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Review Understanding Ethno-Ornithology - Birds of the Residents?

Marilton de Queiroz Borges Filho[1,3,*], Jhon Thomás Manoel Guerreiro[2], José Julián Díaz Vázquez[3], Eliseo Sosa-Montes[3] and José Isidro Alejos de La Fuente[3]

[1]Universidade Federal do Recôncavo da Bahia, Rua Rui Barbosa, 44380-000, Cruz das Almas, Bahia, Brazil. [2]Universidade Federal de Roraima, Aeroporto, Roraima, Brazil. [3]Departamento de Zootecnia, Universidad Autónoma Chapingo, Km 38.5, Carretera México, Texcoco MX 56230, Estado de México, Mexico. *Author for correspondence. E-mail: contato.mariltonfilho@gmail.com

ABSTRACT. This research, conducted between November 2019 and May 2020, Bahia State, aimed to inventory birds used for trophic purposes, capture techniques, zootherapeutic uses, caged birds, and their associations with local myths and legends. Fifty residents who interact with the avifauna were interviewed using semi-structured interviews. A total of 172 endemic species were recorded, with 24 used for human consumption, highlighting *Crypturellus parvirostris*. Birds are captured using 13 techniques, including shotguns and "visgo-de-jaca." Some species, such as *Coragyps atratus* and *Fluvicola nengeta*, are not consumed for cultural reasons. For zootherapeutic purposes, 11 species were recorded, with *columbina talpacoti* being the most notable. As caged birds, twenty-two species were recorded, with *Paroaria dominicana* and *Sporophila nigricollis* being the most common. In symbolic and ritualistic beliefs, some birds are associated with bad luck and weather predictions. The results contribute to local ecological knowledge and may assist in the development of avifauna management and conservation programs, integrating sociocultural and ecological factors.

Keywords: birdlife; traditional knowledge; ornithology; preservation; animal husbandry.

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Introduction

The set of complex ways of interaction between humans and fauna can be traced through different scientific approaches, depending on the theoretical line that will be addressed, Begossi (1993). Historically, it is assumed that ethnozoological science is the area responsible for understanding the interrelationships that the various peoples maintain with animals, having originated simultaneously with the emergence of the human species, Alves and Souto (2010). Ethnozoology is part of a broad field of study: the ethnobiology. Arising from the field of sociolinguistics and cognitive anthropology, ethnobiology is a transdisciplinary field of research that seeks to understand the diverse cultural perceptions of man's relationship with nature, as well as the manner and purpose of how these perceptions are aligned and classified by societies through language, Posey (1987); Begossi (1993). In this sense, among the different ethnozoological areas, ethnoornithology is a variant that seeks to analyze the relationship between humans and wild birds. According to Farias and Alves (2007), ethnoornithology seeks to understand the cognitive, behavioral and symbolic relationships between the human species and birds, crossing knowledge from the understanding of these relationships under different cultural and ecological contexts. Therefore, it investigates phenomena that go beyond the simple interface between biological sciences and anthropology; since birds are seen as archetypal symbols present in the imaginary of various cultures throughout human history on earth. Therefore, studying the relationship of societies with the local avifauna becomes a crucial factor to understand the culture, as well as the state in which wild birds are found, allowing strategies for a socio-environmental education of the local biome. In this respect, it is essential to record the traditional ecological knowledge about wild birds. The objective of this research was to investigate the relationship with the local avifauna, identifying how the birds are perceived, characterized and used. From the reports of the residents, a list of endemic species in the municipality was elaborated, highlighting the most impacted species in the region and the main anthropogenic factors that contribute to the decrease or extinction of local wild birds. The use of fauna has been accentuated throughout the history of humanity and in the so-called "contemporary" societies wild animals have been used from different perspectives. With this, it is evident that

the persistence of hunting activities is certainly interconnected to the cultural and socioeconomic context, being an activity transmitted from generation to generation. When fauna becomes important to a given community, it becomes part of its context and thoughts, thus establishing various relationships between human beings and animals, whether positive (food, clothing, medicinal, magical-religious, etc.), symbolic (legends, myths), or lucrative commerce, which, although often occurs illegally, can also be regulated, promoting less predatory and more sustainable practices, Mason (1899); Bennett and Robinson (1999); Alves et al. (2009); Corona (2011). Also in the Brazilian Semi-arid region, Alves et al. (2010) point out the use of wild birds, which, despite being an illegal practice, is very common, and together with other threats, has contributed to the decline of local avifauna. The present study allows us to record the conditions of the birds of Catuni, the interior of Bahia, identifying environmental problems and proposing conservationist solutions. Unleasing the contradictions of human posture and thought in relation to free animal life, in an erudite way Freire (1991) said, "change is difficult, but it is possible and urgent". In the book "*The Web of Life" Fritjof*, Capra (1996) also says that the way of seeing the world, of perceiving reality, needs to become systemic.

Flap your wings, little bird, That I want to fly - Canta Gal Costa, Tuzé de Abreu (1973).

Material and methods

From the area of study

The work was carried out in the village of Catuni da Estrada (10°20'39. 9"S 40°11'01. 4"W), located in the Mesoregion of the central north of Bahia, and microregion of Senhor do Bonfim, in the Identified Territory of Piemonte Norte (Figure 1) and distant 398 km from the capital Salvador.

Figure 1. Area of Study. Top view of the study area showing the municipality of Catuni da Estrada (Source: Google Earts).

The field research took place after approval by the Research Committee of the Federal University of Recôncavo da Bahia, Interviews were conducted with 50 residents, who know and use wild birds for different purposes. The residents were chosen based on the snowball technique, Biernacki & Waldorf (1981), which consists of locating the other interviewees who were the targets of the research based on the indication of the first ones. The data were obtained through interviews, with questions regarding the use of animals by the local population, integrated with free interviews conducted individually and with informal conversations, Mello (1995); Huntington, (2000); Albuquerque and Lucena (2004). The participants were asked to sign a Free and Informed Consent Form (ICF), which contained information regarding the objective of the research, and the ways in which the data collected were used. When necessary, a field guide, Sigrist (2015) was used to assist in the identification of species with scientific names according to the List of Birds of Brazil, Comitê Brasileiro de Registros Ornitológicos, CBRO (2015). Thus, to determine the relative hunting importance of the species, their respective Use Value (UV) was calculated (method adapted by Phillips et al. (1994), which makes it possible to demonstrate the relative importance of the species known and used locally. The Use Value is calculated using the formula VU = ΣU/n; where VU = Species Use Value,

U = number of citations per species, *n* = number of informants. The data was processed in the Excel 2013 program for later elaboration of the Catuni da Estrada bird list.

Results and discussions

Identification of endemic species and local use

In the village of Catuni, birds are used in different ways: food (trophic interaction), folk medicine activities (zootherapeutic interaction), cage breeding (socio-affective interaction) and trade (economic interaction). The endemic species reported by residents, including both wild and domestic birds, are listed in Table 1. In this sense, the individuals interviewed mentioned 172 names of birds between wild (*n*=170) and domestic (*n*=02). It is noteworthy that 119 species have synonymies, that is, they are one or more names in addition to the one commonly known and used by residents to designate the same ethno-species.

Table 1. List of ethno-species (n=172) and synonymies cited by 50 residents of the municipality of Jaguarari, Bahia State, Brazil.

Etno-species (Portuguese)	Synonymies (Portuguese)	Scientific name
Alma-de-gato	Tincoã	*Piaya cayana (Linnaeus, 1766)*
Andorinha	-	*Pygochelidon cyanoleuca cyanoleuca (Vieillot, 1817)*
Anum-branco	-	*Guira guira (Gmelin, 1788)*
Anum-preto	-	*Crotophaga ani (Linnaeus, 1758)*
Aracuã-de-barringa-Branca	Aracuã	*Ortalis araucuan (Spix, 1825)*
Arapaçu-do-cerrado	-	*Lepidocolaptes angustirostris (Vieillot, 1818)*
Araponga	-	*Procnias nudicollis (Vieillot, 1817)*
Ariramba-de-cauda-ruiva	Bico-de-sovela/bizungão	*Galbula ruficauda (Cuvier, 1816)*
Asa-branca	Pombo-do-mato/pombão	*Patagioenas picazuro (Temminck, 1813)*
Asanhaçu-cinzento	Sanhaçu-cinzento	*Tangara sayaca (Linnaeus, 1766)*
Asanhaçu-de-coqueiro	Sanhaçu-de-coqueiro	*Tangara palmarum (Wied, 1821)*
Azulão	-	*Cyanoloxia brissonii (Lichtenstein, 1823)*
Azulão-de-chiqueiro	Chupim/vira-bosta/maria-preta	*Molothrus bonariensis (Gmelin, 1789)*
Bacurau	-	*Nyctidromus albicollis (Gmelin, 1789)*
Bacurau-tesoura	Coruja-rabo-de-tesoura	*Hydropsalis torquata (Gmelin, 1789)*
Bacurauzinho	-	*Nannochordeiles pusillus (Gould, 1861)*
Beija-flor-asa-de-sabre-cinza	Asa-de-sabre	*Campylopterus largipennis (Boddaert, 1783)*
Beija-flor-balança-rabo-canela	Beija-flor-rajado	*Glaucis dohrnii (Bourcier & Mulsant, 1852)*
Beija-flor-bandeira	Bandeirinha	*Discosura longicaudus (Gmelin, 1788)*
Beija-flor-cinza	-	*Aphantochroa cirrochloris (Vieillot, 1818)*
Beija-flor-de-garganta-verde	Beija-flor-verde	*Amazilia fimbriata (Gmelin, 1788)*
Beija-flor-de-rabo-branco	Rabo-branco-acanelado	*Phaethornis pretrei (Lesson & Delattre (1839)*
Beija-flor-do-peito-azul	Beija-flor-azulzinho/bizunga	*Amazilia lactea (Lesson, 1832)*
Beija-flor- mirim/pequeno	Besourinho-do-bico-vermelho	*Chlorostilbon lucidus (Shaw, 1812)*
Beija-flor-tesoura	Beija-flor-rabo-de-tesoura	*Eupetomena macroura (Gmelin, 1788)*
Beija-flor-vermelho	Papo-de-fogo	*Chrysolampis mosquitus (Linnaeus, 1758)*
Bem-ti-vi	-	*Pitangus sulphuratus (Linnaeus, 1766)*
Bico-assovelado	-	*Ramphocaenus melanurus (Vieillot, 1819)*
Bico-de-lacre	Bico-de-lata	*Estrilda astrild (Linnaeus, 1758)*
Bico-de-pimenta	Bico-de-ouro	*Saltatricula atricollis (Vieillot, 1817)*
Bico-de-veludo	-	*Schistochlamys ruficapillus (Vieillot, 1817)*
Bigodinho	Bigode	*Sporophila lineola (Linnaeus, 1758)*
Cablocinho	-	*Sporophila bouvreuil (Statius Muller, 1776)*
Caboré	Caburé	*Glaucidium brasilianum (Gmelin, 1788)*
Cambacica	Chupa-licuri/chupa-lima/chupincó/caga-sebo/sibiti	*Coereba flaveola (Linnaeus, 1758)*
Canário-da-terra-verdadeiro	Cánario-de-briga	*Sicalis flaveola (Linnaeus, 1766)*
Canário-de-lote	Tipio	*Sicalis luteola (Sparrman, 1789)*
Cancão	Gralha-cancã	*Cyanocorax cyanopogon (Wied, 1821)*
Carcará	Caracará	*Caracara plancus (Miller, 1777)*
Cardeal	Cardeal-do-nordeste	*Paroaria dominicana (Linnaeus, 1758)*
Casaca-de-couro	Cabeleira/maria-cabeleira	*Pseudoseisura cristata (Spix, 1824)*
Cauã	Acauã	*Herpetotheres cachinnans (Linnaeus, 1758)*
Cava-chão	Rapazinho-dos-velhos	*Nystalus maculatus (Gmelin, 1788)*
Choca-barrada-do-nordeste	Corró	*Thamnophilus capistratus (Lesson, 1840)*
Choca-do-nordeste	-	*Sakesphorus cristatus (Wied, 1831)*

Chorão	-	*Sporophila leucoptera (Vieillot, 1817)*
Choró-boi	-	*Taraba major (Vieillot, 1816)*
Chorozinho-de-asa- vermelha	-	*Herpsilochmus rufimarginatus (Temminck, 1822)*
Codorna-amarela	Codorna-comum/codorna-pimpão	*Nothura maculosa (Temminck, 1815)*
Codorna-do-nordeste	Codorniz/curduniz	*Nothura boraquira (Spix, 1825)*
Coleirinha	Coleira/cólera	*Sporophila caerulescens (Vieillot, 1823)*
Coleiro-do-brejo	Colera-do-brejo	*Sporophila collaris (Boddaert, 1783)*
Coruja-buraqueira	Coruja	*Athene cunicularia (Molina, 1782)*
Coruja-de-orelha	Coruja-orelhuda	*Asio clamator (Vieillot, 1808)*
Corujão	Jacurutu	*Bubo virginianus (Gmelin, 1788)*
Corujinha-do-mato	Corujinha	*Megascops choliba (Vieillot, 1817)*
Curió	-	*Sporophila angolensis (Linnaeus, 1766)*
Farinha-aí	Tem-farinha-aí	*Myrmorchilus strigilatus (Wied, 1831)*
Feijão-verde	Bico-de-veludo	*Schistochlamys ruficapillus (Vieillot, 1817)*
Frango-d-água-comum	Galinha-d'água/jaçanã-galo	*Gallinula galeata (Lichtenstein, 1818)*
Galinha	Galinha-doméstica	*Gallus gallus domesticus (Linnnaeus, 1758)*
Galo de campina	Tico-tico-rei-cinza/abre-e-fecha/maria-fita	*Coryphospingus pileatus (Wied, 1821)*
Garça	Gauça	*Bulbucus ibis (Linnaus, 1758)*
Garrincha	Corruíra	*Troglodytes musculus (Naumann, 1823)*
Garrincha-de-barriga-vermelha	-	*Cantorchilus leucotis (Lafresnaye, 1845)*
Garrinchão-do-bico-grande	Rouxinol	*Cantorchilus longirostris (Vieillot, 1819)*
Garrincha-pai-avô	-	*Pheugopedius genibarbis (Swainson, 1838)*
Gaturamo-verdadeiro	Curiatá/cíntia	*Euphonia violacea (Linnaeus, 1758)*
Gavião-caboclo	Gavião-marrom	*Heterospizias meridionalis (Latham, 1790)*
Gavião-caracoleiro	-	*Chondrohierax uncinatus (Temminck, 1822)*
Gavião-carijó	Pega-pinto	*Rupornis magnirostris (Gmelin, 1788)*
Gavião-carrapateiro	Carrapateiro	*Milvago chimachima (Vieillot, 1816)*
Gavião-cauré	-	*Falco rufigularis (Daudin, 1800)*
Gavião-chimango	-	*Milvago chimango (Vieillot, 1816)*
Gavião-da-serra	Águia-serrana/águia-chilena	*Geranoaetus melanoleucus (Vieillot, 1819)*
Gavião-de-cabeça-cinza	-	*Leptodon cayanensis (Latham, 1790)*
Gavião-de-cauda-curta	-	*Buteo brachyurus (Vieillot, 1816)*
Gavião-do-pescoço-branco	-	*Pseudastur polionotus (Kaup, 1847)*
Gavião-miudinho	Gavião-miúdo/gavião-piquinininho	*Accipiter striatus (Kaup, 1850)*
Gavião-papa- gafanhoto	-	*Buteo swainsoni (Bonaparte, 1838)*
Gavião-pedrez	Gavião-cinza	*Buteo nitidus (Latham, 1790)*
Gavião-peneira	Peneira	*Elanus leucurus (Vieillot, 1818)*
Gavião-peregrino	Falcão-peregrino	*Falco peregrinus (Tunstall, 1771)*
Gavião-real	Gavião-verdadeiro	*Harpia harpyja (Linnaeus, 1758)*
Gavião-ripina	Ripina	*Harpagus bidentatus (Latham, 1790)*
Gaviãozinho-da-serra	Gavião-pernilongo/gavião-cinza-azulado	*Geranospiza caerulescens (Vieillot, 1817)*
Golinho	-	*Sporophila albogularis (Spix, 1825)*
Graveteiro	Patativa	*Phacellodomus ruber (Vieillot, 1817)*
Jacu	Jacucaca	*Penelope jacucaca (Spix, 1825)*
Jesus-meu-deus	Tico-tico	*Zonotrichia capensis (Statius Muller, 1776)*
João-corta-pau	-	*Antrostomus rufus (Boddaert, 1783)*
João-de-barro	Janica-de-barro	*Furnarius rufus (Gmelin, 1788)*
Juriti	Juriti-pupu	*Leptotila verreauxi (Bonaparte, 1855)*
Juriti-vermelha	Juriti-roxa	*Geotrygon violacea (Temminck,1809)*
Lagarteiro	Papa-lagarta-acanelado	*Coccyzus melacoryphus (Vieillot, 1817)*
Lavandeira	Lavadeira	*Fluvicola nengeta (Linnaeus, 1766)*
Lavandeira-de-cara-branca	Lavadeira-de-cara-branca	*Fluvicola albiventer (Spix, 1825)*
Maracanã-pequena	-	*Diopsittaca nobilis (Linnaeus, 1758)*
Maria-tola	Guaracava-de-barriga-amarela	*Elaenia flavogaster (Thunberg, 1822)*
Martim-pescador-grande	-	*Megaceryle torquata (Linnaeus, 1766)*
Martim-pescador-pequeno	Martim-pescador/ariramba	*Chloroceryle americana (Gmelin, 1788)*
Martim-pescador- verde	-	*Chloroceryle amazona (Clement's checklist, 2014)*
Mergulhão	-	*Megaceryle torquata (Linnaeus, 1766)*
Mocho-dos-banhado	-	*Asio flammeus (Pontoppidan, 1763)*
Nambu	Lambu-pé-vermelho	*Crypturellus parvirostris (Wagler, 1827)*
Nambu-chororó	Lambu-pé-roxo	*Crypturellus tataupa (Termminck, 1815)*

Noivinha	Viuvinha	*Xolmis irupero (Vieillot, 1823)*
Papa-capim	Coleiro-baiano/baianinho/pacapim	*Sporophila nigricollis (Vieillot, 1823)*
Paquinha	Polícia-inglesa-do-sul/papo-d-fogo	*Sturnella superciliaris (Bonaparte, 1850)*
Pardal	-	*Passer domesticus (Linnaeus, 1758)*
Passarinho-de-arroz	Pássaro-de-arroz	*Chrysomus ruficapillus (Vieillot, 1819)*
Pássaro-preto	Passo-preto/assum-preto/graúna	*Gnorimopsar chopi (Vieillot, 1819)*
Pato	Pato-do-mato	*Cairina moschata (Linnaeus, 1758)*
Pato-marreco	Pato-real	*Dendrocygna autumnalis, Amazonetta brasiliensis*
Pavãozinho-do-mato		*Dromococcyx pavoninus*
Pêga	Pêga-da-meia-noite-preta/peguinha	*Icterus cayanensis* (Linnaeus, 1766)
Perdiz	-	*Rhynchotus rufescens (Temminck, 1815)*
Periquitinho-de-são-josé	Tuim/guizo/guirra	*Forpus xanthopterygius (Spix, 1824)*
Periquito-da-Caatinga	Priquitinho	*Eupsittula cactorum (Kuhl, 1820)*
Pica-pau-anão-de-pintas-amarelas	-	*Picumnus exilis (Lichtenstein, 1823)*
Pica-pau-branco	-	*Melanerpes candidus (Otto, 1796)*
Pica-pau-chorão	-	*Veniliornis mixtus (Boddaert, 1783)*
Pica-pau-de-cabeça-amarela	Pica-pau-louro/topete-louro	*Celeus flavescens (Gmelin, 1788)*
Pica-pau-de-cabeça-vermelha	Pica-pau-de-topete-vermelho/pinica-pau	*Campephilus melanoleucos (Gmelin, 1788)*
Pica-pau-dourado- escuro	-	*Piculus chrysochloros (Vieillot, 1818)*
Pica-pau-pedrez	Orácio/pica-pau-verde-barrado/carijó	*Colaptes melanochloros (Gmelin, 1788)*
Picapauzinho-avermelhado	-	*Veniliornis affinis (Swainson, 1821)*
Picapauzinho-do-nordeste	Picapauzinho-anão	*Veniliornis passerinus (Linnaeus, 1766)*
Pintado	Pica-pau-chorão	*Veniliornis mixtus (Boddaert, 1783)*
Piriquitinho-rico	Periquito-rico	*Brotogeris tirica (Gmelin, 1788)*
Pitiguari	Bico-de-osso	*Cyclarhis gujanensis (Gmelin, 1789)*
Pomba-de-seca	Pomba-verdadeira/ribançã/pomba-do-sertão/pomba-de-bando	*Zenaida auriculata (Des Murs, 1847)*
Quem-quem	Quero-quero	*Vanellus chilensis (Molina, 1782)*
Rabão-de-tesoura	Tesourinha	*Tyrannus savana (Daudin, 1802)*
Rasga-mortalha	Coruja	*Tyto furcata (Temminck, 1827)*
Rolinha-azul	Rola-azul	*Claravis pretiosa (Ferrari-Perez, 1886)*
Rolinha-branca	Rolinha-cinza	*Columbina picui (Temminck, 1813)*
Rolinha-caldo-de- feijão	Rolinha-vermelha/rolinha-roxa/paquinha	*Columbina talpacoti (Temminck, 1810)*
Rolinha-de-asa-canelada	-	*Columbina minuta (Linnaeus, 1766)*
Rolinha-fogo-pagou	Rolinha-de-asa-canela/fogo-apagou	*Columbina squammata (Lesson, 1831)*
Sabiá-barranqueira	Sabiá-barranco	*Turdus leucomelas (Vieillot, 1818)*
Sabiá-bico-de-osso	Sabiá-branca/poca	*Turdus amaurochalinus (Cabanis, 1850)*
Sabiá-coca	Sabiá-laranjeira/coca	*Turdus rufiventris (Vieillot, 1818)*
Sabiá-da-mata	-	*Turdus fumigatus (Lichtenstein, 1823)*
Sabiá-de-sebo	Sabiá-do-campo	*Mimus saturninus (Lichtenstein, 1823)*
Sabiá-gongá	-	*Saltator coerulescens (Vieillot, 1817)*
Saíra-amarela	Assanhaçinho-de-pimenta-de-galinha	*Tangara cayana (Linnaeus, 1766)*
Saíra-azul	Saí-azul	*Dacnis cayana (Linnaeus, 1766)*
Saíra-sete-cor	Saíra-sete-cor	*Tangara seledon (Statius Muller, 1776)*
Saitica	Saci	*Tapera naevia (Linnaeus, 1766)*
Sangue-de-boi	Tiê-sangue	*Ramphocelus bresilius (Linnaeus, 1766)*
Sanhaçu-cinzento	-	*Tangara sayaca (Linnaeus, 1766)*
Sanhaçu-de-coqueiro	Sanhaçu-verde	*Tangara palmarum (Wied, 1821)*
Saracura	Três-pote	*Aramides cajaneus (Statius Muller, 1776)*
Sariema	Siriema/seriema	*Cariama cristata (Linnaeus, 1766)*
Sibinho	Balança-rabo-de-chapéu-preto	*Polioptila plumbea (Gmelin, 1788)*
Siriri	Suiriri	*Tyrannus melancholicus (Vieillot, 1819)*
Siriri-cavaleiro	Bem-ti-vi-carrapateiro	*Machetornis rixosa (Vieillot, 1819)*
Socó	Socó-boi	*Tigrisoma lineatum (Boddaert, 1783)*
Sofrês	Sofrê/corrupião	*Icterus jamacaii (Gmelin, 1788)*
Tempera-viola	Pimenteira	*Saltator maximus (Statius Muller, 1776)*
Tiziu	Maria-pretinha	*Volatinia jacarina (Linnaeus, 1766))*
Trinca-ferro	Estevo/estevão	*Saltator similis (d'Orbigny & Lafresnaye, 1837)*
Urubu-de-cabeça-amarela	-	*Cathartes burrovianus (Cassin, 1845)*
Urubu-de-cabeça- preta	-	*Coragypss atratus (Bechstein, 1793)*
Urubu-de-cabeça-vermelha	Urubu-merdeiro	*Cathartes aura (Linnaeus, 1758)*
Urubu-rei	-	*Sarcoramphus papa (Linnaeus, 1758)*
Vim-vim	Fim-fim	*Euphonia chlorotica (Linnaeus, 1766)*

Vim-vim-grande	-	*Euphonia xanthogaster xanthogaster (Sundevall, 1834)*
Vô-da-lua	Mãe-da-lua	*Nyctibius griseus (Gmelin, 1789)*
Xeque	-	*Agelaioides fringilarius (Spix, 1824)*
Zabelê	-	*Crypturellus noctivagus (Wied, 1820)*

The data of this study resembles the results found by Galvagne-Loss et al. (2014) in a survey carried out in the community of Pedra Branca, municipality of Santa Terezinha, Bahia, when they registered 139 common names, corresponding to 117 (84.17%) endemic species. Of the ethnospecies mentioned, nine could not be identified because the interviewees were unable to provide more information about their morphology and behavior; not even the help of the bird guide allowed us to determine which bird was mentioned considering only the information about the popular name. Figure 2 shows the most frequently cited bird species in the social context. Among the 9 species mentioned, the following can be highlighted: "Blue hawk", "Ox hide", "Para-bala", "Tuntum" and "Zé-pintinho". It may be necessary to deepen the study to identify these unusual creatures. Among the endemic species, the most cited by the interviewees were the Northeast Cardinal - *Paroaria dominicana* (50.0%); Coca Thrush - *Turdus rufiventris* (48.0%); *Coryphospingus pileatus* (46.0%); Sofrê - *Icterus jamacaii* (40.0%); Collar - *Sporophila caerulescens* (38.0%); *Eupetomena macroura* (36.0%) and *Forpus xanthopterygius* (32.0%).

These endemic species are those that evidently cause some cultural influence, as they are also important in the local economy. If there were surveys like this carried out in city halls or through municipal surveys, it would be possible to use them to support management strategies and socio-environmental education programs, promoting a sustainable use of species and strengthening the local traditional knowledge.

Figure 2. Most cited endemic species in the social sphere of Catuni, Bahia, Brazil. (A) Hummingbird; (B) Cardinal; (C) Coleir; (D) Sofrê.

It is also worth noting that some of the species listed, such as Cancão (*Cyanocorax cyanopogon*), Ribaçã (*Zenaida auriculata*), Galo-de-campina (*Coryphospingus pileatus*) and Sofrê (*Icterus jamacaii*) stand out for being endemic species of the Caatinga biome, Sick (2001). These are birds commonly found in the community of Catuni da Estrada, requested to be raised in cages, which often occur in an unregulated way. Also, according to the interviewees, the birds live mainly in the environments of mountains, forests and on the banks of the Catuni River, where they create their nests and search for food. Therefore, the mountainous environments constitute a great refuge for animal species, and the survival of the various species inhabiting the area depends on them. Mountains are perceived as ecological islands composed of several endemic species, thanks to their isolation and verticality, Netto et al. (2020).

Trophic relationship

Regarding the trophic use of birds, the interviewees of the present study mentioned 24 endemic species used as food. The Use Value (UV) of the birds ranged from 0.02 to 0.36. The endemic species most used for food use by the interviewees are: Nambu (*Crypturellus parvirostris*) - VU=0.36; Juriti (*Leptotila verreauxi*) - UV=0.26; Quail (*Nothura boraquira; Nothura maculosa*) - VU=0.18; Turtledove (*Columbina picuí; Columbina talpacoti*) - UV=0.10-0.16; Jacu (*Penelope jacucaca*) - UV=0.12. (Figure 3). The variety of species consumed illustrates not only the availability of resources in the environment, but also the adaptation of residents to different types of birds that are captured and used for different food purposes, with some species being more valued than others, according to their availability and local preferences. Figure 3 shows examples of birds captured and consumed by the community. Among the birds mentioned, endemic species that are on the list of birds in the Red Book of Endangered Brazilian Fauna: volume 1, Brasil (2018) were recorded, marked as Species used as trophic resources critical species. They are Jacu (*Penelope jacucaca*) of the CRACIDAE family and Zabelê (*Crypturellus noctivagus*) of the TINAMIDAE family, both in the vulnerability category.

Figure 3. Birds used for food in the community of Catuni, Bahia, Brazil. Since the species Penelope Jacucaca is on the list of endangered birds. (A) Cat's alma-de-gato; (B) *White turtledove*; (C) *Three-pot*; (D) Jacu.

According to Sick (1997), the families Columbidae and Cracidae represent an important trophic resource for human communities throughout the country. In Catuni, these animals are in great demand as a variation in the protein diet, especially in contexts where access to industrialized protein sources and food markets is limited. These birds are considered important for their good accumulation of body mass and pleasant flavor, which makes them an accessible source of protein with nutritional value for local populations. However, it is relevant to know the impact of collecting these species on the ecological balance and on the local food chain. If, on the one hand, bird hunting can play an essential role for subsistence in rural and isolated areas, where food alternatives are scarce, on the other hand, it can interfere in the dynamics of fauna populations, affecting biodiversity and trophic relationships in biofauna. Thus, it is important that collection and consumption practices are aligned with sustainable

management and respect for environmental laws, seeking to foster a food culture that balances nutritional needs with the conservation of local ecosystems.

> I think that in terms of eating there are no poisonous birds. Now there are differences in flavor, body thickness, some are chubby, have a lot of meat, and others are thin (Antônio, 75 years old).

To acquire these animals and allow for different uses (interactions), several hunting methods have been cited. Knowledge of these techniques is passed down from generation to generation and is part of the culture in the social sphere in question. This traditional knowledge, although deeply rooted in the history and cultural practices of the community, also reflects the needs and realities of the past and present and deserves to be considered in the context of current practices. The rescue of this ancestral knowledge, while recognizing the importance of local culture, can contribute to the development of socio-environmental education strategies, offering a basis for promoting understanding of the relationships between fauna, the environment, and people. This perspective paves the way for more in-depth studies, such as articles and essays that can integrate traditional knowledge with sustainable management and the preservation of local biodiversity. The main hunting and trapping techniques mentioned by the interviewees are described below.

Hunting methods

Hunting is a practice adopted by humanity since ancient times, in various parts of the world, hunting was an essential means for survival, providing food and marking the transition between different age phases, symbolizing independence and autonomy. In some cases, it also represented a source of income. As a result, several techniques were and are developed to assist in the capture and/or slaughter of the desired species, being adopted according to the species, resources and purpose for which the captured animal is intended, Alves et al. (2010). It is worth mentioning that many of these hunting practices can be part of child development and/or adolescence, being essential for the formation of cultural identity and for the development of practical skills, such as learning hunting techniques and understanding the local biome. In this sense, it is relevant to reflect on the impacts of these practices by age group, especially about cognitive development and the construction of environmental awareness. Although this topic cannot be fully addressed in this article, it could be explored in future work. In addition, the reflection on the role of these practices in local development points to the need for adequate management, which involves not only environmental authorities, but also socio-environmental education initiatives through city halls, environmental secretariats, public prosecutor's office, and police stations. The objective would be to reconcile traditional practices with the preservation of local fauna, offering strategies that promote the sustainable use of natural resources. In Catuni, 13 (thirteen) ways of hunting were mentioned, consisting of techniques (traps, instruments) used to capture birds from the region surrounding the community. An example of a trapdoor hunting method is shown in Figure 4.

Figure 4. Capture of birds with trapdoors, Souto et al. (2011).

The trapdoor (N=8) is a type of capture cage for light birds. The song of a bird is used as a "*caller*". It is a technique used to attract other birds, which will certainly compete for territory and resources.

The trap (*n*=17) is a technique that uses pieces of wood that vary according to the size of the bird to be captured. When the bird moves the bait, the device is triggered, imprisoning it until the hunter returns. The badogue (*n*= 7), also known as a slingshot, is used "normally" by children and young people in the community. The shotgun (*n*=13) is a firearm of different calibers and simple and low-cost ammunition. Generally, they are lead particles that vary in size according to the game. Hunting with weapons results in a vast capture of species, but it is an extremely destructive technique, Alves et al. (2009); Trinca and Ferrari (2006).

> Everything has a way of catching on, I myself am against it! (Nilde, 43 years old).

The jackfruit mistletoe (*n*=6) is a totally artisanal technique. In the confection, only a cylindrical-shaped wood is used, surrounded by the vegetable juice of the jackfruit tree, which is glutinous and sticky, commonly used to capture live specimens, especially Passeriformes. Other techniques were also mentioned, such as the use of arrow (*n*=1), fojo (*n*=7) and net (*n*=1), etc.

> He takes the mistletoe from the jackfruit and wraps it on the stick (Rosemar, 52 years old).

Thus, it is perceived that the social chain that provides and stimulates this type of activity has a strong connection with biocultural and economic factors.

Uneaten species

Also, according to some interviewees, there are food taboo restrictions on certain birds. The Black-headed Vulture (*Coragypss atratus*) with *n*=11 and the Wool Tree were mentioned (*Fluvicola nengeta*) *n*=6. Bird species are not consumed due to cultural, spiritual, or behavioral reasons shown in Figure 5. The Sparrow (*Passer domesticus*) and the Sheikh (*Agelaioides fringilarius*) were also mentioned because they live in human environments, in addition to the Heron (*Bulbucus ibis*) that feeds on ticks. There are also those birds that remain taboo due to religious and spiritualist factors, such as: Jesus-my-God (*Zonotrichia capensis*), Shroud-tearing owl (*Tyto furcata*). Given the complexity of these interactions, it is recommended for future studies: (1) to investigate the impact of artisanal capture techniques on the sustainability of birds; (2) to analyze cultural taboos and their influence on the community-fauna relationship; (3) to study the use of birds as local resources to support conservation; and (4) to develop management plans for birds of cultural value, balancing conservation and traditional practices. Figure 6 highlights the species *Fluvicola nengeta*, respected for religious reasons.

> You don't eat the laundry, because when Jesus walked in the world, she was the one who washed his clothes (Maurina, 60 years old).

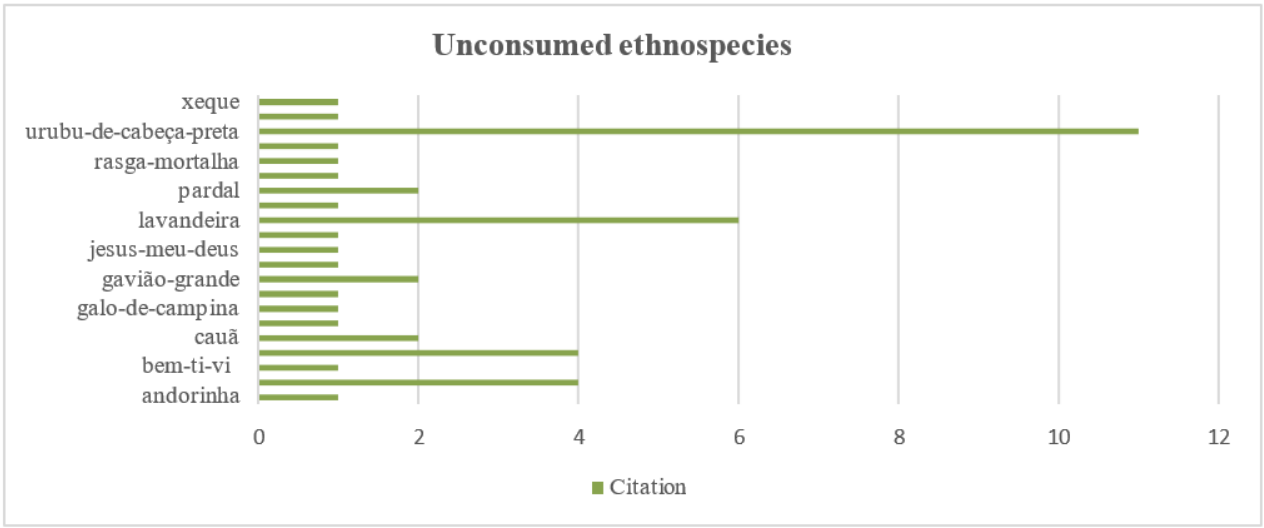

Figure 5. Birds not consumed by residents of Catuni da Estrada, with their respective number of citations, Souto et al. (2011).

It is worth mentioning, Ceará, that a veterinarian indicated for human consumption the meat of Vulture (*C. atratus*), exposing how the animal's food ecology works and its benefits (rich in protein, amino acids, HDL, etc.). Even with fear, people began to eat, and reports revealed that the meat was good and easy to digest.

Birds avoided due to their feeding behavior are shown in Figure 7. The laundromat (*Fluvicola nengeta*) was considered by the interviewees as a bird blessed and protected by Our Lady or Jesus Christ, so it is not hunted, not serving as a food resource.

No one dares to kill to eat, she is very respected (Celso, 70 years old).

The laundrywoman, people say that she washed the cloths, clothes of Jesus and Our Lady (Aparecida, 43 years old).

Forbes (1881) cited in an article one of the most well-known memes, that of the lavender (*Fluvicola nengeta*), in which the bird would theoretically have done a favor to the Virgin Mary, and it would be an act of sacrilege to sacrifice her. Some endemic species mentioned and their social approach regarding their food restrictions were portrayed.

Figure 6. Species Lavandeira and *Fluvicola nengeta*, bird most cited by residents as not consumed for religious and spiritual reasons.

Figure 7. Species are not consumed due to feeding behavior. (A) *Black anum or Crotophaga* ani; (B) Carcará or *Caracara plancus* (C) *King vulture* or *Sarcoramphus papa*; (D) Red-headed vulture or *C. atratus*, Bonfim (2020

Unconsumed species were also mentioned, being deeply linked to religious issues and the bird's own behavior. Examples of birds not consumed by the community are detailed in Table 2.

Table 2. Example of endemic species that are not consumed by the residents of Catuni, Bahia, Brazil.

Endemic species	Statements by Interviewees
Lavandeira (Wagtail)	"You can't eat the wagtail because she washed Jesus' clothes, it's all true! My mother always told me that." — N., 43 years old.
Pardal (Sparrow)	"The sparrow just stays there in the middle of the street!" — A. C., 23 years old.
Urubu (Vulture)	"The vulture, because it eats carrion – it's a cleaner of nature!" — Jean, 28 years old.

Ethnomedicinal relationship

In the scope of zootherapeutic use, 11 (eleven) endemic species of birds used in Catuni were mentioned. Table 3 summarizes the birds used for therapeutic purposes and their traditional indications. Regarding the Use Value, the endemic species black-headed vulture (Coragyps atratus) was the most cited for medicinal use, presenting UV = 0.33; Bean Dove (Columbina talpacoti) UV = 0.13; Black anum (*Crotophaga ani*) UV = 0.10; Cauã (*Herpetotheres cachinnans*), Juriti (*Leptotila verreauxi*) and Partridge (*Rhynchotus rufescens*) UV = 0.08. These birds provide 9 (nine) raw materials for the treatment of various locally diagnosed diseases. According to the interviewees, the most used are feathers, liver, bones, whole birds, blood and lice. The use of animal parts in traditional medicine, in many communities, is an important option for the treatment of numerous ailments.

> The black anum uses the feathers of the right wing, makes the powder and drinks, it's good for the nerves, while the vulture, roasts the liver and puts it in cachaça, but the person can't know! It's for alcoholism. There's also Juriti's blood, it's good for a long cough, it drinks the blood (Maurina, 59 years old).

> The Vulture is good for tuberculosis! Capture the Vulture, put it in the mortar, it is alive! Then it hurts until it becomes bagasse, then it cooks and gives the sick person to drink that broth without salt. But hidden from the sick (Antônio, 75 years old).

Table 3. Endemic species used as a therapeutic resource and their ethnomedicinal indications, by the residents of Catuni, Bahia, Brazil.

Etnoespécies	Scientific Name	Used Parts	Indications
Anum-preto	*Crotophaga ani*	*Penas Fígado Bico*	*Nervos* *Doença do vento (derrame)*
Aracuã	*Crotophaga ani*	*Gordura (banha)*	*Dor de ouvido*
Cauã	*Herpetotheres cachinnans*	*Ave inteira Ossos Penas*	*Doença dovento (derrame)*
Coruja	*Athene cunicularia*	*Ave inteira*	*Alcoolismo*
Galinha	*Gallus gallus domesticus*	*Penas*	*Doença do ar*
Juriti	*Leptotila verreauxi*	*Sangue Moela Ave inteira*	*Tosse comprida Catarata*
Pavão	*Pavo cristatus*	*Penas*	*Doença do vento*
Perdiz	*Rhynchotus rufescens*	*Penas Pé Moela*	*Doença do vento Coluna*
Rolinha-caldo- de-feijão	*Columbina talpacoti*	*Penas Ninho*	*Doença do vento (derrame)*
Rolinha-branca	*Columbina picui*	*Penas Ninho*	*Doença do tempo*
Urubu-de- cabeça-preta	*Coragypss atratus*	*Penas* *Ave inteira Piolho Fígado*	*Tuberculose Cura de umbigo* *Despacho Asma etc.*

The raw materials derived from birds most used for therapeutic purposes by the residents of the village of Pedra Branca in Bahia are feathers, eggs and lard. In Catuni, these raw materials are also used to make medicines.

> Aracuã lard is good for earache, it goes in the ear! (Maurina, 59 years old).

> The Partridge feather is good for this wind disease, it takes the feather and makes a smoker, the turtledove's nest is also and the vulture's feathers (Zezinho, 50 years old).

In this study it was possible to observe that, among the endemic species used for this purpose, most comprise wild birds, and only two domestic endemic species (*Gallus gallus domesticus and Pavo cristatus*) used in local ethnomedicine were identified.

> Take the Peacock feather and burn it for a smoker, it's good for wind sickness! I made it for my aunt, and she did well (Paulo, 68 years old).

> The feathers of the ruped chicken make the smoker serve air sickness (Josefa, 55 years old).

Thus, zootherapeutic practices follow a mystical flow, being called "*magic cures*" and "*sympathies*", with the popular belief that birds could promote the cure of diseases through symbolic rites, in which the sick person is medicated without knowing the form of treatment, a natural tendency in traditional Brazilian

medicine, Alves and Pereira Filho (2007); Alves (2009). Although for local communities these practices are seen as a truth, from a scientific perspective, they suggest a possible positive relationship, which needs to be confirmed by statistical tests or other research and correlations. In this scenario, it is necessary to clearly understand which species are important in the ethnomedicinal relationship in each territory of the country. It is shown to be a tool of crucial importance for knowing the cultural relationship between avifauna and the practices carried out by traditional medicine in existing populations, Souto et al. (2011).

Socio-affective interaction

The rearing of birds in cages is a common practice in Catuni, culturally transmitted. 22 endemic species were recorded, with emphasis on: Cardinal-of-the-Northeast (*Paroaria dominicana*, *n*=26), Papa-capim (*Sporophila nigricollis*, *n*=15), Collar (*Sporophila* 12 *caerulescens*, *n*=15) and Galo-de-campina (*Coryphospingus pileatus*, *n*=13). Table 4 lists birds raised in captivity and their affective importance.

Table 4. Endemic species are cited through affective use in the municipality of Catuni.

Etnoespécies	Scientific Name	Used Parts	Indications
Azulão	*Cyanoloxia brissonii*	19	0,38
Bigodinho	*Sporophila lineola*	6	0,12
Canário-da-terra	Sicalis flaveola	1	0,02
Canário-da-serra	*Sicalis luteola*	1	0,02
Caerdeal	*Paroaria dominicana*	26	0,52
Coleira	*Sporophila caerulescens*	15	0,30
Curiatá	*Euphonia violácea*	1	0,02
Curió	*Sporophila angolensis*	1	0,02
Trinca-ferro	*Saltator similis*	9	0,18
Galo-de-campina	*Coryphospingus pileatus*	13	0,26
Jesus-meu-deus	*Zonotrichia capensis*	14	0,28
Papa-capim	*Sporophila nigricollis*	15	0,30
Papagaio	*Amazona aestiva*	1	0,02
Passo-preto	*Gnorimopsar chopi*	9	0,18
Pêga	*Icterus pyrrhopterus*	1	0,02
Priquitinho	*Eupsittula cactorum*	1	0,02
Pintassilgo	*Spinus yarrellii*	1	0,02
Rolinha-caldo-de- feijão	*Columbina talpacoti*	2	0,04
Sabiá-coca	*Turdus rufiventris*	7	0,14
Sabiá-de-sebo	*Mimus saturninus*	6	0,12
Sofrês	*Icterus jamacaii*	8	0,16
Tiziu	*Volatinia jacarina*	2	0,04

These are birds that have striking characteristics, such as song, the beauty of their plumage, in addition to being highly threatened with extinction. The interest in captive breeding (cages) and illegal trade is often fueled by different groups of consumers. To mitigate the population decline of these species, in addition to legislation, it is essential to adopt strategies for environmental awareness, education about the importance of wild fauna and offer sustainable alternatives, such as responsible breeding programs and incentives for birdwatching tourism, which contribute to the appreciation and preservation of species in their natural habitat.

> I think the singing and the beauty of the feathers are beautiful (Antônio Carlos, 23-year ond)

From the inspection of the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) in the face of the habit of raising birds in cages, as in the case of the Papa-capim and the Collar.

> Boy, the species were decreasing, but now it's increasing! Due to the reproductions in captivity, you don't need to catch it in the bush anymore (A C., 23 years old).

Cited by Pimentel and Santos (2009), the culture of raising songbirds and small birds is concentrated in the State of Bahia, with the Cardinal (*Paroaria dominicana*) being the bird that had the largest number of individuals seized by preventive inspection, followed by Bluebird (Cyanoloxia brissonii), Canary-of-the-earth (*S. flaveola*), Blackbird (C. chopi), Estevão (*S. similis*) and Papa-capim (*Sporophila nigricollis*). In the community of Catuni it is common for such species to be raised as pets. The breeding of wild birds as pets in Catuni can lead to the decline of natural populations, promote illegal trade and harm animal welfare, in addition to perpetuating cultural practices that affect local biodiversity.

In this perception, peasant populations can detect and perceive bird sounds as part of a "*soundscape*". Thus, a study carried out by Marques (1998) in Várzea da Marituba, allowed us to affirm that it is possible to find humans with a high degree of musical intelligence and that vocalizations acquire cultural connotations.

Magical-religious connections

The legends involving birds are widely told in the community of Catuni, according to the interviews, the endemic species are socially described as being animals that bring a warning of death or bad omen, those that bring bad omens, those that foreshadow climatological events in addition to the birds that announce the arrival of visitors. Table 5 presents the birds associated with mystical or religious beliefs.

Table 5. Endemic species are mystical-religious in the municipality of Catuni.

Endemic species	Interviewee Citations
Lavandeira	"She washed Jesus' clothes. If you kill her, it brings years of bad luck." — Dona Maria das Graças, 49 years old
Rasga-mortalha	"They say that if it flies over the ridge of a house, someone in the family will die! Not everyone believes it, but it's the pure truth." — Nilde, 43 years old
Pomba	"They see the dove as the Holy Spirit and it's also used in Candomblé rituals." — A., 75 years old
Rolinha Rolinha (Ground dove)	"The folks over there use the ground dove in Candomblé rituals." — Seu Justino, 72 years old
Urubu	"The vulture was made to clean the world. If you shoot it, you're attracting bad things to yourself, you're condemning yourself! God made it for cleaning the world." — Seo Zezinho, 62 years old
Vô-da-lua (possibly *Nyctidromus albicollis*)	"They say when it sings on top of the house, it's cursing the people to die. But when it sings differently, it's a sign of rain." — Aparecida, 43 years old

Several birds also have vocalizations that "foreshadow" rain; this fact usually happens because climatic factors influence both the reproductive season and the birds' singing, Magalhães (1952); Sick (1997); Kizungu et al. (1998). According to Marques (2002), the songs of these animals are signs of the animal world that human beings grant meanings and values, called zoosemiotic transmutation. In this concept, ornithoaugurs stand out, consisting of "vocalizations that have the power to foretell natural and/or "supernatural" occurrences, being approached as a transcultural phenomenon.

> Vem vem, o fim-fim! When he stays near the house singing Vem-Vindo it is a visit, illness, or warning of something (Aparecida, 43 years old).
>
> The Owl flies and sits on the ground, then it ruins the person, it's not lucky! (Evandro, 36 years old).
>
> The cattle scare I want to, if he eats it, he doesn't sleep at night with it making fun of his head (Adão, 43 years old).

Several birds emit melodious sounds, which, culturally, are understood from different perspectives, being part of myths, superstitions and popular legends, becoming an integral component of folklore, Teschauer (1925); Nomura (1996); Sick (1997). Therefore, in the community in question, there are several myths addressed by social actors, since some birds are strongly seen as ominous. Thus, the energy that is supposedly emitted by the singing and performance of birds around the houses is slaughtered in a perspective to block the bad omens.

Conservationist Implications

Understanding the local culture is essential to understand the relationships between humans and birds. Many interviewees reported the decrease in birds in the region, attributed to deforestation and fires resulting from environmental crimes in the mountain area of the Catuni community. The fragmentation and loss of habitat, caused by the suppression of native vegetation, induces vast consequences for local bird populations, with sensitive species or specialists being the most affected, Santos and Costa-Neto (2007). The perception of the interviewees related to the conservation of the avifauna is perceptible when narrating possible reasons why birds are in the process of decreasing, as highlighted in the following statement:

> Here there were many birds, but as man destroyed the forests, the birds moved away! It is rare that a person sees a turtledove, a Cardinal, a Bluebird does not even see himself anymore. The culprit of all this was the man who, in addition to destroying the forests, took it to sell, trafficking the animals! (A, 75 years old).

The production of knowledge of local biodiversity is urgent. The implementation of wind farms in the mountainous region is also responsible for causing profound impacts on local avifauna, especially for species that need large areas to take flight, as well as migratory habits, Drewitt and Langston (2006). Another direct factor linked to this impact is the collision of birds on wind towers. Average estimates of annual mortality in the USA in wind turbines quantify collisions ranging from 20.000 to 573.000 birds per year, Erickson et al. (2001), (2005); Sovacool (2012); Smallwood (2013). Thus, it would be important to ask traditional communities which are the priority areas for conserving biodiversity and which strategies would make the most sense. It is worth remembering that birds constitute one of the most studied groups, in the ecological and taxonomic sense, being essential animals as bioindicators and in the identification of areas of endemism and those that are priorities for the implementation of conservation projects, Eken et al. (2004). Figure 8 presents species frequently observed in local birdwatching practices. This knowledge is fundamental to guiding preservation actions that consider both ecological needs and local social realities. In this perspective, we can mention the potential of birds for the practice of birdwatching.

Figure 8. Birdwatching in Catuni, Bahia, Brazil. (A) Violet-eared hummingbird - *Colibri serirostris;* (B) Blue tanager - *Dacnis cayana*; (C) *Coryphospingus pileatus*; (D) Awl-billed - Galbula ruficauda.

Commonly called Birding, this activity is responsible for promoting several factors that help promote the well-being of human and bird populations. Being responsible for moving local tourism contributes to the conservation and awareness of people, in addition to generating quantitative data for citizen science. Such data are often used to understand the distribution pattern and richness of species, allowing the implementation of more targeted and effective conservation strategies. In addition, the practice can strengthen the involvements of local communities with the preservation of their natural resources.

Conclusion

Catuni's ethnoornithological study reveals a deep relationship between the residents and the avifaunaobserved in food interactions, medicinal use, and illegal trade. Some species, such as Saltator similis and *Paroaria dominicana*, are threatened. Traditional knowledge is important to understand the threats to local biodiversity. The lack of public policies aggravates environmental degradation, making conservation and community-based tourism essential for the sustainable development of the region.

A Casaca-de-couro é o maestro do Sertão (João, 45 years)

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