shepard 1998).

With this study we attempt to understand the social importance of *Cyperus* spp. to the Ashaninka people from Western Amazonia. What can explain the over-identification and the great diversity of uses for *Cyperus* by the Ashaninka society, since the phytochemical properties of *Cyperus* and the ergot alkaloids found in the *Balansia* fungi do not seem to be sufficient to explain this phenomenon? In other words, what can explain the agency of *ibenki* for the Ashaninka people?

We propose calling our method of analysis a more-than-utility approach to ethnobotany, to investigate the social and ontological relations between the Ashaninka and this group of plants. In order to do so we 1) present the Ashaninka mythical origin of domestication of sedges; 2) examine the phenomenon of over-differentiation in connection with the cognitive system behind folk species of *ibenki*: groupings and naming, as well as the function of the names; 3) consider how the diversity of names is related to consensus regarding their uses; 4) discuss and analyze the uses within three overarching categories of causes, actions, and symptoms, which enable us to answer the question of whether the Ashaninka case supports the phytochemical action of *Cyperus* and *Cyperus*-fungus association; 5) address the issue of *ibenki* exchange and the patterns behind their circulation among the Ashaninka communities.

Methods

STUDY GROUP AND DATA COLLECTION

The Ashaninka belong to the Arawak linguistic family and number over 112,000 members in Peru (BDPI 2020). In Peru they inhabit the tributaries of the Upper Ucayali River, particularly the valleys of the Apurímac, Ene, Perené, Pangoa, and Tambo, as well as the Pichis and Pachitea rivers and the interfluvial area of the Gran Pajonal, in the region referred to as *Selva Central* (Rojas 1997; Varese 2006; Veber 2003). Ashaninka people from the study area live in *comunidades nativa* (native communities), formally recognized by the *Ley de Comunidades Nativas* no. 20656 (1974).

We worked in Ashaninka communities along the Tambo River, affiliated to the regional organization CART (Central Asháninka del Río Tambo). The Ashaninka communities that collaborated with this research were: Oviri, Anapate, Poyeni with its three hamlets: Shikapaja, Savareni, and Selva Verde, then Vista Alegre, Capitiri, Charauaja, Shevoja, Marankiari, and Chembo (Fig. 1). Overall, these twelve communities have legal rights over 81,000 ha of tropical highland forest in Peruvian central Amazonia, with between 1000 and 16,000 ha assigned to each community (SICNA 2016). The number of inhabitants in each community ranges between 80 and 500. The information was collected by Joanna Sosnowska and Monika

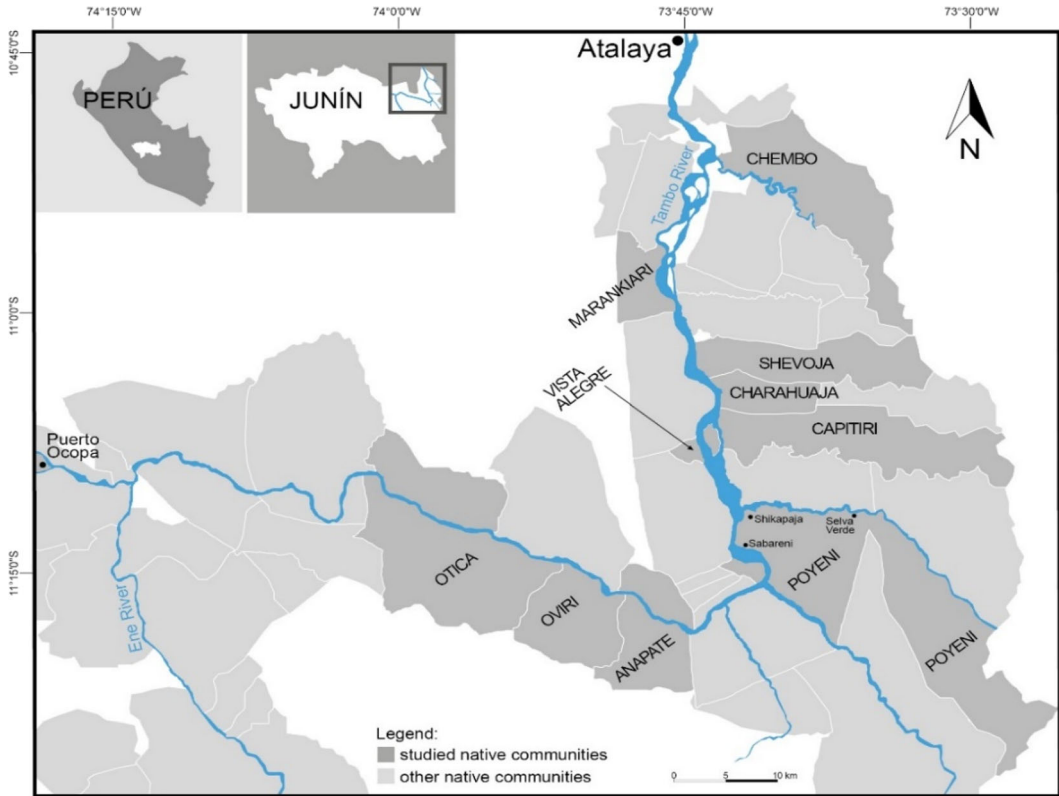


Fig. 1. The map of the Ashaninka communities along the Tambo River, with marked communities showing where the research was conducted. Legend: Otica participated in the general study, but no home gardens were surveyed in this community

Kujawska during four field stays in 2016, 2017, 2018, and 2019. Medicinal plants were cataloged in 66 home gardens, but the data on *Cyperus* come from 58 of the 66 gardens studied. The number of plant owners does not equal the number of home gardens, as some married couples share one garden, but spouses keep their own separate *ibenki*. We have data from 64 persons: 53 women and 11 men. The owners of *ibenki* were asked for plant names (in Ashaninka), their uses, forms and the sites from which they are procured (Fig. 2). A standard ethnobotanical technique—cataloging of plants in home gardens—was supplemented by open-ended interviews and conversations with lay Ashaninka and experts in ethnomedicine.

Herbarium specimens were collected randomly in the case of *Cyperus* species, due to their abundance in home gardens. Ten herbarium specimens of domesticated *Cyperus* spp. and one of wild growing *Cyperus* were collected. The specimens were

processed according to the conventional parameters for herborization and conservation, and deposited in the Herbario de San Marcos del Museo de Historia Natural (USM) in Lima, with duplicates in the Herbarium of the Institute of Botany of the Polish Academy of Sciences in Krakow (KRAM). Permission for conducting the research and collecting herbarium specimens was granted by SERFOR, N° 252–2017–SERFOR/DGGSPFFS. Ashaninka people signed an informed consent form.

DATA ANALYSIS

Here we focus exclusively on plants from the *Cyperus* genus. Our analysis is largely based on the 255 exemplars collected during fieldwork. We define an exemplar as a specific recorded *ibenki* (name, information on use, forms and places of obtaining, photography and/or voucher specimen) in a particular garden ($N = 58$), belonging to a particular



Fig. 2. Ashaninka people and their *ibenki* (*Cyperus* spp.). a), b), c) collecting information in Ashaninka home gardens along the Tambo River; d) Ashaninka woman showing the way she passes juice released through chewing *ibenki*'s rhizome to her baby

person ($N=64$), the botanical identification for which was established through the collection of a photograph or voucher specimen.

The story of the mythical origin of *ibenki* (*Cyperus*) has been recorded and considered in the analysis, as the central element to interpret the ontological position of these plants. We analyze *Cyperus* spp. from the perspective of folk taxa (including folk genera and folk species), that is, as classes of plants distinguished by Ashaninka people and endowed with separate Ashaninka names. As “nomenclature is often a nearly perfect guide to folk taxonomic structure” (Berlin et al. 1974: 27), our scrutiny of plant classification and plant nomenclature are interconnected. As such, our cognitive analysis of plant groupings and nomenclature has been combined with the semantic analysis of names and medicinal uses found behind them.

Venn diagrams were prepared and used to present the structure of grouping *ibenki* in the home gardens. The Ashaninka plant names were translated into Spanish with the help of native interpreters. We draw on Berlin's et al. (1974) approach and tools to analyze the nomenclature and classification

of *ibenki*, without assuming authors' universalist position. Medicinal uses were divided into three major groups, overarching categories, based on cause, action, and symptom. In this analysis, we measured the proportion of use reports for each category (UR, defined as a specific use of a given folk species, which was mentioned by a given interlocutor). In the description of uses, we attempted to present our interlocutors' message accurately.

We conducted consensus analysis based on number of mentions of folk species and corresponding uses. For this, we used Trotter and Logan's (1986) consensus index $[\frac{Nm-Nu}{Nm-1}]$ where Nm refers to the number of mentions, and Nu to the number of uses. In our case, and taking into account folk species, we aimed to search for agreement on each folk taxon (and a corresponding name), in order to establish the degree of consensus between name (folk species) and use.

While this formula gives us information about the name-use consensus, it reveals little about the name-use consensus distributed between the communities. In order to do this,

we slightly modified the Trotter and Logan index by adding a component that considers the distribution of names across the communities (we refer to as “overall community consensus on use”), as in the following formula $(\frac{Nm-Nu}{Nm-1}) \times (\frac{Nc}{Ntc})$. The aggregated component contemplates the relationship between the number of communities (Nc) where a name was mentioned and the total number of communities (Ntc) where the fieldwork was done ($N = 12$). That is, when the same name is used consistently among a greater number of communities (Ntc), the greater its spatial circulation. A relatively high score, close to 1.0, would reveal a highly communicative and transmissive value for a given specific *ibenki*. Our analyses only included names (specific *ibenki*) mentioned by at least three study participants. We may state that a folk species of *ibenki* is efficiently circulating among communities, when the same name is used in a greater number of communities under the same type of use (has high Overall Community Consensus on Use).

We complemented our research on the relationship between the Ashaninka people and domesticated *Cyperus* spp. with an analysis of the manner and places from which propagules of *ibenki* were obtained by each of our collaborators.

Results and Discussion

DOMESTICATED *CYPERUS* (*IBENKI*)—THEIR PLACE IN ASHANINKA AGRICULTURAL AND COSMOLOGICAL ORDER

Like other Arawak groups, the Ashaninka have a long history of practicing horticulture, probably developed across millennia (Heckenberger 2005; Hill and Santos-Granero 2002). All live somewhere in a continuum between self-subsistence and participation in a market economy, though where on that continuum varies between and within communities, and over time (Peralta and Kainer 2008). Every Ashaninka family has at least one swidden field where principal domesticated plants and cash crops are tended. The home gardens (Span. *huerto*, Ash. *nobanki bemento* “mi huerto”), where medicinal plants grow, are most often located in the immediate proximity of the principal house of each family. The home garden area is marked by the careful and continuous elimination of weeds,

sometimes to the level of bare soil; hence the cultivated space is distinguished from the naturally growing vegetation (Ash. *inchatoshi*). A similar pattern of marking home gardens was observed among the Matsigenka—another Arawak-speaking group from Peru (Wezel and Ohl 2005). *Cyperus* are between 40 and 100 cm tall and grow in bush-like formations (see Tournon et al. 1998). *Ibenki* are planted close to the entrance to the home gardens or scattered around the home gardens (Perrault-Archambault and Coomes 2008; Valadeau et al. 2010). Santos-Granero (2012: 183) sees Arawakan gardens as a product of moral and ecological engagement—composite sites that epitomize “multiple social relations.”

According to Tournon et al. (1998), a long process of *Cyperus* domestication has disappeared from ethnic memory and has given rise to a series of mythical origins. We assume, however, that the process of domestication cannot be separated from the mythical history. In the Ashaninka story about the origin of *ibenki*, it was a *sankori* ant (cf. leaf cutter ant, *Atta* spp.), who gave an Ashaninka man his first *ibenki* to help him weed his agriculture field more efficiently.

One time lived *Sankori*—*coqui* [in Spanish] as a person, as people. The Ashaninka lived scattered across the forest. Each family lived in a house, which was 3–4 hours away from the next. One man lived in his house and had his swidden field. Every day he used to go to his field to weed it with a machete, but he could make little progress. His son accompanied him from time to time, but sometimes he would go to the forest to collect fruit, other plants, or to hunt animals. When the man was alone in his field, *Sankori* would show up and say, ‘I see you work every day in your field, but you make little progress.’ ‘Well’, said *Sankori*, ‘Tomorrow I will come to help you.’ *Sankori* blew the swidden field with his *piri-piri*, before the man came. When the man came to his field, *Sankori* also arrived with his family, and they helped him to weed the field with a machete. They slashed the weeds quickly. *Sankori* and his family had small machetes—they weren’t real machetes, but *Sankori*’s teeth. The man also worked and

slashed weeds quickly that time. When they finished, the man invited *Sankori* and his family to his house to have *masato* [cassava fermented drink]—they treated each other as brothers-in-law. They drank *masato* and the man asked, ‘Why have we advanced so quickly today? We have weeded out a lot! You, *Sankori*, you must have something.’ *Sankori*, as he had already drunk *masato*, showed his *piri-piri* to the man and gave it to him. But, he said, ‘It’s a secret. You can’t show it to anyone. It is only for you. Sow it!’ And the man remained with *piri-piri* for slashing the field. [‘Hence’, says Irineo, who told the story, ‘it’s our routine, our way of thinking until now’].

Nowadays, the *ibenki* used in agriculture to weed and burn the swidden field are rare. Elderly people remember that their grandparents used to have *ibenki*, which they would blow over the surface that was to be burned, and a single man could control the burning, supported by the *ibenki* help-action. In the agricultural domain, *kaniribenki* (“herb of cassava”) is still used, blown on cassava cuttings to enhance their growth (Table 1).

For the Ashaninka, as for other Amazonian groups, animals and plants are endowed with intentionality, and emotional and communicative capacities (Daly 2015; Descola 1996; Santos-Granero 2012). The Ashaninka perceive their relationship with animals, plants, and generally non-humans in social terms. Cultivated, and especially domesticated plants are plant-persons (Daly 2015; Rojas 1997). According to the Ashaninka myth, *Sankori*, who offers *ibenki*, is a potential affine—brother-in-law to the Ashaninka man. As with other Amazonian groups, in Ashaninka kinship, a husband or wife (affine) is an outsider, and it is during the prolonged convivial coexistence, sharing intimacy and commensality that the affine progressively becomes kin (see Belaunde 2001; Rival 2002; Santos-Granero 2012; Seeger et al. 1979). Hence, the Ashaninka and *ibenki* are actively involved in the mutual production of kinship, a point we will return to. Here, we want to accept that domesticated *Cyperus* are persons-plants, kin, and important allies to Ashaninka people, whom the Ashaninka socialize with during the encounters in the home gardens and through the ingestion of *ibenki*.

IBENKI – THE PATTERNS BEHIND THEIR GROUPING AND NAMING

Within the folk genus *ibenki* a great diversity of Ashaninka specific names are to be found. Each specific *ibenki* is endowed not only with a name, but with discrete properties and/or uses. Therefore, each specific *ibenki* is considered a separate folk species (ethnospecies), rather than an example of polysemy, where different names are applied to the same botanical taxon. We identified a one-to-one correspondence between the botanical genus *Cyperus* and the folk generic taxon *ibenki* (Fig. 3). Within this folk genus, we find two monotypic names: *ibenki* and *shiobana*, which can be translated as “an herb.” *Shiobanas* are considered a sub-group within *ibenki*. People use the generic name *ibenki* and *shiobana* when they do not know or do not want to reveal the proper name of their *Cyperus* plants. We recorded 28 different exemplars under the name *ibenki* and 23 different exemplars under the name *shiobana* (Table 1).

Thirty species in the *Cyperus* genus have been identified in Peruvian Amazonia (Ayala 2003). In our study we identified four species—*Cyperus odoratus* L., *Cyperus laxus* Lam., *Cyperus manimae* Kunth, *Cyperus prolixus* Kunth—and unspecified *Cyperus* spp., corresponding to 86 descriptive names, which we treat here as 86 different folk species of *ibenki* (We counted lexemic variations as one name, e.g., *janabenki*/*janaribenki* “herb of a fish”). Even though we did not collect all the *Cyperus* species used by the Ashaninka, we can clearly observe, from the botanical perspective, an over-differentiation. Strikingly, from the 86 folk species recorded, 49 (57%) were mentioned by a single person, which may indicate little sharing, and a family-based circuit in knowing and naming them. One case of sub-differentiation was observed under the name of *shijarontsibenki* (“herb of diarrhea”) that corresponded to two biological species (*C. prolixus* and *C. laxus*).

Names of specific *ibenki* are secondary lexemes composed of a semantically productive constituent and a generic suffix (*i*)*benki* (e.g., *avotsibenki*: *avotsi* – path, (*i*)*benki* – generic suffix, “a herb”). The analysis of these secondary lexemes shows that specific names are not based on color, shape, habitat, or morphological cues, as observed in many folk systems (Berlin 1992). Names, such as *cocobenki* (“herb of coconut”) or *kanaribenki* (“herb of cassava”) may be misleading. They do not indicate the

TABLE 1. *IBENKI* FOLK SPECIES RECORDED IN ASHANINKA HOME GARDENS IN PERUVIAN AMAZONIA

| Ashaninka name/ Ashaninka folk species | Spanish and English translation of Ashaninka name | Botanical taxon / no. of collection | Category of Use | Use | No. of mentions |
|--|--|---|--------------------------------|--|--------------------|
| aimentantsipini | | <i>Cyperus</i> sp. | Partners' infidelity | Chest hoarseness and a cough that affects a baby when one of the parents has had extramarital sexual relations | 1 |
| amokorojantsibenki | | <i>Cyperus</i> sp. | Digestive problems | Used to help the digestion; when one eats food that hasn't been well cooked | 1 |
| ampajiyantsibenki | Span. hierba del insomnio / "niño que está afligido", Eng. herb of insomnia / "child who is afflicted" | <i>Cyperus</i> sp. | Spirits | Used when a child is anxious, doesn't want to sleep, due to parents travel with him/her to the forest or to the garden | 1 |
| ampatsibenki, ampetsibenki | Span. hierba de los fantasmas, de las almas muertas, Eng. herb of spirits, of dead souls | <i>Cyperus</i> sp. | Spirits | Used when someone dies in the household, in order to avoid voices of the dead. It prevents the spirit of the dead from returning home and bothering members of the family. | 3 |
| aronibenki | Span. hierba de la caracara de vientre blanco, Eng. herb of an <i>aroni</i> bird | <i>Cyperus</i> sp. | Spirits | Used when a person has visions | 1 |
| asabakochiariakoki | Span. echar a manos, Eng. throw on hands | <i>Cyperus</i> sp. | Expert medicine | Used in initiation for those who heal with mini-saunas/-vaporation. It helps to see the cause of an illness. | 1 |
| atsanantsibenki, atsanabenki | Span. hierba del egoismo, engaño, relacion sexual fuera de la pareja, Eng. herb of selfishness, deception, extramarital sexual intercourse | <i>Cyperus</i> sp. | Partners' infidelity, Spirits | Chest hoarseness and a cough that affects a baby when one of the parents has had extramarital sexual relations; when one has visions | 5 |
| atsorentsibenki, atsarentsibenki | Span. hierba dilatora, Eng. dilator herb | <i>Cyperus</i> sp. | Food proscriptions, Childbirth | Used to accelerate labor. When a woman eats certain game or fruit it can affect the fetus (<i>cutipar</i>) and thus the parturient woman has problems when giving birth | 5 |

(Continued)

TABLE 1. (CONTINUED).

| Ashaninka name/Ashaninka folk species | Spanish and English translation of Ashaninka name | Botanical taxon / no. of collection | Category of Use | Use | No. of |
|---------------------------------------|--|--|-----------------------------|---|--------|
| abotsibenki | Span. hierba del camino, Span. herb of a path | <i>Cyperus</i> sp. | Spirits | Given to a newborn so that the devil does not harm him/her, preventing the baby from being <i>cutipado</i> by any animal or tree [Span. <i>palo</i>]. The baby's spirit always accompanies his father when he goes to the forest – this <i>ibenki</i> accompanies the father apart from protecting the baby. | 1 |
| Bairontsibenki, obairontsiki | Span. hierba del nombre; Eng. herb of a name | <i>Cyperus</i> sp. | Reproductive health | Used to improve a woman's fertility, helps her to get pregnant | 3 |
| batsarobenki | Span. hierba de la herida, Eng. herb of a wound | <i>Cyperus</i> sp. | Skin | Wounds | 1 |
| charabaibenki | Span. hierba del zúngaro, Eng. herb of a <i>zúngaro</i> fish | <i>Cyperus</i> sp. | Fishing | Uses by men to have luck when fishing <i>zúngaro</i> | 1 |
| charibenki | Span. hierba de la cortadura, Eng. herb of a cut | <i>Cyperus</i> sp. | Cut | Used for any type of cuts | 1 |
| charijabenki | Span. hierba de malla /tarrafa de pescar, Eng. herb of a fishing net | <i>Cyperus</i> sp. [MK 404], <i>Cyperus</i> sp. | Fishing, Food proscriptions | Used when fishing net doesn't catch fish, when man doesn't have luck at fishing, when a wife or daughter eats fish during her menstruation, so that a man loses his good luck at fishing; a pregnant woman may be <i>cutipada</i> by a fishing net and has pain and cold during labor. | 7 |
| cocobenki | Span. hierba del coco, Eng. herb of a coco fruit | <i>Cyperus</i> sp. | Food proscriptions | Used when the woman has labor pains because she has been eating coco fruit in excess | 1 |
| eiro abantasi | Span. "no tengo hijos", Eng. "I don't have children." | <i>Cyperus</i> sp. | Reproductive health | Used as a contraceptive, when a woman doesn't want to get pregnant | 1 |
| eiroo tonkantasi tonkamentosi | Span. "respondo con la escopeta", Eng. "I am responding with a shotgun." | <i>Cyperus</i> sp. | Violence | Applied on shotguns and used by a man who wants to aim at enemies | 1 |

(Continued)

TABLE 1. (CONTINUED).

| Ashaninka name/Ashaninka folk species | Spanish and English translation of Ashaninka name | Botanical taxon / no. of collection | Category of Use | Use | No. of |
|---------------------------------------|--|-------------------------------------|--|---|--------|
| emokibenki | Span. hierba del suri; Eng. herb of <i>suri</i> - palm weevil | <i>Cyperus</i> sp. | Food proscscriptions | Used when a woman has labor pains and difficulties with delivery. She has been <i>cutipada</i> with <i>suri</i> | 1 |
| iamabenki | Span. hierba pulsera, Eng. bracelet herb | <i>Cyperus</i> sp. | Prophylaxis, Spirits | Used as a protection, in order that one doesn't get ill | 1 |
| ibatsabenki | Span. hierba de la carne, Eng. herb of meat | <i>Cyperus</i> sp. | Spirits | Used when one has visions, talks to the devil, this produces vomits and diarrhea | 1 |
| ibenki | Span. hierba [a generic name for <i>Cyperus</i>] | <i>Cyperus</i> sp. | Childbirth, Bites, Digestive problems, Expert medicine, Food proscscriptions, Hair, Hunting, Parent-child relations, Partners' infidelity, Skin, Spirits, Witchcraft | Used to accelerate labor; snake bite; diarrhea, to enable one to become an expert in mini sauna/vaporation; when the husband cannot hunt anymore because his wife ate game meat during her menstruation; when parents eat a bird, this can affect the baby, and the baby may emit a sound identical to this bird; to enhance hair growth; extramarital sexual relations of one of the spouses, a bug penetrates his/her body transmitted by the other person – a symptom is a pulsing navel; <i>mal aire</i> ; aphthae; sorcery | 28 |
| iishintsibenki | Span. hierba del cabello, Eng. herb of hair | <i>Cyperus</i> sp. | Hair | Used to enhance a woman's hair growth | 3 |
| irajantsibenki, irantsibenki | Span. hierba de la sangre (<i>ira</i>), Eng. herb of blood | <i>Cyperus</i> sp. | Childbirth, Food proscscriptions, Reproductive health | Used to prevent the hemorrhage during labor; when a woman has excessive bleeding during period; when a woman eats fish or game meat during menstruation – then her husband or her father cannot hunt nor fish any more | 14 |

(Continued)

TABLE 1. (CONTINUED).

| Ashaninka name/Ashaninka folk species | Spanish and English translation of Ashaninka name | Botanical taxon / no. of collection | Category of Use | Use | No. of |
|---------------------------------------|--|--|--------------------------------|--|--------|
| itobenki | Span. hierba de cabeza, Eng. herb of a head | <i>Cyperus</i> sp. | Spirits | Used for headache produced by an encounter with the devil. One walks in the forest alone, meets and talks to an apparently known person, but this is the devil. One may die from this encounter. | 2 |
| itonkibenki | Span. hierba del hueso, Eng. herb of a bone | <i>Cyperus</i> sp. | Food proscription | Used by a pregnant woman who is tempted by different types of food which she should avoid during pregnancy | 1 |
| janabenki | Span. hierba del pescado, Eng. herb of a fish | <i>Cyperus</i> sp. | Digestive problems | Stomach ache, indigestion produced by eating raw or semi-raw food | 2 |
| janekibenki | Span. hierba del niño, Eng. herb of a child | <i>Cyperus</i> sp. | Child rearing | Used for lack of appetite among children, when they don't want to eat cassava | 2 |
| jempabenki | Span. hierba del adormecimiento, Eng. herb of numbness | <i>Cyperus</i> sp. | Symptom | Numbness of legs | 1 |
| kamarankantsibenki | Span. hierba de vomitar, Eng. herb of vomiting | <i>Cyperus</i> sp. | Digestive problems | Used when one vomits | 1 |
| kamaribenki | Span. hierba del diablo, del mal, Eng. herb of the devil | <i>Cyperus odoratus</i> L. [JS 130], <i>Cyperus</i> sp. | Spirits | <i>mal aire</i> , when one meets with <i>kamari</i> – this produces headache, visions produced by encounters with beings of the forest | 11 |
| kamarobenki | Span. hierba de mujer diablo, Eng. herb of a she-devil | <i>Cyperus</i> sp. | Spirits, Horticulture, Hunting | When a person dies, his/her cassava also dies – although it looks healthy from the outside. It is used to prevent cassava rotting; used to protect one's own garden with cassava in the situation when a dead person or someone from his/her household used to pass it every day; used to heal a shotgun when one doesn't have luck in hunting | 7 |

(Continued)

TABLE 1. (CONTINUED).

| Ashaninka name/Ashaninka folk species | Spanish and English translation of Ashaninka name | Botanical taxon / no. of collection | Category of Use | Use | No. of |
|---------------------------------------|---|--|--|--|--------|
| kamatsiribenki | Span. hierba del muerto, Eng. herb of the dead | <i>Cyperus</i> sp. | Spirits | Used for lack of appetite – related to the death of a family member | 1 |
| kaneikibenki | Span. hierba de la hormiga rallada, Eng. herb of a <i>kaneiki</i> ant | <i>Cyperus</i> sp. | Spirits | Used when an ant <i>kaneiki</i> bewitches an adult or a child. The symptoms are wounds or pimples on the skin | 1 |
| kaniribenki | Span. hierba de la yuca, Eng. herb of cassava | <i>Cyperus</i> sp. | Spirits, Horticulture, Parents-child relations | Used to enhance the growth of cassava; when a person dies in the family, used to protect her/his cassava so it won't die too; used when a child suffers from lack of appetite because she/he has inhaled the smell of the menstruating blood of his mother | 5 |
| karaparitsibenki | Span. hierba del cascabel, Eng. herb of a rattlesnake | <i>Cyperus</i> sp. | Bite | Rattlesnake bite | 1 |
| katsinkashiri | Span. frío de la luna, Eng. cold of the moon | <i>Cyperus</i> sp. | Symptom | Used when one feels cold in the feet | 1 |
| kipatsibenki | Span. hierba de la tierra, Eng. herb of the soil | <i>Cyperus</i> sp. | Child rearing | Used when a toddler eats earth/soil | 1 |
| kiriotibenki | Span. hierba de <i>kiroti</i> - un ave. nocturno, no se la ve, Eng. herb of one kind of nocturnal bird, difficult to see | <i>Cyperus</i> sp. | Spirits | <i>Kiroti</i> brings disgrace, illness and heart attack. Used when one feels pain in the body, cannot breathe | 1 |
| kitotsabenki | Span. hierba del bagre, Eng. herb of a <i>bagre</i> fish | <i>Cyperus</i> sp. | Fishing | Used in order to fish <i>bagre</i> | 1 |
| koshipirinki | Span. hierba del jergón, Eng. herb of a lancehead snake | <i>Cyperus manimae</i> Kunth [MK 452], <i>Cyperus</i> sp. | Bite | Bite of a lancehead snake | 2 |
| manijibenki | Span. hierba de isula – hormiga grande y de mordedura muy dolorosa, Eng. herb of a bullet ant – a big ant, whose bite produces great pain | <i>Cyperus</i> sp. | Spirits | Used against the sorcery of the ant <i>maniji</i> . It produces general body pain or ache in a particular part of the body | 6 |

(Continued)

TABLE 1. (CONTINUED).

| Ashaninka name/Ashaninka folk species | Spanish and English translation of Ashaninka name | Botanical taxon / no. of collection | Category of Use | Use | No. of |
|---------------------------------------|--|---|-----------------------------------|---|--------|
| mapibenki | Span. hierba de la piedra, Eng. herb of a stone | <i>Cyperus</i> sp. | Expert medicine | Used during initiation process in becoming a mini sauna /vapor healer | 3 |
| marankebenki | Span. hierba de la víbora, Eng. herb of a viper | <i>Cyperus</i> sp. | Spirits | “By the time the woman is pregnant and sees someone who has been bitten by a viper. The spirit of the baby [fetus] can affect and swell the painful part of the person that has been bitten.” | 1 |
| mashekaribenki | Span. hierba de falta de apetito, Eng. herb of lack of appetite | <i>Cyperus</i> sp. | Child rearing, Food proscriptions | When a child doesn't want to eat cassava. The cause may be that the child smells the menstruating blood of his mother; returns appetite to children and adults | 6 |
| masontobenki | Span. hierba del mudo, Eng. herb of a mute | <i>Cyperus</i> sp. | Violence | Used so that the husband does not bother the wife when he returns home drunk | 1 |
| matsarantsibenki | Span. hierba de la parte del cuello, Eng. herb of a part of neck | <i>Cyperus</i> sp. | Spirits | The encounter with spirits brings vomits and diarrhea | 1 |
| matsibenki | Span. hierba de lo que brujea, Eng. herb of witchcraft | <i>Cyperus</i> sp. | Witchcraft | Used when one feels being bewitched; the person must also follow a diet | 1 |
| menkoribenki | Span. hierba de la nube/neblina, Eng. herb of a cloud/fog | <i>Cyperus</i> cf. <i>odoratus</i> [JS 128] <i>Cyperus</i> sp. | Spirits | Used when an adult or a child has an encounter with <i>menkovi</i> , with it comes a malevolent spirit | 3 |
| mintsarobantsibenki | Span. hierba del susto, Eng. Herb of a fright | <i>Cyperus</i> sp. | Child rearing | “When the baby is scared, at night s/he makes sudden movements. Her/his head and body are blown with the rhizome and one says: <i>ameshoretajiri</i> [you have to come], the baby is filled with her/his spirit, s/he sleeps well, one shouldn't wake her/him up – s/he's going to wake up alone, then s/he's | 1 |

(Continued)

TABLE 1. (CONTINUED).

| Ashaninka name/Ashaninka folk species | Spanish and English translation of Ashaninka name | Botanical taxon / no. of collection | Category of Use | Use | No. of |
|---------------------------------------|---|-------------------------------------|------------------------|--|--------|
| mononkabenki | Span. hierba del desperdicio, Eng. herb of waste | <i>Cyperus</i> sp. | Child rearing, Hunting | happy, he wants to eat again.” When a child throws away bones, his father won't have luck in hunting | 1 |
| motitsibenki | Span. hierba del embarazo, Eng. herb of being pregnant | <i>Cyperus</i> sp. | Childbirth | Used during labor in order to ease the pain | 1 |
| moitotsibenki, moitontsibenki | Span. hierba del ómblico, Eng. herb of the navel | <i>Cyperus</i> sp. | Partner's infidelity | The symptom is a pulsing navel; the cause is extramarital sexual relations by one of the spouses, a bug penetrates the body of the unfaithful partner, and then the bugs are transmitted to the spouse and the child. | 2 |
| neasamanpentsibenki | Span. hierba de las visiones, Eng. herb of visions | <i>Cyperus</i> sp. | Spirits | Used when a person has visions due to an encounter with a malevolent spirit | 1 |
| neamanpiantsibenki | Span. hierba de la visión de la persona, Eng. herb of a vision of a person | <i>Cyperus</i> sp. | Spirits | When one sees a person, but not a real one. In fact, it is a bad spirit who enters one's body. When one returns home, s/he shouldn't tell the family that s/he has seen someone. This vision causes a headache, chills, vomiting, because <i>mal aire</i> is a bad spirit. If the person tells other people, s/he will die soon. | 1 |
| obayeribenki | Span. hierba para luchar, Eng. herb for fighting | <i>Cyperus</i> sp. | Violence | Used to intimidate an enemy | 1 |
| omanibenki | Span. hierba del zúngaro [another kind], Eng. herb of a fish <i>zúngaro</i> | <i>Cyperus</i> sp. | Food proscriptions | When parents of a child eat <i>zungaro/doncella</i> – this <i>cutipa</i> the child and gives her/him diarrhea. | 1 |
| otsitibenki | Span. hierba del perro, Eng. herb of a dog | <i>Cyperus</i> sp. | Hunting | Used to make a dog a good hunter, to | 1 |

(Continued)

TABLE 1. (CONTINUED).

| Ashaninka name/Ashaninka folk species | Spanish and English translation of Ashaninka name | Botanical taxon / no. of collection | Category of Use | Use | No. of |
|---------------------------------------|--|--|---------------------------------|---|--------|
| oyecharibenki | Span. hierba del arco iris, Eng. herb of a rainbow | <i>Cyperus</i> sp. [MK 391], <i>Cyperus</i> sp. | Spirits | enhance hunting skills in a dog Used to prevent or cure a child's diarrhea caused by <i>oyechari</i> . It may happen when a mother goes to the river bay to wash the child's diapers. <i>Oyechari</i> looks similar to poop, and when <i>oyechari</i> smells the child's poop it can <i>cutipar</i> the child. | 6 |
| panatsibenki | Span. hierba de parásitos, Eng. herb of parasites | <i>Cyperus</i> sp. | Parasites, Partner's infidelity | Used against internal parasites. The cause may be extramarital sex by one of the spouses. | 4 |
| pankoinarentsibenki | Span. hierba de maspute [choza de los cazadores], Eng. herb of a hunter's hut | <i>Cyperus</i> sp. | Hunting | Used to attract animals to a hunter's spot | 1 |
| petairikibenki | Span. hierba de la hormiga petairiki [una hormiga negra, vive en huecos de los árboles], Eng. herb of the <i>petairiki</i> ant | <i>Cyperus</i> sp. | Spirits | <i>Petairiki</i> ant stings and causes damage. The symptom is a severe headache – it does not pass with health post painkillers. | 2 |
| pirijabenki | Span. hierba de lo seco, Eng. herb of dryness | <i>Cyperus</i> sp. | Reproductive health | Contraceptive | 1 |
| pocharibenki | Span. hierba dulce, Eng. sweet herb | <i>Cyperus</i> sp. | Cut | Machete or ax cuts | 3 |
| ponkarobenki, ponkaro | Span. hierba del gordo, Eng. herb of a fat one | <i>Cyperus</i> sp. | Child rearing | Used to fatten children | 6 |
| sabiribenki | Span. hierba del machete, Eng. herb of a machete | <i>Cyperus</i> sp. | Cut | Machete cuts | 1 |
| samanibenki | Span. hierba del majáz, Eng. herb of paca | <i>Cyperus</i> sp. | Hunting | Given to dogs, so they can hunt paca | 2 |
| sanibenki | Span. hierba de avispa, Eng. herb of wasp | <i>Cyperus</i> sp. | Spirits | Sorcery or illness produced by wasps | |
| sankoribenki | Span. hierba de la hormiga coqui, Eng. herb of cf. the leaf cutter ant | <i>Cyperus</i> sp. | Spirits | Sorcery produced by the <i>sankori</i> ant, when the <i>sankori cutipa</i> a child. The symptom may be diarrhea with blood or vomiting (it affects children more than adults). | 3 |
| shijarontsibenki, shijarobenki | | <i>Cyperus laxus</i> Lam. [JS] | | Used for diarrhea caused by <i>mal aire</i> , <i>oyechari</i> | 7 |

(Continued)

TABLE 1. (CONTINUED).

| Ashaninka name/Ashaninka folk species | Spanish and English translation of Ashaninka name | Botanical taxon / no. of collection | Category of Use | Use | No. of |
|--|--|---|--|---|--------|
| | Span. hierba de la diarrea, Eng. herb of diarrhea | 193], <i>Cyperus prolixus</i> Kunth [MK 471], <i>Cyperus</i> sp. [MK 393], <i>Cyperus</i> sp. | Digestive problems, Spirits | [rainbow], or due to natural causes (eating raw fish) | |
| shimabenki | Span. hierba del pescado [boquichico], Eng. herb of a fish <i>boquichico</i> | <i>Cyperus</i> sp. | Digestive problems | Diarrhea produced from eating raw fish | 2 |
| shinkirerishi (shiobana) | Span. hoja del viento, remolino, Eng. leaf of the wind, swirl | <i>Cyperus</i> sp. | Spirits | Children are especially susceptible to strong wind, which fills them and produces vomiting. | 1 |
| shintoribenki | Span. hierba del sajino, Eng. herb of the peccary | <i>Cyperus</i> sp. | Hunting | Used for a dog, to make him a good peccary hunter | 1 |
| shintsibenki | Span. hierba de la rapidez y fuerza, Eng. herb of speed and strength | <i>Cyperus</i> sp. | Child rearing | Given to toddlers so they walk fast and have strength in their legs | 5 |
| shiobana | Span. hierba [generic name for <i>Cyperus</i> spp.], Eng. herb | <i>Cyperus</i> cf. <i>odoratus</i> L. [MK 457], <i>Cyperus</i> sp. | Child rearing, Digestive problems, Fractures, Hair, Reproductive health, Spirits | Used in child rearing: fast walking, fattening, weaning, to protect the child from <i>mal aire</i> ; against diarrhea; in fracture healing; as contraceptive; to enhance hair growth; healing from visions of spirits and devil | 23 |
| shiompatiribenki | Span. hierba de las vuletas, del remolino, Eng. herb of swirls and laps | <i>Cyperus</i> cf. <i>odoratus</i> [JS 150], <i>Cyperus</i> sp. | Spirits | <i>Mal aire</i> , a strong wind that can capture the spirit of a small child, the symptoms may be dizziness and vomiting | 2 |
| shipokantatsiribenki, shipokantribenki, shipokarontsibenki | Span. hierba de evaporación sanadora, Eng. herb of vopop healing | <i>Cyperus</i> sp. | Expert medicine | Used in initiation for those who heal by using mini-saunas/-evaporation. It helps to see the cause of an illness | 4 |
| shonkiribenki | Span. hierba de una clase de perdíz, Eng. herb of a partridge | <i>Cyperus</i> sp. | Spirits | When one follows a sound from the forest, when one has been | 1 |

(Continued)

TABLE 1. (CONTINUED).

| Ashaninka name/Ashaninka folk species | Spanish and English translation of Ashaninka name | Botanical taxon / no. of collection | Category of Use | Use | No. of |
|---------------------------------------|--|-------------------------------------|----------------------|--|--------|
| soronkabenki | Span. hierba de resbalar, Eng. herb of slip off | <i>Cyperus</i> sp. | Childbirth | disturbed by an evil spirit Used during labor to ease the pain and accelerate the childbirth | 1 |
| taemperibenki | Span. hierba de la hormiga taemperi [familia de coqui], Eng. herb of the <i>taemperi</i> ant | <i>Cyperus</i> sp. | Spirits | Used when the <i>taemperi</i> ant produces sorcery, the symptoms may be little grains and pimples on the skin. The healing action includes the burning of the ant nest | 3 |
| tampiabenki | Span. hierba del viento, Eng. herb of the wind | <i>Cyperus</i> sp. | Spirits | <i>Mal viento</i> [bad wind], <i>mal aire</i> | 1 |
| tarontsibenki | Span. hierba de la quemadura, Eng. herb of burn | <i>Cyperus</i> sp. | Horticulture | The rhizome is blown over the garden, before the weeds are burnt – it helps to control the fire. | 1 |
| tiatsibenki | Span. hierba del excremento--defecación, Eng. herb of stool-defecation | <i>Cyperus</i> sp. | Child rearing | Given to babies so they don't poo very often | 3 |
| timakorentsibenki, timakoribenki | Span. hierba para nacer, Eng. herb of being born | <i>Cyperus</i> sp. | Childbirth | Used to ease pain and accelerate labor. It may be also used by an accompanying husband. | 4 |
| tsanentsibenki | | <i>Cyperus</i> sp. | Partner's infidelity | When one of the spouses has extramarital sex, the child may have a chest hoarseness. It is the unfaithful partner who must cure the child. | 1 |
| tsimenkitobenki | Span. hierba del carbón, Eng. herb of charcoal | <i>Cyperus</i> sp. | Expert medicine | Used by experts in mini-sauna /vapors. It help them to diagnose the cause of an illness. Charcoal found in evaporation is understood as a sign of a sorcery. | 1 |
| tsimeribenki | Span. hierba del pajarito <i>tsimeri</i> , Eng. herb of the <i>tsimeri</i> bird | <i>Cyperus</i> sp. | Food proscription | When parents eat birds, it may affect their baby. The bird may <i>cutipar</i> the baby and s/he | 1 |

(Continued)

shape of the plant, but the use—food proscriptions, in this case. Other names evoke non-humans such as animals, including insects and fish, spirits and spirits of dead people, natural phenomena, and minerals. Another group of semantic constituents are health problems and symptoms: cuts, wounds, diarrhea, vomits, being in pain (Ash. *katsi*), and others. Occasionally, secondary lexemes refer to actions, such as hunting, fishing and witchcraft (all Ashaninka names translated to Spanish and English are found in the Table 1). The meaning of names strongly corresponds to Ashaninka cosmology and ontological categories, and reveal many levels of connectivity between the Ashaninka and non-humans.

The names of folk species contain mnemonic cues to differentiate otherwise morphologically similar plants. The mnemonic cues are loaded with meaning, and apart from the generic suffix—*iben* “an herb”—they have no reference to morphology. This does not mean that our findings automatically support the utilitarian flank in the ethnoclassification debate (Nazarea 1999; Randall and Hunn 1984), one which highlights the utilitarian ends of the biological ethnoclassification. We instead agree with Balée (1994) and Ihde and Malafouris (2018) that there exists a strong relationship between cognition and the material world, i.e., the cognitive aspects of *ibenki*—their naming and grouping—are embedded in Ashaninka practices and experiences of domesticating, tending, using, and exchanging these plants. On the other hand, we worked with highly culturally-important plants in an entirely anthropogenic habitat, where the connection between classification, cultural categories, and ontology are strong (Ellen 1993).

Tournon (1991) asks questions about the Shipibo-Conibo names of specific *huaste* (*Cyperus*). Namely, whether these are true names or mere descriptions or maybe these names are an improvisation in front of the ethnographer? According to this author, the true name is the one that belongs to the shared culture, and whose reproduction relies on transmission from one interlocutor to another. Tournon’s point is that some of the descriptive names cannot be mere improvisations by the interlocutor, as they contain information that is valid to the local culture.

We asked a similar question to Tournon’s: what potential have names of specific *ibenki* for reproduction in the cultural sphere through transmission? By using consensus analysis (Trotter and Logan 1986), we established that the mean score for

consensus among all folk species was relatively high (0.85), showing that the names have real communicative value and people share understanding of uses behind the names (Fig. 4). This is also supported by the fact that active constituents of secondary lexemes are loaded with meanings that are generally comprehended and shared by the Ashaninka. An example may be here *manijibenki*, “herb of bullet ant” [*isula* in local Amazonian Spanish], which is a stinging ant (cf. *Paraponera* or *Dinoponera*). Most of Ashaninka people have seen the *maniji*, some have been stung by the ant and suffered from the strong pain it produced. The cultivated *manijibenki* is not applied on a swollen part of the body or to soothe the pain. Ashaninka say that *maniji* captures the spirit of an adult or a child: “vamos a la chacra, trabajamos, allí está el panal de la isula, ella ya nos miró, ya nos brujó” (“we go to the garden, we work, there is an *isula* nest, she has already watched us, she has bewitched us already”). In ontological relations, *maniji*, similarly to other ants, is considered a *matsi* “a sorcerer.” The sorcerers harm others by manipulating food remains or some corporeal remains of the people they wish to harm. The Ashaninka see an analogy between ants and sorcerers—ants take food remains left by people (Rojas 2003). From the Ashaninka perspective, the *maniji* bewitches people, producing general body pain or pain in a particular part of the body. *Manijibenki* is used by the Ashaninka against the sorcery ascribed to the bullet ants. The symptoms are general body pain or pains in certain parts of the body (but which are not effects of the ants stinging). Therefore, we agree with Tournon (1991) in that the descriptive names (secondary lexemes) cannot be the improvisations of interlocutors in front of the researcher, in our case. There is a consistency between the information they are loaded with and the shared interpretation of this information.

However, the modified consensus index shows that the overall community consensus on use decreases (from mean 0.85 to mean 0.28) when the spatial correction factor is introduced in the formula, which would support the idea that specific *ibenki* and their names circulate on a small scale, probably among closely related people. This is supported by the notion of the ownership of domesticated sedges: on several occasions we were told that a certain *ibenki* “does not belong to me” or “is of my husband.” The names are not revealed easily to non-related people. As some interlocutors stressed, it might undermine the power and action of *ibenki*.

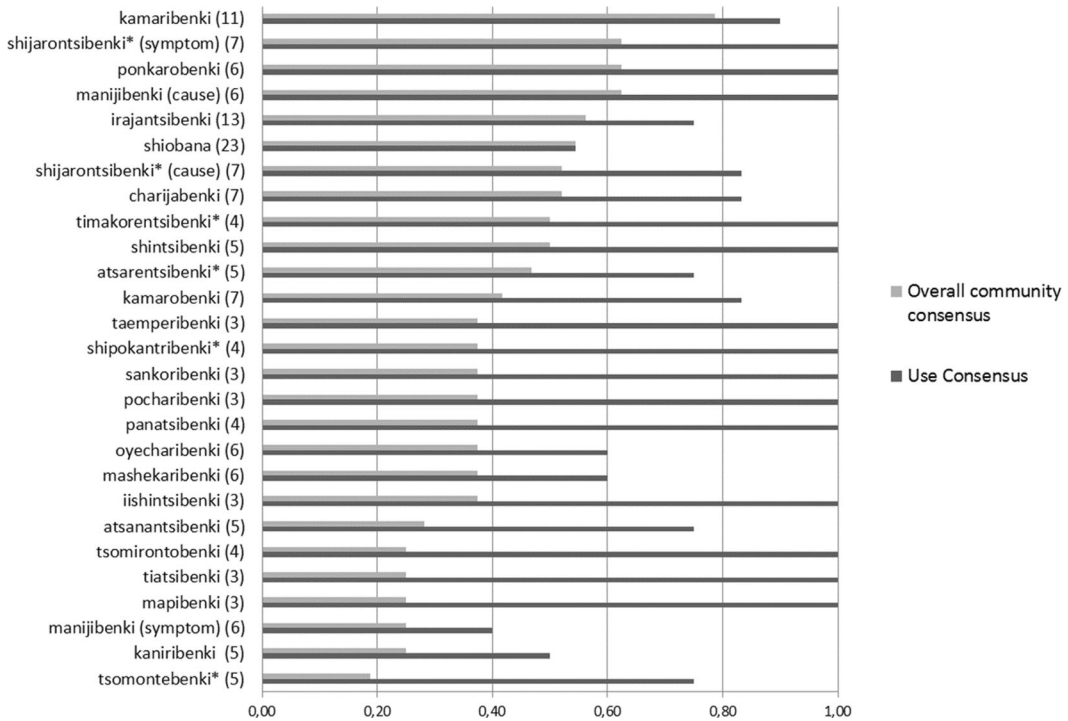


Fig. 4. Consensus on use and overall community consensus on the use (i.e., folk species distribution across the communities) of *ibenki* folk species (mentioned at least three times within 12 Ashaninka communities along the Tambo River, Peru). Legend: The number of mentions is shown in brackets (). → indicates that synonyms for these folk species were found (see Table 1)

It is likely that as in the myth of origin of the *ibenki*, the Ashaninka receive, and then share the *ibenki* with their names in a similar way to that which the *sankori* ant did, i.e., as a secret that is passed between kin or a household group.

Folk species with the highest overall community consensus were *kamaribenki* (0.53) (“herb of the devil”), followed by *manijibenki* (cause), *ponkarobenki* (“herb of a fat one”), and *shijarontsibenki*/*shijarobenki* (symptom) (“herb of diarrhea”), all with a 0.42 consensus score. *Shijarontsibenki* has a great consensus on use (1) but was only cited in five of the 12 communities studied, so when incorporating the spatial correction factor, the overall community consensus drops markedly below 0.5 (Fig. 4).

There is a relationship between a single plant name and a single plant use; in other words, folk species of *ibenki* very rarely have more than one use/application reported by a given person (which is also expressed in a similar overall number of exemplars, mentions, and use reports). Despite the low

individual versatility, the versatility of the whole set of domesticated sedges is very large, which accounts for its resilience. This phenomenon of low individual versatility seems to corroborate the idea that *ibenki* are plant-persons.

IBENKI—ANTIDOTES, ALLIES AND AGENTS OF TRANSFORMATION

Everyday Ashaninka dwelling in the world is intimately related to the knowledge and use of plants, which rests on a shared ontological basis. There are some regularities and continuities observed in the use of *Cyperus*. We arranged the whole array of recorded uses into three overarching categories, based on causes (of illness, social disruption), actions (medicinal and beyond), and symptoms. There are misfortunes and illnesses for which the Ashaninka clearly identify their cause, or even describe a given condition through the etiological lenses. These cause-driven health conditions treated with the help of *ibenki* are mentioned with the

highest frequency. The main causes are: partners' infidelity, inadequate behavior of parents of a small child, breaking taboos, and intentional actions of other humans and non-humans, including spirits and animals. Out of 258 total use reports, 123 UR (48%) directly report causes within the above-mentioned categories. The focus on illness origin in dealing with the healing process, or understanding the cause as a prerequisite in recovering from an illness, has also been described in different Amazonian groups (see inter alia: Belaunde 2001; Heckler 2007; McCallum 1996).

Another overarching category in which *ibenki* are used is what we call "actions." In the Ashaninka scenario, *ibenki* are involved in actions related to childbirth (to accelerate labor, to ease pain, to counteract hemorrhaging, to remove the placenta); child rearing; fishing, hunting, and agriculture activities; actions taken in case of bites, cuts and fractures; as well as in case of violence. These types of uses account for 78 UR (30% of all UR). In some cases actions should be understood as hyperbole—a part that stands for the whole. For example, one interlocutor mentioned that he had *kamarobenki* (herb of a she-devil), which he used to heal his shotgun when he didn't have luck in hunting. According to Ashaninka etiologies, bad luck in fishing or hunting is usually attributed to food proscriptions, namely transgressing food prohibitions by his menstruating daughter or wife. Did our interlocutors prefer to mention just an action or even a symptom without revealing a "real" cause? Therefore, this category is a compromise between our potential oversights in asking specific questions and/ or the interlocutors' omissions. However, the question here may be whether these omissions in revealing the causes do not indicate an on-going process of loosening relationships between cause and cure among the Ashaninka. This would indicate a slow process of expanding symptom-specific treatment to the detriment of cause-centered healing (see Heckler 2007). This would also mean that *ibenki* may lose their positions as plant-persons, kin, and allies to the Ashaninka, and be reduced to "antidotes" at best or just "useful resources" to counteract an illness, symptom, or a misfortune. Our findings show, however, that *ibenki* are rarely used to counteract mere symptoms (31 UR out of 258; 12%), such as digestive problems, intestinal parasites, respiratory, skin, fever, and different kinds of pain, which are not directly related to culturally defined etiologies. In one community, we met a man whose wife was diagnosed with diabetes and he was in search of a

"good" medicine for her. He told us that someone had told him about *ibenki* for diabetes, and he was determined to find it. This case suggests that *ibenki* are suitable to change and adaptation to new cultural and health circumstances. When the Ashaninka experienced the social unrest and horror of *Sendero Luminoso's* (Shining Path) activity in their territory in the 1980s and early 1990s (Varese 2006), Ashaninka men cultivated *Eiro otonkantatsi tonkamentotsi* ("I am responding with a shotgun"), a special *ibenki* to intimidate their enemies. Overall, *ibenki*, culturally important and distinguished plants, are allies in maintaining specific Ashaninka (or indigenous Amazonian) relations between humans and animals and in counteracting prohibitions. This is the core function of *ibenki*, on the periphery; however, as a response to current circumstances, new functions of these powerful plants emerge and a new agency is ascribed to them.

Following the approach of Plowman et al. (1990) and Lewis and Elvin-Lewis (1990), and taking into consideration those ailments that correspond to Western biomedical categories, our findings are in line with these authors' conclusions. *Ibenki* are used extensively to counteract bleeding (ergot alkaloids cause vasoconstriction) and to reduce pain during the childbirth (inducing uterine contractions). Most probably, due to the latter property of ergot alkaloids, different *ibenki* contribute to diverse fertility-related uses, expressed in *ibenki's* name and ascribed properties: *atsorentsibenki* ("dilator herb"), *bairontsibenki* ("herb of the name"—to help women get pregnant), *eiro abantatsi* ("I don't have a child"), *motitsibenki* ("herb of being pregnant"), etc. The treatment based on symptoms and some "actions," where reducing pain and counteracting bleeding is at stake, may be sustained by the pharmacological properties of *Cyperus* spp. and the associated fungus. In other words, many of the Ashaninka uses of *Cyperus* appear coherent with physiological properties of ergot alkaloids. The use of some specific *ibenki* to counteract diarrhea may be attributed to tannins and saponins present in some *Cyperus* species, but more study is needed in this respect. Chemosensory experience (sensu Daly and Shepard 2019) possibly may have influenced the Ashaninka understanding of etiology and efficacy, although expressed in their own cosmological terms. However, the general over-differentiation of *Cyperus* spp. with just one case of under-differentiation together with the broad range of uses show that phytochemical factors of the genus *Cyperus* are not

sufficient to explain the attribution of uses by the Ashaninka. Therefore, we need to turn somewhere else to better understand the agency of the *ibenki*.

A plethora of Amazonian ethnographic literature concentrates on the body, cultural fabrication, and natural instability of the body (reviewed by Vilaça 2005). Amazonian ethnographies have shown that the body “is made by others in a constant flow involving nutrition, abstention, and application of medicines” (McCallum 1996: 352). In other words, the body is not constructed individually, and its growth is not a natural fact, but requires a collective to be made (Seeger et al. 1979; Tola 2005). This collective usually involves parents and kin, the household group, or the local group but also non-humans, such as spirits (Tola 2012). Few ethnographies/studies include plants as agents participating in body making or transformation (Barúa 2007 after Tola 2012; Santos-Granero 2012; Shepard 1998). Our study shows that plants, *ibenki* in this case, participate actively in fabricating the bodies and in their transformation. Specific *ibenki* used in child rearing may serve as one such example, to enhance some desired qualities in children: to walk fast (*shintsibenki* “herb of speed and strength”): *trabajamos, vamos a la chacra, que el niño ande rápido, que no quede sentado* (“we work, we go to the garden, we need the child to walk fast, not to be seated”), to be nicely fat (*ponkarobenki* “herb of a fat one”), to have appetite (*mashekaribenki* “herb of lack of appetite”), to be weaned (*tsomirontsibenki* “herb of weaning”), to reduce defecation (*tiatsibenki* “herb of stool-defecation”), or not to eat the soil (*kipatsibenki* “herb of soil”). Some authors remark on the fact that in child rearing the use of particular plants may be connected to the transfer of morphologically visible plant qualities to children (Santos-Granero 2012). Since all *ibenki* are morphologically similar, this is not a visible quality that is transferred but a notion of inherent interior qualities. According to the local cosmologies, eating others can produce kin—*ibenki* are not eaten in a food context, but the juice of the rhizome is ingested.

Ibenki also participate in maintaining the bodies (persons) connected. The important feature of the Ashaninka body construction and transformation is that the action of one person has strong implications for his/her family and non-humans too—here it makes sense to refer to the theory of connected bodies (Tola 2005, 2012), whereby “if the whole body contains elements that make it dependent on others (...) and that accounts for the mutual dependencies that are woven with other human beings,

with non-humans and with the cosmic order in general, it usually happens that when men and women do not respect certain taboos, the balance in the universe and in social life is altered” (our translation, Tola 2012: 309). Instances of partner’s infidelity provide a good ethnographic example for such a theory. When spousal infidelity has consequences for the child’s health, leading to a chesty hoarseness and cough that is distinct to bronchitis, and referred to as *ronquera*. In such cases, *atsanantsibenki* (“herb of egoism”) or *atsanabenki* (“herb of cheating”) may be given to the child by the parent who has cheated. In this case, e.g., *atsanantsibenki* (“herb of egoism”) or *atsanabenki* (“herb of cheating”) is given to the child (it should be the parent who has cheated, who gives the medicine—a rhizome to the child).

Another example requires an understanding of the Spanish term *cutipar*, which means to copy, gain, or assimilate the characteristic of the other, as it was explained to us by the Ashaninka collaborators. In most cases these are animals and plants which can *cutipar*, i.e., a person gains the characteristic of a given species of animals or plants. Unborn children and infants are especially vulnerable to being *cutipado* (passive form of the verb *cutipar*) by animals and plants. The general idea is that a child will take the characteristic of a fruit or an animal which his/her mother ate while being pregnant. Therefore, pregnant women are careful with what they eat. But some gestating women are tempted by game meat, or by other prohibited kinds of fish or fruits. One of the principal causes for which medicinal plants are taken is the lack of maintaining a proper diet by gestating women. A typical symptom is pain during labor. For these occasions they cultivate *ibenki* which act as an antidote, and take them to counteract the effects of the proscribed food. Some of plants are taken during pregnancy starting from the fifth or seventh month (e.g., *itonkibenki* “herb of a bone”), and others when labor starts, to ease the pain. Sometimes women know precisely what animal or plant had them *cutipado*. Hence, they take *cocobenki* “herb of coco” or *charijabenki* “herb of a fishing net” before childbirth. When a child is born, both of the parents are subjected to a restricted diet, especially avoiding some kinds of game meat. Even the simple act of them walking in the forest may affect the infant. This is explained by the fact that the fragile spirit of a child always accompanies the parents. In the Ashaninka scenario, the healthy growth of a fetus and later a child depends on the parents’ behavior,

including food abstention and displacement in different habitats—especially in the forest, where the chance to encounter potentially malevolent spirits is higher than in the community.

Children in Amazonian cultures are kin with bodies and personalities in formation (Descola 2012; Fortis 2010; Medrano 2013; Tola 2012), therefore they are more likely to be *cutipado*. The children's body and personality are transformed into kin-allied bodies through the endowment of various properties, among which are those that the specific *ibenki* of each family are equipped with. The construction of bodies-relatives-allies, the transfer of some desired qualities to children, as counteracting unwanted properties of being *cutipado* inscribes in an anthropological concept of “contagion,” and what Descola calls “the traffic of souls” (based on the schema of generalized predation around *tsantsa* ritual) (Descola 2012). In this sense the *ibenki* are corps-relatives-allies with multiple agencies in a similar way to those handled by a sorcerer or shaman, capable of capturing or containing properties that are desired to counter others. In the examples described in this section, we observe contagions from animals and plants (desired or unwanted) to people and among people, such as that of the unfaithful spouse to the child, in a similar way to that observed among the Q'om of the Argentine Chaco (Medrano 2013). These contagions occur at different intensities throughout the life cycle of people (i.e., cycle of transformations).

EXCHANGE OF PLANT MATERIAL

We recorded 86 different folk species (specific *ibenki*), which correspond to 255 exemplars in 58 Ashaninka home gardens, belonging to 64 persons. Women ($N = 53$) reported between 1 and 11 (mean 4.4) and men ($N = 11$) reported between 1 and 6 (mean 2) *ibenki* in their home gardens. Women usually cultivate *ibenki* for a wide array of uses for themselves, their children, household protection, etc., while men tend to have specified *ibenki* for a limited number of uses, for example ensuring good hunting and hunting skills, and against bites and cuts.

The names and uses of *ibenki* mostly circulate on a small scale and their circulation decreases when the spatial factor (number of communities) is taken into account. Propagules of *ibenki* are more often obtained within the same community (39%) than from a different community (32%), and we do not have data on 73 exemplars (29%). The owners of

these exemplars did not want to reveal or could not remember where they had obtained their *ibenki*.

Our data suggests that plants are primarily exchanged and obtained along kinship lines (127 out of 255—50%), from affined, such as parents-in-law or brothers-in-law (29 exemplars); non-related people (24); purchased (3). But we do not have data on 72 exemplars (28%) in this respect (Fig. 5).

In most cases, these are adult children who inherit *ibenki* from their parents across gender lines (F to F, M to M), but not always. Due to the displacement of many Ashaninka people during the above-mentioned Shining Path guerrilla-like activity in the Ashaninka territory, many Ashaninka people fled to the forest, taking only the most essential belongings with them, often leaving their *ibenki* behind. We met a few elderly women who managed to obtain and plant some *ibenki* from their granddaughters and nieces.

Similar to other domesticated plants, such as staples cassava and bananas, or coca and tobacco, *ibenki* have a privileged position in Ashaninka society and grow in almost every garden. Wild growing *Cyperus* spp. are disregarded, and not included in the entangled relationships. We collected a wild growing *Cyperus luzulae* (L.) Retz. [v.s. MK 360] (with well-developed inflorescences), but when we asked our interlocutors about its use, they stated that “esto no sirve” (it does not work). This high position of domesticated *Cyperus* does not stem from the fact that these plants need active tending and management. It is the *ibenki* personhood, their entitled position as kin to the Ashaninka and their incorporation in ontological relations that make them so important and resilient. This complex, multilayered relationship must have been created in the past, which is beyond Amazonian chronicles, ethnographies, and life memories, and have persisted until now.

Conclusions

The understanding of plant-people relations is certainly informed by one's own theoretical inclinations. We engage with the growing field of the more-than-human framework in the humanities (e.g., Guzmán-Gallegos 2019), which attempts to dethrone humans from their privileged position and put them in “rhizomatic-like” inter-species relations. We also propose calling our method of analysis the more-than-utility approach to ethnobotany. By proposing the more-than-utility approach, we

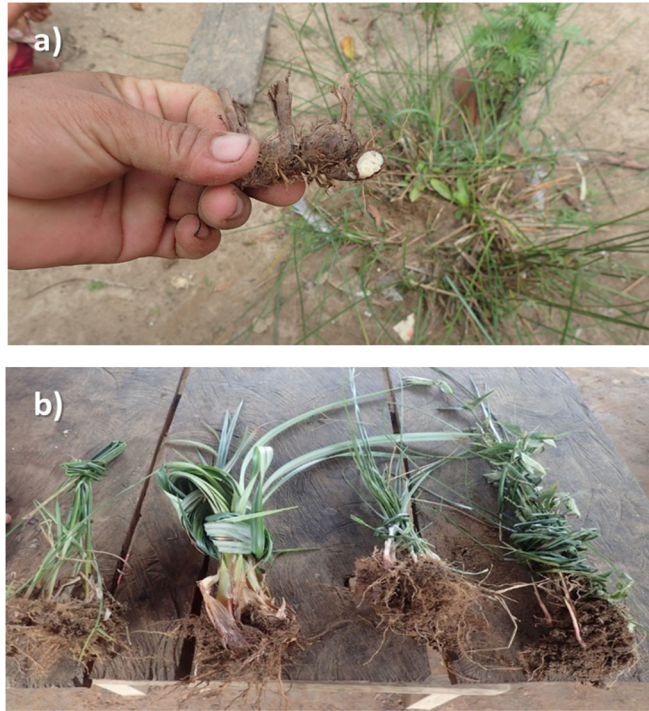


Fig. 5. Different *ibenki* exchanged by related women. a) The rhizome is crucial—many times, when someone shows their *ibenki* they dig out a piece of rhizome to show; b) *ibenki* prepared by an owner of the garden for her aunt to take home (on the table from the left: three different kinds of *ibenki*, extreme right one *ibinishi*—*Justicia* sp.)

do not wish to engage in the ongoing debate between universal / intellectual versus utilitarian flanks in ethnobiological classification, as we understand our approach in a wider sense, one that is not limited to recording and analyzing uses that local communities ascribe to plants. Most definitions of ethnobotany highlight uses as a scope of ethnobotanical interest. We think that in some cases, like ours, taking into account ontological categories, nomenclature, and exchange of plants, together with uses, enables us to understand deep and long-lasting plant-people relationships. The balance of commitment between these elements (oral history [myths], folk classification, uses and etiologies, and plant circulation) highlights certain nodes in an approximation, used in this study, when forming a network of meanings. Nevertheless, the proposed analytical sequences in this study are not considered as a context-free operational model or method.

The paper leaves a clear vision of the importance of a certain plant group, of which the *Flora of Peru* registered 30 *Cyperus* species in Peruvian Amazonia. Certainly more botanical

taxonomic study is needed in this respect. At the same time Ashaninka indigenous people from Peruvian Amazonia have solved the taxonomic problem for themselves by endowing several domesticated species of *Cyperus* (we counted 4) with 86 different names, and corresponding uses, treating them as discrete (folk) species. The prepared diagrams (Fig. 3) place two systems of classification (two epistemological approaches) in dialog and highlight the magnitude of this phenomenon. A possible shortcoming of this paper is the insufficient number of voucher specimens and precise botanical identification of a larger number of *Cyperus* spp., in order to attempt to correlate them with *ibenki*. The identification of the *ibenki* and their close relationship with the Ashaninka people has been confirmed by the rigorous analysis in this study. However, the botanical species and folk-species relationship has yet to be elucidated, assuming that in this process the Ashaninka have quite possibly contributed to the domestication of these important, from a biodiversity perspective, resources.

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