



India Country Paper on Wild Foods: Practices and Policies on Food Security and Resource Management

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India

Non-Timber Forest Products
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Overview

THE (WILD) FOOD SCENARIO IN THE ASIAN REGION AN OVERVIEW TO THE WILD FOODS, BIODIVERSITY AND LIVELIHOODS COUNTRY PAPERS

by Madhu Ramnath (NTFP-EP India; Wild Foods,
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INTRODUCTION

Across the indigenous and rural communities of Asia there exists a deep knowledge about uncultivated foods. In addition to this, the cultivation systems include many lesser-known crops, be they millets, various legumes, yams, and other tubers. Quite often, within these farms and fields, various freshwater snails, crab, and fish, as well as some edible plants too are harvested. Such uncultivated foods have supplemented the diets of the rural and indigenous communities for many generations; apart from the obvious nutritional values that they provide, many of these foods have cultural and sociological links to these societies, as we shall see from some of the case studies.

For the purposes of this paper, wild foods encompass all edible material that is found in the wild (both land and water) and includes leaves, flowers, fruit, seeds and stems, tubers and rhizomes, resins and gums, honey, fungi, as well as eggs, fish, and game.

Mainstream agriculture has, by emphasizing quantity over diversity and quality, delinked food production from nutrition and culture. It is almost as if food production has only one goal: the filling of stomachs! Identity and tradition, exchange, and reciprocation with food and foodways, have been left out. More importantly, wild foods and other traditional crops provide communities that grow (or collect) and consume them with several essential micronutrients necessary for health; in addition, the diversity of crops in a farm supports their food security when a certain crop fails, or if the monsoon is not as good as expected. National and international policies around food and food subsidies, and an official oversight about wild uncultivated foods in most rural diets, have led to a decline in the knowledge about wild foods in the region. In addition, the sole promotion of a skewed agricultural policy in Asian countries, has led to the expansion of monocultures, further reducing spaces where wild foods thrive.

In this series of country papers, it was found important to include all the foodways prevalent in the region. This includes rotational farming systems that focus

on several non-mainstream crops, as highlighted from case-studies from India; aquatic foods such as freshwater fish and crab from rice-fields; and forest foods, such as small game and insects, as from the various forest areas in the region. These case studies, and related fieldwork in Kalimantan and Sarawak, show the strength and the vibrancy of these food systems as they exist, and the various threats that they face while holding their own. The several forces that such food systems are up against—such as the loss of knowledge due to migration of the youth to urban centres, the intrusion of fast foods into remote indigenous areas, the expansion of palm oil and other monoculture plantations at the cost of forests, and other forces of modernity—are not easy to contend with. The modern diet is a massive trade-off: i.e., “the typical fast-food diet... now has only 40% of the wholeness of that of hunger-gatherers...”; ... changing from the hunter-gatherer diet to that of the agriculturalist was associated with a trade-off of quality for quantity, and with enormous changes in the incidence of specific diseases.” (Diamond, J., *The Third Chimpanzee*). One of the Non-Timber Forest Products – Exchange Programme (NTFP-EP)’s mandate is to revive the traditional and wild food systems among the communities it works with.

NTFP-EP’s work requires continuous updating of new food species and their status, the gaps in knowledge noticeable after workshops, and designing appropriate interventions to close them. Importantly, the link between wild foods and their nutritional and cultural values need to be also kept in mind. Other concerns, such as tenure security, climate change and biodiversity, and access to forests that have been declared Protected Areas, are equally important and will be a crucial part of the discussions as we progress in this field.

In 2020, the NTFP-EP Asia received grant support from the Swedish International Agricultural Initiative (SIANI) through its expert group program, enabling it to explore further the topic of wild foods and its links to tenure, biodiversity, livelihoods, and food security. Learning exchange and discussions were carried out through a series of focused dialogues participated in by actors from across sectors based in Sweden, Asia and beyond.

The following are some of the country highlights which will help us understand some of the overall similarities in trends, making it possible to draft appropriate interventions to some of the problems faced by indigenous and rural communities in accessing wild and traditional foods.

Cambodia

Wild foods are collected from all landscapes in Cambodia and in the village documented for the case study (as well as in other forest villages), all the people harvest food from the wild. The knowledge about such foods is quite high, but there is a decline of available species due to deforestation (expansions of monocultures) as well as flooding and changes in river-flow due to hydropower dams. Rotational farming practices, though decreasing, are still being practiced, as in the case of the Kreung in Chuy Village. Many people who practice rotational farming often do so at the edge of their settlements where they gather insects, various greens (including flowers and flower-buds), mushrooms, fruit, and stems for consumption as well as for sale. In many parts of Cambodia, the indigenous people gather 'payab' leaves (*Gnetum* spp.), a local delicacy as well as an important item for sale into neighbouring Vietnam. Rattan is gathered and used as food as well as for handicraft, as it is in most parts of Southeast Asia.

Indonesia

The ironic fact about the Indonesian food situation is the emphasis on rice and, more recently, wheat. Both these food crops were and are imported into the country in large quantities, despite there being other staple foods of the people. Sago has been predominantly harvested from the wild in the past (as in Kalimantan), and cultivated (as in Papua); there has been an array of forest and marine aquatic foods that have been a part of the people's traditional diets for centuries. These have included ferns, fish, a vast array of small game, wild boar, and sago, the latter two being a staple among the deep forest nomadic Punan.

Indonesia is one of the countries facing a huge challenge in terms of malnutrition which has become worse during the pandemic. Media reports confirm that thousands of families suffered from hunger in Jakarta, Depok, Bogor, Bandung, Medan, Muara Enim, Batam, Pekanbaru, Maluku, Bengkalis, and Polewali Mandar; the Central Bureau of Statistics (BPS) data shows that food export is also increasing every year. The export of fruits in 2019 was the highest in recent years (USD 1.5 billion), double the amount in 2015. However, in 2018, Indonesia imported 9.23 million tons of wheat, 4.6 million tons of sugar, 2.5 million tons of salt, and 2.4 million tons of soy. Meanwhile for rice, dependence on imports is very high, shooting up to one million tons annually at present from a figure of 990 tons in the period 1980–99. It is the primary cause of making Indonesia vulnerable to food security.

The displacement of traditional foods by rice and wheat has led to these being cultivated through subsidies even in places where they are not suitable, leading to clearing of new forest areas

and the extraction or pumping of groundwater, both detrimental to the larger ecology of the region. The country has also been made vulnerable as they depend largely on imports; this situation was accentuated during the pandemic period. An additional factor with the change in the food system is that the knowledge about traditional and wild foods is being lost; rice and noodles and various fast foods, all wrapped in layers of plastic, have invaded the indigenous territories.

India

In India, cultivation and food collection occur in all landscapes and rotational farming systems, practiced by various indigenous groups in the central and the northeast parts of the country, provide a diversity of food crops. However, most government policies concerning food, with the aim of providing food security to the population, focus on the quantity of cereals distributed. In fact, the subsidised food provided by the state covers 75% of the rural, and 50% of the urban households. What is missing is that the Food Security Act has no mention of wild and uncultivated foods that supplement the diets of most rural peoples.

Much of the present-day situation regarding food systems, both mainstream and traditional, can be traced to the several decades of Green Revolution driven policies. Over these decades many mainstream foods and food patterns—rice- and wheat-based—displaced and overwhelmed traditional diets. The subsidized food distribution system as well as the compulsory education drive, which kept children away from homes and in school hostels, have been deciding factors in changing the way Indians as a people view food. Overall, one may say that diets have become more uniform across the country, also thanks to the intrusion and acceptance of fast foods. Unfortunately, many traditional foods and food systems have fallen by the wayside.

Many commercial crops, rice, sugarcane, wheat and, more recently, palm oil, have been encouraged. These ventures, many like palm oil supported by state subsidies, have drastically changed the landscape, even encroaching into the commons formerly utilized by marginalized or landless peoples to graze cattle, or to harvest various food plants. Simultaneously, Protected Areas (PAs) across the country have increased, denying indigenous peoples the access to harvest wild foods or non-timber forest produce that are used for their livelihoods. The latter move, of declaring PAs, has continued despite the assurance of tenure rights through the passing of the Forest Rights Act, 2006, a legislation meant to guarantee land rights to the indigenous and other forest dwellers in the country.

There is an overall decline in the knowledge and use of uncultivated foods in India. This is often due to the lack of access to spaces that were earlier accessible (now fenced off as protected areas, or privatized as plantations, etc.) or for various other reasons associated with modernity (migrating youth, fast foods, modern education that derides wild foods, etc.). These trends in changing diets are reflected in health. Female obesity in the country is 21% while male obesity is 19%; anemia among women and children is 50%, and 11.8% of the people suffer from diabetes.

Philippines

Though field work was undertaken among the Kankana-ey of Sagada, Mountain Province and of the Higaunon in Malitbog, Bukidnon, the work also analyzed policies that impact the state of wild foods found in indigenous communities.

From the data gathered from the field as well as relevant literature it was clear that, as in other countries indigenous peoples have an inherent and intricate relationship with nature. Wild foods are used beyond subsistence alone; they are also used for their medicinal purposes and for their cultural and spiritual values. Knowing the importance of the 'wild' in their day-to-day lives, indigenous communities have developed resource management systems, practices and customary laws that have kept the forests pristine and intact.

Another key finding is that indigenous women and youth are crucial actors in sustaining wild foods and the overall traditional resource management systems. As community nurturers, indigenous women hold key roles in food and health systems. Meanwhile, the youth are expected to carry on the cultural practices which includes the sustainable use and management of wild foods. While migration for education and work significantly affects intergenerational transmission of indigenous knowledge, indigenous communities are exploring means to reintegrate the youth back to the community. One such example of this is the Higaunon's panlaoy, a traditional forest walk that enables youth to learn from elders about the biodiversity in their ancestral domains, including the wild foods and herbal plants found inside their conserved forests.

The review of legal frameworks relevant to wild foods and indigenous communities revealed that the policies meant to provide IPs protection are in place (e.g., Indigenous Peoples Rights Act of 1997 (IPRA/Republic Act 8371), Expanded National Integrated Protected Areas System Act (ENIPAS/Republic Act 11038) but do not materialize well on the ground. The FPIC process remains plagued by corruption, deforestation and plunder of natural resources remains unabated, and sustainable traditional resource rights remains curtailed and criminalized.

In addition, many indigenous communities face land use conversion due to business expansion and the encroachment of government projects that violate their right to self-determination. Communities also grapple with challenges such as tourism and the bad farming practices of non-indigenous peoples. Even with this seemingly bleak backdrop, however, indigenous communities maintain a positive outlook as they continue to assert their rights and secure their lands to maintain life in their territories.

Vietnam

In Vietnam, 'wild foods' as a term has hardly found usage, even in official circles. The management of "wild foods" deals with the plants, animals, and fungi, and, at times, their relationship with their habitats and the ecosystem. However, all studies completely leave out the communities that use these foods and are closely connected to them. These communities are often the ethnic minorities or indigenous peoples who have been living in the forest areas for generations, and relying on these resources, especially for food. However, their community rights and benefits are not always included into the overall development and conservation plans of the state. Without an inclusive agenda that also cares for the indigenous people and local communities (IPLCs), their settlements will soon disappear or be replaced by the common modern forms of urban areas, causing the loss of their traditions and knowledge. This might prove to be a vital flaw in the process of sustainable development in the long term for the forest areas. NTFP Asia's work is therefore to find possible solutions by first trying to establish a comprehensive framework for inclusive wild food management that can not only cover all related aspects, but also care for all the involved parties, including the IPLCs.

Wild food has always been an important source of food for certain communities and populations, especially the vulnerable ones in forest, mountainous, or rural areas where agriculture is difficult or not allowed to develop. In times of economic difficulties, it can greatly contribute to the temporary alleviation of food scarcity. Products of wild food could also be a source of income for native and local people, mitigating the burden of poverty. Wild food plays an irreplaceable role in traditional spiritual or recreational occasions, events, or festivals of most native communities. This requires the local knowledge on how to find, gather, process, use, and preserve wild food, as well as how to organize these events. It is felt that only when wild foods are legally recognized that further actions to manage and develop it can be taken. Moreover, a legal framework on wild food, together with relevant policies, can practically help guide the implementation of effective wild food governance, especially with the inclusion of local communities and native people.

ABOUT THE PUBLICATION

This publication presents perspectives and cases from India. It is part of the series of country papers produced by dialogue partners of the SIANI Expert Group Wild Foods, Biodiversity and Livelihoods Network. Other countries in the series include Cambodia, Indonesia, Philippines, and Vietnam.

The present paper does not attempt to provide a comprehensive review of the state of wild foods in India. Rather, it presents a snapshot of the situation of wild foods in the country, illustrated through case studies and review of available literature, and offers ideas on addressing challenges and seizing possible opportunities.

Apart from this paper, the group also produced a policy brief and discussion paper on sustaining wild food practice which highlights the key messages and insights from the dialogues and interventions of the WFBL network from 2020–2021. It is recommended that you pair the reading of this country paper with the policy and practice briefs to learn more about the wild food scenario in the Asian region.

It is hoped that the publications in the series contribute to available literature on the role of IPLCs and forests in ensuring a planet that is healthy, safe, and secure for all.

ABOUT THE WILD FOODS, BIODIVERSITY AND LIVELIHOODS (WFBL) NETWORK, SIANI EXPERT GROUP AND NTFP-EP

WFBL Network SIANI Expert Group

The Wild Foods, Biodiversity and Livelihood (WFBL) Network is an Expert Group supported by the Swedish International Agricultural Network Initiative (SIANI). The group is composed of individuals and organizations from multiple sectors, tied together by a common interest to consolidate knowledge about wild foods in Asia and its links to food security, poverty reduction and sustainable forest management. The network is convened by the NTFP-EP.

The group aims to consolidate traditional ecological knowledge about wild foods in Asia and bridge it with the relevant policy arenas to ensure wise, inclusive, and impactful decision making in the areas of food security, poverty reduction and sustainable forest management.

With support from SIANI, the group has facilitated and convened dialogues and knowledge-sharing activities at the regional level, engaging national and regional representatives from the forest and indigenous communities, government, science, civil society, and development agencies, creating an enabling environment for forest communities and indigenous peoples in Asia, going beyond conservation and expanding the understanding of the value of forests, especially wild foods, and traditional ecological knowledge and systems. Implementation of the activities ran from 2020–2021.

Learn more about the expert group by visiting siani.se and wildfoodsasia.com.

NTFP-EP

NTFP-EP stands as a diverse and collaborative network of over 100 NGOs and CBOs who all work with forest-based communities to strengthen their capacity in the sustainable management of natural resources in Cambodia, India, Indonesia, Malaysia, the Philippines, and Vietnam.

Starting out in 1998 as an informal group of practitioners working in local initiatives in Indonesia, Malaysia, India, Vietnam and the Philippines, the group recognized the potential benefits of sharing experiences and pooling expertise. In September 2003, NTFP-EP was registered as a non-profit organization based in Manila, Philippines.

At present, NTFP-EP serves as a platform for information and knowledge exchange of appropriate resource management and forest-based livelihood techniques and experiences. It is present in six (6) countries, particularly Cambodia, India, Indonesia, Malaysia, the Philippines, and Vietnam.

The network provides technical support and training, assistance in strategy formulation, documentation of best practices and success stories, mobilization of resources, advocacy for local initiatives, and lobbying efforts for enabling policies.

NTFP-EP work is focused on the following thematic outcomes: community-based conservation, indigenous food and health, tenure rights and governance, and sustainable community livelihoods, culture, youth engagement and empowerment, and gender equal community agency and voice.

Introduction



This paper aims to get an understanding of the foods procured from the wild as well as through traditional agricultural systems (such as shifting cultivation). It is an exploration into how wild foods and the biodiversity of forests have continued to contribute to the food security of indigenous and rural communities in India, and how traditional methods of cultivation have maintained the diversity of crops. Over the past three to four decades, especially after the Green Revolution, both food staples and their production underwent significant changes. These changes impacted land use as well as peoples' perceptions about food in general, and wild foods and traditional crops in particular.

Over these decades many mainstream foods and food patterns – particularly rice and wheat-based foods – displaced and overwhelmed traditional diets. The subsidized food distribution system as well as the compulsory education drive, which kept children in school hostels and away from homes, have been deciding factors in changing the way Indians as a people view food. Overall, one may say that diets have become more uniform across the country, also thanks to the intrusion and acceptance of fast foods. Unfortunately, many traditional foods and food systems have fallen by the wayside.

The cultivation of commercial crops such as rice, sugarcane, wheat and, more recently, palm oil, have been encouraged; simultaneously, Protected Areas across the country have increased, denying indigenous peoples the access to harvest wild foods. The paper takes stock of the various forces that both negatively and positively impact indigenous food security in India.

The NTFP EP India has promoted the use of wild (and uncultivated) foods among the various indigenous and rural communities it works with for more than a

decade. Initially seen as an extension to the 'NTFP-related' work, essentially to grasp the full reach of NTFPs gathered and used by the communities, it was realized that subsistence foods – that is foods gathered mainly for consumption – formed a sizable portion of the indigenous food basket. Later, working and interacting with other networks and individuals concerned specifically on wild and traditional foods, EP's engagement became more focused. The 2013 FAO conference that highlighted 'forests for food security and nutrition' gave an impetus to look at forest conservation and food as complementary elements in indigenous lives. Biodiverse landscapes offered a larger range of food.

Work on wild foods in India was undertaken as part of a larger study of the subject in Southeast Asia. The intention was to have an idea of the diversity of plants and animals used as food and to gain an insight into these foods' roles in maintaining indigenous identity and culture, their nutritional values, and their availability in an increasingly shrinking 'community territory'. Shrinking territories were and are caused by an expansion of plantation crops, mining and infrastructure projects, and by an increase in Protected Areas. As most of these projects were in forested areas which were inhabited by indigenous communities, these communities were directly impacted. A crucial factor that is linked to forest foods is the transmission of such traditional knowledge about food (identification, method of harvest, storage, cooking) to the succeeding generation: access to forests is integral to knowledge transfer. The gap in traditional knowledge is further exacerbated due to the migration of indigenous and rural youth to urban areas, modern education that keeps children away from their villages, and a general trend towards modernization across many parts of the world, including India.

Scope and Limitations

The paper uses inputs from select states in India and does not attempt a country-wide perspective. The information used for the paper were gathered from the work being done by NTFP EP India and Using Diversity, both networks that work with indigenous food systems in several states. The information gathered from the indigenous communities are varied: some have been able to help understand the diversity of aquatic foods (fish and crab), some have contributed to showing us the diversity of tubers, and some have shown a high diversity in their rotational agricultural systems. There are communities maintaining a high number of their traditional crops, while others have succumbed to market pressures and cultivate more of the commercial pulses. These differences in attitude and practice in traditional agriculture is illustrated through case studies. Importantly, this paper and its

scope is confined to indigenous and rural landscapes and peoples: it deals with their foods and food traditions and the threats to it.

Some case studies in this paper illustrate the restricted access due to any of the various factors mentioned above. The limitations are therefore as follows: no community deals with the whole range of wild foods described; even within a state, the paper deals with select regions and communities; the impacts of destructive land use on wild food access is not uniform. With regards to scope, the paper reflects only the situation in indigenous and rural areas of central and south India. The gaps will be filled as far as possible through a literature survey, though there is not much to be had in this field for India.

Methodology

Some of the partners within the NTFP EP India network have been working on wild foods and traditional crops among various indigenous communities. There have been workshops and training programs, and a series of wild food festivals to promote the knowledge about such foods among the younger generation of the communities and to sensitize the local administration. The indigenous communities have been the Kurumba, Kadar, Kattunaicken, Sholiga, Durwa, Bhatra, Pahari Korwa, Baiga, Paharia, Bhariya, Birhor and the Kamar; the states dealt with are Kerala, Tamil Nadu, Jharkhand, Chhattisgarh, Odisha, Madhya Pradesh, and Andhra Pradesh.

Most of the information gathered are in the form of lists (particularly of wild foods), notes, and interviews. Some of these have been collated into small booklets and posters for local use and awareness; these are being used for this larger paper at the country level. A serious limitation has been the paucity of policies about wild and uncultivated foods. Food security, at least according to the research results available, has inevitably come to mean cultivated food grains and their access and distribution.



Findings

DATA, DISCUSSION, AND ANALYSIS

In the urban context the idea that foods can be acquired from the wild is uncommon. That wild foods may be consumed and are perhaps healthier than what is procured from fields is something the food-conscious middle class is aware of, but the bulk of the population have more conservative views. Also, due to the distribution of free or subsidized foods, especially cereals, people have become accustomed to the mainstream 'tradition' of rice and wheat as staples. However, it must be mentioned that over the last 4-5 decades (1972-72 to 2011-12) the consumption of cereal and cereal substitutes have come down in both rural and urban India; the consumption of beverages, milk and milk products, fruit and nuts has gone up, and so has the intake of fat. Obesity rates for 2015-16 are 21% for women and 19% for men.

With the increasing number of ailments there is a better awareness among urban populations about what is eaten. An effort is made to cut down on sugars, increase the number of greens, and reduce the amount of meat in diets.

The National Food Security Act (2013) does not mention wild/uncultivated foods. In fact, there has been some embarrassment attached by some state administrations about people eating 'wild tubers', as the association of such foods is with famine and scarcity, or with an extreme 'primitiveness' of the people. Some civil society organizations, however, have been working for the conservation of traditional seed varieties, their ongoing cultivation among various Adivasi communities, and have highlighted their importance for nutrition and food security. These efforts, though strong and valuable, and growing, are no comparison to the large-scale prevalence and influence of the subsidized foods distributed through the state.

PRESENT SITUATION IN TERMS OF TENURE, MANAGEMENT, AND POLICY

In much of the forested areas in central and south India, quick assessments have shown that 200-250 wild edible plant and animal species are available and quite regularly consumed. This includes 20-30 species of fish and crab, and other small game that are found in the areas of research. These foods are usually found in the forest, in and around agricultural landscapes;

some species of plants are also cultivated around the homes. About 10-15 species of insects have also been documented from the Paharia and Pahari Korwa peoples. In some communities, the number of wild species that can be eaten could well reach about 500 or more species.

Most of these wild foods are seasonal. Mushrooms are a common item of monsoon diets; it is easier to bail streams for fish in the dry months; some game, like the giant squirrel or civet, are sought after during winter. Information about the meats (not fish) is usually held back as all hunting and trapping of game is forbidden by law. This does not, however, prevent these activities from taking place in forested and rural areas. One could go along with the assumption that wild boar, barking deer, civets, giant squirrels, mongoose, rat snakes and monitor-lizards are all regularly consumed by forest-based communities.

Hunting-gathering, as a food-way, is now quite negligible in India. Even where it is practiced it is not the sole means of procuring food (as such communities have been identified and provided food by the state) but as a supplement. Usually, this would mean they continue to fish and trap, hunt for honey, and gather mushrooms, greens, and tubers. Shifting cultivation has been labeled a 'bad practice' and deemed destructive to the environment. Communities practicing such ways of food production (refer to case studies) have been under pressure to curtail this practice and are now confined to smaller areas, thereby reducing fallow periods that have led to lower harvests. In addition, soils have been depleted and invasive weeds have taken over abandoned fallows. What is further evident from the case studies of rotational farming is that farmers with access to markets tend to move towards cash crops and rice; this has meant a displacement of the various traditional legumes and pulses grown in the same lands, and a change in their diets.

Though traditional knowledge about shifting cultivation exists – as evidenced by the diversity of crops cultivated, with successive harvest of crops possible through all the seasons, and the understanding of the dynamics of such a system – this has not been recognized. A vast body of research also exists that support the sustainability of such rotational systems, but this has not received attention. Instead, in the northeast part of the country, palm oil plantations have been legitimized as an antidote to

shifting cultivation;¹ the existing governance system in some of these states (parts of Assam, Meghalaya, Tripura, and Mizoram), known as the Autonomous District Council and which has jurisdiction over large stretches of community lands, makes it easier to push such ideas easily.

The existing policies concerning food security covers only the quantity and distribution of food, and depends on studies that highlight populations suffering hunger, malnutrition, anemia, and other parameters. The subject of wild foods is not a focus at all in any government policy and is entirely missed out in the National Food Security Act (2013), a gap that needs to be urgently filled. In this context, another gap that requires attention is the intervention in micro-nutrient malnutrition that relates to iodine, iron, and vitamin A, easily available through many of the combinations of uncultivated foods readily procured from most landscapes: all that is required is a little awareness of the foods and the combinations. It is important that the management of a community's health is restored back to the people rather than it being administered by the state. The NTFP network has sufficient knowledge and expertise to implement this aspect of community health without additional expenses incurring on the state or the people.

The existing national policies concerning food security (NFSA, 2013) covers 75% of the rural population and 50% of the urban population in all states and Union Territories of India. However, it addresses only the quantity of food availability, fortification, and certain aspects like anemia within 'mother and childcare' programs. Extension health workers, midwives, and community health workers are being trained by state governments to deal with local health issues, mainly diarrhea, malaria, night-blindness, all of which peak during certain seasons. The broader connect about wild foods and their access, forest conservation that enhances biodiversity and wild food availability, traditional knowledge, and the overall health of the Adivasi communities is missing from state policies.

The positive side of the present food security policy is that it does follow the principles of the World Food Summit definition and monitoring protocols set in 1996 (reviewed in 2015). The three pillars of food security according to the WFS are aggregate food availability, household food access, and individual food utilization. As far as cultivated food grains are concerned this is commendable, seeing that the food security and nutrition plans of the country is also gender sensitive.

Though still high, anemia among women and children (more than 50% for both groups) has come down over the last 15 years.

The focus of food security has however remained on quantity instead of quality. Unfortunately, there is no recognition of foods accessed from outside distributed through the Targeted Public Distribution System; preliminary studies were conducted in cultivated landscapes (in the Palani hills, Tamil Nadu as well as Bastar, Chhattisgarh). The Bastar research revealed that even in and around rice fields people harvested around 20–25 species of greens, 5–8 species of tubers, 10 species of rodents, several seasonal birds, about 17–20 species of fish and crab, etc. Along with this diversity of food they also enjoy the truly wild food species of fruit, mushroom, yams, etc., from the surrounding forest. In the highly cultivated upper hills of the Palanis where most land is used for cash crops (garlic, potato) and 'English vegetables' (carrot, beet, cabbage, broccoli) the people harvest between 25–30 species of edible plants as well as fish and crab from the landscape.

The point here is the recognition of local communities' access to the commons they habitually use for various purposes (medicine, fuel wood, grazing, leaves) and food. In conjunction, it would be necessary to be sensitive to land use changes, especially conversions of forest areas that destroy food and water sources or prohibit access. Unfortunately, it is the opposite of access to traditionally used commons that is happening: an increasing amount of infrastructure (hydropower, mining, highways) and plantations (palm oil, eucalyptus, forestry) projects have not only taken over the commons but also encroached into community lands, despite the FRA (2006) and the Panchayat Extension for Scheduled Areas Act (PESA), both meant to help communities prevent such land alienation. This has dispossessed people and left many marginalized and land-less communities in the lurch, deprived of their habitual 'food spaces'.

There are a growing number of civil society groups working on the Forest Rights Act, pushing for its implementation, and some are helping Adivasi and other traditional forest dwelling communities formulate their customary conservation and management plans. These plans, if formulated and implemented sensitively, will take care of the existing wild food sources; it is an opportunity that some of the NTFP EP India partners are using to improve food and nutrition security of the peoples they work with.

¹ Monoculture plantations were promoted as an antidote to shifting cultivation in the North East as far back as the 1970s (the early plantations being rubber, areca nut, cashew nut in the Garo Hills); tea also has been promoted a lot, especially in Assam and parts of Meghalaya. The Soil and Water Conservation Department in Meghalaya have been promoting rubber plantations to replace jhum fallows and community forests. The current trend is to promote palm oil plantations; nothing has been learnt from previous failures of monoculture plantations; in Mizoram where oil palm plantations are largely replacing rubber plantations which had failed.

Case Studies

CASE STUDY 1: CASE STUDY ON UNCULTIVATED FOODS OF BAIGA COMMUNITY IN DINDORI DISTRICT OF MADHYA PRADESH by Naresh Biswas

The Baiga are a forest-dwelling Adivasi community in central India with a population of 552,495 according to the 2011 Census. Though concentrated mostly in Madhya Pradesh and Chhattisgarh, Baiga settlements are also found in Jharkhand and Uttar Pradesh. The Baiga inhabit the forest and hilly regions of Mandla, Dindori, Shahadol, Umariya, Balaghat, and Amarkantak districts in Madhya Pradesh and are considered an offshoot of the Bhumias of Chota Nagpur.

The Baiga practice bewar, a type of shifting cultivation and the non-Baigas called them bewadias, the practitioners of bewar. Over time the name bewadia was distorted to baigadia (meaning 'people who destroy land and forest by burning') and baigadia became "Baiga" – the name by which this community is now known.

The social structure of the Baiga consists of a Panchayat comprising of Mukaddam, Diwan, Samrath, Kotwar and Dawar. The Panchayat is authorized to settle all the disputes in the village. The Mukaddam is the head of the village and the Dawar is the priest. In 1890, during British rule, seven villages around Chada village were declared as a Baiga Reserve. Later, 52 Baiga settlements in the forest were included in the Baiga Development Project. Since then, this area is called Baiga Chak. The Baiga of Baiga Chak call themselves Bhumiya Baiga. Bhumi meaning the earth, Bhumiya or Bhuyan being descendants of the earth.

Overview

The Baiga of Baiga Chak have a close relationship with forests. Most of the vegetables in their diet are gathered from the forest. They harvest and consume over 150 types of green leafy vegetables, raw & ripe fruits, flowers, roots, shoots, buds, tendrils, tubers, and mushrooms from the forest. The Baiga also consume over 100 different types of fish, crabs, honey, insects, birds, and animals and are especially fond of the exudate from an insect called the butna keeda which they collect for their children. Forests, rivers, and common lands around villages thus make a significant contribution to the food diversity of Baiga.

Millet is the most important food grain grown and consumed by the Baiga. Many traditional varieties of different millets are cultivated. The Baiga practice a mixed cropping system called Bewar Kheti or Dongar kheti done on hillslopes.

The Baiga grow different traditional varieties of millets including kutki, kaang, salahar, mandiya, saanva, etc. along with different vegetables, pulses (rahar, urada, jhunjharu, jhuraga and barbati) and spices. There are three kinds of farmlands: a) sloping mountain land for bewar farming, b) barren gentle sloping land where kodo, kutki, rahar, urada, jhunjharu, jhuraga and upland varieties of paddy are grown, and c) a small plot of fertile land in the lower terrain known as heavy "bhaari" land with good water-retaining capacity where paddies are set up. Most of the land that the Baiga cultivate are forest lands which they do not own. Few Baiga people own land and those who do not lease land from them for cultivation. In this system of leasing land, called "theka batai", there is no payment in cash: payment is a portion of the crop to the landowner.

Bewar farming has played a significant role in the on-farm conservation of agro-biodiversity in the region. The agriculture of Baiga is based mainly on diverse millets that include kodo, kutki, saanva, salahar, mandiya, kaang and sikiya, some of which are declining. Kodo and kutki are integral to the food security of the Baiga, so they grow these on larger areas.

The Baiga grow paddy on a very small scale since they have little suitable land; the varieties include sathiya, baaridhaan, nevari and ratuva, grown on small paddy fields. However, the Baiga are also getting attracted towards the modern high yielding varieties of paddy which has contributed to a decline in the diversity of traditional paddy varieties.

Though the government has never had any policies for promoting millets, it has recently begun schemes to promote the crop under the Millet Mission in Madhya Pradesh. The scheme is focused on increasing production of kodo and kutki in Dindori and Mandla districts and aims to increase production, increase value, and assist in marketing of kodo and kutki. On the downside, this initiative may wipe out the diversity of millets in the Baiga Chak area.

Baiga food is mostly millet porridge or rice. Their food culture consists of different millets in different seasons and kodo and kutki are eaten in larger quantities. Even a small helping of millet provides them with sufficient energy to work long hours. The millet is accompanied with dal and green leafy vegetables. Dal is easily available as they cultivate it. The Baiga collect various greens from the forest and complement it with other uncultivated foods harvested from their surroundings. However, the cultivation of kodo and kutki is also declining now due to the growing acceptance and popularity of rice. The Baiga harvest diverse uncultivated green leafy vegetables, fruits, seeds, flowers, buds,

shoots, tendrils, tubers, gums, and mushrooms from common lands around villages and from the forest. The diversity of different uncultivated foods is shown below:

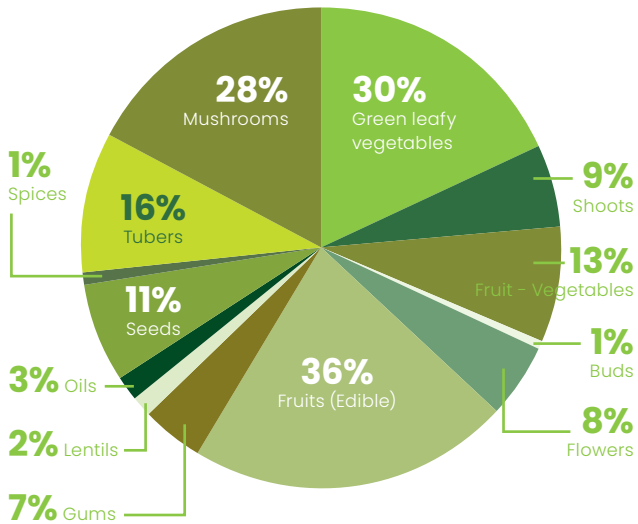


Chart 1: Diversity of plant-based uncultivated foods

Wild foods are available throughout the year though May to September is the peak season. Most of the green leafy vegetables are available during the monsoon. The monthly availability of uncultivated foods can be seen in the chart given below.

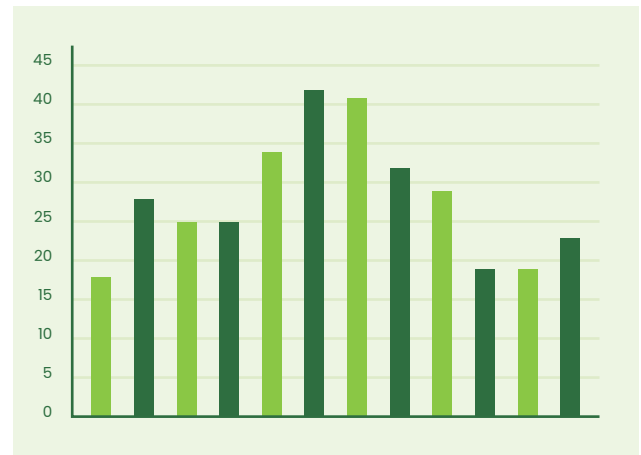


Chart 2: Diversity of animal-based uncultivated foods

Along with the plant-based foods, Baiga consume 32 types of small animals, 48 birds, 2 insects, 14 fish, 4 crabs and 7 types of food from honey bees.

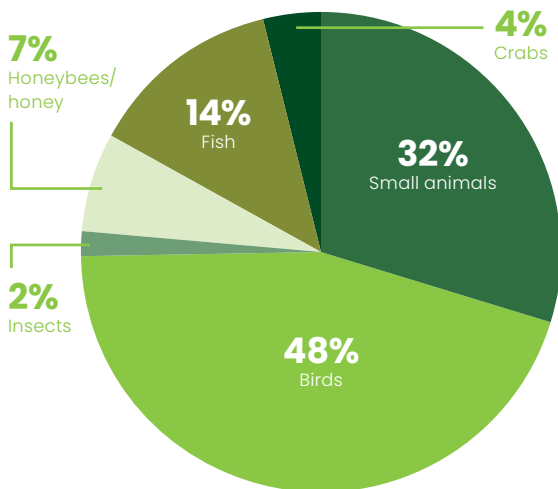


Chart 2: Diversity of animal-based uncultivated foods

Most of the uncultivated foods are for consumption. Very few are sold. However, this is changing now as the Baiga have started selling forest produce in local markets in response to their need for cash. Koilar, pakri, siroti, mainhar, ghui, talko, tendu, sihar, kanihakanda, geenthkanda, nakvakanda, baichandikanda, saidukanda are a few examples of the diverse forest foods that are crucial to the food security of the Baiga. The tubers are a favourite food with kanihakanda being the most popular. As soon as it rains, the moist ground becomes easier to dig the Baiga rush to the forest in groups for collecting tubers. During this period, the Baiga only eat tubers.

Common and Uncommon Uncultivated Foods

In terms of availability and consumption, 25 foods have low availability and low consumption; 46 foods have low availability and high consumption; 22 foods have high availability and low consumption, while 37 foods have high availability and high consumption.

Examples of the 46 foods with low availability and high consumption include vegetables such as mainhar, talka, kurlu, ghathar, siroti, pakri, koilar, ghui, khodhiya, udarkanda, amera, kachnar, karkoti, bhatua, kheksa, dholri, banskaril, nuniha, etc. The availability of these foods has declined due to several factors including destructive harvesting and over exploitation, deforestation, habitat destruction, poor regeneration, the increase in monkeys and the grazing by livestock, etc.

Examples of the 37 foods with high availability and high consumption include vegetables such as siroti, katin, kukrianti, tadar, pihati, char, dhanbahir, chirai jam, kadu gheet, etc. These foods too face an uncertain future given the lack of control over factors that cause a decline in the availability of wild foods.

The Baiga are knowledgeable about medicinal uses of wild foods. Foods like pakri, pipar, bhelva, bramharkas, gohlam, khutni jungle, konjhar, pattarchitti, banskaril, katin, dumar, mainhar, talka, dhanbahir, hasiadhepu, etc. have medicinal properties. Bhelva is used to treat skin related disorders and the Baiga believe that konjhyari bhaaji should be eaten at least once in a year. The leaves are eaten when tender, soon after the first monsoon showers. The Baiga believe that eating it prevents water borne diseases and fever. Forest foods have different nutritional and medicinal properties.

Some are appetite and sleep suppressants, and some are appetite and sleep stimulants. Some act as diuretics and some act as antidiuretics. Their consumption is recommended in different ailments. Baiga dry and preserve many vegetables such as pakri, koilar, chech, charota, etc. Only a few mushrooms such as putpura pihari, putti pihari and chiroki pihari are sold in local markets and they fetch a high price.

A Favorite Food

The charota plant grows when it begins to rain. The plant, which is a favorite of the Baiga, is 1-1.5 feet tall and its tender leaves are cooked and eaten as vegetable. The leaves remain tender almost until the end of the monsoon when they are plucked and dried. The leaves are shallow fried in a pan and dried in the sun and eaten in the summer. Other favorites include millet porridge with greens, the most common being kutki porridge with charota bhaaji. Charota bhaaji is considered the tastiest and most nutritious of all uncultivated foods. It grows in and around the village, in open fields and in the forest. It is available in large quantities and is easy to collect and to cook. Many people drink tea made from the seeds of charota. The seeds are lightly roasted in a pan and ground into a powder. Charota seeds are sold in the market for a high price.

Threats To Wild Foods In The Region

There is considerable decline in the availability of several uncultivated foods from the forest. The main reasons for this are:

- Large scale deforestation
- Forest fires during summer months
- Uncontrolled grazing by a growing livestock population
- Destruction of forest foods by monkeys
- Over exploitation and unsustainable harvesting practices
- Poor regeneration of many species
- Monoculture plantations of commercial tree species by the forest department
- Climate change
- Forest fires

Threats to the Consumption of Wild Foods

Factors contributing to the decline in consumption of wild foods among the Baiga include markets entering Baiga villages; the Baiga youth unable to find time to go to the forest; the rise in wage work opportunities; the easy availability of subsidized food grains provided by the government; growing influence of modern society; changes in the perception of Adivasi about

forests; the Baiga youth moving away from forests; the Baiga children not eating uncultivated foods; and a feeling of inferiority amongst Baiga while consuming uncultivated foods in front of outsiders.

The growing exposure and contact with the outside world (where they migrate for employment) has kindled in the Baiga youth an attraction for city life. When they return to their villages for short periods every several months, they no longer go to the forest to collect wild foods. Not being dependent on forests for their livelihoods, these youth do not have any attachment with forests and often have no inhibitions in resorting to illegal felling of trees. Much like the forest department, school-educated Baiga youth look on forests as nothing more than a source of timber.

The worldview and perceptions of older Adivasi people are also changing as many of them depend on the money earned by their children pursuing wage work in urban areas. They still have a strong association with forests, but they are no longer as determined or as organized in resisting the 'official' tree felling by the forest department.

The availability of subsidized food grains provided by the government has improved considerably since the Baiga have been brought under the ambit of Antyodaya Anna Yojana, a special food security scheme under which each Adivasi family is provided 35 kg of food grains (rice and wheat) each month. With enough food grains in the house every month, there is hardly any need for the Baiga to go to the forests in search of diverse tubers, mushrooms, fruits, and leaves. The Baiga children forced to live in ashram schools (residential schools) away from their homes during the entire academic year and return home only during holidays. With most of their growing years spent in a residential school far away from their homes, Baiga children do not get to eat the diverse uncultivated foods cooked at home and so do not develop the habit of eating these foods at an early age. On the contrary, they develop a taste for eating wheat, rice, and junk foods sold in the market.

Finally, the feeling of inferiority among the Baiga while consuming uncultivated foods in front of outsiders is a result of barbs and taunts by outsiders who tend to look down on the foods from the forest as poor and inferior. This stems also from a deficit of self-respect and pride among the Baiga for their own food culture.

Rituals performed before the harvest of wild foods

There are no special festivals celebrating uncultivated foods, except during Rasnava puja, which is celebrated once every 9 years when the mohti flower blooms. The festival is also called Fulvaari or Mohti. It is celebrated

at the outskirts of the village where the cattle rest. The Baiga mix dongar kutki with honey in a bamboo stem and cook it over a fire. The khichdi cooked from dongar kutki and honey is the offering for this puja after which the people then smear honey and complement each other. They do not eat honey without performing

Rasanva Puja in the year when Mohti blooms. Apart from this, the Baiga celebrate Navakhai. It is different from Rasanva. New grain, green leafy vegetables, cucumber, corn etc. are not eaten till Navakhai is celebrated. It is celebrated by all communities of the area, not just the Baiga.

CASE STUDY 2: CASE STUDY OF BEWAR, SHIFTING CULTIVATION, AMONG THE PAHARI KORWA, CHHATTISGARH by Rohan Mukherjee

The Pahari Korwa are an indigenous people living in the five districts of northern Chhattisgarh. Their villages are in the hilly tracts with abundant rainfall and forests that have diverse wildlife. Their agricultural practices are varied and range from shifting cultivation (known as bewar or ahal), fields with one crop known as ekal kheti, and homestead plots, known as badi. Each of these three types of agriculture focus on some crops (though there are overlaps) and range from those used entirely for self-consumption to those grown primarily for the market.

Along with cultivation the Pahari Korwa also supplement their food with what they find in the wild. Preliminary assessments in seven villages of the Chui Pahar hills have shown that greens (including fruit, shoots, and flowers) account for about 67 species; tubers account for 14 species/varieties; there are 23 species of mushrooms gathered; aquatic species (fish crab and snails) account for 23 species; and insects (mainly bee and hornet larvae) account for nine species. These 136 species of wild foods are obviously mostly seasonal and therefore play the role of indicators to changes in climatic patterns that may occur.

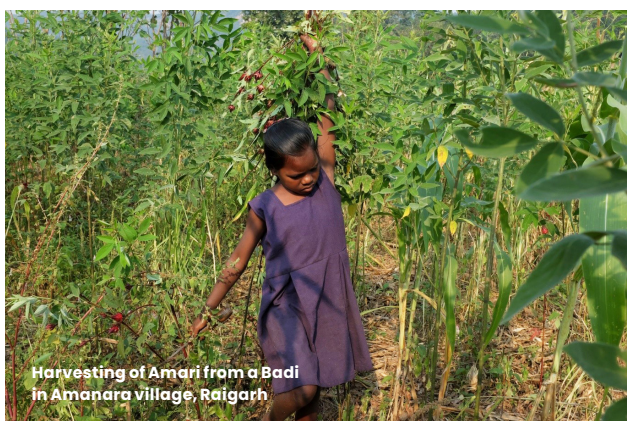


Bewar used to be the space to cultivate a diverse variety of crops and was termed 'elephant's stomach'. This has now changed and the present bewar plots are used to grow commercially important species, mainly pulses and beans (lal rabrang/lal junga, sane/rahar/pigeon pea, toher/sutru/rice bean). Simultaneously, there has been a reduction in the varieties of millets grown and the fallow periods have been decreasing, affecting both soil quality negatively, and adding to the invasion of exotic weeds in the long run. In these plots bajura, jowar, or sorghum are usually cultivated to divert birds away from other crops. The labor involved in the clearing of the plots and the several activities involved until the sowing of the various crops are collective, with families helping in each other in the different plots.

When the crops have begun to grow people need to spend up to three months in their plots – members take turns through the day to guard the crops against birds and monkeys in the day and wild boar and porcupine in the night.

Badi is the area around the homestead and usually used for some cash crops as well as for fruit and vegetables that can grow around the home.

The main crops here include maize, amari, pigeon pea, sorghum and mustard. The mustard is kept for home use and only the excess is usually sold for cash. The badi is also the place to grow some of the 'wild' foods such as "van karela" and even some yams.



Ekal kheti is the place for mono-crop and kathika serale/a variety of little millet, sane/pigeon pea, jadgi (an oil seed) and rice are grown here.

Overall, across all agricultural practices, in the villages studied, there were nine species of pulses and other legumes cultivated; one species of oilseed/maize; 12 species of millet and sorghum; five varieties of paddy and several species of vegetables.

The challenges to the traditional lifestyle that is inextricably linked to the system of food production are as follows:

- a. The market, whose demands influence the way the bewar is practiced. It is seen that up to 75% of the crops grown are meant for the market, especially when the market is easily accessible. De facto, bewar is practiced fully in places that has no access to the market. The increased cultivation of pulses in bewar to meet commercial demand has resulted in reduced cultivation of millets.
- b. The official restrictions on the practice of bewar. This has been a long-standing issue in the country and the general (official) perception of bewar is that it destroys forests and as such is a wasteful practice. Where bewar is still practiced it inevitably faces the problem of shorter cycles of fallow and the depletion of soil quality, accompanied by invasive species. Despite the provisions under the Forest Rights Act (2006) which allows the Pahari Korwa to claim their tenure rights there have been almost no community that has been given these rights in this region.
- c. The popularization of paddy in ekal kheti, making this agricultural system monsoon-dependent and vulnerable. Increased rice varieties, especially hybrid ones, have also reduced area under badi cultivation displacing crops like maize, sorghum, amari and malhan/semi. The increased area granted to rice has had impacts on the diets too with maize – a common staple in Pahari Korwa



households – now often missing. The added reason to this is the distribution of rice through the PDS; many youngsters have begun to prefer the taste of rice to other crops such as millets and maize.

Wild Food

It was reported that a little over 60% of greens, 80% of mushrooms and aquatic species, and 50% of insects were available in abundance in the hills of Chui Pahar. Only the tubers were found to have low availability (57%). Unlike cultivated food which have specific seasons the availability of different wild food is spread throughout the year. In fact, a significant number of plant based wild food species and mushrooms are available in summer and monsoon months which is a time when cultivated food stocks tend to run low and wild food helps meet the nutritional needs of the Pahari Korwas during this time.

While a diverse variety of wild food species are available to the Pahari Korwas only a few species of each of the different categories of wild food are a regular part of the Pahari Korwas' diet. 24% (21) species of greens (including fruit, shoots and flowers); 9% (two) of tuber varieties; 29% (four) of mushrooms; 29% (four) of insects; and 37% (seven) of aquatic species are consumed on a regular basis while the other species are consumed irregularly or sporadically.

Current Situation and Future Work

In villages with market access commercial crops are fast replacing purely subsistence crops. Of the 60 households in Amanara village only four carried on with the traditional bewaar, sowing several varieties and species of millets and other crops; the other 56 households focused on commercial crops alone. In another village, Kawadahi, none of the 20 households cultivated millets and were growing only commercial crops. Even in the villages of Chui Pahar which have limited market access some villagers reported that

sane/pigeon pea was a crop whose increasing commercial importance has made people cultivate it both in bewar as well as their badi.

The effects of climate change – occurring more frequently in the last decades – has also made the Pahari Korwa communities more vulnerable. Their switch to rice in the absence of irrigation facilities, and the simultaneous decline in millet areas (and in some cases maize) has put their nutritional status at a lower level also. These factors, along with less access to good forests, has limited the earlier availability of wild foods. It was reported that while they still had

Amla (*Emblica officinalis*) trees, none bore fruit for over 10 years; this is a phenomenon reported from other parts of the country too and attributed to climate change. The fruiting of Bhelwa (*Semecarpus anacardium*) has also reduced.

The work for the network/civil society lies in the areas of ensuring tenure security, finding ways and means to revive crop diversity in bewar, ekal kheti and badi, and to rejuvenate the traditions and knowledge of uncultivated foods which are an essential supplement to whatever is grown.

CASE STUDY 3: CASE STUDY OF KURWA, SHIFTING CULTIVATION, AMONG THE PAHARIA PEOPLE OF SUNDAR PAHARI, GODDA DISTRICT, JHARKHAND by Soumik Banerjee

The Paharia people, one of Jharkhand's tribal groups, have been distributed across the hills of the Rajmahal, currently the Santhal Pargana region of Jharkhand, and were exclusive owners of the land. They practiced a traditional form of shifting cultivation known as kurwa on the hill slopes, growing maize, and several kinds of millets, pulses, oil seeds and vegetables. The forest ecosystems of the region where kurwa was practiced provided the Paharia people with a wide diversity of wild food that made an invaluable contribution to their nutritional security.

The period of British colonial rule in the region saw the Paharia people having to negotiate restrictions to their self-rule after an armed struggle. With the Santhal people being encouraged to settle the plains the Paharia were restricted to the hills and accepted the legal method of revenue demarcation and settlement put forth by the British. By 1916 all the hill areas were settled and brought under private property laws which was in marked contrast to the earlier custom where land was used based on the needs of domestic

groups and the rights enjoyed based on the same. Consequently, even today, the forests of Sundar Pahari are privately owned with villagers possessing documents dating back to British rule. This pattern of ownership is in marked contrast to the control of the Forest Department over forests that prevails in other areas in India excluding the North East inhabited by indigenous groups.

The inequality of land divisions and preferences given to headmen had disastrous consequences on shifting cultivation which was the primary livelihood of the Paharia people. With reduced acreage, the very nature of shifting cultivation gradually changed from long rotational tree-based fallows to bush fallows with very short fallow periods. This gradual decline in shifting cultivation had serious impacts on the forest ecosystems of the area resulting in their deforestation and declines in their quality.

Currently, the Paharia in the hills of Sundar Pahari continue to carry out shifting cultivation, but the traditional mixed cropping practice of kurwa has been adapted to include one additional year of jara which involves monocrop cultivation of commercially important legume crops like osra/cow pea, kakro/ rice bean, and kursa/velvet bean. This is followed by one year of kurwa, the Paharia traditional mixed crop shifting cultivation practice involving commercial and subsistence crops. The Paharia also cultivate some crops which overlap with those grown in kurwa, in their homestead plots known as potio keta or badi.

Along with cultivation the Paharia people also supplement their food with what they find in the wild. An inventory of wild foods compiled with the people of Bada Palma village in the hills of Sundar Pahari reveals that greens (including fruit, shoots, and flowers) account for about 75 species; tubers account for 18 species/varieties; three species of barks and gums; there are 24 species of mushrooms gathered; aquatic species (fish crab and snails) account for 21 species; and insects (mainly bee and hornet larvae)



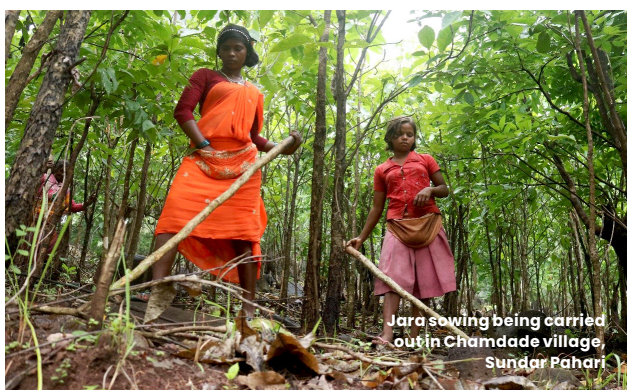
Kurwa sowing being carried out in Tatakapara village, Sundar Pahari

account for 11 species. These 152 species of wild foods are obviously mostly seasonal and therefore play the role of indicators to changes in climatic patterns that may occur. Steadily declining forest quality in the hills of Sundar Pahari has resulted in low and declining availability of most wild foods.



Collection of Komo leaves (*Bauhinia purpurea*), a wild leafy vegetable in Ghagri

Jara. In the 1960s osra/barbatti/cowpea became commercially important and traders from the plains encouraged the Paharia people to cultivate it on a commercial scale. This motivated the Paharia to modify their previously subsistence-oriented shifting cultivation practices. They started the practice of jara which involved mono-cropping of osra/cowpea to meet market demand (for one year) followed by the traditional mixed cropping kurwa in the subsequent year. Currently, they are also cultivating kakro/rice bean and kursa/velvet bean as commercial demand for these crops has been increasing. These are primarily commercial crops with around 75% of the production being sold. Unlike most forms of shifting cultivation, jara does not involve any burning of the cleared vegetation which is used as mulch and manure for the barbatti crop. The Paharia use the jogi – a long wooden stake usually made from “gurso” (*Caeseria elliptica*) – to dibble the barbatti seeds. Gurso wood is preferred as it does not lose its sharpness during dibbling. A day or two after the sowing, the men fell the large trees in the plot. Some valuable trees like Sal (*Shorea robusta*) and Semul (*Bombax ceiba*) are left to be harvested later. The fallen trees are left in the plot and when the rain comes the legume creepers twine over the fallen wood and undergrowth and spread over them.



Jara sowing being carried out in Chamdada village, Sundar Pahari

Kurwa. After one year of jara the Paharia people carry out the traditional mixed cropping cultivation practice of kurwa in the same plot.

Around March the fallen trees of the previous year’s jara are collected in heaps and burnt. However, this burning is very limited and much less than the burning carried out after felling of trees for stand-alone kurwa, currently extremely rare, which is carried out without one year of jara. Prior to the arrival of the monsoons the undergrowth and shrubs are cleared and burnt in small heaps. The burning for kurwa is very controlled and is not allowed to spread beyond the plot.

Previously a rich diversity of crops – including maize, millets, oil seed, pulses and legumes, and a variety of vegetables—were cultivated in kurwa. Currently, four major crops are cultivated: gangi/maize, ture/pigeon pea, tialo/sorghum and kakro/rice bean. While maize is primarily a subsistence crop, pigeon pea, rice bean, and sorghum are grown for both subsistence and to meet commercial demand. They also cultivate a variety of vegetables, Job’s tears (*Coix lacryma-jobi*), kenaf, velvet bean and other pulses and oil seeds. The cultivation of millets such as petge/foxtail millet, batwa/little millet, muto/pearl millet, and kodme/finger millet has reduced considerably, with some millets like gundli (a variety of little millet) having disappeared from the region. After one year of kurwa the land is left fallow for the re-growth of vegetation and trees. While the fallow period varies, on average it tends to be three to four years. However, villagers observed that the fallow period has been steadily declining that affect both soil quality and the invasion of exotic weeds, like Siam weed, in the long run.



Harvesting of tialo (sorghum) in Gargama village, Sundar

The labor involved in the clearing of the plots and the several activities involved in the cultivation of the various crops in jara and kurwa are collective, with families helping in each other in the different plots.



Distribution of meat in exchange for collective labor in Nathgoda village, Sundar Pahari

The Paharia people still follow the traditional practice of providing meat in return for collective labor provided. In return for the labor, the villagers get equal portions of meat from a pig or goat that is slaughtered for the occasion by the landowner. Each worker gets enough meat for a family meal along with hot broth made from the entrails of the slaughtered animal.

When the crops have begun to grow people need to spend up to three months in their plots, members take turns through the day to guard the crops against birds and monkeys in the day and wild boar and porcupine in the night.

Potio Keta or Badi. The Paharia also cultivate small homestead plots known as potio keta or badi. These plots are usually plain lands near habitation areas. The principal crops include gangi/maize, kudrum/kenaf, palonje/cucumber, and ghangri/small cowpea. The only input used in badis is gobar, which is put in the plots all the year around. After the first set of crops are harvested, they cultivate sarso for oil which is used for subsistence and sold commercially as well. With greater focus on jara and kurwa to meet commercial demand potio keta is on the decline. The Paharia people also cultivate several supplementary vegetable crops near their homes, in kitchen gardens and even on their roofs. In addition, they also grow a variety of tree species like drumstick, jackfruit, mango, tamarind, and papaya near their homes and in and around villages.



Kahonda (pumpkin) growing on a roof in Tatakpara village, Sundar Pahari

Overall, across all agricultural practices, in the villages studied, there were eight species of pulses and other legumes cultivated; two oilseeds and maize; four species of millet and sorghum; and 18 species of vegetables. On a smaller scale some families also cultivate paddy varieties, Job's tears, black gram and niger (which are rare).

The challenges to the traditional lifestyle that is inextricably linked to the system of food production are as follows:

- A. The market, whose demands influence the way kurwa is practiced. It is seen that up to 75% of the crops grown, especially in jara, are meant for the market. The increasing commercialization of kurwa has resulted in increased cultivation of pulses – cowpea, rice bean, velvet bean and pigeon pea – and displaced the cultivation of several millet varieties, some of which have vanished from the region, and is also resulting in reduced cultivation of maize which was the Paharia's traditional staple.
- B. With the duration of cultivation being extended to two years and fallow periods shrinking to three years or less, the region is experiencing increasing degradation of forests. Natural tree and plant species, many of whom are sources of wild or support other sources of wild food, are unable to regenerate effectively resulting in a marked decline in availability of most wild food.
- C. The shorter fallow periods have been promoting the spread of invasive species, like Siam weed. These invasive species suppress natural vegetation thereby further contributing to the decline in wild food.
- D. Changing food preference. Because of greater interaction with other communities, the market and the availability of external food items like rice through the public distribution system, the Paharia people are moving away from traditional foods both cultivated and wild. As rice, especially through the PDS, is becoming more popular the consumption of the traditional staple gangi jaggu (a porridge like preparation from maize) and millets is on the decline. The youngsters are also less interested in collection of wild food especially the ones that are more labor-intensive like tubers and are also losing the traditional knowledge of wild food collection and processing.

Wild Foods

As a result of increasing forest degradation and a steady decline in forest quality over several decades' villagers reported the availability of most wild food was low. It was reported that 66% of greens (including fruit, shoots and flowers), 94% of tubers, 67% of barks and gums, and all insect species had low availability and 7% of greens, 21% of mushrooms, 6% of tubers and 29% of aquatic species had become rare. 79% of mushroom species and 52% of aquatic species had medium availability. Only three plant species used as food, one gum species, and two aquatic species were available in abundance.

Unlike cultivated foods which have specific seasons the availability of some wild food or the other is available through the year, in differing quantities. This contributes greatly in times of low supplies, especially in the months between summer and monsoon.

While a diverse variety of wild food species are still available to the Paharia people only a few species of each of the different categories of wild food are a regular part of the Paharis' diet. 16% (15) species of greens (including fruit, shoots and flowers) are consumed regularly; while 46% (44) of greens (including fruit, shoots and flowers) species, 78% (14) of tubers, 100% (24), 36% (four) of insects and 48% (10) of aquatic species were reported to be consumed occasionally. These trends are indicative of both the decline in availability of wild food in the region as well as a shift in the Paharia peoples' diet away from wild food.

Current Situation and Future Work

In most of the Paharia villages in the hills of Sundar Pahari commercial crops are fast replacing purely subsistence crops. The cultivation of commercially important pulses, which are not a major part of the Pahari diet, has resulted in reduced production of domestic food stocks and forced the Paharia people to depend more on external food items from the market and PDS. The effects of climate change – occurring more frequently in the last decades and especially with respect to erratic monsoons and prolonged droughts – has also made the Paharia more vulnerable. Their switch to rice and the simultaneous decline in millets and maize has put their nutritional status at a lower level. These factors, along with ever declining forest quality, has limited the earlier availability and use of wild foods.

There is an urgent need to build an awareness about the benefits of traditional food, both cultivated and wild, and build a sense of pride around the Paharia food traditions. Several workshops, training programs and area level traditional food exhibitions are being conducted across the region. Alongside this there is

a need to implement initiatives aimed at improving the sustainability of kurwa and NTFP collection and promoting restoration and regeneration of native tree and plant species and forests. Some initiatives aimed at promoting a sustainable kurwa being piloted and implemented in the region include:

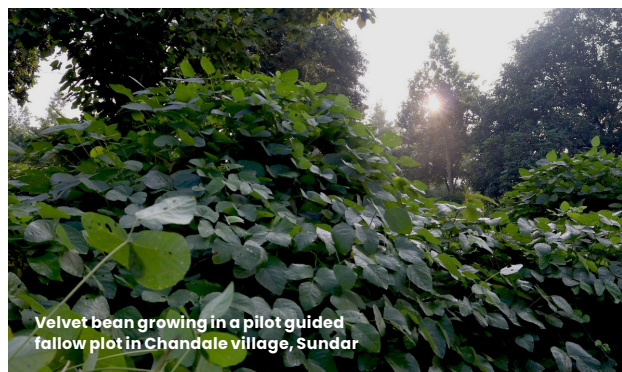
- A. Forest gardens aimed at increasing the productivity of kurwa fallows, which entails increasing the fallow period. After two years of cultivation in the kurwa plots, the land is left fallow for three to five years for regeneration and then again brought under cultivation. However, the minimum optimal time is at least 10 years, which has gradually declined and brought in invasive species like Siam Weed (*Chromolaena odorata*) resulting in loss of biodiversity and nutrient depletion. To extend the fallow time period, forest gardens are being developed through shade tolerant crops such as turmeric, ginger, taro, dioscorea, elephant foot yam, and small gourd, which are being cultivated in the forest fallows to generate additional livelihoods. The fallows are closed for grazing and protected from fires.

Thus, forest gardens would generate supplementary income from fallows that is expected to incentivize the community to extend fallow periods and thus harmonize the kurwa towards increased sustenance.



- B. Guided fallows aimed at addressing challenges being faced in the first year of the fallow period. In the new fallows, velvet bean, jack bean and sword bean are being sown. This is like live mulching. The aim is to reduce invasive species, promote conservation of moisture, creation of a suitable microclimate for microbial action, improving soil structure and texture, maintaining soil pH, improving saline soils, preventing soil erosion, protecting soil biota from UV and Cosmic rays, replenishing water table, aiding in germination by maintenance of soil temperature, increasing crop resilience, creating dense root network, and reducing excessive heating of soil or deposition of salt in topsoil.

By suppressing invasive species and creating a conducive environment for the regeneration of native tree and plant species guided fallows have the potential to improve forest quality across the region, thereby enabling the recovery of wild food species boosting their availability.



Velvet bean growing in a pilot guided fallow plot in Chandale village, Sundar

CASE STUDY 4: CASE STUDY ON UNCULTIVATED FOODS OF KATKARI COMMUNITY IN SINDHUDURG DISTRICT OF MAHARASHTRA by Rajeev Khedkar

A Brief Overview of the Range of Foods

The term 'Katkari' is said to be derived from the Marathi word "Kath" (catechu- the sap of the Khair tree (*Acacia catechu*), 'Kari', refers to making of Kath and so the name Katkari translates to 'makers of catechu'. As per the 2011 Census the population of the Katkari community is reported to be 285,334 individuals. Experts consider two endogamous groups of the community namely Dhor-Katkari and Son-Katkari.

The name and livelihood reflect the origins of the Katkari as a forest people. Historical accounts indicate that prior to the 1940s most Katkari people lived in forest communities in the Western Ghats in the districts of Raigad and Thane in the state of Maharashtra and in some parts of Gujarat. Over a period of time the Katkari turned to charcoal making as their major source of livelihood, due to restrictions imposed by the forest department on felling of khair trees, and then to brick making as controls increased on charcoal-making. The firing of kilns has thus been an integral part of the major livelihoods pursued by the Katkari.

Today the community is found in other districts of Maharashtra (Ratnagiri, Sindhudurg, Pune, Ahmednagar, Nashik, Aurangabad, etc.) and in other states (Rajasthan, Goa, Karnataka and even Punjab), though the bulk of the population continues to stay in Raigad, Palghar and Thane Districts of Maharashtra. With livelihoods shifting from kath, to charcoal and then to brickmaking and wage labor, many Katkari hamlets have relocated to the plains, closer to non-Adivasi villages.

The extreme marginalization and social exclusion of Katkari can be understood from the fact that

their hamlets often do not have legal village land, rendering them prone to evictions at the whim of the landowners. Their hamlets do not have Katkari names (they take the names of the neighboring non-Adivasi village by adding the suffix 'Katkarwadi' or 'Katkariwadi'). Even their different clan names and surnames have been subsumed under a common name: "Katkari" or "Kathodi", which carries with it a whole range of negative connotations such as unkempt, untrustworthy, alcoholic, thief, etc.

In Sindhudurg district, the Katkari found employment in fruit orchards, areca and coconut plantations, and paddy fields. Here they were given a new name. They were called "Wanarmare" or the people who kill 'wanar,' or monkeys. Their job was to protect fruits, areca, coconut, and paddy from the monkeys. Groups of Katkari families lived in shanties close to forest areas, away from non-Adivasi villages. Forests became an important source of livelihood for the Katkari, particularly during stress periods since wage work was seasonal. Treated as bonded laborers, the Katkari have remained landless and without any recognition or support from the government. Most families did not even have basic legal documents until a few years ago.

In Sindhudurg district, the Katkari do not cultivate any crops since they are landless, but they work as laborers in the fields of non-Adivasi people, growing paddy, millets, pulses, vegetables, and oilseeds. A small number of Katkari families have started taking land on lease from non-Adivasi people who are unable to cultivate their large holdings. Paddy is the main crop grown by Katkari who take land on lease. Katkari families who have been able to get household land have started growing different vegetables, tubers, spices, and medicinal herbs in their backyards.

The Katkari have tremendous knowledge about uncultivated foods of plant and animal origin. These include numerous varieties of tubers, leafy greens, fruits, seeds, flowers, shoots, tendrils, mushrooms,

honey, fish, crabs, small animals, birds, and insects. The Katkari consume over 100 uncultivated vegetables as well as more than 100 animals, birds, fish, crabs, honey, etc., being adept at gathering these with incredible ingenuity and skill. For example, Katkari women can draw crabs out of their holes during the summer months by rubbing two stones together, mimicking the sound of rumbling thunder. Apparently, the crabs think it is about to rain and emerge from their hole, only to be grabbed by the Katkari. Another example of their ingenuity and knowledge is their ability to hunt rodents, and even track down the food grains stored by rodents in their burrows. The Katkari are the only Adivasi group in the region who eat rodents. They even have a religious festival pertaining to rodents (Undir Navmi).

There is a misconception among many non-Adivasi people that the Katkari consume wild foods because they do not have food at home. The Katkari love to roam the forests; climb trees; use ingenious ways to trap birds and hunt small game; smoke out rodents; harvest honey from the cliffs or big trees; dig deep in the earth to locate food stored in the tubers; and most of all, fish in the rivers, streams, ponds, and paddy fields. The Katkari love the diverse tastes and textures of uncultivated foods – the extremely bitter fruits of kharsing (*Radermachera xylocarpa*), tender but astringent fruits of bhokar (*Cordia dichotoma*) or savar (*Bombax ceiba*), sour fruits of ratamba (*Garcinia indica*), sweetish and mucilaginous tendrils of Ulus, etc.

Details of different types of plant-based foods and the plant parts used as food are given in the charts shown below:

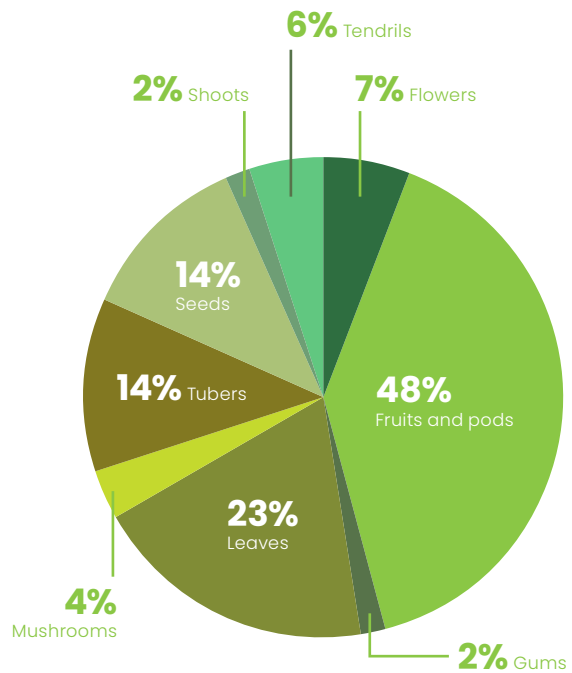


Chart 2: Different type of plant-based foods

In plant-based foods there are 46 trees, four shrubs, 18 herbs, four grasses, 27 climbers/ creepers and four mushrooms (fungi). In addition, the Katkari also cook the honeycomb as a vegetable.

Along with the plant-based foods, Katkari consume 18 species/types of small animals, 56 types of birds, 22 types of fish, two types of snails and four types of honey (made by different types of bees).

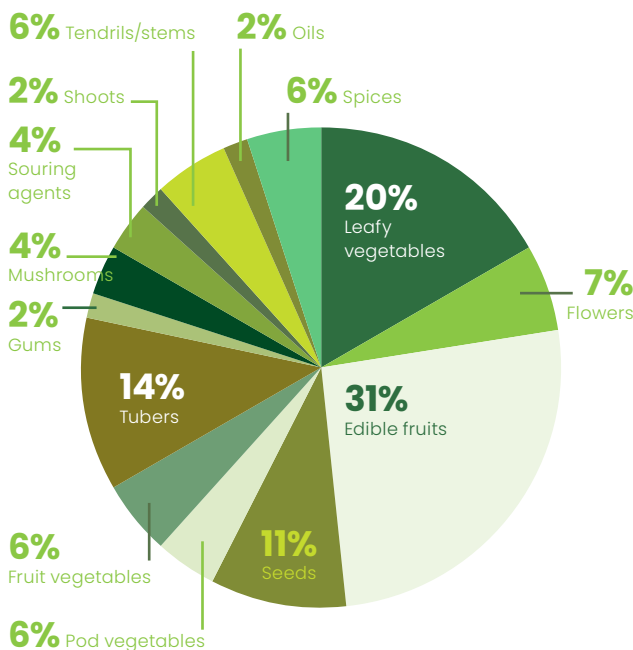


Chart 1: Different types of plant-based foods

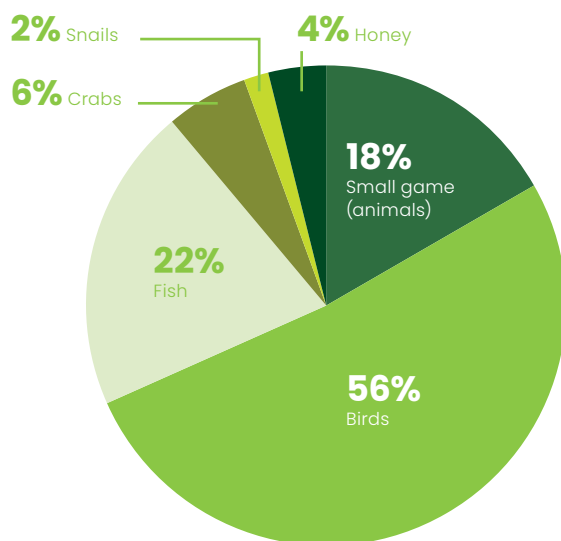


Chart 3: Foods of Animal Origin

While uncultivated foods are available through the year, the availability peaks between April and September. The number of days over which different uncultivated foods are available varies a great deal. While foods from plants like takla (*Cassia tora*), fodshi (*Chlorophytum tuberosum*) and chivar komb (bamboo shoot) are available for only 10–12 days, others like tubers are available over much longer periods of time. Destructive harvesting practices are often used for tubers, gums, honey, and shoots. This is one of the reasons for the decline in availability of uncultivated foods.

In terms of distances over which different uncultivated foods are collected, 47 are collected from fields and common lands in and around villages; 23 are collected from slightly longer distances (1/2 to 1 Km); while 53 foods are collected from further away (one to five kilometers). As to the place of collection, 23 of these foods are collected from common lands in and around villages; nine are collected from paddy fields and field bunds; 14 are collected from Mal Varkas lands or sloping lands on which millets and other crops are grown; 23 are collected from degraded, open forests; 36 are collected from forest areas; six are collected from places close to water bodies; seven are collected from hilly, mountainous areas, while two are found in ecological niches.

Sixty-one uncultivated foods are sold in the market or bartered for food grains, salt, tobacco, alcohol, etc. Of these, 35 are sold in smaller quantities while 24 are sold in larger quantities. Examples of foods sold in larger quantities are jambhul, fagla, avla, karvand, chivar komb, kankiche komb, sita alambi, kali alambi, yet alambi, chara, tera, aagya, pola, takla, katyala, satya, kokani ulus, lundi, etc.

Common and Rare Uncultivated Foods

In terms of availability and consumption, 37 uncultivated foods have low availability and low consumption; 36 foods have low availability but high consumption; 17 foods have high availability and low consumption, while 33 foods have high availability and high consumption.

In the 36 foods with low availability and high consumption, there are six fruits, one gum, one leafy vegetable, four mushrooms, one seed, two shoots, two souring agents, five spices, four tendrils and 10 tubers. Some of these foods are naturally rare (e.g., Eka Paanachi Bhaaji) while many food plants had medium to high availability until 10–12 years ago, but the availability has now declined due to reasons such as destructive harvesting, over exploitation, deforestation, habitat destruction, poor regeneration, etc. Examples of these uncultivated foods include

Fagla, Eka Paanachi Bhaaji, Sita Alambi, Kali Alambi, Yet Alambi, Chivar Komb, Kanakiche Komb, Shevul, Aakur, Ghotyachi Vel, Hanva, Shendval, Kokda, Kokani Ulus, Halinda, Sar Ulus, etc.

In the 33 foods with high availability and high consumption, there are two flowers, 14 fruits, four leafy vegetables, three seeds, one souring agent, one spice, one tendril, three tubers and four pod vegetables. The availability of these uncultivated foods too could decline if care is not taken to prevent destructive harvesting and over exploitation. Some examples of these uncultivated foods are Takla, Aatgi, Kokarbita, Gomta, Bhedsa, Kurada, Kurdu, Kodi, Chara, Ratamba, Umbar Kanda, Vaj Kanda, etc.

Meanwhile, 38 uncultivated foods are considered useful in treating various ailments such as skin conditions, cough, fatigue/weakness, anemia, improving urination, kidney stones, memory, piles, acidity, immunity, digestion, etc. For instance, kurdu, (*Celosia argentea*) improves urination and acts as a preventive and curative for kidney stones; ripe fruits of umbar (*Ficus glomerata*) satiate hunger; consumption of the extremely bitter fruits of kharsing (*Radermachera xylocarpa*) is considered a preventive and curative for worms; leaves of fodshi (*Chlorophytum tuberosum*) clean the stomach and improve digestion at the onset of monsoon; etc.

Specific Wild Foods of the Community

Eka paanachi bhaaji has only one leaf, hence the name. This vegetable is naturally rare and grows in very small quantities in rocky areas around the base of waterfalls. Collecting it is a challenge because of the long distances, difficult terrain, heavy rainfall, extremely small plant populations and slippery rocks around waterfalls during the period of collection (July–August). The leaf is available only for a period of 25–30 days of July–August. Every leaf is carefully plucked along with its tender stem by Katkari children, women, and men.

The leaves are heart shaped, somewhat resembling the leaves of vegetables like alu or tera but can be differentiated from them by the stalk, which is hollow at one end, longer, rounder and reddish green. Only an experienced person can identify eka paanachi bhaaji correctly because it can be easily mistaken for tera which are often found growing in the same area. The leaves are not preserved and very tasty; hence the consumption is quite high despite the low availability. Children enjoy eating it as well. Even if four to five leaves are found, they are immediately cooked with some onion and chilies. Eka paanachi bhaaji is not sold because it is extremely rare and because the Katkari people like it so much. If a moderate quantity

of the leaves is collected they are shared with close relatives and friends. It is said to improve memory in children.

Recipe

Ingredients: Leaves of Eka paanachi bhaaji, onion, chilies or chili powder, oil, dry coconut flakes and salt

Method: The leaves are washed thoroughly as traces of mud may be present on the stalks. They are finely chopped and added to a pan with onions, chilies or chili powder, salt, and dry coconut flakes. The vegetable is steam-cooked, and oil is added afterwards and mixed well. It is eaten with bhakri or rice.

Threats to Wild Foods in the Region

There are several threats to the availability of wild foods in the region. The main threats are deforestation (legal and illegal); habitat destruction (due to illegal mining, road building, etc.), forest fires during summer months; uncontrolled grazing by livestock; destruction of forest foods by monkeys; over exploitation and destructive harvesting practices of people; poor regeneration of some plants; monoculture plantations of commercial tree species by the forest department; clearing of forest land for agriculture & horticulture (mainly cashew and mango); and climate change.

Felling of trees in dense forest areas not only reduces forest cover; the dry litter and open space provide ideal conditions for the rapid spread of forest fires which end up devouring large areas of forests every year. Monoculture plantations of commercial tree species such as teak, bamboo, etc. on large areas of forest land also contribute a great deal to the decline in availability of uncultivated foods.

Over exploitation and destructive harvesting (also influenced by the market) of uncultivated foods is resulting in declining availability of many uncultivated foods. This is seen particularly in the case of tubers, gums, honey, fish, crabs, tendrils, and plants that are naturally rare (e.g., eka paanachi bhaji).

Factors such as deforestation; destruction of flowers and immature fruits by monkeys; grazing and trampling by livestock; forest fires, etc., have considerably slowed down the natural regeneration that was taking place in the forest.

Threats to the Consumption of Wild Foods in the Community

There is a decline in the consumption of wild foods amongst the *Katkari* in Sindhudurg district due to several reasons:

- Increased consumption of market vegetables and food due to growing cash incomes and easier access to markets.
- Assured monthly availability of subsidized food grains through TPDS and Antyodaya Yojana.
- Reluctance on part of the *Katkari* youth to invest the time and efforts required for harvesting uncultivated foods.
- Lack of interest among Adivasi youth in exploring the forest.
- Changes in lifestyles, livelihoods, and aspirations of the *Katkari* youth.
- Increased wage labor opportunities in nearby areas which attract the *Katkari* youth.
- A change in taste among the *Katkari* children for tasty (spicy and sweet) junk foods (Kukure, Potato chips, Maggi, Biscuits, Bakery, etc.). *Katkari* children are hence refusing uncultivated foods.
- Changing tastes among the *Katkari* children staying in residential Ashram Schools preferring wheat chapatis, white rice and market vegetables.
- Dislike for the different tastes and textures of uncultivated foods among the *Katkari* children.
- Feeling of 'inferiority' among the *Katkari* in eating wild foods in front of non-Adivasi people.
- Imitation and adoption of non-Adivasi customs and cultures by the *Katkari* youth due to increased contact and communication with non-Adivasi communities
- Decline in traditional knowledge about uncultivated foods in the younger generation the *Katkari*.
- Breakdown of customs and practices assisting in imbibing of oral traditions due to increased influence of mainstream media (Hindi movies, TV serials, Hindi songs, etc.) among the *Katkari* youth.

Ceremonies or Rituals Performed Before the Harvest of Wild Foods

The *Katkari* perform some rituals before harvesting honey, seeking protection from bee stings and asking for forgiveness in destroying the home of bees.

Tera (*Colocasia*) leaves are eaten only after offering them to ancestors during *Pitri Amavasya*.

CASE STUDY 5: ROCK BEE HONEY by Snehlata Nath

Humans began collecting honey from the wild at least 8,000 years ago, as documented in cave drawings found in Valencia, Spain. Not only was honey used as a sweetener, but it was also used as an embalming agent as well as to treat wounds. Early Ayurveda texts from India have documented the use of honey for therapy and it is still used for formulations today. Honey is known to be a complete food with complex sugars, vitamins, and trace elements. It is anti-bacterial and can keep for several years if hygienically harvested and stored.

In Asia, among the indigenous feral honeybees, *Apis dorsata* or the giant rock bee produces the maximum quantity of honey. Their combs can be seen on high cliff overhangs or on tall trees. Usually, these tall tree-perches are on *Bombax ceiba*, *Dalbergia latifolia*, and various *Terminalia* sp., the wild mango, and other riverine trees of a tropical forest. Many indigenous communities harvest honey from these combs, which involves scaling great heights, the events being dramatic and requiring great courage. Honey harvesting is a special cultural activity with complex social implications and belief and accompanied by ritual and prayer.

In India, the communities known to specialize in honey hunting are the Alu Kurumba, the Jenu Kurumba, the Sholiga, the Kattunaicken, the Cholanaicken, the Chenchu and the Kolam.

For the Kurumba people of the Nilgiri region in Tamil Nadu honey is an important wild food. During the season, between mid-April and mid-July, the family goes to look for hives. Located hives are at once claimed by placing a sign on them; others do not take honey from such 'claimed' hives, which are identified with mantras and chants. Usually, honey cliffs are assigned to clans and specific honey hunters.

Twelve days before the date set for the harvest the honey hunter goes on fast and prays and bathes regularly. The honey hunting is done with his brother-in-law and a trusted friend. They believe that his wife or any other woman should not see them as they leave for honey hunting. On the day of harvest the hunter usually goes on a fast or eats very little vegetarian food. He refrains from talking and constantly invokes the spirits to keep him safe; as he ascends the ladder he sings 'bee-songs,' praising the bees and the seasons, and for the annual return of the colonies.

The brother-in-law holds one end of the rope on top of the cliff when the honey hunter swings on the rope ladder. The ladder is made of the bark of lianas and prepared during the day; the honey is harvested in the evening (dusk). Other material used in the process

of collecting the combs (apart from the ladder) are specific leaves used as the 'smoker', a knife, bamboo baskets and sticks. The brood part is cut first, and it falls off; only the brood with the young comb is eaten. The rest of the comb is collected in tins and taken to the village where it is squeezed out by hand. It is sometimes filtered through cloth. The first honey is tasted by the priest of the village after performing a ritual of offering honeycombs in four directions for the ancestors. The rest is shared in the village and partly sold to known people.

Two Kurumba honey hunters from Kotagiri region, Rasu and Jadayan, said that this ancient tradition is followed even today. Clans among the Kurumba people have demarcated cliffs and tall trees for collection. If a honey gatherer collects from a new area, he has to take the permission of the 'owner' of that ancestral heritage. Practices and norms described earlier are still followed by the young honey hunters. Commercial pressures have not eroded their traditions, which they say is due to fear of ancestors and gods. Some sacred cliffs are not harvested even now, though they are accessible.

Some things have changed, though, due to commerce. Keystone Foundation's intervention of setting up a honey-based enterprise raised the value for honey and bees wax over the years. The honey that was shared with village people and their relatives is now marketed for between Rs.350 – 400/ kg. The people sell all their honey to the enterprise which only deals in *dorsata*-honey; for their own needs they use the honey of other species such as *A.florea* and dammar bees.

Across India, wild honey is available through cooperatives, especially in states like Chhattisgarh, Karnataka, and Andhra Pradesh. The prices are generally high (Rs.250-500/kg) as there is a good demand for honey, both for retail and for the larger quantities demanded by the ayurvedic and herbal medicine industry. TRIFED has made interventions by training honey harvesters, and by providing them with gear and equipment to harvest honey hygienically. Interventions have also been made by the Khadi and Village Board to set the standards of processing honey. Most of the wild honey sold is procured by the ayurvedic industry, while a small quantity is packed and sold as retail brands.

Legally, honey collection is allowed across India as per the Forest Rights Act, 2006. However, in some Protected Areas (e.g., in the Sathyamangalam Tiger Reserve) the Forest Department discourages its collection, as honey and hives are a part of conservation. Bee colonies are for the bears and for natural pollination services. Any collection of honey in these areas is considered destructive and illegal.

CASE STUDY 6: THE RIVER THAT ONCE FED US: INDIGENOUS COMMUNITIES AND FISH OF THE KARIMPUZHA RIVER IN NILAMBUR VALLEY IN A POST FLOOD SCENARIO by G. Ramachandran

Introduction

The Karimpuzha is a major tributary of the Chaliyar river, one of the longest rivers in the state of Kerala. Karimpuzha, which means 'black river,' flows through the wilderness of New Amarambalam Forest Reserve that is a core area of Nilgiri Biosphere Reserve, a biodiversity hot spot of the Western Ghats. There are approximately 300 families belonging to four different tribal communities, namely, the Cholanaicken, Kattunaicken, Paniya and Aranandan, living on the banks of river within these forests.

The Karimpuzha has a rich diversity of freshwater fish. Around 43 different species of fishes were identified in 2010; these belong to 13 families and 28 genera, and about 50% of these are endemic to the Western Ghats. These fishes provide food and nutritional security to hundreds of people.

The Karimpuzha and the people depending on her were gravely affected by the floods that occurred in 2018 and 2019. The 2019 deluge shattered the normal life of people living in five different settlements on the banks of the river and affected the population and habitats of the freshwater fisheries of Karimpuzha as well. Three of the settlements have yet to fully recover from this natural calamity.

Indigenous Knowledge and Fish

The indigenous people living in the Nilambur's forests interact with their habitats daily and their knowledge about aquatic flora and fauna is exceptional. Many of them know where different fish species are found, how they behave, what they feed on, how to catch them and the breeding season. The people have developed different methods, tools, and traps to catch fish. Such knowledge is transferred from one generation to another either orally or by practice.

For people in most tribal settlements along the riverbanks, fishing is a daily activity, and fish a part of their diets. Families go fishing in groups or, as husband-wife teams; usually children don't accompany them as it can be unsafe. These families go out to catch fish when the water is low in the river. They block the flow of water by building small bunds across the streams or rivulets; these pools are then bailed, and the fish trapped. Groups take their own catch, but exceptions are made when someone doesn't get enough to

feed the family. Enough fish are caught daily for consumption, not for sale. During the monsoon fishing activities peak and many youngsters holding fishing lines sit along the banks of the river. This is the time some fish species go upstream to lay eggs.

Many fish species like the Kallangari, Koti, Mushi, Paral, Aaral and Mananjil are smoked and stored for up to a year. The Kallangari is one of the favorite fish across all the communities here. The Kadanna is not eaten during the rainy season by any of these communities as the meat is bitter or poisonous then; the Kadanna feed on poisonous seeds and fruits floating on the top of the water during that period. Apparently, women do not eat the Mananjil (eel); their skin is traditionally used as medicine for the treatment of asthma. The skin is dried, and the powdered form is given to patients after mixing with some ayurvedic medicines esp. with arishtam (medicinal beverage). This concoction is used to treat whooping cough in children, or for persistent cough in elders.

Tools, Methods and Practices

The Cholanaicken people living in the upstream areas of the Karimpuzha fish in the areas of Meenmutti, Paanapuzha, and Mancheeri, and the Kattunaicken and Paniyan communities living in downstream areas use different methods and strategies to catch fishes depending on the size, habitat, and habits of the fishes. Different seasons and the increase and decrease of the water levels are crucial elements in devising different fishing tactics. For instance, for mananjil, the people fishing with lines use parelmeen as bait. Some small fish are caught using bamboo traps during the monsoon. Shrimp species (chelli or konju) are used as bait for bigger fish. They use a hook on a small stick with similar bait for catching crabs. Nowadays, sardines and chicken waste are used to catch big fishes like kadanna and cheran.

The use of plant poisons to stupefy fish is also common. The mature marotti seeds, crushed with sand, are mixed in bunded water; all fish are affected by this poison, including eels; the effect of the poison may last for more than half an hour. Meenkollikuru (seeds), karanthavalli (creeper), soap-nut seeds, nadanvalli (creeper), odugu (leaves), nyetaival (leaves), kumbi (roots), and bamboo shoots, are all used as fish poisons. The pith of cycads has also been used as fish poison in the past. The Kattunaicken are excellent craftsmen and known for making bamboo-traps for fishing. Some fishes like the poosan were caught by barbs made from of umbrella spokes, used like an arrow. Pootta or andichi fish were caught by hand by cornering them near rocks and covering them with dried leaves.

Declining Fish Populations

Until a couple of years ago, most of the fish mentioned above were common. Since the floods of 2018 and 2019, many fish once commonly found in the downstream areas of the Karimpuzha have become rare. Fishes like the poosan, chakkali, mandakaruthala and maniyar (with suckers sticking on the rocks) have disappeared from the stretches of the river area where the Paniya people of Nedunkayam fished. There is a sharp decline in the population of arana, manjakoti, kuyil, kalchotti, and chelli (big shrimps) over the last ten years according to these Paniya people. The numbers of other fish like the cheran, braal, irattamukkan, olimeen, kallangari, and kannanchutti, are also decreasing in the river.

The population of shrimps (chelli) dropped when the kora pullu and naya-karumbu (or pattikarumbu) (both sedges and grasses) disappeared from the banks; also, manja-kadamba trees are missing from the banks. The poosan, koyata, irupu-koyata, kannanchutti have either disappeared or sharply declined, possibly due to sand mining downstream, which has changed the riverbeds upstream (from sand to slush to stone/pebbles) where fish can't hide or graze. Other reasons for the decline of some small fish species are the fisheries department that has introduced Tilapia, Rohu and Katla in the deeper parts of the river. And a more general reason for decline in fish numbers is over-exploitation, especially by non-Adivasi people who come to catch fish as a trade.

The unnatural floods over the past years too have severely affected the population of fish both upstream and downstream of the Karimpuzha. The pebbles and small rocky outcrops were almost completely swept away from the riverbed, and the riverbank was broken by the force of river flow. Micro-habitats of small as well as big fishes were also critically damaged, perhaps the reason for the disappearance of many of the commonly found fish. Some people still hopefully look forward to the seasons of pre-monsoon and monsoon as these fishes used to come back to their home for laying eggs during this time.



Future of Community Conservation of Fish and Their Habitats

The indigenous people have been thinking of certain conservation strategies. The restoration of riverbanks and the revamping micro-habitats of fish have become very crucial; the community understands the need for planting of various plants missing from the riverbanks. The people also want the extreme and devastating sand mining to be stopped, especially that which is carried out further downstream by non-tribal people. Maintaining the river-flow and the depth of water is also essential for preventing diseases that affect fish. The tribal communities wish the non-tribal encroachments on their traditional fishing habitats be restricted. Community-managed fish hatcheries in small artificial micro-ponds are another idea shared by the people for conserving decreasing population of fishes.



The different case studies that illustrate the points made in this paper are varied. These are all indigenous communities practicing shifting or non-rotational cultivation, and who supplement their food with what they collect from the wild. One example is about traditional knowledge that specifically concerns fish and the ongoing trends in fish availability and consumption. Another describes the changing world of honey hunters. What becomes amply clear from the case studies is that indigenous and forest dwelling peoples are under tremendous pressure to forego their food systems, be it rotational farming or the collection of food, honey, or fish from the wild. Some of these pressures are from within the communities, often due to education and new aspirations of the youth; some are from outside, as with deforestation and a sudden lack of access to traditional lands. There are other forces, like the subsidized food distribution that provides the staple of rice and wheat, or the market that demands certain crops, that makes the cultivation and consumption of some traditional foods almost untenable. In addition, as more conservation policies and their implementation become exclusionist – relocating people from ‘conservation areas’ – whole food systems are bound to be lost forever.

There is a clear intention by the government to ensure that the country is food secure. Surveys have been made about the population and the proportion of the people who require food subsidies; other region-wise statistics of ailments and nutrition deficiencies, such as malnutrition, stunting, anemia, etc., have also been gathered. Health programs are in place and reach the village through, for example, the Accredited Social Health Activist (ASHA) workers; overall these workers take care of women and children, help with encouraging sanitation, and with preventive health care. In addition, 75 % of the combined rural and urban population of the country is covered for subsidized food grains through the Targeted Public Distribution System.

However, what seems missing from the government’s food security efforts is the recognition that a large proportion of rural people supplement their diets with wild and uncultivated foods. Many of these foods have valuable nutrients and micronutrients, are accessible from the surrounding landscapes, and have been a part of traditional diets of the local communities. Such foods include fish and other aquatic fauna, greens, tubers, mushrooms, and small game: their harvest entails knowledge about the characteristics and habitats of these species. Traditional knowledge and access to locally available foods – which total more than 200 species on average³ in most village communities we are discussing – can go a long way in ensuring food security. Simultaneously, the losses in workdays due to various health deficiencies can be reduced by encouraging the use of local food and knowledge. More than other factors it is access to forests and commons in the landscape that is crucial for uncultivated foods. However, with the increase in Protected Areas, the expansion of projects and plantations, and diversions of forest lands for non-forestry purposes, areas with uncultivated foods are decreasing.

Apart from some civil society organizations there is not much interest or focus on the value of wild foods and biodiversity, nor in the traditional knowledge required for their conservation. The need of the moment is to document the information we have about wild foods and local biodiversity, and to sustainably upscale it to reach more communities across the country. This would entail selecting suitable plant species (such as certain yams) for cultivation in homesteads and as inter-crops; fish breeding in village ponds; focusing on traditional breeds of poultry; and practicing bio-diverse ways of farming. Alongside, the promotion of wild food consumption found in neighboring landscapes and the proper method of their harvest techniques, would go a long way to ensuring that India is closer to its SDG-2 goal of ending hunger.

Recommendations

The recommendations towards the revival of wild and traditional foods and the prevention of the loss of knowledge about such foods demands wide-ranging efforts. These require addressing the government, sensitizing them in most instances; campaigns to stop the further expansion of destructive projects (hydropower, coal mines, sand mining) and the pollution of water bodies; awareness programmes to reinstall confidence in the values and worth of traditional foods among the indigenous and rural youth. Some of these potential actions are given below:

1. The state driven Targeted Public Distribution System:

- Use the system to provide traditional staples (maize and millet based)
- Create awareness about the bad effects on health to uniform diets
- Create awareness about the negative effects of fast foods; develop tasty recipes for local foods

2. Reducing drudgery of processing traditional crops (millets) by introducing appropriate machinery at the local level; operations such as of drying, pounding and winnowing millets, for instance, are extremely time-consuming and depend entirely on women.

3. Mid-day meals in schools

- Include traditional foods, seasonally available local foods, also from nutrition gardens that can be established at the community level.
- Discuss possibility of introducing traditional foods in Ashram schools

4. Traditional Knowledge

- Village elders to be incorporated in village school programmes to talk about traditional foods (names, seasons, recipes, etc.) to place foods within the wider cultural context.
- Link wild food work with Adivasi tradition and culture; engage the adivasi youth and discuss the positive values of their food and other traditions.
- Create informative publications about local foods and cultures, aimed especially at the local youth to counter the feelings of inferiority with respect to the foods they eat.

5. Traditional Agriculture

- Promoting the methods, the crops, the diversity, ability to withstand climatic changes
- Are there policies within the FRA/PESA that allow/promote rotational agriculture? How can these be promoted without damage to ecology, crop cycles and diversity?
- The assertion of rights (as accorded by the Forest Rights Act and the PESA) to practice such forms of agriculture that is also the basis of knowledge related to traditional crop diversity, lesser-known crops, available wild foods found within such systems, and varieties of crops suitable for different terrains and climatic zones

6. Wild Foods

- Promote awareness about such foods, nutritional values; also posters, publications, etc.
- Those foods found within CFR spaces and incorporated in community management plans for claimed forests.
- Make plantation projects deal with, or be conscious of, wild foods.

7. Access

- Ensure access to land and water in community forest areas (also in PAs) for the collection of wild foods
- Ensure land and forest tenure security to conserve the areas with a view to food species, rivers and streams, ntfps
- Scrutinize all forest diversions that occur to make way for infrastructure projects with an eye to the potential loss of food species and the communities dependent on them

8. Conservation

- Conservation policies to be sensitized about uncultivated foods used by the community
- Rivers need to be kept free from pollution (from mining waste, chemicals from factories, etc.) with a view to the food species in the water
- Agriculture and plantations need to be steered away from chemicals that affect food species detrimentally (fish in rice fields, etc.)
- Prevent: over-harvest of wild foods, forest fires, unsustainable harvest methods for fish, crabs in

rivers, and other ntfps; which entails establishing harvest protocols (either those that traditionally exist or generating new ones)

9. Towards self-sufficiency

- Promoting cultivation of more foods locally; kitchen gardens, expanding crop diversity to include some wild foods, learning to process foods for longer storage, building suitable storage spaces

- Having locally accessible seed banks for exchanges, as also exchanges of knowledge between local communities
- Awareness programmes about wild foods available in the area that were previously untapped
- Promote alternative weekly markets to sell local/traditional foods and food products (to counter the mainstream foods sold in most village shops); assist smallholder groups to sell local foods in small quantities

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