

# Forestry in Ancient India: Some Literary Evidences on Productive and Protective Aspects

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## Abstract

*This paper outlines certain ideas of forest conservation and sustainable management ingrained in pre-historic India. Apparently, both productive as well as protective aspects of forest vegetation were emphasized during the Vedic period (~ 4500 and 1800 BC; c. 8000–1000 BC – eds.). In particular, the religious texts such as Aranyakas (“forest” works), Upanishad, and Smritis contain many descriptions on the uses and management of forests, and highlight sustainability as an implicit theme. According to the Vedic traditions, every village will attain wholeness only when certain types of forests are present. Some of these are, however, equivalent to the ‘protected areas’ and ‘production forests’ of today. The concept of participatory forest management, an important forest management paradigm today, also was prevalent in ancient India, as illustrated by the example of a village committee overseeing the maintenance of forests. During the late Vedic period (c. 500 BC; 1000 BC – eds.) with the emergence of agriculture as the dominant economic activity, the concept of cultural landscapes such as sacred forests and groves, sacred corridors, and a variety of ethnoforestry practices evolved, which continued into the post-Vedic period (c. 1000 to 200 BC). The Himalayas since Vedic times also have been home for an array of medicinal plants and other resources. Furthermore, several Indian trees and shrubs were regarded as sacred because of their medicinal/aesthetic/natural qualities as well as their proximity to a particular deity. Religion was probably used in ancient India as a tool to protect nature and natural resources and several instances of worshipping the trees have been reported from different parts of the country, besides a wide range of ethnoforestry practices. All these probably highlight the conservation ethos of ancient Indian people.*

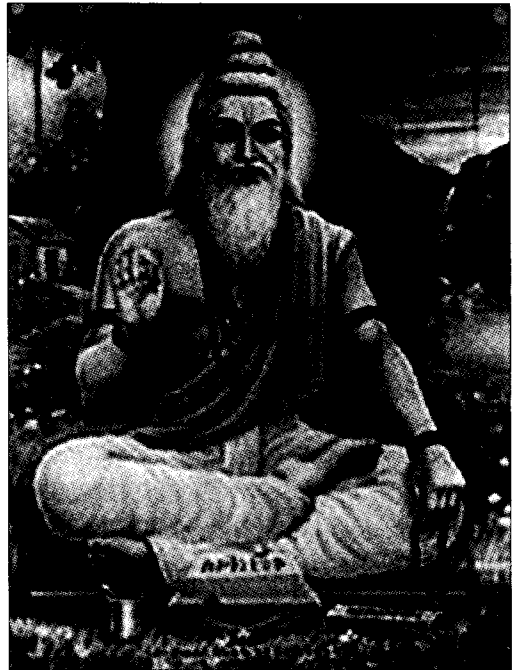
Despite the prevailing notion that forestry as a “science” and “practice” originated in the Western Europe and further advanced in North America (Lewis, 2005), the

principles of forest conservation and sustainable management were well entrenched in the pre-historic India. Forestry traditions have been documented

in the religious texts of this country for long. For example, the Vedas (<http://en.wikipedia.org/wiki/Vedas>; last accessed on 11 February 2008) contain several descriptions on the uses and management of forests. Although no consensus on when the Vedas were cognized, the timeline of Vedic civilization, which gave rise to these scriptures, is thought to be between 4500 and 1800 BC ([http://www.haryana-online.com/History/vedic\\_culture.htm](http://www.haryana-online.com/History/vedic_culture.htm); last accessed on 12 February 2008; 8000–1000 BC – eds.). Starting with the days of Vedas and extending into the post-Vedic and Puranic times (200 BC to 100 AD) (<http://www.ejvs.laurasianacademy.com/ejvs1006/1006.txt>; last accessed on 8 February 2008), environment consciousness, besides natural resource and biodiversity conservation, were intrinsic features of Hindu religious rituals and practices. Both productive as well as protective aspects of forest vegetation were emphasized in Vedic forestry. Some glimpses of production, conservation, and management of forests in India during the Vedic period, late Vedic period, and the Puranic periods are unraveled here.

## Vedas or “the Books of Knowledge”

Vedas are the sacred Sanskrit texts of Hinduism. According to some scholars, the great sage Ved Vyasa (Fig. 1) codified and put the Vedas into writing at the beginning of *Kali Yuga* (3102 BC) ([http://www.encyclopediaofauthentichinduism.org/articles/51\\_the\\_bhartiya\\_chronology.htm](http://www.encyclopediaofauthentichinduism.org/articles/51_the_bhartiya_chronology.htm); last accessed on 8 February 2008). These are the Shruti Vedas, which include: Rig



**Figure 1.** Sage Ved Vyasa (Source: [http://blog.jyotish.holy.jp/images/photo\\_ved\\_vyasa.jpg](http://blog.jyotish.holy.jp/images/photo_ved_vyasa.jpg); last accessed on 8 February 2008).

Veda (Wisdom of the Verses), Sama Veda (Wisdom of the Chants), Yajur Veda (Wisdom of the Sacrificial Formulas), and Atharva Veda (Wisdom of the *Atharvan* Priests). Initially, the Shruti Vedas consisted of four collections of *mantras* (*Samhitas*), each associated with a particular priest or aspect of ritual. Over centuries, three kinds of additional literature were attached to each of the *Samhitas*: the *Brahmanas* (discussions of the ritual), *Aranyakas* (books studied in the forest), and *Upanishads* or the philosophical writings (Bloomfield, 1908; Witzel, 2003).

Of these, *Aranyakas* or the “forest” works (*aranya* in Sanskrit means ‘forest’ and

*aranya* means 'in the forest') and the Upanishad '*Brhadaranya*' (translated as "Great Forest Text") are particularly important from the perspective of forestry traditions (Pande, 1994; Keith, 2005; Witzel, 2005). *Aranyakas* in general discussed the rites deemed 'not suitable' for the village. In other words, these are treatises for *sadhus* or *vanaprasthas* [third spiritual stage (*asrama*) in the *varnasrama* system: <http://en.wikipedia.org/wiki/Vanaprastha>; last accessed on 8 February 2008] living in the wilderness as hermits experimenting with detachment from material life. Although *aranyakas* provide the theological foundations of early Hinduism, which is outside the realm of forestry, some of these descriptions are relevant to indigenous ecological knowledge, on which there is considerable interest now (e.g., Gadgil *et al.*, 1998; Folke, 2004). Attempts have been also made recently to evaluate the cultural values as a social mechanism behind the traditional practices (Berkes *et al.*, 2000).

Smriti Vedas or the Vedas for *Kali Yuga* constitute another branch of Hindu religious literature. It includes the two epic poems: Mahabharata (composed by sage Ved Vyasa) and Ramayana (composed by sage

Valmiki), besides the many *Puranas*; all these contain umpteen references to forests. According to these, the land originally was under tree cover, but as the human settlements expanded, trees were cleared to make way for cultivation. The legend is that King Prithu milked the earth (*Prithvi*) in the form of a cow (*Shri Mad-Bhaagvat Jee, Skandh 4: Chapters 17–18*), signifying the start of agriculture. Prithu is also credited with the feat of clearing forests and establishing the organized agricultural settlements and townships.

## Nature conservation ethos in ancient India

Sustainability was ingrained in the thought processes of early Indians as evident from the teachings of Vedas. For example, the Atharva Veda (Chand, 1997) hymn 12.1.11 reads:

"O Earth! Pleasant be thy hills, snow-clad mountains and forests; O numerous coloured, firm and protected Earth! On this earth I stand, undefeated, unslain, unhurt."

Another hymn from Atharva Veda (12.1.35) reads:

"Whatever I dig out from you, O Earth! May that have quick regeneration again; may we not damage thy vital habitat and heart."

## Forests and forestry during the Vedic and late Vedic periods

The Vedic traditions affirm that every village will be complete only when certain categories of forest vegetation or trees (e.g.,

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*Mahavan, Shrivān, and Tapovan*) are preserved in and around its territory (Prime, 2002). Of these, *Mahavan*, or ‘the great natural forest’, is perhaps equivalent to the ‘protected areas’ of today; it adjoins the village and provides a place where all species can coexist. Once some of the original forest was cleared, the Vedic culture also necessitated that another kind of forest be established in its place (Banwari, 2002 in Prime, 2002). This is equivalent to today’s ‘production forests’ and it provides the essential goods and services to humans and livestock (e.g., fodder, timber, roots, and herbs, besides maintaining soil fertility, air and water quality as well as providing shelter). Traditionally, these are called *Shrivān* or the ‘forest of prosperity’ or ‘forest of wealth’. The *Shrivān* could be in the form of monospecific stands (plantations) or species mixtures (agroforests). The third category of forests is *Tapovan*, or the ‘forest of religion’ – the home of sages. Being sacred, no animal or tree could be harmed in these forests. This kind of forest is natural and untended, but is specifically set aside as a place for the practice of religion.

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During the Vedic age, each village was also responsible through its *panchayat*, or committee of five elders, for maintaining the forests in its own territory (Banwari, 2002 in Prime, 2002). Implicit in this is the concept of participatory forest management, which forms a main component of the forest management paradigm today. Also, no village would be complete without its woodlands in and around the houses. Every village also must have a cluster of five great trees; *panchavati* symbolizing the five primary elements: earth, water, fire, air, and ‘ether’ – the totality of everything.

The shift from early to later Vedic period also signified the emergence of agriculture as the dominant economic activity with a corresponding decline in cattle rearing. The late Vedic period from c. 500 BC (c. 1000 BC – eds.) also merges smoothly with the period of the Middle kingdoms (230 BC–1279 AD). Numerous descriptions of trees and groves exemplifying the bond between Indian people and trees are available in the writings from this period. Varahamihira’s *Brhat Samhita* (c. 700 AD; Bhat, 1981), which describes the relationships between irrigation tanks and trees, is probably the most important in this respect. Varahamihira

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provided detailed technical instructions on tank construction and prescription on species to be planted on the embankments. According to him, the shoreline (banks) of the tanks should be shaded (planted) with the mixed stands of *Terminalia arjuna* (arjun), *Ficus benghalensis* (banyan), *Mangifera indica* (mango), *Ficus religiosa* (pipal), *Nauclea orientalis*, *Syzygium cumini* (Java plum), *Mitragyna parvifolia*, *Borassus flabellifer* (palmyra palm), *Saraca asoka* (Asoka tree), *Madhuca indica* (mahua), *Mimusops elengi* (Spanish cherry), among others (54.119). Agriculture by Parashara (Krishi-Parashara; 400 BC) (Sadhale, 1999); Laws of Manu or Manusmriti (c. 200 BC–200 AD); The Epic of Fire or Agni Purana compiled c. 700 or 800 AD; A Treatise on Agriculture by Kashyapa (Kashyapiya-krishisukti; c. 800 AD) (Ayachit, 2002); The Science of Plant Life by Surapala (Surapala's Vrikshayurveda; c. 1000 AD) (Sadhale, 1996) are some of the relevant texts from that era.

### Sacred trees, groves, and landscapes

“The *Hindu* idea is that this whole world is a forest. To keep this world as it is we have to keep the world-forest intact” (Banwari, 2002 in Prime, 2002). This gave rise to the concept of cultural landscapes such as sacred forests and groves, sacred corridors, and a variety of ethnoforestry practices that mirror the “ecosystem-like concepts in traditional societies” (Berkes *et al.*, 1998). In the post-Vedic period, this tradition continued; in addition to considering a landscape as such valuable and sacred,

individual species and micro-units were also treated as sacred (Pandey, 1998). Examples include the temple forests, monastery forests, sanctified and consecrated trees, the sacred forests, sacred groves, sacred trees, and the like. Ramakrishnan *et al.* (1998), however, asserts that “The Vedic people assimilated new environmental values and the concept of ‘sacred groves’ form the value system of the original inhabitants of the Indian subcontinent”, implying their presumably pre-Vedic origin.

### Medicinal plants

Himalayas since Vedic times have been regarded as a vast repository of medicinal plants and other resources. Vedic literatures of Charaka, Susruta, Dhanwantri, Nagarjuna, Parashara, Valmiki and various other seers, exemplify that. During Emperor Ashoka's days (Fig. 2), planting of medicinal herbs and trees besides shade trees along the roads and fruit plants on the wastelands was mandatory – analogous to the social and agroforestry programmes of today, in some ways. The Second of the 14 Rock Edicts of Emperor Ashoka (issued in 257 BC) illustrates this practice (<http://www.cs.colostate.edu/~malaiya/ashoka.html>; last accessed on 19 February 2008).

“Everywhere within Beloved-of-the-Gods, King *Piyadasi's* domain, and among the people beyond the borders, the *Cholas*, the *Pandyas*, the *Satiyaputras*, the *Keralaputras*, as far as *Tamraparni* and where the Greek king Antiochos rules, and among the kings who are neighbors of Antiochos, everywhere has Beloved-of-the-



**Figure 2. Emperor Ashoka (reign 273–232 BC) (Source: [http://en.wikipedia.org/wiki/Ashoka\\_the\\_Great](http://en.wikipedia.org/wiki/Ashoka_the_Great); last accessed on 11 February 2008).**

Gods, King *Piyadasi*, made provision for two types of medical treatment: medical treatment for humans and medical treatment for animals. Wherever medical herbs suitable for humans or animals are not available, I have had them imported and grown. Wherever medical roots or fruits are not available I have had them imported and grown. Along roads I have had wells dug and trees planted for the benefit of humans and animals.”

Another landmark development during the reign of Ashoka was the establishment of hospitals for medical treatment for humans and animals; presumably the first of the “veterinary hospitals” in the world.

## Religion as a tool to protect nature and natural resources: tree worshiping

Several trees and shrubs were regarded as sacred because of their medicinal/aesthetic/natural qualities as well as some because of their proximity to a particular deity. Piplal (*Ficus religiosa*) is probably the most important species in this respect. In *Upanishads* and *Bhagawat Gita*, frequent references have been made to pipal (e.g., *Bhagawat Gita* 10.26; 15.1). A seal discovered at Mohenjodaro, one of the cities of the Indus Valley Civilization (c. 3000–1700 BC), also suggests pipal being worshiped. During the Vedic period, pipal wood was used to make fire by friction; its bark yields tannins used in treating leather and has many Ayurvedic uses too.

Sometimes threads are tied around certain trees, to seek a boon; or even symbolic marriages are performed on *Amavasya* (new-moon night), between the neem (*Azadirachta indica*) and pipal, which are usually grown near each other. *Parijata* (supposedly ‘Har Singar’ or *Nyctanthes arbor-tristis*; night-flowering jasmine) is another divine tree believed to be introduced by Lord Krishna from the heaven. Yet

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another belief that helped in conserving wild vegetation is that during the *Chaturmasya* (4 months of the rainy season: approximately July to October), the gods rest on trees and plants. Therefore, if trees are worshiped during this time, the gods will be pleased. Traditionally, trees are cut only if absolutely necessary. Moreover, before being cut, the tree spirit is asked for forgiveness by chanting certain *mantras*, so that the ill effect is thought to be alleviated.

Mythology also has been useful in cultivating certain plants that needed extra care. For example, the *tulsi* (*Ocimum sanctum*; sacred basil), a highly valued medicinal plant, is grown in every household in the center of the courtyard and ritually watered, even today. This is clearly a case of religion and culture being used to protect, conserve, and/or produce resources for human sustenance. Several socio-culturally valued species also find a place in the homegardens and courtyards (Kumar, 2007). The tradition of sanctifying various trees and plants prevalent during the Vedic period also may have helped their preservation. For instance, in Kerala there has been a practice of “allocating” tree species to individuals based on the lunar asterism under which they are born (“Birth star trees or *Nakshatra Vanam*”). Under this, all individuals are expected to take care of their “birth star trees” (for these details on species see Appendix 2 in Kumar, 2008).

For the Bisnoi community of Rajasthan, felling *Prosopis cineraria* is a taboo. The Bisnoi teachings proclaim that “if one has to lose head (life) for saving a tree, know that the bargain is inexpensive” (Pandey, 2003). Descriptions on ethnoforestry

practices can be almost unending implying that religious knowledge has also been useful for ecosystem restoration and often has ingredients of adaptive management (Berkes *et al.*, 2000; Pandey, 2003). In short, the Indian religious literature is replete with ideas of forest conservation, utilization, and regeneration. The traditional conservation ethos is also reflected in a variety of practices that support biodiversity conservation in natural ecosystems and helps reduce the harvest pressure.

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