Indian Journal of Traditional Knowledge
Vol 18(1), January 2019, pp 94-103

# Traditional knowledge and use of mammals in a rural community in the Sertaneja depression (Paraíba State, Northeast Brazil)

Suellen da Silva Santos*[,1,+], Hyago Keslley de Lucena Soares[1,$], Vanessa Moura dos Santos Soares[2,#], Reinaldo Farias Paiva de Lucena[3,~]

[1]UFPB, Specialization in Ethnobiology - UEPB and Master's degree in Development and Environment - PRODEMA, João Pessoa, Paraíba State, COUNTRY

[2]UFPB and Specialization in Ethnobiology - UEPB, Campina Grande, Paraíba State

[3]Department of Systematics and Ecology (CCEN) – Campus I, João Pessoa, Paraíba State

E-mail: [+]suellenbiologa.ss@gmail.com; [$]mr.hyago@hotmail.com; [#]vanessamoura_santos@hotmail.com; [~]rlucena@dse.ufpb.br

*Received 23 July 2018; revised 08 November 2018*

Mammal species are important populations of the semi-arid region of Northeast Brazil. However, these species may be over-exploited, meaning that ethno zoological studies are vital to ensure that the appropriate conservation strategies are applied. This research aimed to collect and analyze data relating to the local knowledge and use of these mammals obtained through semi-structured questionnaires. The study was carried out in the municipality of Lagoa, Paraíba State, Northeast Brazil. Data were analyzed by calculating the general, potential, and current use values. The medium use values of the species were also calculated, as well as the fidelity level of the information and the rank-order priority. Twenty-three animals were recorded, of which twenty were identified at the species level. From interviews with local people, *Dasypus novemcinctus* was the most cited species. However, *Mazama gouazoubira* was the most important in terms of current use. The uses of animals fell into four categories: food, captive breeding, zooterapic, and artisanal. Food was the most cited category, including 19 species, 16 of which at the 100% fidelity level. More in-depth studies are needed to obtain further data on the uses of species in order to develop strategies to mitigate possible local extinction and inform sustainable plans for the use of fauna resources in the region.

**Keywords:** Caatinga, Mammalian Ethno fauna, Use value

**IPC Code:** Int. Cl.[18] A61K 8/97, A61K 36/539, A61K 36/539

The Caatinga is one of the six main phytogeographic domains of Brazil, and one of the largest semi-arid areas of South America, covering more than 800,000 km². It is located in the northeastern region of Brazil, surrounded by the Atlantic forest and the Cerrado. The region has long been designated a homogeneous region, poor in species and endemism, and there is a considerable lack of scientific information about the area. In recent years, increased numbers of researchers have been studying the ecosystem of the region[1] and the amount of information available is gradually increasing. Studies of the taxonomy and species richness, ecology, physiology and distribution of flora and fauna have revealed the heterogeneity of the region and several species that can adapt to environmental conditions have been identified[2-9].

Many ethnobiological studies have been conducted on this ecosystem, with the aim of recording traditional knowledge and species use[10-13]. Among these, ethnozoological studies—which relate to the relationships between humans and animals—have recorded the knowledge, symbolism, meaning and use attributed to the fauna by the people[14-17]. These studies provide informative zoological surveys, since the knowledge of local populations is described in parallel to scientific data[18-27]. Therefore, it is possible to predict the local fauna and the relationship with human beings. This fusion of knowledge is essential for the development of conservation plans, which should be based on the ways in which these populations use the environmental resources[28].

Mammal species are the most valued animals for hunting, especially medium-and large-sized species because the biomass of the animals provides a more significant return of protein per unit of hunting effort[29]. These relationships become important in regions such as the Brazilian Northeast, which is characterized by high income inequality and a

*Corresponding author

concentration of people living on as little as one quarter of the monthly minimum wage[30]. It is assumed that these people have developed a unique socio cultural structure and a strong relationship with the environmental resources in their regions. This assumption is applied to semi-arid regions, which encompasses most of the northeast of Brazil[23].

Based on the importance of wild fauna to the human populations of the semi-arid population regions, this study aimed to investigate the knowledge and use of mammals in the municipality of Lagoa, Sertão region of Paraíba State, Brazil.

## Methodology

### Study area

The present study was carried out in the municipality of Lagoa (6°35'26.09" S latitude and 37°54'52.43" W longitude), in Paraíba State, northeastern Brazil. This municipality is located in the Caatinga, which is an ecosystem that covers a vast area of the Brazilian Northeast region, characterized by water deficiency due to low rainfall, high potential evapo transpiration, and irregular rainfall distribution[31,32]. Lagoa has an average temperature of 27°C and a drought period that can last up to 11 months[33]. Lagoa is situated in the Sertão mesoregion and Catolé do Rocha micro region. It has a territorial area of 177,902 km² and a population of 4,676 inhabitants. The municipality is bordered by Bom Sucesso, Jericó, and Mato Grosso (to the North); Pombal (South); Paulista (East); and Santa Cruz (West). The main rural communities in the municipality of Lagoa are Jutubarana, Jatobá, Timbaúba, Várzea da Ema, Cantinho Logrador, Pai-João, Cachoeira Velha, Lagoa de Cima, Sabiá, Pipoca, Cabeça de Onça, Açudinho and Barroquinha[33]. In the community of Barroquinha, subsistence agriculture is the main income-producing activity of the population. This agriculture is generally carried out by men whilst women are responsible for the housework[34].

### Data collection

Information of the local knowledge and use of mammals was obtained using semi-structured questionnaires, complemented by free interviews and informal conversations[35,36]. The purpose of the research was explained to the informants prior to interview and they were asked to sign the Free and Clarified Consent Term which is required by the National Health Council through the Research Ethics Committee (Resolution 196/96). The present study was approved by the Human Research Ethics Committee (CEP) of the Lauro Wanderley Hospital of the Federal University of Paraíba (protocol CEP/HULW No. 297/11).

The breadwinners (men and women) were chosen for interview from the rural community of Barroquinha with the aim of evaluating the knowledge of both genders. Sixty-two people were interviewed (35 women and 27 men), corresponding to 100% of the breadwinners living in the studied community. This discrepancy between the number of men and women was due to the presence of widows and unmarried women. The age of the informants ranged from 23 to 82 years among men, and from 15 to 85 years among women, indicating the representation of young, adult, and elderly people in the research. It is noteworthy that only one of the informants was under 18 years old. This participant was included because—according to the civil code—her emancipation could be considered because she was married and, therefore, able to participate. The questionnaire included questions about the mammals found in the region, the purpose and use of the used parts of the animal, capture methods, and morphological and ecological descriptions of the species. The free-listing technique was used to record the names of animals used by the interviewees. This technique is based on the principle that elements are listed in order of cultural importance[36]. In order to overcome the limitations of the technique, non-specific prompting and reading back were carried out[36,37]. In addition, the hunting activities of two informants (hunters) were monitored in order to obtain more precise data on the hunted species and the processes involved in capture and slaughter.

Hunted fauna were identified through: 1) analysis of the specimens mentioned by interviewees, 2) analysis of photographs taken during interviews and monitoring of hunting, 3) albums containing photographs of the mammal species in the region, and 4) vernacular names with the help of local taxonomists (researchers from the Federal University of Paraíba, Campus I, Mastozoology Laboratory).

### Data analysis

The use value (UV) was calculated to quantify the local importance of each species from the interviewee's point of view. The UV was calculated[38]considering three different methods of data collection and interpretation from the interviews

(adapted from the methods ofLucena[39]). The current UV ($UV_c$) was calculated as per Eq. 1, based on the uses that people cited as effective (known and currently applied by them). The potential UV ($UV_p$) was calculated as per Eq. 2, based on uses that people were aware of but do not themselves use; and the general UV ($UV_g$) referred to uses that were commonly reported in the literature but with no distinction between use and knowledge, calculated using Eq. 3.

$$UV_c = Ui_c/n \quad \ldots(1)$$

Where $UV_c$ = current use value of the species; Ui = number of current use value citations of the species mentioned by each informant; n = total number of informants.

$$UV_p = Uip/n \quad \ldots(2)$$

Where $UV_p$ = potential use value of the species; Ui = number of potential use value citations of the species mentioned by each informant; n = total number of informants.

$$UV_g = Ui/n \quad \ldots(3)$$

Where $UV_g$ = use value of the species; Ui = number of use citations of the species mentioned by each informant; n = total number of informants.

The medium UV (UV med) was calculated to obtain the UV of each order of mammals[40], using Eq. 4:

$$UV\ med = \sum UV/x \quad \ldots(4)$$

Where UV med = medium use value of the order; UV = use value of each species of the order; x = number of species cited by informants.

However, in the present study, the UV med was calculated per species, considering the results of their $UV_c$, $UV_p$, and $UV_g$ using Eqs. 5, 6, and 7:

$$UV\ med_c = \sum UVc/x \quad \ldots(5)$$

Where UV $med_c$ = medium use value with regards to current use value; $UV_c$ = current use value of each species; x = number of species cited by informants.

$$UV\ med_p = \sum UVp/x \quad \ldots(6)$$

Where UV $\mathbf{med_p}$ = medium use value with regards to potential use value; $UV_p$ = potential use value of each species; x = number of species cited by informants.

$$UVmed_g = \sum UVg/x \quad \ldots(7)$$

Where UV $\mathbf{med_g}$ = medium use value with regards to general use value; $UV_g$ = general use value of each species; x = number of species cited by informants.

The reliability of the information for each species was assessed using the level of fidelity (FL) and rank-order priority (ROP)[41]. The FL value was obtained using Eq. 8:

$$FL = Ip \times 100/Iu \quad \ldots(8)$$

Where FL = fidelity level, Ip = number of informants who suggest the use of a certain mammal for its main use, and Iu= total number of informants who cited the mammal.

The calculation of rank-order priority was calculated using Eq. 9:

$$ROP = FL \times RP \quad \ldots(9)$$

Where ROP = rank-order priority, FL = fidelity level, and RP = relative popularity calculated by the ratio between the number of informants who cited a given species and the number of informants who cited the most cited species.

**Results and discussion**

Twenty-three animals were recorded from 20 species belonging to 19 genera, 14 families, and 8 orders: Didelphimorpha (1 sp.), Rodentia (4 spp.), Artiodactyla (2 spp.), Carnivora (8 spp.), Cingulata (2 spp.), Pilosa (1 sp.), Primate (2 spp.), Lagomorpha (1 sp.), and Chiroptera. It is worth noting that "bat" (1 sp.) and "fruit bat" (1 sp.) was only identified up to the order level (Chiroptera), because when informants mentioned the existence of two species when asked about the existence of more than one species. The species were distinguished by ecological descriptions with emphasis on their diet, in which one is described as hematophagous and the other as frugivorous. This imprecise description of the characteristics by interviewees made species-level identification impossible. This was also true for *Leopardus* sp.

All use values of the recorded animals ranged from 0.84 to 0.016 and the UV med ranged from 0.038 to

0.0001. Most of the species had a low UV (lower than 0.29), although five animals were identified as having high importance for the communities. These were *Mazama gouazoubira* (G. Fischer, 1814), deer; *Kerodon rupestris* (Wied-Neuwied, 1820), rock cavy;*Galea spixii* (Wagler, 1831), prea; *Euphractus sexcinctus* (Linnaeus, 1758), yellow armadillo; and *Dasypus novemcinctus* (Linnaeus, 1758), armadillo.

The rank-ordering of the species followed a trend in line with the calculated UVs ($UV_c$, $UV_p$, and $UV_g$) and UVmeds ($UVmed_c$, $UVmed_p$ and $UVmed_g$). This is probably because the community uses only a few animals. However, this needs to be addressed in future studies in order to identify which species have suffered high use pressure and focus attention for the application of wild fauna management plans.

The distinction between the UVs (general, potential and current) was based on a method proposed for plant species[39] which has also been adopted for fauna species[26, 42-43]. The classification was made during the interviews by asking informants if they currently use their knowledge relating to animals. The UV meds (general, potential and current) were calculated based on the UV results, which revealed that two of the cited species (of the order Chiroptera) have no use to people of the region. The other 20 species were mentioned because they represent part of the cultural knowledge in the region. Among these, 11 were described for current use (Table 1).

Table 1 — Ordering of the most important species according to their use values (general, current, and potential), median use value (general, current, and potential) and their respective categories of use. Key: Fo = food, Cb = captive breeding, Zoot = zooterapic, Art = Artisanal.

| Scientific name | Vernacular name | $UV_g$ | $UV_c$ | $UV_p$ | $UVmed._g$ | $UVmed._c$ | $UVmed._p$ | Purpose of uses |
|---|---|---|---|---|---|---|---|---|
| **Primates** | | | | | | | | |
| **Cebidae** | | | | | | | | |
| *Callithrixjacchus* (Linnaeus, 1758) | Common marmoset | 0.29 | - | 0.29 | 0.013 | - | 0.013 | Cb. |
| *Cebuslibidinosus* Spix, 1823 | Bearded capuchin monkey | 0.35 | - | 0.35 | 0.015 | - | 0.015 | Cb. |
| **Carnivora** | | | | | | | | |
| **Canidae** | | | | | | | | |
| *Cerdocyonthous* (Linnaeus, 1766) | Fox | 0.16 | - | 0.16 | 0.007 | - | 0.007 | Fo., Art., Zoot. |
| **Felidae** | | | | | | | | |
| *Leopardus pardalis* (Linnaeus, 1758) | Ocelot | 0.13 | - | 0.13 | 0.006 | - | 0.006 | Fo., Art. |
| *Leopardus* spp. | "Mirim cat" | 0.29 | 0.16 | 0.13 | 0.013 | 0.007 | 0.006 | Fo., Art. |
| *Puma concolor* (Linnaeus, 1771) | Puma | 0.1 | 0.02 | 0.08 | 0.004 | 0.0009 | 0.003 | Fo. |
| *Puma yagouaroundi* (É. Geoffroy Saint-Hilaire, 1803) | Jaguarundi | 0.37 | 0.03 | 0.34 | 0.016 | 0.001 | 0.015 | Fo., Art. |
| *Pantheraonca* (Linnaeus, 1758) | Jaguar | 0.08 | - | 0.08 | 0.003 | - | 0.003 | Fo., Art. |
| **Mephitidae** | | | | | | | | |
| *Conepatussemistriatus* (Boddaert, 1785) | Striped Hog-nosed Skunk | 0.029 | 0.029 | - | 0.001 | 0.001 | - | Fo., Zoot. |
| **Mustelidae** | | | | | | | | |
| *Galictiscuja* (Molina, 1782) | Lessergrison | 0.016 | - | 0.016 | 0.0007 | - | 0.0007 | Fo. |
| **Procyonidae** | | | | | | | | |
| *Procyoncancrivorus* Storr, 1780 | Rab-eatingraccoon | 0.03 | - | 0.03 | 0.001 | - | 0.001 | Fo., Art. |
| **Rodentia** | | | | | | | | |
| **Caviidae** | | | | | | | | |
| *Kerodon rupestris* (Wied-Neuwied, 1820) | Rock cavy | 0.61 | 0.16 | 0.45 | 0.026 | 0.007 | 0.020 | Fo., Zoot. |
| *Galea spixii* (Wagler, 1831) | Prea | 0.71 | 0.29 | 0.42 | 0.031 | 0.013 | 0.018 | Fo., Cb. |
| **Cuniculidae** | | | | | | | | |
| *Cuniculuspaca* (Linnaeus, 1766) | Paca | 0.01 | - | 0.01 | 0.0004 | - | 0.0004 | Fo. |
| **Echimyidae** | | | | | | | | |
| *Thrichomysapereoides* (Lund, 1941) | Punaré rat | 0.19 | 0.05 | 0.14 | 0.008 | 0.002 | 0.006 | Fo. |

(*Contd.*)

Table 1 — Ordering of the most important species according to their use values (general, current, and potential), median use value (general, current, and potential) and their respective categories of use. Key: Fo = food, Cb = captive breeding, Zoot = zooterapic, Art = Artisanal. (*Contd*.)

| Scientific name | Vernacular name | $UV_g$ | $UV_c$ | $UV_p$ | $UVmed._g$ | $UVmed._c$ | $UVmed._p$ | Purpose of uses |
|---|---|---|---|---|---|---|---|---|
| **Artiodactyla** | | | | | | | | |
| **Cervidae** | | | | | | | | |
| *Mazamagouazoubira* (G. Fischer, 1814) | Deer | 0.50 | 0.48 | 0.02 | 0.022 | 0.020 | 0.0009 | Fo., Zoot., Art. |
| **Tayassuidae** | | | | | | | | |
| *Pecaritajacu* (Linneaus, 1758) | Collared peccary | 0.21 | - | 0.21 | 0.009 | - | 0.009 | Fo. |
| **Cingulata** | | | | | | | | |
| **Dasypodidae** | | | | | | | | |
| *Dasypusnovemcinctus* (Linnaeus, 1758) | Armadillo | 0.84 | 0.27 | 0.57 | 0.036 | 0.012 | 0.025 | Fo.,Cb., Zoot. |
| *Euphractussexcinctus* (Linnaeus, 1758) | Yellow armadillo | 0.82 | 0.36 | 0.46 | 0.035 | 0.016 | 0.020 | Fo.,Cb., Zoot. |
| **Didelphimorpha** | | | | | | | | |
| **Didelphidae** | | | | | | | | |
| *Didelphisalbiventris* Lund, 1840 | South American opossum | 0.20 | - | 0.20 | 0.009 | - | 0.009 | Fo. |
| **Pilosa** | | | | | | | | |
| **Myrmecophagidae** | | | | | | | | |
| *Tamanduatetradactyla* (Linnaeus, 1758) | Collaredante ater | 0.53 | 0.15 | 0.38 | 0.023 | 0.006 | 0.016 | Fo., Art. |
| **Chiroptera** | | | | | | | | |
| Chiroptera | Bat | - | - | - | - | - | - | - |
| Chiroptera | Fruit bat | - | - | - | - | - | - | - |

It is noteworthy that *M. gouazoubira* was found to be the most important species for current use in the community of Barroquinha ($UV_c$ = 0.48). Informants described the decline of the species, indicated by difficulties in finding and capturing the animals. However, the Red List of Threatened Species of the International Union for Conservation of Nature lists the conservation status of *M. gouazoubira* as least concern[44]. The Chico Mendes Institute for Biodiversity Conservation and the Brazilian Ministry of the Environment do not list *M. gouazoubira* on the Brazilian Threatened Fauna Species List[45] (ICMBio, 2016). Nevertheless, our data suggest that special attention should be paid to the conservation of this species, because it may become locally extinct due to the pressure of capture/hunting. Local extinction may also occur for species that are known but not used by the population. This emphasizes the need for ethno zoological studies to investigate this phenomenon and inform strategies to reduce negative impacts on species which are used by the population. Such strategies may include the development of sustainable management plans in specific cases.

The cited uses of the species were analyzed for their reliability (FL) and rank-order priority (ROP), in order to analyze the uses of each cited species in relation to their main use. This provides quantitative data; however, it has a qualitative bias as it seeks to attribute values for use and taxon to each species in order to determine the importance of these categories[46]. When a particular animal was associated with only one type of use, an FL of 100% was assigned. When informants cited more than one type of use for an animal, the resulting FL value was below 100% (Table 2). As well as being used to evaluate the use of medicinal plants, this method has been applied to the use of insects in a region of Santa Catarina[47] and to determine the most frequent uses and to assign a value to the main use of each species in semi-arid regions of Paraíba[48, 49]. The ROP index, which has been combined with the FL by some authors[50], was calculated in order to include a new consensus level; the distribution of knowledge relating to each species in relation to the wealth of resources mentioned in the use category studied (Table 2).

Nineteen species were cited as being used for food, with 16 of these having FL values of 100%, indicating this to be the primary use (Table 2). According to the informants, these animals are highly valued in local cuisine. The other uses that were recorded in this

Table 2 — Fidelity levelsand rank-order priorities of the uses of mammals, calculated from the answer of 62 informants in the community of Barroquinha. Key: FL – fidelity level, ROP – rank-order priority, *both uses had the same number of citations.

| Scientific name | FL (%) | ROP (%) | Main use |
|---|---|---|---|
| **Primates** | | | |
| **Cebidae** | | | |
| *Callithrixjacchus* (Linnaeus, 1758) | 100 | 36 | Captive breeding |
| *Cebuslibidinosus* Spix, 1823 | 100 | 44 | Captive breeding |
| **Canidae** | | | |
| *Cerdocyonthous* (Linnaeus, 1766) | 62.5 | 10 | Artisanal |
| **Mephitidae** | | | |
| *Conepatussemistriatus* (Boddaert, 1785) | 100 | 36 | Food |
| **Felidae** | | | |
| *Leoparduspardalis* (Linnaeus, 1758) | 75 | 12 | Artisanal |
| *Leopardus* spp. | 61.5 | 16 | Artisanal |
| *Pantheraonca* (Linnaeus, 1758) | 100 | 14 | Artisanal* Food* |
| *Puma concolor* (Linnaeus, 1771) | 80 | 8 | Food |
| *Puma yagouaroundi* (É. Geoffroy Saint-Hilaire, 1803) | 92.8 | 52 | Food |
| **Mustelidae** | | | |
| *Galictiscuja* (Molina, 1782) | 100 | 2 | Food |
| **Procyonidae** | | | |
| *Procyoncancrivorous* Storr,1780 | 100 | 4 | Food* Artisanal* |
| **Rodentia** | | | |
| **Caviidae** | | | |
| *Galea spixii* (Wagler, 1831) | 100 | 76 | Food |
| *Kerodon rupestris* (Wied-Neuwied, 1820) | 94.7 | 36 | Food |
| **Cuniculidae** | | | |
| *Cuniculuspaca* (Linnaeus, 1766) | 100 | 2 | Food |
| **Echimyidae** | | | |
| *Thrichomysapareoides* (Lund, 1941) | 100 | 18 | Food |
| **Cingulata** | | | |
| **Dasypodidae** | | | |
| *Dasypusnovemcinctus* (Linnaeus, 1758) | 100 | 100 | Food |
| *Euphractussexcinctus* (Linnaeus, 1758) | 100 | 80 | Food |
| **Didelphimorpha** | | | |
| **Didelphidae** | | | |
| *Didelphis albiventris*Lund, 1840 | 100 | 16 | Food |
| **Artiodactyla** | | | |
| **Cervidae** | | | |
| *Mazamagouazoubira* (G. Fischer, 1814) | 100 | 40 | Food |
| **Tayassuidae** | | | |
| *Pecaritajacu* (Linneaus, 1758) | 100 | 16 | Food |
| **Pilosa** | | | |
| **Myrmecophagidae** | | | |
| *Tamanduatetradactyla* (Linnaeus, 1758) | 100 | 64 | Food |

Both uses had the same number of citations = *

research were: captive breeding, zoo therapy (medicinal purposes), and artisanal uses; therefore, four categories of use were identified. In studies carried out in other regions, mammal species represented wide varieties of uses to local communities[8, 13, 25]. This leads us to consider that the cultural importance of wild fauna may be different between the communities of this region.

Some of the animals were classified in more than one category (Table 1); such as the rodent *K. rupestris*, which was described as a highly versatile species, with several body parts used for different purposes. This animal lives in rock floorings, making it difficult to hunt. However, local hunters are able capture this species due to their ethological knowledge of the animal. This emphasizes the importance of traditional knowledge in the community. As well as the symbolism that particular species may hold, human groups attribute value to a biological resource based on the characteristics of its use;for example, types of uses, frequency of use, the possibility of multiple uses, and potential economic and subsistence benefits[51]. However, versatility of a species and their different purposes of use result in higher pressure and consequently a more significant reduction of the species[25].

Eight species were classified in the artisanal category, which describes animals whose body parts are used for making artifacts. Leather is the most significant product of this category, used in the production of musical items such as tambourines, timbrel, and zabumba; as well as items such as saddles, chair seats, sandal soles, motorcycles seats, bags, belts, straps for sandals, and leather doublets (a typical cowboy clothing in Northeast Brazil). However, none of these items were produced in the residences visited during this study. Hunting was quite common in the studied region, although it is not a common activity among residents at the present time.

Informants reported that selling leather was used to supplement the family income. In the past, leather from high value species such as *Puma concolor* (Linnaeus, 1771), Puma could provide the family with up to two months of income. The demand for leather was so high that it was commercialized in fairs in the community itself, as is highlighted in the following excerpt:

*"Leather used to be sold at the fair ."*(J.J.V, 22 years old)

In times of low supply, traders who used leather as a raw material for making artifacts would travel to the

hunters' houses to buy it. Due to the supervision by environmental bodies, this practice no longer exists.

Six animals were classified as being used for medicinal purposes, for the treatment of 12 diseases. However, some species had more than one therapeutic application. The animal most frequently mentioned in this category was *K. rupestris*, indicated to be used to treat seven types of disease (Table 3). Considering its significant zoo therapeutic potential, it is surprising that the species appears infrequently in ethno zoological studies with a focus on zoo therapy. A total of 65 species were found to be used for this purpose, indicating zoo therapy represents an important use of local fauna, as several animals and their parts are important components used in the treatment of diseases[52]. The use of drugs made from animal substances varies according to the nature of the disease, the purpose of use and the ingredients used[52-55].

Five species were cited as being used for breeding. The largest numbers of citations for this category were for the primate species *Cebus libidinosus* Spix, 1823, Bearded capuchin monkey; and *Callithrix jacchus* (Linnaeus, 1758), Common marmoset. However, two different reasons for rearing were noted: for pet purposes (*C. libinosus* and *C. jacchus*) and for fattening purposes (*D. novemcinctus*, *E. sexcinctus* and *G. spixii*). The second purpose involves capturing the animal alive and keeping it in confinement with intense feeding for weight gain and human consumption, as reported by other studies[56].

To conclude, in the study area, the local population was found to have relevant knowledge of the local fauna and its use. Food was the main use of the mammalian fauna resources, with cultural aspects being preponderant for the persistence of this use. The application of the UV and UVmed calculations differentiated between the real ($UV_c$–$UVmed_c$), potential ($UV_p$–$UVmed_p$), and general ($UV_g$–$UVmed_g$) uses, allowing us to ascertain which groups of species are simply known of and which are present in the daily life of the community.

The application of the UV index was necessary in order to measure not just the knowledge of the community, but also the potential exploitation of each species in order to determine which one(s) require(s) more conservation attention. It is important to analyze

Table 3 — Species cited as used for medicinal purposes by the interviewees in the rural community of Barroquinha. 1: Parts used for the treatment of diseases: (M) meat; (F) fat; (T) tail; (B) broth; (F) feces. 2: Administration route for the treatment of diseases: (1) ingestion after being melted; (2) application to the affected area; (3) ingestion of cooked portion; (4) ingestion of broth from cooked meat; (5) taken mixed with water; (6) inserted into the ear.

| Scientific name | Parts used | Form of uses | Disease treated |
|---|---|---|---|
| **Carnivora** | | | |
| **Canidae** | | | |
| *Cerdocyonthous* (Linneaus, 1766) | Fat | (F) Ingestion after being melted;<br>(F) Applied on the affected area | Cracks in the feet; Liver problems |
| **Mephitidae** | | | |
| *Conepatussemistriatus* (Boddaert, 1785) | Meat | (M) Ingestion of cooked portion | Rheumatism |
| **Rodentia** | | | |
| **Caviidae** | | | |
| *Kerodon rupestris* (Wied-Neuwied, 1820) | Meat<br>Broth<br>Feces | (M) Ingestion of cooked portion;<br>(B) Ingestion of broth from cooked meat;<br>(F) Taken mixed with water | Accelerate dental growth in children;<br>Work up the appetite; Bone strengthening; Diarrhea in children;<br>Energy repository in adults; Herpes |
| **Cingulata** | | | |
| **Dasypodidae** | | | |
| *Euphractus sexcinctus* (Linnaeus, 1758) | Meat<br>Fat | (M) Ingestion of cooked portion;<br>(F) Ingestion after being melted | Sore throat |
| *Dasypus novemcinctus* (Linnaeus, 1758) | Meat<br>Fat<br>Tail | (M) Ingestion of cooked portion;<br>(F) Ingestion after being melted;<br>(T) Put into the ear | Sore throat; Earache |
| **Artiodactyla** | | | |
| **Cervidae** | | | |
| *Mazamagouazoubira*(G.Fischer, 1814) | Broth<br>Feces<br>Meat | (B) Ingestion of broth from cooked meat<br>(M) Ingestion of cooked meat;<br>(F) Taken mixed with water | Herpes; Conjunctivitis |

the versatility of uses, species availability, and cultural aspects; since the UV may (or may not) be related to these factors. Species that are currently used need special attention because, although they may be in abundance in the region, their continuous use over the years could lead to population decline.

Species of the region which are hunted for multiple uses are more likely to suffer population reduction and consequent local extinction, and so should be the focus of special conservation attentions. In-depth studies on the potential food, medicinal, technological, and breeding uses of these animals are critical for the development of management and conservation plans to prevent local extinction and develop sustainable practices regarding the use of local wild fauna resources by communities.

**Acknowledgements**

The authors would like to thank all the who were studied for their reception and for agreeing to participate in the study.

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