



# Beyond Animal Husbandry: The Role of Herders Among the Wayuu of Colombia

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## Abstract

The territory of the Wayuu indigenous people comprises a small, low mountain range surrounded by a large desert that extends from Colombia to Venezuela in the Guajira peninsula. In pre-Columbian times, Wayuu livelihoods relied mainly on fishing and hunting in the littoral zone. Following the Spanish conquest, in their fight to maintain their territorial integrity they turned to rearing cattle, goats, and sheep they captured from colonists. They maintained their struggle against colonisation post-independence. In Colombia they have only recently obtained political devolution through legal recognition of their indigenous territories. Their economy now relies on animal husbandry to combat food insecurity. Our ethnographic study of Wayuu pastoralism confirmed our hypothesis that rearing goats and sheep has become integral to maintaining their cultural traditions, and revealed that the role of both male and female herders has become instrumental in their rituals, and integral to maintaining their longstanding patterns of reciprocity.

**Keywords** Wayuu · Non-human · Animal husbandry · Pastoralism · Transhumance · Transtermitance / transterminance · Reciprocity · Political devolution · Climate change · Guajira peninsular · Colombia · Venezuela

## Introduction

The ancestral territory of the Wayuu indigenous people is on the Caribbean Guajira peninsula covering an area extending across the northern Colombian Department of Guajira and the north-eastern Zulia State of Venezuela. We developed the study presented here with Wayuu pastoral communities on the Colombian side of the peninsula. The Wayuu are a matrilineal and uxori-local clan-based society and both men and women have important roles in herding activities on which their livelihoods depend.

## Studying Wayuu Pastoralism

The practice of migrating livestock seasonally between seasonal grazing grounds is known as transhumant or (semi) nomadic pastoralism. The sustainability of transhumant

pastoralism depends on knowledge, skills, and strategies to integrate herd management into functioning of socioecological systems. Pastoral practices that involve movement of herds need to accommodate climate variability and availability of fodder. These systems are distinctively adapted to local environmental contexts and conditions (Kakinuma et al., 2019), all of which makes them particularly susceptible to global climate change.

There has been no research to date on indigenous pastoralism practices in Colombia. During the twentieth century, farming industries and research institutions were managed according to the green revolution innovation model, which is supply driven and encourages a division of labour between scientists and agricultural experts and the farming sector, mediated by technology advisers and rural extension personnel such that improvements of agrifood systems were reached through technological innovation alone, ignoring both traditional knowledge and environmental suitability. As a result, there has been increased agroecosystem destruction with the subsequent collapse of ecosystem services required for traditional farming. This in turn has facilitated land concentration or land grabs, further intensifying the vulnerability of marginalised peoples, adding to increased malnutrition, gender inequalities, socioeconomic injustice, and reduced capacity to withstand global pandemics

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(Hidalgo, 2020; Wallace et al., 2020). Technological fixes to solve the unsuitability of current agrifood systems have promoted the industrialisation of agriculture through the use of capital-intensive equipment and chemical-intensive inputs whilst ignoring traditional knowledge and practices, making it harder to implement alternative agroecological models (Levidow et al., 2021).

In Colombia, policy for development of innovation in the agricultural sector has only recently considered an alternative to the green revolution model, ordering the creation of territorial innovation systems (TIS) (SNIA, 2017). TIS are spaces for coordinating actions towards innovation routes for the agricultural sector. Through TIS consensus must be reached among civil servants, private industry, research and education institutions, local populations, and other stakeholders in territorial development.

Reform in 2017 was expected to lead to renewed interest in traditional pastoralism. However, the only published research specifically related to Wayuu pastoralism we found was that of Gonzales Bermudez (2017). There is interest in investigating whether regenerative farming may contribute to adaptation to global climate change (see Altieri, 2004; Miller-Klugesherz, 2022). We hope that our ethnographic study of Wayuu pastoralism provides a basis to advance discussions on the prospect of Wayuu transitioning to regenerative pastoralism.

Given the history of government intervention in the livelihoods of peasants and indigenous peoples in Colombia, the Wayuu remain sceptical that government interest in pastoralism is genuine and well intentioned. The FAO has identified similar scepticism from indigenous peoples across Latin America and argues that weak self-identification of pastoralists is due to propaganda disseminating a negative perception of pastoralism, and to conflicts between indigenous and *criollo* pastoralists (FAO, 2021).

## Study Area

The Guajira peninsula covers 9,700 square miles from Caribbean Sea in the northwest to the Gulf of Venezuela in the Southeast and borders the Sierra Nevada of Santa Marta and Sierra de Perijá in the south. For administrative purposes and to highlight the biogeographical differences, the Department of Guajira is divided into upper, middle, and lower Guajira (Observatorio del Caribe Colombiano, 2020). About two thirds of the Colombian peninsula has been legally recognised as indigenous territory in the form of “*resguardos*,” indigenous landholdings, which grant a degree of political devolution to indigenous peoples. The largest Wayuu *resguardo* (1,067,505 ha), the Great Resguardo Wayúu is located in the middle and upper Guajira (Ministerio de Cultura, Republica de Colombia, 2010). There are eight

smaller *resguardos* in lower Guajira. Outside *resguardos*, Wayuu move with their herds through several municipalities. We conducted our research in the Guajira department of Colombia exclusively, including Maicao, Uribia, Manaure, Dibulla, Albania, and Riohacha municipalities (Fig. 1).

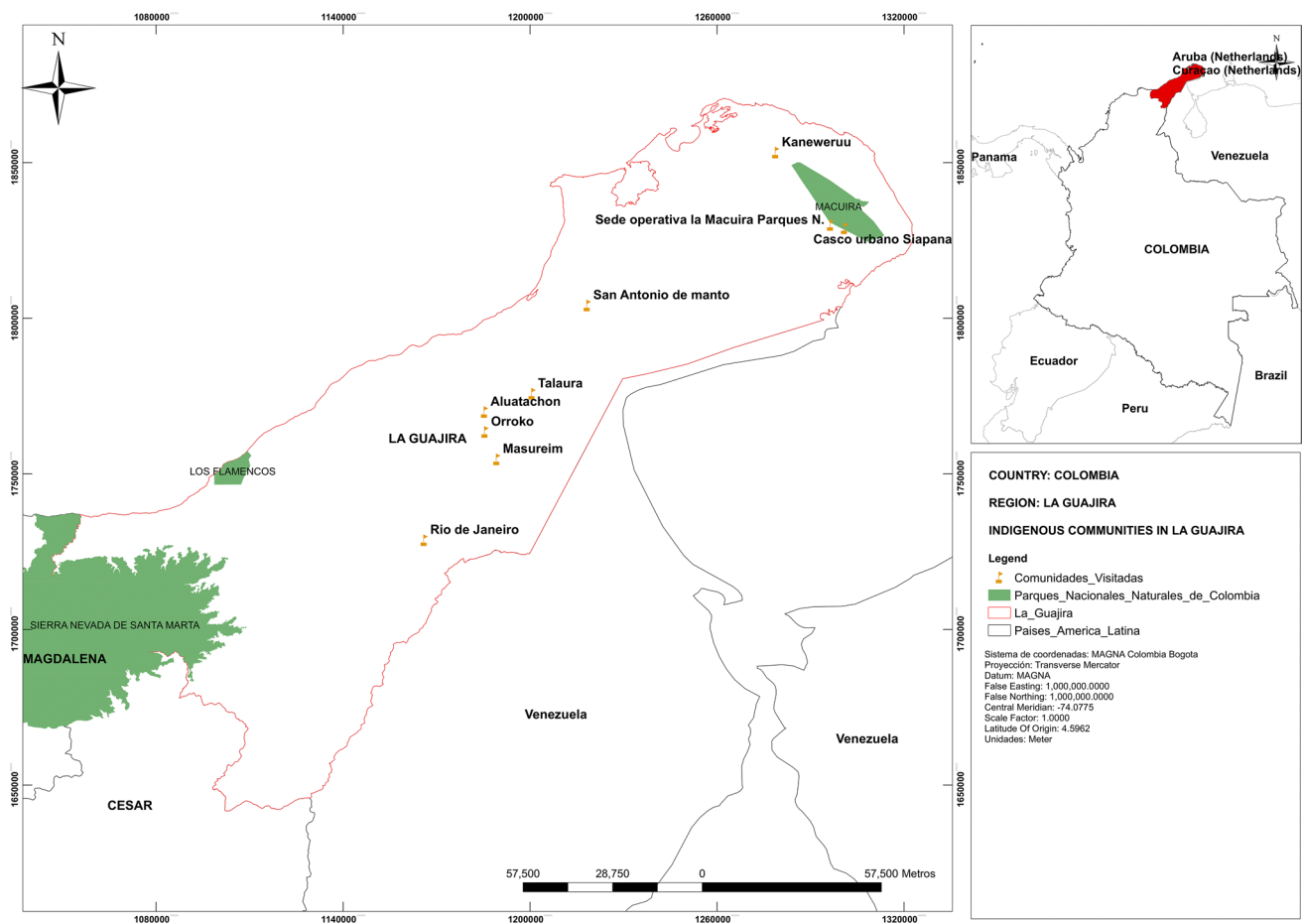
Guajira is comprised of tropical and subtropical dry forests, and subtropical thorn bush. The peninsula is characterised by high temperatures and low precipitation, with exceptionally low humidity and high solar radiation. It is affected by strong trade winds most of the year, and *El Niño* and *La Niña* events exacerbate climate variability in the peninsula (Le Houérou, 1996). Upper Guajira is an arid desert region with scarce vegetation, while Middle Guajira has more vegetation, with low bushes typical of the semi-arid region adequate for animal husbandry. Indigenous settlements are concentrated in the north of Uribia municipality, as well as in Manaure and Maicao municipalities. Our research was conducted in the Macuira National Park headquarters, the Sianapa urban area, and the *rancherías* (settlement areas) of Rio de Janeiro, Masureim, Orroko, Aluatachon, Talaura, San Antonio de Manto, and Kaneweruu (Fig. 1).

Rancherías are resting places used during the regular transhumant movements of the herds and are equipped with square or rectangular structures of wood thatched with palm fronds. Sometimes walls are added with mud covered webbing between the wooden posts. Household necessities such as hammocks, cooking utensils, and other basics necessary for a temporary stay would be brought along with the herds. As transtermitance became the dominant form of pastoralism rancherías became more permanent settlements, with doors and windows incorporated into the basic structures and water tanks added. Socio-politically, rancherías function as autonomous units, although dependent upon the intra- and inter-clan functioning network of exchange of knowledge, goods, and services.

## Demography

The 2018 Colombian census registered the Wayuu population at 380,460 people, which is 20% of the Colombia’s indigenous population (Gobierno de Colombia, 2018). According to the census, indigenous peoples comprise only 4.4% of the total Colombian population but inhabit exceptionally important areas of agrobiodiversity, including the indigenous territories of the peninsula where the Wayuu, Kogui, Wiwa, and Arhuacos indigenous peoples occupy areas considered “biodiversity hotspots” (Alvear et al., 2013; McGinley, 2014; Vasquez-Carrillo & Sealey, 2021).

According to the 2011 Venezuela census, 413,437 people self-identified as Wayuu (Gobierno Bolivariano de Venezuela, 2011). The Maduro administration in Venezuela has seen the collapse of the economy, the rise of poverty, and an almost



**Fig. 1** Wayuu indigenous study settlements (Source: Agrosavia QGIS Development Team, 2019)

complete disappearance of social services (Bertelsmann, 2022; Naím & Toro, 2018; Rendon & Schneieder, 2018; Human Rights Watch 2022).

The Wayuu have experienced increased food insecurity and infant mortality (Gandini et al., 2019), Russell et al. (2020) confirmed Wayuu children are suffering from chronic malnutrition: “Of all surveyed Wayuú children, 22.9% and 18.3% met criteria for moderate and severe malnutrition, 33.4% and 28.1% met criteria for moderate and severe stunting, and 28.1% and 16.6% were moderately and severely underweight” (2020: 905). Their research revealed that the prevalence of malnutrition amongst Wayuu children is much higher than national levels in Colombia, and they called for urgent assistance to address this problem. Food insecurity is a mayor driver of migration from Venezuela to Colombia in recent years, reversing the trend that seemed to have peaked during 2016.

Precise data on migration of Wayuu fleeing Venezuela during 2020 following the Covid-19 pandemic is yet to be estimated, but prior to that food insecurity was already critical. During December 2019, in response to a plea from

Guajira inhabitants, the Food and Agriculture Organization of the United Nations (FAO) undertook an intervention to alleviate hunger, targeting 1,003 vulnerable households, mostly composed of indigenous Wayuu: 37% Colombian residents, 33% Colombian returnees, and 30% Venezuelan migrants (FAO, 2020).

## Political Devolution

The transformation of livelihoods and of Wayuu pastoralism in Colombian is intrinsically related to their struggle to retain their autonomy and advance political devolution. The Wayuu captured herds of cattle, goats, and sheep during their defence of their ancestral lands against colonisation (Grah, 1979). Following the capture of 22 Wayuu men by Spaniards in year 1769, the Wayuu retaliated by burning the town of El Rincon. The confrontations that followed became to be known as the Guajira rebellion of 1769 (Barrera Monroy, 1988, 1990; Grah, 1979). Guerra Curvelo (2002) argued that current Wayuu social structure

has been shaped by their adoption of animal husbandry subsequent to their contact with the Spanish.

Following independence from Spain (1821) the indigenous peoples of Colombia maintained their fight against the policy of cultural assimilation that continued unchallenged until the 1960s. Prior to 1991, all constitutions defined the nation as Catholic and Spanish speaking to the exclusion of indigenous peoples and other minority groups (Bustamante Pena, 2011). Education of indigenous peoples was entrusted to the Catholic Church as indigenous peoples continued to be considered disabled or minors under the law (Ariza, 2004).

A principal instrument used by indigenous peoples in their struggle for autonomy and advancing political devolution are “*Resguardos de Tierras*” - communal entitlements issued by the Spanish Crown since the mid-sixteenth century. The Crown granted land entitlement to indigenous peoples for communal use, with autonomy to manage the land and natural resources under the condition of payment of tribute. The communal and inalienable *resguardo* lands were administered by elected councils known as “*cabildos*”. Under the *resguardo* regulation, lands for usufruct of indigenous communities were protected from outside encroachment (Arango Ochoa, 1992; Rappaport & Dover, 1996; Van de Sandt, 2003).

During the twentieth century successive Colombian governments promoted the dissolution of *resguardos*. By the 1960s, most had fallen into the hands of non-indigenous landowners who exploited indigenous populations as cheap labour. Dispossessed indigenous peoples from the south-western parts of the country faced violence and repression by government authorities when they mobilised to reoccupy *resguardos* (Van de Sandt, 2003). However, they found allies among the judiciary who upheld their rights to *resguardo* land acquired through Law 89 of 1890. The government finally instructed the Colombian Institute of Agrarian Reform (INCORA) to comply with agrarian reform legislation (Law 135 of 1961), ordering the return of communal lands to indigenous communities (Findji, 1992; Kloosterman, 1994; Rappaport, 1992; Van de Sandt, 2003).

Since the constitution of the Republic (1821), “assimilation” and “integration” of indigenous peoples was conceived by the mestizo elite governing the country as a progressive endeavour. Castilian Spanish continues to be the official language of Colombia, but Article 10 of the 1991 constitution now recognises the co-officiality of languages and dialects of ethnic groups in their territories. Notions of progress for nation construction continued to be racialised post-independence as reflected in the constitutions, policy documents, and political discourses during nineteenth century, and in the strategies for development followed during most of the twentieth century.

The greatest advance in the continuing fight of indigenous peoples in Colombia for greater autonomy, the right to self-determination, protection to continue practicing their religious and ritual ceremonies, and education in their own language came from the 1991 constitutional reform, through which the government of Colombia formally recognised the autonomy of indigenous peoples in self-governing their indigenous territories (Rappaport & Dover, 1996; Van de Sant, 2003). Since then, Wayuu indigenous organisations have organised to issue their own territorial development plans, and have entered partnerships with charities, NGOs, and education and research institutes to further advance political devolution.

### Legal and Illegal Trade

The Wayuu have been and remain principal actors in both illegal and legal trade throughout the peninsula. During colonial times, the Wayuu participated in trafficking pearls, tobacco, liquor, and even humans. Post-independence they continued to work with smugglers operating in the Caribbean (González-Plazas, 2008). By the 1970s Maicao in Guajira had become infamous as a main smuggling centre of electronics and textiles with many Wayuu being willing participants (González-Plazas, 2008). From the 1970s, Wayuu smuggling networks were used by drug traffickers and money launderers, some Wayuu individuals with double nationality were recruited to illegally move cash across the border (González-Plazas, 2008). During 2014, following a food insecurity crisis, desperate Wayuu families became involved in the smuggling of petrol from Venezuela to Colombia instigated by a Venezuelan policy allowing the Wayuu to buy petrol in Venezuela at subsidised prices (Cawley, 2014; Revista Semana, 2014).

Over their long history of defending their territories from invasion, the Wayuu have learnt manipulate rival forces to their own advantage in their struggle against assimilation. Due to this versatility, Wayuu territory was never conquered or subdued and has remained relatively autonomous.

### Adaptability and Devolution

Current processes of political devolution face the challenge of negotiating for a type of governance that ensures retaining autonomy, whilst at the same time facilitating knowledge exchange and research collaborations to advance adaptation strategies to global climate change and the rapid loss of agrobiodiversity. These strategies must consider cultural sensitivity and indigeneity, but also be informed by robust science. In the case of the Guajira, the conservation area managers of Macuira National Park and the Wayuu signed a co-governance agreement to manage the conservation area. The protection of

habitats and ecosystems are of the utmost importance for the provision of environmental services that Wayuu livelihoods depend upon. The conservation area authority recognised the legitimacy of indigenous governing authority and agreed to support Wayuu efforts to guard their territory. In return, the Wayuu agreed to the sustainable use of natural resources, restricting pastoralism if necessary to achieve conservation targets as indicated by the conservation area authorities. The alliance has proved effective with both parties agreeing necessary trade-offs to effective co-governance (Premauer & Berkes, 2015).

In their search to strengthen sustainability of their livelihoods, the Wayuu have sought knowledge exchange and capacity building, particularly to increase efficiency of their production systems. The Wayuu recognise that animal husbandry is central not only for addressing persistent food insecurity, but also to generate income. Statistics from the Colombian farming institute (ICA, 2019) indicate that in Colombia, 42.1% of ovine and 79.4% of caprine populations are reared in Guajira. However, Vargas-López et al. (2018) concluded that environmental changes have severely impacted animal husbandry in the Guajira peninsula, which has experienced extended dry seasons and increased flood risk, with very heavy rainfall during a shorter period of the rainy season. Flooding increases the susceptibility of herds to disease, and this is reflected in higher morbidity and mortality rates. The severity of the dry season increases scarcity of water and fodder, which diminishes productivity, lowering income and increasing Wayuu vulnerability to poverty and food insecurity (Espinosa et al., 2020). Thus, we were able to identify a common research interest with the Wayuu community and agreed that an ethnographic study of Wayuu pastoralism may be appropriate to identify contemporary challenges that prevent increased sustainability of animal husbandry of sheep and goats, and of pastoralism as a livelihood strategy.

## Political Challenges

The transformation of the landscape due to climate change and loss of biodiversity is not the only challenge the Wayuu face to make pastoralism sustainable. The governments of Colombia and Venezuela have maintained strained relations since the establishment of the Bolivarian socialist regime in Venezuela. The two previous administrations of Colombia recognised Juan Guaidó as legitimate president of Venezuela instead of Maduro, but the Petro administration re-established diplomatic relations with the Maduro administration and in February 2023 the president made an official visit to Venezuela to meet with him. The presidents signed a treaty to reinvigorate trade and to ease movement of nationals of both countries across the border. It is too early to know if these developments favour resilience of Wayuu livelihoods, including pastoralism.

Pastoralism used to rely on transhumance, called “*o'onowa*” in Wayuunaiki, which translates as “moving the herds to graze on land with water.” Traditionally, there was free movement on either side of the border. Although transhumance was already in decline at the turn of the century, the subsequent restrictions imposed on Wayuu movement at the border further impacted the movement of herds.

The resilience of Wayuu livelihoods in general has been tested following hyper-inflation, the collapse of social services in Venezuela, and the shortage of agricultural inputs that used to be cheaply available (Puerta Silva, 2020; Puerta Silva et al., 2020). The adaptive capacity of herders, as well as the capacity of Wayuu society to transform their livelihoods is of utmost importance to their survival and cultural reproduction. Bearing in mind that rearing of goats and sheep is a major source of income and currently essential to alleviate chronic food insecurity amongst the Wayuu, developing an ethnography of Wayuu pastoralism seemed urgent.

## Methodology

We understood that in order to assist the Wayuu in the improvement of their animal husbandry we required a greater understanding of their current practices. We thus designed our ethnographic study to initiate respectful interactions to discuss and identify possible ways of improving current animal husbandry strategies that would be culturally appropriate amongst the Wayuu.

Our study was primarily designed to gain an understanding of what the Wayuu themselves consider effective management of herds, and to identify current challenges to increased sustainability of pastoralism. We sought to capture the life stories of key stakeholders. We analysed audio-visual recordings and edited some into the video “*Prácticas tradicionales de la ganadería wayuu*” (Agrosavia, 2020) targeted towards both the Wayuu themselves and the rural extension workers and Macuira Park rangers working with them.

Nine communities took part in the ethnographic study (Fig. 1). We first examined management practices related to animal husbandry in general considering some a priori categories, but also registering emergent categories from an analysis of participant observation findings, focus group discussions, and semi-structured and focussed interviews. We conducted daily participant observation of herding movements, details of fodder, weight of the animals, and took faecal samples for parasitology studies. We taught interested herders to use the microscopes we brought to a selected *rancheria* for in-situ analysis of faecal samples to follow the protocol to corroborate results by themselves. We kept field-diaries for later analyses.

The semi-structured interviews were designed to allow participants to describe their pastoralist lifestyle in their

own terms. We noted all unanticipated issues or concerns raised by participants during interviews, focus group discussions or in the questionnaires to identify emerging categories and their relation to our pre-established categories during data analysis. Having a priori categories enabled comparison of Wayuu and non-Wayuu practices through cross-referencing to facilitate identification of distinctive features of Wayuu herding from herding as practised elsewhere in Colombia.

All information captured or generated was entered into Atlas Ti 6.2 software to facilitate qualitative data analysis. Relational maps were sketched. Reflexivity was conducted from the outset and throughout the research activities. To this end, the same coding and classification of field diary criteria were used for coding and classification of captured or generated information through participants' input into the research activities. In conjunction, between the pre-established and the emerging categories, 48 categories were clearly identified and grouped into the following thematic clusters: (a) animal reproduction and genetic improvement, (b) animal health and welfare, (c) environmental factors impacting animal husbandry, (d) food and nutrition considerations in herding, (e) pastoralism management practices, (f) use of indicators of productivity, (g) infrastructure development, (h) socioeconomic and (i) socio-cultural factors influencing animal husbandry.

It should be noted that as ethnographic work progressed, we realised that the information being gathered and generated was not only valuable in identifying the characteristics of Wayuu pastoralism, but also for other pastoral communities experiencing similar environmental and socio-economic challenges in the twenty-first century: the loss of traditional knowledge and practices following transition from transhumance to transtermitance/transterminance (moving herds over relatively short distances), and/or governmental initiatives promoting or enforcing sedentarisation and unsustainable use of agrobiodiversity exacerbated by lack of strategic planning for adaptation to global climate change (French, 2017).

## Results

### Focus Groups

In Wayuunaiki, “*Esü jutkata süpula yotta süchiku ayatawa*,” (a meeting to converse about labour) is a traditional discussion space open to all community members, independent of their role, age, or gender. We solicited and obtained approval from the Wayuu to conduct group interviews and focus groups in these spaces, focussing discussions on herding and animal husbandry. All those present during the two

days that focus groups lasted participated at will, including the elderly, women, men, youths, and children.

We chose four of the nine participant communities with distinctive characteristics for development of the focus groups. In each location the development of focus groups took two days. Focus group dynamics comprised two stages. During first stage we asked participants to draw scenarios that would reflect what herds and herding mean to them as individuals and as Wayuu. The drawing should reflect existing relationship between the Wayuu and their herds, and more broadly between animals and the Wayuu people. Drawings could refer to cultural practices or rituals conducted to maintain appropriate relations of the Wayuu with non-humans, although most drawings related to daily experience and routine animal husbandry practices.

The upper drawing (Fig. 2) shows a shepherd guiding herds from the desert to enclosures. The man wears a common home-made hat and the traditional cloth (“*aichee*”) to cover his penis, which is tied to a girdle (“*si'ira*”). Arguing that the use of the *aichee* and *si'ira* was uncivilised and indicative of savagery (Gonzales-Zubiria, 2019), the Colombian authorities issued Decree 40 of 29<sup>th</sup> of July of 1942 making their use illegal in urban sites and punishable by fines or arrest. Nowadays the decree is hardly enforced, and Wayuu men very rarely use the *aichee* other than as an act of defiance to non-indigenous authority.

The lower drawing is a remarkably detailed representation of what pastoralism entails. One of the sheep is pregnant (a little red figure can be seen in its belly), other is feeding her lamb, and a third has a stick around its neck, commonly used to facilitate guiding the herds to enclosures and to natural wells (“*jagueyes*”), which are also depicted. Herders are also responsible for slaughtering their animals, which follows a protocol to ensure respectful treatment of animals, including ensuring that all parts of slaughtered animals are used, also illustrated on the left of the drawing.

During a second stage, we assigned smaller groups to respond to specific questions related to animal husbandry assisted by a translator, fluent in Spanish and Wayuunaiki. The dialogue was conducted in Wayuunaiki and the agreed responses were then translated into Spanish.

The Wayuu referred repeatedly to “*Jutkatsü*” or “*kolotsü*”, the meetings of herds, which they emphasised take place close to water in favourable grazing areas and near enclosures. We noted that in discussions and interviews these terms were used metaphorically to refer to encounters of both humans and non-humans.

We took photographs at every location. At first, we focussed on pictures related to the a priori defined themes/categories, but as knowledge exchange proceeded, we took pictures more spontaneously, often following the advice of the research participants.

**Fig. 2** Sample of drawings made by members of the Wayuu indigenous communities during workshops



## In-Depth Interviews and Life Stories

We identified key individuals, well-known as experienced herders and/or recognised as experts in Wayuu animal husbandry or cultural traditions. Their life stories as well as those of the custodians of conventions of exchange within reciprocity systems were rich and complex. One interviewee was a “Pütchipü’ü” (Wayuunaiki) “*palabrer*os” (Spanish), which roughly translates as “managers of words”. Pütchipü’ü are councillors, called to manage disputes between clans related to exchange and reciprocity, and to advise routes of action to reach socio-political agreements between clans and with non-Wayuu. We conducted over 40 interviews, of which 13 were in-depth and four of these were life stories of men’s experience of transhumance over their lifetime. One of them, an 80-year-old, is also an expert in traditional

medicine. Another is a 57-year-old renowned for his expertise in all aspects of animal husbandry. Of the other nine in-depth interviews, which focus was on contemporary challenges faced by herders, five were with women, one of them a 67-year-old matriarch renowned for her herding skills. The other interviewees, four men and four women were between 20 and 50 years of age. We found interviewing the elderly men who narrated their experiences of transhumant pastoralism an enlightening experience. They recalled travelling with their parents for up to seven months, leading the herds to optimal pastures during long journeys through extended territory. They travelled with donkeys to carry food, clothes, cooking utensils and all the equipment necessary to survive the harsh environment of the tropical dry forest. All the in-depth interviewees were selected for their manifested interest in improving sustainability of Wayuu pastoralism.

## Wayuu Cosmology

The Wayuu conceive of their existence as transcending an individual's life cycle. Within the Wayuu system of beliefs, a person first inhabits the material world, *anasü*, the realm of the living. After death, the soul or spirit continues its existence as *Yolujaa in Jeira* (spiritual state). Little by little, *Yolujaa* transcends from being an individual to become an anonymous spiritual entity. The deceased and spirits dwell in *pülasü*, a transcendental or sacred realm. Eventually, they cease to exist, becoming rain "*Wanülüü*" or similar anonymous entities. The living and spiritual beings interact through this cycle aided by *Lapü*, dreams, which effectively mediate between the realms of the living and otherworldly spirits (Perrin, 1987; Morillo Arapé & Paz Reverol, 2008). The maintenance of culture requires every Wayuu to fulfil their role, taking part in livelihood activities and being involved in ceremonies, celebrations, and other rituals.

Meat consumption during burials is believed to help the deceased in his/her journey. For the Wayuu, this practice ensures the maintenance of a harmonious relationship between the deceased and his/her living relatives. Kazianka (2020) identified three dimensions of living Wayuu with non-humans. The first type refers to routine activities that develop in the physical world of the living, such as the day-to-day activities of animal husbandry. In a second dimension, the living Wayuu interact with their deceased relatives, the "*Yolujaa*". This occurs when meat is shared during burial rituals. In a third dimension, Wayuu interact with mythological beings, which include ancestral entities that the Wayuu understand have deity qualities, such as the *Wanülüü*.

Currently, consumption of sheep and goat meat is customary during all rituals of passage, and how herds and individual animals are cared for, exchanged, gifted, butchered, cooked, and shared matters. Consequently, the actions of herders are of importance to the maintenance of culture.

Traditionally, animal enclosures are built by piling up together tree trunks of different shapes in a circular contour and most enclosures conform to this tradition. However, we observed enclosures made with wood planks, arranged in squares, and one with added barbed wire. The traditional enclosures are easy to assemble and dismantle and can be modified easily, which allows for adding or subtracting animals to or from a herd. This flexibility facilitates the disposition of animals for impromptu arrangements when rites of mourning and burial need to be performed.

Funeral ceremonies require the sacrifice of several animals. Depending on the social status of the deceased, the number varies from a few to between 100 and 800. During

mourning and burial ovine meat is preferred. However, relatives of the deceased must also offer live goats to allies attending the ritual. On occasions, the recipient of these offerings orders the immediate sacrifice of some or all the gifted goats as contribution to ritual feast. The number of animals sacrificed varies, depending on an unwritten but carefully balanced rules of reciprocity exchanges. At "secondary burials" in the form of manipulation of human remains, the celebration involves consumption of meat with hosts and guests drinking '*chirrinche*,' a homemade alcoholic brew.

## Wayuu Pastoralism

Extensive grazing continues to be the prevailing method Wayuu herders feed their animals throughout the year. They distinguish between two types of grazing: "There are two ways of grazing animals: one is led and the other is semi-led. Led is one in which the shepherd goes behind or on the side of the animals, never ahead ... the herder stands in front [of the flock] so that when they [the animals] see him/her they [turn back and] return. Semi-led is when they [the flock] are released to stand by their own. Hours later the herder comes back where the animals are grazing to supervise that they [the animals] are all well and to prevent theft. In the afternoon the animals return by themselves [without supervision]" (Herder 2 Alutachum).

As feed decreases significantly during the dry season, grazing time is extended. During the dry season herders undertake longer journeys to reach grazing land located further from *rancherías*: "During summer times we release the animals earlier (7:00 am) because they have to go looking for their food, because during those times there is a shortage of food ..., the animals are accompanied [at all times] by the herder, who then takes care of returning with them at three in the afternoon to give them the [food] supplements" (Focus group Aluatachom – Alta Guajira) (see Fig. 3 for a schematic overview of Wayuu herding organization). Since the grazing areas of goats and sheep are different, it is tricky to get the timing right for led and semi-led herding of goats and ewes simultaneously. Sheep move more quickly through the territory and consequently get lost more frequently. Our results indicated that sheep had an average live weight of  $35.4 \pm 6.6$  kg and rams  $43.1 \pm 10.7$  kg. ( $n = 177$ ). The female goats had an average of  $36 \pm 8.8$  kg of live weight and the male goats  $45.2 \pm 16.1$  kg ( $n = 184$ ). These weight ranges are indicative of normal healthy animals. Faecal samples were taken during dry and rainy seasons, and our analysis showed a normal parasitic load of healthy animals.



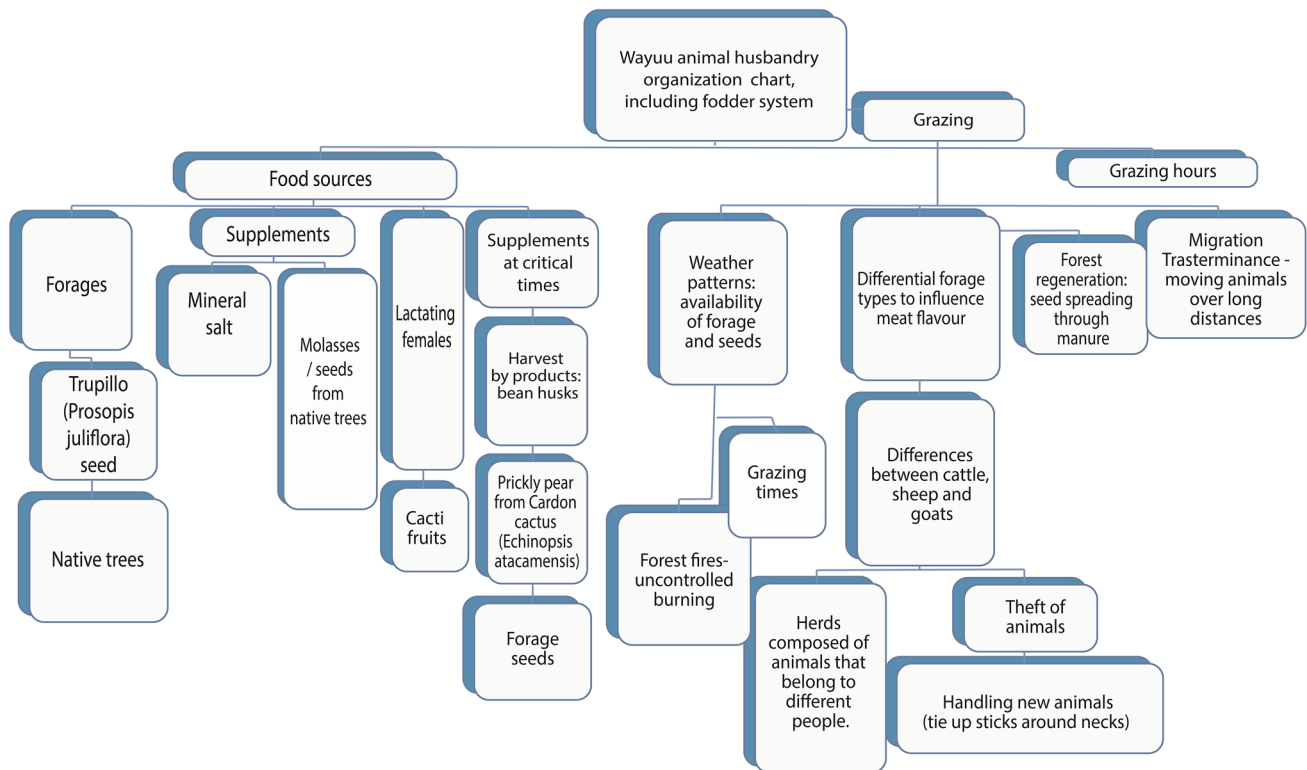


Fig. 3 Wayuu animal husbandry organization chart, including fodder system for cattle, goats, and sheep

## Gender Roles in Wayuu pastoralism

Our research results reflected the findings of González Bermúdez (2017) among the Wayuu pastoralists in the Makuira mountain range of Guajira regarding livestock management. The roles of women, men, and children in caring for their herds are established but interchangeable. In general, men are responsible for herding, feeding, and watering the livestock, and also make handicrafts such as hats and fibre sandals. Children help with herding and animal husbandry under the supervision of their parents, who assign age and gender appropriate tasks to encourage their involvement in pastoral activities.

Women are responsible for household chores and oversee artisanal activities such as making backpacks, basketry, hammocks, and the famous Wayuu handbags that sell at a good price nationwide. Importantly, since the Wayuu are matrilineal and uxorilocal, women own the herds, which are inherited by their children (González-Bermudez, 2017). Our informants highlighted that local governments do not take into account the importance of the role and status of women in the development of rural extension services that municipalities are obliged to provide. When men are required to travel, the women take charge of all herding activities including overseeing grazing herds, monitoring animals returning to the enclosures, removing cacti thorns,

attending to wounds and treating illness, and searching for missing animals. They also resolve conflicts related to the theft or loss of animals (Cook, 2001). And although the men are generally responsible for many of these tasks, the women have ultimate control of the herds.

We recorded the time spent taking animals to grazing places, grazing times, and resting per location-herder. Over the seasons, herders use their in-depth knowledge of agroclimatic conditions and of dry forest seasonal dynamics was revealed to adapt grazing times depending on climatic variability. Women and children milk<sup>1</sup> the goats at dawn before they are taken to the pastures and herd the animals into enclosures when they return at dusk. After milking between 6 and 7am, the herders move the animals to the grazing pastures until midday when they water them at the wells or *jagueys*. After drinking and eating themselves, the herders lead them to grazing grounds again. They leave to return to the rancheria settlement at about 4 pm or earlier depending upon the distance. The animals are then checked for wounds or other signs of sickness or discomfort. Sick animals are separated from the rest of the

<sup>1</sup> Women prepare *Yajaushi*, a beverage made with corn and goats' milk, and generally make sheep and goat cheeses, although men sometimes participate or make their own.

herd and are usually nursed in grazing areas close to the rancheria. One informant explained that special supervision is needed when animals are added to the flock: “During the day, the shepherd supervises grazing to check that they [all animals] are well, and especially if there are new animals added to the flock, to prevent them from getting lost. These [animals] almost always will return to the place where they were brought to feed the first time, which may cause them to get lost as they do not know well their new grazing territory” (Herder 1: Orroko).

To organize collective activities such as marking the sheep (by notching ears with distinctive patterns), castration, and building or reconstructing enclosures, the herders consult the traditional specialists who oversee the activities, such as the ‘*Yanama*,’ when animals are slaughtered. On these occasions, various foods and the fermented maize beverage *chicha* are shared among participants and offered to non-humans as well.

During the lambing season, herders monitor that all lambs are adequately nourished, and if a lamb is unable to feed from its mother, they put it onto other lactating sheep. They also prevent infection of the umbilicus and keep the lamb from grazing for two to three weeks whilst routinely assessing its condition. The herders use individual characteristics such as moles and hair and eye colour to keep a mental record of lineage of each lamb. and can identify individual animals by their distinctive behaviour and particular traits, such as walking pace. Wayuu herders favour the so-called “*criollo*” breeds that have adapted over time to local environmental conditions of arid and semiarid lands with scarce vegetation, typical of tropical dry and deciduous forests (Bellido et al., 2001), and prefer to graze their herds in areas with a high presence of trees, shrubs, and some herbaceous plants. Herders monitor natural indicators, such as flowering and seeding of key species to estimate fodder availability.

## Traditional Ecological Knowledge

Our informants were able to identify herbs, bushes, trees, and cacti used in traditional medicine or/and that provide fodder for cattle, sheep, and goats. Most used species selected from the larger list of identified species were: Guasimo (*Guazuma Ulmifolia*), Trupillo (*Proposis Juliflora*), Dividivi (*Casualpina Coriana*), Brasil (*Pithecellobium Lancealato*), Olivo (*Capparis odoratissima*), Escobilla (*Sida rhombifolia*), Palo verde (*Parkinsonia praecox*), Cardon (*Cereus peruvianus*). For fodder, herders use nutritional supplements such as sea salt, seeds of native trees, cane molasses, and cacti.

## Access to Markets

There is currently no reliable infrastructure that would guarantee the Wayuu regular access to municipal meat markets of Uribia and Maicao. But even if appropriate infrastructure were in place, regular standardised supply of meat would be difficult to attain in light of ongoing unpredictable environmental and socioeconomic changes. Meat distributors occasionally travel from Uribia and Maicao to *rancherías* to buy live or slaughtered animals for the municipal markets. Wayuu herders or the owners of the herds they manage do travel to these municipalities to sell meat when cash is urgently needed, and some have managed to establish relations with managers of butcher shops who buy their meat when available, but these are “informal” transactions not backed by contractual agreements. Further research is required to establish if the Wayuu could position themselves with competitive advantage within some of the established supply chains operating in Guajira.

## Discussion

The reciprocity system and continuity of human and non-human interaction through myths and rites are fundamental to Wayuu identity (Perrin, 1980, 1987). The Wayuu must nourish the spiritual entities through offerings and sacrifices (Mancuso, 2020). As recalled by research participants, use of marine and coastal resources during rituals has radically changed following the adoption of pastoralist livelihoods.

Harker and Guerra Curvelo (1998) argue that the Wayuu are one of the few indigenous peoples from the Americas who survived European invasion that have retained a high degree of autonomy. The challenge of resistance and adaptation involved making use of imported ideas or artefacts, and even increased interaction with invaders, whilst retaining political autonomy. Our ethnographic data corroborated that the Wayuu introduced animal husbandry to their livelihood strategies but preserved rituals and cultural practices that allowed continuation of their distinctive relationship with non-humans (animals, dead ancestors, and other non-material entities). The Wayuu adopted and adapted pastoralism practices (animal husbandry) and representations (myths and rites) to reflect their indigeneity. Wayuu pastoralism is situated within the contentious endeavours of resistance (to assimilation and integration) and adaptation to socio-political and environmental changes.

The Wayuu relocated herding and animal husbandry within their existing cosmology, reshaping the role of herders. Currently, the knowledge associated with pastoralism is at the core of their reciprocity system, essential to food security and a decisive part of Wayuu kinship and cultural heritage. The Wayuu have been able to incorporate the flow of goods and services and the associated knowledge practices into their reciprocity networks and have succeeded in using these networking capacities to reinforce identity and autonomy. The Wayuu have maintained a tribal organisation, in which there is no overall political head. Instead, social cohesion relies on the reciprocity system structured around clan affiliation (Robles, 2008). This decentralised political system suited transhumant pastoralism, with extended families and clans retaining autonomy necessary for adaptive management of herds through extended territory. And, although transtermitance has replaced transhumant pastoralism the Wayuu maintain the decentralised political system.

Barros (2017) argued that animal husbandry, trade, sales, or sacrifice, must conform to social norms and reciprocity. Our Wayuu informants confirmed that they do not see themselves as business managers. Although interested in bettering their income, they are conscious and concerned with passing their knowledge and expertise to the younger generation to ensure their distinctive values and traditions are preserved.

Wayuu herders have gained a prominent role in processes of cultural reproduction and have become key players in the tribal economy. Not only are their animals scarified during rituals of puberty, marriage, and death, they are the principal exchange good. Sheep and goats are also offered as inter-clan payment in compensation for a violent death. Sheep and goats, like the herders that manage them, have become a ubiquitous presence in human and non-human interaction.

Animal husbandry expertise is now recognised as a distinctive expression of Wayuu identity. The role of herders as carers of animals and as enablers of rites of passage has become reflected in myths and legends. Arocha Rodriguez (1991) recorded mythological narratives where fishermen envision sheep and goat enclosures as fishing areas, opting to manage the herds as they used to manage coastal resources. The myth reflects the transition of Wayuu from being harvesters of the sea to land-based pastoralists.

The practise of transhumance requires in-depth knowledge of environmental conditions, and of strategies to manage stresses caused by climate variability. In the case of Guajira, it required acquiring detailed knowledge of the topography, hydrology, and vegetation cover of the peninsula. Effectively herders know precise location of natural wells and of the engineering to build temporary reservoirs. Any assessment of socioecological resilience of Wayuu

pastoralism must consider that, as made evident from our investigation, the Wayuu have acquired in-depth knowledge of dry forest reproduction dynamics, such as the role that herd mobility plays in seed dispersion. Such knowledge could be key to developing adaptation strategies for increased sustainability of pastoralism.

Similar ethnographic research to ours has been carried out elsewhere in Latin America. For example, the FAO hub to promote networking through dialogue between pastoral communities and the establishment of pastoral knowledge in Argentina serving pastoral communities throughout Latin America is indicative of an approach to research and development of pastoralism that is radically different to the supply driven innovation model of the twentieth century (see <https://www.fao.org/pastoralist-knowledge-hub/pastoralist-networks/regional-networks/latin-america>).

Wawrzyk and Vilá (2013) conducted an ethnographic study among Argentinian herders of llamas, goats, and sheep that revealed their transhumance strategy had developed over a long time. Herders became experts in mobilising herds through varied ecological zones, adapting transhumance according to seasonality and climate variability. Argentinian herders, like Wayuu herders cultivate an in-depth knowledge of the species they rear.

Both our research and that of Wawrzyk and Vilá (2013) documented gradual and persistent change in animal husbandry knowledge practices, with communities becoming less mobile. In the case of the Wayuu, oral history confirmed that political, economic, and environmental changes have restricted mobility. Cuesta (1983) has suggested that transitioning from nomadic to semi-nomadic and sedentary pastoralism seems to occur everywhere, as livelihoods become less dependent upon herding alone, incorporating agriculture or more diverse economic activities. Considering the long-term efforts of the Wayuu to adapt and transform their livelihoods, and recognising that pastoralism continues to evolve, it seems urgent to conduct a socioecological resilience assessment of Wayuu livelihoods. We suggest future research collaborations with the Wayuu should facilitate the creation of methodological frameworks for conducting this assessment within the cultural and political context of Wayuu pastoralism.

During interviews, traditional authorities as well as herders expressed concern and frustration that young Wayuu are not participating in pastoralists activities but are migrating to urban centres, perhaps in search of better job opportunities, making it more difficult to transmit traditional ancestral knowledge to future generations and possibly leading to a definitive decline of pastoralism as the main livelihood strategy. At present, based upon the our data we could not confirm that this is or will become the case. There is need therefore to conduct further research in this regard.

## Conclusions

A socioecological resilience assessment would enhance understanding of adequacy and pertinence of processes of adaptability and transformation not only in relation to economic viability and environmental sustainability of current livelihoods, but also considering the aspirations and preferences of new generations.

Our ethnographic data revealed that Wayuu have continued adapting to environmental and socio-political shocks. However, the perspective of Wayuu themselves is that the environmental changes of recent years are occurring too rapidly for effective adaptation. Our team and the Wayuu agreed that herders are constantly improving management practices. However, we also agreed that perhaps there is need to reconsider (assess) whether the transformation from transhumance to transmeritance / transmeritance has contributed to the increased resilience of their livelihoods.

## Recommendations

We have made explicit that the Wayuu have been effective in transforming livelihood strategies without compromising cultural reproduction or identity. Considering the rapid environmental and political changes occurring in Guajira, it is urgent to advise the Wayuu on how to conduct a socioecological resilience assessment of livelihoods, with focus in Wayuu pastoralism.

Any future strategy devoted to addressing the problem of food insecurity and chronic malnutrition amongst the Wayuu must be co-designed with Wayuu themselves. The strategy should ensure the increased sustainability of the Wayuu's pastoralist practices. Such strategies must carefully consider the role that herders play in cultural reproduction and in maintaining the Wayuu's reciprocity system.

Rural extension programs have until now ignored particularities of Wayuu socio-political organization, most notably the role of women. Future knowledge exchange, capacity building and rural extension services programs targeting Wayuu herders must consider particularities of Wayuu socio-political organization and programs must be designed to strengthen the role of girls and women in leading adaptation of livelihoods.

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## Declarations

**Ethical Approval** Ethics approval was obtained, and that Agrosavia guidelines related to ethics procedures were followed at all times during the research process.

**Informed Consent** Research participants took part in the ethnography of pastoralism voluntarily, were informed of the objective of the research, and that they completed the consent forms in compliance with all the laws and regulations of Colombia, where the research activities took place.

**Consent for Publication** We confirm that that manuscript does not contain any data from an individual person. All interviews and participants of the focus groups were anonymized prior to data analyses and therefore further consent for publication is not applicable.

**Conflict of Interest** We, the authors of the manuscript "Beyond animal husbandry: The role of Wayuu shepherds and shepherdesses", hereby declare that we had not, and currently have no conflict of interest to declare regarding the research "Etnografía de la ganadería Wayuu", which informed the article "Beyond animal husbandry: The role of Wayuu shepherds and shepherdesses" submitted for publication to Human Ecology: An Interdisciplinary Journal. The authors thereby declare to have no affiliation to any business or for-profit organisation, or contractual employment agreement that could influence research process, treatment of data or obtention of results to the project of the reference. The authors thereby confirm we have not and will not receive any payment or financial benefit by publishing the submitted manuscript. The authors declare that they have no conflicts of interest.

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