



INDIAN KNOWLEDGE SYSTEM IN THE CONTEXT OF ZOOLOGY: A TRADITIONAL AND SCIENTIFIC PERSPECTIVE

Zoology

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ABSTRACT

A plethora of zoological knowledge is interwoven with philosophy, medicine, ecology, and spirituality in the Indian Knowledge System (IKS). This study explores the diverse perspectives on animal existence as documented in ancient Indian texts such as the Vedas, Manusmriti, Charaka Samhita, Sushruta Samhita, Brihat Samhita, Panchatantra, and Jataka Tales. In traditional Indian systems, animals were categorized based on their edibility, habitat, way of birth, behavior, and usage in ceremonies and medicine. This method took into account both actual observation and ethical considerations. Ayurvedic literature places a strong emphasis on using animal products in medicine and nourishment in accordance with each person's constitution and ecological surroundings. Current studies of animal behavior are consistent with many of the behavioral patterns, interspecies interactions, and environmental cues that were highlighted in historical ethological discoveries found in literature. The veneration for animals in spiritual and cultural traditions has fostered conservation principles, as seen by the protection of sacred creatures and the preservation of biodiversity through religious rites. By offering a thorough framework that strikes a balance between scientific research and ethical and environmental considerations, this study exemplifies the continued relevance of IKS in promoting modern zoology, veterinary medicine, and ecological sustainability.

KEYWORDS

Traditional Indian Knowledge, animal science, classification, conservation principles

INTRODUCTION

The Indian Knowledge System (IKS) is an extensive collection of traditional knowledge that has been gathered over many centuries and covers a wide range of disciplines, including astronomy, biology, medicine, and botany. The animal kingdom was thoroughly understood by ancient Indian scholars, and this knowledge was methodically recorded in works like the Rigveda, Shrimad Bhagavad Gita, Charaka Samhita, Sushruta Samhita, and Brihat Samhita. In addition to classifying animals, these works discussed their behavior, ecological relevance, and place in human civilization. Additionally, ecological balance and sustainable animal management are key components of traditional Indian conservation methods, which are consistent with current environmental research and wildlife conservation initiatives. Various animals are mentioned in hymns found in the Rigveda (c. 1500 BCE), which classify them according to their habitats and interactions with people (Griffith, 1896). Early human-animal ties are illustrated, and the significance of animals in religious rites and agricultural operations is acknowledged. Veterinary science, illness treatment, and the medicinal use of animal products are all included in the foundational Ayurvedic texts Charaka Samhita and Sushruta Samhita (c. 600 BCE). The Brihat Samhita by Varahamihira (6th century CE) offers a comprehensive examination of animal classification, astrological predictions of animal behavior, and the ecological duties of various organisms. Indian customs, which strongly emphasized moral and conservation-focused perspectives, fostered the ideas of ahimsa (non-violence) and ecological balance. Examples of how these concepts impacted biodiversity conservation efforts include the establishment of protected zones and sacred groves where hunting and deforestation were prohibited. The ancient Indian idea of peaceful coexistence with nature, which can be found in various scriptures, was reflected in the cultural traditions that treated animals with respect and assigned them specific responsibilities. This study examines the ways in which IKS has impacted zoology and how traditional knowledge may be used to justify modern scientific approaches. The use of both domestic and wild animals, including certain protected species, highlights the need for sustainable conservation methods (Madan et al., 2007).

conventional veterinary science.

- To draw attention to conservation techniques that are rooted in Indian ecological and philosophical traditions.

Methodology

This study employs a qualitative and historical analysis approach, utilizing textual analysis and comparative evaluation based on secondary data collected from various sources including research papers, books, online articles, ancient Indian texts etc.

Traditional Animal Classification In Ancient Indian Literature

The ancient Indian system of classifying animals was rooted in observational science, spiritual philosophy, and ritual practice. Unlike modern taxonomy, this system emphasized origin, habitat, utility, and ethical context. The Srimad Bhagavatam presents a unique and insightful classification of living beings that reflects an early understanding of biological diversity and physiological traits (Titiya Skandha, Dasamodhyaya 19). Firstly, based on movement, organisms are divided into two broad categories: Achara or Sthavar, referring to non-moving life forms such as trees, plants, and other rooted organisms; and Chara, which includes mobile beings like animals and humans. Secondly, the text classifies creatures based on the direction of food movement within their bodies. In the Urdhva category, food moves horizontally, a characteristic seen in earlier or more primitive life forms like insects and arthropods, which were believed to have multiple legs and a lateral alimentary flow. In contrast, the Adho category includes more evolved species such as humans, where the food travels vertically through the digestive tract—from the mouth downward—signifying a vertical alimentary canal. This classification not only demonstrates a profound observation of anatomical function but also hints at a graded evolution of body structure, correlating physical form with function and complexity in living beings.

In the verse “Andeshu Peshishu Tadrupavinishteshu Prano Hi Jeevmupyaati Tatra” from the Srimad Bhagavatam offers a profound classification of living beings based on the origin of birth (Ekadashah Skandha, trtiyaodhyaya 39). It states that life manifests itself in four distinct types of bodies, each arising through a unique reproductive process. The first category, Andaja, includes beings that are born from eggs, such as birds and reptiles. The second type, Svedaja, consists of organisms generated from sweat or moisture, such as insects, worms, and other small creatures believed in ancient times to emerge spontaneously from damp environments. The third classification, Udbhijja, refers to life forms born from the earth or through the splitting of seeds, encompassing plants, trees, and fungi. Finally, Jarayuj includes beings born from the womb, like mammals, including humans. This ancient system reveals a sophisticated

Objectives

The Primary Objectives Of This Research Are:

- To evaluate the contributions of the Indian Knowledge System to animal science and zoology.
- To explore the relevance of traditional classification systems to modern taxonomy.
- To study ethological principles found in the literature of ancient India.
- To evaluate how modern animal healthcare is affected by

understanding of reproductive biology and highlights the Indian sages' attempt to categorize life forms based on observable phenomena, anticipating modern biological taxonomies with remarkable insight.

Similarly, in the Manusmriti, an ancient Hindu literature composed between the 2nd century BCE and 3rd century CE, living beings are classified in two significant ways—by their mode of birth as viviparous (jarayuja), oviparous (andaja), sweat-born (svedaja), and those born from seeds or soil (udbhijja).” In the Vedas, for example, the Rigveda (10.90.12) mentions land, air, and water creatures as fundamental aspects of the cosmic being, Purusha, emphasizing the interdependence of all life forms. Beyond habitat-based grouping, animals in the Vedas are also described in terms of their symbolic and ritual significance. They often appear as representations of divine qualities or are associated with deities and sacred rites. For instance, Agni (the fire god) is sometimes compared to a powerful bull, which represents strength and vigor. Garuda, the heavenly eagle, is portrayed as a quick and magnificent bird, serving as a symbol of speed and transcendence. The Ashvamedha, or horse sacrifice, is one of the most important royal ceremonies in Vedic history, with the ashva (horse) serving as a symbol of royal authority, power, and cosmic order. These allusions demonstrate the close connection between animals and spiritual philosophy, cosmology, and ceremonial life in the Vedic worldview.

In Ayurveda, particularly in the Charaka Samhita and Sushruta Samhita, animals are classified based on their habitat, nutritional compatibility, therapeutic utility, and impact on the body's doshas (Vata, Pitta, and Kapha). This classification demonstrates a thorough understanding of animal life as it relates to human health and the environment. This classification reflects an in-depth comprehension of animal life in relation to human health and the environment. Habitat is a key classifying strategy. Animals are classified according to the natural surroundings in which they live. Jala-chara comprises aquatic animals like fish and turtles, which are known for their moist properties and kapha-increasing nature. Sthala-chara refers to terrestrial animals such as deer, cows, and goats, which are commonly employed in diet and medicine due to their digestibility and suitability for human physiology. Vihanga, or sky-dwelling animals, include birds like doves, peacocks, and vultures, whose meat is occasionally prescribed for specific ailments. Insects and parasites like worms and lice, which are typically seen as detrimental but are also being researched for their potential involvement in specific diseases, fall under the Krimi group. Pashu, or domesticated animals like cows and buffaloes, hold a central place in Ayurveda for their nourishing products such as milk, ghee, and urine (used in Panchagavya therapy). In contrast, mriga, or wild animals such as lions and wild deer, are often examined for their unique bodily traits and the medicinal qualities of their meat or other body parts. In addition to habitat-based grouping, animals are also evaluated for their utility in diet and medicine. Ayurvedic scriptures provide specific advice on which animal products are light (laghu) and easy to digest, such as deer meat, and which are heavy (guru), like beef or buffalo meat, and should be avoided due to their potential to increase kapha and ama (toxins). Products like cow's milk is regarded sattvic, meaning it promotes clarity, nourishment, and longevity. Fish, while high in nutrients, are considered to stimulate kapha and should be consumed with caution, particularly by people who suffer from congestion or slow digestion. The acceptability of meat and animal products is thus determined by individual prakriti (nature), sickness status, season, and digestive capability.

This Ayurvedic classification underscores a holistic approach where animals are not just part of the ecosystem but integral to human well-being, both as sources of nutrition and as elements in therapeutic regimes. The teachings found in Sushruta Samhita (Sutrasthana, Chapter 45) and Charaka Samhita (Sutrasthana, Chapters 27–29) form a foundational understanding of how animals are interwoven into the Ayurvedic vision of health and harmony with nature.

Ethology and Animal Behavior in Indian Literature

Ethology, the scientific study of animal behavior, has similarities in ancient Indian literature. The ancient texts such as Brihat Samhita, Panchatantra and Jataka Tales feature extensive narratives describing animal psychology, social organization, and interspecies interactions. These findings are consistent with recent ethological research, particularly on animal communication, cooperation, and adaptation to environmental changes. Ancient Indian scientists identified animal behavioral patterns and linked them to ecological stability and human-

nature connections.

The Brihat Samhita, composed in the 6th century CE by the renowned scholar Varahamihira, is a monumental compendium encompassing a wide range of sciences, including astronomy, astrology, botany, meteorology, and zoology. Within its vast scope, the text provides a detailed understanding of animals, particularly through the lens of habitat and behavior-based classification. Animals are grouped according to where they live—on land, in water, or in the sky—and their characteristic behaviors, reflecting an early scientific curiosity about the natural world. The Brihat Samhita also delves into the astrological influences on animal health, fertility, and reproduction, illustrating how celestial movements were believed to impact biological processes. Additionally, it offers guidelines for interpreting auspicious and inauspicious signs in animals, which were used in agriculture, rituals, and forecasting events. Such interpretations were not merely superstitious; they were tied to empirical observations of animal behavior as indicators of environmental changes, such as rainfall, seasonal transitions, and natural disasters. The text demonstrates a sophisticated integration of ethology, ecology, and astrology, making it a valuable source in the Indian Knowledge System for understanding the interrelationship between animals, the environment, and cosmic forces.

The Panchatantra, an ancient Indian collection of tales written by Vishnu Sharma in the third century BCE, serves as a moral and ethical guide for teaching life lessons while also revealing insights into animal behavior and intelligence. It teaches lessons about cooperation, leadership, strategy, and survival, all of which mimic real-world animal group dynamics. The Panchatantra also functions as an anthropological mirror, providing early insights into animal behavior and emotions such as fear, trust, jealousy, and loyalty. On the other hand, the Jataka Tales written around 300BC in Pali depict a friendly connection between people and animals, revealing interspecies communication, hierarchies, and survival methods.

Ayurveda makes considerable use of animal-based products, acknowledging their great medicinal benefits for a variety of health issues. Dairy products, particularly cow's milk, are considered sattvic—pure and life-enhancing—and have been shown to improve immunity, digestion, and mental health. Ghee, or clarified butter, is used extensively in detoxification therapies such as Panchakarma and is known for its nourishing benefits on the brain and nerve system. Honey (madhu), obtained from bees, is commonly used to treat respiratory diseases, heal wounds, and improve digestion; its antibacterial and therapeutic abilities have been proven by contemporary research. Musk (kasturi), taken from the male musk deer, has traditionally been used as a powerful cardiac stimulant and aphrodisiac, and it is still utilized in Ayurvedic and Unani medicine today. Similarly, bones and shells, especially those from marine sources, were pulverized and utilized as natural calcium supplements to cure bone diseases. Animal fats and oils, notably those derived from fish and crocodiles, were used in external therapies like massages and to treat skin ailments. Fish oil is now widely recognized for its omega-3 fatty acids, which are helpful to heart and brain health (Charaka Samhita, Sutrasthana, Chapters 27-30, Annapanavidhi & Dravadravya Vijnaniya Adhyaya). These examples highlight the Ayurvedic tradition's early understanding of the biochemical relevance of animal-derived compounds, indicating a highly advanced, nature-integrated approach to healing and wellness.

The Sushruta Samhita, a fundamental text in ancient Indian surgery, merges medical science and zoology to offer comprehensive understandings of animal anatomy as well as practical surgical instruments. Many of the surgical tools discussed in the text were based on the forms and capabilities of animal parts; for example, forceps made to resemble a bird's beak were made to be handled precisely during surgery (Sushruta Samhita, Sutrasthana, Chapter 7, Shashtra Vidhi Adhyaya). One noteworthy technique mentioned is leech therapy (Jalauka Avacharana), in which medicinal leeches were expertly utilized for bloodletting, especially to treat inflammatory illnesses, skin ailments, and abscesses (Sushruta Samhita, Sutrasthana, Chapter 13, Jalauka Avacharana Vidhi). Additionally, Sushruta developed surgical methods for suturing, bone alignment, and wound dressing by referencing animal behavior and healing patterns. Furthermore, to promote tissue regeneration and healing, animal-derived materials such as fats and ghee were administered to burns and wounds (Sushruta Samhita, Chikitsasthana, Chapter 1, Vrana

Chikitsa). The foundation for early comparative anatomy and veterinary-informed human medicine was laid by the extensive research that ancient Indian surgeons conducted on animals, both for anatomical understanding and to simulate the natural healing processes in humans.

Zoology And Spirituality: Sacredness For Protection

The Indian Knowledge System (IKS) emphasizes the connection between zoology and conservation, recognizing animals as divine manifestations, companions of deities, or cosmic principles. This reverence has significantly influenced indigenous conservation ethics and practices. Animals are often associated with Hindu gods and goddesses, providing protection and survival in natural habitats. For example, cows (Gau Mata) are venerated as sacred and linked to Lord Krishna, while elephants are associated with Lord Ganesha and are seen as symbols of wisdom and strength. This sacred status has led to widespread protection of cows and elephants in Indian society. Snakes, particularly cobras, are worshipped during festivals like Nag Panchami and believed to be associated with Lord Shiva, reducing indiscriminate killing. Peacocks, the national bird of India, are considered sacred as the vehicle of Kartikeya, the god of war, and are protected in many parts of the country. The Garuda Purana, an ancient text, offers spiritual and ecological reflections on birds like eagles and vultures. Hanuman, the monkey god, represents strength and loyalty, leading to cultural tolerance and protection of monkeys in many regions.

In an early ecological consciousness, religion and conservation coexisted peacefully, as evidenced by these spiritual relationships. An enduring human-animal bond was fostered by the frequent caring, feeding, and symbolic worship of animals as part of rituals, festivals, and temple customs. Therefore, the Indian Knowledge System provides a comprehensive approach to zoology, integrating ethics, ecology, and spirituality in daily life while using sacredness as a tool for biodiversity protection.

Relevance Of The Indian Knowledge System In Modern Zoology

1. Comparing IKS and Modern Zoological Classification:

As evidenced by ancient writings such as the Manusmriti, Charaka Samhita, Sushruta Samhita, and the Vedas, the Indian Knowledge System (IKS) classifies animals based more on observation, habitat, utility, and philosophical context than on rigid morphological characteristics. IKS provided a comprehensive and useful classification by classifying animals according to their behavior, edibility, medicinal use, habitat (aquatic, terrestrial, and aerial), method of birth (viviparous, oviparous, sweat-born, sprouting), and habitat. For example, animals were considered sacred or therapeutic based on their role in maintaining ecological and bodily balance (Dosha—Vata, Pitta, Kapha). The Linnaean method gave rise to modern taxonomy, which was improved by evolutionary biology. It uses hierarchical ranks such as kingdom, phylum, class, order, family, genus, and species to categorize creatures according to morphological, anatomical, genetic, and phylogenetic criteria. IKS places more emphasis on ecological responsibilities, spiritual value, and human-animal connections than contemporary taxonomy does on structural and genetic linkages. IKS provides an early form of ethology and ecological classification, and it demonstrates a profound empirical understanding of animal life despite the absence of official binomial nomenclature. Despite using different approaches, both systems seek to bring order to the diversity of existence; one does this through precise science, while the other does so through experienced, integrative knowledge.

2. Integrating Modern Animal Science with Traditional Veterinary Practices

Traditional herbal remedies are beneficial in veterinary care, according to recent scientific investigations. Ayurvedic remedies for animal illnesses offer sustainable and environmentally beneficial substitutes for modern medications. New advances in veterinary medicine may result from studies of the pharmacological characteristics of medicinal plants mentioned in ancient writings.

3. Sustainable Wildlife Conservation Strategies

Modern ecological solutions are consistent with many of the precepts of traditional Indian conservation approaches. Similar to modern wildlife reserves and protected areas, sacred groves reflect the idea of community-driven conservation. To strengthen efforts to maintain biodiversity, contemporary conservation policies might incorporate

indigenous knowledge.

4. Ethological Studies and Ancient Text's Perspectives

Ancient Indian writings that contain in-depth observations of animal behavior can aid in current ethological studies. Historical perspectives on animal psychology and social connections can enhance current research on migration, species adaption, and wildlife behavior.

CONCLUSION:

The Indian Knowledge System provides a thorough and cohesive viewpoint on zoology by fusing philosophical investigation, scientific observation, and spiritual respect. Not only are its conventional classification schemes, behavioral research, and conservation ethics important historically, but they also fit well with a lot of contemporary ecological and zoological ideas. This age-old knowledge, which is firmly based in observation and reverence for all living things, enhances current scientific methods and could improve zoology and conservation techniques. Engaging with nature in a more ethical and sustainable way can be facilitated by revisiting and incorporating such indigenous knowledge systems.

Conflict Of Interest: The authors declare that there is no conflict of interest.

REFERENCES:

1. Varahamihira. (1947). *Brhat Samhita* (V. Subrahmanya Sastri, Trans. & Notes; V. M. Ramakrishna Bhat, Ed.). V. B. Soobiah & Sons at the M. B. D. Electric Printing Works. <https://indianculture.gov.in/system/files/digitalFilesICWeb/ICrarebooks/cslrepository/3569/RB340.pdf>
2. Sushruta. (n.d.). *Sushruta Samhita* (Sutrasthana & Chikitsasthana). Retrieved from <https://www.ayurveda.com/resources/articles/sushruta-samhita>
3. <https://sites.google.com/view/sanatan-dharma/rg-veda-10-90-purusha-sukta>
4. Dutta, N. C., Lahiri, P., & Kar, S. (2014). Animal science (Vol. IV, Part II). In A. K. Sharma (Ed.), *History of science in India*. Kolkata: The Ramakrishna Mission Institute of Culture.
5. Gautam, S. P. (n.d.). *Shrimadbhagavat mein vgyan* [Science in Shrimad Bhagavat]. Bhopal: Madhya Pradesh Hindi Granth Akademi.
6. Charaka Samhita Online. (n.d.). Annapanavidhi Adhyaya. Retrieved from https://www.carakasamhitaonline.com/index.php/Annapanavidhi_Adhyaya
7. Griffith, R. T. H. (1896). *The Rigveda*. E. J. Lazarus & Co.
8. Mahawar, M. M., & Jaroli, D. P. (2007). Traditional knowledge on zootherapeutic uses by the Saharia tribe of Rajasthan, India. *Journal of Ethnobiology and Ethnomedicine*, 3(1), 25. <https://doi.org/10.1186/1746-4269-3-25>.
9. Babbitt, E. C. (1912). *Jataka Tales: Animal Stories*. New York: D. Appleton-Century Company. Retrieved from <https://archive.org/details/jatakatalesanima00babb>
10. Vishnu Sharma. (2011). *Panchatantra* (G. L. Chandiramani, Trans.). Rupa Publications India Pvt. Ltd. (Original work published 1991) <https://www.banyantree.in/jagdishpur/wp-content/uploads/2020/06/Panchatantra-.pdf>.