

RESEARCH ARTICLE

Ethnobotanical species and traditional ethnocraft technology used by the Sherdukpen tribe of West Kameng district in Arunachal Pradesh, India

Rinchin Norbu Thungon, Pallabi Kalita Hui, Hui Tag*

Plant Systematics and Ethnobotanical Research Laboratory, Department of Botany, Rajiv Gandhi University, Rono Hills, Doimukh-791112, Arunachal Pradesh, India.

Department of Biotechnology, National Institute of Technology Arunachal Pradesh, Jote-791123, Papum Pare, Arunachal Pradesh, India.

*Corresponding author email: hui.tag@rgu.ac.in

Article No.: RTJBR90; Received: 05.12.2023; Peer-reviewed: 30.04.2024, Revised and Accepted: 25.05.2024; Published: 30.06.2024

Doi: <https://doi.org/10.5281/zenodo.12636573>

Abstract

Present study documents traditional ethnocraft products, technology and knowledge system of the Sherdukpen tribe residing in Shergaon and Rupa circles of West Kameng district of Arunachal Pradesh, India. The study unveils 9 angiosperm species primarily used for crafting 20 types of ethnocraft products crafted by the rural artisans. Some of the ethnocraft products were found to be utilitarian in nature, but unique to the community that help in securing rural livelihood. These ethnocraft products also symbolize and portray traditional cultural expression and community identity of the Sherdukpen. IPR protection in the form of GI tag has been felt essential to protect and promote the unique creativity knowledge, skills and innovative technology of the rural artisans.

Keyword: Traditional Ethnocraft; Rural Artisans; Angiosperm Species; Creativity; Skills; Sherdukpen Tribe; Cultural Identity; Livelihood

1. Introduction

The state of Arunachal Pradesh is rich in both cultural and biological diversity. It has been recognized as part of the Himalayan Hotspot by IUCN and endowed with significance presence of endemic flora (Myers et al., 2000), and also found to have rich representation of Indo-Malayan, Chinese, Indo-China, Himalaya, Indo-Myanmar, Brahmaputra, Deccan and Indo-Gangetic floristic elements. The rich diversity of floristic elements and vegetation type is contributed by its unique phytogeographical location characterized by undulating terrain and mountainous ranges, dissected by deep gorges and valleys, with diverse range of climate and soil types. Arunachal Pradesh harbours more than 5000 species of angiosperm flora (Mao and Dash, 2020; eFlora of India, 2023) out of which 2000 species are reported to have an ethnobotanical significance to the tribal communities (Tag et al., 2012). The state has 29 scheduled tribe groups out of which 24 tribes are constitutionally recognized schedule tribes and rest 5 tribes are yet to be enlisted in the constitutional schedule tribe order 1950 (Part XVIII), but they are recognized in the state of Arunachal Pradesh (Gazzatte of India, 2008, 2021; Dani, 2021). The Sherdukpen is one among the 24 tribal groups recognized from Arunachal Pradesh by Govt. of India enlisted under the Constitutional (Scheduled Tribes) Order, 1950 (PART XVIII), the Constitutional (Scheduled Tribes) Order, 1950 (Amendment) Act, 2008 (Act No. 014 of 2008) and the Constitutional (Scheduled Tribes) Order, 1950 (Amendment) Act, 2021 (Act No. 32 of 2021) (Gazzatte of India, 2021).

Sherdukpen are primarily found residing in Rupa and Shergaon Circles of West Kameng district of Arunachal Pradesh. They embraced Gelugpa sect of Tibetan Buddhism while the profound impact of pre-Buddhistic animistic tradition is also not uncommon among the villagers due to the influence of local Shamans which perform traditional religious activities known as Jiji (Sharma, 1961; Anonymous, 2011). Rural handicrafts products and design portray human emotions, local essence and cultural identity of the Sherdukpen, and they are also reported as an important pillar that support the rural livelihood system of the Sherdukpen community (Sharma, 1961). Perusal of literatures have revealed lack of in-depth published information related to traditional ethnocraft products of the Sherdukpen tribe. Present investigation explored

and documented the botanical resources used in the traditional handicraft products, indigenous tools and technology used in the crafting of various handicraft products in rural localities of the Sherdukpen tribe residing in the West Kameng district of Arunachal Pradesh.

2. Materials and methods

2.1 Study site and ethnic community

The Sherdukpen dominated area in West Kameng district of Arunachal Pradesh is located within a geographical coordinate of 91°30' to 92°40' East Longitudes and 26°54' to 28°01' North latitude with elevation ranging from 1200 – 3500 m from mean Sea level (Figure 1). The Sherdukpen are mainly found settled in Rupa circle (altitude 1954 – 3000 m) and Shergaon circle (altitude 1408 – 3500 m). They belonging to Mongoloid racial stocks and speaks Tibeto-Burman dialect, and mostly follow Buddhism but also follow pre-Buddhistic animistic ritual tradition called Jiji influenced by the local Shamans, and some of them worship Shakti cult of Hinduism and Lamaism. The Sherdukpen tribe has a total population 9,663 persons which accounts for 11.51% of the total population (83,947 persons) recorded from West Kameng district of Arunachal Pradesh (Census of India, 2011). Majority Sherdukpen artisans practices traditional agriculture, animal husbandry and fishery, and reported to possess rich traditional knowledge related to utilization of bioresources for crafting ethnocrafts products, housing, food, medicinal, and other cultural materials (Sharma, 1961; Anonymous, 2011).

2.2 Survey method

Ethnobotanical survey was conducted in the month of June and August 2023 in the Sherdukpen dominated area of West Kameng district of Arunachal Pradesh for collection of ethnocraft products and plant species used in rural ethnocrafts following the method suggested by Rao and Jain (1976). A total of 91 informants (70 male and 21 female) were interviewed covering 80 household located in the 15 villages namely: Shergaon, Rupa, Jigaon, Mushaksing, Chillipam, Lumbaktang, Thungree, Mukuthing, Membachar,

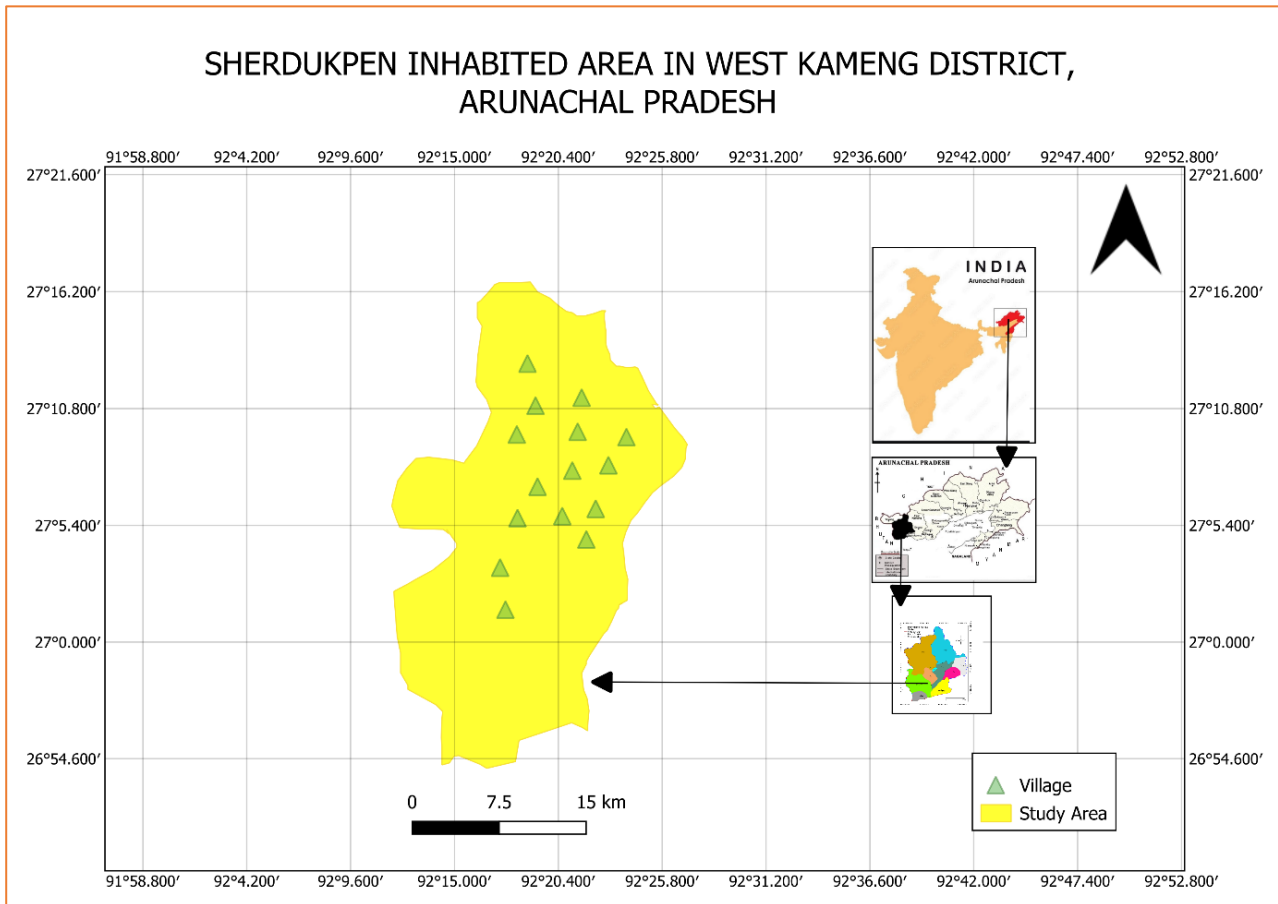


Figure 1. Map showing Sherdukpen inhabited villages in West Kameng district of Arunachal Pradesh.

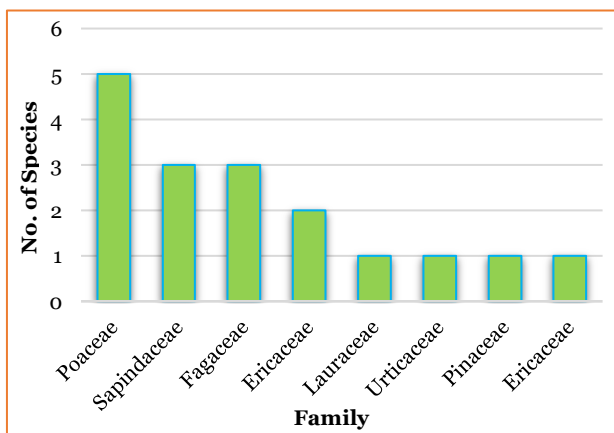


Figure 2. Graph showing number of plant species reported under 8 plant families traditionally used among the Sherdukpen tribe of W/Kameng district of Arunachal Pradesh in preparation of ethnocraft items.

Garbow, Brokpublang, Jungpam, Dikshipam, Dukumpani, Yokmupam.

2.3 Collection of ethnocraft products

During field interview, only elderly people of the Sherdukpen village belonging to age group 30 – 80 years were interviewed for gathering the traditional knowledge related to crafting of different types of ethnocrafts products. Majority of the ethnocraft products and related information were collected from Shergaon, Rupa, Jigaon, Mushaksing, Chillipam, Lumbaktang, Thungree, Mukuthing villages. The botanical resources, traditional knowledge and technology related to crafting and utilization of ethnocraft products were recorded in the field note book. The field collection code was maintained for each ethnocraft product collected from the local residents.

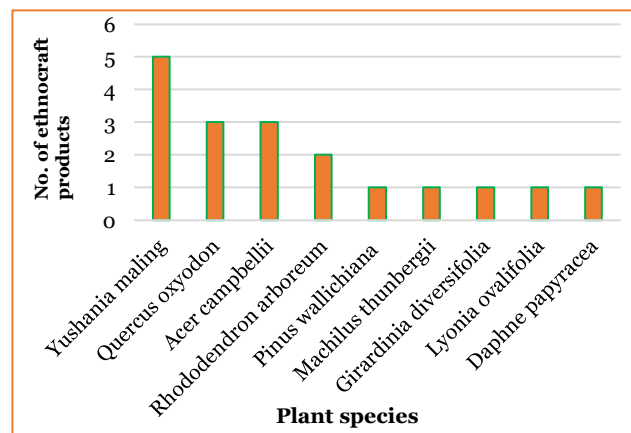


Figure 3. Graph showing plant species (n=9) and number of ethnocraft items (n=19) prepared by local artisans of Sherdukpen tribe of W/Kameng district of Arunachal Pradesh.

2.4. Collection and identification of plant species used in ethnocraft

The ethnobotanical species used in ethnocraft products were collected from the community forest area by transect walk with knowledgeable local artisans and geotagged the location of plant species using **GPS Garmin Montana 680**. Digital photographs were taken for each species and part harvest using digital Camera (**Canon 1500D**). The traditional crafting technology, plant parts harvest and used in crafting of ethnocraft products were recorded in the field notebook. The plant species were identified by consulting standard taxonomic literatures such as *Materials for the Flora of Arunachal Pradesh Vol. I* (Chowdhery et al., 1996), *Flora of Kurung Kumey district, Arunachal Pradesh* (Dash and Paramjit, 2017), *Flora of Bhutan Vol 1 & 2* (Gierson and Long, 1983, 2001), *e-Flora of India* (2023), *e-Flora of China* and *e-Herbarium of Kew*, thesis and research papers. The accepted names of each species were verified in the POWO (<https://powo.science.kew.org/>). The voucher specimens were

deposited in the HAU, Department of Botany, Rajiv Gandhi University, Rono Hills, Doimukh, Arunachal Pradesh for future references.

3. Result

3.1 Diversity of plants species used in ethnocraft products

Present investigation has reported 9 angiosperm species which were found to be widely used among the Sherdukpen tribe of West Kameng district of Arunachal Pradesh in crafting ethnocraft product for household and other utility. These ethnobotanically significant plant species used in ethnocrafts are: *Acer campbellii* (*Phlomu hing*), *Rhododendron arboretum* (*Khandak hing*), *Yushania maling* (*Yam mah*), *Machilus thunbergii* (*Rhee hing*), *Girardinia diversifolia* (*Ihi pehnap*), *Quercus oxyodon* (*Thongpu hing*) *Lyonia ovalifolia* (*Hing seeh*), *Pinus wallichiana* (*Bichi hing*), belonging to family Spindaceae, Ericaceae, Poaceae, Lauraceae, Urticaceae, Fagaceae, Ericaceae and Pinaceae respectively (Figure 2 and 3). The collection code, traditional uses and types of ethnocraft products designed are presented in Table 1 and digital photographs of each plant species used for designing and crafting ethnocraft products and traditional uses are provided in Figure 4 – 10 for easy identification.

It was observed that the ethnocraft products designed were mostly utilitarian in nature and found to be practiced among the few skilled artisans of the Sherdukpen villages for sustaining their rural livelihood. Majority of the ethnocraft products reported in present studies were collected from the villages. The types of ethnocraft products of botanical origin popularly crafted and used among the Sherdukpen community for supporting livelihood system were mostly wooden grinder, bowl, bamboo tiffin, fishing trap, basket, pounding tool, local bag, maize storage container, agriculture implements such as plough, scythe, dibbler, ploughing handle, and traditional noodle pressing machine, traditional mask used for ritual purposes.

3.3. Types of traditional ethnocraft products

Sherdukpen community are blessed with rich floristic diversity which they used them for crafting variety of traditional handicraft products of ecofriendly nature. Rural artisans have the rich possession of unique skills and technology for wood curving and crafting of bamboo products for household uses and commercial purposes. In the present study, a total of 20 ethnocraft products have been collected and recorded which were mostly made of wood and bamboo resources (Table 1, Figure 3). The ethnocraft products with high utility value recorded from study sites are: Togchi (wooden grinder), Gorbi (Wooden bowl), Banchung (Bamboo/cane tiffin carrier), Hobe (fishing trap), Tung (Basket), Khetok (apparatus for making beer), Yung (conical basket), Chom/Changke (Pounding machine), Bogre (local bag), Ganga/Thongpu (Plough), Chahakhi (Dibbler), Brachok (Scythe), Shartok (traditional mini table), Pheetoh luhkang (traditional noodle pressing tool), Nodop gham (Millet storage container), Boh (traditional mask), Flu (Axe), Chhampok (Weeder), Sipsho (traditional spoon). Highest number of ethnocraft products (5) were found to be crafted from the local bamboo species *Yushania maling* (Poaceae) followed with *Quercus oxyodon* and *Acer campbellii* with 3 product each, *Rhododendron arboretum* with 2 products, while only single ethnocraft product was recorded for *Pinus wallichiana*, *Machilus thunbergia*, *Girardinia diversifolia*, *Lyonia ovalifolia* and *Daphne papyracea*.

3.4. Methods of crafting

The village artisans of the Sherdukpen community employs various traditional skills, tools and techniques and also invest sufficient time and energy to bring out well polished and artistic ethnocraft products of household utility and for commercial purposes.

3.4.1. Togchi

Togchi is a local mortar and pestle which is typically used as a wooden grinder. *Rhododendron arboretum*, locally known as *Khandak hing*, and its matured wood is used to make traditional wooden grinder. A matured wood of *Rhododendron arboreum* is cutdown and allowed to dry for a season. Then it is cut into small pieces and curved into a perfect design. It is traditionally used in crushing, grinding pepper, chillis, seeds and garlic.

3.4.2. Gorbi

Gorbi is a local wooden bowl crafted from wood of *Rhododendron arboreum*. It is typically designed in curved circular shape which is used in serving soup or chillis, food items and even used for offering ritual items during prayers and worship of the native Gods.

3.4.3. Bogre

Bogre is a traditional local bag which is wear by Sherdukpen people. It has a Swastika symbol in the centre and also crafted in a variegated patterns that depicts cultural animal and state flag such as eyes of yaks or pigeons, face of a sheep, and Tibetan flag. Sometimes, scenes of arrow - shooting are also depicted and borders of the cloth are usually in designed in a multicoloured pattern.

The yarn is extracted from the stem bark of stinging plant *Girardinia diversifolia*, locally known as *Ihi pehnap*. The local yarn prepared from *Ihi pehnap* is reported to have high tensile strength, strong and durable. Local womenfolk usually cover their hands with cloth to remove the stem cover of *Ihi pehnap*, which is then soaked in boiling water, and washed several times till the organic content decomposes and becomes pulpy. The fibre is then extracted and, sundried, and it is spun with the help of bamboo spindle and fly wheel to make a cloth.

3.4.4. Banchung

Banchung is a traditional Bamboo tiffin carrier which is also used as traditional plate. A bamboo species, *Yushania maling*, locally known as *Yam mah* is primarily used as a principal raw material to craft ecofriendly household utensil products. The outer green layer of the culm is removed which is then woven into beautiful design. It has two parts, that is, the upper lid and the lower base. It is generally used in serving and storing food, and also used during traditional cultural festivals.

3.4.5. Hobe

Hobe is a traditional fishing trap crafted from *Yushania maling* which is primarily used for catching fish from the streams and rivers. They are typically designed in a conical shape and closed at lower end. The traps are placed in the stream with their mouths facing the upward direction of the flowing stream and secured in the position with bamboo strips, and it is hemmed with stones to avoid drifting away by water current of stream. The most common method of catching fish from the river in large scale is by damming the stream and small rivers with logs and stones, and diverting it to a dry land on a higher level. The water surges forward and then subside, leaving the fish on dry ground where they are easily caught by the fishermen.

3.4.6. Tung

Tung is a rectangular shaped basket designed from bamboo *Yushania maling*. It is traditionally used as a storage for millets and maize and ritual items. The matured stem of bamboo is made to split longitudinally to obtain thin strips, and then they are used for crafting rectangular shaped basket for household utility.

3.4.7. Khetok

It is the local apparatus specifically crafted for making rice and fruit beer, which is designed from a culm of bamboo. They are of two types: cylindrical flask and conical sieve. Traditional beer which is locally known as *phak* is fermented in *khetok*. The fermented item is placed in a conical sieve, squeezed and then filtered in a cylindrical bamboo flask. The rubber extract is used to seal from inside of the conical flask to prevent leakage.

3.4.8. Yung

It is a conical basket made of bamboo which is carried in the backside for carrying firewood and vegetables.

3.4.9. Chom and Changke

It is equivalent of a mortar and pestle which is important tools for pounding grain. It is usually crafted from the wood of plant *Machilus thunbergii*, locally known as *Rhee hing*. Local artisans used wood to curve the cylindrical mortar and the about 5 feet long pestle. It is generally used for pounding and grinding millets, cereals and maize grains into powder form.



Figure 4. A. *Rhododendron arboreum*; B. Togchi (Wooden grinder); C. Gorbi (Wooden Bowl); and Togchi top view.



Figure 5. A. *Yushania maling*; B. Banchung (Bamboo tiffin carrier) and plate; C. Hobe (Fishing trap); D. Tung (Basket); E. Yung (a conical basket) F-G. Khetok (apparatus for making beer)



Figure 6. A. *Girardinia diversifolia*; B. Bogre – a local handmade bag crafted from the fiber *Girardinia diversifolia*; C. Person wearing the Bogre in the back side of his body.

Figure 6. D. *Pinus wallichiana*; D-D6. Various uses of timber of *Pinus wallichiana*: Nodop gham (D4) –a local rice store, traditional huts (D5) for dwelling and Pheroh (local stool) of the Sherdukpen tribe of W/Kameng district of Arunachal Pradesh.



Figure 7. A. *Quercus oxyodon*; B. Agriculture tools; C. Ganga (Plough); D. Thongpu (Wooden sharp pointed dibbler); E. Chhakhi (Dibbler); F. Chhampok (Weeder); G. Brachok (Scythe)



Figure 8. A-A1 *Acer campbellii*; B. Local dining table (*Shartok*); C & D Traditional pressing tools for making noodle (*Pheetoh luhkang*); E & F. Local mask design (*Boh*); G. Interaction with local informants



Figure 9. A-A2. *Lyonia ovalifolia*; A1. Flu (Axe handle made up of lyonia wood); A2. Bhakshing (Dibbler with sharp end); B – B3. *Daphne papyracea*, stem and floral parts; C. Local handmade paper crafted from bark fibre of *Daphne papyracea*.



Figure 10. A. *Machilus thunbergii*; B. Chom side view B1 Chom changke (Pounding tool); C. Sipsho (Traditional spoon)

Table 1. Checklist of plant species used in the preparation of ethnocraft items among the Sherdukpen tribe of West Kameng district in Arunachal Pradesh, India.

SN	Botanical name/Family/Collection No./Geocoordinate	Local name	Habit & habitat	Plant part used	Type of ethnocraft	Local name & Code of ethnocraft product
1	<i>Rhododendron arboreum</i> Sm. [Ericaceae] Collection: RNT01/HAU/10.03.2023/Shergao/2103 m 27°07'22"N; 92°15'14"E	Khandak hing	Tree; terrestrial	Stem (Wood)	i. Wooden grinder ii. Wooden Bowl	Togchi (EC-01) Gorbi (EC-02)
2	<i>Yushania maling</i> (Gamble) R. B. Majumdar & Karthik [Poaceae] Collection: RNT200/HAU/15.06.2023/Shergao/2137 m 27°06'57" N and 92°12'50"E	Yam mah	Shrub; terrestrial	Stem	i. Bamboo/Cane tiffin carrier ii. Fishing trap iii. Basket iv. Appliances for making beer v. A conical basket	Banchung (EC-15) Hobe (EC-16) Tung (EC-17) Khetok (EC-18) Yung (EC-19)
3	<i>Machilus thumbergii</i> Siebold & Zucc. [Lauraceae] Collection: RNT172/HAU/25.06.2023/Jigao/1750 m 27°11'15" N and 92°19'43"E	Rhee hing	Tree; terrestrial	Stem	i. Pounding machine ii. Traditional stirring spoon	Chom, change (EC-10) Sipsho (EC-11)
4	<i>Girardinia diversifolia</i> (Link) Friis [Urticaceae] Collection: RNT175/HAU/27.06.2023/Rupa/1906 m 27°11'42" N and 92°15'41"E	Ihi pehnap	Herb; terrestrial	Stem	Local bag	Bogre (EC-08)
5	<i>Quercus oxyodon</i> Miq. [Fagaceae] Collection: RNT172/HAU/02.08.2023/Mushaksing/2032 m 27°13'15" N and 92°17'43"E	Thongpu hing	Tree; terrestrial	Stem	i. Agriculture tool, plough ii. Dibbler iii. Scythe iv. Weeder	Ganga/Thongpu (EC-04) Chhakhi (EC-05) Brachok (EC-06) Chhampok (EC-07)
6	<i>Pinus uallichiana</i> A.B. Jackson [Pinaceae] Collection: RNT06/HAU/05.08.2023/Shergao/2231 m 27°08'22"N and 92°12'14"E	Bichi hing	Tree; terrestrial	Stem (Wood)	Storage container	Nodop gham (EC-3)
7	<i>Acer campbellii</i> Hook.f. & Thomson ex Hiern [Sapindaceae] Collection: RNT174/HAU/10.08.2023/Membachur/2089 m 27°12'11"N and 92°17'23"E	Phlomu hing	Tree; terrestrial	Stem	i. Small traditional table ii. Traditional noodle pressing tool iii. Traditional mask	Shartok (EC-12) Pheetoh luhkang (EC-13) Boa (EC-14)
8	<i>Lyonia ovalifolia</i> (Wall.) Drude [Ericaceae] Collection: RNT122/HAU/17.08.2023/Shergao/2103 m 27°10'22"N and 92°11'14"E	Hing seeh	Tree; terrestrial	stem	Axe	Flu (EC-09)
9	<i>Daphne papyracea</i> Wall. ex G. Don [Thymelaeaceae] Collection: RNT210/HAU/18.08.2023/Shergao/2105 m 27°11'21"N and 92°11'16"E	Sheeghi hing	Shrub; terrestrial	Stem bark	Handmade paper used for writing Buddhist scriptures.	Kaso (EC-20)

3.4.10. Ganga

It is a plough made from the wood of *Quercus oxyodon*, locally known as *Thongpu hing*. The wood is curved to a sharp pointed triangular shaped end which is attached with 5 - 6 feet long plough. It is drawn by a pair of oxen and is used for ploughing the agri cultural field.

3.4.11. Chhakhi

It is a dibbler which consists of stout wooden handle and iron blade which is typically used for surface cleaning, mulching and digging of the hard soil in the agricultural field.

3.4.12. Scynthe

It is a harvesting sickle wherein handle is made up of wood which is primarily used as implement for crop harvesting and removal of weeds in an agricultural field.

3.4.13. Chhampok

It is a wooden implement with the pointed end which is basically used for weeding, scraping and drilling small holes in the fields. Maize seeds are dropped into these small holes which are then filled with soil by slight sweeping of feet.

3.4.14. Nodop gham

It is a wooden rectangular box used as a storage of rice, millets and maize. It is crafted from a matured wood of *Pinus wallichiana*, locally known as *Bichi hing*. Timber is mainly used for crafting *nodop gham*.

3.4.15. Shartok

It is a small traditional dining table used in the local kitchen of Sherdukpen house which is crafted from seasoned wood of *Acer campbellii*, locally known as *Phlomu hing*.

3.4.16. Pheetoh luhkang

It is a traditional noodle pressing tool which is made from wood of *Acer campbellii*. It is crafted in the form of wooden basal box with small holes at the base and a pressing wood handle with a solid box to fix the basal end of the wooden box. Kneaded flour is place in a wooden box, and then the wooden handle pressure is applied so that the noodle is released at the small holes of the wooden box at basal end.

3.4.17. Boh

Boh is a traditional mask which is specifically used in the traditional ritual and cultural festival. Wood of *Acer campbellii* is crafted by skilled artisans which ultimately take the shape of a wearable musk designed in a multicoloured pattern.

3.4.18. Flu

It is an axe used for felling of trees and branches. The handle of axe is basically made of *Acer campbellii* wood which tough and resilient.

3.4.19. Kaso

Kaso is a local handmade paper crafted from fibre obtained from the stem bark of *Daphne papyracea*, locally known as *Sheeghi hing*. The handmade paper is used for writing Buddhist and Tibetan script. Buddhist and Tibetan scriptures were found to be mainly written on handmade paper. The stem bark of *Daphne papyracea* is removed in a large quantity and they are soaked in a boiling water, and left for about half a day to dissolve and disintegrate. After that they are crushed properly, and the liquid extracts are filtered off with cold water, sieved and allow it to cool. The leftover fibres are dried, compacted and crafted into thin sheet paper of over 100 GSM.

3.5. Innovative technology and uniqueness

Handmade ethnocraft products reported in present study were found to be attractive, decorative, unique and ecofriendly nature. The traditional cup, plate, tiffin, bags, agricultural implements were all found to be decorative, user friendly and biodegradable. Sherdukpen mostly prefer natural resources for the crafting of household products such as wooden grinder, wooden bowl, traditional local bag, fishing trap, basket, apparatus for making beer, and pounding tool etc. which need IPR protection.

4. Discussion

Designing and use of ethnocraft items from available botanical resources of a given traditional ecological landscape have been

reported to be an integral part of the traditional cultural practices and belief system among the tribal communities of North East India (Tag and Das, 2007; Ranjay et al., 2008). Handicraft culture is popular among the tribal communities which symbolize their close co-existence with nature, traditional ethos and local values. Handicraft items are one of a kind which cannot be crafted by a modern machine. Craftsmanship is a creativity, ingenuity and skills born out of creative thought of an artisans which truly portray human emotions and traditional cultural expression of a given cultural community. It plays a vital role in local employment generation and boost livelihood opportunities among the tribal communities (Tag et al., 2008; Sudhakar et al., 2008). Earlier, Sharma (1961) had reported about ethnic origin, language, religious practices and belief system, some handicraft products used by the Sherdukpen tribe of Kameng Frontier Division of NFEA region. In the present study, it was observed that the creativity and craftsmanship of the rural artisans helps in maintaining cultural identity of the Sherdukpen tribe. Sherdukpen artisans in rural areas were mostly a marginal farmer but they sustain their economy and livelihood through agriculture, animal husbandry, fishery and by selling out their ethnocraft products born out of their creativity and ingenuity. Govt support is needed to help them flourish their creativity, unique talents and skills that would boost their economic and livelihood opportunities.

5. Conclusion

Present study unveiled some important ethnobotanical resources used in traditional ethnocraft product development and utilization among the Sherdukpen artisans of the West Kameng district of Arunachal Pradesh. The 20 types of ethnocraft products created from 9 species of angiosperms have been found unique and utilitarian in nature which contributes to the preservation of traditional local culture and promote livelihood security among the Sherdukpen. However, majority of the rural artisans, their creative ideas and skills are at receiving end due to lack of support and patronization. Protection of their unique talents, technology and skills through GI tag is essential to prevent fraudulent practices which could harm their unique technology, traditional knowledge system and economy. Promotion through purchasing these attractive and decorative traditional ethnocraft products could help in sustain the traditional cultural expression and community identity, boost rural economy and livelihood security of the Sherdukpen to a great extent.

Acknowledgement

Authors are thankful to Rajiv Gandhi University, Rono Hills, Doimukh, Arunachal Pradesh for Lab and logistic support. The first author (RNT) is thankful to CSIR New Delhi for Fellowship support through JRF (NET) fellowship scheme. Authors expresses deep sense of gratitude to rural artisans of Shergaon and Rupa circles of West Kameng district of Arunachal Pradesh for sharing their valuable traditional ethnocraft knowledge system.

Author's contribution

Rinchin Norbu Thungon – Field survey, documentation and first draft of the manuscript. Hui Tag – research design, supervision, concept and final manuscript draft and communication.

Declaration of conflict of interest

Authors have no conflict of interest.

References

- Anonymous. 2011. *Statistical abstract of Arunachal Pradesh*. Directorate of Economics and Statistics, Govt. of Arunachal Pradesh, Itanagar.
- Census of India. 2011. Arunachal Pradesh - Series 13 - Part XII A - District Census Handbook, West Kameng.
- Chowdhery HJ, Giri GS, Pal GD, Pramanik A, Das SK in: PK Hajra et al (Eds.). 1996. *Materials for the Flora of Arunachal Pradesh*, Vol.1. Botanical Survey of India, Brabourne Road, Kolkata.
- Dani S. 2021. How many tribes are there in Arunachal Pradesh? The Arunachal Times, 12 August 2021 Issue.
- eFlora of India. 2023. eflora of India - Database of plants of Indian subcontinent. <https://efloraofindia.com/>
- Gazette of India. 2008. the Constitutional (Scheduled Tribes) Order, 1950 (Amendment) Act, 2008 (Act No. 014 of 2008). In: *The Gazette of India, Extraordinary*, PART II, SECTION I, dated 01.04.2008. Published by Ministry of Law & Justice, Govt. of India.

- Gazette of India. 2021. Constitutional (Scheduled Tribes) Order, 1950 (Amendment) Act, 2021 (Act No. 32 of 2021). In: *The Gazette of India, Extraordinary, PART II, SECTION I* (No. 43), Dated 13 August 2021. Published by Ministry of Law & Justice, Govt. of India.
- Gierson AJC and Long DG. 1983. *Flora of Bhutan*, Vol.1. Royal Botanic Gardens, Edinburgh.
- Grierson AJC and Long DG. 2001. *Flora of Bhutan*, Vol 2. Royal Botanic Gardens, Edinburgh.
- Mao AA and Dash SS. 2020. *Flowering Plants of India an Annotated Checklist (Dicotyledons)*, Vol 1, Pp. 1-970. Botanical Survey of India.
- Myers N, Mittermier RA, Mittermier CG, da Fonseca GAB and Kent J. 2000. Biodiversity hotspots for conservation priorities. *Nature* 40: 853 – 858.
- Ranjay KS, Anamika S, Tag H and Adi community. 2008. Traditional Skills among the Adi tribe of Arunachal Pradesh. *Indian Journal of Traditional Knowledge* 7(1): 27-36.
- Reddy KN, Chiranjibi P, Reddy CS, Murthy EN and Raju VS. 2008. Plants used in traditional handicrafts in North eastern Andhra Pradesh. *Indian Journal of Traditional Knowledge* 7(1):162-165.
- Sharma RRP. 1961. *The Sherdukpens*. PC Dutta for the Research Department - Advisor Secretariat, Shillong, 1961.
- Tag H and Das AK. 2007. Significant Plants used by the Nyishi tribe of Arunachal Pradesh, Northeast India. In: Das AP and Pandey AK (Eds) *Advance in Ethnobotany*, Pp. 43-50. Bishen Singh and Mahindra Pal Singh, Dehra Dun.
- Tag H, Das AK, Pallabi H, Ranjay KS, Palit G. 2008. Botanical resources used in traditional wood curving industry among the Wancho tribe of Arunachal Pradesh. *Indian Journal of Traditional Knowledge* 7(1): 148 - 156.
- Tag H, Pallabi K, Dwivedi P, Das AK, Namsa ND. 2012. Herbal medicine used in the treatment of diabetes mellitus in Arunachal Himalaya, Northeast, India. *Journal of Ethnopharmacology* 141(3): 786-795.

