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Beyond *Bombyx mori*: Exploring the Diverse World of Wild Silks

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While mulberry silk from the domesticated *Bombyx mori* silkworm dominates the global silk market (accounting for approximately 90% of production), there exists a fascinating array of wild silks that offer unique properties, cultural significance, and ethical alternatives. These non-mulberry varieties—including Tasar, Eri and Muga—represent a small but valuable segment of the silk industry, cherished for their distinctive textures, natural colours, and cultural heritage. Unlike the highly standardized production of mulberry silk, wild silks are often produced by semi-domesticated or wild silkworms that feed on various forest plants rather than exclusively on mulberry leaves. This fundamental difference in ecology and production methods contributes to both their unique characteristics and their limited availability.

The history of wild silks stretches back millennia, with archaeological evidence suggesting their use in ancient civilizations including the Indus Valley around 2400 BCE. Despite this long history, wild silks have historically been overshadowed by the more easily reeled and cultivated mulberry variety. The production of wild silks remains a specialized craft, often deeply intertwined with cultural traditions and local ecosystems, making them vulnerable to modernization and environmental changes. This article explores the unique properties, production methods, and challenges facing these extraordinary silk varieties, revealing why they remain less common than mulberry silk despite their valuable qualities.

Tasar Silk: The Textured Wild Silk

Tasar silk stands as the second most popular wild silk after mulberry, primarily produced in India and other South Asian countries. This distinctive silk is produced by wild silkworms of the genus *Antheraea*—including *Antheraea mylitta*, *Antheraea proyeli*, and *Antheraea pernyi*—which thrive in forested areas and feed on various trees such as oak and sal. Unlike the controlled diet of mulberry-fed silkworms, the diverse feeding habits of these wild caterpillars contribute to Tasar's unique characteristics.

Tasar is copperish beige colour, coarse silk mainly used for furnishings and interiors. It is less lustrous than mulberry silk, but has its own feel and appeal. Tasar silk is particularly valued for traditional Indian garments like sarees and for upholstery and wall hangings due to its durable nature. The production process remains largely traditional, with cocoons collected from forest areas by local communities. This wild harvesting method makes Tasar silk more sustainable in some respects than cultivated varieties, though it also results in less consistent quality and limited quantities. The challenges in Tasar production include dependency on forest ecosystems, which are increasingly threatened by deforestation and climate change, as well as difficulties in reeling the fibers due to their shorter staple length and higher gum content compared to mulberry silk.

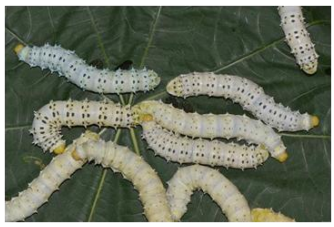
			
Tasar silk moth	**Tasar silkworm**	**Tasar cocoons**	**Tasar Raw silk**

Eri Silk: The Peaceful Alternative

Eri silk, known as **"ahimsa silk"**, offers a unique ethical alternative to conventional silk production methods. This special designation comes from its production process: unlike traditional silk harvesting where silkworms are killed inside their cocoons to preserve filament continuity, Eri silkworms (*Samia ricini* or *Philosamia ricini*) are allowed to complete their life cycle and emerge as moths before the cocoons are harvested. This method aligns with the principle of *ahimsa*, making it particularly appealing to ethically conscious consumers.

Traditionally, silk was used by tribal communities to weave chaddars (wraps) for their own use. In recent years, Eri silk has gained global recognition because of its isothermal properties, which keep the wearer warm in winter and cool in summer. These qualities make it ideal for manufacturing shawls, jackets, and blankets. In India, Eri culture is predominantly practiced in the North-Eastern states, but its popularity is expanding to regions like Bihar, West Bengal, Odisha, Uttar Pradesh, and Andhra Pradesh.

Beyond traditional use, Eri silk has also entered the fashion industry. Its soft texture and durability make it suitable for knitted fabrics, undergarments, children's wear, denim, and a variety of fashion garments, further increasing its demand in both domestic and international markets.

			
Eri silk moth	Eri silkworm	Eri cocoons	Eri Raw silk

Muga Silk: The Golden Treasure of Assam

Assam contributes to more than 95% of the world's Muga silk production, making it the undisputed home of this rare and precious silk. While Assam is the primary hub, Muga culture has also spread to the neighboring districts of Meghalaya, Nagaland, Manipur, Mizoram, Arunachal Pradesh, and parts of West Bengal.

This silk, with its natural golden-yellow hue, is unique to India and is regarded as the cultural pride of Assam. It is obtained from the wild multivoltine silkworm, *Antheraea assamensis*, which feeds primarily on the aromatic leaves of the Som (*Machilus 73ombycine*) and Soalu (*Litsea polyantha*) plants. These silkworms are reared in outdoor conditions, like the practices followed in tasar culture.

Muga silk is considered one of the finest treasures of natural fabrics in the world. Traditionally, it is woven on hand-operated, foot-powered looms, a process that imparts a subtle irregularity to the weave, adding to its charm and authenticity. The silk's natural golden shimmer requires no dye, as its inherent beauty and luster make it stand out among luxury textiles.

Due to its high quality and durability, Muga silk is extensively used in making sarees, mekhalas, chaddars, and other traditional Assamese attire. Over time, its applications have expanded, with Muga now being used as a substitute for zari work in sarees, as well as for surface embellishments in garments and fashion apparel. Although rooted in Assam's tradition and heritage, the culture of Muga silk is gradually gaining ground in other states,

especially Arunachal Pradesh, Meghalaya, and Nagaland, where host plants are also available.

The production of Muga silk remains limited due to several factors: the geographical restrictions of the silkworms' habitat and the labour-intensive process of harvesting. Additionally, climate change and deforestation threaten the native host plants, further endangering Muga silk production. These factors combine to make Muga silk one of the rarest and most expensive silk varieties in the world, with prices reflecting its exclusivity and cultural significance. Despite these challenges, Muga silk represents an invaluable cultural heritage and continues to be highly sought after by connoisseurs of fine textiles worldwide.

			
Muga silk moth	**Muga silkworm**	**Muga cocoons**	**Muga Raw silk**

Challenges and Sustainability of Wild Silk Production

The production of wild silks faces numerous challenges that contribute to their limited availability compared to mulberry silk. These challenges span ecological, economic, and technical dimensions, creating barriers to scaling production while maintaining the unique qualities that make these silks valuable.

Ecological Challenges

Wild silks depend on healthy forest ecosystems and specific host plants that are increasingly threatened by deforestation, climate change, and human expansion. For instance, Muga silk production is entirely dependent on the availability of som and soalu trees in Assam, while Tasar silk requires oak and other forest trees that are diminishing in many regions. The decline in these host plants directly impacts silkworm populations and silk production. Additionally, wild silkworms are more vulnerable to diseases and pest infestations than domesticated varieties, with mortality rates ranging from 10% to 47% depending on region and conditions.

Technical and Economic Limitations

Wild silks present significant technical challenges in processing compared to mulberry silk. The cocoons of wild silkworms often have mineral reinforcements (e.g., calcium oxalate) and tannins that make them harder to degum and reel. While methods have been developed to demineralize wild silk for easier processing, these add steps and cost to production. Additionally, wild silk fibers are generally shorter and more irregular than the continuous filaments of mulberry silk, requiring spinning rather than reeling—a less efficient process that yields less uniform thread.

The economic viability of wild silk production is challenged by higher production costs, lower yields, and limited market awareness. While wild silks often command premium prices, the production volumes remain small, and many producers struggle to compete with the efficiency and scale of mulberry silk production. Furthermore, the knowledge and skills required for wild silk production are often traditional and region-specific, creating challenges for knowledge transfer and quality standardization.

Conclusion: The Future of Wild Silks

The world of wild silks represents an extraordinary diversity of natural materials, cultural traditions, and ecological relationships that stand in contrast to the standardized production of mulberry silk. From the textured golden threads of Tasar to the ethical production of Eri, the radiant luxury of Muga, these alternative silks offer unique properties that cannot be replicated by their more common counterpart. Yet they remain less common due to a

complex interplay of ecological, technical, and economic factors that limit their production and availability.

The future of wild silks may depend on finding a balance between preservation and innovation. On one hand, protecting the traditional knowledge and ecological systems that support wild silk production is essential for maintaining these unique textiles. Initiatives to document traditional techniques, protect forest habitats, and support artisan communities can help preserve this cultural heritage. On the other hand, technological innovations in processing, quality control, and marketing may help overcome some of the limitations that have kept wild silks in niche markets.

Growing consumer interest in sustainable and unique textiles presents new opportunities for wild silks to find their place in the global market. As awareness grows about the environmental and social impacts of conventional textiles, fibers like ahimsa silk (Eri) and sustainably harvested wild silks may appeal to conscientious consumers willing to pay premium prices for products that align with their values.

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