

CELEBRATING NATURE-CULTURE RELATIONSHIPS

FROM FORAGING TO FOLKLORE: EXPLORING SOCIO-CULTURAL RELATIONSHIPS WITH GOA'S LATERITE PLATEAU ECOSYSTEMS

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ABSTRACT

Laterite plateau ecosystems in Goa, officially misclassified as ‘wastelands,’ are ecologically unique, yet their socio-cultural significance has remained undocumented. This study addresses this critical knowledge gap by exploring the deep relationships between local communities and these landscapes. Employing qualitative methods, including 27 semi-structured interviews and participatory walks at two contrasting sites in North and South Goa, the research documents the plateaus’ integral role in village life. We find that these ecosystems have been historically vital as an agricultural matrix for unique ‘Kamat’ farming, essential grazing commons, and a ‘natural pantry’ providing foraged foods, medicines, and culturally significant plants for rituals like the *matoli*. They also hold deep spiritual importance, hosting temples and sacred sites. However, these profound human-environment connections are rapidly eroding due to urbanisation and shifting livelihoods.

This has created a ‘tragedy of the commons by disuse,’ making these areas highly vulnerable to privatisation and large-scale development. This study systematically documents the plateaus’ immense cultural value, directly challenging their ‘wasteland’ status and providing a crucial evidence base for their conservation, potentially through designation as Biodiversity Heritage Sites (BHSs) that promote participatory management.

Figure 1: Laterite plateau in Goa | Farai Patel/WCS-India



INTRODUCTION

The laterite plateau ecosystems of Western India consist of rocky flatlands that are primarily composed of laterite and are found across the Central and Northern Western Ghats (Kulkarni et al. 2023). They are found scattered along the tops of the Northern Western Ghats as High Level Ferricretes, and along the Western Coast as Low Level Ferricretes (Watve 2013). LLF are much more widespread and are found in the coastal regions stretching from Maharashtra to North Kerala, including in Goa. Across these areas, studies have documented a wealth of unique species of flora including numerous species of endemic and threatened herbaceous plants that are adapted to the harsh conditions on the plateau tops (Lekhak and Yadav 2012; Watve 2013; Rao et al. 2012). They also act as important habitats for various other species including amphibians (Thorpe et al. 2018; Katwate and Apte 2019) and birds (Desai and Shanbhag 2012). Though there has been increasing interest in their ecological importance, there has been no published research that explores their place in the lives of the people inhabiting these areas.



Figure 2: Flowers carpeting a plateau in Goa during the monsoon | Farai Patel/WCS-India

There is only limited research on the interaction between culture and rocky outcrops in general, despite the fact that across the world, rocky areas are considered sacred (Fitzsimons and Michael 2017; Kiernan 2015). From Uluru in Australia to the cave temples of Ajanta and Ellora in Central India, numerous cultures, both historical and contemporary, consider these rocky areas important spiritually and culturally (Kiernan 2015). In Aboriginal Australian culture, they are also important sources of water in otherwise arid landscapes (Fitzsimons and Michael 2017).

In Western India, the lateritic plateaus are also used in a variety of ways. Numerous species of edible and medicinal plants grow on and around the plateaus, which are foraged by local people, while the dense grass that carpets them post monsoon is used for grazing cattle. Though there is limited documentation of plants that are associated with the plateaus that are consumed, research has shown a wide variety of wild plants that are consumed by people in the northern Western Ghats (Jadhav, Datar, and Upadhye 2015; Sreekumar et al. 2020). There is also archaeological and spiritual significance to these areas. In South Maharashtra, numerous prehistoric petroglyphs have been discovered on laterite plateaus (Samant, Pundalik, and Samant 2021), while temples are also associated with these areas.



Figure 3: Socorro plateau in the early monsoon | Farai Patel/WCS-India

Despite a wealth of informal evidence on the plateau's role in local culture (Das, 2024), there has been no systematic documentation of these stories and traditions. This is particularly concerning given the rapid degradation of plateau ecosystems and the traditions associated with them in Goa. These ecosystems have been viewed as wastelands and are categorised as such in the Wasteland Atlas of India, a document produced by the Department of Land Resources. Hastening urbanisation has resulted in many plateaus being used for construction of large infrastructure projects and housing, while changing lifestyles and increasing migration are leading to the loss of traditional knowledge. This study aims to fill a large knowledge gap by exploring the place of the plateaus in the lives and livelihoods of communities in Goa while uncovering the impacts of differing histories on these relationships.

STUDY SITES AND METHODS

SOCIO-ECOLOGICAL SURVEYS

We selected two focal areas in Goa. The first is Socorro plateau in the Bardez taluka of North Goa and its adjoining villages of Socorro, Pomburpa, Paliyem-Uccasiam and Salvador du Mundo. The second is Bhagwati plateau in the Canacona taluka of South Goa and its adjoining villages of Loliem and Poinguinim. These two areas were selected because both plateaus are relatively intact, and because of their vastly different histories. Bardez taluka is part of the Portuguese old conquests and since independence has been a centre of tourism and population growth. Its population in the 2011 Census was over 230,000 people. Hence, it has been more heavily impacted by urbanisation, industrialisation, migration and land use change. On the other hand, the more distant Canacona taluka is home to much fewer people, 45,000 in the last census, and is less impacted by these processes. Communities in both areas are a mix of Hindus and Catholics. Both plateaus have also been the sites of proposed projects that were cancelled due to opposition by locals. An IT Park was proposed on Socorro plateau in the 2010s and two projects, an IIT campus and more recently a film city have been proposed on Bhagwati plateau (Fernandes, 2013; de Souza 2024).

We first conducted preliminary interviews in areas around the plateau to identify potential traditional knowledge holders. These preliminary interviews explored general relationships with the plateau and the surrounding forests and included questions regarding traditional occupations. With the selected participants, we then conducted in depth semi-structured and unstructured interviews across both these focal areas. The interviews were divided into



Figure 4. Maps showing the focal study sites of a) Socorro plateau and b) Loliem Plateau

four main sections: introductory questions that focused on terminology and descriptions, foraging and farming, grazing and land ownership and religion and spirituality. We also conducted two additional interviews outside these focal areas with individuals who held important information that we were unable to find in the villages around Socorro Plateau. These two interviews were with vegetable sellers who farm around the Bambolim plateau in North Goa. In addition to the interviews, we also conducted participatory walks on the plateau with a limited number of interviewees. These walks revealed valuable information regarding useful plants and geographic markers. Interviews were transcribed, translated, and systematically analyzed using thematic analysis to identify recurring patterns related to land use, terminology, cultural practices, and perceptions of change. All coding was done on the open-source software Taguette. We obtained an ethics clearance to conduct these interviews from the WCS-India and ensured prior informed consent was obtained from all participants and ensured anonymity in the reporting of data.



Figure 5. Interviewing community members on the plateau | Farai Patel/WCS-India

RESULTS

We conducted 27 interviews including 11 around Socorro plateau, 14 around Bhagwati plateau and 2 in Bambolim. All of our interviewees were Hindu, except two that were Catholic, and almost all participated in agriculture traditionally. Though we spoke to many Catholic people during our preliminary surveys, we did not conduct full interviews as they did not have relevant or specific information regarding the plateau. All but 2 of our respondents were older than 50, reflecting the loss of the traditional knowledge associated with these ecosystems.

Much has been written about the agricultural economy and traditions of Goa, but the omission of the plateau in these narratives is glaring. Our interviews have revealed that these plateaus have been integral to village life for centuries, though these relationships are changing rapidly. Though the plateau has been widely used, the concept of the plateau as a single entity is blurred and many respondents referred to it as simply a *dhongar* or hill. This is interesting, considering that they are very different from the high hills of the Western Ghats that are also called *dhongars*. However, for most villages near the coastline, these plateau *dhongars* were the only raised areas in the landscape, possibly explaining this terminology. There were however other names that were used by some respondents, including *sada* which is the Marathi word for plateau and *pathar*. There were also various terminologies used for parts of the plateau. These included the commonly used *mal* which are the flat areas where shallow soil collects and *talap/tarap* which refers to the rocky areas that characterise the plateaus.

1) AN AGRICULTURAL MATRIX

Though the plateaus today could be mistaken for unused landscapes, this was far from the reality decades ago. Today, the low-lying rice fields and the khazans are most associated with agriculture in Goa, but the plateaus, too, were important agricultural areas.

We found that there were various types of cultivation and plantation practised on the plateau and hill slopes. All of our respondents in the villages around the Bhagwati plateau spoke of a form of farming known as *Kamat* that was unique to the hills and practised by both men and women. From our interviews, we understand that there are two areas where *Kamat* performed. The first are sloped areas where trees were cleared, and the second is the *mal* or *sariya*, the naturally treeless areas of shallow soil on the plateau tops between the rocks. In these areas, people grow vegetables such as *taushi* (local cucumbers), *ghosali* (ridge gourd), lady fingers, *chibud* (mash melon) and chillies among others.

The process of preparing an area for *Kamat* starts just before the monsoon, when the land is cleared for grass and creepers, often by burning. A natural boundary, made of branches and woody stems, is then erected around a plot. This is mainly for protection from cattle and wild animals such as boars, but also serves to demarcate plots. The area is then covered with natural fertiliser (*savor*), which consists of wild creepers and leaves collected from the surrounding areas. Once the rain starts in June, seeds and saplings are planted in these prepared areas. The crops are completely rain-fed, and no irrigation system is used. Many respondents spoke of the presence of flowing water on the plateau that allows the soil to remain drained. While the crops were growing, some people would also stay on the plateau to ensure the crop was not predated by wild animals. The final harvests would take place between September and November.

Kamat still takes place, particularly in the tribal areas of South Goa, including in the villages around Karmal Ghat and near Cotigao Wildlife Sanctuary, where there are no plateaus, but higher hills. On the Poinguinim plateau, some villagers continue *Kamat* on the plateau top. Many of our respondents spoke of the much better taste of the vegetables produced in the *Kamat*, compared to those grown in the lowlands. Some attributed this to the good drainage of the soil and the ample sun. The lowland fields are often waterlogged in the monsoon, leading to rot in the cultivated plants. In fact, the famous Canacona chillies are grown particularly in the *Kamat*.

“The crops grown on the hill [plateau] region taste different. The ladyfingers cultivated on the bundhs [embankments around khazans] are different in taste compared to those grown in the uplands. The soil on the bundh is clayey because of it being khazan land while here [the hills], the soil is red. So, the taste also differs because of the soil.”

Some of the produce was for sale, especially valuable crops such as chillies. However, most of our respondents said the harvest was mainly for personal use, with the excess being sold. Some of the harvested vegetables were also stored for later use.

“Unripe tavshi can be stored by hanging in the house. It remains edible even till the next monsoon arrives. Pumpkin and ash gourds can also be stored in the same way.”

In Socorro, a few of our respondents said that vegetable farming took place on the plateau, but many said it did not happen, indicating the cessation decades prior. There is a form of agriculture that is virtually identical to *Kamat* still taking place on the Bambolim plateau and its slopes by villagers of Curca and Siridao that is sometimes called *morod* farming, a more general term to refer to cultivation in the uplands. It is practised quite widely and forms an important secondary income for many families. In these areas, cultivation can be lucrative and money from the sale of vegetables can often cover the expenses of monsoon festivals like Ganesh Chaturthi, which is a major celebration in Goa. In these areas, the choice of vegetable grown depends on demand and labour availability. Some vegetable such as the 7 *shiraiche bhindi*, a variety of ladyfingers grown in these areas, are highly sought after and fetch very high prices.

“We now sell freshly harvested ladyfingers at Rs 100 for 5 to 6 pieces [compared to regular ladyfingers which are more than 4 times cheaper]. There is a high demand of them and all get sold”



Figure 6. Rice farming on the Verna plateau | Farai Patel/WCS-India

Other types of agriculture were also performed on the plateau, also referred to as morod or upland farming, particularly of rice and finger millet (nachni). Finger millet was a widely grown and commonly consumed staple, and the well-drained soil in these upper areas was ideal for its cultivation. Respondents in Loliem made a strong distinction between Kamat and the farming of the crops due to the more specific preparation of the plot for Kamat, and the distinct vegetables grown there. Respondents in both Socorro and Bambolim also spoke of past farming on the plateaus, though in Socorro, it was largely abandoned 30 to 40 years ago.

In Socorro, only one Dhangar family that lives on the plateau continues to farm there. Due to the rain-fed nature of the crops and the rockier soils, specific varieties of rice were grown, which included Annapurna and Koryo. Some more widely grown hybrid varieties, such as Jyoti and Jaya, were also sometimes grown in these areas.

Possible reasons for its continuation in Bambolim could be the better suitability of farming on the Bambolim plateau, and the fact that it is closely connected to customers and the large markets of Panjim. In addition, the extensive fertile fields around the villages of Socorro and Uccasiam may have made this highland farming unnecessary. In Loliem, by contrast, there are only limited low-lying agricultural areas, possibly causing many more people to cultivate on the plateaus. However, in recent years, highland farming and *Kamat* have also largely been abandoned by the villagers around Bhagwati plateau. Many respondents who gave up cultivation in the last decade point to two main reasons. The first is the manual labour required and the loss of interest from the younger generations. The second is the growing threat of crop predation by wildlife, particularly Gaur that have increased in numbers because of stricter protection under forest conservation laws.

“Everyone stopped cultivating on the plateau top. I stopped farming there for about 10-12 years. I had restarted Kamat 3 years ago but now the Gaur break all the fencing. One can guard from monkeys and wild boar but not from Gaur. They destroy everything.”

In Bambolim too, respondents spoke of wildlife, particularly wild boars, as a major reason for the stoppage of cultivation, along with the reduction of land due to privatisation and development.

2) A GRAZING COMMONS

The plateaus were also traditionally used as a grazing common. Most families in Goa kept at least some livestock, either cows, goats or buffalo, with many of our respondents owning large herds of above 10 cows and buffalo. These livestock were used for milk and to till the fields. Almost all our respondents referred to the plateau as important grazing commons, while some said it was not only the most important, but also the only area around the village that were used solely as pastureland. This is because, through the monsoon, the plateaus are covered with herbaceous plants which then give way to dense carpets of grass that the livestock graze on. People also said that the cattle could not be grazed anywhere else due to the risk of them consuming peoples crops or garden plants.

*“You can graze anywhere as long as you don’t destroy somebody else’ crop.
Somebody else’s damage was also our damage.”*

Respondents described hundreds of cattle being grazed on the plateau during the monsoon and post monsoon months. Fodder was also collected from the plateau during these months. During the summer, when the fields were fallow and the plateau much drier, cattle were grazed in the lowland fields where both fodder and water were available.

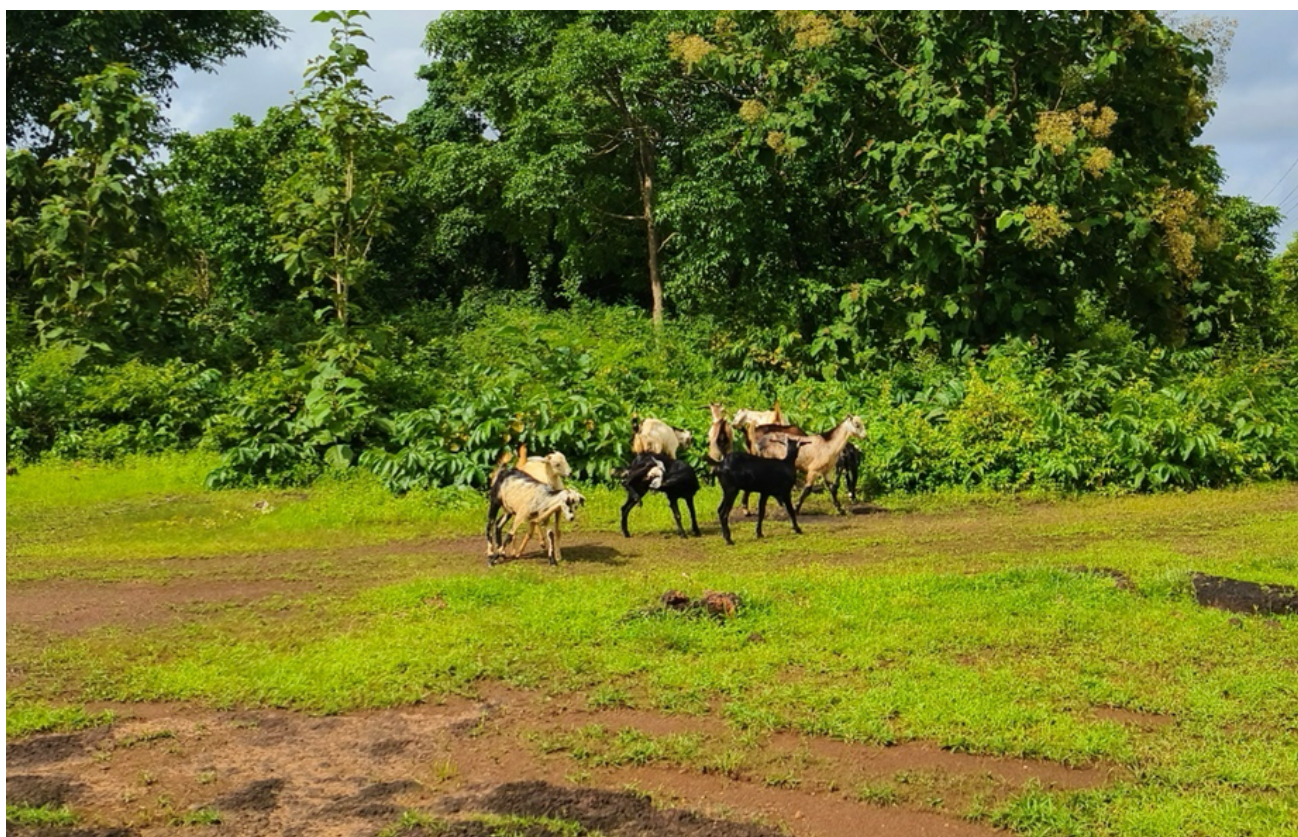


Figure 7. Goats being grazed on the plateau top | Farai Patel/WCS-India

However, over the last 20 years, livestock rearing has become extremely rare in the parts of Goa that we surveyed. There are only a handful of people we identified who still graze cattle or goats on the plateau, mostly around Socorro.

“Most people used to just leave the livestock to wander on the hill. Sometimes, the livestock would get down in the fields and would eat people’s crops. Some people started poisoning and killing them and then people gradually abandoned their cattle.”

In the village of Loliem, the Konkan railway line built in the 90s was a major reason that people gave up their cattle. The railway cut paths and access points from the village and created a steep valley. Some described their cattle getting stuck in this valley and then mowed down by incoming trains.

3) OWNERSHIP

The ownership regime of the plateau reflects its use as a village common. The flat top of the plateau is usually owned by the comunidade. The comunidade is the Portuguese formalisation of the much older *gaunkari* system, wherein the original inhabitants of the village, known as the *gaunkars*, held village land as a ‘commons’ managed by an association. This land included lowland agricultural land and the *khazans*, a system of bunds and sluice gates used for aquaculture, which were auctioned to villagers to use. Though sometimes considered a model for the governance of common land, it does have inequalities affecting it.

The plateau was somewhat unique in Goa’s landscape in that they were an open common, and there were no costs of access to be paid to the comunidade for grazing. This is possibly because of the much higher productivity of lowland rice farming and *khazan* aquaculture (Desouza 1994). Some highland areas were given as completely rent-free leases known as *aframentos*, which today also consist of plateau slope cashew plantations (Desouza 1994). However, some respondents did speak of auctioning rights for cultivation on the plateau tops decades ago, a practice that does not exist any longer.

“Earlier all this forest and plateau came under the comunidade. The land was given for us to cultivate and in return Rs.50 was given to the comunidade... Though we were given land to cultivate, the brabmin community [part of the comunidade] would take some of the harvest.”

The slopes of the plateau, where cashew is grown, are held privately, either by villagers at the base or by bhatkars, the traditional landowners. The slopes are cleared of undergrowth when the cashew harvesting season begins in February and March. Many respondents spoke of the annual tradition of cashew harvesting on the slopes, with some even staying multiple weeks on the plateau during the harvest season. The rocky nature of the plateaus was of advantage for cashew harvest:

“The rock is levelled and is used to grind cashew fruit. Bamboo is added and then smashed, crushed, and then a hole is made for the resulting juice to collect in. The juice is then fermented and distilled to make urrak [a popular Goan alcoholic drink].”

There are sections of the plateau top that are privately held. For example, the Dhangar family residing on Socorro plateau own the land they live and farm on, and on the Uccasiam side of the plateau, comunidade land was given to people who did not own land from other parts of Goa in the 1970s and 80s. The comunidade, is able to lease land to economically weaker sections under Article 334-A of the Code of Comunidades, 1961. Some powerful, landowning people also own land on the plateau top and in some areas, including on Bambolim plateau and Arambol plateau further north, the entire plateau is owned by a landlord family.

4) NATURE’S PANTRY AND MEDICINE CABINET

There are thousands of edible and useful plants found in the Western Ghats, and the ecosystems on the plateaus are home to a variety that are still used today. These include many species of wild vegetables, including *Senna tora* (Taikilo), *Amorphophallus paeoniifolius* (Luti), *Dioscorea bulbifera* (Karando), *Celosia argentea* (kuddiki bhaji) and a number of wild tubers, including those of *Luti*. While many of these plants are not restricted to the plateau areas and can be found along village roads, some, such as *shirmundli bhaji*, the leaves of a creeper, are restricted to forests, often on the edges of the plateau. Most of these wild vegetables grow during the monsoon months. During the summer, foraging shifts from greens to berries, and several delicious varieties are found on the plateaus. These include the berries of *Carissa carandas*, known as *kanna* and those of *Ziziphus rugosa*, called *chunna*. Respondents in both study areas spoke of foraging for gavti (local) fruits and vegetables in the forests around the plateaus.

Beyond edible plants and berries, the plateau was also used as a natural medicine cabinet. Numerous varieties of medicinal plants were found in these areas that were used to treat

both human and animal ailments. In fact, the plateau forests were considered so filled with healing plants that the waters that flow from them, including the famous Pomburpa Spring from Socorro plateau, are considered medicinal.

“People would get water from the springs. The soil would act as a sponge for the water to soak in and the roots would hold the soil together. Water would then trickle down into the wells. When water is percolating through the roots of medicinal plants, there will of course be medicinal benefits.”

Several threatened and rare plants, such as *Naregamia elata* can be found in the forest patches on the plateau tops. Other plants that grow particularly on the plateaus include species of *Lepidagathis* (known in Canacona as *talapkati* due to its pokey leaves) which is used as a remedy for childhood illnesses and leaves of *Cajanus* sp. that are used to make a tea to treat a variety of ailments. Though we did not aim to compile a list of medicinal plants, respondents in both areas spoke of dozens of medicinal and important plants that were traditionally foraged from these areas. However, almost all said that this knowledge is being rapidly lost and that only a few older people can still identify these plants.



Figure 8. *Talapkati* (*Lepidagathis* sp.) is a medicinal plant only found on the rocky areas of the plateaus | Farai Patel/WCS-India

5) RELIGION AND SPIRITUALITY

The lands of the Konkan and Goa are steeped in folklore and spirituality. The diversity of religious practices in Goa is reflected in the use of the plateau as well. The Socorro plateau has a few crosses scattered across it, both as religious structures but also as markers for navigation, reflecting the past use of the area. Paths across the plateau were the main throughfares between the villages of Pomburpa, Aldona, Penha de França and Salvador du Mundo and the important market town of Mapusa. The plateau area also has protector spirits associated with it. These are known as *Rakhandars* or *Devsars* in Goa and each village has these spirits associated with them. The paths on which they walk are often marked with *ghumtis* (small shrines) or simply sacred rocks or trees at the base of which offerings, such as bidis, are left for the spirits on their nightly journeys. However, as the use of the plateau has decreased over time, so has the memory of these sacred trees and the rakhandars associated with them.

“There used to be big banyan tree before. Travellers with goods used to keep betelnut or coconut at the tree to seek blessings so that all of their goods got sold. There was a ghumti built before and now there is a temple there. All the communinade land and the whole of the vaddo (part of the village) is protected by this diety.”



Figure 9. A cross on Socorro plateau. A prayer happens at this cross once a year | Farai Patel/WCS-India

Important temples are often associated with plateaus as well. On the edge of Socorro plateau, the *Panch Pandav* (five Pandavas) temple is located in a natural cave. Though outside our study area, another important temple on the Verna plateau is considered the source of the river Sal, one of Goa's main rivers.

Bhagwati plateau is named after the goddess associated with the temple on the plateau's top. This goddess Bhagwati is an avatar of Lakshmi, and the temple is celebrated twice a year on full moon days. In the temple, a stone idol of a tiger known as *waghdo* is considered her *vahaan* (mount) and the protector of the plateau. Twice a year a festival is celebrated for the goddess where people walk to the temple to pray, sing and eat from a prepared feast. Though none of the respondents spoke of the particular significance of the plateau, a pond and cave besides the temple was considered significant as a tiger was believed to have resided there.

“If there is no tiger, there will be no jungle and if there’s no jungle remaining, there will be no humans”



Figure 10. Bhagwati temple on Bhagwati plateau, Loliem | Farai Patel/WCS-India

Ganesh Chaturti is one of the most important festivals celebrated in Goa and the Konkan. It is a celebration of the monsoon's bounty, and one of the main decorations during the festival, the *matoli*, is a reflection of this. The *matoli* is a bamboo frame that is fixed above the Ganesh idol, onto which a huge variety of cultivated and foraged fruits, flowers and leaves are hung. A huge number of these plants come from the plateaus and their forests. These include *harin* (*Senecio bombayensis*) an annual herb with a yellow flower that is considered important for the goddess Lakshmi and grows particularly on the plateau tops. Traditionally each family would collect these *matoli* items, however in recent years most families purchase them from markets. In parts of South Maharashtra, many people have replaced even these with plastic copies for their matolis.



Figure 11. a) A local person collecting wild berries for the matoli b) Seeds, fruits and leaves used for the matoli being sold at Panjim market | Farai Patel/WCS-India



Figure 12. A Ganesh idol with the matoli seen hanging above | Farai Patel/WCS-India

DISCUSSION

Through this study, we have observed deep but disappearing connections between people and the plateaus, particularly in terms of traditional uses. However, the wealth of traditional ecological knowledge associated with these systems highlights their immense importance in the history and culture of Goa. As the first systematic work exploring these connections, this study provides critical, systematic evidence of the deep socio-cultural value of these ecosystems, directly challenging their official misclassification as 'wastelands' and the policies that stem from it (Watve et al, 2021).

The plateaus have been used for generations in a variety of important ways, including as a matrix of agriculture, grazing and foraging. The growing disconnects between people and these ecosystems reflect a larger change in Goa's landscapes and the lives of its people. There has been a rapid loss of traditional livelihoods, such as agriculture, in favour of jobs in industries and in the tourism sector, while many choose to leave the state in search of better opportunities. Simultaneously, Goa's land has become some of the valuable real estate in the country, and a massive expansion of urbanisation and industrialisation has led to the degradation of the ecosystems that supported these traditional livelihoods (Vaz, 2019).

Though both the villages of North and South Goa have a similar trajectory in terms of the cessation of agriculture and grazing, the rate of this change is mediated by their differing histories and contexts. On the Socorro plateau, agriculture stopped more than 30 years ago, while on the Bhagwati plateau, *Kamat* cultivation was only abandoned in the last decade. Though wildlife was cited as a reason for stopping agriculture, the increase in wildlife is likely due not only to successful conservation measures but also to the reduction of people using the plateau areas. In many areas, including in Loliem, people have even stopped farming rice in lowland areas as young people look for higher-paying jobs, reflecting larger lifestyle shifts beyond the threat of wildlife predation (D'mello, 2019).

Perhaps the only continuing use of the plateau is the use of its slopes for cashew, still a valuable crop in the state, though many cashew plantations have also been abandoned. New uses have emerged, and some plateaus, particularly Socorro, are now used as places for people to hang out, picnic and walk their dogs. In South Goa, the stoppage of these traditional uses is reflected in the way people describe change on the plateau. Many described how these areas have become much wilder and that thick undergrowth and patches of forests have grown that would have been cleared in the past. In North Goa, both in Socorro and Bambolim, the responses were different. Even though some did speak of the

overgrown nature of traditional paths, many said the plateau has been degraded over the last decades. This is likely because of the extensive garbage dumping on the Socorro plateau and the increasing pressure on the plateau slopes for housing development.

While there are certainly many instances of local people opposing construction on the plateaus, both Socorro and Bhagwati plateaus are examples of this, there are many more examples of plateaus becoming victims of conversion. Almost all of Goa's industrial areas, including Verna, Pilerne and Kudnem industrial estates, are on plateau tops. New townships have been planned for the Kadamba plateau, and Manohar Parrikar International Airport was also placed atop the large Mopa plateau.

In this way, we observe a possible 'tragedy of the commons' not by overuse but by disuse. Comunidades that were custodians of these areas have lost revenue from rents taken from auctioning lands for agriculture and fields due to changing livelihoods and lost power due to the Goa Panchayat Raj Act, 1994 (D'Cruz and Raikar, 2006), are turning to selling and privatising the valuable land that they hold. This can be seen starkly in recent developments in Loliem, where the comunidade is pushing for a huge industrial project on Bhagwati plateau despite the opposition of locals (De Souza, 2024). The existing inequities in the governing of these commons, where comunidades are controlled by upper caste and landowning families, has also hastened their decline. People who used to cultivate the land and graze their cattle have limited say in the decisions of the comunidade. This privatisation is continuing across the state and is being met with resistance from local people who fear its impacts on water security and village life.

"If all the trees are cut then there will be no water in the springs. You can see how cool this place [the plateau] is because trees are present. It feels fresh once you come to the plateau. When you don't leave your home for a few days, you will feel uneasy. Instead, if you come up here, the air will act like a medicine, and everything will be cured."



Figure 13. Expansion of Verna industrial estate, already one of the largest in Goa continues on Verna plateau | Farai Patel/WCS-India

CONCLUSIONS AND FUTURE DIRECTIONS

As economic and social changes impact landscapes across the Konkan, the future of these ecosystems and the stories and culture they sustain is uncertain. However, the increased research interest in their unique biodiversity provides hope that there will be renewed focus on these areas for protection. Legislation such as the Biological Diversity Act of 2002 provides a framework for safeguarding ecosystems based on their socio-cultural and ecological significance through declarations of Biodiversity Heritage Sites (BHSs), which allow continued access for local people and prioritise participatory management, unlike other forms of protected areas. Efforts are underway in Maharashtra to declare some plateaus BHSs; however, this will require focused research on various aspects (Watve and Chavan, 2020). While the results from this research can form an important part of the case for the declaration of BHSs on Goa's plateaus, further research on their importance as water towers, for pollination, and the provisioning of other ecosystem services will also be vital (Ghorpade, 2024).

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