The Relation Between Ashaninka Amazonian Society and Cultivated Acanthaceae Plants

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Abstract The article discusses the relationships between Ashaninka people from Peruvian Amazonia and the *ibinishi* ethnotaxon corresponding to several species from the Acanthaceae family cultivated in Ashaninka home gardens. The information on cultivated Acanthaceae comes from 59 gardens in 12 native communities along the Tambo River valley in Peruvian Upper Amazonia. The data were interpreted with a more-than-utility theoretical-methodological approach. *Ibinishi*, also known as *pinitsi*, are the second major group of cultivated medicinal plants after *ibenki* (*Cyperus* spp.) by the Ashaninka. An over-differentiation phenomenon is observed, in which three species of *Justicia*, one of *Lepidagathis*, and one of *Ruellia* correspond to 66 different ethnospecies of *ibinishi*. Their names are secondary lexemes, and in their meaning, they refer mostly to visions, spirits, and human and animal sorcerers. A wide scope of uses is connected to Ashaninka etiologies but only partly supported by the secondary metabolites found in those species. The ethnomedical phenomenon of *ibinishi* has been found among the Ashaninka but not among other Arawak-speaking groups in Amazonia. Compared to ethnographic sources, the importance of *ibinishi* seems to have grown among the Ashaninka, which may be ascribed to the armed conflicts and social unrest this group has gone through in recent times.

Resumen El artículo se enfoca en las relaciones entre el pueblo Ashaninka de la Amazonía peruana y el etnotaxón i*binishi* correspondiente a varias especies de la familia Acanthaceae cultivadas en huertos familiares ashaninka. La información sobre las Acanthaceas cultivadas se fue recopilada en 59 huertos en 12 comunidades nativas en el valle del río Tambo en Selva Central, Perú. Usamos el enfoque teórico-metodológico más-que-utilitario para interpretar los datos. Los *ibinishi*, también conocidos como *pinitsi*, son el segundo grupo mayor de plantas medicinales cultivadas después de las *ibenki* (*Cyperus* spp.) por los ashaninka. Se observa un fenómeno de sobre-diferenciación, en el que tres especies de *Justicia*, una de *Lepidagathis* y una de *Ruellia* corresponden a 66 etnoespecies diferentes de *ibinishi*. Sus nombres son lexemas secundarios y en su significado se refieren principalmente a visiones, espíritus y hechiceros humanos y animales. Una amplia gama de usos está relacionada con las etiologías Ashaninka, pero solo en parte respaldada por los metabolitos secundarios que se encuentran en esas especies. El fenómeno etnomédico de *ibinishi* se ha encontrado entre los ashaninka pero no entre otros grupos de habla arawak en la Amazonía peruana. En

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comparación con las fuentes etnográficas, la importancia de *ibinishi* parece haber crecido entre los ashaninka, lo que puede atribuirse a los conflictos armados y al malestar social que ha atravesado este grupo en los últimos tiempos.

Keywords: Ashaninka people, Ethnobotany, *Justicia*, *Lepidagathis*, *Ruellia*, Acanthaceae, Incipient domestication, *Ibinishi*, Selva Central, Amazonia, Peru

Introduction

Different Amazonian indigenous groups have special considerations for and relationships with certain plant species, such as cassava, plantains, peach palm, coca, cotton, sedges, and ginger (Daly 2021; Descola 1996; Giovannini 2015; Kujawska et al. 2020; Martin 1970; Rival 2002; Salick et al. 1997; Sosnowska and Kujawska 2014). These useful plants are subject to active propagation and management, often leading to cultivated varieties. In local cosmologies, their ontological status is that of kin or affine, which means that local indigenous groups establish social relations with these plants (Descola 1996; Rojas-Zolezzi 2014, Weiss 1975). Moreover, viewed from botanical taxonomy, these plants are often over-differentiated in local classifications (Boster 1986).

Domesticated sedges (*Cyperus* spp.), also known as *piri-piri* in Amazonian Spanish (Tournon et al. 1998), are found in the home gardens of indigenous groups across Amazonia (Cipolletti 1988; Shepard 1998; Tournon et al. 1998, Valadeau et al. 2010). In our previous paper, we discussed the complex interconnections between domesticated sedges and the Ashaninka people from the Arawak linguistic family who inhabit Peruvian Upper Amazonia (Kujawska et al. 2020). Sedges (Ash. *ibenki*) were exclusively propagated in a vegetative way and were mostly exchanged among kinship lines. We recorded a tremendous diversity of ethnospecies of *ibenki* ($N = 86$) that corresponded to four species from the genus *Cyperus*. This over-differentiation pattern was accompanied by a great number of uses ascribed to these plants which were embedded in the Ashaninka etiological system. Continuing with the line of inquiry from the previous work on *ibenki*, in this study, we explore the complex relationship between the same group of Ashaninka people and the second most important group of useful plants growing in Ashaninka home gardens called *ibinishi*. This ethnotaxon, distinguished in the Ashaninka classification of plants, presents a priori a similar pattern of over-differentiation as *ibenki* (Kujawska et al. 2020). This group of plants has not been described in the literature about Arawak-speaking people from Peruvian Amazonia. We found no reference to *ibinishi* plants, while the references to *ibenki*/*ivenki* (Ashaninka), *ivenkeki* (Matsigenka) and *epe'* (Yanesha) which correspond to *Cyperus* spp. are numerous (Luziatelli et al. 2010; Revilla-Minaya 2019; Rojas Zolezzi 1997; Santos-Granero 2012; Shepard 1998; Valadeau et al. 2010). Thus, we think the phenomenon of *ibinishi* is worthy of further exploration.

The ethnotaxon *ibinishi* corresponds to three botanical genera: *Justicia*, *Lepidagathis*, and *Ruellia* (belonging to the Acanthaceae family). Although some species, such as *Justicia pectoralis* Jacq., have gained great interest among ethnobotanists and anthropologists (Schultes 1990), in general, these genera have been little discussed in Amazonian ethnobotanical literature. In Table 1, we present a short state of the art considering the relationships of Amazonian societies with these three genera.

In ethnobotanical sources, *Justicia pectoralis* has been described as a cultivated plant by indigenous societies in Amazonia (see review in Schultes 1990). The species is characterized by a wide morphological variation. The generation of morphological variability is one of the consequences of domestication (Pickersgill 2007). Finding many variants of the same plant species or plant crop is part of the so-called domestication syndrome. In plants, this syndrome is defined by a wide variety of traits that, depending on the species, may include a reduced ability to disperse seeds without human intervention, reduced physical and chemical defenses, reduced unproductive secondary shoots, reduced seed dormancy, larger seeds, more predictable and synchronous germination, and, in some seed-propagated species, larger and more abundant inflorescences (Hammer 1984). In this work, we

Table 1. An overview of ethnobotanical studies in Amazonia and the Caribbean concerning genera of *Justicia*, *Lepidagathis*, and *Ruellia*

Genus	Species	Local uses	Source
Justicia It is the most numerous genus of the Acanthaceae family with species distributed in tropical regions In Peru, 64 species of *Justicia* grow naturally and/or in cultivation (Villanueva-Espinoza and Condo 2019)	*Justicia pectoralis* Jacq.	Medicinal and ritual plant, often cultivated in home gardens	Albuquerque et al. 2007; Caballero-Serrano et al. 2019; van Andel and Havinga 2008
		Versatile applications in local pharmacopoeias: respiratory conditions, digestive problems, wounds, as a sedative and analgesic agent, and as an aphrodisiac	Review of uses: Roersch 2018
		The dried leaves were smoked in the form of cigarettes by the Wayãpi people of French Guiana	Grenand et al. 1987, after Milliken et al. 1999
		Additive to *Virola* snuff among different groups from Orinoco and among the Yanomami in northern Brazil	Milliken et al. 1999; Prance 1972; Schultes 1990
		Ethnopharmacological properties	Macrae and Towers 1984; Roersch 2018
	Justicia calycina (Nees) V.A.W. Graham	Medicinal use in the Caribbean	van Andel and Ruysschaert 2011; Wong 1976
	Justicia secunda Lam	Medicinal use in the Caribbean	van Andel and Ruysschaert 2011; Wong 1976
	Justicia polygonoides Kunth	Medicinal use in Brazil	Bennett 1991
Lepidagathis Four species of *Lepidagathis* grow in Peru (Villanueva-Espinoza and Condo 2019)	*Lepidagathis lanceolata* (Nees) Wassh.	Vaginal infections among the Rama in Nicaragua	Coe 2008
	Lepidagathis alopecuroidea (Vahl) R.Br. ex Griseb	Medicinal use and poison	Plants of the World Online 2023
Ruellia Thirty species of *Ruellia* grow in Peru (Villanueva-Espinoza and Condo 2019)	*Ruellia ruiziana* (Nees) Lindau	Medicinal use among the Yanesha	Bourdy et al. 2008
	Ruellia puri (Nees) Mart.	Medicinal use among the Yanesha	Bourdy et al. 2008
	Ruellia tuberosa L.	Important medicinal and ritual plant in Suriname and Trinidad	van Andel and Ruysschaert 2011; Wong, 1976
	Ruellia proxima Lindau	Medicinal use in Peruvian Amazonia	Sanz-Biset and Cañigueral 2011

refer only to the incipient domestication phase of the domestication syndrome. A plant population is considered incipiently domesticated due to human intervention at least by promotion/propagation or tolerance in the system, but with the average phenotype of the selected character still within the range of variation found in wild conditions (Clement 1999).

In this work, we explore further our proposed method of analysis called the *more-than-utility approach to ethnobotany* (*ethnobiology*) to investigate biological, ecological, and social relationships between different human cultures and plants (Kujawska et al. 2020). This is a theoretical-methodological approach, emerging from the dialogue between ethnobotany, ecology, phytochemistry, anthropology, and cognitive-based science. This approach engages with the growing fields of the more-than-human perspective in the humanities (Guzmán-Gallegos 2019; Marder 2013), anthropology beyond humanity (Ingold 2013; Kohn 2013), and multispecies ethnography (Tsing 2015), which postulate a shift of perspectives and foci from those strictly human, and emerged in Western ontology, toward less hierarchical or even horizontal interspecies relations. Therefore, this perspective seeks to go beyond the classical utilitarian approach in ethnobotany and ethnobiology. In practical ethnobotanical endeavors, the proposed approach means looking at all elements of the interactions between plants and human societies in addressing human and plant agency. It also proposes taking into account not only human-users' perspectives, but also those of plants, in which case approaches from ecology, chemical and sensory ecology, and ecosemiotics seem appropriate paths (Daly and Shepard 2019; Hornborg 2001; Kołodziejska and Kujawska 2020; Maran 2020; Shepard 2004).

Amazonia covers 61% of the Peruvian territory (IBC 2006). This region is populated by 59 different ethnic groups, and the indigenous population has been estimated around 300,000 people of which the Ashaninka number over 100,000 according to the latest census (BDPI 2020), hereby being the most numerous Peruvian Amazonian society. Yet, the ethnobotanical knowledge and practices of plant management by the Ashaninka people have been sparsely documented and discussed in the literature (Aldave and Summers 2014; Luziatelli et al. 2010; Kujawska et al. 2020; Reynel et al. 1990; Rojas Zolezzi 2014). Moreover, *Cyperus* and several species of the Acanthaceae family are traditionally cultivated plants in their gardens and are of great importance for their well-being. However, so far, no study has been published on this subject. This paper offers the most systematic ethnobotanical study on the Acanthaceae cultivated by one of the Amazonian indigenous groups.

The general objective is to analyze the place which *ibinishi* occupy in the life of the Ashaninka from the Tambo River valley, particularly in their medicine, cosmology, classification system, and agricultural practice at present. To achieve this, we: (1) make a comparison between botanical taxonomy and Ashaninka classification; (2) describe forms of cultivation and propagation of *ibinishi*; (3) evoke the stories of the mythical origin of these plants; (4) analyze the nomenclature of the ethnospecies and the consensus between the name, use, and their distribution; (5) analyze forms of circulation of these plants between people in different communities; and (6) describe the diversity of uses in relation to Ashaninka illness etiologies and symptoms.

Methods

Study Group and Data Collection

The Ashaninka (Arawak Linguistic Family) Number 112,000 Members (BDPI 2020). They inhabit Upper Amazonia in Peru (*Selva Central*), particularly the tributaries of the Upper Ucayali River, such as the Apurímac, Ene, Perené, Pangoa, and Tambo; valleys of the Pichis and Pachitea rivers; and the interfluvial area of the Gran Pajonal (Rojas Zolezzi 2014; Veber 2003).

We worked in Ashaninka native communities along the Tambo River, affiliated to the regional organization Central Asháninka del Río Tambo (CART). The study of medicinal plants in home gardens of the Ashaninka was performed in 12 communities: Anapate, Capitiri, Charahuaja, Chembo, Marankiari, Oviri, Shevoja, and Vista Alegre, plus Poyeni and its three hamlets—Shikapaja, Sabareni, and Selva Verde—which were treated in the analysis as separate communities (Fig. 1). Each community was visited at least twice. The number of studied home gardens per

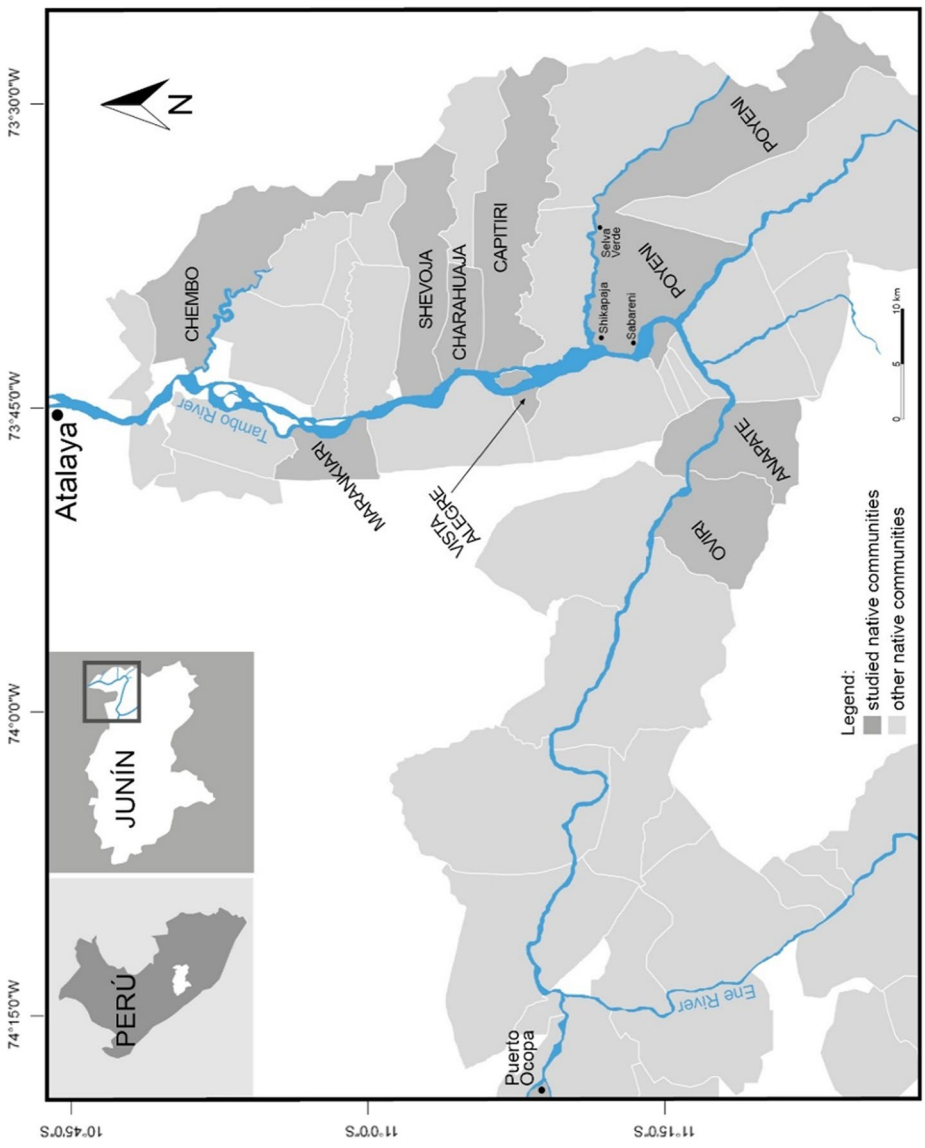

Fig. 1. Map of Ashaninka communities along the Tambo River, with communities where the research was conducted marked

community was distributed evenly. *Ibinishi* were recorded in 59 home gardens which belonged to 67 participants: 52 women and 15 men; their age range was from 22 to 70 years old. The number of participants was higher than the number of home gardens because some married couples keep their own separate *ibinishi* in one garden. A similar phenomenon was documented in our previous study of *ibenki* (*Cyperus* spp.).

The first contact with the Ashaninka from the Tambo River was established by Joanna Sosnowska in 2008. Building trust and rapport with the Ashaninka was a long process that included discussions with CART authorities (before and after every visit to the native communities) and obtaining their permits. In each community, before starting fieldwork, we had meetings with community authorities and then a general meeting with the inhabitants, and numerous conversations during our stays about the purpose of the project, as well as about the potential returns to the Ashaninka. This scenario was repeated with every consecutive visit and fieldwork in all communities. The information on cultivated home garden plants and voucher specimens were collected by MK and JS during five field stays in the period 2016–2019 and in 2022. Study participants were recruited from Ashaninka volunteers who wished to collaborate in this study. The ethnobotanical data were obtained during guided tours in 70 home gardens, and *ibinishi* were present in 59 gardens, or 84% of all studied gardens. During these guided tours, we stopped at every plant, and the garden owners were asked to give a plant name in the Ashaninka language, its uses, forms of propagation, and the sites and persons from which they were obtained. Every *ibinishi* plant that was shown to us was documented with photography and in a field note. Whenever the plants had flowers, and the plant owner agreed that we could take a sample, we collected herbarium specimens. Moreover, we interviewed 16 specialists/experts of Ashaninka traditional medicine: including midwives, bone setters, shamans, and steam bath makers or other healers (in Spanish: *curanderos*). Other semi-structured interviews and conversations (at least 30) were conducted among lay Ashaninka and concentrated on illnesses and forms of treatment in order to contextualize the information on plants used in Ashaninka traditional medicine, including their etiological system, and cosmology. No recording was done, as Ashaninka participants were reluctant toward being recorded. Most Ashaninka participants were bilingual in Ashaninka and Spanish, though on a few occasions we were assisted by a native interpreter. The Ashaninka plant names were translated into Spanish with the help of native interpreters. Three Ashaninka persons from three different communities, including a bilingual teacher, went through the complete list of the recorded names of *ibinishi* in order to check the spelling and their translation to Spanish.

Twenty-three herbarium specimens of cultivated *Justicia*, *Lepidagathis*, and *Ruellia* species were collected in Ashaninka home gardens. The specimens were pressed and dried (without using alcohol). Botanical identification of these specimens was made by consulting botanical keys, descriptions and specialized bibliography, and verifications with USM Herbarium specimens and with other virtual herbaria: Missouri Botanical Garden (MO) and Field Museum Herbarium (F), among others. The taxonomic ordering of angiosperms was performed according to Angiosperm Phylogeny Group IV (2016). For up to date scientific names, we used specialized websites, such as Plants of the World Online (2023) and the International Plant Names Index (IPNI) (nd). The specimens were deposited in the USM Herbario de la Universidad Nacional Mayor de San Marcos in Lima. The Ashaninka authorities gave their written approval for the implementation of the project, and the corresponding permissions from the Peruvian state for collecting herbarium specimens were granted by SERFOR, N° 252-2017-SERFOR/DGGSPFFS and RD N° D000163-2022-MIDAGRI-SERFOR-DGGSPFFS-DGSPF.

Data Analysis

During data analysis, we took into account the following variables: ethnoclassification and nomenclature, cultivation practices (including modes of propagation), and Ashaninka cosmology (including myths). We analyzed the correspondence between the ethnospecies and their uses in general, and across the communities, by means of two consensus analyses (see further). We also analyzed the circulation of plants between people and communities. Finally, we analyzed the uses of ethnospecies of *ibinishi* and their connection to Ashaninka etiologies, in order to better understand deep and long-lasting plant-people relationships.

We understand a particular *ibinishi* as a record of a particular ethnospecies, with information on its use, form of obtaining (from a family member, non-family, purchased) and place/community where it was obtained from, and supported by photography and/or a herbarium specimen in a particular garden, belonging to a particular person. In this study, the number of records is synonymous with the number of citations.

Our cognitive analysis of plant groupings and nomenclature (i.e., classification system) has been combined with the semantic analysis of names (see Tournon 1991). We counted any lexemic variation as one name. Venn diagrams were prepared and used to present the relationship between ethnotaxa and botanical taxon.

We conducted consensus analysis based on the number of mentions of folk species and corresponding uses. For this, we used Trotter and Logan's (1986) consensus index $\left[\left(\frac{Nm-Nu}{Nm-1}\right)\right]$ where Nm refers to the number of records of each ethnospecies and Nu to the number of uses. In our case, we set out to find the degree of consensus among the Ashaninka on the correspondence between ethnospecies names and their uses.

While this formula gives us information about the name-use consensus, it informs little about the distribution of name-use consensus between communities. In order to do this, we added to Trotter and Logan's index a component that considers the distribution of names across the communities (which we refer to as "overall community consensus on use"), as in the following formula $\left(\frac{Nm-Nu}{Nm-1}\right)x\left(\frac{Nc}{Ntc}\right)$ where Nc refers to the number of communities where ethnospecies of a given *ibinishi* were recorded, and Ntc to the total number of communities studied ($N = 12$) (for more details see Kujawska et al. 2020). Both consensus indices were calculated for a subgroup of 17 ethnospecies, which were recorded in at least three Ashaninka gardens (i.e., mentioned at least three times).

In the paper, we also included wild growing *Justicia*, *Ruellia* as well as other Acanthaceae species which we recorded and collected during walks in the forest with Ashaninka collaborators, in order to analyze which Acanthaceae species the Ashaninka cultivate, and which they collect from the wild. Then, we compared the management of Acanthaceae plants by the Ashaninka with the available literature on the status of domestication of these species in Peruvian Amazonia (Bautista et al. 2012; Parra Rondinel 2014).

We also analyzed the means of obtaining plants and propagules (via kinship, affines, non-related persons, purchase) and places from which propagules of *ibinishi* were obtained (the same community versus another community) by each of our collaborators. This approach, in concordance with overall community consensus on use and other findings, allows to generate some interpretations about processes of domestication of *ibinishi* plants by the Ashaninka people.

Uses of *ibinishi* were divided into etic categories and discussed according to shaninka etiologies and symptoms, as well as "actions" in which they were involved. These diverse yet complementary analyses enabled us to discuss the place which *ibinishi* plants occupy in Ashaninka lives, cosmology, and plant classification.

Results

Ibinishi—the Patterns Behind Their Grouping and Naming

Within the ethnotaxon *ibinishi*, we found 66 ethnospecies cultivated in 59 home gardens. An ethnospecies is defined here as a plant distinguished by the Ashaninka people and endowed with a separate Ashaninka name and use(s). Our analysis of *ibinishi* is based on the 177 exemplars collected in Ashaninka home gardens. Two monotypic names, *ibinishi* and *pinitsi*, were also used when people did not remember or did not want to mention the specific name of their *ibinishi*. These monotypic names are most likely synonyms, deriving from different traditions of naming. *Pinitsi* was translated to us as "a small herbaceous curative plant." We recorded 20 exemplars under the monotypic name *ibinishi* and three under the name *pinitsi*.

There is a 1:3 correspondence between *ibinishi* ethnotaxon and its botanical equivalents of *Justicia*, *Lepidagathi*s, and *Ruellia* genera. Even though we did not collect all the species from these genera cultivated by the Ashaninka, we can observe, from the botanical perspective, an over-differentiation phenomenon (Fig. 2). When we look more closely at Venn diagrams and the botanical identification in the list of *ibinishi* (Table 2), it becomes clear that *ibinishi*

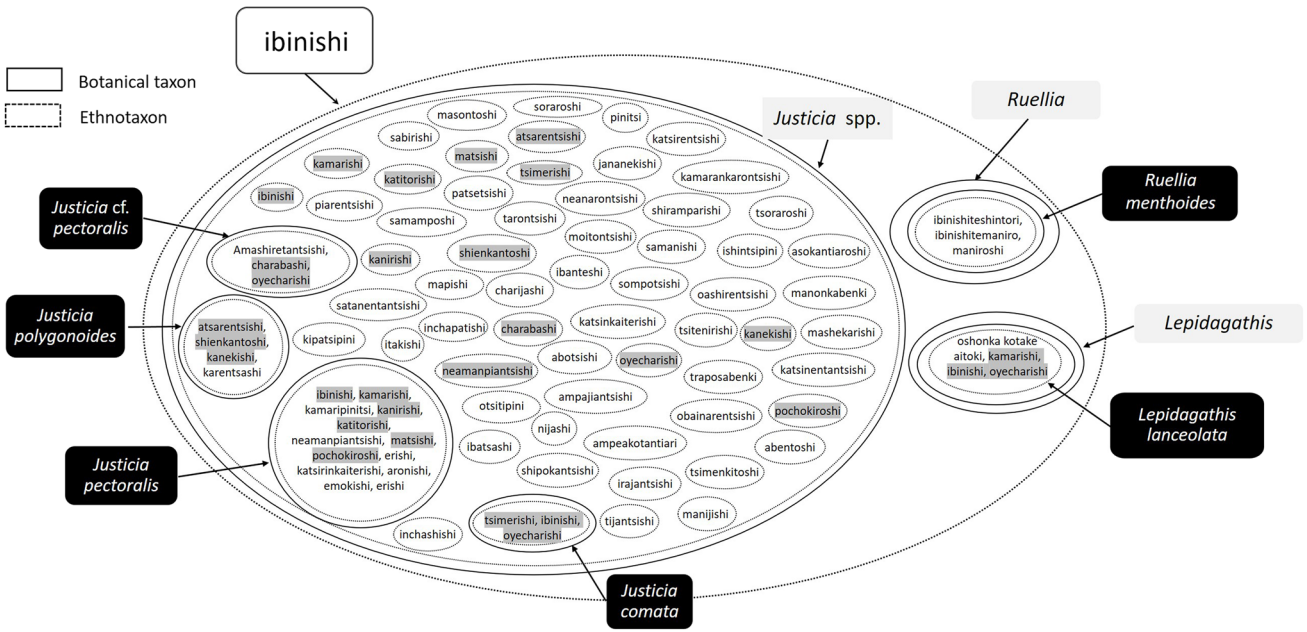

Fig. 2. Groupings of *ibinishi* and their correspondence to botanical taxonomy. Legend: ethnospecies corresponding to more than one botanical species are shown in gray

Table 2. Ethnospecies of *ibinishi* recorded in the Ashaninka home gardens in the native communities of the Tambo River, Peruvian Upper Amazonia

Ashaninka name	Spanish (Span.) and English (Eng.) translation of Ashaninka name	Botanical taxon/No. of collection	Category of use	Use	No. of gardens
Abentoshi	Span. hoja de llorar el bebé, Eng. leaf of the child's crying	*Justicia* sp.	Child fragility	Used when a child is anxious and cries a lot (in Spanish: *es mañoso*). A hot bath in leaf infusion is prepared	**2**
Abotsishi	Span. hoja del camino; Eng. leaf of the path	*Justicia* sp.	Spirits, devils	Against *mal aire*—so the child will not suffer from *mal aire*. It is used in a preventive way when a mother wants to carry her child into or across the forest. With the protection of this *ibninishi* "none of the tress will affect (in Spanish: *cutipar*) the baby"	**1**
Amashiretantsishi	Span. hoja que traer nuestro espiritu, Eng. leaf which brings our spirit back	*Justicia pectoralis* Jacq.	Spirits, devils	When a person is in agony, fainted, is about to die	2
Ampajiantsishi	Span. hoja del inquieto durante la noche, Eng. leaf of restlessness during the night	*Justicia* sp.	Parent-child relation	When a child cannot sleep, is anxious because his father was walking in the forest, part of the child spirit has accompanied him and has been affected (in Spanish: *cutipado*) by an animal, e.g., a bird could capture the child's spirit	1
Ampeakotantiari	Span. para olvidar, Eng. to forget	*Justicia* sp.	Partners' infidelity	When a person leaves his/her partner, it is used by a person who was abandoned to forget about this person, not to suffer	1

Table 2. (continued)

Ashaninka name	Spanish (Span.) and English (Eng.) translation of Ashaninka name	Botanical taxon/No. of collection	Category of use	Use	No. of gardens
Aronishi	Span. hoja de aroni - pájaro negro de vientre blanco y cabeza roja, Eng. leaf of a bird which is black with white belly and red head	*Justicia pectoralis* Jacq. (MK 392)	Parent-child relation	(1) "It is the same as devil." When a father of a small child goes to the forest, then he can cross with a bird. As the father is carrying a part of his child's spirit with him, the spirit may clash (in Spanish: *chocar*) with the spirit of *aroni*. When it happens, a child follows the voice of *aroni*—imitating it, crying a lot, cannot sleep properly, has headache. The leaf infusion is used to wash the baby. (2) When a man goes to the forest where he finds a woman who is a demon in fact. She wants to have sex with him. If she convinces him, he may come back home and becomes a sleepwalker, loses his senses, says "she is here"—keeps seeing the woman, talks like a drunk. Juice of crashed leaves is put in the eyes of a person affected by *aroni*	1
Asokantiaroshi osheki	Span. "sacar muchas hojas," Eng. "take out plenty leaves"	*Justicia* sp.	Expert medicine	It is used in the expert medicine by a person who heals with evaporation/mini-sauna	1

Table 2. (continued)

Ashaninka name	Spanish (Span.) and English (Eng.) translation of Ashaninka name	Botanical taxon/No. of collection	Category of use	Use	No. of gardens
Atsarentsipini, atsarentsishi	Span. hoja de lo que cutipa, Eng. leaf of something/someone that affects you	*Justicia polygonoides* Kunth (MK516, MK646), *Justicia* sp.	Childbirth, food proscriptions	(1) A pregnant woman eats food which may affect her (in Spanish: *cutipar*). When childbirth is about to start, a midwife or another woman who is assisting the delivering woman, asks her, what she has been eaten and brings leaves of plants, such as *shapaja* (*Attalea phalerata*), *coco* (*Cocos nucifera*), *caimito* (*Pouteria caimito*)—especially those that do not let a child to be delivered, which has its manifestation in pain and the childbirth is slow. A bath is made from the decoction of these leaves just before labor starts. (2) When a woman is already in the 8th month of pregnancy, she starts to prepare a decoction from this *ibinishi* mixed with malva (*Malachra alceifolia*), so that childbirth is not painful and fast. (3) This ibinishi is drunk by the parturient woman when the placenta is not coming out—this is due to some food that might affect (in Spanish: *cutipar*) the delivering woman, such as rice, *suri* larvae, different kinds of fruit	7
Charabashi	Span. hoja del zúngaro, Eng. leaf of a *zungaro* fish	*Justicia pectoralis* Jacq.; *Justicia* sp. (JS153)	Fishing	Uses by a man when he does not have luck in fishing *zungaro*	3
Charijashi	Span. hoja de malla/tarrafa de pescar, Eng. leaf of a fishing net	*Justicia* sp.	Fishing, food proscription	(1) Applied for a new fishing net, to have luck in fishing; (2) a pregnant woman may be affected (in Spanish: *cutipada*) by a fishing net and feels pain and chills during the labor. This plant is used together with *charijabenki* (*charijashi* is a company of *charijabenki*)	2

Table 2. (continued)

Ashaninka name	Spanish (Span.) and English (Eng.) translation of Ashaninka name	Botanical taxon/No. of collection	Category of use	Use	No. of gardens
Emokishi	Span. hierba del suri; Eng. herb of *suri*—palm weevil	*Justicia pectoralis* Jacq. (MK417)	Food proscription	Used when a woman has labor pains and difficulties with delivery. She has been affected (in Spanish: *cutipada*) with *suri*—palm weevil. It is used in a form of decoction just before labor starts	1
Erishi	Span. hoja de la abeja *eri* (*Trigona* spp.), Eng. Leaf of *eri* bee (stingless Melipona bee)	*Justicia pectoralis* Jacq. (MK405, MK468)	Witchcraft	"This bee produces honey that is not good to eat. When you get dizzy from taking *masato*, you say "eri's spirit has taken hold of me". That is why you vomit and have dizziness in your head;" It is used against headache, which is produced from eri's invisible sting—evil black bee. Juice of squeezed leaves is placed in the eyes	2
Ibanteshi	Span. hoja de la boca, Eng. leaf of the mouth	*Justicia* sp.	Childbirth	To stretch the vagina, so that the baby is born fast and without much pain—it is used just before delivery	1
Ibatsashi	Span. hoja de la carne, Eng. leaf of meat	*Justicia* sp.	Spirits, devils	When one is walking through the forest and sees a woman or a man, when one comes closer, the woman or the man becomes a tree or a leaf. This is the acting of a demon, and this vision can produce vomits. One returns home and only says "I want to vomit," without warning what had happened. Someone from the family puts juice of squeezed leaves in the person's eyes	1

Table 2. (continued)

Ashaninka name	Spanish (Span.) and English (Eng.) translation of Ashaninka name	Botanical taxon/No. of collection	Category of use	Use	No. of gardens
Ibinishi	Span. hoja curativa, Eng. healing leaf (a generic names for the whole group of plants)	*Justicia pectoralis* Jacq. (MK394, MK464), *Justicia comata* (L.) Lam. (MK537), *Justicia polygonoides* Kunth (MK687), *Justicia* sp.	Childbirth, child rearing, cut, digestion problem, expert medicine, fishing, hair, horticulture, hunting, partners' infidelity, spirits and devils, symptoms, violence, witchcraft	(1) For a child to walk and talk; (2) abdominal pain; (3) for the growth of hair of a girl; (4) for the cut from a machete; (5) for a dog to become a hunter; (6) when a husband has another woman, the wife bathes in the leaves, and this makes the husband leave the other woman; (7) when one has visions or *mal aire*; (8) when a child has been affected by the rainbow (in Ashaninka: *oyechari*), it produces green diarrhea; (9) when one has dizziness, the juice is placed in eyes; (10) headache produced by insolation; (11) to discourage agouti (a rodent species) from eating manioc; (12) to become a healer and expert in mini-sauna; (13) to accelerate childbirth (labor); (14) to walk at night and not be bothered by bad spirits; (15) it serves to make the police a fool when intervening, then one can talk easily with the policeman—the person first rubs the leaves of the plant in his hand and shakes hands with a policeman; (16) to have luck in fishing *cunchi*	20
Ibinishiteshintori, ibinishitemaniro, maniroshi	Span. pusanga de sajino y venado, hoja de vanado, Eng. *pusanga*—attraction for collared peccary and for deer	*Ruellia menthoides* (Nees) Hiern (MK562)	Hunting	*pusanga* of collared peccary and deer; "It is the *pusanga* of deer - before going to the forest, you rub a squeezed leaf on your face. When you enter the forest and see the birds and peccaries, you should not kill them. Only when you see a deer, then you can kill it – because this plant is the mother of deers"	2

Table 2. (continued)

Ashaninka name	Spanish (Span.) and English (Eng.) translation of Ashaninka name	Botanical taxon/No. of collection	Category of use	Use	No. of gardens
Inchapatishi	Span. hoja de cuando uno ve visiones, Eng. leaf of when one has visions	*Justicia* sp.	Spirits, devils	When one sees a person but it is not true—what one sees is a spirit of a family member, including children, but when one looks closer, it is a log	2
Inchashishi	Span. hoja del daño/brujería, Eng. leaf of harm/sorcery	*Justicia* sp.	Witchcraft	Harm due to the sorcery or a love spell. The symptoms may be weakness, fatigue, one cannot bear staying in the full sun. It goes away with evaporation/mini-sauna treatment, or when one puts squeezed juice from the leaves of this plant into the eyes	3
Irajantsishi	Span. hoja de la sangre, Eng. leaf of blood	*Justicia* sp.	Food proscription	When a woman eats meat or fish during her menstruation, the husband will no longer have any luck in hunting	3
Ishintsipini	Span. hierba del pelo, Eng. herb of hair	*Justicia* sp.	Hair	For the growth of hair	1
Itakishi	Span. hoja de caparazón, Eng. leaf of the shell	*Justicia* sp.	Spirits, devils	Used against *mal aire*	1
Jananekishi	Span. hoja del niño, Eng. leaf of the child	*Justicia* sp.	Parent-child relation	(1) When the father refuses his baby —says it is not his; (2) a child may lose appetite—it often happens when the small child sleeps with their mother and when she is menstruating, the child inhales the menstruation and this may affect him/her (in Spanish: *cutipar*) and loses appetite—does not want to eat manioc. The leaf infusion brings back the appetite for manioc and other safe foods for the child	2

Table 2. (continued)

Ashaninka name	Spanish (Span.) and English (Eng.) translation of Ashaninka name	Botanical taxon/No. of collection	Category of use	Use	No. of gardens
Kamarankarontsishi	Span. hoja de vomitar, Eng. vomitive leaf	*Justicia* sp.	Food proscription	Used by a man when he has no luck in hunting. When a woman has eaten meat during her full menstruation, her husband will not be able to hunt; (2) it is also useful when a man is at a party (e.g., birthday party) and drinks manios beer, eats meat, and then vomits the meat that he has eaten due to an excess of drinks and food—then he goes to the forest and has no luck with hunting the animals	2
Kamarishi, kamaripinitsi	Span. hoja del diablo, Eng. leaf of the devil	*Justicia pectoralis* Jacq., *Justicia* sp., *Lepidagathis lanceolata* (Nees) Wassh.	Spirits, devils	(1) It is used for all kinds of problems; (2) it is used in evaporations, it removes evil and *mal aire*; (3) when one sees the devil *kamari*, this vision produces headache; (4) when one sees a person who is not real; sometimes a child thinks that his/her mother is coming, but she disappears. Through this vision the child can feel fear, gets fever, they scream at night; (5) when one sees the devil from a distance in the forest. One cannot tell their family, after 3 days the person can only tell, because if the person tells before, they can die; (6) when the devil beats (in Spanish: *golpea*) a person, one feels pain in the body and may vomit too; (7) "We are used to making jokes and we make jokes of an animal. It appears to us." Leaves are used in evaporation, leaf juice is placed in the eyes, and in the case of children, a bath is prepared	15

Table 2. (continued)

Ashaninka name	Spanish (Span.) and English (Eng.) translation of Ashaninka name	Botanical taxon/No. of collection	Category of use	Use	No. of gardens
Kanekishi	Span. hoja de la hormiga tangarana; Eng. leaf of the *kaneki* ant	*Justicia polygonoides* Kunth (MK662), *Justicia* sp.	Witchcraft	Harm/illness due to the sorcery of the ant *kaneki*, the symptom may be a pulsing head. When a person is ill, they have a particular smell, and when they pass next to where *kaneki* is present, the ant absorbs the spirit of the person. The symptom may be a burning eye. The leaves are placed in water overnight and boiled at dawn, and the eyes are washed with this decoction	2
Kanirishi	Span. hoja de yuca, Eng. leaf of manioc	*Justicia pectoralis* Jacq. (MK467), *Justicia* sp.	Horticulture	For the manioc to grow fast and large; to make the manioc "fat"	5
Karentsashi	Span. hoja de resbalar, Eng leaf of slipping up	*Justicia polygonoides* Kunth (MK450)	Food proscription	For pregnant women. What a pregnant women eats can make the baby/fetus sick (in Spanish: *lo cutipa*). The plant has a partner in the form of *ibenki*	1
Katitorishi	Span. hoja de la hormiga *katitori*, Eng. leaf of the *katitori* termite	*Justicia pectoralis* Jacq., *Justicia* sp.	Skin, spirits and devils, witchcraft	(1) Thrush in the child's mouth, pimples in the mouth, it is an effect of the sorcery and harm done by the ant. It happens when the baby vomits with the milk from their mother, the ant comes and takes it away; (2) when the child has rashes/pimples on the head or in the mouth; (3) a person chews coca and throws the remains on the ground; an ant takes it and turns it into an evil which harms the person	7
Katsinentantsishi	Span. hoja para cólico; Eng. leaf of colic	*Justicia* sp.	Digestion problem	Abdominal pain	1
Katsinkaiterishi	Span. hoja de escalofrío, Eng. leaf of chill/shiver	*Justicia* sp.	Symptoms	Used against chills and fever	1

Table 2. (continued)

Ashaninka name	Spanish (Span.) and English (Eng.) translation of Ashaninka name	Botanical taxon/No. of collection	Category of use	Use	No. of gardens
Katsirentsishi	Span. hoja de dolor de la cabeza, Eng. leaf of the headache	*Justicia* sp.	Symptoms	Used against headache, which is not caused by spirits, it is a pulsating pain	2
Katsirinkaiterishi	Span. hoja del sol, Eng. leaf of the sun	*Justicia pectoralis* Jacq.	Partners' infidelity	When a woman or man has a love affair with another man/woman, outside the marriage; the symptoms may be fatigue and little stars the person sees when looking at the sun	1
Kipatsipini	Span. hierba de la tierra, Eng. herb of the soil	*Justicia* sp.	Child rearing	When a baby starts to become a toddler and may eat the soil	1
Manijishi	Span. hoja de la hormiga isula, Eng. leaf of the bullet ant	*Justicia* sp.	Witchcraft	It is used against the sorcery of the bullet ant. The symptoms may be a fever, toothache, general body pain. The ant takes parts of food to her nest, and the person whose leftovers were taken by the ant to the nest may get sick. When one has the evaporation/mini-sauna done, the dead body of the bullet ant or parts of the ant come out	3
Manonkabenki	Span. hierba de mal agüero/no seguir una norma, Eng. leaf of bad omen/of not following the norm	*Justicia* sp.	Food proscription	When a man loses his luck in hunting, the cause may be in the woman's menstruation, or when a person invited to eat the meat throws away the bone, the hunter who invited them will not be able to hunt	1
Mapishi	Span. hoja de la piedra, Eng. leaf of stone	*Justicia* sp.	Expert medicine	Used by the apprentice in the process of becoming an expert in mini-saunas	2
Mashekarishi	Span. hoja de falta de apetito, Eng. leaf of the lack of appetite	*Justicia* sp.	Partners' infidelity	Chest hoarseness and a cough that affects a baby when one of the parents has had extramarital sexual relations. It is drunk in infusion, and it is the parent who cheated who has to give the medicine to the child	1

Table 2. (continued)

Ashaninka name	Spanish (Span.) and English (Eng.) translation of Ashaninka name	Botanical taxon/No. of collection	Category of use	Use	No. of gardens
Masontoshi	Span. hoja de alguien tranquilo, Eng. leaf of a calm person	*Justicia* sp.	Violence	(1) "This is used during the war, you put a leaf under the tongue and you talk with your enemy, you influence your enemy to stay calm, so he does not want to fight anymore;" (2) when a man/husband returns home after having drunk manioc beer and wants to quarrel and fight with his family—leaf juice is mixed with his manioc beer or it is placed in his eyes	2
Matsishi	Span. hoja de lo que brujea, Eng. leaf of the sorcery	*Justicia pectoralis* Jacq., *Justicia* sp.	Witchcraft	(1) It is used to counteract harm; a person figures it out that they have been hurt due to the heart pounding (strong beating); when a person is bewitched with love, it may produce a headache; (2) against evil, witchcraft	4
Moitontsishi	Span. hoja de ombligo, Eng. leaf of the naval	*Justicia* sp.	Childbirth	To cure the navel of the baby. The leaf is crushed and squeezed, and the juices that come out are placed on top of the navel	1
Neamanpiantsishi	Span. hoja de las visiones, Eng. leaf of visions	*Justicia pectoralis* Jacq. (JS129), Justicia sp.	Spirits, devils	Visions, *mal aire*; when the visions are advanced, when one is about to die, the juice of the leaf is placed in the eye of the affected person; when a person sees the devil, the juice of squeezed leaves is placed in the eyes	5
Neanarontsishi	Span. hoja de la lengua, Eng. leaf of the tongue	*Justicia* sp.	Child rearing	When the child is a stutterer, it is given to drink the leaves, and it is bathed in the decoction of leaves	1
Nijashi	Span. hoja del agua, Eng. leaf of the water	*Justicia* sp.	Symptoms	When a person is not used to any more to bathing in cold water	1
Oashirentsishi	Span. hoja de la tristeza, Eng. leaf of sadness	*Justicia* sp.	Symptoms	To forget all worries; when we are sad	1

Table 2. (continued)

Ashaninka name	Spanish (Span.) and English (Eng.) translation of Ashaninka name	Botanical taxon/No. of collection	Category of use	Use	No. of gardens
Obainarentsishi	Span. hoja del mareo, Eng. leaf of dizziness	*Justicia* sp.	Witchcraft	Dizziness, headache due to some sort of sorcery	1
Oshonka kotake aitoki	Span. "mareo de nuestra cabeza," Eng. "dizziness of our head"	*Lepidagathis lanceolata* (Nees) Wassh.	Symptoms	Headache and dizziness which are not caused by sorcery	1
Otsitipini, otsitishi	Span. hierba del perro, Eng. leaf of the dog	*Justicia* sp.	Hunting	For the dog to be a hunter. The leaves are crushed with a stone, then the dog owner puts the squeezed juice in the dog's mouth so that the dog knows how to hunt	3
Oyecharishi	Span. hoja del arco iris, Eng. leaf of the rainbow	*Justicia pectoralis* Jacq. (MK398), *Justicia comat*a (L.) Lam. (MK448), *Lepidagathis lanceolata* (Nees) Wassh. (MK473), *Justicia* sp.	Spirits, devils	(1) Used as a remedy of the rainbow burn, when the devil burns; (2) when a mother goes to wash her child's diaper at the stream—it is often where the rainbow takes its birthing place, the rainbow smells the child's poop and affects him/her (in Spanish: *lo cutipa*), the child gets diarrhea	4
Patsetsishi, patsetsipini	Span. hoja del hongo de la piel, Eng. leaf of the skin fungus	Acanthaceae (MK 449), Justicia sp.	Skin	Skin fungus locally called *caracha*, which produces itchiness	2
Piarentsishi	Span. hoja del masato, Eng. leaf of the manioc beer	*Justicia* sp.	Symptom, violence	(1) When manioc beer makes one dizzy, when a person is no longer used to drink *masato*—one drinks little and feels drunk; (2) cursing people after drinking *masato*, when one drinks *masato* and goes crazy, wants to fight	5
Pinitsi	Span. hierba curativa, Eng. healing herb (generic name)	*Justicia* sp.	Child fragility, symptoms	(1) *mal aire*; (2) for a child to stop crying; (3) against headache from drinking manioc beer	3

Table 2. (continued)

Ashaninka name	Spanish (Span.) and English (Eng.) translation of Ashaninka name	Botanical taxon/No. of collection	Category of use	Use	No. of gardens
Pochokiroshi	Span. hoja del sueño, Eng. leaf of being asleep	*Justicia pectoralis* Jacq. (MK557), *Justicia* sp.	Child rearing, symptoms	Used for the child to fall asleep easily so that the mother can work quietly, the child is bathed in the infusion from leaves in warm water	3
Sabirishi	Span. hoja del machete, Eng. leaf of the machete	*Justicia* sp.	Cut	For machete or ax cutting—a crushed leaf is placed on the wound to heal it	7
Samamposhi	Span. hoja de ceniza, Eng. leaf of ash	*Justicia* sp.	Hunting	"When the husband brings the meat from the forest, sometimes during the preparation, the meat overflows in the ashes. With this, the man will no longer have any luck in hunting," It is used to bring back luck during hunting	2
Samanishi	Span. hoja de majáz, Eng. hoja de *Agouti paca*	*Justicia* sp.	Hunting	To be able to hunt *Agouti paca* with a dog	1
Satanentantsishi, satanentsishi	Span. hoja para cólico con hincazón, Eng. colic with localized sharp pain	*Justicia* sp.	Digestion problem, spirits and devils	This is for women who suffer from colic, abdominal, and body pain, it comes from the devil. Leaf infusion is prepared and drunk	2
Shienkantoshi	Span. hoja de llorar el bebé, Eng. leaf of child's crying	*Justicia polygonoides* Kunth (MK 553), *Justicia* sp.	Child fragility	For the child to stop crying and sleep well	4
Shipokantsishi	Span. hoja de evaporación sanadora, Eng. leaf of the healing evaporation	*Justicia* sp.	Expert medicine	It is used in evaporations, it takes the pain away	1
Shiramparishi	Span. hoja del hombre, Eng. leaf of a man	*Justicia* sp.	Partners' infidelity	It is used when a woman wants her husband or lover to return. Two twigs of this *ibinishi* are placed on the photo of the lover. Together, they are hidden in a book that has not been used. He is bound to return within 15 days	1

Table 2. (continued)

Ashaninka name	Spanish (Span.) and English (Eng.) translation of Ashaninka name	Botanical taxon/No. of collection	Category of use	Use	No. of gardens
Sompotsishi	Span. hoja de la herida con pus (angochupo), Eng. leaf of the wound with pus	*Justicia* sp.	Skin	Used as a compress and to wash wounds with pus	1
Soraroshi	Span. hoja del soldado, Eng. leaf of soldier	*Justicia* sp.	Violence	When a policeman is coming to take the Ashaninka person, this *ibinishi* makes him full. The person needs first to rub the leaves in the hand before shaking it with the policeman. It is also used when a person wants to travel without documents (in Spanish: DNI).	2
Tarontsishi	Span. hoja de la quemadura, Eng. leaf of burning	*Justicia* sp.	Skin	The skin burns, the juice from squeezed leaves is put on the burnt skin	1
Tijantsishi	Span. hoja de tejer, Eng. leaf of weaving	*Justicia* sp.	Craft	To weave, when the woman is beginning to weave *cushma* (tunica dress)—she rubs the leaves in her hands	1
Traposabenki (ibinishi)	Span. hierba de malla de pescar, Eng. herb of the fishing net	*Justicia* sp. (JS151)	Food proscription	(1) When the woman is pregnant, her husband may be unlucky with fishing, so he cures his net by placing the leaves in the net for 3 days without touching it, and then luck returns. (2) Before childbirth, the woman bathes in the leaf decoction so that childbirth is less painful	1
Tsimenkitoshi	Span. hoja de carbón, Eng. leaf of charcoal	*Justicia* sp.	Witchcraft	When a person takes a mini-sauna and among the leaves some parts of a charcoal or smut are found by an expert who performed the evaporation. This is a sign that a person has been bewitched	1

Table 2. (continued)

Ashaninka name	Spanish (Span.) and English (Eng.) translation of Ashaninka name	Botanical taxon/No. of collection	Category of use	Use	No. of gardens
Tsimerishi	Span. hoja del pajarito tsimeri, Eng. leaf of *tsimeri* little bird	*Justicia comata* (L.) Lam (JS 152), *Justicia* sp.	Parent-child relations, hunting	(1) When the baby is born, it is bathed in a decoction of the leaves, so his father can go to the forest to hunt; otherwise, the newborn will cry. When the baby cries, it is because the little *tsimeri* bird captures his spirit and the child follows his voice; (2) when the child cries, when it is still very small, it can be affected (in Spanish: *cutipado*) by what the parents eat; (3) used for hunting little birds. A person chews the leaf and blows in a slingshot and keeps it for 3 days without usage, and then he can go hunting. It is for the arrow too, but not for the shotgun	8
Tsitenirishi	Span. hoja de la noche o lo oscuro, Eng. leaf of the night or darkness	*Justicia* sp.	Spirits, devils	When the mother walks with her baby at night, so that *mal aire* does not reach the baby	1
Tsoraroshi	Span. hoja de no tener miedo, Eng. leaf of fearlessness	*Justicia* sp.	Violence	"leaf of justice" (no further explanations)	1

correspond mostly to *Justicia* species, especially to *J. pectoralis*.

In this overall scheme of over-identification, there are at least two specific *ibinishi* which merge different botanical species under one ethnospecies. *Kamarishi/kamaripinitsi* "leaf or herb of the devil *kamari*"—reported by 15 persons—corresponds to *Justicia pectoralis*, unspecified *Justicia* sp., and *Lepidagathis lanceolata* (Nees) Wassh. It is one of the most frequently cultivated and popular *ibinishi*; therefore, the lumping together may be due to its extensive use. *Oyecharishi* "leaf of the rainbow" amalgamates at least three Acanthaceae species: *Justicia comata* (L.) Lam., *Justicia pectoralis*, and *Lepidagathis lanceolata*. *Oyecharishi* was cultivated by four people, and the causality behind using the plant bears great consensus among them. "*Oyecharishi* is used when a rainbow hits the child – when the mother takes her baby to the river shore, there are plenty of rainbows there; as the baby has this strong smell, the rainbow can easily hit them" (Span. *chocar*). *Oyechari* is a kind of bog, or at least this is a birth place of the rainbow, and according to the Ashaninka, it may affect the child (Span. *cutipar*) most often producing diarrhea. *Oyechari* may also produce a skin burning in adults, but for this event, *oyecharibenki* is used (*Cyperus* sp.). The symptom-related use of *oyecharishi*, the child's diarrhea, may be the reason for grouping several species under one ethnospecies.

All the specific names within the *ibinishi* ethnotaxon are descriptive secondary lexemes composed of a productive constituent and the suffix *shi*, which comes from the world *oshi*—"a leaf." Apart from *ibenki* and *ibinishi*, another important group of plants distinguished by the Ashaninka is *inchatoshi* which can be translated as "forest trees." The names of many forest plants have the suffix *shi* as well. In other words, the suffix *shi* is shared between *ibinishi* and many forest plants. The *ibinishi* ethnotaxon includes *pinitsi*, which is a primary lexeme and which performs as a suffix of secondary lexemes, e.g., *kamaripinitsi* "herb of the devil" and *otsitipini* "herb of a dog." The exceptions to this rule of producing secondary lexemes of *ibinishi* are *ibinishitesamani* "*pusanga* for a white-lipped peccary" and *ibinishiteshintori* "*pusanga* for collared peccary." The first part of this lexeme is *ibinishi* which was translated by an Ashaninka interlocutor as "pusanga," and the second part corresponds to a specific animal. *Pusanga* is an object, often a plant or an animal part used in love lore. When we asked the Ashaninka whether the word "ibinishi" could be translated as "pusanga" in general, they disagreed with this suggestion.

The analysis of semantically productive constituents in the secondary lexemes shows that specific names evoke non-humans such as animals, including insects, such as ants and bees; then fish, birds, and mammals; spirits and spirits of dead people; natural phenomena; stars; and minerals. Another group of semantically productive constituents are health problems and symptoms: vomiting, headache, colic, pain, and some specific states (sadness, crying), body parts, and body flux. Another group forms semantic constituents which indicate various activities, e.g., witchcraft. Other names directly point to various tools, such as a fishing net or machete. Finally, there are names evoking the staple food—manioc—and the culturally most important beverage, *piarentsi* "manioc beer" (all Ashaninka names translated to Spanish and English are found in Table 2).

Cultivated Acanthaceae Species in Ashaninka Home Gardens

The *ibinishi* are perennial herbs and subshrubs of 15–30 cm in height, and they are distinguished by the Ashaninka by their life habit—they expand horizontally, forming a carpet-like formation separated one from the other (in gardens where several *ibinishi* are planted) and from other plants through careful weeding and occasional pruning (Fig. 3). We did not observe, however, other practices, such as soil improvement or parasite removal. Ashaninka people do not collect the seeds of these plants. They exclusively propagate them in a vegetative way. Whenever they move their households, they transplant *ibinishi* by dividing them. The same practice is followed when they share their *ibinishi* with their kinsfolk or other people.

In Table 3, we included the species from the Acanthaceae family collected during research: not only cultivated *ibinishi* but also species transplanted to home gardens from the forest, and wild-growing plants which were collected in the forest but not considered *ibinishi* by the

Fig. 3. Examples of *ibinishi* growing in Ashaninka home gardens along the Tambo River: **A** *Satanentsishi*—"leaf of colic with localized sharp pain," *Justicia* sp.; **B** *Erishi*—"leaf of the bee *eri* (*Trigona* spp.)," *Justicia pectoralis*; **C** Collecting *tsimerishi*—"leaf of a small bird *tsimeri*," *Justicia comata*; **D** *Kanekishi*—"leaf of the ant *kaneki*," *Justicia polygonoides*

Ashaninka. In this table, we indicate the management practices performed by Ashaninka people and collate these practices with the known status of domestication of these species from the literature (Bautista et al. 2012; Parra Rondinel 2014).

The main difference between the Ashaninka practice and the literature is contemplated in *Justicia polygonoides* Kunth and *Ruellia menthoides* (Nees) Hiern which are considered wild species in the literature (Bautista et al. 2012; Parra Rondinel 2014), but which Ashaninka people cultivate and propagate in a vegetative way like all other *ibinishi*. Thus, their populations in the Tambo River valleys are most probably incipiently domesticated. On the other hand, *Aphelandra aurantiaca* (Scheidw.) Lindl. is considered incipiently domesticated in the literature, but in the Tambo River valley it is collected from the wild. The genus *Justicia* seems very important for the Ashaninka. We found the populations of *Justicia comata*, *Justicia pectoralis*, and *Justicia polygonoides* exclusively cultivated. From what we could observe, *Justicia pectoralis* possesses great morphological variance. Other *Justicia* species, such as *Justicia appendiculata* (Ruiz & Pav.) Vahl, *Justicia pilosa* (Ruiz ex Nees) Lindau, *Justicia poeppigiana* (Nees) Lindau, and *Justicia rauhii* Wassh., were collected in the forest by the Ashaninka.

The Mythical Origin of Ibinishi

The mythical origin of *ibinishi* is uncertain; they appear in the myths of the origin of *piri-piri* in general, but there are no specific myths that would only apply to them without amalgamating their origin with that of *ibenki*.

In 2022, we recorded the following story about the origin of *ibenki* and *ibinishi*:

In earlier times, a person (Ashaninka person) deceived a condor by pretending to be dead. The person was so intelligent that he spread his *cushma* (a tunica dress) allover with young shoots of the *setico* tree (*Cecropia* spp.) which

Table 3. Acanthaceae species* cultivated and collected by the Ashaninka people from the Tambo River valley and their status of domestication**

Botanical species	Ashaninka name(s)	Ashaninka form of obtaining and propagation	Status of domestication		
			Wild	Evolution in perturbated sites	Incipient domestication
Aphelandra aurantiaca (Scheidw.) Lindl.	Tsorishi, tarontsishi	Collected from the wild			x
Justicia appendiculata (Ruiz & Pav.) Vahl	Tronkirabanti, katsinarentsishi	Collected from the wild	x		
Justicia comata (L.) Lam.	Oyecharishi, tsimerishi	Cultivated in home garden (*ibinishi*)			x
Justicia pectoralis Jacq.	Aronishi, neamanpiantsishi, oyecharishi, erishi, emokishi, kanirishi	Cultivated in home garden (*ibinishi*)			x
Justicia pilosa (Ruiz ex Nees) Lindau	Choritoshi	Collected from the wild	x		
Justicia poeppigiana (Nees) Lindau	No name reported	Collected from the wild		x	
Justicia polygonoides Kunth	Karentsashi, atsarentsishi, shienkantoshi, kanekishi	Cultivated in home garden (*ibinishi*)	x		
Justicia rauhii Wassh.	Aimentantsishi	Collected from the wild	x endemic to Peru		
Lepidagathis lanceolata (Nees) Wassh.	Oyecharishi	Cultivated in home garden (*ibinishi*)			x
Pachystachys coccinea (Aubl.) Nees	Onkirishi	Collected from the wild		x	
Pachystachys badiospica Wassh.	Tonkitsipini	Collected from the wild	x endemic to Peru		
Pseuderanthemum lanceolatum (Ruiz & Pav.) Wassh.	Tsitenirishi	Collected from the wild		x	
Ruellia brevifolia (Pohl) C. Ezcurra	Tsatanekishikamari	Collected from the wild	x	x	
Ruellia caroliniensis (J.F.Gmel.) Steud.	Eritokishi	Transplant from the forest to home garden			x
Ruellia menthoides (Nees) Hiern	Ibinishiteshintori, ibinishitemaniro	Cultivated in home garden (*ibinishi*)	x		
Sanchezia ovata Ruiz & Pav.	No name reported	Collected from the wild	x endemic to Peru		

Table 3. (continued)

Botanical species	Ashaninka name(s)	Ashaninka form of obtaining and propagation	Status of domestication		
			Wild	Evolution in perturbated sites	Incipient domestication
Sanchezia oblonga Ruiz & Pav.	Tsorishi, kaninashiro	Collected from the wild, transplant from the forest to home garden			x

*This list was composed based on collected and identified specimens during this research. Taxa identified to genus or family level were not included in this list. **The findings were compared to Bautista et al. 2012 and Parra Rondinel 2014

contain phlegm. He kept this *cushma* for one week in a cave, for it to gain the odor of the dead. The person who had this *cushma* wore it and laid down on the beach. Soon a *gallinazo* (*Coragyps atratus*) and the condor arrived to devour the rotten meat. The person had put his face and his limbs inside the *cushma*. The condor very much liked to eat eyes. So, they were discussing with the *gallinazo* who would eat which part and who would eat the eyes while they were coming closer to what looked like a rotten human body. When they finally reached the man, he jumped and said "Why do you want to eat me? I am not dead". So, the condor responded "Why are you playing games with me? What do you want from me?". And this is when the person asked for *ibenki* and *ibinishi*. And in that moment different varieties of *ibenki* and *ibinishi* appeared in the world: *masontobenki*, *menkoribenki*, *makarobenki*. These first *piri-piri* were for the war. And also *kaniribenki* and *kanirishi* – to burn *chacra* (agricultural field), they have small *pepa* (rhizome in botanical terms).

Some interlocutors explained to us that the story of the origin of *ibenki* (*Cyperus* spp.) could be applied to *ibinishi*. In that myth, it was a *sankori* ant (cf. leaf cutter ant, *Atta* spp.) who gave an Ashaninka man his first *ibenki* to help him weed his agricultural field faster (see the full length version in Kujawska et al. 2020).

The mentioned stories suggest the importance of *ibinishi* in the realm of agriculture and war. We recorded just one *ibinishi* being used in agriculture nowadays, namely *kanirishi* "leaf of cassava" used to enhance the growth of manioc (Span. *para que engorde la yuca*). More specifically *ibinishi* was recorded for war and conflict—*masontoshi* "leaf of a calm person" to intimidate an enemy or *tsoraroshi* "leaf of fearlessness" and *soraroshi* to deal with police, namely to fool the police when they intervene (Table 2).

According to the Ashaninka people, *ibinishi* are as old as *ibenki*. Ashaninka people believe that not only they have *piri-piri* (cultivated plants with special powers), but every kind of animal has their own *piri-piri*, because, they explain, in earlier times, animals were humans. For example, the *gallinazo* cultivates its own *piri-piri*. When part of his *ibinishi* dies, it is a sign to him that someone has died, and he starts searching for a dead body.

Consensus on Name, Uses, and the Distribution of Ibinishi

Given the huge diversity of ethnospecies of *ibinishi* ($N = 66$), we asked a question: what potential do names of specific *ibinishi* have for transmission in the cultural sphere? One way of answering this question is through the analysis of consensus between names and uses and, further on, the distribution of these plants and corresponding names across Ashaninka communities ("overall community consensus on use").

According to the consensus analysis carried out on the subgroup of 17 ethnospecies (each with ≥ 3 mentions), the average consensus on use was high (0.87). The names have high communicative value, and Ashaninka

people understand and share the uses which stand behind those names. Eight out of the 17 ethnospecies had a maximum consensus on use equal to 1: *charabashi* "leaf of the zungaro fish," *inchashishi* "leaf of harm/sorcery," *irajantsishi* "leaf of the blood," *manijishi* "leaf of the bullet ant," *otsitipini/otsitishi* "leaf or herb of dog," *pochokiroshi* "leaf of being asleep," *sabirishi* "leaf of the machete," and *shienkantoshi* "leaf of the child's crying." This means that each of these ethnospecies had the same use among people that have named this ethnospecies (Fig. 4).

The average consensus on use decreases considerably when incorporating the spatial correction factor, and the overall community consensus on use drops markedly to 0.29 (Fig. 4). The ethnospecies with the highest overall community consensus on use were *kamarishi* "leaf of the devil" (0.67) followed by *sabirishi* "leaf of the machete" (0.58), followed by *katitorishi* "leaf of *katitori* termite" (0.5) and *tsimerishi* "leaf of the small bird *tsimeri*" (0.5). It means that their names and uses are shared across the communities.

These results can be better understood when we take also into account: (a) the circulation of *ibinishi* between people (along kinship or non-kinship lines) and (b) the places of obtaining of the propagules of *ibinishi* (from the same versus from another community). *Ibinishi* are mostly exchanged between families (37.2%). This score is slightly higher than the sum of all other forms of circulation of *ibinishi* between affines, non-family members (such as comrades, friends), and purchases which reaches 34.3%. We do not have information on 28% of the exemplars (Table 4). These plants predominantly circulate within single community (44.6%) and to a lesser extent are brought from other communities (26.5%).

Women ($N = 52$) reported between 1 and 11 (mean 2.7), and men ($N = 15$) reported between 1 and 6 (mean 2) *ibinishi* in their home gardens. Women cultivate these plants for a wide array of uses for themselves, their children, household protection, etc., while men tend to have specified *ibinishi* for a limited number of uses, for example, ensuring good hunting and fishing and enhancing hunting skills in their dog.

Ibinishi—Their Use and Agency

We arranged the recorded uses into 19 categories which were etic but which followed the logic of our interlocutors. There are misfortunes and illnesses for which the Ashaninka clearly identify their cause or even describe a given problem from the causal perspective. These cause-driven health conditions treated with the help of *ibinishi* are found mainly in the categories of food proscriptions, spirits and devils, witchcraft, and parent-child relations (Fig. 5). In total, we counted 34 descriptions of the use of *ibinishi* from the perspective of the cause of the illness, a disruption of norms or disharmony.

Food proscriptions refer to the breaking of food taboos. It may happen when a menstruating wife or a daughter eats fish or meat brought by her husband or father or another male from the family. As a consequence, the man loses his luck in hunting or fishing. Other food proscriptions refer to the breaking of food taboos by a pregnant woman, who instead of eating safe food in the pregnancy, such as manioc, plantains, and certain kinds of fish, eats fruits, palm weevil *emoki* (Span. *suri*), or some other kinds of fish and game, which may affect her (Span. *cutipar*) and cause the childbirth to be painful and slow.

The concept of *cutipar* basically refers to a form of contagion from an animal, a plant, a rainbow, etc. to humans. To affect people (Span. *cutipar*) is in the nature of a given non-human being. *Ibinishi* are also used to counteract an act of sorcery—an intentional malevolent action by other humans or non-human animals, which produces harm, illness, or misfortune. *Ibinishi* used to counteract the sorcery were divided into two categories: witchcraft and spirits and devils. For example, ants and one particular stingless bee *eri* (*Trigona* spp.) are considered *matsi* (Span. *brujo*)—sorcerers—and they take the food remains (including milk vomited by babies and chewed and spat-out coca leaves) left by humans to their nests, and they use them to produce an illness which is then transmitted to humans. The remedy is a specific *ibinishi* whose name contains the designation of an ant or a bee sorcerer. Additionally, a nest should be localized and burned. The Ashaninka recognize a great number of malevolent ants, and there are specific *ibinishi* to counteract their actions *manijishi* "leaf of the bullet ant," *kanekishi* "leaf of ant *kaneki*," and *katitorishi* "leaf of *katitori* termite." The harm of the bee *eri* manifests in dizziness,

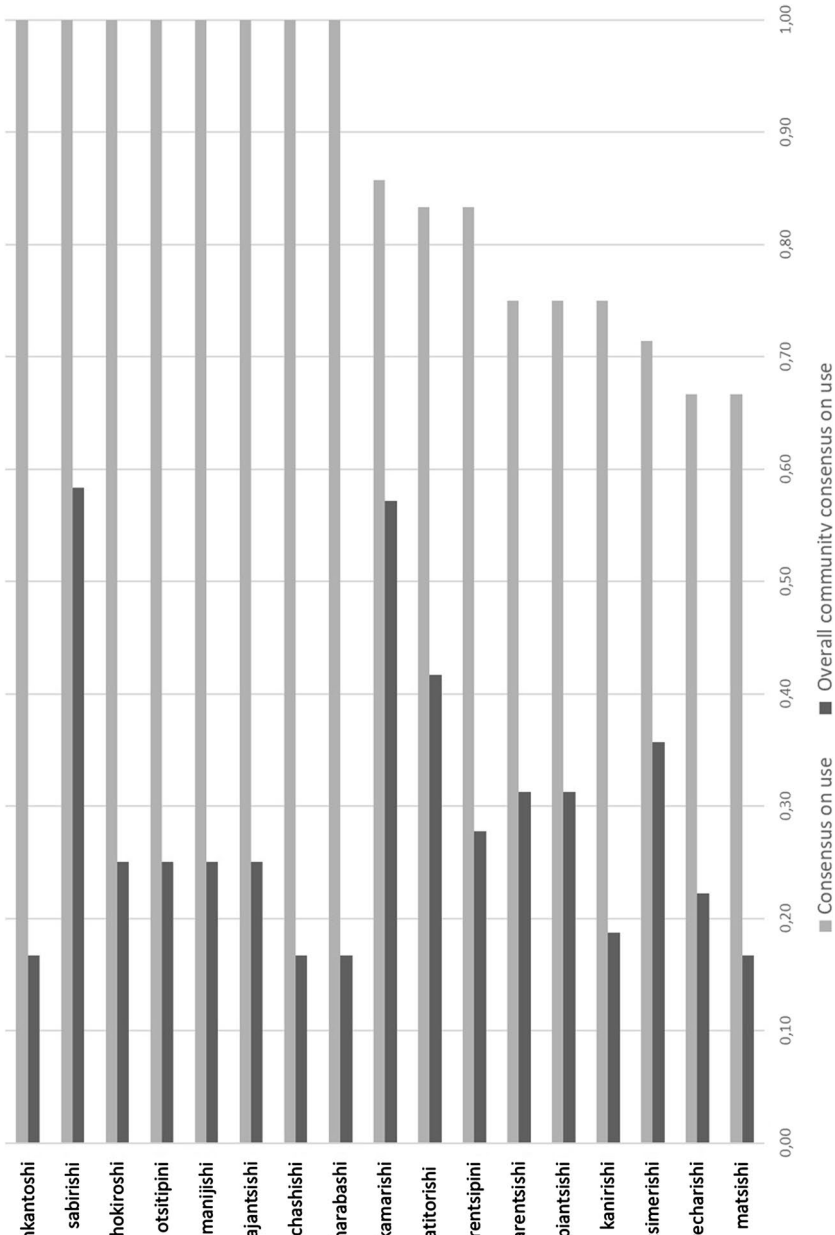

Fig. 4. Consensus on use and the overall community consensus on use

Table 4. Circulation of *ibinishi* among people and places in Ashaninka communities of the Tambo River valley

		Ibinishi	
		Number of mentions	%
Kinship lines	Kin	66	37
	Affines*	30	17
	Non-related people	27	15
	Purchased	4	2
	N/d	50	28
	Total	177	100
Source	The same community	79	45
	Different Community	47	27
	N/d	51	29
	Total	177	100

Legend: *affines are those persons who are related by marriage (wife and husband, parents-in-law, brothers and sisters-in-law), contrary to kin who are related through blood ties

especially after drinking a manioc beer. The dizziness and the headache are treated with *erishi* (the juice from crushed leaves is poured into the eyes). According to Ashaninka myths and stories, Eri—the sister of Abireri—the Ashaninka mythical cultural hero and trickster, was the one who gave manioc beer (Ash. *piarentsi*) to the Ashaninka people (Sosnowska and Kujawska 2014).

Another category, which encapsulates more causes than symptoms, is the parent-child relation, especially when the father of a small child goes to the forest to hunt. The spirit of a small child accompanies him, and the child's spirit may be captured by birds such as *tsimeri* or *aroni*. The latter is described as "the same as a devil." As a consequence, the child follows and imitates the voice of the bird, cannot sleep at night, and cries a lot. For this purpose, *aronishi* or *tsimerishi* is used. A small child may be also affected by the diet of their parents.

Ibinishi are involved in many actions which are not confined to medicine but which have consequences in health and well-being. The action of *ibinishi* is directly related to their perceived agency. The action of *ibinishi* is manifested, for

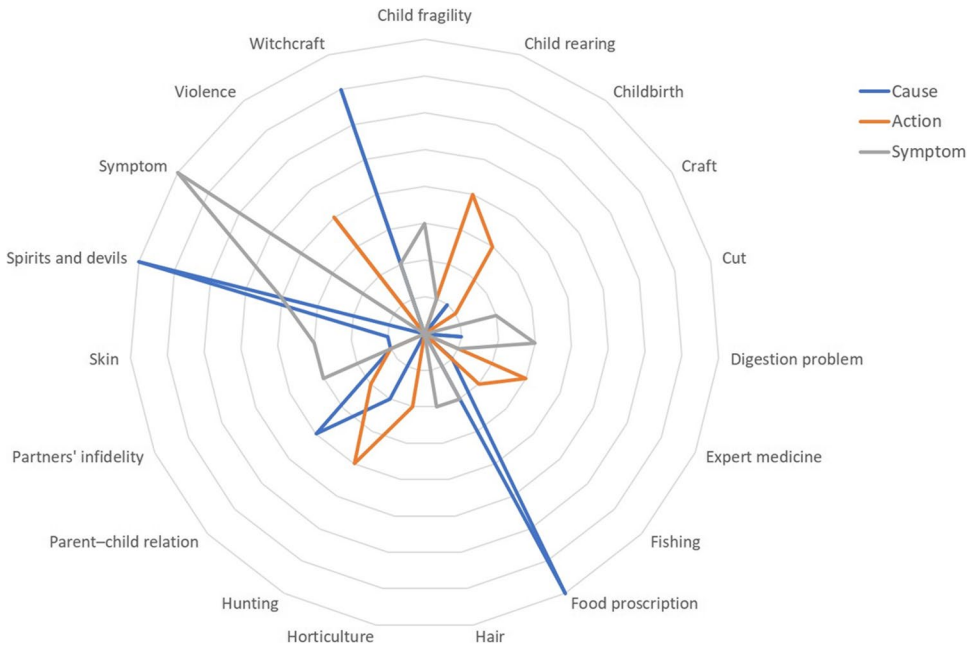

Fig. 5. Categories of the use of *ibinishi* with an emphasis on causes, actions, and symptoms, through which illnesses and other problems are described in a given category of use

example, in hunting, where certain *ibinishi* are used as *pusangas* for animals or to obtain certain qualities in hunting dogs, etc. *Pusangas*, however, are used most often in love lore—to attract a person and make them fall in love with a person who acts through the *pusanga*. But in a hunting context, it is also used to attract animals (or the mother of a certain species/class of animals). *Ibinishi* are also involved in actions related to child rearing; in this case, these plants are used to develop certain qualities in children, such as walking, or talking, or to counteract bad habits such as eating earth/soil when they are toddlers. Another category in which the action of *ibinishi* is manifested is what we have called "violence." It may be violence related to warfare or household violence provoked by a drunk family member. There is one special *ibinishi* called *soraroshi*, used when the police are coming to take an Ashaninka person; this plant causes the police to be fooled. The Ashaninka person needs first to rub the leaves of *soraroshi* in the hand before shaking it with the policeman's. Other categories in which a desired action of *ibinishi* is expected are childbirth, expert medicine, fishing, and horticulture. Altogether, we counted 26 descriptions of *ibinishi* from the perspective of actions they are involved in.

Ibinishi are also used to counteract mere symptoms, such as digestive problems, skin fungus, fever, and headache, which are not directly related to culturally defined etiologies or for which the Ashaninka say that they do not stem from the malevolent action of other people or non-humans (they are natural). These ailments were placed in the digestive problems and symptom categories. But the Ashaninka sometimes describe health or other problems via symptoms, not the causes, but which have explanation in their etiological system and cosmological order. For example, "when the visions are advanced and one is about to die, the juice of the leaf is placed in the eye of that person" for which purpose *neaasamanpentsishi* "leaf of visions" is used. Thanks to other interlocutors' explanations we know that these states are never "natural" but provoked by a devil or a spirit of a dead person who presents themselves in the forest in the disguise of an attractive lover-to-become or an alive family member. In the category of "child fragility," all the descriptions refer to a symptom—a child's crying—but from numerous conversations and the description of uses of other plants we learn that the child crying often has its cause in the breaking of taboos by parents or *mal aire* and the capture of the child's spirit by animals, etc. In total, we recorded 34 descriptions of illnesses and other problems expressed through symptoms, which is exactly the same number as in the case of causal explanations.

Modes of Preparation and Administration

In the case of *ibinishi*, it is always leaves which are used, and the most common form of preparation and intake is by squeezing fresh leaves and inducing the release of juice, which is applied directly into the eyes. Hence *ibinishi* are defined by topical ocular juice administration. Occasionally, baths are prepared too.

Probably due to the specificity of the application of leaf juice as a drug delivery, it is mainly *ibinishi*, compared to other cultivated home garden plants, that are used to counteract the effect of encounters with malevolent spirits, devils, and spirits of dead people in the forest. In such circumstances, an appropriate medicine is one which can be applied to the eye of an affected person. We also collected information about forest plants (Ash. *inchatoshi*) administered in the same way, used to "bring back the mental equilibrium" after encounters with spirits.

Discussion

Ibinishi Among Arawakan Indigenous Groups

In the ethnography on the Ashaninka cosmology, Weiss mentioned *pinitsi*, identified as *Justicia pectoralis* (Weiss 1975: 538). In the 1960s, Weiss came across circa 17 "varieties" (ethnospecies) of *pinitsi* cultivated in home gardens among the ribereño Campa people (a denomination for the Ashaninka, Asheninka altogether) who lived along the Ene, Tambo, and Perené Rivers. He also counted 70 "varieties" of *ivenki* (*Cyperus* spp.), but the author did not write down their names. Rojaz Zolezzi (2014) reported *ivenki* (*Cyperus* spp.) and *pinitsi* (*Justicia pectoralis)* as two classes of cultivated plants with ritual uses among the Ashaninka from the same region. Vilchez-Gamarra (2017)

found *pinitsi* (*Justicia* sp.) commonly cultivated in Ashaninka gardens and used against headache and *mal aire* in three communities in Perené and Pichanaki district, in the same region of *Selva Central*. To the best of our knowledge, these are the only other works, apart from ours, that refer to the cultivation and use of *Justicia* species among the Ashaninka. We are unaware of the origin of the name *ibinishi*, which seems to have existed side by side with *pinitsi* and which is currently more in use than *pinitsi* by the Ashaninka of the Tambo River valley.

Luziatelli et al. (2010) mentioned botanically unidentified *pinitsi* among the Ashaninka from the Perené—one of the tributaries of the Tambo River. According to these authors, *pinitsi*—small herbaceous plants—were cultivated in gardens in secret, and their specific names were secret too; therefore, it was impossible for the researchers to collect any specimens. Other information provided was that they were used to protect against the action of malevolent shamans and spirits (Luziatelli et al. 2010). In their conclusions, these authors wrote that "two particular categories of plants called *pinitsi* and *ivenki* (*Cyperus* spp.) had an important cultural value, often for magic-protective use in the household" (Luziatelli et al. 2010: 20). The picture that arises from our and other studies is that there are two major groups of cultivated plants which play important role in maintaining good health and social relations of the Ashaninka people. The ethnobotanical studies from other Arawakan groups include the information exclusively about cultivated *Cyperus* spp. (Revilla-Minaya 2019; Santos-Granero 2012; Shepard 1998; Valadeau et al. 2010).

Ibinishi as "Companions" of Ibenki

Ibenki and *ibinishi* are the two major groups of plants cultivated in Ashaninka home gardens along the Tambo River valley. There are certain similarities between them, as, for example, in the pattern of constructing secondary lexemes and in the meaning of these binomials. Forty-four percent of names of specific *ibinishi* have their equivalent in *ibenki* names—they have identical semantically productive constituents, with different suffixes which identify these groups in the Ashaninka nomenclature. Some *ibinishi* are *comapañeros* "companions" of a given *ibenki* and aim at strengthening their companion *ibenki*'s action (Kujawska et al. 2020). Although the overall diversity of *ibenki* is higher (86 ethnospecies) than those of *ibinishi* (66), especially considering the fact that they grow practically in the same number of gardens and are cultivated by a similar number of plant owners, the patterns behind the consensus on name and use and the overall community consensus on use are very similar. The circulation of *ibenki* and *ibinishi* relies on the same scheme, although the exchange between communities is slightly higher for *ibenki* than for *ibinishi* (32 % versus 26.5%) (Kujawska et al. 2020).

However, these two groups of plants are distinguished not only due to their different appearances (morphology) by the Ashaninka, but they are also discriminated by plant parts employed in healing and specific forms of administration. While for *ibenki* this is always the rhizome, whose juice is ingested, in the case of *ibinishi*, it is always the leaves that are used, and the squeezed leaf juice is placed in the eyes. We suppose that *ibenki* might have emerged first as a group of cultivated plants with a wide medicinal and more-than-medicinal uses, and *ibinishi* followed their path. We support this claim with the following argumentation: the mythical origin of *ibinishi* is uncertain and always lumped with that of *ibenki*. Second, *Justicia* species documented in this research are most probably only incipiently, not fully domesticated, unlike *Cyperus* spp. (Kujawska et al. 2020). Moreover, the ethnogenus *ibenki* is very "stable"—it has a 1:1 correspondence to the *Cyperus* genus—while the *ibinishi* ethnotaxon is less clear in relation to botanical taxonomy. Third, the diversity of ethnospecies of *ibinishi* is lower than that of *ibenki*, and the diversity of uses is oriented toward specific uses, such as counteracting violence, sorcery, and malevolent actions of spirits and animals, coupled with a greater symptomatic use than *ibenki*. Moreover, we never heard of *ibenki* being a companion of a specific *ibinishi*, but several times we heard that a specific *ibinishi* was a companion of *ibenki*.

Ashaninka Classification of Medicinal Plants

Ashaninka classification of medicinal plants, on the highest level, distinguishes *ibenki* and

ibinishi as cultivated garden plants and *inchatoshi* as wild forest plants. This distinction is based both on the ecology and ontological status of these groups of plants. The ecological discrimination into cultivated or even domesticated and wild plants has its analogy in animal classification. In the Ashaninka cognitive system of animal organization, one of the used classificatory criteria separates domestic from wild animals (Rojas Zolezzi 2003). The clear distinction is made between forest *inchatoshi* and garden *ibenki*—fully domesticated plants endowed with mythical origin, possessing an ontological status and subjectivity of plant-persons, and which are in kin relation to the Ashaninka and equipped with many culture-specific virtues (Kujawska et al. 2020). *Ibinishi* do not have identical ontological status to *ibenki*. Although they create a well-distinguished group of cultivated medicinal plants, *ibinishi* have the same suffix *shi* as wild forest plants. Therefore, we may surmise that *ibinishi* are in the intermediate position between forest and garden plants but currently perceived much closer to *ibenki* than to *inchatoshi*.

The position of a plant for Ashaninka people takes into account multiple criteria. It can also be interpreted that the ontological status acts as a modeler of the social distance between different inhabitants, both human and non-human, in the Ashaninka world (Rojas Zolezzi 2014). This aspect of Amerindian perspectivism has also been documented by other researchers (Rival 2002; Santos-Granero 2012). What is characteristic of the Ashaninka case is this juxtaposition between the ecological and ontological considerations referring to domestic and wild space, plant subjectivity, and their proximity to people.

The second, more perceptual level of classification of medicinal plants relies on perceived visual cues. *Ibenki* and *ibinishi*, lianas (*shibitsa*), trees (*inchato*), and plants from the Araceae family (*kajento*) or Piperaceae family (*ibarantsi*) are differentiated due to perceived visual features which form patterns (our field observations; Luziatelli et al. 2010; Rojas Zolezzi 2014). Even to an untrained eye, *ibinishi* form different formations than other garden plants. However, the suffix *shi*, from *oshi* "leaf," does not necessarily indicate the lifeform—as this suffix is shared by forest trees, shrubs, and herbs.

The Secoya *curaca* once said *Yo probé todas las hojas* "I have tried all kinds of leaves" (Vickers 1976:161), which can be interpreted as "I have tried all the medicines." Following the argumentation of Randall and Hunn (1984), we interpret the *shi* suffix in specific *ibinishi* not as an indicator or a metonymy (a part that stays for the whole) of a specific life form or a morphological criterion that defines this group of plants. As in the case of the Secoya healer, *oshi*/*shi* is present in the names of medicinal plants or medicinal leaves rather than anything else. Or in other words, the suffix *shi* in the plant name indicates which part is used medicinally. Many studies dedicated to medicinal plant use among different Peruvian Amazonia indigenous groups pointed to the predominance of leaves used in the treatment (Luziatelli et al. 2010, Odonne et al. 2013, Valadeau et al. 2010). For the Ashaninka, the forest trees that produce edible fruits have a suffix *ki* "plenty;" therefore, a tree may be called *ompikiriki* or *ompikirishi* depending whether a person refers to its edible fruits or medicinal leaves (our field observations; Rojas Zolezzi 2014).

Finally, on the specific level, it is the use of criterion that predominates in the classification. The nomenclature has a powerful mnemonic function in designating uses or properties to otherwise uniform classes of *ibenki* and *ibinishi*, respectively. Hence, the Ashaninka system of classification takes into account different aspects, i.e., ecology, ontology, visual features, and use. The importance of uses should be acknowledged in this classification, because it is of paramount importance to relate an adequate medicinal plant and its name to a given etiology, health condition, or symptom.

Sociopolitical Implications of the Incipient Domestication of Ibinishi

Ways of grouping and patterns of naming (constructing secondary lexemes) reveal how the Ashaninka deal with intra-ethnogenus diversity. Long processes of *Cyperus* and *Justicia* domestication have blended in the ethnic memory with mythical origins of these species (see Tournon et al. 1998).

We count with just one ethnographic historical source (Weiss 1975) with which we can compare our findings and ponder on the importance of *ibinishi*/*pinitsi* among the Ashaninka.

Based on this comparison, we may claim that the popularity of *ibinishi* is growing among the Ashaninka, while that of *ibenki* remains at the same level.

What is the reason for the increasing number of ethnospecies of *ibinishi* and their presence in Ashaninka home gardens? We surmise that the clue to this phenomenon can be found in recent Ashaninka history, especially that related to the presence of the *Sendero Luminoso* "Shining Path" subversive guerrilla like organization in the late 1980s and the beginning of the 1990s. "10,000 of about 80,000 Ashaninka people were forcibly displaced in the Ene, Tambo, and Perene valleys, at least 6,000 died and almost 5,000 were under Sendero's control. By 1990, at the height of its power in Amazonia, Sendero controlled the entire Ene River and the Tambo River down to Poyeni […] Fourteen out of thirty-five *Communidades Nativas* of the Tambo and all thirty of the Ene disappeared as people escaped or were taken by Sendero into the forest, in many cases voluntarily" (Sarmiento-Barletti 2011:156). The *Comite de Autodefensa*—Ashaninka self-defense militia—managed to rescue nearly 4000 Ashaninka people in the Ene and Tambo River valleys in the following years. These people were taken to *núcleos poblacionales*—kind of settlements that soon became overpopulated (Sarmiento-Barletti 2011). These facts are in line with the Ashaninkas' accounts we heard during fieldwork about the displacement of people, their temporary refuge in the forest, their loss of gardens and *piri-piri*, and confusions in defining who was an ally and who was an enemy in the forest. In recent years, the Ashaninka from the region have been experiencing pressure and violence from cocaine producers and drug traffickers, though decisively to a lesser extent along the Tambo River than the Ene River (Rodrigues Viana 2017). Following the Ashaninka approach to certain plants, especially the domesticated ones, with whom Ashaninka people have kin-like relations and which are considered loyal allies, the agency of *ibinishi* must have increased in these times of social unrest and violence.

Moreover, "[a]ny excess or defect in any activity can lead the person to dangerous situations that can culminate in his transformation, with illness or with death itself" (Fernández 1986: 71). The middle ground and balance reflect the notion of the Ashaninka *kametsa asaike* "good life" (Sarmiento-Barletti 2011). The transformation in this case needs to be understood in the animistic sense—as a gradual change of the body and perspective of one class of being into another. As we maintained in the previous paper, the life of the Ashaninka is above all relational and processual (Kujawska et al. 2020). Hence, *ibinishi* seem to grow in importance as the Ashaninka's allies, because *ibenki* seem not to be sufficient in situations of excess (of violence from people and spirits), confusion (when an enemy is in disguise), and scarcity (of meat and fish in overpopulated villages).

Another possible conjecture is that of a loss and return of the *ibinishi* in the life of the Ashaninka due to unidentified causes. The literature has reported such processes in certain cultivars as seen through genetic analysis, which indicate processes of selection and de-selection over time (Chiou et al. 2014; Scaldaferro et al. 2018). However, descriptions of forms of propagations, patterns of circulations of *ibinishi*, and their uses and position in the classification suggest an ongoing process of domestication of populations of certain Acanthaceae species among the Ashaninka. An exact estimation of the stage of domestication of these populations was beyond the scope of this research. Here, we should underline that the notion of domestication is a Western construct which we may observe among the Ashaninka using etic lenses but which is experienced along their own modes of engagement with plants and the world. These processes of domestication may be enhanced by current needs or more enrooted behavior, as the Ashaninka people have practiced agriculture for centuries (Heckenberger 2005) and the domesticated plants have mythical origin and the special status of plant-persons and kin. So, we surmise that the Ashaninka people practice their engagement with the world through plant cultivation and active participation in what we call plant domestication.

Ethnopharmacology of Ibinishi

The phytochemicals found in specific *Justicia*, *Lepidagathis*, and *Ruellia* species cannot be solely responsible for the numerous properties ascribed to these species by the Ashaninka.

Numerous reports about the use of dried leaves of *J. pectoralis* as an hallucinogenic snuff applied on its own or as an admixture to *Virola* snuff raised interest in the chemical compounds of this species. An apparent discovery of small amounts of alkaloids tryptamines in *J. pectoralis* reported by Schultes (1990) was not confirmed by further phytochemical studies (Roersch 2018). *Justicia pectoralis* contains betaine and coumarins. The ocular administration of leaf extract may produce smooth muscle relaxation lowering heart rate and blood pressure. At high doses, such as those when directly put into the eyes, coumarins may produce a sedative and even hypnotic effect (Macrae and Towers 1984). High levels of betaines have been also found in different *Ruellia* species (Fischer et al. 1988). Clinical studies showed anti-inflammatory and antimicrobial properties of betaine and its derivatives in humans (Zeisel et al. 2008). However, only a limited number of *Ruellia* species have been chemically and biologically studied so far (Sanz-Biset and Cañigueral 2011).

Most probably, the Ashaninka used *ibinishi* first to counteract the stress and restlessness produced by visions in the forest or during warfare, but due to their effectiveness in this regard, this group of plants was endowed with other properties and thus their agency expanded. However, to fully understand the agency of *ibinishi* from both ethnopharmacological and sociocultural perspectives and plant ecology, other studies directly dedicated to the cultivation, propagation, and processes of domestication should contribute to the understanding of the position of cultivated Acanthaceae species in indigenous Amazonia.

Conclusions

This article is the first comprehensive analysis of the importance and meaning of *ibinishi/pinitsi* in the life of the Ashaninka of the Tambo River valley, particularly in their medicine, cosmology, classification, and agricultural practice today. This is also the first systematic analysis of the cultivated species from the Acanthaceae family among one Indigenous Amazonian group.

Based on our research, we suggest that *ibinishi* are perceived by the Ashaninka as subjects that (co)produce the social world and have been subjected to domestication processes. Moreover, *ibinishi* seem to respond to new and changing scenarios, thus being part of silent strategies of resistance and cultural resilience. Our findings lay the groundwork for further analysis and interpretations related to the relationships between Ashaninka people and plants, or wider still, Indigenous Amazonian people and plants.

We used a theoretical-methodological approach called the more-than-utility approach, to address the research problem in a holistic way. In this approach, we used the combination of perspectives from ethnobotany, anthropology, ecology, phytochemistry, and cognitive-based science. The engagement with these particular branches of science was due to our aims, research questions, and Ashaninka forms of worlding. By choosing this particular theoretical-methodological path, we also wanted to get as close as possible to Ashaninka knowledge, practices, and cosmology related to these Acanthaceae plants.

A future complementary contribution to this study would be one that fully addresses the domestication processes of Acanthaceae species by contextualizing the asexual reproduction of the *ibinishi* by the Ashaninka adopted for their biological and cultural conservation.

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Data Availability All medicinal plants of each home garden were documented in photos and field note and they can be verified in the affiliation site of the first author.

Declarations

Ethics Approval and Consent to Participate We followed all ISE Code of Ethics Guidelines. The necessary permissions were obtained from the Ministry of Agriculture in Peru (permission number in the Acknowledgements section) and from the Ashaninka Authorities from the Tambo River (CART). Moreover, in every community, we planned to do fieldwork; first we reached the authorities and asked for organizing the meeting with the community members. The prior informed consents were obtained in each community from the authorities and from every adult Ashaninka person who volunteered to participate in the study.

Competing Interest The authors declare that they do not have competing interests.

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