

Bamboo Collection Scenario in Tadoba Buffer



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Bamboo Collection Scenario in Tadoba Buffer

**This study was conducted under the project title
Human-Wildlife Coexistence in Central India Landscape:
Challenges and opportunities**



EXECUTIVE SUMMARY

Bamboo collection and product making are some of the most important livelihoods in the Tadoba Andhari Tiger Reserve (TATR) buffer villages. In the buffer, there are 21 thousand families in 92 villages. Out of 92, a total of 2081 families from 45 villages are involved in this business. (Source TATR) As per BNHS estimation, additionally more than 1,500 families are illegally harvesting bamboo from these villages. Out of six buffer ranges in Tadoba, the Shivani range is leading in the bamboo business. There are 923 families in this range, who collect bamboo from the core as well as the buffer area of Tadoba Andhari Tiger Reserve.

The BNHS team noticed that bamboo collection was done deep inside the forest, which disturbs the wildlife habitat and animal movements. Karwa and Rantalodhi villages are on the boundary of the core area so, villagers collect bamboo from the core area. The footprint of the bamboo collection by these villagers is impacting the forests enormously. These villagers cut the bamboo in large numbers for commercial use. They sell bamboo slivers to various bamboo workers in nearby villages.

In the Tadoba Andhari tiger reserve, a strict ban on bamboo fences (locally known as *Tatwa*) created a huge disagreement in the community. These families shifted to other work of Chilli collection in Telangana. The ban on *tatwa* saves the important forest and its natural habitat. This also results in getting bamboo easily to traditional bamboo workers in the nearest forest. Their collection time is also saved according to the local bamboo workers. As per our survey, the bamboo livelihood business in Tadoba buffer villages is about 25 crores in a year.

The Bamboo depot in the selected buffer villages by project tiger is also one of the important interventions. Many families purchased bamboo from these depots. They transport this bamboo with the help of a tractor or bullock cart. Transportation is always a challenge for bamboo workers. The bamboo cost goes high due to transportation.

Bamboo flowering started in the Tadoba landscape. This will affect in diminishing of bamboo clumps from the buffer as well as the core area. The livelihood activities of bamboo workers will be severely hampered due to this phenomenon. This scenario will create a livelihood problem for bamboo working communities in near future.



INTRODUCTION

The state of Maharashtra has a total forest area of 61,939 sq. km. The bamboo forest comprises 8,400 sq. km or about 13% of the total forest area. This distinctive grass predominates in the districts of Gadchiroli, Chandrapur, Amravati, Bhandara, and Gondia. Only the districts of Gadchiroli and Chandrapur produce 90 percent of the state's bamboo. Bamboo is a versatile forest product with the title "green gold" due to its economic importance. Bamboo has numerous applications and can give economic empowerment, particularly in rural areas. The bamboo market is worth approximately Rs 26,000 crore in India. Bamboo furniture, bamboo pulp, bamboo mat board, cottage industries, and plyboard are just a few examples. As a result, bamboo is seen as a source of economic and social development. With all these considerations in mind, the government has established a National Bamboo Mission to cultivate bamboo and fully exploit its potential for the economic and social development of the underprivileged. The government has announced a bamboo policy as per its decision of 2014.

As part of the comprehensive implementation of this policy, a Bamboo Research and Training Center (BRTC) was set up by the Maharashtra government at Chichpalli in the Chandrapur district. Also, Maharashtra Bamboo Development Board (MBDB) has been established as per Government Resolution 2016. Maharashtra is the first state in the country to release TP-free bamboo transportation in 2017. Subsequently, the Central Government revoked the bamboo felling license in the entire country by changing the bamboo from tree to grass species included in the Indian Forest Act, 1927 in 2018. In the last few years, several initiatives have been taken in the Chandrapur district to promote the bamboo sector, in which more than 3,000 women had been trained in bamboo handicrafts at Chichpalli and Chandrapur. Bamboo Diploma Course has been started at Chandrapur. Every year, 20 students are trained in this center. Five sub-centers have been set up at Chandrapur for making bamboo handicrafts and furniture.

In Tadoba-Andhari Tiger Reserve, approximately 45 buffer villages rely on bamboo for livelihood. There is a continuous demand for this raw material which is illegally harvested in the nearby forests. Due to the immense harvesting of bamboo from the buffer as well as the core area, Tadoba management banned the making of *tatwa* as it required a huge quantity of bamboo which hampered the pristine habitat of the Tiger Reserve.

Bamboo flowered in the Chandrapur landscape this year after 1982. A separate management plan for this flowering is prepared by Tadoba-Andhari Tiger Reserve.

BNHS INTERVENTION

Since 2005, BNHS has been working in the Tadoba landscape. During several interactions with the community, it was revealed that there was a significant reliance on the forest for a living through bamboo work. In 2007, BNHS invited the late Mr. Sunil Deshpande (Melghat), a renowned bamboo expert, to connect with the bamboo worker community for their benefit. In 2008, BNHS established a bamboo nursery in Kolara village to promote bamboo cultivation in agricultural fields. The saplings grown in this nursery were distributed to the farmers. Previously, locals were hesitant to plant bamboo in their fields, but this project was welcomed by this community.

To support the local bamboo artisans, the BNHS announced a bamboo craft competition for bamboo workers in Tadoba buffer communities in 2014. BNHS selected ten young locals for skill development training in Pune. Following this training, BNHS established the Tadoba Bamboo Craft workshop in Palasgaon, a buffer village of Tadoba. The crafts manufactured by these bamboo craftsmen are well-finished and appealing, and they were in demand in Mumbai, Pune, Nagpur, and Chandrapur. These bamboo artists were involved in multiple exhibitions and travelled a lot with their crafts. With the financial support of the Ministry of Environment, Forestry, and Climate Change (MoEF&CC), a bamboo training for local women was organized in which these trained youths provided 45 days of training to the participating women. The training was a part of the Green Skill development initiative by the ministry. This bamboo youth group worked from 2014 to 2019 in this workshop. The BNHS has created a self-help group for these artists and is functioning independently.

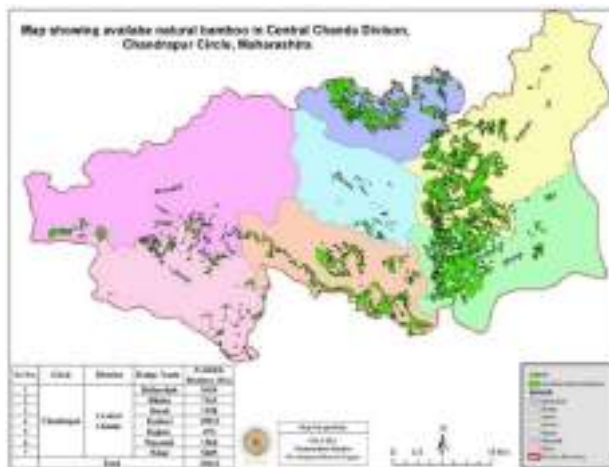


METHODOLOGY

BNHS has a longstanding experience with bamboo livelihood initiatives in the Tadoba landscape. Taking this a step further, the team aimed to conduct a detailed survey of 45 villages engaged in bamboo livelihood activities. The team used a community-based approach comprising a qualitative study. The information for this bamboo study was gathered by visiting all bamboo working villages in Tadoba buffer and Chandrapur circle. Several bamboo workers' families were approached and group discussions were held. Apart from this, the BNHS team also accompanied the bamboo harvester in the core and buffer forests to understand the collection pattern of bamboo. The team did this pilot study in the Chati and Karwa buffer villages.

CHANDRAPUR CIRCLE & TADoba BUFFER SCENARIO

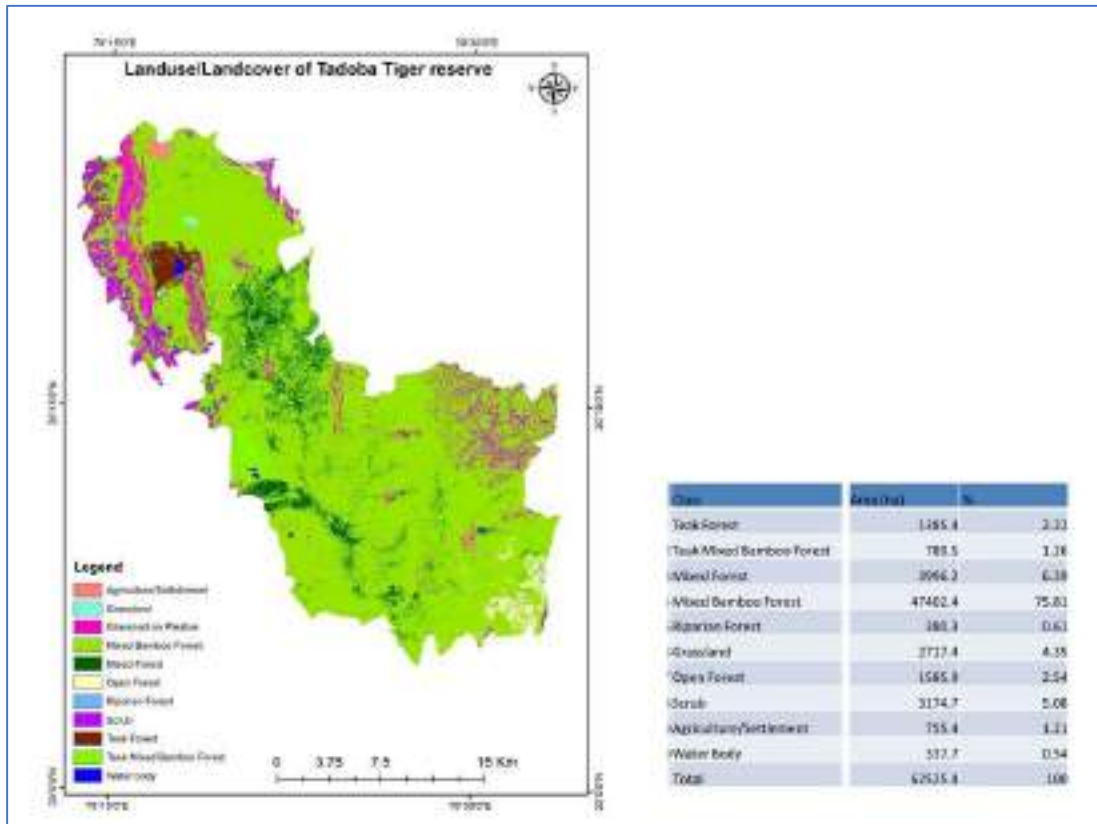
The Chandrapur forest circle has three main forest divisions in the district. The Central Chanda Forest division has the most bamboo area at 32,663 hectares, followed by the Chandrapur forest division at 28,724 hectares, and the Bramhapuri division at 5,817 hectares (source-MBDB). Besides that, the core-buffer zone of the Tadoba Andhari Tiger Reserve contains a significant 47,402 hectares of mixed bamboo forest. (75 percent)



IN THE CENTRAL CHANDA FOREST DIVISION THERE IS A GOOD AMOUNT OF NATURAL BAMBOO FORESTS COMPARED TO THE OTHER TWO DIVISIONS



Source: MBDB



Map: Landcover area of TATR

Source: TATR

Bamboo is the primary source of income for 45 of the 92 villages in the buffer zone of Tadoba. Kolara, Madnapur, Vihirgaon, Belara, Palasgaon, Adegaoon, Piparda, Wagheda, and Parna villages in the buffer zone are heavily dependent on bamboo for livelihood. The bamboo-dependent families from these villages harvest bamboo from adjacent forests as well as core areas. Some families buy illegally harvested bamboo or purchased official from the depot of the buffer zone of the tiger reserve. Most villages have small traders who purchase bamboo products and sell them to dealers in the taluka places. A well-organized network of vendors provides constant economic assistance to bamboo workers in their villages. There is no need for bamboo workers to rush to sell outside the village because traditional items are in demand in the local market throughout the year.

In the last decade, many families start bamboo fences (*Tatwa*) businesses which are easy to work. Many villagers who had previously not engaged in this business, switched to making bamboo *tatwa* as it gives instant money. This fence requires a large quantity of bamboo. Due to this extensive and illegal harvesting, Tadoba management banned this business in 2017-18. In addition, the department acted against the sellers of this fencing. As a result, many villages stopped the production of *tatwa*.

The traditional bamboo workers are busy with their livelihood for 9 to 10 months. During the monsoon, these families shifted their focus to paddy fields. In this season, they do not harvest bamboo from the forest as they are busy with agricultural work, as they obtain paddy from this work. Paddy being their staple food, they prefer to do this work. *Sup, Bendawa, Pardi, Dawadi, Topali, Bora*, and *Gaur Parida* are some of the traditional items they make. Some of these traditional products are seasonal. In some villages, bamboo workers make *Dala* and *Bora* the main products.



BAMBOO COLLECTION METHOD

Bamboo is gathered from adjoining forests in many villages in the Tadoba Andhari Tiger Reserve. This bamboo is collected from both the buffer and the core area. Bamboo workers travel to the forest to harvest bamboo in various places. These collectors very well know the locations of good quality bamboo. They then make and sell bamboo products made from the collected bamboo. However, some families avoid visiting the forest because they are afraid of the forest department and wildlife mainly the tiger. They purchase this bamboo from those who bring bamboo from the forest. Previously, this bamboo costs Rs. 15 on the doorstep. In 2020–21, it has increased to Rs 20–25. (Depending on the size). Some individuals visit the core area because of the unavailability of high-quality bamboo in the buffer zone. Some villagers go to the forest in the morning and return in the afternoon, while others go around 10 in the morning and carry bamboo on their shoulders until the evening. Bicycles are occasionally used to transport bamboo. There are two different types of collection systems.

In the first method, bamboo suppliers cut the bamboo, peel it, and extract slivers in the forest. This is commercial extraction. There were 8 to 10 people who work hard to collect this raw material. They spend 6 to 8 hours in the forest to complete the task. These slivers, known locally as *Uchada*, are fastened to a bicycle, and brought to the villages to be sold to bamboo working communities. Secondly, workers cut and carry the entire bamboo on their shoulders or bicycles. Bamboo is cut according to the type of product that needs to be made. Wet bamboo is preferred by all bamboo workers as it is easier to sliver. After bringing the bamboo home, the items are made and ready for sale within a week.



While cutting bamboo in the forest, one must either sit, bend, or crawl in the bushes. This increases the probability of encountering wildlife. Human fatal attacks by tigers occur in the district. In 2021 two collectors were killed by a tiger in the forest. The BNHS team documented these collection methods.



BAMBOO SLIVER SUPPLIERS AXE THE BAMBOO, PEEL IT, AND EXTRACT SLIVERS IN THE FOREST. THESE SLIVERS FASTENED TO A BICYCLE AND BROUGHT TO THE VILLAGES TO SELL TO BAMBOO WORKING COMMUNITIES

Bamboo depots are established by the tiger reserve management in Moharli, Madnapur, Shivani, Palasgaon, and Khadasangi villages. Every year, Tadoba management cuts bamboo from the buffer and stores it in these depots for sale. These depots are only for local bamboo workers; to prevent illegal harvesting of bamboo from the forest and avoid human attacks by tigers. Some bamboo workers buy this dry bamboo, but most of the workers are hesitant to buy it as they obtain wet bamboo from the forest regularly. According to the information provided, dry bamboo cannot be used to make some products. The dry bamboo costs Rs. 19 in the depot, and an additional Rs 4 for transportation, i.e., dry bamboo costs up to Rs. 23/piece. This bamboo is also sold to farmers as well as industries by the department.

Basod card is issued to bamboo working communities by the forest department to procure bamboo from these depots. One family gets 1,500 bamboos on this card annually. But the response is poor.



TATWA AGAINST TRADITIONAL BAMBOO PRODUCTS

Bamboo fence locally known as *Tatwa* is the most common product seen previously in the Tadoba buffer villages. Now, this fence is restricted to a few villages. Previously these *Tatwas* were in demand throughout the year. In the last 10 to 12 years, due to instant money, many families who were previously not involved in bamboo work, have jumped into this business. Also, the strong chain of these product sales has led to the growth in the business of making fences in many villages. Several families got involved in this business as the bamboo required for making *tatwa* was available in the nearby forest for free and no special skill was required to make this fence. All the family members were involved in making this fence as it fetches a good amount of money. People from all casts were involved in making this fence.

Traditional bamboo products are mainly made by the Schedule Tribe (ST) community (*Burud*). A small *tatwa* (4x6 feet) costs Rs. 125–150 each three years ago. A large *tatwa* (4x8 feet) costs between Rs.200 and Rs.250 depending on the season. This fence is made with the outer sliver (*potkambi*). The *tatwa* made of outer sliver is robust and in high demand outside the Chandrapur district. A four-person family used to make 5-6 *tatwa* per day. A *tatwa* is normally made from 5 to 6 green bamboos. This was made from both young (6–8 months) and mature long bamboo. For this fence, on average a family needs 800-1000 bamboos in a month, however, for traditional items, a family needs 1500 bamboos in a year. To the massive amount of bamboo being cut, the Tadoba management banned the production of *tatwa*. The department also took tough measures against the traders of *tatwa*. As a result, 20–22 buffer villages stopped making *tatwa*.



TADOBA
MANAGEMENT
BANNED
MAKING TATWA
AS IT REQUIRES
LARGE
AMOUNTS OF
BAMBOO

In the Tadoba buffer, Sirkada, Fulzari, Doni, Peth, Zari, Pahami, Haldi, Nimbala, Vaygaon, Chorgaon, Junona, Adegaon, Sitrampeth (two), Khatera, Piparda, Singadzari, Wasera, Parna, Karwa, Pethgaon, and Chak Bramhani were the villages involved in making *tatwa*. Because of the ban, families moved to other livelihood options. In recent years, some families have been involved in Chilli harvesting in the states of Andhra Pradesh and Telangana. Traditional articles are not prohibited by Tadoba management as they require less quantity of bamboo.

Uchada is supplied to several villages in the buffer zone by a few families from Rantalodhi village in Tadoba's core zone. This is the only village left in the core zone. They get 100 *uchadas* after cutting 25 bamboos. On a bicycle, a resident of this village transports roughly 200 *uchadas* (50 bamboo). These people travel 15–20 km to sell this *uchada* in a few buffer villages. *Uchada* is sold in bundles of 100 pieces for Rs. 200 as a raw material. This is the *uchada* that is used to make *Dala*. *Dala* is a large basket that is frequently used in agriculture. Throughout the year, it is in high demand. 4–5 bamboo (16-20 *uchada*) are needed to prepare this *dala*. Imposed a ban on *tatwa*, many bamboo workers began to make *Dala*. *Potawa* (the interior sliver section of bamboo) is discarded into the forest because it is not useful for any product. *Potawa* is now used to make inferior-quality of *tatwa* in some villages. However, because this *tatwa* is small and of inferior quality, it is only in demand in local villages.

Traditional bamboo products from buffer villages

Sr No	Product (Local name)	Bamboo required	Utility	Cost in Rs	Time required for product
1	<i>Sup</i>	1	Cleaning grains	60	1 day
2	<i>Bendawa</i>	2	Enclosure of chicken	120	1 day
3	<i>Pardi</i>	1	Grains storage	30	Half-day
4	<i>Davadi</i>	½	Grains storage	25	Half-day
5	<i>Topli</i>	¼	Daily needs	10	2 hours
6	<i>Parada-big</i>	1 ½	In wedding ceremony	150	1 day
7	<i>Bora</i>	3	Used for house, fence	60	1 day
8	<i>Dala-Big</i>	5	Agriculture/ cattle	80	1 day
9	<i>Dala -small</i>	3	Agriculture/soil work	50	Half-day
10	<i>Mare kada</i>	3	Agriculture/ Machan	350	1 day
11	<i>Gaur pada -small</i>	1/2	For worship	15	1 hour
12	<i>Tatwa</i>	4-6	Fence	200–250	Half day



TRADITIONAL BAMBOO PRODUCTS ARE MAINLY MADE BY THE SCHEDULE TRIBE COMMUNITY. IT HAS A GOOD DEMAND IN THE LOCAL MARKETS

Village-wise Burud registered under the Tadoba buffer division

Sr. No.	Forest Range	Village Name	Families
1	Chandrapur	Chorgaon	35
2		Varvat	22
3		Borda	43
4		Nimbala	40
5		Ghantachauki	13
6		Vaygaon	41
7		Mamala	13
8		Mahadvadi	17
9		Zari	18
10		Peth	3
11		Pahami	4
12		Haldi	10
		Total....	259
13	Shivani	Mohadi	65
14		Jamsala	94
15		Kalamgaon (Ganna)	91
16		Kalamgaon (Tukum)	17
17		Pethgaon	42
18		Chakbamni	37
19		Khatera	47
20		Shivani	100
21		Sirkada	110
22		Piparheti	60
23		Wasera	95
24		Pandharwani	64
25		Singadzari	76
26		Pangadi	25
		Total....	923
27	Palasgaon	Kolara	56
28		Vihirgaon	33
29		Piparda	89
30		Parna	46
31		Belara	75
32		Madnapur	26
33		Karwa	87
34		Palasgaon	161
35		Gondmohadi	40
		Total....	613
36	Mul	Doni	27
37		Fulzari	25
		Total....	52
38	Moharli	Moharli	33
39		Junona	22

40		Sitarampeth	35
41		Mudholi	82
42		Kondegaon	3
43		Aagarzari	6
44		Devada	39
45		Adegaon	14
		Total....	234
		Grand Total....	2081

(Source: Tadoba Andhari Tiger Reserve. List updated 31 December 2021)

ECONOMY

In the survey, it is noticed that a single family from a buffer village earns Rs. 2000–3200 weekly according to the family members involved in bamboo craft making. They can approximately earn Rs. 8000–12000 per month.

Only men collect bamboo from forests as it is a labor-intensive activity in bamboo cutting, and transporting it by bicycle or on the shoulders. Some families collect bamboo themselves from the forest and convert it. So, the basic cost of the raw material (bamboo) to make the product is availed free of cost to them. Primarily *Dala*, *Bora*, *Bendawa*, and *Parla* can be made in a single day. If more family members are involved in making these products, the family will earn more money. If we consider Rs. 10,000 income per family per month on average, the income generated for 2,081 families (official figure) for a year will be about Rs. 25 crores. Considering this big amount, one can imagine how vast the economy is behind this livelihood-generated activity in the Tadoba buffer.

In *tatwa* making, a family of four members could earn Rs. 1000 per day previously. So, their income was Rs. 6–7000 per week and around Rs. 25000 per month.



*IN TADOBA ANDHARI
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IN A YEAR*

BAMBOO COLLECTION IN CHAITI VILLAGE, TADOBA BUFFER

To understand the bamboo collection intensely, the BNHS team surveyed Chaiti and Karwa villages. These villages are involved in the commercial trading of bamboo. The team accompanied the bamboo suppliers in the forest of Tadoba Andhari tiger reserve.

Chaiti is a small village in the buffer near the Kolara entrance gate of Tadoba Andhari Tiger Reserve. 5 to 7 individuals from this village go into the buffer as well as core areas of the tiger reserve to collect bamboo. In this village, no one is making bamboo articles. All the bamboo collected is for sale in Kolara village. The BNHS team accompanied these bamboo suppliers to the forest for two days to learn about their collection process. Our team did the same exercise with the bamboo workers in Karwa village also.

Our team accompanied the Kawara and Chaiti collectors in November 2021. The Chaiti bamboo cutters ride their bicycles into the forest around 9–9:30 in the morning on a forest route familiar to them. They had an axe, a water bottle, a lunch box, a rope, and a cell phone. They reached the core zone of the tiger reserve around 11 am. Everyone parked their bicycles and proceeded to cut bamboo. At 11:30 am, they start cutting bamboo in one location. They were cutting the bamboo at a close enough distance so they could see each other. They were communicating with each other while cutting. They were climbing bamboo clumps to cut them. The bamboo was forcefully removed from the clump. An axe was used to remove the bamboo thorns. After cutting, the bamboo was tied on their bicycles at around 1:30 pm. These bamboos are tied to the bicycle on both sides. Everyone cut bamboo by his ability. After completing the work, they sat down for a meal at about 2 pm. and subsequently left for the



village. This time they walked with their bicycles in hand. They arrived home at 5:30 in the evening.

It was observed that, on the first day, 7 people cut a total of 160 bamboos. The length of the bamboo was approximately 14 to 20 feet and its diameter is 3 inches. Approx one person cut a minimum of 16 bamboo and a maximum of 32 on that day. Bamboo was sold to bamboo worker communities in Kolara village the next morning. Kolara is hardly 3 km from this village. The price of this bamboo was Rs. 25/ bamboo.

On the first day, seven people from Chaiti village went to the core area of the forest. They travelled 18.4 km to and fro for the bamboo collection. The next day, 3 people went to the buffer zone of the forest and cut a total of 66 bamboos. As they were only 3 individuals, they preferred to go to the buffer area. On this day, they traveled 9.70 km to fetch bamboo. These bamboo collectors usually visit the forest thrice a week. By selling this bamboo they earn about Rs. 7000–8000 per month. This was also observed in Karwa bamboo collectors. Karwa collectors cut the bamboo and sliver it in the forest and transport the sliver.



FEW FAMILIES FROM CHAITI VILLAGE SELL ONLY BAMBOO FOR THEIR LIVELIHOOD

BAMBOO COLLECTION IN KARWA VILLAGE, TADOBA BUFFER

The Karwa village is in the Palasgaon buffer and on the edge of the core. This village is deep inside the forest. Previously, in this village, roughly 90% of households were engaged in the *tatwa* -making business. The extraction of bamboo from the forest was at an all-time high during the *tatwa* -making activities. However, in 2017-18, the Tadoba Andhari Tiger Reserve management implemented a ban on *tatwa* making. After that many families shifted to other livelihoods.

The bamboo collection pattern in Karwa village varies depending on the activities linked to cutting whether to sell slivers only or for personal use.

The household survey sheds light on the bamboo collection pattern, and after analyzing the data, the team revealed some remarkable findings concerning the bamboo collection pattern in Karwa village. Bamboo is primarily collected in the summer for both selling slivers and for personal use. However, in comparison to personal use, bamboo is heavily harvested throughout the winter season as well. Bamboo is less frequently harvested for both purposes during the monsoon. Because residents in Karwa do not have any major livelihood activities at the start of the summer, they spend time collecting bamboo to meet their structural needs; summer is the most popular season for collecting bamboo for the construction of cattle shades and fences. The frequency at which core and buffer forests are visited for bamboo collection is diverse for both activities. Sliver collectors gather on average 90 days per year, while for personal use, the villagers collect on average one week per year. In Karwa, 29 bamboo was collected per day for sliver selling and 12 bamboo per day for local use.

The impact zone for the bamboo collection is calculated using the google earth measurement scale. For the minimum impact zone, the shortest GPS track is considered and for the maximum impact zone, the longest track is considered. The starting point of the track is considered the centroid to calculate and draw the impact zone. The measurement is calculated in the Hectare (Ha) scale to present the impact on land more accurately.



Collection for sliver sell purposes takes an average of 8.17 hours per day, whereas for non-commercial purposes takes an average of 2.46 hours per day. One group of commercial dwellers, who mostly extract the *Uchada* (Sliver) for sale, rides their bicycles to the forest. This group is

monitored for two days in the winter and one day in the monsoon using GPS. By 8 or 9 am,

the group has left the house and arrived at their chosen area for bamboo cutting. They initially cut the bamboo and began extracting the *uchada* entirely in the forest. In the recent scenario, the commercial dwellers convert *uchada* into *Benda*, *dale*, and *topali* which are mostly made by skilled workers.

According to the household data, there are currently 113 households of which 29 households are extracting bamboo for commercial usage.



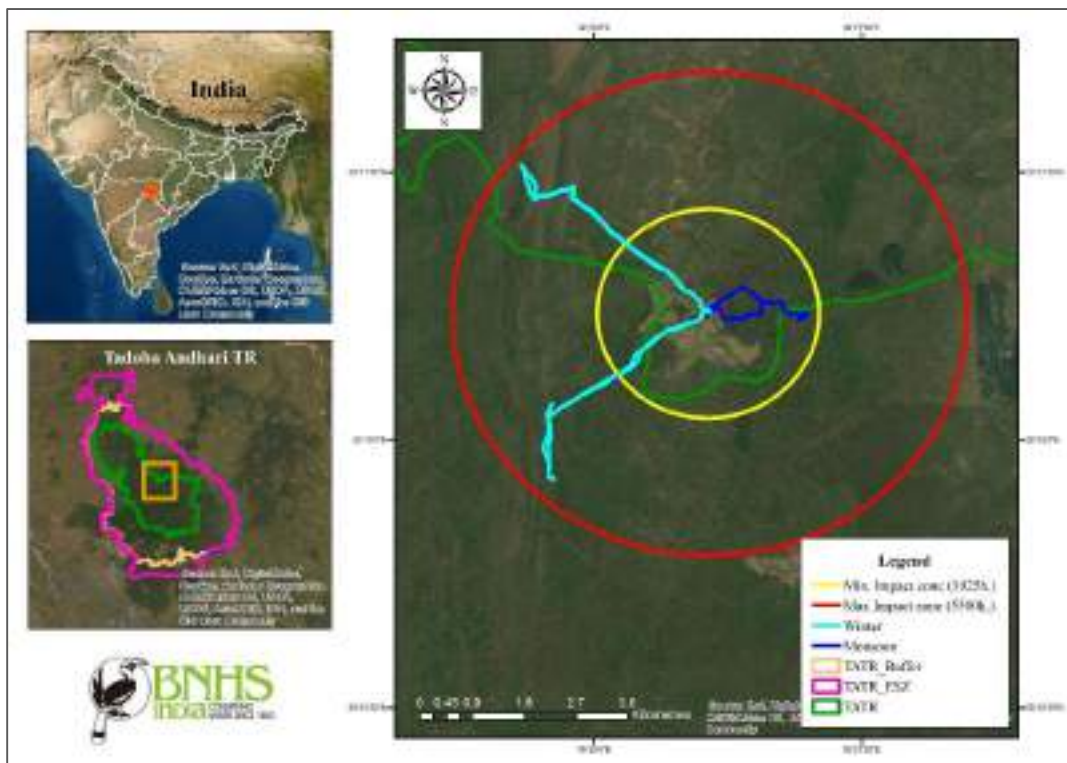
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According to household survey data, villagers travel about 3 to 4 km in the core and buffer area to harvest the bamboo. Bamboo collectors move over a 5000-hectare region to harvest bamboo in their impact zone. The locals who collect for commercial purposes cause a lot of disturbance in the core and the buffer area. A villager who uses bamboo for commercial purposes harvests an estimated 2500 to 3000 bamboos per year, according to household data. Commercial dwellers (29) harvest an average of 75,000 bamboos every year for commercial purposes solely. When *tatwa* manufacturing was on the line, the village's bamboo collection hampered the buffer and core forest at huge.

However, after a restriction was enforced on the activity in 2017-18, the amount of bamboo harvesting by Karwa village reduced significantly. However, there are still 29 households engaged in commercial bamboo extraction. The extracting pattern of *Uchada* causes a lot of disturbance in their impact zone. For about 6 to 8 hours, the group of individuals stays inside the forest to extract the *Uchada*. The activity is causing significant interruption to wildlife. However, although the extraction is reduced, the *Uchada* harvesting activity is disrupting the core and buffer areas.



Bamboo collection tracks in Karwa village

A VILLAGER WHO USES BAMBOO FOR COMMERCIAL PURPOSES HARVESTS AN ESTIMATED 2500 TO 3000 BAMBOOS PER YEAR, ACCORDING TO HOUSEHOLD DATA

IMPACT

In the Tadoba buffer, from 45 villages, more than 2,000 families are involved in bamboo work. These villagers are involved in making traditional articles. Before 2017–18, around 3,000 families from another 22 villages were involved in only *tatwa* making. At that time, it was a common scenario to see bamboo workers riding bicycles and carrying headloads of bamboo from the forest. Some villages on the fringe of the core area harvested bamboo in large amounts. The Piparda is one of the leading villages involved in making *tatwa* in huge quantities. The forest department banned making *tatwa* and the traders resulting in clashes between the park managers and the villagers.

Bamboo could be easily harvested from the buffer zone a few years ago. Tiger habitat in the buffer zone is severely hampered as a result of overharvesting. Villagers were venturing deeper into the core area as the bamboo in the buffer zone was dwindling. The number of trips by locals to the forest had increased as a result of excessive bamboo harvesting, causing wildlife disturbance. Since *tatwa* making has stopped there is a regeneration of the species, according to the traditional bamboo workers.



RECOMMENDATIONS

There were several thousand families in the Chandrapur district whom are traditional bamboo weavers excelling in making mats, baskets, fishing equipment, and different types of materials required by farmers and rural people. These products have a traditional market all over the Vidarbha region. In the district due to the Bamboo Research Training Center (BRTC), a lot of activities are carried out in the recent past. The apathy of this raw material (Bamboo) continues. Most of the villagers think that this raw material is harvested from the adjoining forest as it is ample. But a study and survey clarify that this raw material vanishes from the nearby forested villages. This degradation is also acknowledged by the bamboo working communities which is the cause of concern.

1. Planting bamboo in the agriculture fields, and promoting bamboo plantation is very much essential in the Chandrapur landscape.
2. The Forest department should take the initiative to promote this important grass for the benefit of the community. In vernacular language, there is the phrase ` *Pikata thete vikat nahi* ` which means if the resource is ample, there is no value for it. Likewise, Chandrapur district has a good bamboo forest, but the community is not aware of these important factors in the forests both ecologically and socially. So, education is necessary to be aware of this raw material and sustainable bamboo harvesting.
3. All these possibilities should be explored in this district. Small-scale industries should be encouraged to diversify this business.
4. Many bamboo workers have either not been issued or procured the Basod Cards by the forest departments or the department is failing to provide 1500 bamboos to each cardholder annually.
5. The tiger project must think of starting sub-depots in Shivani and Palasgaon buffer ranges. So, maximum villages can procure fresh bamboo at the proper rate nearby and avoid distractive activities in the forest area and tackle the human-wildlife interface.
6. The department should take strict action against the illegal harvesters of bamboo from the core area of the tiger reserve.
7. The ban on *Tatwa* is a very essential and bold move by the tiger project. The department must continue this ban, so the traditional bamboo working community gets the benefit of it.
8. Agriculture and other line departments must actively participate in the alternate livelihood work in this critical situation of bamboo flowering. The tiger project management should take lead and incorporate other departments for the betterment of the communities residing in the forests.

Increased protection level and its consequences on Bamboo business: NNTR perspective



INTRODUCTION

Navegaon-Nagzira Tiger Reserve (NNTR) was notified as the 44th tiger reserve of India on 12th December 2013. It is the 5th Tiger reserve of Maharashtra and the Buffer Zone of NNTR was notified on 7th September 2016. But it is not still under the direct control of CF and FD, NNTR, and Gondia. It spreads over both the Gondia and Bhandara districts in the Northeastern corner of Maharashtra. NNTR is comprised of the notified area of one national park namely Navegaon National Park and four Wildlife Sanctuaries namely, Nagzira, Navegaon, New Nagzira, and Koka. The buffer zone is spread over 185 villages over 10 tehsils in Gondia and Bhandara districts. Most of the population belongs to scheduled caste and scheduled tribe communities. As most of the inhabitants are marginal cultivators, agriculture laborers, and household industrial labors.

The buffer villages of the Navegaon National Park adjacent to villages are more sensitive to illicit activities. The Baki, Kalimati, Kokana, Kawlewada, Khoba I, Khoba II, and Rampuri beats are vulnerable to illicit felling. Barring a few instances, most of the illicit cutting is done by the villagers of adjoining villages. Villagers of Wangi, Chingi, Kokana, Khoba, Chikhali, and Kohmara were notorious for being involved in high tree and bamboo felling incidences. The villages of Nagzira Wildlife Sanctuary vulnerable to illicit felling are Mangezari and Kodebarra. However, in the case of bamboo, the problem is different. There is a community by the name “burud”, which is traditionally engaged in making articles from bamboo such as mats. The miscreants from some villages, particularly from Thadezari, Murpar, Mangezari, and Bhajepar of Nagzira Wildlife Sanctuary are involved in cutting bamboo and selling it to these families. Of late, the bamboo cutters have been operating in bigger gangs of 15–20 persons and carrying out their operations early in the morning. The incidences of attacks on-field staff by villagers are happening. The supply of arms to the field staff is not possible as the area is Naxal affected. (Source TCP-NNTR)

Bamboo occurs in abundance over the central portion of the Nagzira WLS, Pitezari range, and Navegaon NP where deep soil combined with moisture is available. It is also present in other ranges with good growth. It grows as a middle storied in teak as well as mixed forests. There is no exploitation of bamboo, but its illicit cutting is a continuous threat, and because of this bamboo is either absent or of very poor quality in areas on the outer fringes of the tiger reserve.

Before the tiger project formation (2013), there was rampant illicit bamboo extraction in the prime habitat of the protected area. But, after the establishment of the tiger reserve various protection measures in action, which include patrolling by frontline staff, temporary staff working in the anti-poaching camp, and Special Tiger Protection Force (STPF) staff, illicit activities were reduced drastically, in the recent past. It also reflects on a collection of bamboo from the forest. Still, some families were involved in the illicit extraction of bamboo from the core as well as the buffer area. Understanding bamboo dependence on forests in selected villages of NNTR is the main objective of this study.

METHODOLOGY

To understand the dependency of the local community on traditional bamboo craft-making for their livelihood, the BNHS team conducted a household questionnaire survey from 5th to 18th April 2019. A total of 188 households from 23 villages in the buffer zone of NNTR were surveyed.

Each questionnaire included a total of 67 questions that covered data on the previous and current eminence of bamboo-dependent livelihood. Intrinsically Ghanod, Khoba, Mangezari, Pitezari, and Sukadi stand as among the first 5 villages (Fig. 1) with a maximum number of families, which were partially or involved in bamboo craft making. However, Mangezari and Pitezari were entirely dependent on their livelihood. Overall, 94.08% (Fig. 2) of surveyed households were completely dependent on the bamboo craft-making business as a primary source of livelihood; while the remaining 5.91% of households were partially dependent. Also, 83.43% (Fig. 2) of households were involved in the bamboo craft-making business throughout the year, and the remaining 16.56% were during the winter and summer seasons. This suggests before the establishment of the tiger reserve livelihood dependency on bamboo craft-making was superfluous in surveyed villages.

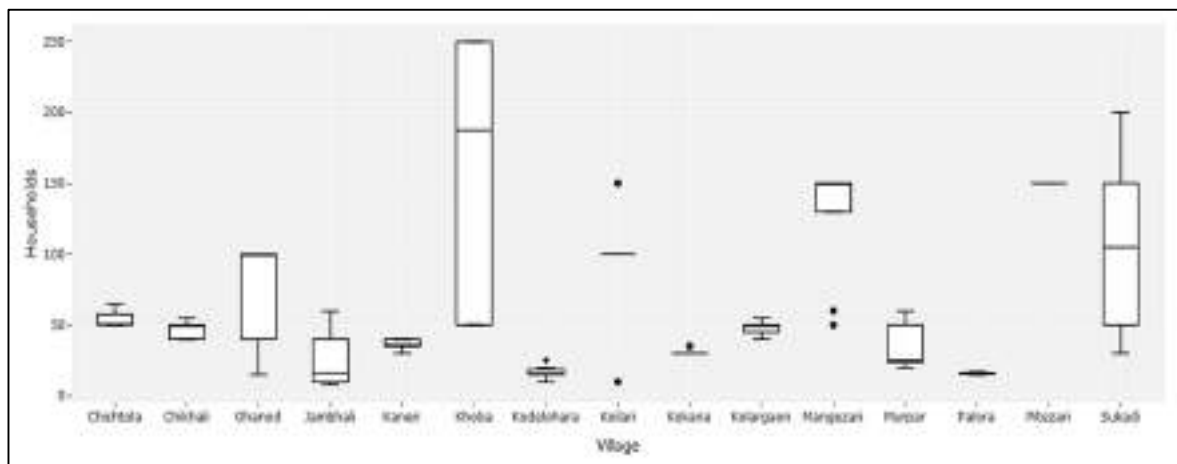


Fig.1 Village-wise total number of families involved in bamboo craft making before 2010

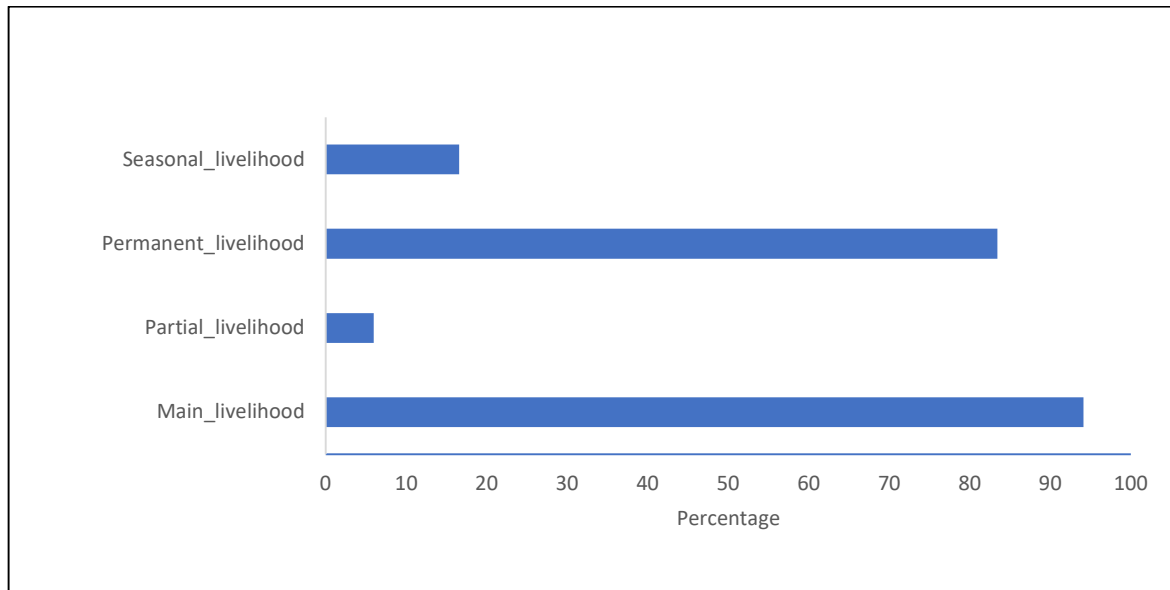


Fig.2 Percentage of bamboo livelihood as a main, partial, permanent, and seasonal business

COMMUNITY DEPENDENCY AND LIVELIHOOD

In surveyed villages of the NNTR buffer zone, Scheduled Caste (SC) was predominantly tangled with bamboo craft-making for their livelihood followed by Nomadic Tribes (NT) and Scheduled Tribes (ST). The entire SC community from Sukadi village was involved in the traditional bamboo craft-making business. Besides, the entire Mangezari village was making raw sticks for the incense sticks, which were sold to the outside factory. Both men and women were involved in the bamboo collection along with craft making. In some households' children were aiding family livelihood. Entire Pitezari village and in some other villages several households from ST and NT communities were predominantly collecting bamboo, which they used to sell to the SC community for craft making. Along with a few other traditional bamboo crafts mostly mats were made of collected bamboo. However, local traders were buying all the goods which they were selling to a merchant. In a nutshell, merchants were selling all the goods in large cities like Mumbai, Pune, and others, but the local community was earning approximately 1,000-1,500 rupees per week, which was sufficient for their livelihood.

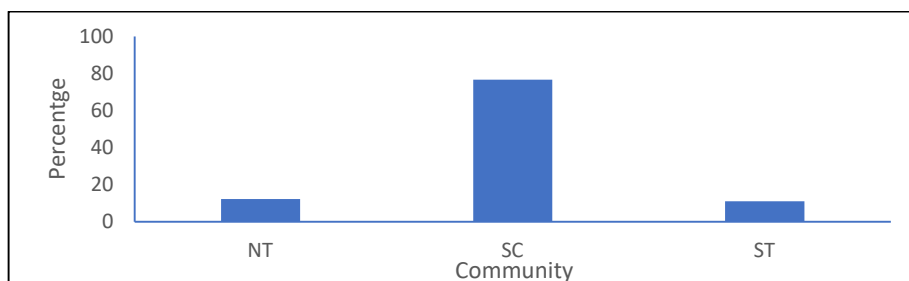


Fig. 3 Community dependency on bamboo for livelihood (in percentage)

BAMBOO AVAILABILITY AND COLLECTION

Interviewed households specified; in the past, a maximum of bamboo (43.47%) was getting collected from the area, which comes under tiger reserve (past status as wildlife sanctuaries) followed by regular (36.71%) and Forest Development Corporation of Maharashtra Limited-FDCM (19.8%) managed areas (Fig. 4). Except rainy days bamboo collection continued throughout the year. Men collected approximately 14–15 bamboos in a single visit while women collected 8–10 bamboo. Habitually daily, the community was spending 5–8 hours on the collection, but several households spend more than 8 hours. Uncontrolled and over-exploitation of bamboo led individuals to travel ten to fifteen kilometers distance from the village or even further to gather good quality bamboo (Fig. 4a). Moreover, a few individuals also confirmed that nearby forest areas were virtually devoid of bamboo due to overexploitation. Individuals from the village Chichatola were travelling a maximum distance (15 to 20 km) followed by Chikhali, Kolargaon, Manditola, and Pitezari (Fig. 4b). Also, 59.57% (Fig. 5) of the households confirmed that because of the unavailability of matured (good quality) bamboo in the nearby area, they were collecting immature bamboo. Approximately 90% of interviewed households still have not realized that overexploitation was the main cause of the unavailability of mature/good quality bamboo in nearby areas and it was the major reason for long-distance collection.

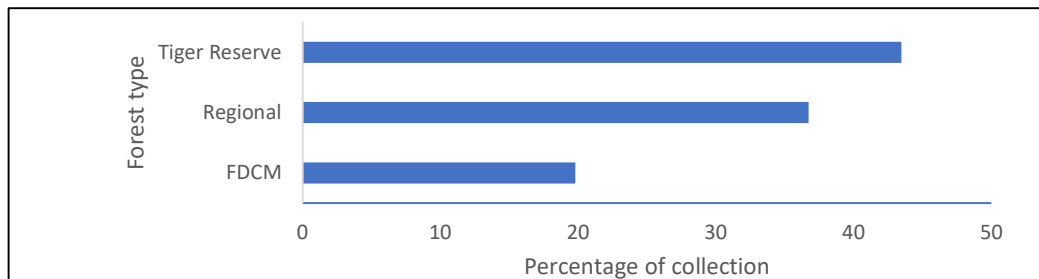


Fig. 4 Percentage of bamboo collection from the forest

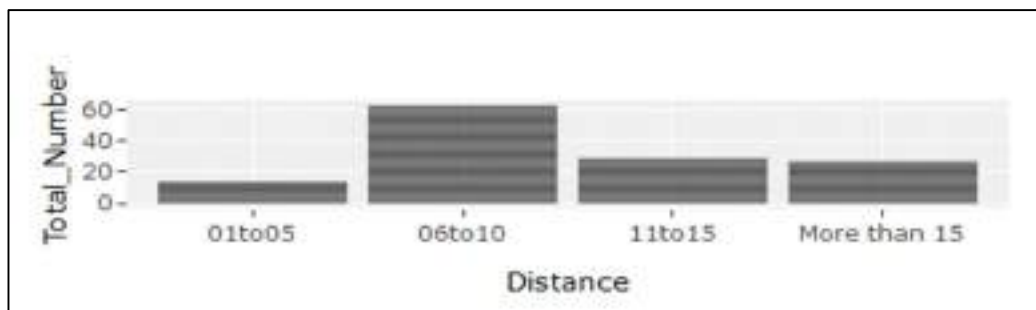


Fig. 4a Distance (km) of bamboo collection from village

CONFLICT IN LANDSCAPE

Since the declaration of NNTR, bamboo collection has been strictly forbidden. Approximately 81.91% of households in the landscape are against the ban. These households believe that the declaration of tiger reserve has affected their livelihood.

Many families have shifted towards other livelihood sources, such as daily wages, farming, and others to which they are not used. In certain villages, the forest department is hiring locals on a daily wage basis as forest watchers, fire-line formation workers, tourism guides, and others. Yet the availability of daily wage work is very low, a limited number of individuals get the opportunity, and it is also unassured. This has created a gap between the number of dependent households and available work. The local community feels that the state forest department is liable for these circumstances. Also, many households have shifted towards farming as an alternative major source of livelihood. Simultaneously, increased protection level has ensured an increase in the density of fauna. This has increased the movement of herbivores in adjacent farms and has increased crop raiding, another foremost concern in the landscape.



DISCUSSION

Traditional bamboo craft making was the major livelihood of several villages in the buffer zone of the NNTR landscape earlier. In recent years, increased protection in a protected area has cut down access to bamboo and has affected it economically and socially. Also, alternative livelihood opportunities are very sporadic in the region. These circumstances are one of the crucial causes of conflict in the vicinity of the Navegaon-Nagzira Tiger Reserve. However, the local community is still unaware of overexploitation, which was the fundamental reason for the depletion of bamboo in the reserve.

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