

# the Fleece & Fiber

SHEEP  
GOATS  
ALPACAS  
LLAMAS  
VICUÑAS  
CAMELS  
BISON  
MUSK OXEN  
YAKS  
and more

## SOURCEBOOK

MORE THAN 200 FIBERS  
from Animal to Spun Yarn

Deborah Robson & Carol Ekarius



Alpaca



Dalesbred sheep



# the Fleece & Fiber SOURCEBOOK



More than 200 Fibers from Animal to Spun Yarn

Deborah Robson & Carol Ekarius



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# *The Fleece & Fiber Sourcebook*



French Angora Rabbit



Debouillet sheep



Musk oxen



Alpaca



Angora goat



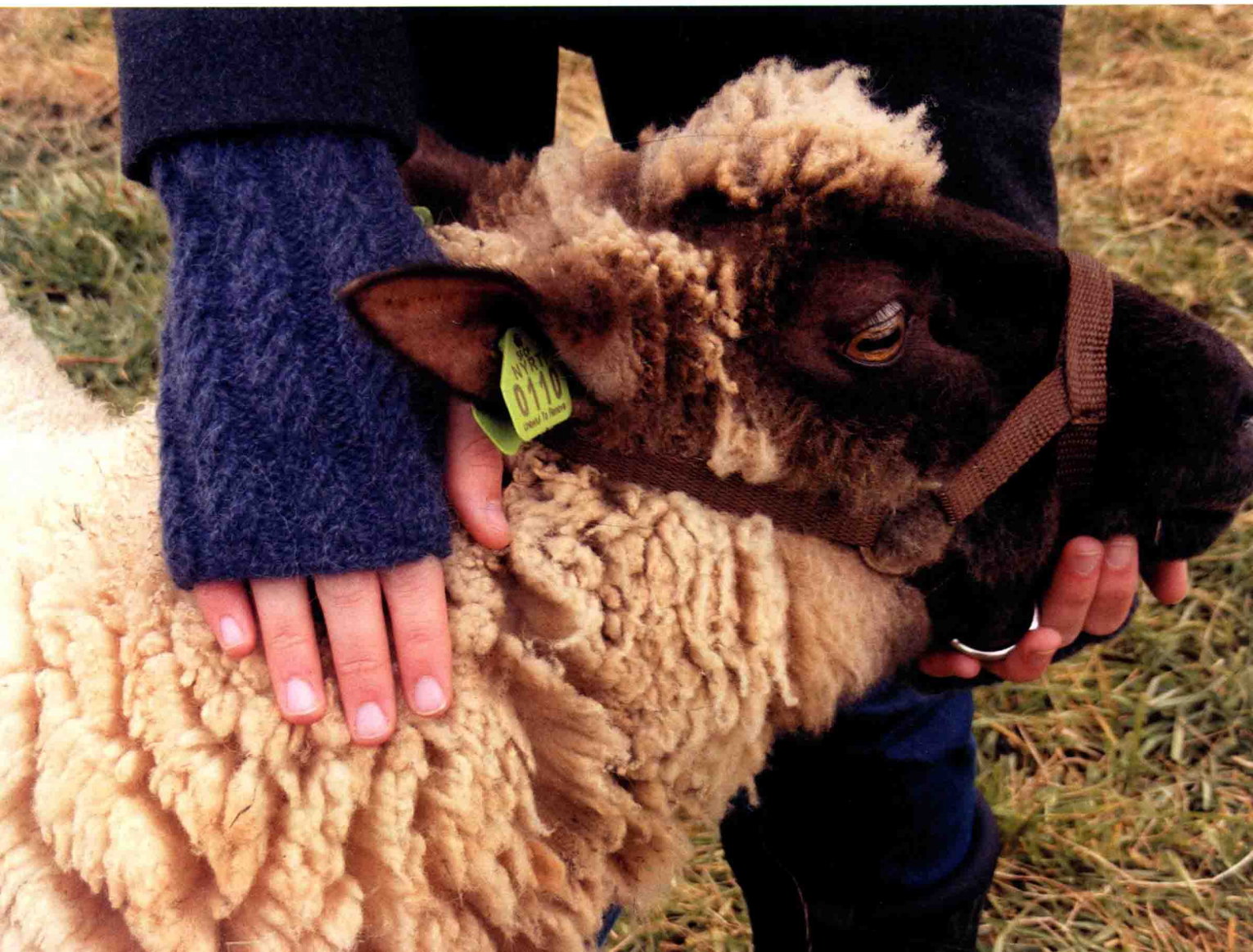


# Preface

SOMETIME IN ANTIQUITY (no one is sure exactly when, but we'll tell you what is known on the subject in chapter one) a human discovered that fibers could be twisted and pulled to create a cord. This twisting and pulling of fibers probably occurred quite by happenstance, yet

what a profound impact it came to have on humanity. The finest cords, when twisted or braided together, became larger cords — thread, string, yarn, rope. Just think what handy inventions these must have been for cave dwellers, nomads, and other early people. And the

Before and after buddies. A Clun Forest ewe and fingerless mittens from Solitude Wool's Clun Forest/alpaca yarn.



strands of twisted fiber could be woven together to become cloth. Suddenly clothing options expanded from the skin of a dead animal (one imagines, a heavy, smelly covering) to much lighter and more versatile garments.

Over the eons, since our foremothers and -fathers made their discovery, the fibers of animals and plants have served humankind and seemingly insinuated themselves in our DNA, carving out a place in the hearts and minds of fiber buffs everywhere. We are those kind of people. Like so many others who share this passion, we caught the bug as kids, starting to sew before we hit school, and learning the basics of knitting and crocheting by 10 or so. We both dabbled with some kind of loom as kids, and again a bit more seriously in our late teens, but it was in young adulthood when we each became serious about weaving, and soon after that we discovered spinning. Carol's interest in fiber and food led to farming and raising critters, including sheep, and to writing about farming and animals. Deb's home situation kept her from ever owning her own fiber animals, but her fiber addiction led her to pursue fiber professionally, as a writer, editor, and publisher of fiber-related magazines and books.

The two of us met years ago, in a context totally unrelated to fiber or animals, but as we discovered our common interest we became friends, and ultimately that led us to pursue the idea of doing a project together. This is our project, and our goal for it is to look at the

animal fibers in a way that hasn't really been done before. We are looking in more depth than we believe anyone has before at the animals that have provided handspinners, knitters, and weavers with the foundation of their craft and artistry for thousands of years. You won't find patterns in this book, but we hope you will learn a great deal about the wool and hair fibers that have clothed and served us for generation upon generation, back to the person who first picked a fluff of wild sheep fibers out of a bush and twisted them together.

If you have ever run your hand over a fleece and sighed, picked up a ball of yarn and groaned with pleasure, run your hand along the light and breezy swath of a fine jersey woolen fabric and felt a tingle run down your spine, or worn a favorite wool jacket season after season, then you are a person who may just lose yourself in the pages that follow. We hope it tantalizes your senses and that it encourages you to venture into projects using fibers you never really thought of before.

A handwritten signature in dark ink, reading "Deb Ralston". The signature is fluid and cursive, with a long, sweeping underline that extends to the left.A handwritten signature in dark ink, reading "Carol Ekarius". The signature is cursive and elegant, with a long, sweeping underline that extends to the right.







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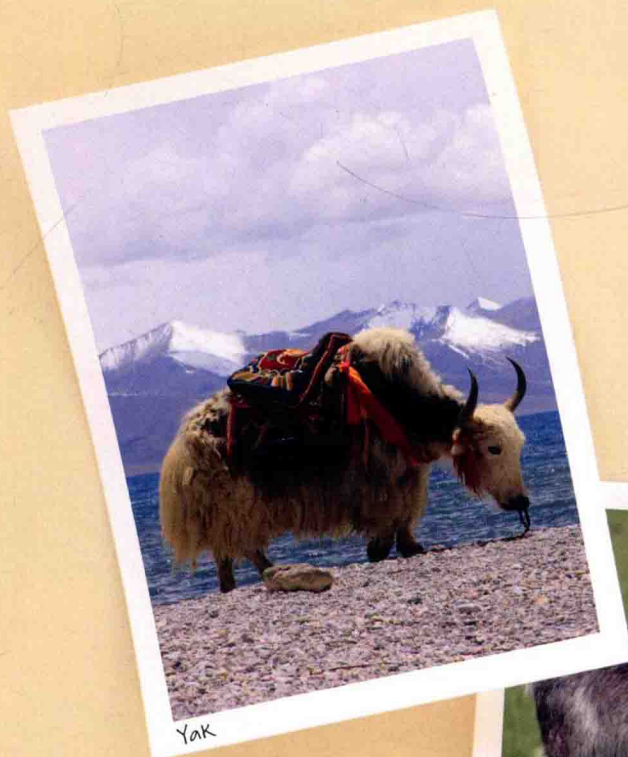
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Yak




Pygmy goats

# Fiber Fascination

Make stuff. Stay home. Draw. Dress locally.  
Hand wash. Learn to darn.

— Sarah Swett, Fiber Artist

ick up a ball of yarn and cast stitches onto a needle. Start knitting. Quickly see a form begin to take shape — a sweater for a loved one, perhaps, or fun socks to keep your tootsies warm on a cold winter night. Or pull a stool up to a beautiful loom and begin the rhythmic work of weaving weft into warp. Back and forth, back and forth, throw the shuttle, pull the beater: An intricate pattern begins to reveal itself. What great satisfaction this work brings. It connects us to our past and creates memories for our future. And it all starts with fiber.

This book focuses on animal fibers, but before we move along, we want to call your attention to the other natural sources of fibers: plants and minerals. Cotton, flax, and hemp are the most common plant fibers, but other vegetable-source fibers, such as sisal, coconut, and pineapple fiber, are in use around the globe. In terms of mineral fibers, you wouldn't want to knit a sweater out of asbestos or weave a blanket of "mineral wool" or spun glass (also known as fiberglass), but these natural fibers find their way into a variety of industrial applications and products we routinely use.

What about synthetic fibers? Today they account for over 65 percent of global production, and this share is growing steadily as the market for natural fibers falls. The industrialized world prefers synthetic fibers because they are more standardized, relatively cheap, and easier to

manage on a large scale than are natural fibers. Consumers have also been trained to think that the synthetics perform better than their natural equivalents. In some cases they do, but in many others the benefits of the synthetics have been significantly overrated and the drawbacks of becoming dependent on manufactured fibers have been glossed over.

What difference does it make, this shift from natural to synthetic textiles? Why should we care if natural fibers disappear? First of all,

## Definitions of Fiber

We cover fiber in great detail in the pages to come. To avoid confusion, let's introduce two definitions that tend to overlap:

**The commercial definition.** Fiber is a long, narrow, and flexible material that may be of animal, plant, synthetic, or mineral origin. It is used not only in the production of textiles, but also for paper, rope, and a wide array of other useful items, including automobiles, sporting goods, cosmetics, and food.

**The zoological definition.** Fiber is an external, multicellular structure made up primarily of protein. It grows from the skin, and its primary function is to provide a creature with protection from the elements and from predators.





## Slow Food Movement

Slow Food is a movement that started in Italy and has spread around the globe, with more than 80,000 members in the United States. Slow Food USA envisions a future food system that is based on the principles of high quality and taste, environmental sustainability, and social justice — in essence, a food system that is good, clean, and fair. This movement supports a shift away from the destructive effects of an industrial food system and toward the regenerative cultural, social, and economic benefits of a sustainable food system, regional food traditions, the pleasures of the table, and a slower and more harmonious rhythm of life. Learn more at [www.slowfoodusa.org](http://www.slowfoodusa.org).

synthetic fibers are . . . well, *synthetic*. They are cooked up in a lab from oil and chemicals with unpronounceable names. Their production requires high inputs of energy and water, and the process releases harmful volatile organic compounds (VOCs) into the air. VOCs are a major contributor to smog and a number of health issues. Synthetic fibers do have benefits; they are readily available and relatively inexpensive in today's markets, for starters. But they don't connect us to the earth. They aren't sustainable.

Natural fibers are part of our culture, our heritage. They have stories. They have a living, breathing animal (or a growing plant) behind them. They often have small-scale farmers or indigenous communities behind them, too — people and cultures whose livelihoods and historic identities can be supported by their continuing work with these fibers.

When the United Nations declared 2009 the International Year of Natural Fibres, that organization honored the role that natural fibers play in the lives of both producers and consumers. Inspired in part by this worldwide acknowledgment of the importance and vulnerability of the fibers that we love, we began writing this book with the aim of raising awareness among other fiber lovers. Perhaps knowing more about the source will spark a desire to seek out and experiment with natural fibers, which may in turn help keep the animals that produce these distinctive fiber resources alive and well. We hope that increasing awareness will also encourage (financially and culturally) the small-scale and indigenous farmers who raise these animals, as well as the mills and designers who bring their products to market. We think of this as sort of a Slow Fiber movement, similar to the Slow Food movement, and a way of bringing fiber lovers back to the roots of their craft and building on the heritage laid down by those who came before us.



## Why Choose Natural Fibers?

According to the United Nations, there are many great reasons to choose natural fibers over synthetic substitutes. Here are some of them:

**Natural fibers are a healthy choice.** Textiles created from natural fibers absorb perspiration and release it into the air (in a process called wicking), creating natural ventilation. Because of their more compact molecular structure, synthetic fibers that are designed to wick can't "breathe" in the same way. In the case of animal fibers, the bends (or crimp) of the fiber effectively trap pockets of air within spun yarns and constructed fabrics, acting as insulation against both cold and heat. This is why the desert-living Bedouins wear lightweight wool clothing to keep themselves cool.

**Natural fibers are a responsible choice.** The production, processing, and export of natural fibers are vital to the economies of many developing countries, providing livelihoods for millions of small-scale farmers and workers in almost every corner of the planet. Natural fibers also play a key role in the emerging green economy, due to their potentially energy-efficient production. They provide not only traditional textiles but also a truly renewable raw material in the production of items such as car panels or furniture stuffing. There are lower carbon emissions in the production of natural fibers than in the production of their synthetic substitutes, as well as lower use of water. And at the end of their life cycle, natural fibers are 100 percent recyclable and biodegradable.

**Natural fibers have industrial value.** They have intrinsic properties — mechanical strength, low weight, and green credentials — that make them attractive to industry. For consumers, animal- and plant-fiber composites in automobiles and other applications provide better thermal and acoustic insulation than fiberglass, while reducing irritation of the skin and respiratory system. Their low density reduces weight, which cuts energy use in both production and transport. This saves wear and tear on machinery, thus cutting production costs by up to 30 percent. Worldwide, the construction industry is using natural fibers in light structural walls, insulation materials, floor and wall coverings, and roofing.

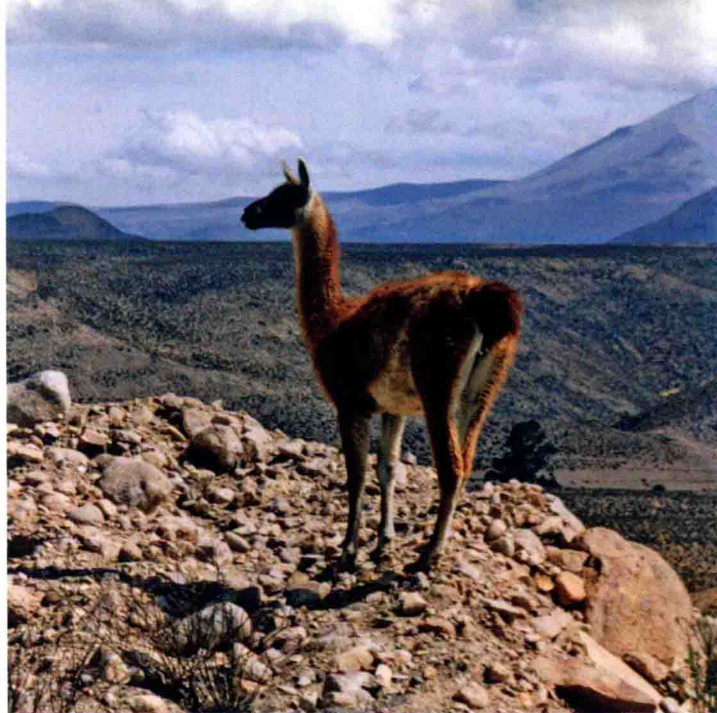
**Natural fibers are chic again!** They are deemed sustainable, green, ethical, and ecofriendly. Young designers are offering "100 percent carbon-neutral" collections that strive for sustainability at every stage of their garments' life cycle — from production, processing, and packaging to transportation, retailing, and ultimate disposal. Fashion collections are highlighting organic wool, produced by sheep that have not been exposed to pesticide dips, and we see increasingly creative ways for yarn and fiber aficionados to obtain their materials direct from the growers, including CSAs (Community Supported Agriculture programs), Etsy shops, and other marketing channels.



# The Value of Diversity

IT IS ALMOST IMPOSSIBLE to say how many sheep breeds exist around the world, but an educated guess puts the number somewhere around 1,400. For goats, the number is closer to 100. That may seem a more-than-abundant number, but according to the United Nations' Food and Agriculture Organization (FAO), over one-third of these breeds are in danger of extinction — and that's not good news. As we'll show in this book, the fibers produced by the most endangered breeds have unique, irreplaceable qualities, and the animals themselves fit into valuable ecological niches.

Many of the animals included in this book are recognized as endangered by expert sources, such as the FAO; the American Livestock



Breeds Conservancy, which tracks livestock breeds within the United States; Rare Breeds Canada; the Rare Breeds Survival Trust (United Kingdom); The Sheep Trust (United Kingdom); North SheD (focusing in Nordic countries); Heritage Sheep (European Union); Rare Breeds Trust of Australia; and Rare

## "Breeds Breed True" and Other Truisms

A breed is a group of domestic animals with identifiable characteristics — visual, performance, geographic, and/or cultural — that allow it to be distinguished from other groups within the same species. When purebred members of a specific breed are mated to each other, those traits that make that breed unique will pass down through the generations in a consistent manner. Thus the saying, "Breeds breed true."

We use the term *landrace* from time to time. A landrace is essentially an old breed that developed in a very limited geographic area over many centuries. These old breeds were developed by farmers with little emphasis on modern breeding techniques, or sometimes strictly by natural selection due to environmental conditions.

Because a landrace has not undergone intensive selection, it generally has greater genetic variability (more variation in

coat color or other discernible traits) than more highly developed modern breeds. A landrace usually lacks documentation through a breed registry, but it is always well adapted to the place where it developed. The Gulf Coast Native sheep (see page 124) is a landrace still found in North America. Some landraces are now being recognized and protected, although some of these breeds still fly under the radar of our awareness.





Clockwise from upper left: **Guanaco**, a South American wild camelid whose numbers decreased radically after the Spanish arrived in the Americas; **American bison**, representing an animal whose natural grazing territory has succumbed to human population pressures; **Santa Cruz sheep**, which are critically endangered; **Jacob sheep** and **Myotonic goats** (also known as Tennessee Fainting goats), which are also conservation breeds.

Breeds Conservation Society of New Zealand. In the case of some wild species, such as the guanaco (see page 379), the recognition comes from the Convention on International Trade in Endangered Species.

People can understand the need to protect wild species from extinction, but you may wonder, *why worry about conserving breeds of domestic livestock?* There are many reasons, but the first has to do with genetic diversity that could be crucial to us in the future. The industrialization of agriculture has consolidated domesticated animals into standardized systems of production. These systems rely upon climate-controlled confinement housing, sophisticated husbandry and veterinary support, chemical additives, and heavy grain feeding. Only a handful of breeds have acclimated to these systems, and though those breeds are highly productive, they are unlikely to adapt quickly enough to climate or environmental change, or to serious disease outbreaks. Monocultures of genetically similar animals may look good on spreadsheets, where short-term bottom-line economics is the main consideration, but they are like a house of cards that could collapse completely under pressure.



As our friend Don Bixby (a veterinarian and former executive director of the American Livestock Breeds Conservancy) says, “Genetic uniformity and genetic diversity are mutually exclusive.” More diversity in the gene pool provides a much better shot at adapting to changing conditions. There are several other reasons to protect breed diversity:

- ☉ **Traditional breeds** work well in sustainable and small-scale agriculture and thrive in more natural farming systems. They can be used to improve the quality of the environment by reducing the negative impact of intensive agricultural practices.
- ☉ **Maintaining traditional breeds** helps support rural and regional communities by enhancing the profitability of small farmers and indigenous people.
- ☉ **Specific breeds**, well managed and placed in appropriate environments, can help reclaim damaged landscapes.

Some breeds are vulnerable because their population numbers have become very low, but even breeds that seem to have healthier populations can swiftly veer toward extinction. In 2001, the United Kingdom had a severe epidemic of foot-and-mouth disease (also called hoof-and-mouth disease); millions of sheep — whether they were sick or not — were destroyed to control the spread of the disease. When a breed is geographically isolated, an event like this can wipe out an important population even when the overall numbers seemed strong. For instance, Herdwick sheep (see page 266) are found mainly in northwest England’s Lake District — an area that covers just 885 square miles (2,292 sq km). With an entire breeding population living in close proximity, it is difficult to protect them from the spread of disease. During the epidemic, at least 35 percent of the Herdwicks were destroyed, and their numbers are still significantly reduced. The survival

chances of other breeds in similar situations were also dramatically affected.

As you read through the descriptions of breeds in this book, you will see that some are designated Conservation Breed or Critical Conservation Breed. For the record, these are not terms specifically used by the biodiversity groups listed above. Each organization has its own slightly different terms and reporting systems, and the breeds’ classifications can change from year to year. So we came up with our own consolidated listing, based on our understanding of what these various groups say about the breed’s overall picture for survival. The Critical Conservation Breeds are globally rare and stand on the precipice of extinction. All will truly benefit from your informed support. By seeking out the fibers produced by rare and endangered animals, you will help maintain them!

## The Language of Our Lives

Thanks to the prominent roles fibers and textiles have played in human development, it isn’t surprising that they have also played a role in our language and culture. Think of all the sayings we take from the world of fiber:

*He **knit** his brow in consternation.*

*She spun a great **yarn** about giants and elves.*

*He took a **cotton** to her.*

*The social **fabric** seems to be **unraveling**.*

*Their story is **interwoven** with the events.*

*Sleep that **knits up** the ravell’d sleeve of care (from Macbeth, Act 2, Scene 2).*

*I’m feeling fair to **middling**. (The best grade of cotton is called middling.)*