Unveiling the Cultural Significance of Animals in Goan Tradition: An Ethnozoological Exploration of SelectedTalukas of Goa

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DECLARATION BY STUDENT

I hereby declare that the data presented in this Dissertation report entitled, "Unveiling the Cultural Significance of Animals in Goan Tradition: An Ethnozoological Exploration of Selected talukas of Goa " is based on the results of investigations carried out by me in the (Zoology Discipline) at the School of Biological Sciences and Biotechnology, Goa University under the supervision of Dr. Nitin Sawant and the same has not been submitted elsewhere for the award of a degree or diploma by me. Further, I understand that Goa University or its authorities will not be responsible for the correctness of observations / experimental or other findings given the dissertation.

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COMPLETION CERTIFICATE

This is to certify that the dissertation report **"Unveiling the Cultural Significance of Animals in Goan Tradition: An Ethnozoological Exploration of Selected talukas of Goa"** is a bonafide work carried out by **Ms Ishika Gajanan Chopdekar** under my supervision in partial fulfillment of the requirements for the award of the degree of (**M.Sc Zoology**) in the Discipline (Zoology Discipline) at the School of Biological Sciences and Biotechnology, Goa University.

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Contents

Preface

Goa, a tiny state on India's western coast, is a treasure trove of cultural and biological diversity. Home to a rich cultural heritage and a unique blend of traditional and modern practices, Goa offers a fascinating backdrop for exploring the complex relationships between humans and animals. This dissertation “Unveiling the Cultural Significance of Animals in Goan Tradition: An Ethnozoological Exploration of Selected Talukas of Goa’' delves into the uncharted territories of animal mythology, temple worship, and zoo therapy in Goa.

Through this research, I aim to uncover the intricate web of beliefs, practices, and stories that surround animals in Goan culture. By examining the mythology of animals, animal worship in temples, and the potential of zoo therapy, this study seeks to contribute to a deeper understanding of the cultural significance of animals in Goa.

This research is not just an academic exercise, but a journey into the heart of Goa's cultural identity. It is an attempt to listen to the stories, legends, and experiences of the people of Goa, and to understand how animals shape their lives, beliefs, and practices.

I hope that this dissertation will not only shed light on the ethnozoology of Goa but also inspire further research and conservation efforts in this unique region. By exploring the cultural significance of animals, we can gain a deeper appreciation for the natural world and our place within it."

Acknowledgment

This dissertation program has taught me to endure and overcome every forthcoming challenge. I am deeply indebted to all those who helped me channel my energy for my best, in every possible way.

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Tables and Figures

Abstract

This dissertation investigates the ethnozoology of Goa, focusing on the mythology of animals, animal worship in temples, and zoo therapy practices in Bicholim and Tiswadi talukas of Goa. The study aims to document and analyse animals' traditional knowledge and uses in these regions.

A mixed-methods approach was employed, combining survey research in which 144 homes that is 72 homes per taluka were interviewed out of which 120 responded, and online Google surveys with 80 respondents. The findings reveal that 33 species of animals are used in zootherapy, with mammals being the most commonly used (39.39%) and amphibians the least (3.03%). Fidelity levels were highest for mammals (52.13%) and lowest for annelids (2.44%). The mode of application was primarily consuming raw (26.41%) and least commonly massaging (1.88%).

This research provides valuable insights into the cultural significance of animals in Goa, highlighting the importance of mammals in traditional practices. The findings contribute to a deeper understanding of ethnozoology in the region and have implications for conservation efforts, cultural heritage preservation, and the development of innovative therapeutic approaches.

CHAPTER - 1

Introduction

The fascinating field of ethnozoology, which lies at the crossroads of anthropology, zoology, and cultural studies, explores the complex interactions that people have with animals in a variety of settings and cultures. This topic provides an intriguing investigation into how various communities view, engage with, and make use of the animal species; it is a tapestry woven with ecological practices, traditional knowledge, and spiritual beliefs. (Ishaq and Adil, 2021).

Since the beginning of written history, animals have performed a wide range of roles in human existence, and people have interacted with one another in numerous ways. "The investigation of biological sciences as applied by the various populations under investigation in ethnozoology," based on a definition from the 19th century (Clement et al., 1998)

Ecology and culture interact in mutual ways, and ethnobiological research greatly advances our knowledge of these interactions. It covers cultural knowledge, the naming and classification of animals, and the use of both domestic and wild animals. The study of human-animal interaction is known as ethnozoology. A branch of biology called ethnozoology studies how people interact with animals and the information they have learned about Earth's wildlife. The goal of ethnozoological research is to better understand the roles that animals play in human civilization by utilizing information from Ethnozoology. A subfield of Ethnology called Ethnozoology examines how people have lived around the world observed and engaged with wildlife resources from the dawn of humankind (Alves and Souto, 2015).

Goa, a state in western India, is well-known for its immaculate beaches, lively culture, and abundant wildlife. This idyllic coastal town is home to a wealth of ethnozoological information, where the region's varied wildlife coexist with centuries-old customs and beliefs. Goan ethnozoology provides an intriguing look into the complex bonds that Goan communities havebuilt with animals, which have shaped their everyday customs and sense of self. Animals are present in every aspect of Goan culture, from the cow's sacred place in Hindu ceremonies to the mythology surrounding the elusive

king cobra.

They are sources of sustenance, ecological protectors, and spiritual symbols. Goa's ethnozoological landscape reflects the region's complex history and cultural diversity, with a blend of indigenous traditions, Portuguese influences, and modern dynamics. We explore the diverse ways that Goans view, engage with, and preserve the animal kingdom via the lens of ethnozoological inquiry, fusing environmental stewardship, innovation, and tradition. (Sonak,2005)

In this succinct overview of ethnozoology in Goa, we set out to investigate the cultural fabric that unites people and animals in this seaside community. Every thread reveals a distinct expression of human-animal relationships that resonates with both reverence and pragmatism, from the sacred groves dedicated to local deities to the sustainable fishing practices passed down through generations. Using community involvement, interdisciplinary cooperation, and ethnographic research.

Zootherapy, a centuries-old healing art that employs animals and their byproducts for therapeutic purposes, provides a distinctive viewpoint on medical care. (Haidar and Bashir, 2021), Zootherapy, which has its roots in the Greek words "zoo," which means animal, and "therapeia," which means healing, includes a wide variety of conventional and non-traditional healing techniques used by people in many different cultures. Animal-assisted therapy for mental health disorders and the application of animal venoms and oils provide a holistic approach that incorporates the natural world into the healing process. This will examine the history, cultural relevance, therapeutic uses, and ethical issues related to the practice of zootherapy, among other aspects of the discipline. Learning more about the close relationship that exists between people, and animals, and the restorative power of nature through zootherapy. (Kim and Song, 2013)

The human-animal bond can typically arise from a variety of obligations for things like clothing, food, medicine, and other forms of assistance. Every human ethic, which often advocates a planned healthcare system, uses animals as pharmaceuticals. According to traditional wisdom, eating animals is a part of the body. This information is increasingly being taken into account about public health initiatives, human protection, a natural viewpoint with patents, and ecological management of natural resources. (Alves and Rosa, 2005; Alves and Alves, 2011)

Over the past ten years, there has been a significant increase in research focus and activities in the fields of ethnomedicine. Systematic research in these specialized fields has been essential to our understanding of conventional subsistence and medical information and exercise since the disciplines' founding. In India, zootherapy has been practiced for ages, and its benefits have been acknowledged by Ayurveda and Siddha since ancient times. (Altaf et al., 2017) Furthermore, a great deal of information has been transmitted to the present day through folklore, as manycustoms became ingrained in the traditions of various ethnic groups. (Farooq et al., 2019) Thus, before the conventional wisdom completely disappears, it is imperative to inventory and record all ethnic zoological data among the various ethnic communities. (Vijayakumar et al., 2015) When compared to plants, research on the potential for healing properties of animals and their body parts has been abandoned; nevertheless, immediate assistance is needed in this particular niche. (Cheikhyoussef et al., 2011)

This Study aims to fill the Lacuna of the Ethnozoological knowledge that is the man-animal coalition. Goa is a culturally rich state that showcases traditional connectivity with wildlife, (flora and fauna) however there is a major lacuna in addressing this scientific documentation on ethnozoology.

1.1 BACKGROUND

Goa has a long history of fostering cohabitation between human groups and the surrounding biodiversity, which includes a wide range of animal species.

The state is renowned for its unique cultural heritage. The study of the link between humans and animals in cultural contexts, or ethnozoology, is important for comprehending indigenous knowledge systems, customs, and cultural beliefs related to the local fauna.

Limited Research: Despite its importance, very few thorough studies have been done on Goa's ethnozoological activities, especially in the Tiswadi and Bicholim taluka Goa administrative districts that offer distinctive sociocultural contexts.

Goa is a Biodiversity hotspot due to its position in the Western Ghats, where a variety of ecosystems

support a large number of Animal species, many of which are significant to the local inhabitants both culturally and economically.

Traditional ethnozoological traditions and the preservation of Goon fauna are seriously threatened by the state's rapid urbanization, habit degradation, and shifting socioeconomic dynamics.

Finding and recording the ethnozoological practices and knowledge that exist within certain Goan talukas might close a significant research gap by offering insights into conservation tactics, traditional ecological knowledge, and possible direction for sustainable development.

Importance of Study: Conservation policies, biodiversity management plans, and initiatives to support the preservation of cultural heritage and sustainable lifestyles can all benefit from an understanding of the ethnozoological viewpoints of the local communities in these talukas. Overall, the background emphasizes the value of researching ethnozoology in the setting of two Goan talukas, highlighting the necessity for studies to close the information gap and support both academic research and real-world conservation efforts.

1.2 AIMS & OBJECTIVES

Aim

1. To unveil the cultural significance of animals in Goan Tradition

Objectives

1. To document and analyze the Ethnozoological knowledge of Goan traditions and culture.
2. To investigate the use of faunal diversity in traditional medicine (Zoo therapy) and folk remedies.

1.3 HYPOTHESIS

Differences in cultural history, ecological locations, and socioeconomic variables, the groups in Tiswadi and Bicholim Taluka will have quite different Ethnozoological knowledge and practices.

1.4 SCOPE

1. Ethnozoology in Goa studies traditional knowledge of local fauna, including customs, folklore, and ceremonies.

2. It contributes to biodiversity conservation by documenting ecological knowledge andcommunity-based wildlife management.

2. Research delves into animal use in traditional medicine and cultural practices, enriching understanding of therapeutic qualities and cultural significance.

3. Livelihoods are explored by studying animals' roles in fishing, agriculture, and the economy, aiming for sustainable resource management.

4. The field's scope encompasses preserving biodiversity, cultural heritage, and sustainable liveloods within Goa's diverse human-animal interactions.

CHAPTER - 2

Review of Literature

A Study was conducted by (Alves & Souto, 2017). on Ethnozoology in Brazil: current status and perspectives. This study explores the development, trends, and prospects for ethnozoological research in Brazil over the last century. This revealed that ethnozoology in Brazil has made substantial strides recently. The difficulties in researching ethnozoology in Brazil are considerable, and the patterns found in this study could help define research approaches that can both support the necessary qualitative advancements and sustain the recent development in quantitative data.

Food taboos refer to carnivorous or medicinal animals (Cristiana Simao Seixas, 2001) This study covers an aspect of ethnozoology of inhabitants of Avenlureiro and Proveta, communities located Ailiha Grande, Atlantic Forest coast (SE Brazil analyzing the local nomenclature of fish, and comparing it to the scientific taxonomy suggests that local knowledge of game and fish usefulness as well as on folk taxonomy may be an important source of information to develop ecologically sound, and socio-economically appropriate resource management plans.

The study examined the Cuicatec people, an extinct human group confined to the area, and their understanding of and usage of animals in connection with faunistic management. This study anticipated a spectrum of interactions, ranging from basic hunting and gathering to community use laws, specialized management approaches, and the care, raising, and domestication of animals. The preservation of viability, the scarcity of animals, and cultural and economic values would all have a proportionate impact on this gradient of management interactions. (Solis & Casas, 2019).

From the dawn of their common existence, humans have utilized animals and their products. (Demelo et al., 2014). A study has been conducted on The Role of Mammals in Local Communities Living in Conservation Areas in the Northeast of Brazil: An Ethnozoological Approach. This study examines the roles that mammals play in two communities that live in protected areas, taking into account the effects

of age and gender on people's awareness of and use of mammals.

A study conducted by (Ahmad et.al., 2021) on Zootherapy as a traditional therapeutic strategy in the Cholistan desert of Bahawalpur-Pakistan says that the current study compiled folk knowledge about the usage of various animal-derived goods and Ethnozoological based medications as medicinal remedies by the people living in Bahawalpur, Pakistan's Cholistan desert. In this regard, 46 trustworthy and knowledgeable seniors, hakims, and spiritual healers between the ages of 35 and 60 who were knowledgeable about zootherapy were included in the current study.

Animals are used for the treatment of diseases caused by inflammatory processes, although few studies evaluate their potential for these purposes (Ferreira et.al., 2014). This study reported that zootherapeutic compounds made from vertebrates that are utilized in traditional Brazilian medicine have anti-inflammatory properties.

Both domestic and wild animals, as well as their byproducts, are valuable components in the creation of traditional folk medicines that have been practiced since antiquity in many human civilizations. (Santos et.al., 2020) Uses of wild vertebrates in traditional medicine by farmers in the region surrounding the Serra do Conduru State Park (Bahia, Brazil) Accordingly, the current study set out to determine the wild vertebrate species that are utilized in folk medicine in five communities that surround Brazil's Serra do Conduru State Park (PESC). In interviews, 45 hunter-farmers mentioned 23 different species, of which 17 are used as raw ingredients for the treatment or prevention of 19 different diseases. The most frequently mentioned taxon was mammals, followed by birds and reptiles.

The investigation was carried out on Wild Animals Used in Zoo-Therapy at Ibadan, Oyo State, Nigeria by (Oduntan et.al., 2012). The purpose of this study was to raise awareness of the usage of wild animals and their byproducts as alternative therapies. Structured questionnaires were used to gather primary data from all traditional medicine vendors in the market who were prepared to reply. Ninety-nine people answered the questionnaire in total. This study reports on the wild animals whose uses were specified

by a minimum of five individuals.

The search happened to be carried out on Traditional knowledge of zootherapeutic practices among some folk medicinal practitioners of Bangladesh (Khatun et.al., 2013). This study investigates the usage of different animal, bird, and insect species by three randomly chosen folk healers in the country's Brahmanbaria, Narsinghdi, and Rajshahi regions. Between themselves, the three practitioners were seen to employ thirteen different animal species.

The probe has been carried out on Faunal drugstore: Animal-based remedies used in traditional medicines in Latin America (Alves & Humberto, 2011). This paper addresses the implications of zootherapy for public health and biological conservation, lists the species utilized as folk remedies, and explores some associated elements of animal-based therapies in Latin America. According to an examination of the literature, the area's traditional medicine has utilized at least 584 animal species, spread across 13 taxonomic divisions. The large number of medicinal species that have been listed highlights the significance of zootherapy as a substitute form of treatment in Latin America.

An Ethnozoological study was conducted in the adjoining areas of Mount Abu Wildlife Sanctuary, India by (Jaroli et.al., 2010). Which resulted in A total of twenty-four animal species have been utilized for religious and medical purposes in 35 various medical conditions, such as asthma, weakness, TB, cough, paralysis, and blisters. There are fourteen mammals, five birds, three reptiles, one arthropod, and one amphibian among the animals that the Garasiya tribe is known to use. While *Sus scrofa* flesh and *Elephas maximus* teeth have the lowest FL (12%), the meat of *Cynopterus sphinx*, which is used to treat fever and cough, has the highest FL (96%) of any animal. Important medicinal resources were also mentioned for some protected species, including *Cervus unicolor* (sambhar), *Elephas maximus* (elephant), and *Semnopithecus priam* (monkey). Additionally, we discovered that the most commonly reported illnesses are respiratory conditions including cough, asthma, and other illnesses; hence, many

conventional medicines are available for treatment.

A study was conducted on Ethnozoological practices among Naga tribes by (Jamir & Lal 2005). This explains how numerous vertebrates, invertebrates, and/or their products are traditionally used in several Naga tribes in Nagaland, India, to treat a variety of diseases. There are 26 species listed, which include the following: frog, crow, peacock, pigeon, bear, cat, deer, dog, elephant, flying squirrel, goat, jackal, gayals, monkey, porcupine, tiger, and earthworm. Infectious disorders like tuberculosis, inflammation, discomfort, asthma, and skin blemishes are among the ailments treated.

In many communities, medications used in traditional medicine and traditional meals are prepared using components derived from wild animals and their products. (Chinlampianga et.al., 2013). The study was conducted on Northeastern India's Ethnozoological Diversity: Empirical Learning with Mizoram and Arunachal Pradesh's Traditional Knowledge Holders which resulted in It has been documented that the Adi tribal peoples of East Siang district employ a total of 39 aquatic and terrestrial species for food, medicine, and/or spiritual and cultural purposes. We collected ethnozoological data on 48 different faunal species from communities in the state of Mizoram. 35 of which were said to be frequently utilized for ethnomedical purposes, including the treatment of diabetes, convulsions, paralysis, coughs, asthma, TB, earaches, weakness, and muscle aches.

A study was carried out on the documentation and quantitative analysis of traditional healers' local ethnozoological expertise in the Theni area of Tamil Nadu, India. (Chellappandian et.al., 2014). Which documented 69 medicinal animals and animal products, together with their respective modes of usage. According to the survey, only 19.2% of traditional healers in the Theni district prescribed medicines derived from animals, and the majority of them (95.83%) were restricted to the rural parts of the Andipatti and Uthamapalayam taluks in the Theni district. In comparison to animals under government protection, domesticated animals had a higher number of citations.

Animals and plants have long been employed as remedies in human societies. (Tynsong H. 2020). Conducted a study on Ethno-zoological investigation of animal-based remedies utilized by Northeast Indian traditional healers which says the current understanding of the ethno-zoological therapeutic applications employed by several traditional healers in Northeastern India (NE India). In terms of animal species frequency, NE India is the region where the use of mammals and mammalian products is highest when compared to other animal groups. In contrast, the use of fish-based medicine in the state of Manipur is prevalent compared to other animal species. In Arunachal Pradesh, traditional medicines make extensive use of insects.

A study was conducted by (Vijayakumar et.al., 2015). According to this study, the traditional healers in the Palakkad district are still treating a variety of illnesses with animals. The empirical knowledge presented in this study will offer the pharmaceutical sector exceptional opportunities for the development of new sources of medicine. A total of 57 families, 66 genera, and 69 species of animals were identified in this study, and they created 163 utilization techniques. Mammals made up 29% of all the animals named, with Aves coming in second at 28%, insects at 17%, reptiles at 10%, Actinopterygii at 4%, amphibians, clitellata, and malacostracan at 3%, Chilopoda at 2%, and Gastropoda at 1%, overall. 68 species were used for food products and medicinal purposes, accounting for 98.55% of total usage. One species was used for cosmetics, accounting for 1.45% of total usage.

Ethnozoological study of animal-based medicine used by traditional healers and indigenous inhabitants in the adjoining areas of Gibbon Wildlife Sanctuary, Assam, India was carried out by (Borah & Prasad 2017). The results indicate that the native people living close to Gibbon Wildlife Sanctuary receive a significant portion of their primary healthcare from the traditional zootherapeutic remedial techniques they practice. The documentation of this traditional knowledge about animal-based remedies could be particularly beneficial in developing strategies for the conservation and sustainable management of bioresources and opening up new avenues for developing innovative pharmaceuticals.

An investigation was carried out on the quantitative ethnozoological study of traditionally used animals in the Pachamalai hills of Tamil Nadu, India (S. Vijaykumar et.al., 2015). This study aimed to collect primary folk knowledge on the various animal-based remedies utilized by the Malayalis in the Pachamalai highlands. Information about the medicinal animals and animal products was recorded, and the applications were subjected to quantitative analysis. It has been discovered that Malayalis in the Pachamalai hills use traditional medicine using 46 animal species from 8 taxonomic groupings. Animals were used to manufacture medications based on their whole bodies, bodily parts, or items that were derived from them.

A study was conducted on ethnozoological practices among tribal inhabitants in the Khowai district of Tripura, North-East India by (Das 2015). Tripura's Khowai district—a biodiversity hotspot area of Indo-Burma—is documented in this research. It is mostly based on field surveys that were conducted in villages and data gathered from 235 locals regarding animal species used as medicine, how body parts are prepared for treatments, whose ailments they are used for, etc. The Tripuri, Jamitia, and Reang tribes are the most prevalent ones in the districts that use animal parts as medicine. Animal components, such as blood, excrement, meat, etc., were utilized to treat 23 different illnesses, including arthritis, fever, and asthma. According to the study, the tribal community ingested a total of 25 animal species, of which 28% fell into the category of invertebrates and 72% into that of vertebrates.

A study was conducted on traditional zootherapeutic studies in India: A review by (Mahawar & Jaroli 2008). Zootherapeutic approaches are used by India's many ethnic communities. This study also resulted in providing a list of animals that various Indian civilizations have used for therapeutic purposes. Information was collected from fifteen research publications on zootherapeutic investigations in India that were published between 2000 and 2007 by different authors. There are reports of 109 animals and 270 applications for them in traditional Indian medicine throughout various regions.

An investigation was carried out on Ethnozoological remedial uses by the Indigenous inhabitants in

adjoining areas of the Pobitora Wildlife Sanctuary Assam, India (Bohra & Prasad 2016). There were found to be 26 ethnomedical animals and animal products that are used to treat a wide range of illnesses, such as anemia, asthma, jaundice, chicken pox, pneumonia, and so on. Important medical applications have also been claimed for a few protected wild species, including the Indian crested porcupine (*Hystrix indica*), (*Rhinoceros unicornis)*, and golden jackal (*Canis aureus*). The largest proportion of animals utilized in Mammals (~34.62%), fish (~30.77%), and birds (~15.38%) receive the usual therapy. The majority of the material is typically supplied by older adults in the 50+ age range.

Natural Heritage of Goa by (Kerkar 2016). This documents Various people and places of Goa having zoological importance like the Madei Wildlife Sanctuary and feasts and festivals of Goa like Shigmo their Cultural importance and how it has changed over recent times. It documented different animals like crocodiles in religion and culture etc.

CHAPTER - 3

Materials and Methods

3.1 STUDY AREA

Goa is a tiny State on the western coast that has two districts. Bicholim (Konkani: Dicholi) is a tiny town located in the North Goa District. The coordinates are 15.60°N 73.95°E. It is elevated on average by 22 meters (72 feet). Which consists of 24 settlements in total. Bicholim, which has a tropical wet and dry or savanna climate, is situated at an elevation of 12.38 meters (40.62 feet) above sea level (Classification: Aw). The district experiences an annual temperature of 28.74ºC (83.73ºF), which is 2.77% higher than the average for India. Bicholim experiences 41.27 wet days (11.31% of the total) and 108.39 millimeters (4.27 inches) of precipitation on average every year. The Taluka of Tiswadi is situated in Goa's North Goa district. It is one of the districts of North Goa's six talukas. Tiswadi Taluka consists of eleven municipalities and twenty-two villages. Position: 15° 28' 48.00" N 73° 49' 48.00" E is the longitude.

Fig-3.1 Map of Goa

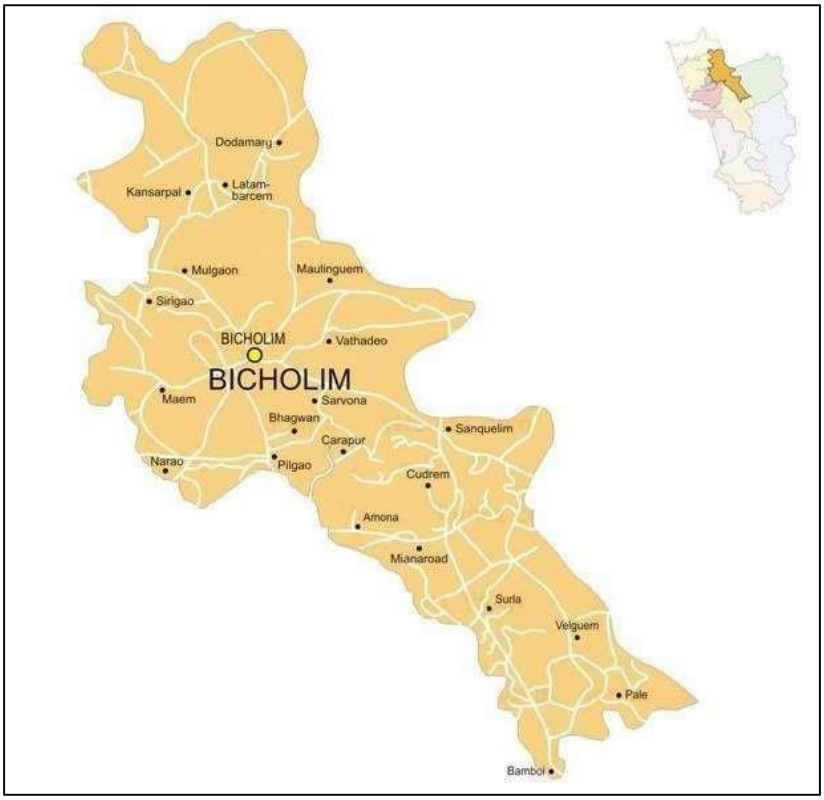


Figure 3.2: Map of Study Area 1- Bicholim Taluka

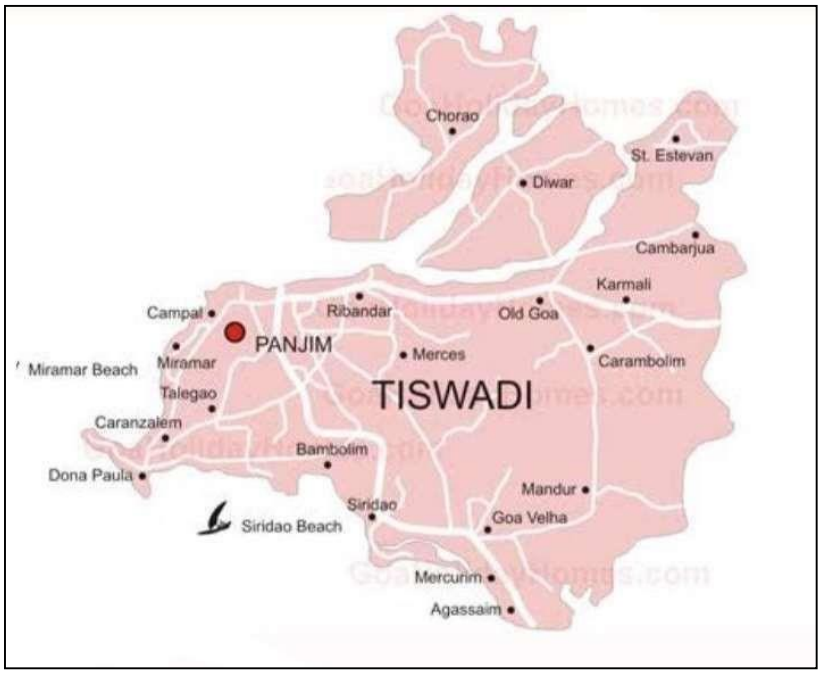


Figure 3.3: Map of Study Area 2- Tiswadi taluka

3.1.1 Selecting sampling villages

To gather information on ethnozoology—the study of human-animal interaction—a survey was conducted among Bicholim and Tiswadi Taluka, North Goa residents. Topics covered included animal worship, animal-related rituals and ceremonies, zootherapy—using animals for medicinal purposes—and the locals' customary preparation of animal products.

Adwalpale, Amone, Aturli, Carapur, Cotombi, Cudnem, Curchirem, Dumacem, Latambarcem, Maem, Maulinguem, Mencurem, Mulgaon, Naroa, Navelim, Ona, Pale, Pilgaon, Salem, Sarvona, Sirigao, Surla, Vaiguinim, Velguem are the 24 villages in Bicholim Taluka.

Ambarim, Azossim, Bainguinim, Batim, Capao, Caraim, Cacra, Carambol, Chorao, Curca, Calapor, Ella, Gancim, Gaundalim, Goalim Moula, Goltim, Malar, Mandur, Narao, Navelim, Neura-O-grande, Neura-O-Pequeno, Siridao, Taleigao and Talaulim etc are among the 36 villages in Tiswadi Taluka.

All of the Tiswadi Taluka and Bicholim villages participated in a pilot survey. The process of choosing the communities was done using simple random sampling. According to Acharya et al. (2013), this technique ensures that every sample unit has an equal chance of being chosen from the entire population.

The two talukas' worth of villages were divided into lots using the lottery technique. The top limit was determined by counting all of the sample villages in the relevant area. Two bowls were filled with the respective lots. Five lots (sampling without replacement) were chosen from each bowl. Following each selection, a suitable swirl was applied (Acharya et al. 2013).

There are 24 villages in the First Study Area and 36 villages in the Second Study Area. In total, 12 villages, or 20% of the Taluka, were sampled for this study. Twelve homes representative of each of the first six villages chosen from the corresponding zone were visited, and the villagers were questioned about their understanding of ethnozoology.

Information was gathered from 144 homes that is 72 homes per taluka were interviewed out of which 120 individuals knew Animal based medicines. The criteria utilized to pick households for the survey were those with senior citizens who utilized them and had expertise in ethnozoological information, such as regional names, parts utilized, illnesses, preparation techniques, modes of administration, dosage, and useful time for each medicinal drug. Every home was responsible for one sample unit, in which every member of the family (elderly male/female > children) provided one response. (Martin, 1995; Cotton, 1996; Jain, 1991; Yabeshetal., 2014).

Furthermore, informal interviews were conducted with the remaining members of the household and other members who frequently gathered around the sample unit, as reported by Kumara et al. (2013). All that was needed for the investigation was taking pictures of the accessible data. There were no specimens gathered. Non-invasive approaches formed the basis of the entire inquiry.

3.1.2 Sampling villages

Mulgaon, Carapur, Cudne, Pilgaon, Amone, and Maem villages were selected as sampling villages from the Bicholim taluka while Cacra, Neura-o-Grande, Azossim, Mandur, Carambol, and Chorao were selected as sampling villages from Tiswadi taluka.

3.2 DATA COLLECTION

To assess the state of ethnozoology in the research area, formal and informal talks in the local languages of Konkani or Marathi were held with stakeholders. The duration for administering the questionnaire ranged from thirty to forty-five minutes. Confidentiality was ensured for the respondent's personal information that was recorded during the interview. Data collection utilizing visual aids was also discussed with the people. The studies were designed to document and enumerate the animals used in zoo treatment, worship, rituals, and ceremonies. On weekends between June 2023 and October 2023, interviews with the stakeholders of the aforementioned study areas were conducted.

3.2.1 Google survey

The Google Survey Method is the process of gathering data from respondents by using Google Surveys, a market research tool that Google offers. Using Google's platform,

online surveys are usually created and sent to specific audiences to collect data on a variety of issues, including customer preferences, opinions, and habits. Google Surveys provide opportunities for personalization, demographic targeting, and effective result analysis.

3.2.2 Questionnaire

The mixed-method approach of "mixing" qualitative and quantitative data gathering methods was used to develop the stakeholder survey on attitudes toward Man-Animal interaction, or ethnozoology (Decker et al., 2012). The comprehension, viewpoint, and experiences of stakeholders with animals interacting with humans are the main subjects of this study. In addition to a few open-ended questions, the questionnaire consists mostly of structured questions. An interviewer's prejudice may influence the findings in an unstructured survey, necessitating extensive probing (Fowler, 2002). Because of this, the majority of the study's questions were closed-ended, which lessens the possibility of interviewer bias.

Date:
Taluka:
Village:
Name:
Age:

1. Can you identify and name any local animal commonly found in your area?
2. Are there specific animals traditionally used for medicinal purposes in your village
3. If yes then elaborate for which disease which animal is used and method of preparation and dosage.
4. Which animals are considered important for religious or cultural rituals?
5. Are there any superstitions or folklore associated with certain animal
6. How is ethnozoological knowledge passed down within your village (e.g., through oral traditions, rituals, storytelling?
7. Do you think there have been changes in traditional knowledge and practices related to animals over the years?

Fig-3.4- Figure showing standardized questionnaire

3.3 CALCULATIONS

3.3.1 Level of fidelity

To assess which animal species are most frequently utilized by informants in the study area to treat a given disease category, fidelity level (FL) is computed for the data analysis. Finding out which species a resident prefers to utilize to heal specific ailments can be done with the help of their fidelity level. by applying the following formula:

FL (%) = Np x 100 / N

Where N is the total number of informants who used animals as medicine to treat any given sickness, and Np is the number of informants who claim to have used a particular animal species to treat a particular ailment.

(Jaroli et.al., 2010)

CHAPTER-4

Analysis and Conclusions

4.1 OBSERVATIONS

4.1.1 Animal Worship

Ancient humans held animals in high regard due to their strength and slyness. They thought that particular species' perceptive eyes and strong scents indicated direction from the spirit world. Occasionally, rather than being put to death, animals who destroyed standing crops were worshipped in exchange for bountiful agricultural production. (Bhupal, 2014)

4.1.1.a Termite Hill Worship

It is necessary to draw a parallel between Shantadurga and Santeri both of which are symbolized by termite hills. Since ancient times, thoroughly impressed by the architectural finesse of the termite mounds and the highly organized social structure of its occupants, our ancestors sanctified these marvels of nature. Worshiping termite mounds is a symbol of Goddess Santeri, which is endorsed by socio-cultural authorities. During the renovation of a temple, care is taken not to disturb the termite mounts. The Goddess also known as Renuka symbolizes the cult of earth worship. The etymology of the word Renuka has come from the word Renu which means earth particles, and probably from the word Renu the Konkani word Roin meaning the termite mound has been coined. The termite mound comprises earth and symbolizes the genitals and the uterus of Mother Earth, and the serpent resident in the mount symbolizes masculinity. Matangs worship the goddess Matangi (from Mati means soil). Mythologically Santeri also known as Bhumika (Bhumi - earth) is a companion of Ravalnath whose vahan or mount is believed to be a tortoise a horse or a serpent. The etymology of the word Ravalnath is linked to the word Roin which means termite mount. The well-known historian Shri Anant Dhume opines that in Shabar language a term for termite mount Ron means riddled with holes. The Konkani word for Roin originated from the word Ron. Also fascinating is that the Sanskrit word for a termite mound is Santra. In Bicholim taluka the termite mount at Nanoda resembles a feminine face. Goddess Santeri is also worshiped in Mencurem Bicholim (fig-4.1) and Shantadurga temple Bicholim (fig-4.2)

Fig-4.1

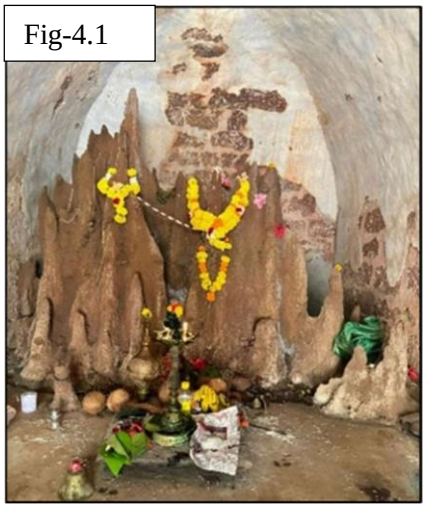


Fig-4.1 Termite hill worship at Menkurem, Bicholim

Fig-4.2

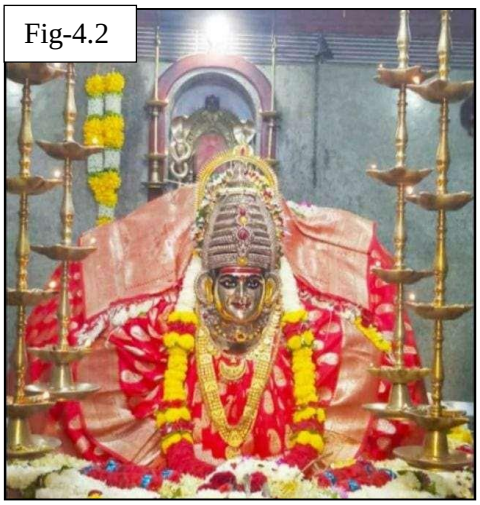


Fig-4.2 Termite hill worship at Shanta-durga temple Bicholim

4.1.1.b Snake worship

In Sanskrit, snakes are known as 'sarpa' meaning any gliding creature. Snakes rank sacred second after the cow in mythology. Due to its movement, hypnotic eyes, and poisonous bites, it is feared which has led to its veneration in the hope that it would protect and not harm any of its devotees. Snakes are an important part of mythology in India, especially in the south. Sheshnaga, Manasadevi, Astika, Kaliya, Shiva, and Vishnu are mythological deities related to snakes. It is believed that if they get angry due to any disrespect; they curse the people and they fall sick, causing death or even loss of property. Therefore most of the homes have their snake shrines in their backyards or gardens, often under a neem tree with a snake icon below it. These groves are highly revered and no one would dare trespass them.

Rural folklore abounds with stories of people who incurred the wrath of the snake God for violating the taboos. Appeasing snake God for a new birth is a very common practice. They even believe that snakes are spirits of the departed souls and are treated as their ancestors, especially during the Shraadh ceremony. Snake worship is invested with several myths, superstitions, and dogmas. Indeed this cult of snake worship is mystique and has a huge following. In many parts of Goa particularly in regions where laborers from the South Indian states of Karnataka and Tamil Nadu have settled, Naga stones and snake icons have been ceremoniously established and worshiped. Such icons are conveniently blended with the Goan folk religion. The compounds of the Hindu ancestral houses have beneath a

tree Naga stone that is worshiped every evening by the lady of the house who lights a traditional lamp as an expression of awareness of the reptiles on the premises. Such reptiles occasionally sighted are regarded as protectors of the place and locally known as Jagacho Sorop (fig-4.4) or the snake of the place. It is believed to be guarding the territory and is not harmful—increased episodes of sightings such, as territorial snakes are interpreted as a bad omen. One would also see a Nag stone beneath a revered tree on the premises of many Goan temples. Snake festivals are held at various times and in various parts of the country depending on the local customs. The fifth day in the month of Sharavan is believed to be auspicious for snakes. Nag Panchami is celebrated in honor of the snakes that deify and venerate them. (fig-4.3) On this day snakes are worshiped with milk and fruits.The worship of Nagas is attested to by the stone sculptures of Naga that have reportedly been found in the Mahadev temple in Shankarwadi temple Tiswadi, and the Kudneshwar temple in Kudne Bicholim Goa. There is a region on the Taleigao plateau known as Nagali. In addition, there are springs in Bicholim that go by the name Nagzar. The names of all these places point to the Naga Cult's expansion throughout Goa.

Fig-4.3

Fig-4.3 Naag Panchami

Fig-4.4

Fig-4.4 jagyacho sorop

4.1.1.c Crocodile worship

Maange thapnee or magar pooja is a ritual practiced by the agrarian tribe of Goa, the Hindu Gawdas of Cumarjua villages in Tiswadi taluka, the early settlers of the land. These tribes that reside in the catchment area of the Cumbarjua Canal observe Maange Thapnee.

In Goa, Maange thapnee or Mugger pooja is celebrated on the new moon day of the paush month of the Hindu festival calendar as it is auspicious for crocodile worship. Incidentally, the crocodile worship coincides with the commencement of the threshing of the paddy fields.

The paddy field workers equaling the number of paddy fields get together on the bunds. They then, get into the waterlogged fields to scoop the silt out. The collected silt is deposited on the bund and given the shape of a crocodile. Clamshells are embedded on this silt-shaped crocodile to represent their scutes and eyes, and small straight sticks are used to represent the teeth. A pit is made, by scooping off a small amount of silt and a live chick is placed in it. The dummy crocodile is then decorated with some flowers and vermilion. (Fig-4.5) A community prayer known as 'Garhane' is performed for good crop yield, which is followed by the offerings of coconut, puffed rice, and jaggery to God, which is later distributed among the devotees.

In Cumarjua, the Mugger pooja is followed by a goat sacrifice. The goat is taken all around the paddy fields before being sacrificed. The meat is then distributed among the villagers as 'Prasad'.

Interactions with the tribes revealed that this ritual has been practiced since time immemorial for generations without any break.

The people believe that the paddy fields adjacent to the Cumbarjua canal used to get inundated with seawater causing the destruction of crops and the hyper-saline soil made the land undesirable for agriculture. Inundation by the sea which had a large number of crocodiles in it was venerated, it is believed that the crocodile is the mount of Lord Varun, the Lord of rain, and hence worshiped the sea. Since then this ritual has been practiced with great participation from the youth.

In Pilgaon village there is a small icon worshipped of Varuna god who is sitting on a crocodile. (Fig-4.6) There is a common belief that the quantity of stones in an animal's stomach corresponds to its age and that a mother crocodile lays 108 eggs, which is equivalent to the beads in a Hindu rosary.

Fig- 4.5

Fig- 4.5 Maange Thapnee at Cumbharjua

Fig-4.6

Fig-4.6 Varun dev with its vahan Crocodile

4.1.1.d Turtle worship

Kurmasan the turtle worship which has been granted divinity is the incarnation of Lord Vishnu, one of the deities of the Hindu triad. In many temples particularly in the taluka of Bicholim wooden receptacles for placing holy books are given the shape of a turtle (kurma - turtle) (Fig-4.7)) Also most of the temples have turtles placed at the entrance of the temples. (Fig-4.8) Turtles are the symbol of Earth, immortality wisdom knowledge, and fertility.

Fig-4.7

Fig-4.7 Kurmasan

Fig-4.8

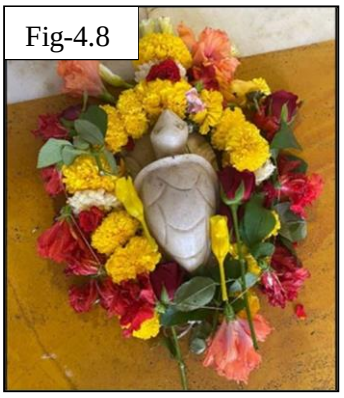


Fig-4.8 Tortise worship at Swami smarath temple Tiswadi

Fig-4.9

Fig-4.9 Tortise worship at Bhramapuri Old-Goa, Tiswadi.

4.1.1.e Peacock Veneration

The Peacock for its association with the Goddess of learning Saraswati and one of the most popular Hindu deities Lord Krishna has been venerated in many parts of India. (Fig-4.10) In Goa at Latambarcem, a village dominated by the Velips, in the temple of Krishna is seen a very ancient copper plaque showing an engraved icon of Mahishasur Mardini (Fig-4.12) identifiable from the

narmundamala (necklace of human heads) from its neck, peacock feathers are always kept along with this deity. The peacock is revered in Goan religion and culture and has a specific meaning. One of these designs is a gorgeously sculpted peacock. Peacock-themed painted and carved wooden panels may be found in numerous temples. On the wooden panels, Kartikeya and Saraswati are depicted mounted atop a peacock. The whitewashed external wall of an ancient Hanuman temple in Nachinodawada of Advalpal in Bicholim features a peacock pattern on a rosette in a red graffito style. Peacock references abound in Goan folklore. Morulo is a popular traditional dance performed by the young Sarvan from Bicholim (Fig-4.11) at the Shigmo festival, which takes place before the start of Ghodemodni. On festive occasions, folk songs that discuss the peacock's diverse behavioral habits are sung, the male dance is the most captivating and captivating.

Fig-4.10

Fig-4.10 Krishna

Fig-4.11

Fig-4.11 Morulo Dance

Fig-4.12

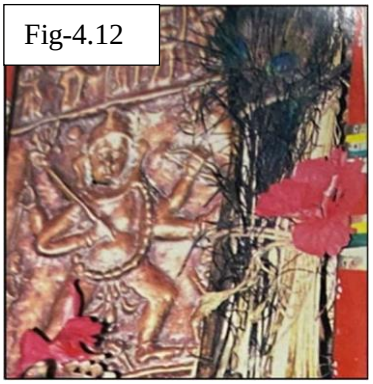


Fig-4.12 Krishna on copper plate

4.1.1.f Crow worship (Kaak Daan)

In front of the temple of Shantadurga Bicholim is seen between the two Tulsi Vrindavan a raised granite platform with a depression in the center. The depression is filled with water and every afternoon after offering the prasad to Shantadurga few grains of cooked rice are left on this granite platform for the crows. This is called Kak Daan or offerings for the crow. Apart from the element of divinity, this is also an expression of compassion towards the lesser forms of life.

After the demise of a Hindu, his kin indulge in rituals prescribed by the religion to ensure that the departed soul seeks salvation. (Fig-4.13)

Fig-4.13

Fig-4.13 Shraad ceremony

4.1.1.g Dog worship

Sometimes the loyalty of a dog is commemorated to the extent of veneration as can be seen from the statue of a dog in the compound of the ancestral houses of Goa. (Fig-4.14) In the village of Vargaon, Bicholim taluka Chamundeshwari temple the goddess Chamunda is seen standing on a preta and her vahana, a dog (Fig-4.16) is seen standing on Its hind feet to smell her left knee. Kalbhairav temple in Gaonkarwaddo Bicholim Goa has also seen worshiping dog icons.

Datta temple at Bhatlem Tiswadi Goa has four Vedas embodied in Dattatreya's four dogs.

(Fig-4.15) "Hounds of heaven, watchdogs of the ultimate Truth" is how they identify with the Lord. Wherever they may be born, they assist the Lord in "hunting" and locating pure souls. The cow known as Kamadhenu is behind Lord Dattatreya.

Fig-4.14

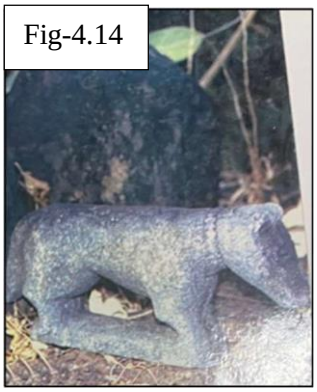


Fig-4.14 Dog at Goan ancestral houses

Fig-4.15

Fig-4.15 Lord Dattatreya

Fig-4.16

Fig-4.16 Goddess Chamundeshwari

4.1.1.h Horse worship (Ghodo dev)

The Buddhist cave in Lamgao Goa has a temple of Shree Rudreswar Which is a Lord Shiva Temple. Outside Cave No. 1 at Lamgao, and towards the North of the cow-dung-coated courtyard, we can see

many pottery horses kept on a make-do pedestal, with offerings placed in front of them (Fig-4.17). These are the offerings made by devotees, in fulfillment of the vows made by them. In Goa, there is a sword-wielding deity called "Paik Dev"(Fig-4.18) seen especially in South Goa, who is depicted as riding on a horse. Fulfillment of religious vows is seen to be carried out in many different ways, in various parts of Goa; and this is one of them. It is also said that offering of terracotta horses, commissioned by farmers grateful for plenty of rain and good harvest.

Ghodemodni of Parye - Sakhalim Ghodemodni (Fig-4.19) is an important form of Warrior folk dance performed during Shigmo As the name suggests Ghode Modni ('Ghode' means 'horse' and 'Modni' mean 'gyrations and dance-like movements) Men performing Ghodemodni dress up in a costume that has an attached Horse face and literally dance doing horse-like movements. It is a spectacular warrior dance commemorating the victory of the Ranes, the Maratha rulers of the Bicholim taluka in Goa, over the Portuguese. Holding the bridle in one hand and brandishing a naked sword with the other hand, the dancers move forward and backward to the beat of drums, Dhol, Tasha, and Cymbals to recreate the prancing of war horses. Ghode Modni is a dance commemorating the Maratha rulers and warriors of the past who are said to have left their homes during Dussehra (another festival occurring in autumn) to fight and return victorious at Holi (the onset of spring).

Ghode modni could be seen as a mixture of martial arts and horse dance performed during the festival and parades of Shigmo They wear the traditional turban of a Rajput chieftain, known as a Peshwai pagri. The dancers are barefoot and wear ghungaroos, or anklets with bells to amplify the sound of their steps.

Fig-4.17

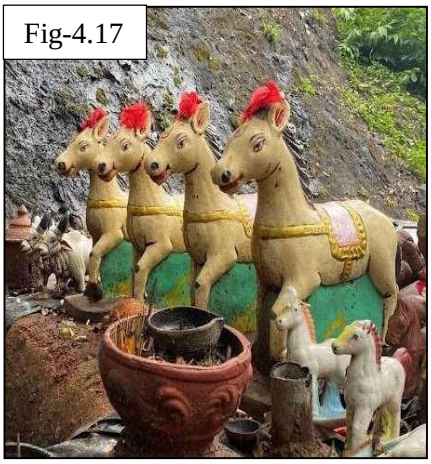


Fig-4.17 horse offerings at Lamgaon Caves.

Fig-4.18

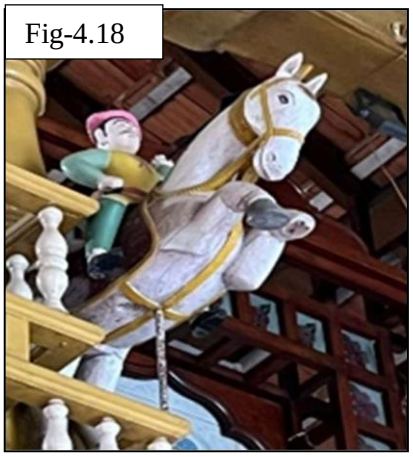


Fig-4.18 Paik Dev at Lamgaon.

Fig-4.19

Fig-4.19 Ghode modni

Fig-4.20

Fig-4.20 worshiping ghodo dev

4.1.1.i Lion worship

Today lions are restricted to the Gir forests. But there is evidence of their presence throughout India from down south to river Narmada in the north during times. The icon of the lion at Narve in Bicholim taluka was found in a place known as Pandavanchi Hovare, which is a piece of evidence that this Icon was venerated by the villagers which could be an indication that lions did exist at some point in Goa, In Lamgaon Buddhist cave there is an icon of Tiger locally known as Vaghro (Fig-4.22) some locals say that it's not a Vaghro but a Lion because the icon has thick mustache which is a striking feature of Lion. In Goan Portuguese homes, (Fig-4.21) lions are frequently erected before the doorway as a representation of strength, power, and defense. Numerous civilizations, such as the Portuguese and Goan, have regal and protective associations with lions. It is said that placing sculptures or statues of lions at the door will ward off evil spirits and keep the home and its occupants safe. It also gives the entrance a regal and ornamental touch that expresses the owner's status and style.

Fig-4.21

Fig-4.21 Lions at entrance of Portugal houses in Goa

Fig-4.22

Fig-4.22 Lion icon at Lamgaon

4.1.1.j Tiger worship

This wildcat mammal has been feared in the past due to Its ferocious nature. But as the urban and the modern man invades his habitat and hunts animals that are preyed by the tigers, the availability of the prey is which has caused loss of property and life. This act resulted in, hatred and an abstract of anger, which has cost this species their life. The practice of hunting which marked the vigorousness of the man was a great threat to these species.

In the absence of written laws our religiously and ecologically influenced ancestors to maintain an ecological balance, bestowed sanctification on the tigers which led to their veneration which was an indirect way of conserving these mammalian species, the national animal of India.

In Goa, though tigers have not been sighted, there have been indirect pieces of evidence of pugmarks of tigers in the recent census, and it is even said that tigers migrate from the Karnataka - Goa border. There are cultural indices of tiger presence in Goa since remote antiquity as icons of tiger have been found in Bicholim Taluka. In Goa's cultural and religious traditions, tigers have a significant role, and the large cats are still revered in some areas of the state. Tigers are revered as deities in numerous temples. History also offers hints about this kind of worship. Guhalladeva II's Kadamba plate, discovered in Avchitwada Bicholim, refers to the king as "Vyagramarl," meaning tiger slayer. (Fig-4.23) The fading Perni Zagor is Goa's oldest folk dance and may be the only one in which masks are worn by the dancers (Fig-4.24) A tiger mask is one of the most noticeable masks worn throughout the dance. The tiger is revered as a folk divinity in the rural Dhangar people of Goa."Tigers are deemed important by communities traditionally living in forests because, being a predator, it keeps the population of other animals under check and therefore helps maintain ecological balance," says a Cudnem resident. Sculpture of a tiger emerges from the shrubbery across from the Shree Laxmi Narayan temple at Avchitwada in Bicholim. Due to devoted followers of the nearby temple, this unique tiger statue has endured despite the area's current lack of forest cover and development. At Mahalaxmi temple, an old icon of Goddess Durga is worshipped which has a Tiger along with her. (Fig4.25)

Fig-4.23

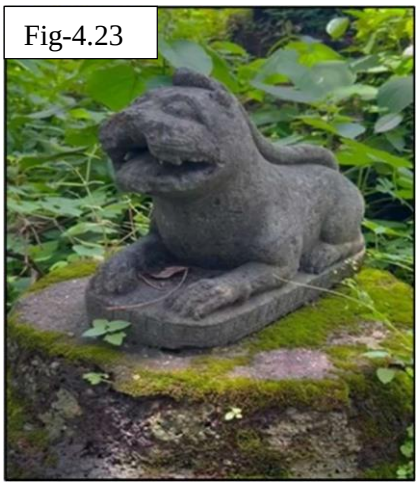


Fig-4.23 Vagro at Avchitwada Bicholim.

Fig-4.24

Fig-4.24 Waag khel

Fig-4.25

Fig-4.25 Mahalaxmi icon with Tiger

4.1.1.k Elephant worship

Ganesh Chaturthi is a 10-day festival from the 4th to the 15th day in the bright fortnight of Bhadrapad. The festival begins on the 4" day of Bhadrapad, which is celebrated as Ganesh Chaturthi. This festival is very important to the Hindus who believe that by praying to Lord Ganesh the remover of all obstructions, people hope to dispel all obstacles in their life. It said that on this day Lord Ganesh was born. Ganesh Chaturthi embeds religious and cultural expressions throughout the festival. (Fig-4.26) The idol is worshiped every morning and evening with simple recitations of Ganesha Stuti, devotional songs, offerings, of flowers, incense sticks, and lamps. The installation pooja by the priest culminates into the Uttar pooja, with which the divinity of the deity is virtually ended. God returns to his heavenly abode after the ten days of worship which is followed by the immersion of the idol in water. The immersion ritual is simple. Final gifts of coconuts, flowers, and burning camphor cubes are offered to the idol, accompanied by the singing of aartis. Then a few people carry the idol far enough into the river or sea to immerse it, where it quickly dissolves. The immersion marks the end of the festival. Lord Ganesha is worshipped all over Goa in the form of an elephant face.

A laterite stone with an engraving of an elephant known to the locals as Aairavat can be found at Mayem, Bicholim, in the refreshing shade of several trees. This holy elephant sculpture also known as the “VAADYAKAR” is situated near Kelbai temple Maem (Fig-4.27). locals believe that this was the same elephant sculpture on which seven sisters (Kelbai, Mahamaya, Lairai, Mirabai, (or Milagres),

Morjai, Sheetalai, Ajadipa, and their brother Khetoba) arrived in Maem Bicholim

Fig-4.26

Fig-4.26 Ganesh Chaturthi

Fig-4.27

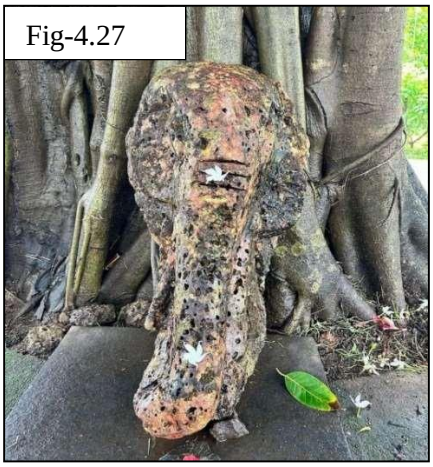


Fig-4.27 Vaadyakar near Kelbai Temple Bicholim,Goa

4.1.1.l Cattle worship

Lord Krishna, is the most popular of the Indian deity found in very few temples in Goa. Lord Krishna's association with the cattle, The deity has always been associated with elements of biodiversity be it the feathers of the peacock that adorned his head, the cattle he herded, the bamboo flute that he loved to play, Kaliya the serpent he humiliated, all reflect on its interaction with the floral and faunal elements of nature. Cattle have been worshipped for ages in Krishna Temple.

Gorvancho Padwo is observed on Diwali, all over Goa following the celebration of Laxmi Puja. This is the day that cows are revered. The cowshed is cleaned in the morning and embellished with flowers and mango tree leaves. (Fig-4.28) The animal is rubbed with oil and then given a bath. The cows then undergo Arti and Puja, and a tilak of kumkum (vermillion) is administered on their foreheads. The cow has a garland of flowers around its neck, a vibrant design sketched on its back, and a fabric wrapped over it. Rice flour is boiled to make a thick pole, called a dosa. Urad dal is hung around its neck and is later consumed by family members as well as offered to others. On this day, the diligent animal is given delicious food and let to relax. In addition, below Tulsi Vrindavan, a miniature model cowshed constructed of cow dung is located. (Fig-4.29) It features multiple chambers and a Gairi, which is utilised by the farmer to gather cow dung and ash. This cowshed contains a little model of cows fashioned out of the wild fruit called "Caarit." Lastly, a doll is placed inside the shed to represent the "Gavli" Cowherd. A few individuals have set up an idol of Lord Krishna.

Fig-4.28

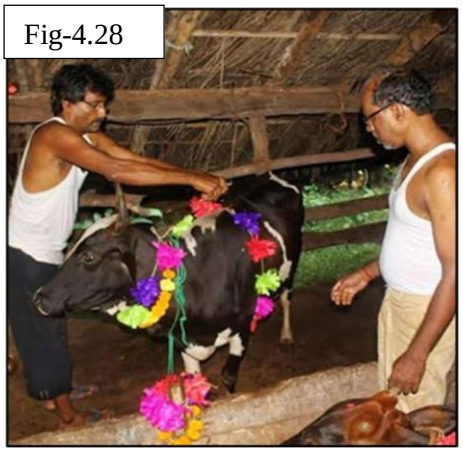


Fig-4.28 Cow worship

Fig-4.29

Fig-4.29 Cowshed constructed from cow dung on Padwo festival.

4.1.1.m Ox worship

The Hindu god Shiva is represented by the Bull vahana Nandi, which means happiness, joy, and satisfaction. Nearly all Shiva temples have stone images of a seated, humped, white Nandi, reclining on an elevated platform and usually facing the main shrine, staring at the god nonstop. Nandi is one of Shiva's chief attendants and is sometimes portrayed in sculpture as a bull-headed figure. In addition, Nandi is seen in full human form as Nandikeshwara or Nandideva. (Fig-4.30) These sculptured forms can be seen at the entrance of many Shiva temples in Bicholim Goa India,(Fig-4.31) and they are often mistaken for representations of the deity due to similarities in iconography such as the third eye, the crescent moon in the matted hair, and the four arms, two of which are holding an antelope and a battleaxe. The fact that Nandi's hands are clasped together in affection, however, sets her apart.

Fig-4.30

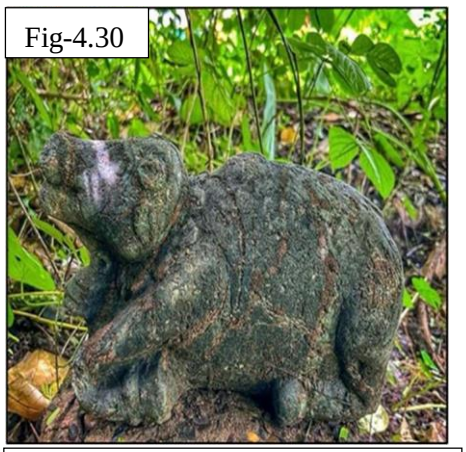


Fig-4.30 Nandi Dev at Advalpal Bicholim

Fig-4.31

Fig-4.31 Siddeshwar devasthan Bicholim

4.1.1.n Monkey worship (Lord Hanuman)

Another of the popular Hindu deities, Saturdays having been earmarked for its worship is lord Hanuman, the monkey god showing extreme devotion and loyalty. Temple at Tiswadi Mala Marutigad where Hanuman is worshiped. (Fig-4.32) As narrated in the epic Ramayana, Hanuman played a key role in rescuing Sita, the wife of lord Ram. Hanuman's contribution to constructing a bridge, his extraordinary ability to fly oceans, and his indefatiguity in lifting the whole mountain for one single medicinal plant 'Sanjeevini booti' have all been glorified. It is this deity that has extended divinity to the species of monkeys in India such as Hanuman Langur, which people revere despite their pest potential in orchards.

Fig-4.32

Fig-4.32 Hanuman Temple Bicholim

Fig-4.33

Fig-4.33 Worship of monkey in the form of Hanuman

4.1.1.o Fowl sacrifice

To ensure an abundant crop output, a chicken is slaughtered and then Garanhe, a Konkani communal prayer is sung. The local population has long been accustomed to this pagan ceremony, which is observed with unwavering devotion. (Fig-4.35) It is stated that by doing this, the supplicant's sins are transferred into the chicken's body and ultimately put to death (along with the bird's life). Goan hindus leave a fowl after the death of their loved ones in the cemetery. A "Galo de Barcelos" or Barcelos rooster (Fig-4.34) is the name given to the clay bird that perches on top of Portuguese Goan homes. In Portuguese culture, it represents faith, good fortune, and defense against evil spirits. Goan

houses most likely adopted the custom as a result of Portuguese colonialism in the past.

Fig-4.34

Fig-4.34 Galo de Barcelos

Fig-4.35

Fig-4.35 Fowl Sacrifice

4.1.1.p Tulsi Vrindavan

Every Hindu household's courtyard is adorned with a Tulsi Vrindavan, which showcases a diverse range of wildlife sculptures. (Fig-4.36) Although there is no set subject for the representation, holy animals are typically seen in concrete molds. The holy cow, Nandi, the bull, hooded serpents, turtles, crocodiles, lions, peacocks, and other animals are among the most frequently sighted creatures at Tulsi vrindavan. There is also an appearance of the Hindu trio Brahma, Vishnu, and Mahesh on the Tulsi Vrindavan. The profuse incorporation of herpetomorphs in the construction of Tulsi Vrindavan also reflects the rich reptilian diversity of our land. All these reptiles are venerated for being either the incarnations of deities or for being the mounts of Gods and Goddesses. Incidentally, all these reptiles still find habitat in Goa. (Fig-4.37)

Fig-4.36

Fig-4.36 Tulsi Vrindavan showing wildlife

Fig-4.37

Fig-4.37 Tulsi Vrindavan showing Reptiles

4.1.1.q Zoomorphic gargoyles (Gargoyles shaped like animals)

Zoomorphic gargoyles are an integral part of temple architecture in Goa. This gargoyle, resembling the head of a bull or cow, is frequently observed on the outside walls of the temples known as "Grabha Griha." The water or panchamrut (a mixture of five liquids, namely water, honey, ghee, curd, and milk) that is ceremoniously bathed in front of the idol or Shivling every morning (known as the Abhishek) flows out of the gargoyles' mouths. (Fig-4.38) Water trickles down a gargoyle's mouth collects in the reservoir and finally absorbs into the ground. This process solely serves to keep the water pure. The gargoyles are a means of education through architecture on the diversity of domestic animals, of which the cow and the bull are important components.

Fig-4.38

Fig-4.38 Zoomorphic Gargoyle

Fig-4.39

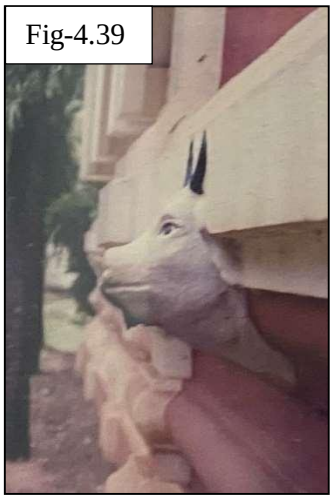


Fig-4.39 Cow shaped Gargoyle

4.1.1.r Portraying fauna in wood carvings

In some parts of Goa the pillars of the temples are exclusively carved depicting mythological scenes Many of the carvings on the wooden pillars depict the holy animals and trees. Curious elements of temple interiors are woodcarvings that often depict a synthesis of biodiversity and the spirit of nationalism. A classic example is a carving of a deity within the confines of Indian territorial boundaries resting against a lion. The deity is 'Bharat Mata' or Mother India and the lion symbolizes the spirit of national integrity. (Fig-4.40) Such idea of feminism and ecology is believed to have come from the meeting between India and the West. First comes the veneration of thousands of Godess for Indians, India is above all Mother India. India's femininity and sexual ambiguity are the

very antithesis of Western virility. The highlight of Indian philosophy is that nature should be revered and befriended

Fig-4.40

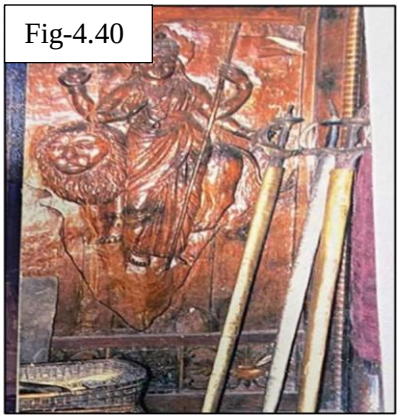


Fig-4.40 Deity Bharat Mata symbolizing Lion

Fig-4.41

Fig-4.41Elephants carved on Wooden panels

4.1.2 FOLKLORE & RITUALS

4.1.2.a Ganv Bhovni

Ganv Bhovni is known as Akhand Shikar in other parts of India. Bhovni means a long walk or a stroll, but done more systematically and uniquely. It is a very old traditional ritual of hunting in many villages of Goa, particularly the thickly forested densely talukas, which is celebrated even today. It is timed with the harvest season, the cherishing time in a farmer's life representing his hard work on his field as the grains enter his house. This time-lapse after the five days of harvesting is called as 'hangam' season.

The gaonkars of the village meet in the temple premises and hold mutual consultations on Bhovni after which they seek an opinion from Ghad', to which Goddess Santeri or Kelmai needs offerings. It is believed that if a male Antelope then Goddess Kelmai is pleased and If a female antelope then Goddess Santer. (Fig-4.42) After obtaining requisite information the gaonkars decide on the day and the area of Bhovni. After the decision, the plan is told to the deity and Prasad is taken for Bhovni. Then a 'Mahar' (a scheduled cast person) announces the details of Bhovni to the whole village, accompanied by drum beats. On the next day, every household is represented by one or more members who gather in front of the temple and offer community prayer for good yield and for seeking blessings for a successful Bhovni. On mapping down their plan the hunters or gunmen are kept at strategic sites

where the chances of encountering an animal are high. Two or three men accompany each hunter, and the remaining members of the party generate a lot of noise to scare the prey.

The entire group of villagers get into the forest and circle the planned area. Due to the loud noise made by the people, the prey gets alert and runs in the opposite direction of the noise, hence getting shot by the hunters already standing in the opposite direction of the noise.

The animal that is hunted is laid on a ladder made of sticks and brought to the temple in a procession with great zest and energy. Sometimes they even bring the animal on their shoulders. Once the animal is brought to the temple the temple priest cuts the right ear of the animal and offers it to the Goddess. This is followed by a prayer to seek blessings from the deity for the betterment and prosperity of the village. Then the meat is equally distributed among the villagers. The people who were appointed to official posts during the Portuguese rule, still exist and are known as Fauzdar, Karkoon, and Police Pail are also given an extra share of meat.

The temple priest also gets a share, which he cooks with the ear offered to the Goddess and the food is offered, to anyone who wants to eat in the temple. The main share goes to the hunter whose bullet first hit the animal. There is another Bhovni that is practiced in Goa and is known as Parmeshwarachi Bhovni. In this Bhovni the village does not participate, it is done on a commercial basis for an economy. The hunters take the permission of the Goddess and then set for hunting in a small group. On bringing the animal to the village, the meat is distributed among the villagers present at the time of cutting of the animal. Some part of it is also given to the temple priest, Sarpanch, Police Patil and the Gaonkars. The remaining meat is for the hunters and he has full right over it even to sell it.

The villagers believe that Bhovni wards off evil and hence pleases the deity. Repentance and forgiveness sought by the villagers for any sins is still a strong reason for Bhovni. But recently, Bhovni has been altered considerably and the hunting practice is held at least 2 -3 times a year, all in the name of God. Usually, Bhovni was held during the Shigmo festival, but today Bhovni is being taken at every festival. When God offers the people favors, if asked for any, also carry out small Bhovni's to please the deity. In many parts of Goa this practice has been stopped due to the declaration of the areas as Wildlife Sanctuary, fights among the temple priests, distrust among the villagers, lack of

youth participation, and even could be due to the depletion of wildlife due to its frequent practice.

Fig-4.42

Fig-4.42 Antlers collected during Gavn Bhovni

4.1.2.b Ghumat and pitiable Monitor Lizard

In Goa, the most extensively used traditional musical instrument is the ghumat. It is connected to the identity of Goans. The Ghumat is used for traditional folk performances by both Christians and Hindus. The majority of the Goan Hindus' devotional musical performances during the Chavath emphasize the importance of the ghumat. This two-mouthed earthen jar is among the oldest percussion instruments known to man. One of them is larger than the others and has the monitor lizard's skin all over it. The pot's little mouth is left open, which aids in regulating the air pressure inside. While having fun, we must remember that the monitor lizard, a reptile covered by Schedule I of the Wildlife Protection Act of 1972, must be killed to obtain the skin needed to make the ghumat. These days, the increased commerce in its skin has put it in peril. Additionally, Goans have a long-standing belief that if a patient drinks monitor lizard blood, it can heal their asthma. It is also thought that oil extracted from monitor lizard lungs can heal intricate cuts, burns, and wounds. This oil is used as an effective massage oil in some regions of Goa to strengthen children's bones.

All of these theories, meanwhile, need scientific validation. Nonetheless, poachers murder monitor lizards all across Goa because they want to eat their meat and hides. In Goa, people refer to the Common Indian Monitor (*Varanus bengalensis*) as Gar or Ghorpad. This reptile performs a vital function in preserving the ecological equilibrium. Despite being an interesting reptile, the monitor lizard is currently being slaughtered in certain parts of Goa, primarily for its skin, which is used to

make ghumat.

Over a thousand monitor lizards are illegally slaughtered each year for their skins. The monitor lizard will completely go extinct if this is not stopped. As we usually say, Goans have a natural reverence for all kinds of wildlife. The Goan conventional wisdom of "live and let live" is beginning to crumble, though, in recent years. Finding a replacement for the Monitor Lizard's skin is the most pressing assignment. Goat skin is being used by folk artists in certain parts of Goa to cover the human's earthen pot's mouth. They assert that it produces music identical to that of ghumat, which is manufactured from the skin of a monitor lizard. (Fig-4.43) If the majority accepts the alternative of utilizing goat skin, it will help to somewhat curb the senseless killing of this helpless animal.

construction activities.

Fig-4.43

Fig-4.43 Ghumat made from Monitor lizard Skin

4.1.3 FAUNAL DIVERSITY AS PREDICTED THROUGH PREHISTORIC ROCK ART AND PAINTINGS

Prehistoric man has always used rock paintings and engravings as a medium to depict his lifestyle and culture. In parts of Goa, archaeological expeditions have led to excavations of monoliths and other stones, with explicit rock carvings that depict diverse animal figures, and in some cases abstract geometrical forms. These provide an Insight into Goa's cultural past and may also be taken as authentic reflectors in retrospection on the biodiversity of this place in the days by gone. A careful analysis of these zoo morphs depicted through rock art corroborates very well with the extant biodiversity of the state.

The zoo morphs on a small stone excavated from behind the temple of Paik Dev, in Bicholim taluka at Lamgaon, though primitive on a scale of artistic expression reveals a variety of animal forms particularly dominated by the ungulates such as Chittal with ramifying antlers, (Fig-4.44)

4.1.3.a Biodiversity in Paintings

Early man has been a practical biologist, having systematic knowledge of plants and animals, among which and on some of which he believed. These paintings depicted birds, animals, war scenes, hunting scenes, dances, etc.

Indeed, kaavi art is an essential component of Goan culture. (Fig-4.45) The state of Goa in India is the birthplace of this unusual style of mural painting. Traditionally, these paintings have been done on the walls of temples, homes, and other structures. They frequently feature scenes from ordinary life, local folklore, or Hindu mythology.

Fig-4.44

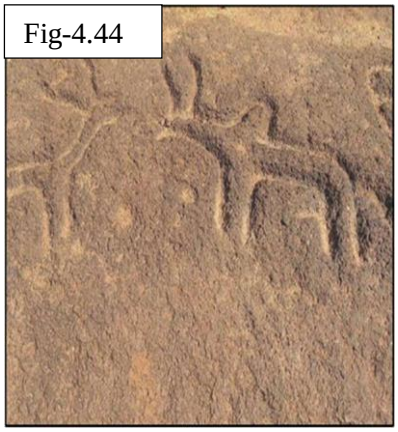


Fig-4.44 Chittals with antlers at Lamgaon Caves

Fig-4.45

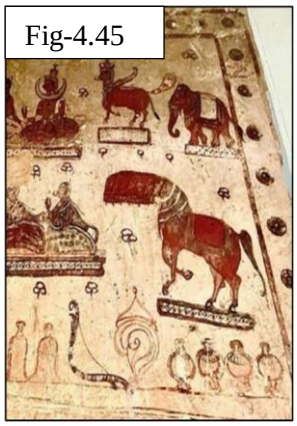


Fig-4.45 Kaavi art showing Faunal Diversity in Bicholim

Fig-4.46

Fig-4.46 Hanuman Temple Bicholim

4.1.4 ICONS

4.1.4.a The Gajalaxmi Panels

This icon seen in many parts of Goa is also important symbolizing the goddess of prosperity. The Gajalakshmi is also called 'Shakhambari', the goddess of vegetation, thereby implying that the icon has climatological and ecological dimensions. Gajalakshmi panels have been excavated from the entire Sahyadri belt, known for its rich water resources. The panel depicts the deity with a garlanded deity, being sprinkled with water showers by two elephants on either side and the elephant represents the clouds. It has been presumed that this icon reflects the advent of agriculture. The

remaining portion of the panel shows a ceremonial procession and a joyous mood reflecting prosperity. (Fig-4.48)

4.1.4.b Brahmini Mahamaya

The icon of Brahmini Maya is characterized by, a deity holding a snake in each hand in a sitting posture. This icon throws light on the cult of snake worship. So powerful is the influence of the deity on the villagers that at Menkurem Bicholim, the holy water (tirtha) from the temples of Brahmini Maya is known to have the incredible power of healing snakebites and skin diseases. It is a very popular deity in Bicholim taluka. (Fig-4.49)

4.1.4.c Betal

Betal is a popular folk deity whose icon is unmistakenly recognized, by a scorpion engraving on its belly. Betal temple is found in Cudnem village of Bicholim Goa.The deity wears a 'nagkirit' (serpent crown) and 'nag bhushan' (serpent jewellry) and sometimes around Its neck can be seen a 'narmund mala, a garland of human heads. The icons of this male folk deity are often shown naked with elaborate genitals. There is some degree of mystique and fear in the minds of people about this deity and it is propitiated by animal sacrifice.

The icon at Amona in Bicholim,(Fig-4.50) Is one of the biggest in Goa and is seen riding on a hors is believed that this folk deity is a protector of villages and any violation of codes of conduct would invite punishment. There is an impressive black stone icon of Betal at Narve. There is an elaborate veneration of this deity during the Shigmo festival during which Betal is propitiated by offerings of animal sacrifices.

4.1.4.d Mahishasur Mardini

Mahishasur Mardini is one of the popular icon found in Lamgaon Bicholim taluka. The icon depicts a female deity shown in war or battle stance holding weapons in all her four hands, the Mahishasur Mardini is shown stepping on the buffalo demon. Mahishasur who as per Hindu mythology troubled the truth seekers, this deity is nothing but a form of Durga. (Fig-4.51)

4.1.4.e Jain Trithankar

This small icon of a Jain Tirthankar (before Mahavira) was found at Narve, Bicholim. (Fig-4.52) The icon shows a snake hood, which is the Jain Tirthankar's motif; every Tirthankar has its nature motif. It is said that the people who worshiped this deity carried these small icons in their bags and worshiped them wherever they halted in their journey.

4.1.4.f Brahma Dev

This icon was originally from Karmeli, in Tiswadi taluka, it is a four-headed icon and assumes great significance as the creator of the universe (Brahma - universe, Dev - deity). (Fig-4.53) There is a rich depiction of biodiversity in the paraphernalia (Prabhaval). For example, swans, crocodiles, and horses as well as floral diversity are profuse in this icon. Each head of the icon represents one of the four Vedas. The deity holds a 'Kamandalu' a pot of water in its left lower hand.

Fig-4.47

Fig-4.47 Gajalaxmi icon

Fig-4.48

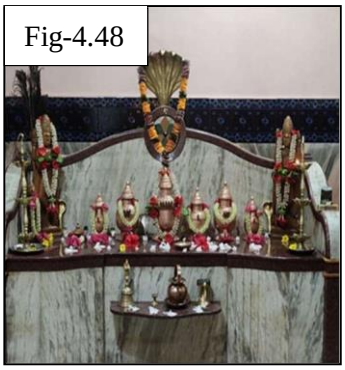


Fig- Fig-4.48 Brahminimaya

Fig-4.49

Fig-4.49 Betal icon at Amona.

Fig-4.50

Fig-4.50 Mahishasur Mardini

Fig-4.51

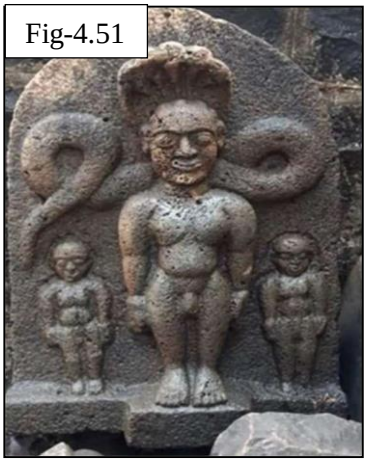


Fig-4.51 Jain Tirthankar icon

Fig-4.52

Fig-4.52 Brahma Dev

4.1.5 Observation Tables

Table no- 4.1

Data table for Zoo-therapy

Sr no	Group	Common name	Scientific Name	Local Name	Parts used	Medicinal uses	Mode Of application
1	Mammals	Rat	*Rattus spp.*	Undir	Blood	Wart	Anointing
					Urine	Wound	Applying directly
2	Mammals	Wild boar	*Sus scrofa*	Ran Dhukar	Meat	Stomach ache, and malaria	Cooked and consumed
3	Mammal	Cow	*Bos taurus*	Gaay	Butter	Malaria and Paralysis	Consumed raw
					Milk	Rabies and TB	Consumed raw
					Urine	Malaria and acne	Consumed raw
					spleen	Anaemia, Malaria	Boiled and consumed
					Omasum	Gastritis	Cooked and consumed
					Liver	Anaemia	Cooked and consumed
					Blood	Wart	Consumed raw
4	Mammal	Porcupine	*Hystrix spp.*	Sal	Meat	Swelling, Headache, Asthma,	Cooked and consumed
					Stomach and Intestine	Diarrhea and diabetes	Cooked and consumed
					Thorn/spine	Wound and a Fracture	Tying
					Liver	Diabetes disease	Boiled and consumed
5	Mammal	Domestic water Buffalo	*Bubalus bubalis*	Mosh	Meat	Sex Stimulant	Cooked and consumed
					Ghee	Snakebite	Consumed raw
					Milk	Jaundice	Consumed raw

6	Mammal	Sambar Deer	*Rusa unicolor*	Haran	Bones of Legs	Body weakness	Consumed by making a soup mixing the paste with water
					Antler	Eye disease, cough, cold & swelling	Paste, Topical
7	Mammal	Goat	*Capra aegagrus hircus*	Bokdi	Milk	Eye disease, wound, headache, vomiting, snake poison	Consumed raw
					Fat	Wound and Toothache	Banding
					Bone	Headache and ear infection	Massaging
					Liver	Eye disease	Liver is crushed and paste is made and applied on eyes
8	Mammal	Sheep	*Ovis aries*	Mendri	Milk	Malaria	Consumed raw
9	Mammal	Bat	*Rhinolophus sp.*	Pakko	Meat	Asthma	Raw flesh is consumed
10	Mammal	Rabbit	*Lepus capensis*	Sosso	Heart	Prevents miscarriage	Cooked and consumed
11	Mammal	Dog	*Canis familaries*	Kutro	Bone	Seizure Disorder	Tying
12	Mammal	Donkey	*Equs asinus*		Dung	Jaundice	Dung is kept in water and after 24 hours the water is filtered and given to drink
13	Mammal	Human	*Homo Sapiens*	Manis	Urine	Antiseptic for its wound healing	Applying Raw

14	Arthropod	Termite (Queen)	All spp.	Whiti	Whole body	Obesity	Consumed raw
15	Arthropod	Honey Bee	*Apis mellifera*	Gandhirmus	Honey	Cough, cold, and anti-inflammatory purposes	Consumed raw
16	Arthropod	Firefly	*Lampyris noctiluca*	Kazulo	Whole body	Throat infection	4/5raw fireflies prescribed to eat daily
17	Arthropod	Prawn	*Palaemon sp*	Sungat	Whole body	General weakness	Boiled and consumed
					Pila water	Conjunctivitis	As eye drops
					Alive prawn	Excess saliva	consumed raw
18	Arthropods	Crab	*Cracinus Sp.*	Kurli	Flesh	Asthma	Cooked and consumed
19	Annelid	Leeches	All spp.	zoolo	Head	Sucking up bad blood	Applying it to the body
20	Annelid	Earthworm	*Metaphire posthuma*	Gainol	Head	Joints Pain	Massaging
21	Amphibian	Frog	*Rana tigrina*	Bebo	Oil and Skin	Wounds and scars healing	Massaging
22	Aves	Red jungle fowl	*Gallus gallus*	Komdi	Testis Whole body	For male infertility General weakness	Boiled and consumed Roasted on coconut leaves and consumed
23	Aves	Peacock	*Pavo cristatus*	Mor	Legs	Ear pain	Legs are crushed and boiled and water is used as drops
24	Aves	Pigeon	*Columba livia*	Kabutar	Meat	Heart failure and asthma	Boiled and consumed
25	Reptiles	Monitor Lizard	*Varanus spp*	Ghaar	Blood	Cardiac diseases	Drinking by mixing with traditionally made cashew alcohol
26	Reptiles	Cobra	*Naja naja*	Nag	Coat	Headache	Tying

					Venom	Malaria, snake bite, Neurological conditions	Anointing
27	Mollusca	Squids	*(Sepioteuthis sepioidea*)	Manki	Cuttlebone	Wound healing and Tonsils	Cuttlebone is made into a powder and applied
28	Mollusca	Oyster	*Magallana gigas*	Kalwa	Shell	Toothache	Powder of shell is applied
29	Fish	Shark	*Scoliodon laticaudus*	Pillo	Liver oil	Immunity booster	Consumed raw
30	Fish	Indian anchovy	*Stolephorus indicus*	Velli	Whole body	Brain growth in children	Consumed raw
31	Fish	Croaker	*Micropogonias undulatus*	Dodyaro	Whole body fried with coconut leaves	General weakness in kids	Roasted and consumed
32	Fish	Grey mullet	*Mugil cephalis*	Shevto	Whole body	Lactating women	Cooked and consumed
33	Fish	Toothpony	*Gazza minuta*	Khapi	Whole body	Pregnant women	Boiled and consumed

Table no-4.2

Number of informants

Sr.no	Animal Groups	Animals	Number of informants
1	Mammals	Rat	1
		Wild boar	2
		Cow	9
		Porcupine	3
		Buffalo	2
		Sambhar	7
		Goat	6
		Sheep	2
		Bat	1
		Rabbit	1
		Dog	1
		Donkey	1
		Human	2
2	Arthropod	Termite	2

		Honey bee	6
		Fireflies	1
		Prawn	5
		Crab	1
3	Annelid	Leech	6
		Earthworms	3
4	Amphibia	Frog	5
5	Aves	Red jungle fowl	2
		Peacock	2
		Pigeon	2
6	Reptiles	Monitor-Lizard	10
		Cobra	1
7	Mollusc	Squids	10
		Oyster	8
8	Fish	Shark	3
		Indian anchovy	2
		Croaker	1
		Grey mullet	10
		Tooth pony	2

Google survey responses

Fig- 4.53

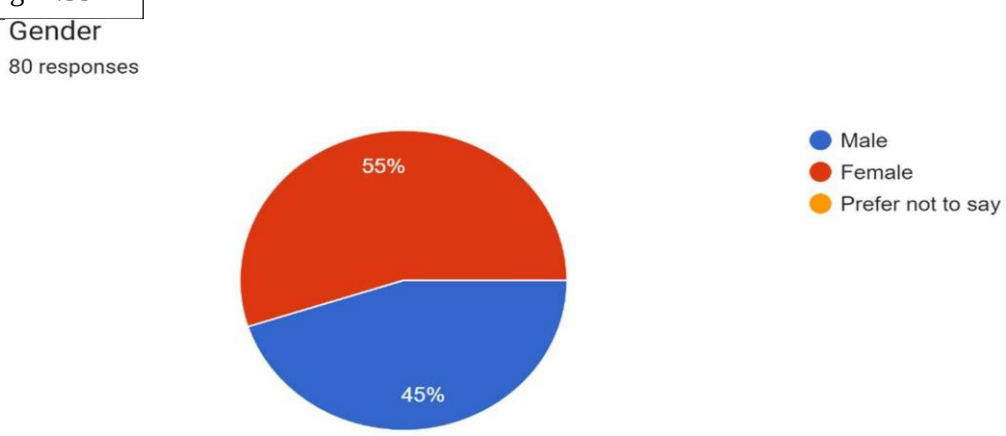


Fig-4.54

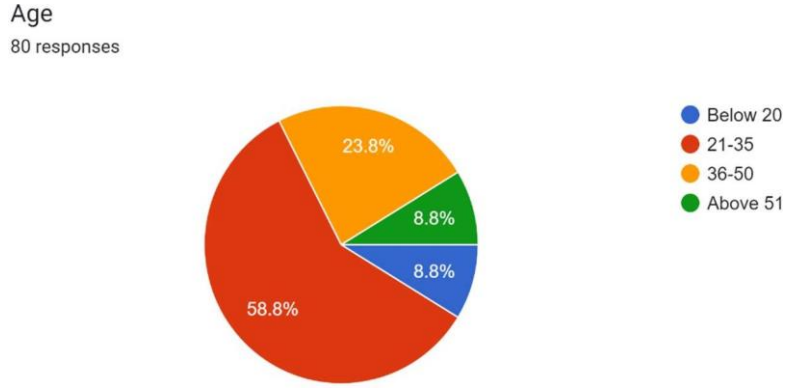


Fig-4.55

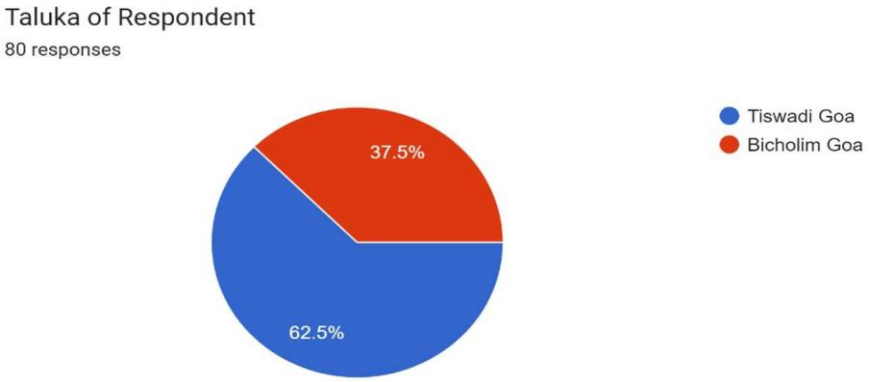


Fig-4.56

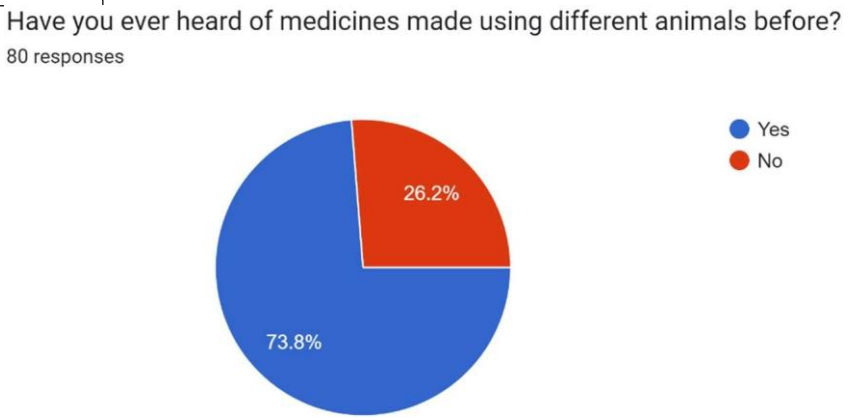


Fig-4.57

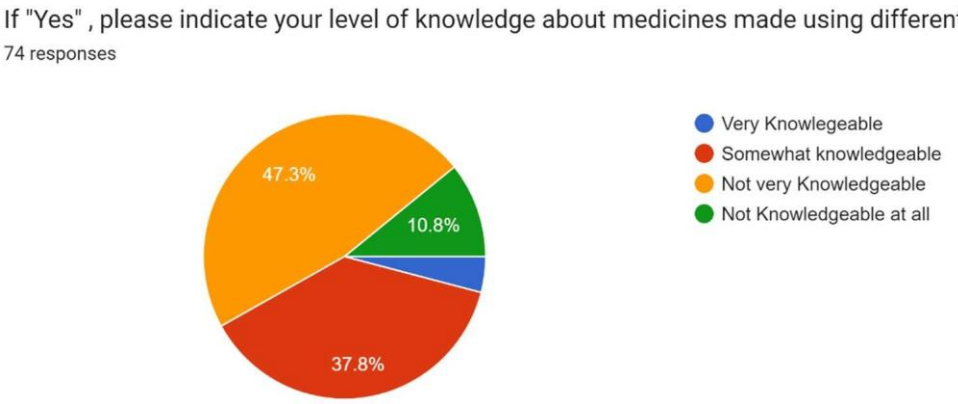


Fig-4.58

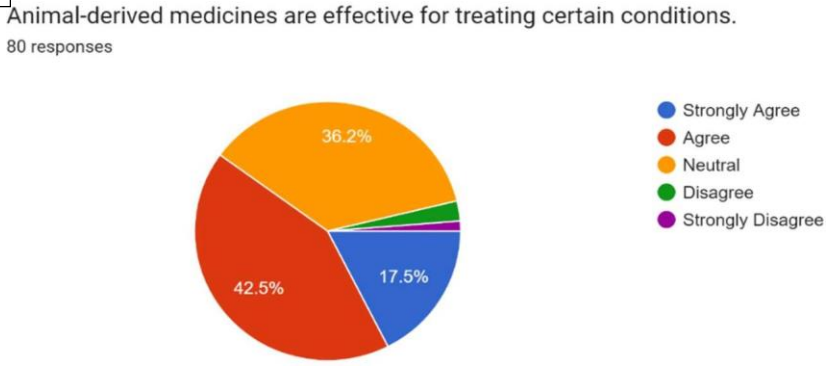


Fig-4.59

There are ethical concerns about using animals to produce medicines.

80 responses

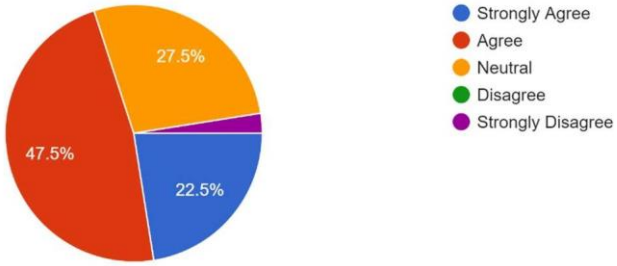


Fig-4.60

Have you ever used any Animal derived medicine ?

80 responses

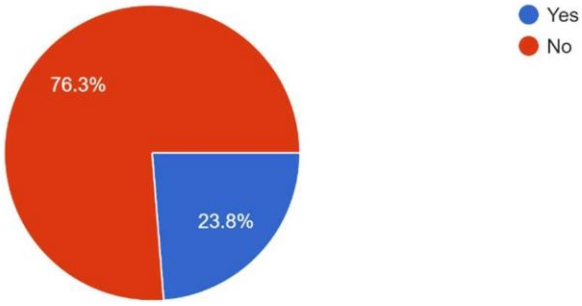


Fig-4.61

If no, will you be willing to use the same in the future.

71 responses

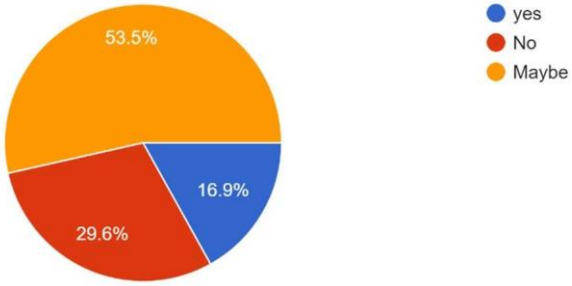
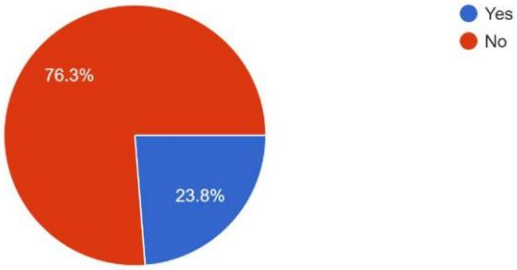


Fig-4.62

Do you know someone who uses Zootheraphy

80 responses



Survey method responds

Fig-4.63

Study Area	Respondents
Tiswadi	46
Bicholim	74

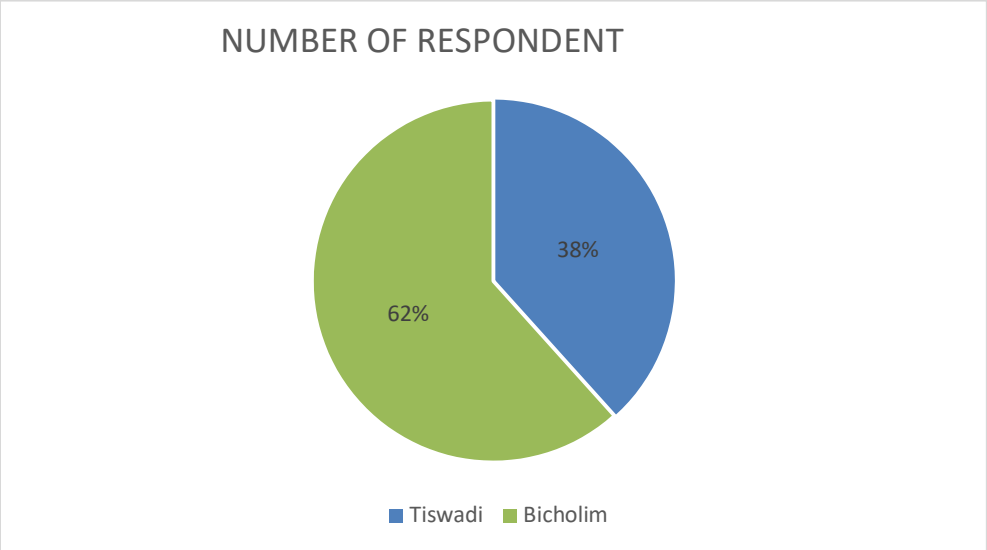


Fig-4.64

Age	Number of individuals
Below 20	4
21-31	6
32-42	13
43-53	41
54 and above	56

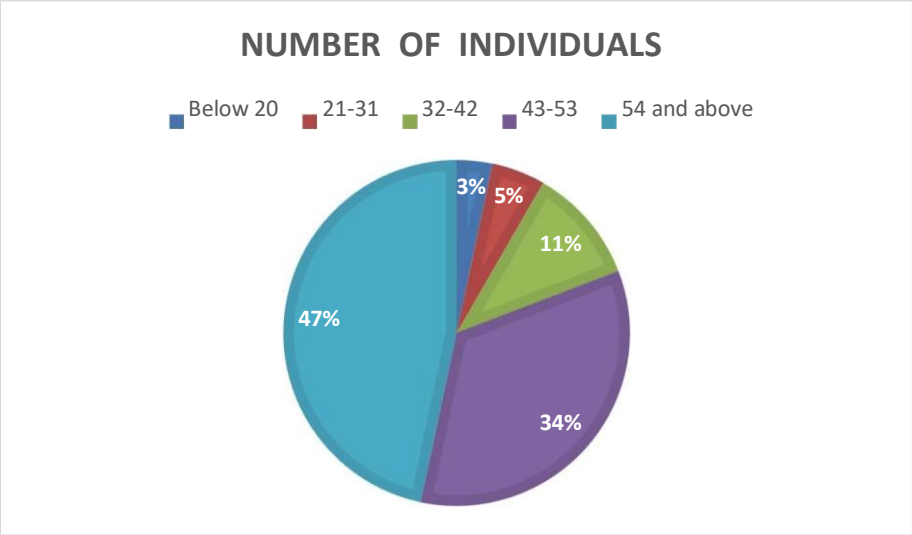


Fig-4.65

Mammals	Response distribution
Rat	1
Wild boar	2
Cow	9
Porcupine	3
Buffalo	2
Sambhar	7
Goat	6
Sheep	2
Bat	1
Rabbit	1
Dog	1
Donkey	1
Human	2

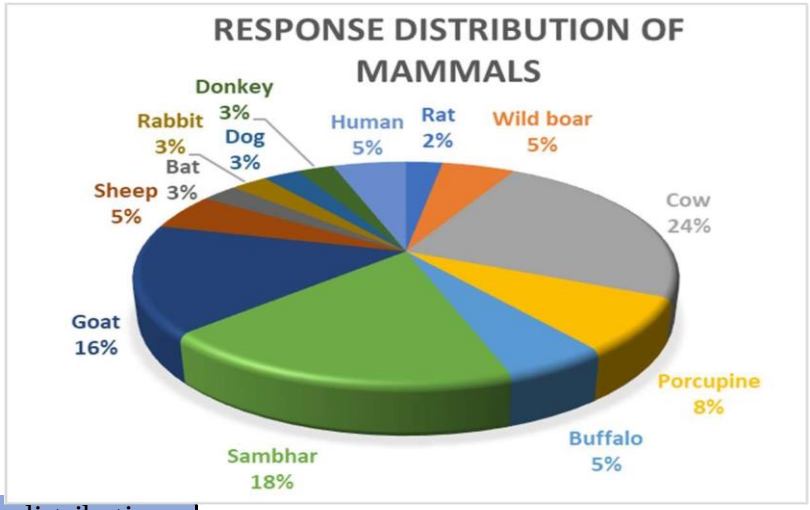


Fig-4.66

Arthropods	Response distribution
Termite	2
Honey bee	6
Fireflies	1
Prawn	5
Crab	1

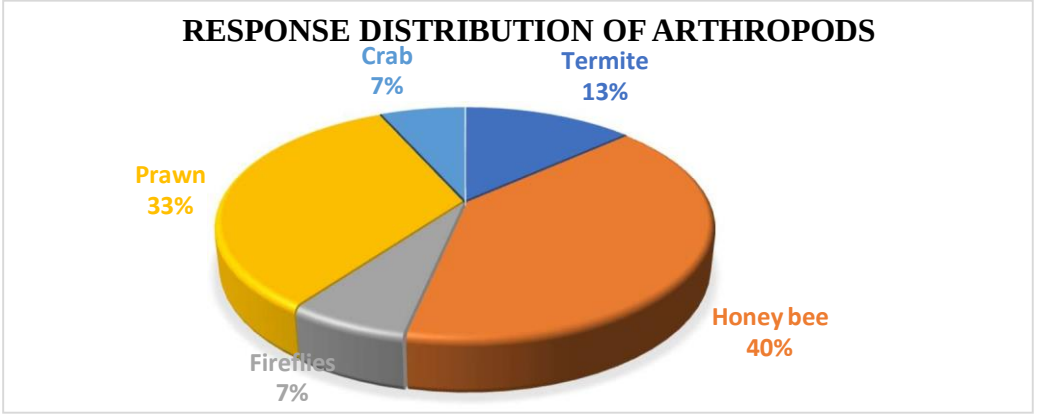


Fig-4.67

Annelid	Response distribution
Leech	6
Earthworms	3

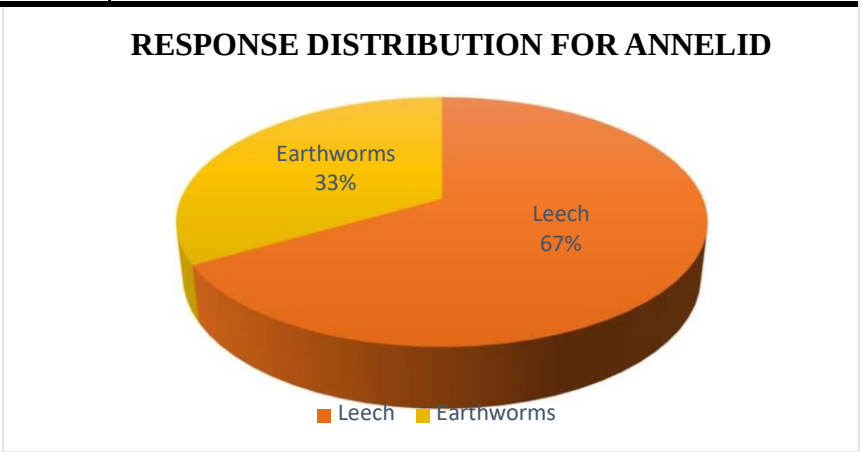


Fig-4.68

Amphibia	Response distribution
Frog	5

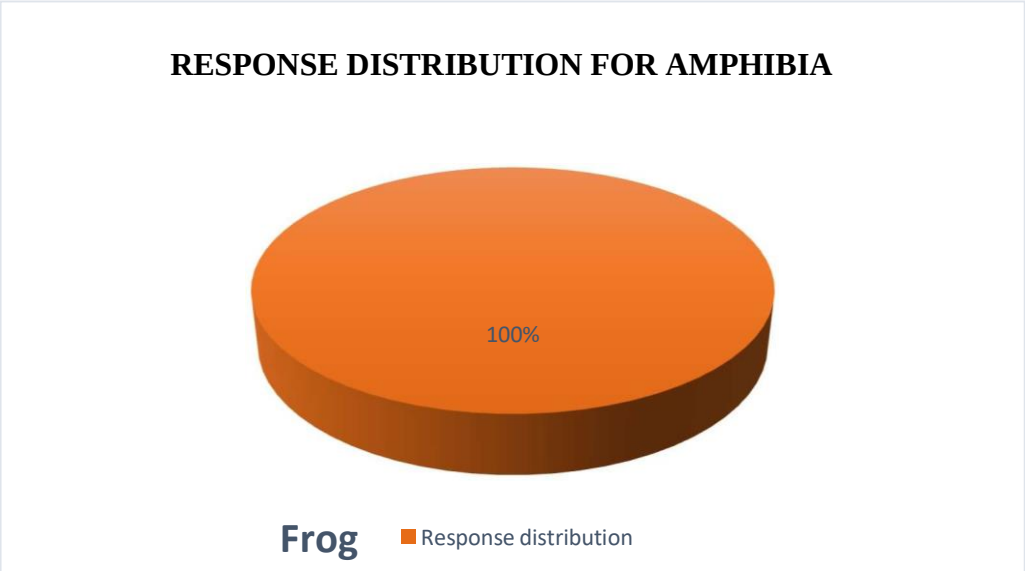


Fig-4.69

Aves	Response distribution
Red jungle fowl	2
Peacock	2
Pigeon	2

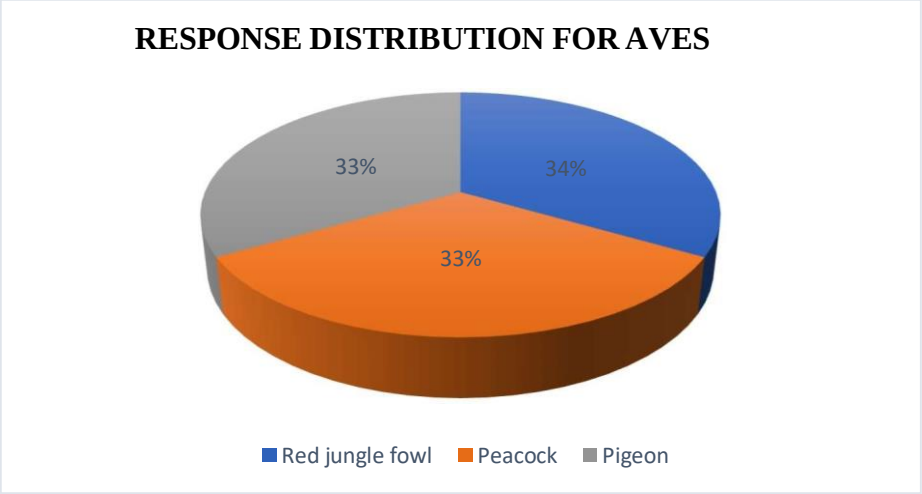


Fig-4.70

Reptiles	Response distribution
Monitor-Lizard	10
Cobra	1

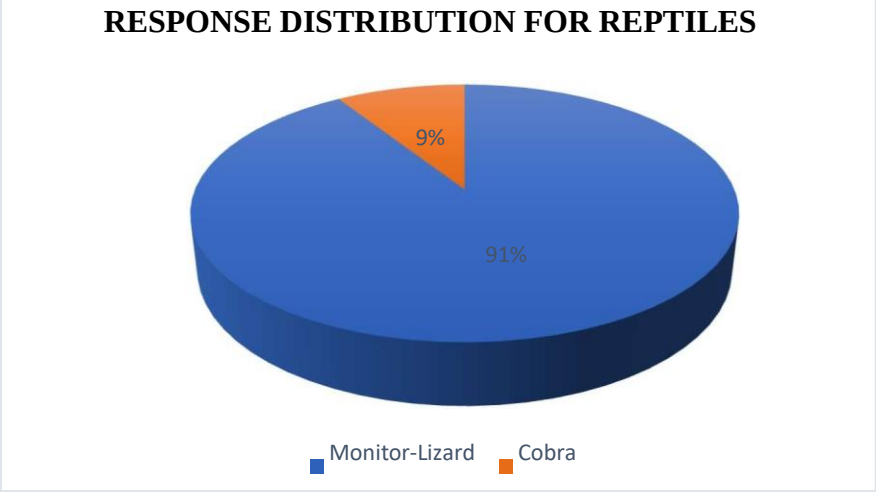


Fig-4.71

Mollusc	Response distribution
Squids	10
Oyster	8

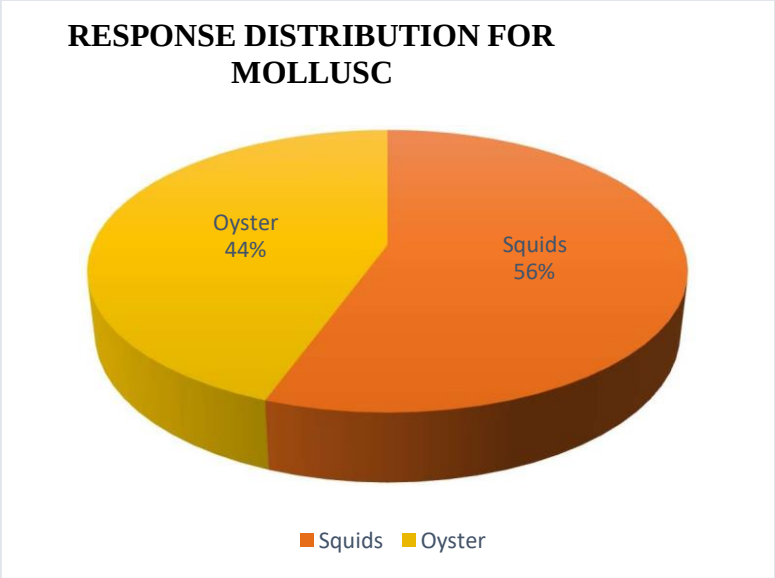


Fig-4.72

Pieces	Response distribution
Shark	3
Indian anchovy	2
Croaker	1
Grey mullet	10
Tooth pony	2

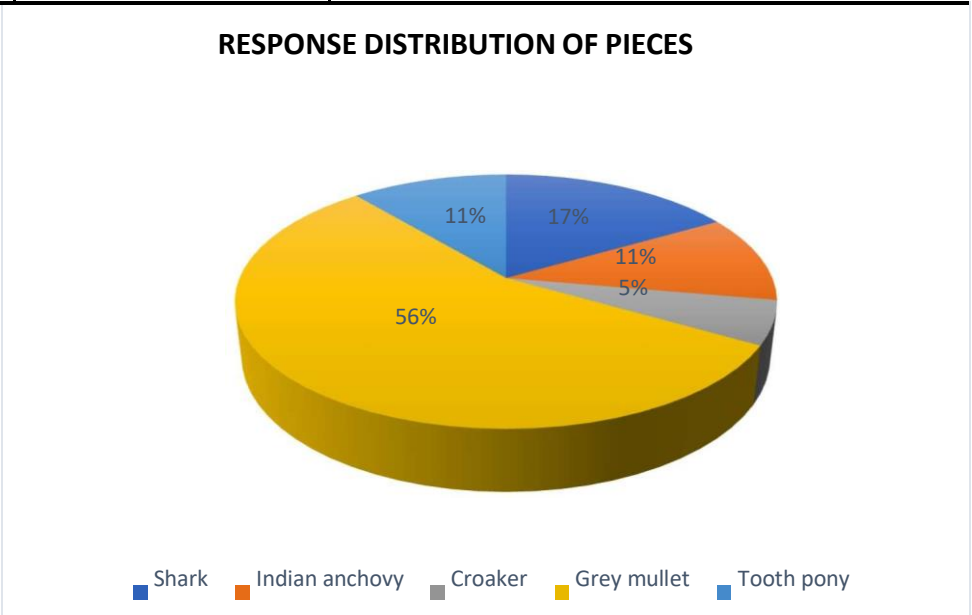


Fig-4.71

Animal groups	Percentage
Mammals	39.39
Arthropod	15.15
Annelid	6.06
Amphibia	3.03
Aves	9.09
Reptiles	6.06
Mollusc	6.06
Pieces	15.15

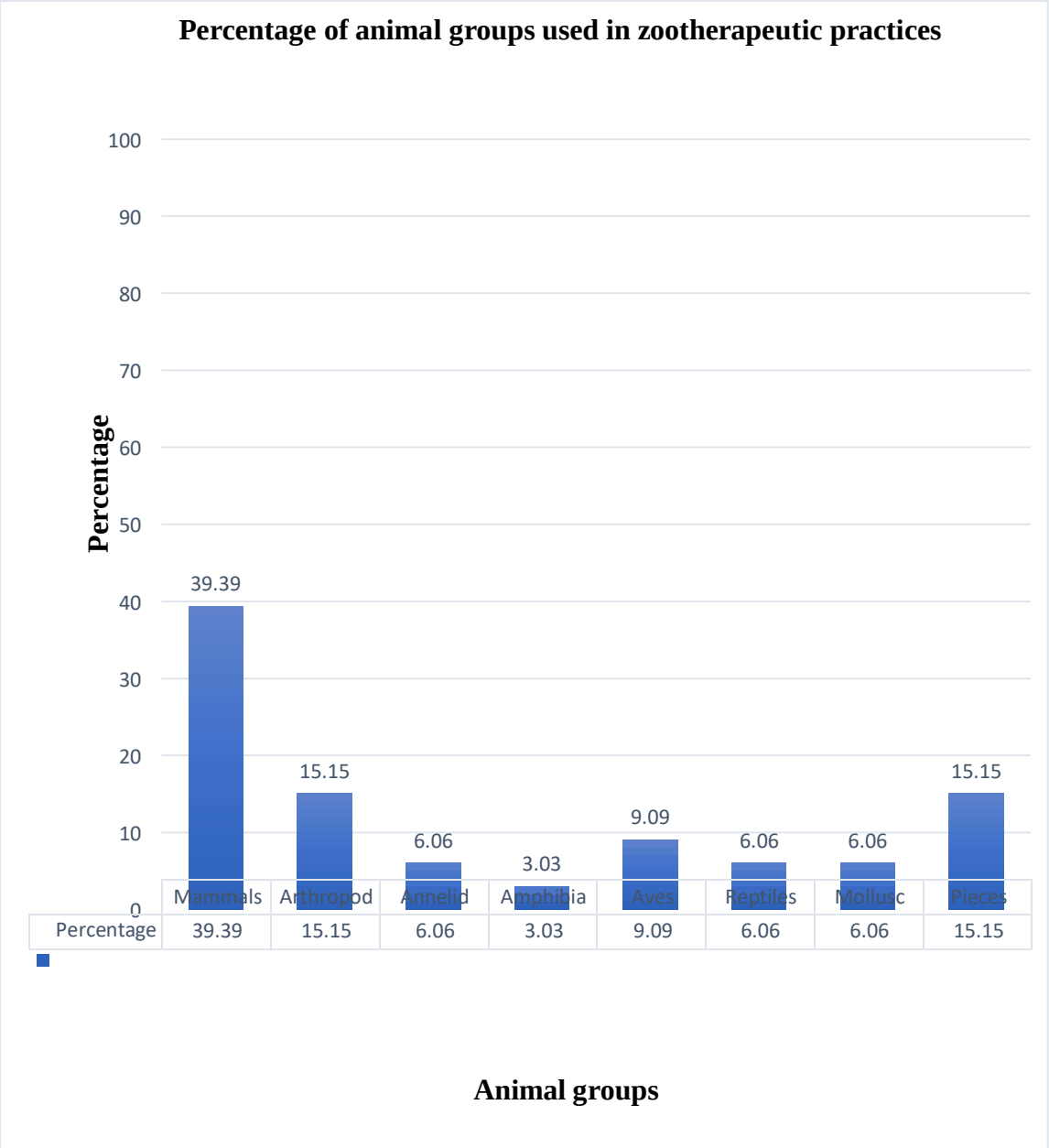


Fig-4.74

Mode of application	Percentage
Anointing	3.77
Applying directly	7.54
Cooked & Consumed	18.86
Consumed raw	26.41
Boiled & Consumed	13.2
Tying	5.66
Paste	5.66
Banding	9.43
Massaging	1.88
Drinking	3.77
Roasted & consumed	3.77

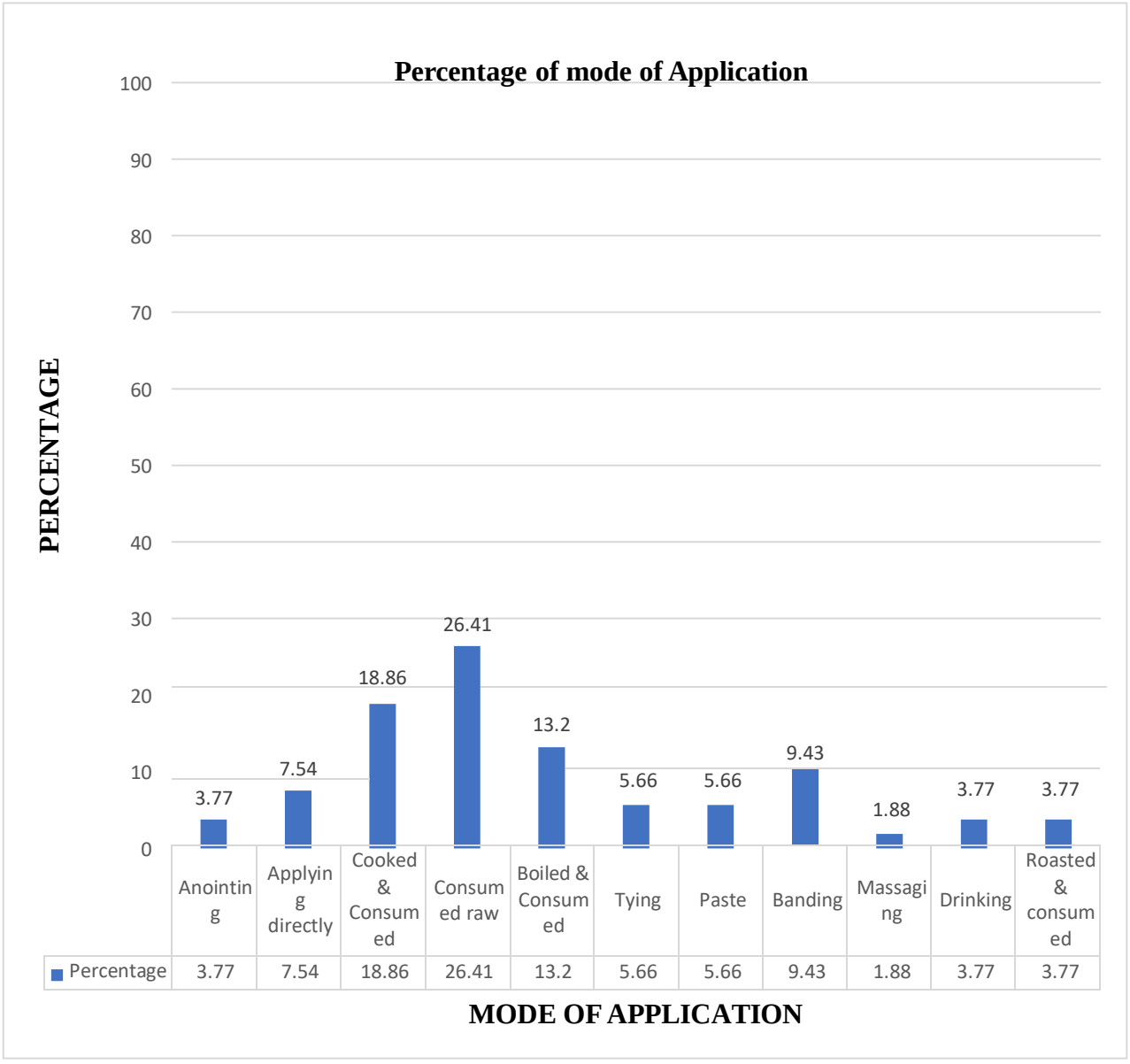
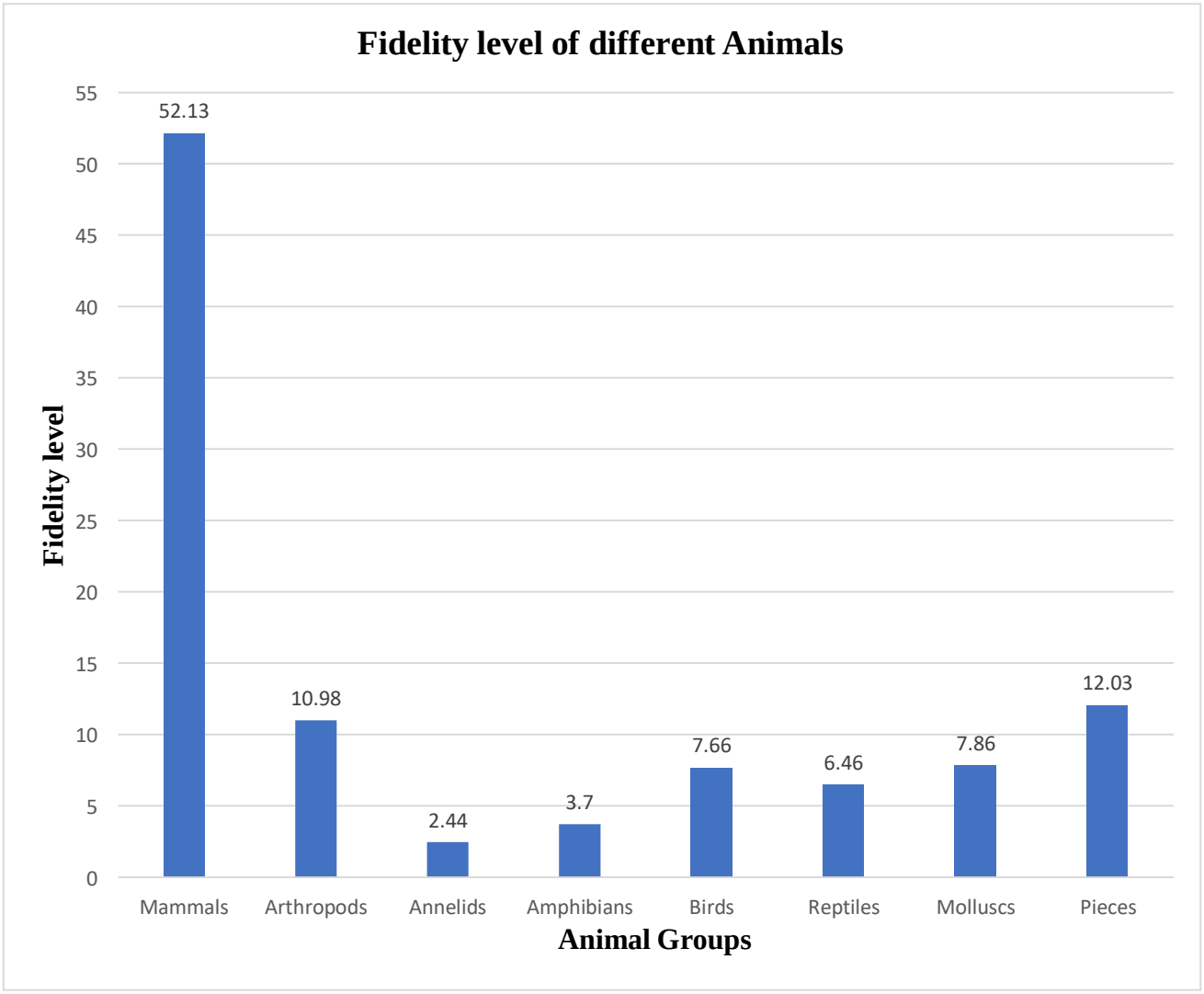


Fig-4.75

Animal Groups	Fidelity level
Mammals	52.13
Arthropods	10.98
Annelids	2.44
Amphibians	3.7
Aves	7.66
Reptiles	6.46
Molluscs	7.86
Pieces	12.03



4.1 DISCUSSION

4.2.1 Survey Visit

Information gathered from 144 homes that is 72 homes per taluka were interviewed out of which 120 individuals were knowing Animal based medicines. (Fig-4.63) A total of 12 villages were selected from 2 talukas using the Lottery method which was also used by Anita Acharya in the Indian Journal of Medicinal Specialists 2013.

4.2.1.a Survey Visit Responses

A total number of 32 species were recorded from two taluka which are (Mammals) Rat, Wild boar, Cow, Porcupine, Buffalo, Sambhar deer, Goat, Sheep, Bat, Rabbit, Dog, Donkey, Human (Arthropods) Termite, Honeybee, Firefly, Prawn, Crab, (Annelid) Leech, Earthworm, (Amphibian) Frog, (Birds) Red jungle fowl, Peacock, Pigeon, (Reptiles) Monitor lizard, Cobra, (mollusk) Squids, Oyster,(Pieces) Shark, Indian anchovy, Crocker, Grey mullet, Tooth pony. (Table-4.2)

Which were used for medicinal purposes to cure 45 different diseases like Warts, Wounds, Stomach ache, Malaria, Paralysis, Rabies, T.B, Acne, Anemia, Gastritis, Swelling, Headache, Asthma, Diarrhea, Diabetes, Fracture, Sex stimulant, Snakebite, Jaundice, Body ache, Eye disease, Cough & Cold, Swelling, Vomiting, Toothache, Ear infection, Prevents miscarriage, Seizure disorder, Antiseptic property, Obesity, Anti-inflammatory, Throat infection, General weakness, Conjunctivitis, Salvation, Sucking up bad blood, Joint pain, Scar healing, Male infertility, Cardiac disease, Neurological conditions, Tonsils, Immunity booster. Brain Growth, Lactation and Pregnancy. (Table-4.1) (Unander et al., 1991, Boo et al., 2011)

4.2.1.b Animals as medicine

The number of Mammals used for Zootherapeutic purposes reported was the highest with a count of 13 Species with a Percentage of (39.39%), Cow (24%), Sambhar (18%), Goat (16%), Porcupine(8%), Wild boar, Buffalo, Sheep, Human(5%) Donkey, Bat, Rabbit, Dog (3%) and Rat(2%) belonging to 10 different families like Muridae, Suidae, Bovidae, Hystricidae, Cervidae, Pteropodidae, Leporidae, Canidae, Equidae, and Hominidae which belong to 7 different orders like Rodentia, Artiodactyl, Chiroptera, Lagomorpha, Carnivora, Perissodactyla and Primates. (Fig-4.65)

The percentage of animal groups used in zootherapeutic practices was highest in Mammals (Vijaykumar et.al., 2015) with a percentage of (39.39%) followed by Pieces and Arthropods (15.15%) each Aves at (9.09%) Reptiles and Mollusc (6.06%) each and the lowest is Amphibia at (3.03%). (Fig-4.75)

According to the observation the responses from the respondents were recorded and calculated using the fidelity level (FL) method therefore the FL for the mammals was the highest with a percentage of (52.13%). Finding the most popular species among the residents to treat specific illnesses may be done with the help of the fidelity level. The study's FL values ranged from 1.0% to 100%. Typically, a FL of 100% for a particular animal signifies that the identical approach to employing the animal for treatment was described in every use report (Kim and Song, 2013).

The number of Pieces (Fig-4.72) was reported with a count of 5 species with a percentage of (15.15%) that is Grey-mullet (56%), Shark (17%), Tooth pony, Indian anchovy (11%) croaker (5%) belonging to 5 different families Carcharhinida, Engruculidae, Sciaenidae, Mugilidae, Leiognathidae which belonged to 5 different orders Carcharhiniformes, Clupeiforms, Acanthuriformes, Mugiliformes, Perciformes. The (FL) for pieces was calculated which resulted in (12.03%.)

The number of Arthropods (Fig-4.66) was reported with a count of 5 species with a percentage of 15.15% which is Honey bee (40%), Prawn (35%), Termite (13%), Crab & Fireflies (7%). It belongs to 5 different families Mastotermide, Apidae, Lampyridae, Penaeidae, and Curcridae which have 4 different orders Blattodea, Coleoptera, and Decapoda. The (FL) was calculated for arthropods which resulted in (10.98%)

The number of Birds (Fig-4.69) was reported with a count of 3 species with a percentage of (9.09%) that is Red jungle fowl (34%) Pigeon (33%) and Peacock (33%) which belong to 2 different families Phasianidae and Columbidae which belonged to 2 different orders Galliformes & and Columbiformes. The Fidelity level for the Aves was (7.66%)

The number of Annelids (Fig-4.67) reported was 2 species with a percentage of 6.06% that is Earthworm (33%) and Leech (67%) belonging to 2 different families Hirunidae and Lumbricidae

which belonged to 2 different orders Arhynchobdellida and Opisthopora with a least (FL) Value of (2.44%.)

The number of Reptiles (Fig-4.70) reported was 2 species with a percentage of 6.06% which is the Monitor lizard (91%) and cobra (9%) belonging to 2 different families that is Varanidae and Elapidae belonging to 1 order Squamata (FL) Value of (6.46%)

The number of Mollusc (Fig-4.72) reported was 2 species with a percentage of 6.06% that is Oysters (44%) and Squids (56%) belonging to 2 different families Loliginidae and Anomiidae which belonged to 2 different orders Myopsiaa and Pectinida with an (FL) of (7.66%.)

The number of Amphian (Fig-4.69) reported was 1 species with a percentage of 100% that is a Frog belonging to Family Ceratophryidae and the order Anura with a (FL) value of (3.7%).

The Animal group with the highest FL value was Mammals (52.13%) followed by Pieces (12.03%), Arthropods (10.98%), Mollusc (7.86%) Birds (7.66%) Reptiles (6.46%) Amphibia (3.7%) and the least Annelids with an (FL) of (2.44%). (Fig-4.76) (Jaroli et.al., 2010)

The survey method that was conducted collected information from 144 homes that are 72 homes per taluka out of which 120 individuals were interviewed which resulted in (62%) of respondents from Bicholim taluka and (38%) (Fig-4.64) of respondents from Tiswadi taluka might be so because they live so close to fields, forests, and other natural places, people in rural areas frequently have a greater affinity with the natural world. Being near the land helps them develop a stronger bond with the nearby plants and animals, which results in an abundance of native knowledge regarding zootherapy (the use of animal products for medical purposes) and ethnozoology (the study of the relationship between people and animals).

On the other hand, city places are usually farther from the natural world. City dwellers might not have as many possibilities to engage in traditional animal-based therapeutic methods or to interact with a variety of animal species. Age group 54 and above was highest with a percentage of (47%), (Vyas et.al., 2015) followed by age group 43-53years (34%), 32-42years (11%), 21-31years (5%), and below 20 years (3%). (Fig-4.65) The elder generation may know more about ethnozoology and zootherapy from indigenous sources than the younger age for a few reasons Cultural Indigenous

knowledge is typically transmitted verbally across generations. Younger members of the community are mostly taught this knowledge by elders through stories, customs, and hands-on demonstrations. On the other hand, there might be fewer opportunities for this information transfer to take place successfully due to technology and lifestyle changes.

4.6.2 Medicinal mode

The results depict 11 modes of preparation for the medicinal materials of animals that is Anointing (3.77%), Applying directly (7.54%), Cooked & consumed (18.86%), Roasted and consumed (3.77%), consumed raw (26.41%), Boiled & consumed (13.2%), Tying (5.66%), Paste (5.66%), Banding (9.43%), Massaging (1.88%) and drinking (3.77%). It was reported that most of the respondents (26.41%) consumed animal products raw and the least number of respondents (1.88%) used the massaging mode of the application. (Fig-4.74) (Jaroli et. al.,2015)

4.6.3 Google survey

A Google survey was carried out with a Structured questionnaire which is a set of questions circulated in Tiswadi and Bicholim Taluka of Goa using social media platforms. The Google form reached 80 respondents out of which 45% were males and 55% female. (Fig-4.53) The number of respondents was highest in the age group of 21-35 years (58.8%) followed by the Age group 21-35 (23.8%) followed by the age group below 20 years and above 51 years with a percentage of (8.8%). (Fig-4.54) From which (62.5%) respondents were from Tiswadi taluka and (37.5%) from Bicholim taluka. (Fig4.55)

It was also reported that (73.8%) of Respondents had heard about medicines that were derived from animals and (26.2%) had no knowledge about the same (Fig-4.56) Out of 80 Respondents (47.3%) respondents were not very knowledgeable, (37.8%) were somewhat knowledgeable, (10.8%) were not knowledgeable at all and none of them were very knowledgeable about the level of knowledge about medicines made up of different animals. (Fig-4.57)

It was also brought about that (42.5%) of respondents agreed, (36.2%) responded with neutral,

(17.5%) strongly agreed and none of them disagreed or strongly disagreed on whether animal-derived medicines were effective in treating certain conditions. (Fig-4.58)

(47.5%) of respondents agreed, (27.5%) responded neutral, (22.5%) strongly agreed and none of them disagreed and strongly disagreed with the statement that says are there any ethical concerns about using animal-derived products as medicines (Fig-4.59)

It was elicited that (76.3%) of respondents had not used any animal-based medicine and (23.8%) of respondents had used the same. (Fig-4.60) The respondents who never used animal-based medicines were asked if they were willing to use the same in the future which resulted in (53.5%) using, (29.6%) will not, and (16.9%) will use the same in the future. (Fig-4.61) Also (76.3%) of respondents didn't know any traditional healers who use zoo-therapy and (28.3%) of respondents knew about the same. (Fig-4.62)

4.6.4 Animal worship

Termite Hill has been worshipped in many villages of Tiswadi and Bicholim Goa like St.cruz Tiswadi Shanta Durga temple, Menkurem, and Sankhalim Shanta Durga temple Bicholim. Worshipping termite hills could be an expression of acknowledging and respecting the force and balance of nature, as they are thought to be a part of the natural landscape. Termite hills can be a sign of rich soil since they are frequently seen in productive places. Termite hill worship may be associated with fertility rites, signifying a desire for prosperity and an abundance of crops. Termite hill worship may also be an attempt to revive old cultural traditions that have been passed down through the ages. this was mentioned by NM Kamat in 1999 in his research paper.

Snake is worshiped at Kudnem Shiv temple Bicholim, Nagachi Rai at Nagali hill tiswadi Goa. Because they keep rodent populations and other pests under control, snakes are essential to the preservation of ecological equilibrium. One approach to recognize the value of snakes in the environment and encourage coexistence with them is to worship them.

Crocodile is worshipped at Cumbharjua Canal Tiswadi as apex predators, crocodiles are essential

to preserving the biological balance of aquatic environments. In regions where crocodiles are found, they are frequently regarded as representations of the environment's vigor and health. Respect for the natural world and a desire to preserve the ecological balance of water bodies may be reflected in the worship of crocodiles. This was also described by Kerkar in 2022.

Turtles have been worshipped in many temples of Goa Shree swami Samarth Temple Goa Tiswadi In maritime environments, turtles are regarded as keystone species because of the vital functions they play in preserving ecosystem health and biodiversity. Turtle worship may be an indication of a community's understanding of the value of environmental preservation and its commitment to safeguarding these delicate animals and their environments.

The Peacock feature has been used as a symbol to worship lord Krishna and can be also considered a holy feather, this is observed at Devki Krishna Temple Marcel Tiswadi Goa The peacock has a close relationship with various deities in Hinduism. The god of war and triumph, Lord Kartikeya (also called Murugan or Skanda), rides a peacock, or vahana. Another well-known Hindu god, Lord Krishna, is frequently seen wearing a crown made of peacock feathers. So, paying homage to peacocks and requesting their blessings could be considered ways of honoring these gods.

Crow worship is regarded as messengers of the god of death, Yama, and the ancestors in Hindu mythology. It is thought that ancestors visit the homes of their descendants to take part in the offerings given in their honor during the Shraddha ceremony. It is believed that crows transport these sacrifices to the afterlife, making sure the ancestors receive them.

The dog is worshiped as the guru of lord Dattatray this is seen at Bhatlem Datta temple in Goa. Because of their bravery, loyalty, and protective nature, dogs are highly regarded animals. It may be possible to honor these attributes and ask for protection from dogs by worshipping them in societies where dogs are revered as protectors of homes and families.

Horses are worshipped and sacrificed as a symbol of ritual at Lamgaon Rudreshwar Devasthan Bicholim Goa In many civilizations, horses have long been connected to strength, power, and royalty. Hindu mythology frequently describes horses as the carriages (vahanas) of several gods, including the universe's preserver Lord Vishnu. The worship of horses may represent respect for

these characteristics as well as a desire to use these traits in one's own life.

Tigers and Lions are worshipped in many areas of Goa like Vagrodev at Bicholim Goa. Certain Hindu deities are seen riding lions or tigers, or they are shown with them. For example, the goddess Durga is frequently shown riding a tiger, signifying her might and ferocity in the face of bad forces. Similar to this, the representation of Narasimha, a manifestation of the god Vishnu, as a lion-headed man denotes his heavenly strength.

Elephant is worshiped in the form of Lord Ganesh in Goa Religious rites, festivals, and rituals all include elephants, which are held in high regard as sacred creatures. Elephants dressed in vibrant costumes and jewels are paraded through the streets during religious processions and festivals like Ganesh Chaturthi, accompanied by music and chanting.

Cattle and ox are worshipped as a symbol of Lord Shiva in the Shiv Temple of Goa. In Hinduism, cows in particular are highly regarded as symbols of fertility and prosperity. They are revered animals, frequently connected to several gods, including the wish-fulfilling deity Kamadhenu. As a working animal, the ox is also held in high regard for its assistance in agriculture and field preparation, both of which are vital to agrarian communities' means of subsistence.

Monkey worship in Goa in Hinduism, particularly in the Ramayana epic, the monkey deity Hanuman holds a revered position. Hanuman is worshipped for his unwavering devotion to Lord Rama and his role in the epic story. While there might not be specific monkey worship rituals in Goa, devotion to Hanuman is widespread across India, and his temples can be found in various places, including Goa.

Fowl sacrifice can symbolize various concepts depending on the context. It might represent offering gratitude, seeking protection, or asking for divine guidance. In some cases, the sacrifice of a fowl symbolizes the shedding of blood as a form of atonement or purification.

The tangible depictions of the creatures Vrindavan may have significant implications. In Hinduism, certain animals hold significance and are associated with distinct deities or attributes. For instance, the peacock symbolizes spirituality and beauty, the snake denotes fertility and rebirth, and the cow stands for abundance and motherhood. By using these animal motifs, the structures may allude to

the divine presence that is linked with them or they may symbolize qualities such as fertility, protection, or auspiciousness.

The dual function and symbolic meaning of zoomorphic gargoyles in Goan temple design make them significant. These architectural elements, which frequently resemble the heads of bulls or cows, channel water or Panchamrut to keep it clean during the morning Abhishek ritual. They also represent the respect that Hinduism has for domestic animals, especially the bull and cow, which have both cultural and religious significance. Thus, zoomorphic gargoyles reinforce cultural and religious values while serving both practical and symbolic functions, enhancing the temple's visual appeal.

In some parts of Goa, temple pillars feature exclusive carvings depicting mythological scenes, including holy animals and trees. These carvings often blend biodiversity with nationalism, such as depictions of deities within Bharat mata resting against lions, symbolizing national integrity. This synthesis of feminism, ecology, and national identity is influenced by India's reverence for nature and its meeting with Western ideas.

The Gajalakshmi icon symbolizes the goddess of prosperity and vegetation. This icon is associated with the advent of agriculture and prosperity, as shown in ceremonial processions and joyful scenes. The icon of Brahmini Maya depicted holding a snake in each hand, reflects the cult of snake worship in Goa. This deity is revered for its power to heal snakebites and skin diseases. A popular folk deity in Goa is recognized by a scorpion engraving on its belly. The Betal temple in Amona village, Bicholim, depicts the deity adorned with a serpent crown, and sometimes a garland of human heads. Jain Tirthankar Found at Narve, Bicholim, features a snake hood, a characteristic motif of Jain Tirthankars. These icons were carried by worshippers in their bags and worshipped wherever they stopped during their journey. This four-headed icon from Karmeli, Tiswadi taluka, symbolizes Brahma, the creator of the universe. Each head represents one of the four Vedas, with rich biodiversity depicted. A popular icon in Lamgaon, Bicholim taluka. She is shown triumphing over the buffalo demon Mahishasur, who troubled truth seekers in Hindu mythology.

4.3 Conclusion

In conclusion, this ethnozoological study of Goa has unveiled the profound significance of animals in the cultural, spiritual, and therapeutic practices of the state's communities. The research has achieved its major objectives by exploring the mythology of animals in Goa, examining animal worship in temples, and investigating the potential of zoo-therapy in the region.

The findings of this study demonstrate that animals play a vital role in Goan mythology, with stories and legends reflecting a deep appreciation and reverence for the natural world. The worship of animals in temples highlights the sacred status accorded to certain species, underscoring the interconnectedness of human and animal worlds.

Furthermore, the exploration of zoo therapy in Goa has revealed its potential as an innovative approach topromoting mental well-being, conservation, and community engagement.

This research contributes to a deeper understanding of the complex relationships between humans and animals in Goa, shedding light on the cultural, spiritual, and therapeutic significance of animals in the region. The findings of this study have implications for conservation efforts, cultural heritage preservation,and the development of innovative therapeutic approaches.

Ultimately, this dissertation demonstrates that the ethnozoology of Goa is a rich and fascinating field, offering insights into the intricate web of relationships between humans and animals, and highlighting the importance of preserving and respecting the natural world for future generations.

Future aspects

Looking ahead, the field of ethnozoology in Goa holds promising avenues for future exploration and development. Firstly, continued research into the mythology of animals in Goa can unveil deeper layers ofcultural significance and historical narratives, shedding light on how these beliefs have evolved and their relevance in contemporary society.

Secondly, the study of animal worship in temples presents opportunities for interdisciplinary collaboration, involving fields such as anthropology, religious studies, and conservation biology. Understanding the socio- religious dynamics behind animal worship can inform conservation efforts, as well as foster dialogue between traditional practices and modern conservation initiatives.

Thirdly, the emerging field of zoo therapy offers exciting prospects for further investigation and applicationin Goa. Future research can delve into the efficacy of zoo therapy interventions within Goan communities, exploring its potential to improve mental health, foster social connections, and promote environmental stewardship.

Overall, future endeavors in ethnozoology in Goa should aim to bridge the gap between traditional knowledge and contemporary science, fostering a holistic approach to understanding the human-animal relationship. By embracing interdisciplinary perspectives and engaging with local communities, researchers can contribute to the preservation of cultural heritage, the conservation of biodiversity, and the promotion of human well-being in Goa and beyond.

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