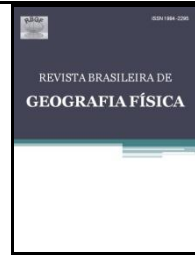




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Use of Animals for Communities of Small Farmers in the R efugio de Vida Silvestre Matas do Sistema Gurja u Northeast of Brazil

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ABSTRACT

The Atlantic Forest is one of the largest tropical rainforests in the world and has a high degree of endemism, being one of the main targets of conservation actions in Brazil. The creation of protection areas (UC) is one of the strategies used to guarantee the conservation of this Biome. Ethnobiological and ethnoecological studies are important for understanding the relationships established between populations and ecosystems. Due to the ecological importance of the Atlantic Forest and the rich occurrence of wild fauna in its remnants, the present study aimed to characterize the use and knowledge of the farmers inserted inside and surrounds the Refugio de Vida Silvestre Matas do Sistemas Gurja u (RVS Gurja u) on local fauna. For this, semi-structured interviews were applied and the data obtained through the qualitative-quantitative analysis, using Local Value Index (IVL) and Value of Use (VU) indexes for men and women. The results obtained showed that the animals most used by RVS Gurja u farmers' communities were mammals, being the Tatu (*Dasypus novemcinctus*) the species with the highest VU and higher IVL for men, followed by the Teju lizard (*Salvator merianae*), and for women the Teju lizard (*Salvator merianae*) presented the highest IVL followed by the Tatu (*Dasypus novemcinctus*) and reveals guiding strategies for the conservation of species by local populations. Most of the species mentioned are according to the IUCN in the category of Least Concern species, with only the Gato Maracaj  (*Leopardus wiedii*) being Near Threatened species.

Keywords: Conservation. Ethnozoology. Farmers. Fauna.

Introduction

Protected areas are considered as the main conservation strategy in the world and probably in Brazil. They were created with the purpose of protecting natural areas of relevant importance of biodiversity, resource management, ecosystems and ecological processes, as well as ensuring conditions for the continuity of viable populations in situ (Oliveira, 2010), thus ensuring the conservation of biological heritage, genetic, ecosystem and cultural practices.

The initiative to create and manage protected areas in Brazil was influenced by the international movement to create National Parks, through the preservationist idea of protection that began in the United States of America (Medeiros,

2004). This model of creation with anthropocentric vision that benefited the urban populations with their cultural manifestations is inadequate from the conservation point of view, because favors natural areas based on their aesthetic value, neglecting areas essential to the functioning of ecosystems (Diegues, 2008) and the maintenance of the traditional populations living there.

The institution of protected areas in Brazil occurred during the Republican period, during the 20th century, with the creation of a set of legal instruments and administrative structure, focused on the management of protected areas, among them: the Forest Code, the Code of Hunting and Fishing, Water Code and the Animal Protection Decree (Medeiros et al., 2004). These actions

intensified in 1970, after the era of industrialization and environmental degradation, and began a period of concern and action on environmental issues in relation to biodiversity protection mechanisms (Tabarelli et al., 2005).

All initiatives for the institution of protected areas in Brazil and creations of instruments to ensure the establishment of these areas were the result of Chapter IV of Article 225, which establishes guidelines on the environment, especially in paragraphs III and VII, which says:

Art. 225. Todos têm direito ao meio ambiente ecologicamente equilibrado, bem de uso comum do povo e essencial à sadia qualidade de vida, impondo-se ao Poder Público e à coletividade o dever de defendê-lo e preservá-lo para as presentes e futuras gerações.

III - definir, em todas as unidades da Federação, espaços territoriais e seus componentes a serem especialmente protegidos, sendo a alteração e a supressão permitidas somente através de lei, vedada qualquer utilização que comprometa a integridade dos atributos que justifiquem sua proteção;

VII - proteger a fauna e a flora, vedadas, na forma da lei, as práticas que coloquem em risco sua função ecológica, provoquem a extinção de espécies ou submetam os animais a crueldade (Brasil, 1988).

In 2000, through Law 9,985, the National System of Conservation Units (SNUC) was created, which establishes criteria and standards for the creation, implementation and management of protected areas (UC). According to SNUC, protected areas in Brazil are divided into two main categories: (i) Sustainable Use and (ii) Integral Protection. The Sustainable Use UC allows the direct use of natural resources, in which the variation in the form of exploration will depend on the categories, being: Área de Proteção Ambiental (APA), Área de Relevante Interesse Ecológico (ARIE), Floresta Nacional (FLONA), Reserva Extrativista (RESEX), Reserva de Fauna, Reserva de Desenvolvimento Sustentável (RDS) and Reserva Particular do Patrimônio Natural (RPPN). The regulations (management plan and management agreement), as well as the formation of the management council, which can be

deliberative or consultative, also influence the way in which resources are used.

The Integral Protection UC have more restrictive rules, allowing only the indirect use of their natural resources, varying according to the categories, These are: Estação Ecológica (ESEC), Reserva Biológica (REBIO), Parque Nacional (PARNA), Monumento Natural (MONA) and Refúgio de Vida Silvestre (RVS) (Brasil, 2000). Gonçalves (2012) comments that historically the UC of Protection Integral have the potential to generate conflicts, mainly associated to the use of existing natural resources, as well as the expropriation of particular areas for the creation of UC. The author points out that the lack of participation of the communities in the area and in the surroundings, without taking into account the dynamics already existing in the area and with little popular participation in the definition of the area to be protected, is the main factor in the generation of these conflicts. This is because it is prohibited the permanence of residents in UC of Protection Integral, but the RVS category may be constituted by particular areas, provided that the use of natural resources by the owners is in accordance with the objectives of the UC (Brasil, 2000).

Conflicts related to the use of existing natural resources result from hunting, fishing and other extractive activities that meet the objectives established by the agency responsible for managing the UC. Among the conflicts, hunting has been considered the main reason for direct reduction of the fauna causing population decrease and extinction of species, being able to be divided into two categories: Subsistence hunting and Commercial hunting (Redford, 1997). Subsistence hunting is defined by Alves et al. (2010) as a cultural activity passed from generation and a traditional form of wildlife management. Commercial hunting is characterized by the capture of wildlife to obtain income through the sale of live animals, parts of them or by-products used as clothing, tools, for medicinal and magical-religious use (Rocha et al., 2006; Pereira & Schiavett, 2010).

Extraction of wildlife for subsistence is of fundamental importance in maintaining traditional communities in different tropical areas and serves as the main source of protein and fat for local populations, especially groups living outside urban areas (Redford, 1997; Pereira, 2010). In spite of this, under Law No. 5.197 of 1967, all animals that constitute wild fauna are State property and their use, persecution, destruction,

hunting or harvesting are prohibited (Brasil, 1967).

The interaction with animals is established since the origin of humanity, these relations are constituted in complex and multidimensional ways. This is due to the fact that man is a natural part of the fauna existing on earth. In rock paintings and engravings all over the world are found the first evidence of these relationships, which represent animals that would have been used as food and those that generated fear in the hunters (Alves & Albuquerque, 2017).

Despite the existing conflicts, the local residents are potential contributors to the conservation of protected areas, due to their relationship man-nature maintaining the forms and uses of natural resources that occur in a more sustainable way (Ribeiro, 2014). This is possible if there are subsistence alternatives and environmental education initiatives to be offered to the population, avoiding possible conflicts (Sodhi, 2010).

The traditional populations become great allies to the conservation, since they were able to create systems of management of the fauna that act by protecting, conserving and potentializing the biological diversity (Diegues, 2008). Souto (2014) also reports the systems of management of the flora by population that maintain extractive activities sustainable and through casters of uses protect areas according to generation periods.

The study of the knowledge of traditional populations belongs to ethnosciences, such as ethnobiology, ethnoecology, ethnobotany and ethnozoology, starting from linguistics and orality to study the knowledge of human populations about natural processes trying to discover the underlying logic of human knowledge of natural processes (Diegues & Arruda, 2001). Among the ethnosciences is ethnozoology, which can be defined as the study of knowledge and beliefs, affective representations and behaviors that mediate relations between human populations and animal species (Marques, 2002).

Traditional knowledge can have important implications for biodiversity conservation and management, especially when local populations are involved in conservation efforts (Pinto, 2011). Provided that access to this information takes place in such a way as to promote the inclusion of the population in environmental management and policy initiatives, and not, their exclusion and / or application of the legislation to their actions, which for the most part are unaware or do not

understand the application of such fines and / or the framework for environmental crimes.

The term "traditional population" is used to name a set of populations that use the resources of nature through activities with the use of technology of low impact to the natural environment, who live in forest remnants, being or not, as artisanal fishermen, subsistence farmers, caçaras, peasants, extractivists, pantanal and riverine (Vianna, 2008).

Traditional populations are culturally differentiated groups that are recognized as such, have their own form of social organization and occupy and use territories and natural resources for their cultural reproduction using knowledge generated and transmitted by tradition (Souto, 2010; Brasil, 2015). Populations that exist in the around and / or still inserted in areas of Conservation areas have their method of use and management of native and / or introduced species, possessing empirical knowledge, generally unknown by the scientific community (Tuan, 1980), which with the rise of ethnosciences has been corroborating for the conservation of UC and maintenance of sustainable practices.

Traditional communities, as subsistence farmers, have historically adopted indigenous adaptive techniques, with their food base consisting of planting techniques, native fruit collections, and as an essential complement to hunting and fishing (Arruda, 1999). Many develop practices from the experimentation and creation of social technologies to maximize the use of resources with more sustainable measures, as the rotation of use of sites for resource extraction triggered by the knowledge that these are only found in properly preserved areas (Souto, 2010).

The existence of data on the knowledge and use of the local fauna would allow the planning of more effective management measures, according to the reality of the populations, associating scientific and traditional information in favor of the maintenance of biodiversity (Pinto, 2011). In the same way that more appropriate measures can promote the environmental management and the promotion of policies that minimize the use of the natural resources that are not of subsistence and / or it does not have character consistent with the conservation in the RVS Gurjaú, some measures have been promoting environmental education, including fauna management, dissemination of research through workshops and / or courses for the surrounding populations, as well as actions involving school activities, residents' association, farmers and members of its management council.

The present study aimed to characterize the relationship of farmers living in the UC and their surroundings with the local fauna.

Methodology

Research Subjects

The studied communities are formed predominantly by individuals who carry out family farming activities, with an agricultural crop of planting of manioc, potato, banana, among others, including sugarcane planting. Some residents also perform functions at sugarcane mills and established companies.

Study area

Data collection was performed at the RVS Gurjaú and its surroundings, which was defined as the Ecological Reserve of the Metropolitan Region of Recife through Law No. 9.989 of

January 13, 1987 and categorized as a Wildlife Refuge (RVS) through Law No. 14.324, dated June 3, 2011. Located in the rural area of the municipalities of Cabo de Santo Agostinho, Jaboatão dos Guararapes and Moreno (8°12'42.16" S and 35°03'44.46 W).

RVS Gurjaú is located on the border between the municipalities of Cabo de Santo Agostinho (with 587.92 ha), Jaboatão dos Guararapes (472.76 ha) and Moreno (280.04 ha) between the mills: Salvador, São Braz, São João and Roças Velhas on the south coast of Pernambuco State (Fig. 1). RVS Gurjaú is managed by an advisory board established by CPRH, which is also responsible for managing four other RVS located in the area of influence of the Refuge: in the South, RVS Bom Jardim and RVS Contra Açude, RVS Caraúna in the North, and RVS Salgadinho in the East.

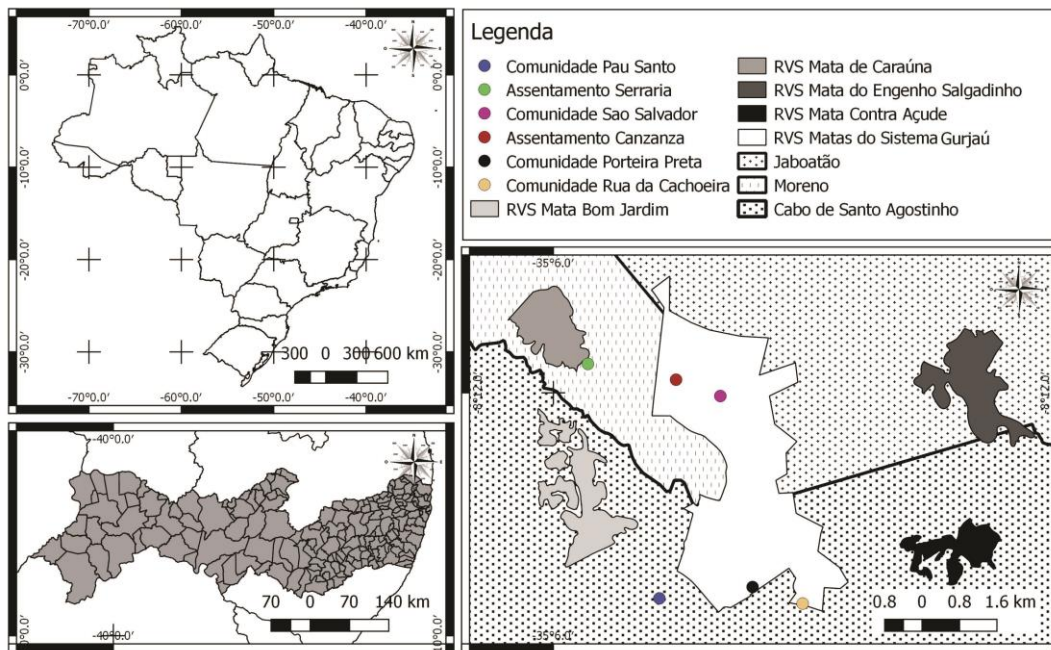


Figure 1. Map of the location of the Matas Wildlife Reserve of the Gurjaú System. Brazil; Pernambuco; Municipalities: Jaboatão dos Guararapes, Moreno, Cabo de Santo Agostinho.

All were created by State Law 9.989 / 87 as Ecological Reserve of the Metropolitan Region of Recife and categorized in 2011 as Wildlife Refuges by Law No. 14.324. They are remnants of the Atlantic Forest and considered an area of relevant importance in the protection of fauna, flora and hydrographic system among the refuges are located the communities and mills: São João and Bom Jesus in the south. Secupeminha and

Canzanza in the North, to the East the Mills Barbalho, Rico and Rochas Velhas and in the West the Mills São Braz, Jacobina, and Pau Santo.

The RVS Gurjaú also has a high degree of relevance for the conservation of the Atlantic Forest biome, being considered of extreme biological importance for the Northeast and included in the Atlas of Biodiversity of Pernambuco as a priority area for conservation,

arousing great interest of the scientific community for research on the biological diversity of the State (e.g., Fidem, 1987; Nascimento et al., 2016; Barbosa & Rodrigues, 2017; Silva, et al. 2017).

Methods

Data collection was carried out through visits to the communities inside and around the protection areas of the RVS Gurjaú Management Council group. During the initial visit, key informants were identified, people recognized by the community and identified as knowledgeable about the subject (Marques, 1991), that is, the local fauna. Then, were interviewed by people indicated by these informants and also randomly chosen people were interviewed so that the community's relationship with the local fauna was comprehensively represented.

The data were obtained through interviews with the application of semi-structured questionnaires (Huntington, 2000), containing questions regarding the profile of the residents of the studied communities, their knowledge about RVS Gurjaú and about the local fauna. The social characterization of the interviewees is necessary to understand their forms of relationship with the local Conservation Units. The questionnaires were answered individually so that it was possible to develop a relationship with the interviewees, opening space for people to talk about their livngs and experiences in RVS Gurjaú.

The communities visited were (Fig. 2): i) Pau Santo, located to the west of the refuges, between RVS Gurjaú and RVS Bom Jardim; ii) Settlement Serraria, in the municipality of Moreno, between RVS Caraúna and RVS Gurjaú; iii) Settlement Canzanza, located to the north, where is part of RVS Gurjaú and RVS Caraúna; iv) Community of São Salvador, in the RVS Gurjaú area, in the municipality of Jaboatão; v) Community Porteira Preta, located in the area of RVS Gurjaú, municipality of Cabo de Santo Agostinho; e vi) Community of Rua da Cachoeira. There were also regular meetings held by the management council of RVS Gurjaú in the prefectures of Jaboatão dos Guararapes and Cabo de Santo Agostinho.

The interviews were conducted during October and November of 2017, with a daily visit in each community and participation in the meetings of the Management Council of RVS Gurjaú. Initially, the informants were nominated by members of the Farmers' Associations and the following defined using the methodology

"Snowball" (Biernacki & Waldorf, 1981). This method consists of the intentional selection of the informant indicated by the community as a specialist who will indicate another and so on.

Regarding the knowledge and use of the fauna, the information was obtained through the free list methodology (Albuquerque et al., 2010), where respondents are asked to cite the names of animals they know locally, since it is assumed that the more culturally important will get more quotes and in order of similar importance. For this, the following questions were asked: (a) If they know the animals in the RVS. If the answer was yes, (b) what animals do you know.

The species cited by the interviewees were transcribed to the scientific nomenclature with the aid of bibliographies and complemented with the consultation of surveys and inventories of fauna. For reptiles and amphibians, studies were carried out recently at the site (e.g., Barbosa & Rodrigues, 2017; Laurindo-Silva et al., 2017). The information was organized through simple analyzes to highlight the data obtained and to classify into categories, containing the uses, quotations and classification of the species present in the list of the International Union for Conservation of Nature (IUCN).

Data analysis

To estimate the value of use for each species, a list was drawn up containing all species of fauna cited by the respondents and their types of uses. From the number of citations of each species was calculated the Value of Use (VU) (Albuquerque et al., 2006). VU is calculated using the formula: $VU = \sum U/n$, where the total of citations related to the use for each species (U) is divided by the total number of interviewees (n). The VU is used to demonstrate the relative importance of the uses of species that are known and used in a particular group of people locally (Pieve, 2009).

The Local Value Index (IVL) was used to calculate the cultural significance of the fauna species found in the area. This method was developed to calculate quantitative indices from qualitative data. The formula for determining the local value between man and woman is defined by the following equation $VTx = \sum Tx/nx$, where it is calculated for each taxon (T) the local value of the species attributed by Men and Women (x) divided by the total number of men or women (Almeida, 2010). In order to evaluate if there was a significant difference in the Local Value of the

species of the fauna between the genera, the results obtained by the local value were tested

through the Mann-Whitney normality test.

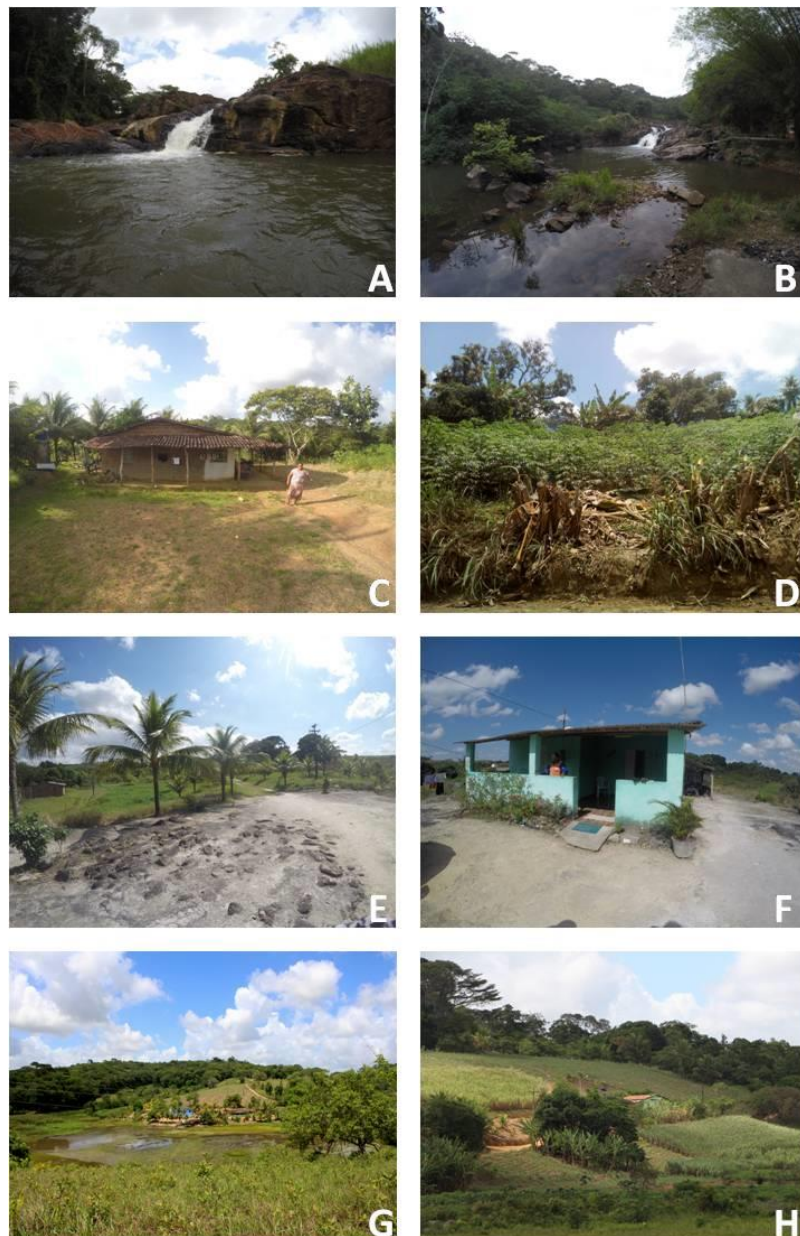


Figure 2. Communities visited during interviews: A-Cachoeira Gujaú; B-Rua da Cachoeira; C-Pau Santo; D-Porteira Preta; E-Canzanza; F-Serraria; G,H-São Salvador.

Results

In total 37 residents were interviewed, the interviewees were always chosen over the age of 18, between 31 and 73 years of age, being 13 women and 24 men, seeking to maintain a representative number of approximately six interviewees in the four localities visited. As for the level of education, three have completed higher education, six have completed high school and in the remaining 28 the profile is of functional illiterate people. Most of the interviewees (28)

have the main income and food derived from sugarcane agriculture and monoculture and those who have another job (9) are usually temporary service providers to the sugarcane mills in the region and COMPESA employees.

With regard to housing, most respondents have been in place for more than 30 years. Among the interviewees, only two residents said they did not know the animals in the area. Three interviewees lived less than five years in the locality and these showed little knowledge about the area and existing animals, only mentioning domestic animals when questioned.

From the 408 citations made by the interviewees it was observed that the species belong to six zoological groups: mammals (41%), reptiles (29%), birds (22%), amphibians (7%), arachnids and fishes (1%). Among the groups mentioned were 32 different popular names for mammals, 32 for birds, 22 for reptiles, 6 for amphibians, 2 for arachnids and only one for fish.

The species most cited by the interviewees were those that had some associated use, mainly those that have food and domestic use. The ten species most cited were: Tatu (33),

Teju (28), Cascavel (18), Paca (18), Cutia (16), Capivara (12), Gia (13), Preá (9), Canário (8) and Sabiá (9). When asked about the species most used by the community, the interviewees listed the following species: the Tatu received the highest number of citations related to the use for feeding (18), followed by Teju (8) followed by with citations related also to medicinal use, Quati (3), Paca (3), Cutia (2), Capivara, Jacaré and Rolinha(1). And for the domestic use the listed species were: “Birds” in general and also Papa capim, all containing a quotation.

Table 1. Conservation status of species (IUCN) related to some type of use. Subtitle: LC – Least Concern; NT – Near Threatened; –Not identified.

Group	Popular name	Scientific name	IUCN
Amphibians	Gia	<i>Leptodactylus vastus</i> (Lutz, 1830)	LC
	Rã	<i>Leptodactylus</i> sp	-
	Sapo Cururu	<i>Rhinella</i> sp (Linnaeus, 1758)	LC
Birds	Biziu	<i>Volatinia jacarina</i> (Linnaeus, 1766)	LC
	Canario	<i>Sicalis</i> sp	LC
	Canário da Terra	<i>Sicalis flaveola</i> (Linnaeus, 1766)	LC
	Chorão	<i>Sporophila leucoptera</i> (Vieillot, 1817)	LC
	Galo de Campina	<i>Paroaria dominicana</i> (Linnaeus, 1758)	LC
	Guriatã de bananeira	<i>Euphonia violacea</i> (Linnaeus, 1758)	LC
	Guriatã de coqueiro	<i>Coereba flaveola</i> (Linnaeus, 1758)	LC
	Papa Capim	<i>Sporophila nigricollis</i> (Vieillot, 1823)	LC
	Pássaros	Passeriformes sp	-
	Sabiá	<i>Turdus</i> sp	-
	Sanhaçu	<i>Thraupis sayaca</i> (Linnaeus, 1766)	LC
	Codorna	<i>Nothura boraquira</i> (Spix, 1825)	LC
	Lambu	<i>Crypturellus parvirostris</i> (Wagler, 1827)	LC
Rolinha	<i>Columbina</i> sp	-	
Mammals	Capivara	<i>Hydrochoerus hydrochaeris</i> (Linnaeus, 1766)	LC
	Coelho	<i>Sylvilagus brasiliensis</i> (Linnaeus, 1758)	LC
	Cutia	<i>Dasyprocta punctata</i> (Gray, 1842)	LC
	Gato Maracajá	<i>Leopardus wiedii</i> (Schinz, 1821)	NT
	Paca	<i>Cuniculus paca</i> (Schinz, 1821)	LC
	Preá	<i>Cavia aperea</i> (Erxleben, 1777)	LC
	Quati	<i>Nasua nasua</i> (Linnaeus, 1766)	LC
	Raposa	<i>Cerdocyon thous</i> (Linnaeus, 1766)	LC
	Raposa de Gato	<i>Puma yagouaroundi</i> (Geoffroy, 1803)	LC
	Sagui	<i>Callithrix jacchus</i> (Linnaeus, 1758)	LC
	Tamanduá	<i>Tamandua tetradactyla</i> (Linnaeus, 1758)	LC
	Tatu	<i>Dasytus novemcinctus</i> (Linnaeus, 1758)	LC
	Tatu verdadeiro	<i>Dasytus novemcinctus</i> (Linnaeus, 1758)	LC
Reptiles	Camaleão	<i>Iguana iguana</i> (Linnaeus, 1758)	-
	Cascavel	<i>Crotalus durissus</i> (Linnaeus, 1758)	LC
	Jacaré	<i>Caiman latirostris</i> (Daudin, 1802)	LC
	Salamandra	<i>Epicrates cenchria</i> (Linnaeus, 1758)	-
	Teju	<i>Salvator merianae</i> (Duméril & Bibron, 1839)	LC
-	Juru-Guará	-	-

The categories of use of the identified species were four in total: (i) food, (ii) domestic, (iii) medicinal and (iv) commercial. The most representative category was that corresponding to the **use for food**, with references to 21 species of certain groups, with the following popular names: reptiles (Teju, Camaleão, Jacaré and Salamandra), amphibians (Gua), mammals (Tatu, Tamanduá, Paca, Cutia, Preá, Capivara, Coelho, Raposa and

Guará de cana) and birds (Codorna, Lambú and Rolinha).

The second category was the one of domestic use, with 24 citations for 16 species, with the majority being represented by birds (Fig. 3), with eleven citations (Passeriformes and Galliformes) and mammals with four species (Capivara, Coelho, Cutia e Sagui).



Figure 3: Domestic use of birds observed in a residence located in the community of São Salvador. A - Cage with trap. B - Cages with birds.

The third was the **medicinal use**, with 15 citations of uses related to the six species of popular names: Teju (*Salvatormerianae*), Sapocururu (*Rhinella jimmy* and / or *R. granulosa*), Rã (*Leptodactylus* sp), Cascavel (*Crotalus durissus*), Quati (*Nasua nasua*) and Tatu (*Dasyurus novemcinctus*). Being that according to the report of the community, the fat of the teju is used in the treatment of pains and infections of the skin; the toad of the Sapo cururu obtained a citation for the use as cicatrizante in wounds in the skin; the Rã is used for throat inflammation; Quati tail bone tea is used for treatment of male erectile dysfunction; and Tatu syrup is used in the treatment of foot cracks. Respondents reported the medicinal use of the rattlesnake, but failed to exemplify the treatments.

The latter, the category of **commercial use**, which obtained only a quotation attributed to the Canário, Passeriformes (*Sicalis flaveola*). Although he did not obtain any direct quotations on the Jacaré (*Caiman latirostris*), one of the interviewees reported that there is in the community of São Salvador the trade of this species, listing that the prices range from R\$ 30.00 Reais to Kg of the tail and R\$ 20.00 Reais to Kg of the other parts of the animal.

The species that presented the highest Value of Use (VU) in the communities were: Tatu

(0.48); Teju (0.39); Papa Capim (0.19) Quati and Paca (0.16) Cascavel, Pássaros and Jacaré (0.13); Preá, Cutia, Coelho and Capivara (0.10). These species are mainly related to food use, with some species having two types of use (domestic / food, domestic / medicinal). According to the IUCN, the conservation status of most species related to some type of use is defined as "Least Concern", with only one species classified as "Near Threatened", which was the maracajá cat (*Leopardus wiedii*).

The IVL (Table 2) species for men and women ranged between 0.05 and 3.55. The ten species of higher IVL for men were, in descending order: tatu (3.55); Teju (2.35), Paca and Cutia (2.23), Capivara (1.64), Raposa (1.05); Cascavel (1.00); Sagüi (0.86), Tamanduá (0.82); and Preá (0.73). For women: Teju (2.80) Tatu (2.70); Paca (1.60); Cuandu (1.40); Preguiça, Sagüi and Cascavel (1.20); Jacaré and Sabiá (1.00); and Capivara (0.90). The species of lower local value for males were: Canário, Papa-Capim, Juru-Guará, Cobra D'água, Papa-Ovo, Siri De Fogo and Jacu (0.05). For women: Cobra, Tatu-Peba, Tamanduá and Sapo Cururu (0.10). The species that presented the highest IVL for men and women were: the Tatu, being the largest for men and second for women (3.55; 2.70), and the Teju, being the largest for women and second for

men (2.80; 2.35). Through the Mann-Whitney normality test, it was found that the samples

showed significant differences between genders ($p = 0.0131$) at the 5% level.

Table 2. Local Value Index for the ten species most cited by Men and Women from the communities around the *Réfugio de Vida Silvestre Matas do Sistema Gurjaú*.

Popular name	Women	Men
Tatu	2.70	3.55
Teju	2.80	2.35
Paca	1.60	2.23
Cascavel	1.20	1.00
Cutia	0.80	2.23
Gia	0.60	0.09
Capivara	0.90	1.64
Sabiá	1.00	0.32
Preá	0.40	0.73
Canário	0.50	0.05

Discussion

The data obtained in relation to the social profile of the communities reflect a profile of traditional society, which, according to Diegues & Arruda (2001), is characterized by the occupation of the territory in several generations, through subsidy practices and reduction of accumulation of capital. Souto (2015) points out that certain traditional communities present a characteristic far from the urban-capitalist, in which we live, evidencing a stronger relationship of society-nature. Residence time of more than 30 years, associated with low schooling and low income indicates a great knowledge and dependence of the place on the majority of the interviewees present in the communities.

The family support observed in most of the interviewees occurs through the union of agricultural practices complemented with salaried jobs. These characteristics configure a family farming profile that is defined according to the II and III paragraph of the law 11.326 of July 24, 2016 as:

Art. 3o Para os efeitos desta Lei, considera-se agricultor familiar e empreendedor familiar rural aquele que pratica atividades no meio rural, atendendo, simultaneamente, aos seguintes requisitos:

I - não detenha, a qualquer título, área maior do que 4 (quatro) módulos fiscais;

II - utilize predominantemente mão-de-obra da própria família nas atividades econômicas do seu estabelecimento ou empreendimento;

III - tenha percentual mínimo da renda familiar originada de atividades econômicas do seu estabelecimento ou empreendimento, na forma definida pelo Poder Executivo; (Redação dada pela Lei nº 12.512, de 2011);

IV - dirija seu estabelecimento ou empreendimento com sua família (Brasil 2006).

The relationship of wildlife use by the residents is through the cultural aspect, low income and due to the isolation of the communities. Difficult access to the centers to obtain supplies and remedies makes wildlife an alternative food and medicine, being food use, considered by some residents, as a healthier alternative, and medical use, practiced by the belief in the cure of diseases from parts of these animals. The use of animals for food and medical purposes was also observed in other works developed in the Northeast.

Alves et al. (2012) report that the human population of the researched area interacts with an expressive richness of game vertebrates, either by its utilitarian value or by conflict relations. Pereira and Schiavett (2010) showed that for the indigenous, hunting is considered a subsistence activity, complementing other activities carried out in the region, with the animals being captured

for food, therapeutic, artisanal and magical purposes. Silva (2009) mentions that food and medicinal uses stand out as relevant in a needy region, but also demonstrate the maintenance of culture and traditional uses for communities.

Regarding medicinal uses, Alves et al. (2010) report that about 100 diseases are treated with derivatives of reptiles, including *S. merianae*. Hard parts of animals, such as horns, bones, carapaces, among others, are burned, crushed and prepared for infusion, or used in smokes (Silva, 2008). Almeida et al. (2002), report the use of the *Crotalus* sp rattle in the treatment of asthma. Barboza (2009) describes that *D. novemcinctus* and *E. sexcinctus* are used for the treatment of 10 conditions or diseases by the population in the semi-arid region of Paraíba, such as: Asthma, ear pain, wounds, furunculosis, hoarseness, stuffy nose, insect bites, rheumatism, varicose veins and warts. Alves & Rosa (2007) also describe the medicinal use of *Bufo* sp (whole body) and *Leptodactylus* sp (fat) for the treatment of wounds and boil. It was observed that the inhabitants perceive and cite more the species that they present greater relation, utilitarian or emotional. The popular zoological classification is defined according to the relationship of humans with animals, their uses, customs and knowledge of which vary according to different cultures (Razera, 2006). The results show that vertebrates are more cited than invertebrates, these data corroborate with those found by Razera et al. (2006) and Alves et al. (2012), reporting that large animals and utilitarian use are easily perceived in the daily lives of populations.

The high number of citations for mammals demonstrates the proximity of the inhabitants to this zoological group, this is due to the fact that the mammal is a more charismatic and attractive group than the groups of amphibians and reptiles (Pires et al., 2010), and because they have a larger size, allowing the energy return through the use of food (Alves et al., 2012). Through the analysis of the Value of Use attributed by the inhabitants, among the 10 most cited species, it was observed that the group with the highest representativity was also the mammals.

Tatu was the species with the most quotations and the one with the highest VU, with 16 direct quotes related to the use, and 40 in the total of citations. This can be explained by the establishment of relations between the population and nature through the exercise of agriculture. Pereira & Schiavetti (2010) found

similar results and described that this animal being generalist and occupying a variety of environments becomes more easily found and captured.

Regarding the IVL attributed to the species by the inhabitants, of the ten species with the highest local value, the mammals were the most representative. The species with the highest number of citations generally obtained the highest local value. On the significant differences in IVL between genders, Keller & Berry (1987) explain that men and women present cognitive and emotional differences through animals. The data found are similar to that found by Alves et al. (2012) that explain the difference between genders due to the fact that hunting is an activity performed by men in most societies.

the Teju (*Salvator merianae*) was the reptile with more citations related to the use, with six citations related to the alimentary use and six related to the medicinal one, that characterizes it like the main reptile of the region. Results similar to that found by Alves et al. (2012), which relate the use to the size, being the largest species of semi-arid lizard. The jacaré (*Caiman latirostris*) mentioned only four times for food use and did not possess any current direct quote related to commercial use, it was described as a spice sold in San Salvador community. Alves et al. (2012) report that although few ethnozoological studies mention food use for alligators, some show that all species of alligators are consumed and that there is a food preference of human populations for this group.

The birds mentioned were mostly related to domestic use. This practice of bird raising and trading in cages by populations is common in the Northeast of Brazil and has also been described by some studies in the area (Pereira & Brito, 2005; Ferreira et al., 2010). The species with the highest number of citations for domestic use was the Papa Capim (*Sporophila nigricollis*) and according to Pereira & Brito (2005), this species is one of the most commercialized in the free trade fairs of Pernambuco.

Despite the high abundance described by Barbosa & Rodrigues (2017) with a total of 2448 specimens, distributed in 28 species in seven families for RVS Gurjaú, the anurans only obtained 25 citations, divided into six popular names. This is due to the uniformity of their basic morphology which makes it difficult to distinguish between families and genera, because they have a moist integument that ends up arousing disgust and being feared as venomous

animals. The invertebrates cited are spiders and scorpions that usually appear in homes.

Of the species used by the population and which were possible to translate from the popular nomenclature to the scientific one, 26 have the status of "Least Concern" according to the IUCN. Species that have a high VU in these communities, such as the Tatu, Teju and Quati, are included in this categorization. It is important to note that this classification applied worldwide may vary regionally, and species described here as "Least Concern" may be at risk when evaluated only locally (IUCN, 2012).

The Gato Maracajá (*Leopardus wiedii*), despite having only one food use citation, was the only one classified as a "Near Threatened" species. This classification indicates that the species is close to qualifying for a more worrying criterion in the near future (IUCN, 2012). The fact that there is only one citation for this species can occur due to the size of the populations of *L. wiedii* being considered intrinsically small and due to the loss and fragmentation of natural habitats, the main threat to populations of *L. wiedii* (Tortato et al., 2013).

Conclusion

This research reveals that the use and knowledge of the species by the farming communities around the RVS Gurjaú can be used to create actions for local conservation, showing actions to raise awareness of the importance of wildlife are necessary to ensure the continuation of existing species in the Gurjaú RVS. These actions can be based on environmental education activities with the teaching of fauna management practices and the strengthening of communication between academic and governmental institutions with the populations inserted in preservation areas, in this case the RVS Gurjaú and surrounds. The creation of the management plan for RVS Gurjaú should take into account the social and cultural context of the residents of the area, exemplified in this research.

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