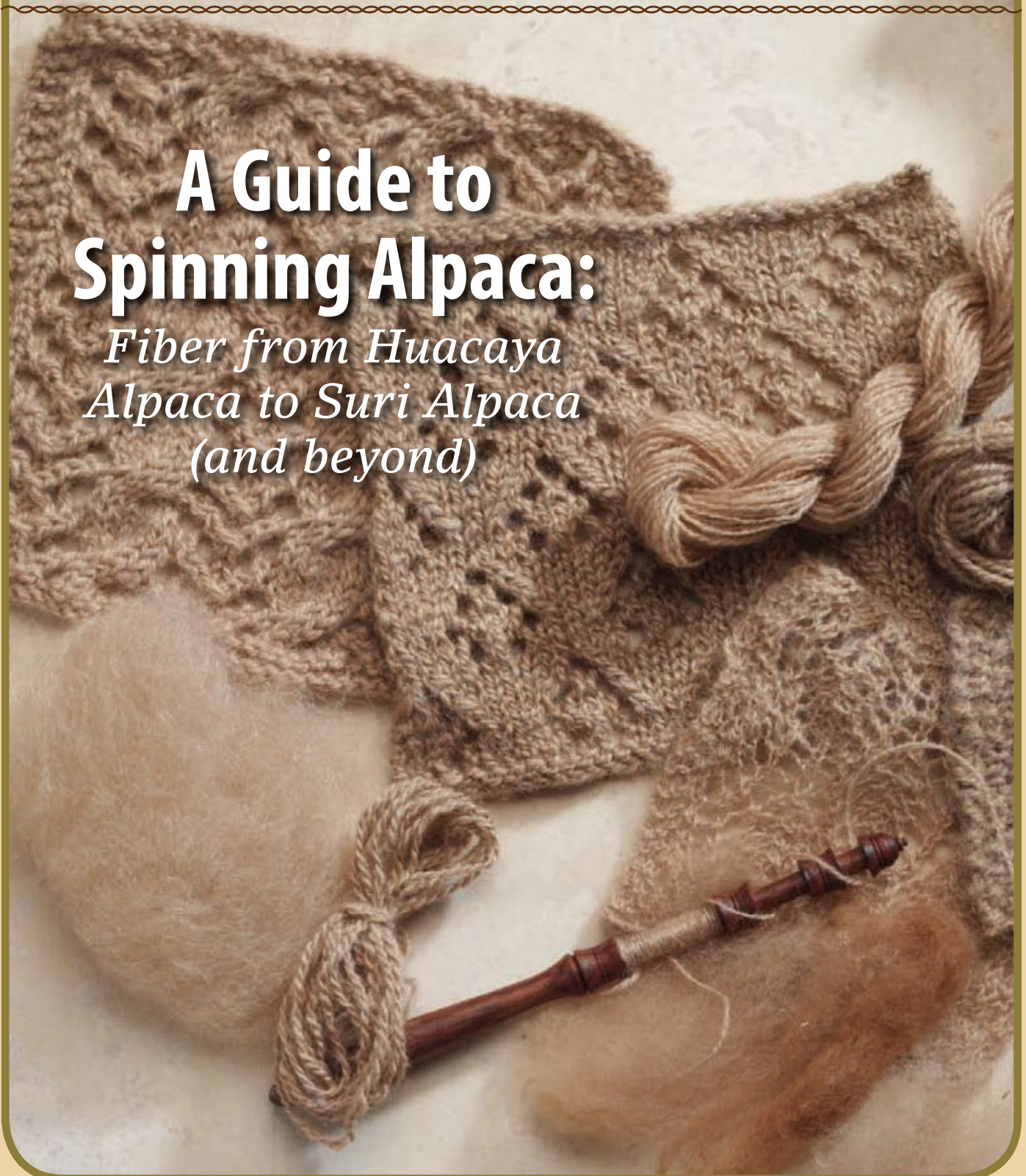


spinning daily  presents

A Guide to Spinning Alpaca:

*Fiber from Huacaya
Alpaca to Suri Alpaca
(and beyond)*





Soft, long, and available in a range of beautiful natural colors, alpaca can be a joy to spin. That is, if you know what makes it different from the sheep's wool most spinners start with. It is a long fiber with no crimp, so it doesn't stretch and bounce the way wool does. Sheep's wool also contains a lot of lanolin (grease) and most spinners like to scour the wool to remove excess lanolin before they spin it. Alpaca doesn't have the same grease content, so it can be spun raw (or unwashed) pretty easily, though it may contain a lot of dust or vegetable matter. Alpaca fiber also takes dye beautifully—you'll find that the colors will be a little more muted than they would be on most sheep's wool because the fiber is not lustrous. Because alpaca fiber doesn't have crimp of wool, the yarn requires more twist to stay together as well as hold its shape over time. If you spin a softly spun, thick yarn, and then knit a heavy sweater, the garment is likely to grow over time as the fiber stretches. I hadn't much experience spinning alpaca until I started volunteering at a school with a spinning program and two alpacas on the working farm that is part of the campus. As I started working with alpaca fiber regularly, I started to appreciate its unique properties and learn how to spin it to best advantage. In this free eBook you will learn about the different types of alpaca and their fiber from Kaye Collins, who raises her own alpaca and has traveled extensively to the Andes of South America where the animals originate.

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Happy spinning,

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SPINNING ALPACA FOR KNITTING: *Huacaya alpaca*

I began spinning alpaca nearly ten years ago, when a friend asked me to spin samples from her animals. Over the ensuing years, my interest grew to such an extent that I completed the in-depth study for my Certificate of Excellence in Handspinning by working with alpaca.¹ I've learned more about alpaca than can be covered in a single article. So I'll start with an overview and then I'll focus on spinning Huacaya fiber—the “woolier” type of alpaca—to make knitting yarns.

by Kaye Collins

History

Alpacas come from the Camelidae family. Archaeological evidence indicates that their ancestors roamed the central plains of North America, although camelids became extinct on this continent by 10,000 B.C. One genus, consisting of the camelids who don't have humps, migrated to South America. This group is now represented by the alpaca, llama, guanaco, and vicuña.²

Domestication of the alpaca began several thousand years ago in the Andes Mountains, primarily in what is now Peru, Bolivia, and Chile.³ During the Spanish invasion of South America in the 1500s, sheep replaced camelids as the primary fiber source. It wasn't until the 1800s that alpaca fiber came back into demand, due to its “rediscovery” and promotion by one English businessman.

Today there are over three million alpacas. Eighty-five percent of these are in Peru, tended by Quechua and Aymara people. These animals support Peru's

multi-million-dollar alpaca industry. Exports include raw fiber, top, roving, and finished garments.

Alpacas were imported to the United States in 1984. By 1998, there were over 12,000 alpacas in the United States.

Huacaya and Suri

The two basic varieties of alpaca are Huacaya and Suri. These animals differ in appearance and fiber quality. The rounded Huacaya has dense, wool-like fiber. The slender, angular Suri, with a topknot over its eyes, has slick, lustrous fiber that hangs in ringlets called *roping*.

Below left: *Huacaya alpaca—the fluffier kind—named Sidhartha, from Pine Lake Alpacas in Washington.*

Below right: *Suri alpaca—the silkier kind—at the International Alpaca Association Conference in Arequipa, Peru.*



¹ The Certificate of Excellence in Handspinning program is sponsored by the Handweavers Guild of America (HGA). For more information, contact HGA, 1255 Buford Hwy., Ste. 211 Suwanee, GA, 30024. (678) 730-0010; hga@weavespindye.org; www.weavespindye.org.

² The genus *Lama*.

³ Estimates vary from 3000 to 6000 years ago.

Kaye's matching adult-and-child sweaters show the five natural colors of alpaca.





Kaye says, "When I was invited to Lima to set up a weaving and spinning display for a large wool/alpaca mill, I jumped at the chance. Several components of this trip led me further into my exploration of alpaca. The mill had just acquired a knitting factory, and my husband and I were impressed by its equipment and by the pure-alpaca garments it produced. This trip also coincided with the International Alpaca Association's annual conference in Arequipa. There we saw crowds of alpacas and breeders, and more alpaca garments. To see and touch so many lovely animals was a treat. I was even 'kissed' by a vicuña."

In both varieties, the fiber tends to be smooth and long, and spins into a soft, silky yarn with little loft. Alpaca can be soft enough to use next to the skin, and is nearly always durable enough for use in outerwear. As with sheep's wool, you need to evaluate fleeces individually.

Alpacas are basically single-coated and do not have guard hairs in the blanket area of the fleece. In general, alpaca is finer than sheep's wool. It comes in many natural colors, exhibits some crimp (more in the Huacaya than the Suri), has good insulating qualities, and is very strong. Most alpaca displays some luster and takes dye well. The fiber can be spun worsted or woolen; I often mix elements of both approaches to make yarns that preserve the luster and silkiness without being dense and heavy.

In one year, alpaca fiber grows an average of four inches (10 cm) and a single animal produces three to four pounds (1.3 to 1.8 kg) of fleece. The staple length depends

on shearing frequency. Most North American growers shear every one or two years. Staple lengths between 3 and 5 inches (7.5 and 12.5 cm) work well for spinning by themselves or in blends. Staple lengths greater than 5 to 6 inches (12.5 to 15 cm) offer no benefits and can cause nightmares in preparation.

Commercial preparations

Commercially prepared alpaca tops and rovings are readily available and often attractive. They are smooth, silky, and free of debris. However, I found that yarns I made from hand-prepared fiber tended to be lighter and more resilient than those spun from commercially processed fiber, even when I recarded it. (Some small processing companies can make a carded preparation that spins like hand-prepared fiber.) In another experiment, I fulled many samples. Those made from commercial preparations fulling 3 percent on average, while the hand-prepared samples fulling between 9 and 16 percent.

These observations suggest that alpaca is very sensitive to preparation method. I encourage spinners to experiment with raw alpaca fiber and not limit themselves to the packaged variety.

Choosing a fleece

It is a treat—if not always possible—to personally handle and choose a fleece. When ordering from a distance, ask for sample cards to help you select for color and softness. If possible, buy an ounce of each fleece you are considering and spin samples before you begin a large project. When you decide on a fleece, order plenty. It is almost impossible to match the fiber later, even when the second batch comes from the same animal as the first. You'll need enough for samples, and possibly to sort for color and texture.

Beware of debris. Each twig or seed must be picked out by hand. Dirt, on the other hand, washes out easily. Watch out for tender, sunburned tips, which may break off and cause *noils*, which are balls of short fibers.

Beware of *knots*, which some animals create by rolling on the ground a lot. Knots are different from noils; they occur when long fibers tangle together and they are difficult to pick out.

If you are faced with a fleece containing debris or knots, carding will make the situation worse. You'll have better luck if you comb.

Washing

I hand wash raw alpaca before spinning, although it's tempting to skip this step. The fiber is low in grease and you can comb it raw. However, if you wash first, the finished yarn ends up noticeably cleaner, especially for white fleeces. In colored fiber, washing makes slight color variations more obvious and you can decide how to handle them during processing.

Before washing, remove as much debris as possible. If the fleece has bleached or tender tips, trim them off. In washing, especially if I intend to comb the fiber, I work to maintain the lock formation, although alpaca fibers do not stick together in locks as sheep's wool does.

I use Dawn dishwashing liquid. You won't need extremely hot water, because you'll be removing mostly dirt or dust, rather than grease. Alpaca loses only about 7 to 10 percent of its raw weight in washing. Since alpaca does felt, rinse in water of the same temperature as your wash water and be careful not to agitate.

Preparation and spinning

For my study, I rigorously sampled eighteen fleeces. I spun each with woolen, semi-woolen, and worsted techniques for preparation, drafting, and finishing. I knitted samples, made notes, and learned a lot.

General observations. When planning your approach, consider staple length first. Shorter alpaca (1 to 4 inches, or 2.5 to 10 cm) may be carded and spun woolen or semi-woolen. Longer alpaca (over 5 to 6 inches, or 12.5 to 15 cm) works better if combed and then spun worsted or semi-worsted.

Plan to use a tensioner when plying to keep the tension even and prevent the singles from tangling, especially if you're working with more than two strands.

Pay close attention to joins. Alpaca will pull apart if your joins are weak.

Monitor the amount of twist you are inserting. Alpaca's inherent strength and long staples produce yarn that holds together with moderate twist, but you may need more twist to get the performance

you want. In both singles and plying, alpaca has a narrower range of twist tolerance than sheep's wool. It tends to be lackluster with too little twist and to bias in knitting with too much. You want enough twist to give your yarn integrity (this may be slightly more than "feels right" as you spin), but not so much that the yarn becomes harsh. Sample often.

If you will be working with a pattern designed for wool yarn, spin a slightly finer weight in alpaca. Full your yarn; make and wash swatches.

Woolen techniques. Woolen yarn, spun from carded fiber, incorporates a lot of air. It's light and fluffy, and insulates well. I got smoother-spinning fiber from drum carding than from hand carding, even when I used cotton carders. I learned to card only enough to open the fibers completely. Extra processing caused breakage.

Because of the fiber length, I run alpaca through the drum carder in a particular way. For the first pass, I hold the loose fiber against the back side of the large drum, allowing the fiber to wrap directly around that drum. This helps open the locks and keeps them from binding between the two drums. I split the resulting batts lengthwise and then card them normally once or twice, running them under the lick (smaller drum). To maximize air in drum-prepared fiber, I split each batt sideways into three or four pieces and pull a loose roving from the *side* of each section.

I spin woolen yarn using a *long draw* (often called a *one-handed draw*), not allowing my front hand to smooth or compress the yarn. In a long draw you quickly draft out an arm's length of fiber and then gently tug with your back hand to even out the thickness as twist continues to enter the fiber. You quickly allow this yarn to draw in and draft another length. This is an easy draw, and you'll need to be careful to put in enough twist.

A spinning trick I found useful when spinning in this style is one I call the "roll-back method." The front hand not only stops the twist from advancing into the forming yarn but actually untwists the yarn slightly, so the back hand can draft more easily and can even out thick spots. The thumb of the front hand rolls across the yarn to quickly untwist it. (This is the opposite of fingering in the twist, often used in worsted spinning.) Then the back hand quickly drafts a bit more and the

In her study, Kaye sampled more than forty-five fleeces and put eighteen through a full set of tests. Red folders signified Huacaya fiber, and each full review was recorded in detail.





Kaye's adult-and-child matching sweaters show the intensity and variety of natural colors alpacas provide. The sweaters aren't heavier than their sheep's wool equivalents. The models are Jean Campbell, former editor of Beadwork magazine, and her son, Dylan.

spinning rhythm continues.

To finish my woolen yarns, I lightly wash the skeins and hang them unweighted to dry.

Semi-woolen techniques. In a semi-woolen yarn, the fibers are aligned more noticeably with each other and with the yarn's axis than in a woolen yarn, yet the yarn is fluffier than a worsted yarn. I wash and drum-card the fibers as above, then split the batts *lengthwise* into three or four narrow sections and pull a roving from one end of each section. I lightly predraft, then spin and finish as above.

Worsted techniques. Worsted yarns are smooth and dense. They are spun from fibers of similar lengths which are prepared and spun in ways that align them with each other and with the yarn's axis. Alpaca fiber is strong, dense, and smooth; worsted preparation emphasizes these qualities. The long alpaca fibers tend to align themselves, no matter what you do. You'll usually want to spin with a light touch to keep the yarn from feeling excessively dense.

Fiber for worsted yarns is combed to remove all the short fibers. You may use a dog comb (slow, but good for sampling), mini combs, or large wool combs. The fiber's fineness suits combs with a large

number of fine tines. I clamp a mini-comb to a table or use wool combs (five-row MEP combs by John Meck). I begin with the cut ends of the locks in the tines, keep track of the number of passes, and prepare my roving so that I begin spinning from the cut ends.

I spray the fiber lightly with an oil/water mixture to reduce static electricity. (This may not be necessary in a more humid climate.) Then I comb. When it's time to pull the fiber off the combs, I don't think a diz helps. I wrap the prepared fiber around my right hand, coiling so the end where I'll begin spinning is on the outside.

In worsted spinning, twist never enters the drafting zone. The fiber is drafted out between the two hands. Once the fiber is completely drafted, the front hand slides down the yarn, fingering in the twist and compressing the yarn. Spinning is easy (be sure there's enough twist) and the yarn is smooth and compact. I wrap the yarn around a niddy noddy made from PVC pipe, on which I wash, rinse, and dry the skein.

Natural-colored sweaters

Huacaya alpaca comes in rich natural colors. The fleeces in these garments represent the five basic colors: brown, shiny true black, light charcoal gray, fawn (this is Peruvian), and white (this is baby alpaca). While brown is common, the unusually inspiring fleece in these sweaters had lovely red highlights, especially in the sunlight.

The larger sweater fits my husband, and I made a sweater for my grandson from the leftovers. I chose the adult pattern from *Abstracts Images*, by Lee Andersen. It calls for worsted-weight yarn. After fulling, my alpaca samples worked up at 20 stitches and 26 rows to 4 inches (10 cm).

I was concerned that the alpaca would make a very heavy sweater. In fact, the finished garment was lighter than it would have been if made from commercial wool.

My techniques combined woolen and worsted elements to achieve this lightness. I drum carded everything except the fawn, which I combed to remove broken tips, knots, and fragile fibers. I spun from the end of each batt, so the fibers were somewhat aligned. The singles averaged eight twists per inch (2.5 cm), and the finished yarn was a soft two-ply, averaging four plying twists to the inch (2.5 cm), 15 to 17

wraps per inch (2.5 cm), and 65 yards per ounce (1040 yards per pound).

I spun the yarn with the point of twist method, a modification of the long draw in which the front hand exerts some control on twist insertion. This very fast draw allows the yarn to be airy and soft. The back hand holds the fiber and drafts ahead of the twist. The front hand pinches the yarn near the orifice, keeping part of the twist from entering the forming yarn as the back hand drafts. The front hand releases and allows more twist to run down the already lightly twisted yarn between the hands. The front hand moves along the new length of yarn and pinches again, then allows the yarn to feed into the orifice. The front hand only opens and closes as it controls the twist, never fingering in the twist or compressing the yarn as it might in worsted spinning. The back hand must stay just ahead of the twist (often referred to as the drafting triangle; see page 205 of *In Sheep's Clothing* by Fournier and Fournier).

I used a firm corrugated ribbing on the sweaters, alternating brown alpaca and black sheep's wool. The wool helps the ribbings hold their shape; alpaca is notoriously inelastic when used alone. Because corrugated ribbing is worked throughout with two strands, I spun these yarns finer than the body yarns. The alpaca measured 20 wraps per inch (2.5 cm), 76 yards per ounce (1216 yards per pound). The wool fullled to 16 wraps per inch (2.5 cm).

The intarsia patterning required up to sixteen yarns per row. Alpaca is slippery and not as pliable as wool. In order to secure the ends so they wouldn't work their way out of the fabric, I stitched each in place with sewing thread.

Baby alpaca for baby people

Alpaca makes nice baby garments. It is silky and soft (especially in the lower micron counts) and raises minimal fuzz. In another part of my study, I experimented with samples from young alpacas.

Most alpaca measures between 17 and 35 microns. In Peru, *baby alpaca* is defined as having a micron count of less than 25. For comparison, the micron count of cashmere is no more than 18.5.

In the United States, an animal's first shearing is often referred to as *baby alpaca* or *cria alpaca*. While the first shearing is

usually the finest fleece an animal will ever produce, the fiber may or may not measure less than 25 microns.

When ordering baby alpaca, it helps to know the micron count. Some breeders have this information. Also, be forewarned that the first shearing may contain debris and knots. Those babies love to roll and play.

Spinning baby-fine alpaca is a treat. The fiber looks, feels, and acts like cashmere, only the fiber is not so short! The other tactile comparison I would make is to a Merino wool/silk blend. Some of these fleeces have regular and fine crimp, with resulting elasticity. My yarns were strong, light, and airy. They fullled dramatically and evidenced a lovely sheen.

The first fleece I sampled was advertised as *cria alpaca*, so I knew it came from a first shearing but had no information on its fineness. The yarn was extremely soft and smooth. The second fleece tested at

Take a look at the fiber at the top of this photo. It's alpaca, and there's crimp there. The lace scarf was knitted from a fine, two-ply, worsted yarn. The fleece came from a two-year-old Huacaya alpaca. The fleece is white and has a low micron count. The scarf measures 58 by 8 inches (147 by 20 cm) and weighs 1.3 ounces (37 g).

The baby cap and booties resulted from Kaye's experiments with fiber from young alpacas, which tends to be fine and soft.



21 microns; it contained debris (removed by combing) and occasional black hairs. The final fleece was the one I ultimately worked up in a project. It was one year's growth (second shearing) and measured 20 microns, with a staple length of 5 to 6 inches (12.5 to 15 cm) and an even, moderate amount of crimp. Some debris needed to be picked out. After washing, the fleece was a lovely white.

My sample yarns fullled a surprising amount during finishing. The woolen and semi-woolen yarns fullled the most, ending up as very soft, light, and springy yarns. The worsted sample, slightly denser and silkier, gave better stitch definition in its swatch. I brushed half of each swatch to see how the fabric would look after wear. I decided to combine techniques to make a yarn that was smooth enough to provide clarity in the pattern without being dense.

I ordered one pound—much more than I needed, because I wasn't done sampling. I experimented with yarn diameters in two- and three-ply yarns, and settled on a fine two-ply at 20 wraps per inch (2.5 cm).

The cap pattern came from *Star Baby Book No. 96*, published in 1952. I had trouble getting the back to look just right, and knitted it several times. Finally, I wore out the yarn and had to spin more! I designed booties to match the hat.

I lightly washed the finished garments and laid them flat to dry. I chose pink ribbon as an accent, I suppose because I raised four girls.

Alpaca blends

I blended alpaca with four other fibers: angora rabbit, silk, kid mohair, and sheep's wool. This selection included fibers that were similar to and distinctly different from the alpaca. I blended each fiber with alpaca at ratios of 1:3, 1:1, and 3:1. I also made combination yarns by plying together one strand each of alpaca and the other fiber.

The alpaca was creamy white, baby-fine, and came as commercially carded roving.⁴ The staple length was less than three inches (7.5 cm). I thought the short fibers would survive the intensive processing relatively undamaged; this was true.

I separated the alpaca into staple-length segments and ran it through the drum carder with the companion fiber three times. I split the batts lengthwise and spun from the end of each section. I chose my drafting technique to emphasize the woolen or worsted qualities of each blend. Since the alpaca was consistent, my choice was determined primarily by the characteristics of the added fiber. All yarns were finished with a light wash and rinse, then hung unweighted to preserve elasticity.

Angora rabbit. I chose German angora because it is strong and less likely than other types of angora to pill during carding. The alpaca was not a true white and the angora was a sparkling white; careful blending obscured this difference. I spun a loose, open yarn, using a long draw to capitalize on the angora's softness and lightness.

When I plied alpaca and angora together, the yarn looked irregular because the angora fluffed out more than the alpaca. Some sheen is evident in the alpaca strand.

Silk. The alpaca was a creamy, rather than pure, white, so I blended with Tussah silk. I used a worsted-style draw to emphasize the smoothness and natural sheen of both fibers.

When I plied together strands of these fibers, the colors matched but the textures differed. This became more evident when the alpaca fullled and the silk didn't. This effect could be exploited by using contrasting colors or different sizes of singles.

Alpaca and silk make a lovely combination. The fibers are both slick and

This was one of Kaye's "unsuccessful" experiments. We'll take it! Kaye thought the French angora in the white yarn created too much of a halo, which in turn obscured the patterning. She moved on in her experiments, using German angora in her blends for the headband and hat shown opposite.



⁴ The next year I was able to acquire raw fleece from the same animal. As was becoming usual, I preferred working with raw fiber.



In Kaye's blending exercises, the headband above was practice for the hat. In both, the background in the body of the object is pure alpaca in an intense black. The ribbing combines wool with alpaca for greater elasticity, and the white pattern yarn is a blend of alpaca and German angora, which adds dimension, sparkle, and extra warmth. The gray accent yarn is pure alpaca.

Kaye offers special thanks to several breeders who shared time, knowledge, experience, and fiber: Chris and Phil Switzer, Switzer-Land Paco-Vicuñas and Alpacas, www.alpacaland.com. Elaine and Ted Chepolis, Pine Lake Alpacas, www.alpacacom.com/home.html; Sue Scott.

dense; the finished yarn feels softer and shinier than straight alpaca. When using a combination like this for knitting, keep in mind that the yarn has minimal elasticity. This blend is well suited for use in weaving, either as warp (it is certainly strong) or as weft.

Kid mohair. The kid mohair was a first shearing, and whiter than the alpaca. I spun worsted-style. Kid mohair and alpaca make a fabulous combination. They are similar in fineness, luster, strength, and staple length. The mohair added sheen to the combination, and produced loft when the fabric was brushed.

When I plied together strands of alpaca and kid mohair, the plies were hard to balance. The mohair spiraled around the alpaca. The distinctive sheen of the mohair is evident in the finished yarn.

Norwegian-style headgear

I designed these items in part to make use of alpaca's natural blacks. I started with a headband because I wanted to refine my choices on a small project. I was looking for warmth, elasticity, and softness, so that the headband—and ultimately the hat—would be warm and soft and would stay on the head. I also wanted the finished items to look great, of course.

In both projects, I worked with sport-weight to medium-weight yarns, with 100 percent alpaca as the background yarn in the body. I used blends in the ribbing (for performance) and in the accent yarn (for warmth and aesthetics).

The background yarn in the body of the ski band is solid black alpaca. I spun samples from two black alpacas, using worsted techniques to maximize smoothness and sheen. My ultimate three-ply yarn measured 14 wraps per inch (2.5 cm).

For the ribbing, I blended black alpaca with black sheep's wool to increase elasticity. The first wool was too coarse, so I switched to a very soft, fine, first-shearing lamb's wool. I blended on the combs, alternating locks of wool and alpaca as I loaded. When I pulled off the top, the fibers were somewhat unevenly mixed, despite careful combing. I spun samples and decided on a 1:1 blend in a two-ply yarn (the rest of the yarns for the headband were three-ply).

For the snowflake pattern, I blended white alpaca with German-cross angora. The alpaca, a first shearing, was whiter

than usual. After sampling, I blended the fibers 1:1 and made a three-ply yarn at 13.5 wraps per inch (2.5 cm). I liked the contrast between the fuzzy pattern yarn and the smooth background.

When I got to the hat, I found a design used for the Norwegian ski team at the 1984 Olympics. I spun smooth, even, sportweight, three-ply yarns. The weight of the alpaca hat matches that of a similar hat knitted from handspun sheep's wool.

I drum-carded all the fibers except the gray alpaca, which I combed to remove knots and fragile tips. For the ribbing, I prepared a 1:1 blend of alpaca and fine wool. Both fibers were richly black and had sunburned tips, which I cut off. I also picked a lot of debris out of the alpaca. The gray alpaca was a bouncy fleece which produced a soft, light yarn, even when spun worsted-style. I blended German angora with alpaca for the white accent.

Before leaving you to experiment with alpaca on your own, I need to warn you about books-on-tape. When I spun one of these yarns the first time, I was listening to a suspenseful set of tapes and kept spinning faster. The yarn ended up too fine, and I had to find another black fleece and begin again!

These projects represent only a few of the wonderful items that can be made from alpaca. I have also made lace bookmarks, a knitted lace scarf and shawls, socks, knit/felted items, toy animals, woven scarves, macramé cord (from coarse fibers), and a natural-colored afghan.

Alpaca comes in fantastic colors, can be blended to create special effects and to enhance performance, is easy to prepare from the raw state, and slides smoothly through your fingers as you draft and again as you knit or weave. When you're looking for fiber adventure, consider alpaca. ❖

Kaye Collins lives in Livermore, Colorado. She operates a custom spinning and design business called Fiber to Fabric. Kaye has been spinning since 1981 and knitting since third grade. She has earned a Certificate of Excellence in Handspinning, is a Master Knitter, and is a Certified Knitting Instructor through the Knitting Guild of America. She enjoys spinning exotic fibers, including dog down from her two Samoyeds (see the Fall 1991 issue of Spin-Off).

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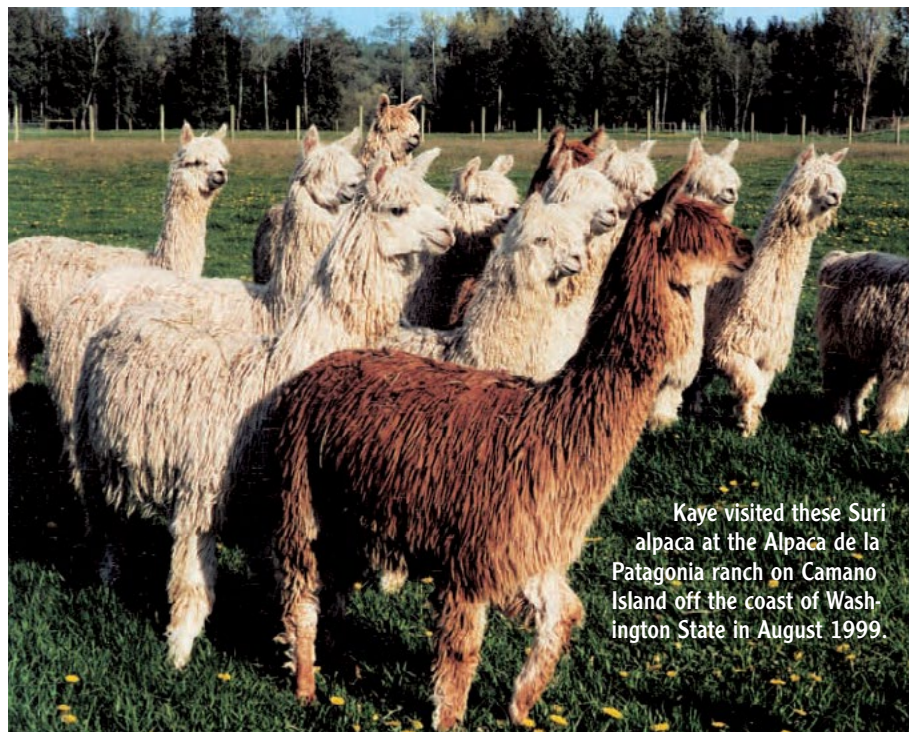
Spin·Off magazine, published four times a year, features articles about the ancient and thriving craft of spinning. Each issue highlights the vibrant and diverse spinning community and explores the intricacies of spinning. Travel around the world to learn new spinning techniques, discover new and old spinning tools, and sit down with knowledgeable instructors whose craft and experience will enrich your life!

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Spinning Suri Alpaca

Step-by-step instruction from a Master Spinner

BY KAYE COLLINS



Kaye visited these Suri alpaca at the Alpaca de la Patagonia ranch on Camano Island off the coast of Washington State in August 1999.

PHOTO BY KAYE COLLINS

HAVE YOU recently discovered that bag of alpaca fiber stashed in the closet? Or perhaps you purchased some luscious alpaca at a spinning event and have now decided to spin it. If so, here are some tips on how to transform this gorgeous fiber into beautiful yarns.

There are two basic breeds of alpacas: Huacaya and Suri. The rich deep colors and crimp waves of Huacaya alpaca have made it very popular among spinners. I wrote about spinning Huacaya alpaca into yarns for knitting in the Summer 1999 issue of *Spin-Off*. In the present article I'll focus on the "other" alpaca, Suri, but much of my advice on fiber preparation and spinning applies to both breeds.

Although there are nearly 4,000 Suri alpaca in the United States, this breed represents less than 6 percent of all the alpacas worldwide. This means that

Suri alpaca fiber is relatively rare. It is unique and very desirable. I have produced my loveliest and finest yarns using ultra-fine Suri. This fiber is fine and soft like cashmere with the sheen and smoothness of silk. Suri also has the added benefit of a long staple length. Once Suri fiber is well prepared, it spins so easily you can forget your troubles, relax, and spin, spin, spin.

Although I have had some challenges working with Suri fiber, I enjoy spinning it and experimenting with the yarns. Nearly all Suri yarns are well suited for weaving. (In Peru, Suri fiber is spun worsted style and woven into cloth that is often brushed. It makes lovely overcoats, jackets, and blazers.) The yarns do not exhibit elasticity, especially when blocked, and are very strong even when spun very fine.


Suri fibers are dense, with no medulla (hollow core), and unless the

yarn is spun fine it may produce a garment that is heavy and tends to sag. The knitting yarns I have created with Suri alpaca are ideal for lace. One caution: Suri yarns tend to be slippery so it is important to leave very long ends when you're changing yarns and to carefully weave those loose ends into the fabric afterwards. I've even resorted to using sewing thread to tack those pesky tails in place!

Finding Suri fiber

Very few mill preparations of Suri alpaca fiber are available to handspinners today. Louet sells a Suri roving that comes from Europe, and some American Suri raisers send their fiber to processing companies that wash and comb or card it into roving for sale. During this commercial processing, fibers get straightened and aligned, and the roving gets compressed, so it can be difficult to spin a light, airy, knitting yarn from roving. I think starting with raw fleece and hand-preparing the fiber makes yarn that is lighter, has more spring, and feels exceptionally soft and lively. But if you want to spin yarns for weaving, you may be pleased with the results you get from roving.

Finding a good Suri fleece takes patience and research. Many alpaca raisers in the United States have recently started breeding Suri alpacas. However, the handspinner's market is still very limited. You can get a list of Suri alpaca raisers through the Internet (www.surinetwork.org) and possibly purchase Suri fleece directly. Expect to pay around \$2.50 to \$5.00 per ounce for raw Suri fleece. Be a discriminating buyer and get samples first before ordering in quantity.

The image displays three distinct alpaca fiber samples, each featuring a decorative edging. The top sample is a dark brown fiber with a crocheted edging in a spider pattern, which is a rectangular piece with a central knot and radiating lines. The middle sample is a light cream-colored fiber with a crocheted edging in a similar spider pattern, accompanied by a small ball of yarn. The bottom sample is a light tan fiber with a knitted edging in the same spider pattern. Each fiber sample is long and wispy, with the bottom two having long, thin tails.

Edging for the semi-circular scarf in spider pattern from the Art of Shetland Lace by Sarah Don, page 106. The fiber is a two-year growth, 8–10" staple (22.6 microns) from a male Suri named Tacna from Switzerland Alpacas.

Crocheted edging from a female Suri from Alpacas of America. The fiber is a 2½ year growth and has a micron count of less than 21.

Knitted from the same pattern as the Top edging. The fiber is a two-year growth, 6–10" staple (20 microns) from a female Suri named Goldilocks from Switzerland Alpacas.

What to look for when purchasing Suri alpaca fleece

- Cleanliness is very important. Beware of fleeces with excessive vegetation. These may produce a lovely yarn but the waste is considerable and processing takes extra care and time.
- Usually, the **finer** the fleece, the softer it feels. Some Suri fiber may be as fine as cashmere (less than 20 microns). A micron is one thousandth of a millimeter. The average fiber diameter for Suri is about 25 to 27 microns, but occasionally Suri fiber is coarser than that. Fiber over 30 microns makes yarn that looks hairy and feels prickly. The range from fine to coarse fibers in a fleece is called the “standard deviation.” There is greater deviation in Suri fleeces than in most Huacaya fleeces. Coarse Suri is usable for rugs or outerwear, but not for next-to-the-skin wear.
- Appropriate **staple**. The length of the fibers, or the staple, varies depending on the age of the animal and the interval between shearing. Some raisers keep several years’ growth of fleece on their animals to make the animals attractive for sale. Such fleeces look dramatic but can be a nightmare to prepare. If the fiber has been on the animal for several years and is longer than 8 inches it will probably contain some debris and felted areas, as well as fragile tips. Most raisers agree that frequent shearing (yearly in most areas) produces the best fleece for hand-spinning. Shorter fibers are easier to clean and prepare. When I get a nice fleece that is exceptionally long, I cut the locks in the middle to make the fiber more manageable or I spin over-the-fold.
- The most readily available **color** is creamy white. Although most Suri animals imported to the United States are white or light fawn, selective breeding has added dark fawn, brown and, rarely, black. Colored Suri is very attractive but the most difficult to acquire.
- The Suri fleece exhibits **luster**, often referred to as sheen. This makes it very attractive and reminds one of silk.
- Suri fiber does not have **crimp**, as seen in some Huacaya fleeces, although it does have distinctly curly locks. It’s unclear how the lock formation and the density of the locks affect handspinning, but it does seem that the tighter the curl or twist and the denser the fleece, the finer the fibers.

Washing alpaca fleece

Some spinners suggest spinning alpaca straight from the unwashed locks. Personally, I do not like to work with raw (unclean) fiber. Even if a fleece is exceptionally clean, up to 10 percent of the weight is dirt that spins into the yarn and rubs off on your hands and equipment. When you’re working with a washed fleece, you can clearly see areas that contain a high amount of debris and skirt these out, and you can identify and combine areas of varied color to make a uniform yarn. I suggest careful washing using a mild dishwashing liquid and warm water. I allow at least two clear rinses and squeeze out the excess water. I lay the wet fiber to dry on a sweater rack or on a window screen that is slightly elevated over a large table.

How to spin alpaca from prepared top

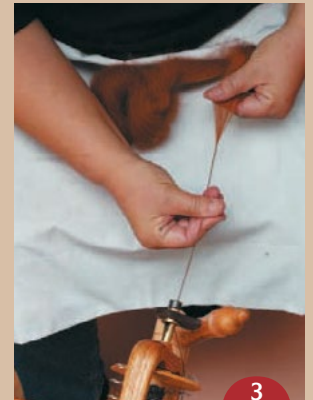
Most spinners are introduced to alpaca fiber by first handling the beautifully prepared combed top that they find in their local fiber shop. This is almost always Huacaya alpaca and comes in natural shades of white, brown, and gray; it is sometimes available in dyed colors. Here are a couple of tips that will enhance your experience with spinning alpaca top.



1. Before you begin spinning, divide a long section (1 to 2 yards) of the top lengthwise into halves.



2. Gently predraft each half. This opens up the fibers so that they spin more easily. If you are still having trouble drafting, turn the roving upside down and spin from the other end.



3. Prepared alpaca top spins easily and makes a lovely yarn when it is spun with a woolen technique. Sometimes I run a commercially prepared top through the drum carder once to open up the fibers and add more air to the preparation.

Carding alpaca on a drum carder

Maybe you’ve found a gorgeous alpaca fleece and are now ready to process it for spinning. After washing the fleece to remove grease and vegetation, you can drum-card it (look above for washing tips).



4. Instead of feeding the fiber onto the tray which pulls the fiber under the small cylinder and transfers it to the large cylinder, try feeding the teased locks directly onto the large cylinder. This technique helps prevent the tangles that can occur when some long fibers don’t transfer. (Alpaca fiber is typically longer than most wool fibers.)



5. After you have filled the large cylinder, doff the batt (take it off the cylinder) and divide it in half lengthwise. Then gently feed each half onto the tray in the normal fashion. Repeat this process once or twice to improve the results. Divide the carded batt once or twice before spinning.

Combing and worsted preparation

After extensive sampling I have found Suri to be well suited for the worsted style of preparation and spinning because of its long staple length and its slick, smooth character. In order to have a truly worsted yarn, you must comb the fiber. For very fine fibers I like to use two-row mini-combs.



6. Wash the locks of Suri fiber undisturbed, without picking, in order to facilitate combing. Place the butt or cut end of each lock on the tines of the combs and follow with a sprinkling of cornstarch to control static electricity.

7. The moving comb, held sideways in your right hand, collects fiber as it passes sideways through the locks on the upright stationary comb starting at the fiber tips and moving toward the tines.

8. Reverse your passes to replace the fibers on the stationary comb.

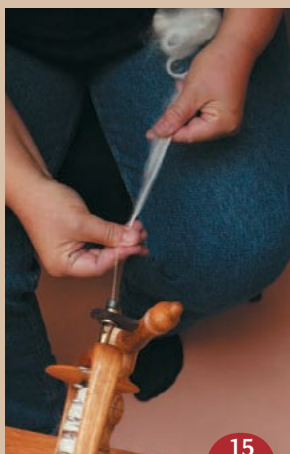
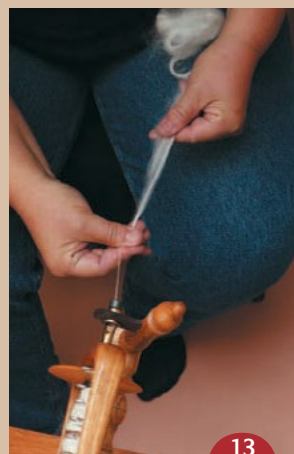
9. Sometimes it is necessary to repeat this process.

10. and 11. Starting with the tips of the fibers, draft a light and airy top from the stationary comb.

12. Wrap the top around your right hand as it turns clockwise. You'll end with the butt end of the fibers out, ready to spin.

Worsted spinning

Spinning Suri alpaca worsted style produces a yarn that is smooth, dense, lustrous, and durable. Once you have made a fine and airy top by combing, you will find it spins easily, quickly, and enjoyably.



13. The back hand lightly holds the sliver as the front hand controls the twist. Your two hands are separated; the distance depends on the staple length of the fibers. The back hand gently drafts the sliver, allowing only a few fibers between your hands as the front hand firmly pinches the yarn to prevent twist from entering until drafting is completed.

14. The front hand guides the twist toward the back hand, condensing the fibers as the twist enters. With Suri it is important to *gently* compress the fibers so you don't make the yarn any heavier than it needs to be.

15. The final step is to feed the newly twisted yarn onto the bobbin. Repeating these three steps with consistent treadling establishes a rhythm.

Spinning over-the-fold

One method of spinning prepared Suri roving is over-the-fold. This technique makes spinning long fibers more manageable. Begin by pulling off a staple length and placing these fibers on your lap.



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16. You will fold these fibers over your index finger, holding them gently with your lower fingers and thumb. Allow the fibers at the center of the fold to twist into the yarn as you draft backwards.

17. You can take your index finger out of the fold, continuing to hold the folded fibers with your lower fingers and thumb and drafting as you would normally.

Judging twist

While spinning Suri, I find it necessary to stop regularly and sample my yarn by allowing 10 to 20 inches to twist back on itself to see if the yarn contains enough twist for a two-ply yarn. If it doesn't, I respin the yarn to add more twist. Fine yarn requires more twist than heavy yarn and it seems that Suri resists this twist. Using enough twist is especially important for knitting lace, because lace has many yarnovers (holes) where the yarn is exposed to extra stress.

"Bubbling" and problem solving

I normally wash and rinse my smooth, even, two-ply knitting yarns and let them hang unweighted to dry, but when I tried this with my first skeins of Suri alpaca I had a surprise. When dry, the yarn had regular areas of untwisted fiber that bubbled out of the singles and made it look like a "designer" yarn. Through careful observation I finally discovered that some of the fibers were fulling or drawing in while some were not. I solved this problem by wrapping the finished yarn on a niddy noddly made from PVC pipe, and I washed, rinsed, and dried the yarn while it was still on the niddy noddly. For larger projects I wrapped clean, wet Suri yarn around a large yarn blocker. The highly blocked yarn did not bubble and was very smooth and inelastic. Since lace yarn does not require elasticity, this yarn was still well suited for my purpose.



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When I first encountered this problem, I thought my preparation and spinning techniques were causing the bubbling. But after extensive experimentation, I found once the yarns were initially blocked, they did not bubble nearly as much when they were rewashed and dried. Since lace is usually blocked after each washing, this was not a problem for the piece I was making. I also discovered that mill spun Suri yarn bubbles when washed in hot water—which is necessary to remove the spinning oil. I believe the fiber is similar to mohair and the natural helical twist in each Suri fiber also contributes to the bubbling effect.

18. Kaye wraps her skeins of Suri alpaca yarn on a niddy noddly made from PVC pipe and washes, rinses, and dries the yarn while it is still on the niddy noddly to solve the "bubbling" problem she was having with untensioned yarn.



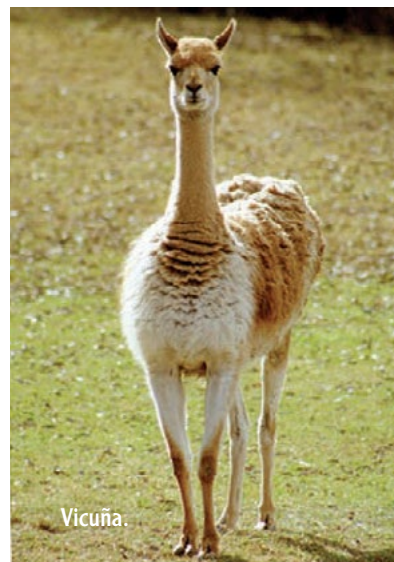
PACO-VICUÑA

SPINNING THE YARN OF A NEWCOMER

BY KAYE D. COLLINS



Chris and Phil Switzer with Quesa (an alpaca), Luna (a paco-vicuña), and Calypso (an intermediate paco-vicuña).



Vicuña.

PHOTO BY BRENT HUFFMAN, WWW.ULTIMATEUNGULATE.COM

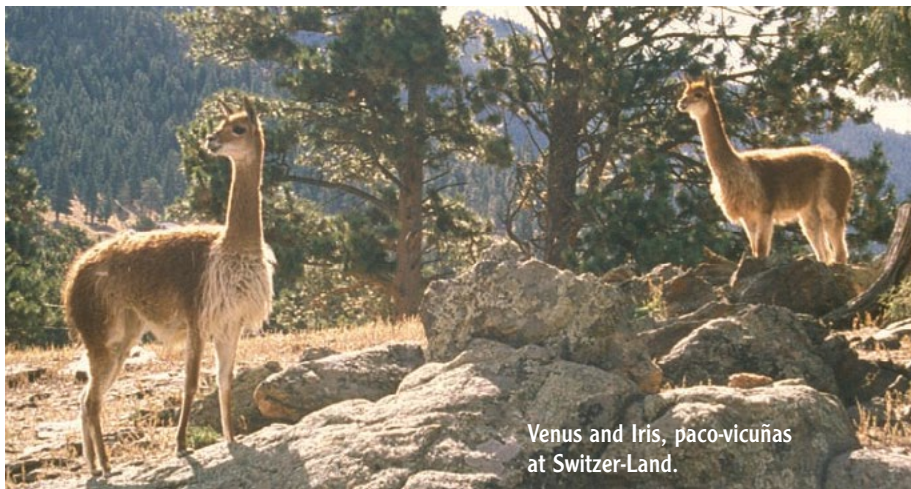
WITH SO MANY new and fantastic spinning fibers on the market (Soy Silk, bamboo, ingeo) it is hard to believe there could possibly be more—but it's true. Paco-vicuña is the newest fiber-producing camelid in North America.

In 1998, Phil, Chris, and Dave Switzer of Switzer-Land Alpacas in Estes Park, Colorado, began selecting special alpacas from those they could import directly from Peru, Argentina, Bolivia, or Chile. They were looking for alpacas that clearly exhibited many of the characteristics of the vicuña, the wild predecessor of the domesticated alpaca. The Switzers selected a small group of animals and tested their DNA for vicuña origin, and then imported the animals to Colorado. Through the Switzers' careful breeding efforts, the American paco-vicuña was developed, a camelid that maintains quality alpaca characteristics and exhibits valuable vicuña traits.

Vicuña, the spirit and life-blood of the camelid family

The wild ancestor of the alpaca, the vicuña roams between 13,000 and 16,000 feet above sea level in the Andes of South America. With a light-colored bib on its chest, the typical vicuña weighs between 90 and 110 pounds and has little leg or head wool. The vicuña offers some of the

finest fleece in the world, with the diameter of a single strand measuring between 11 and 16 microns (a micron is $\frac{1}{25,000}$ of an inch). The golden beige color of the vicuña fleece is so distinct that vicuña has become its own color name. In fact, a garment may be dubbed vicuña color (close to cinnamon) yet contain no actual vicuña fiber.



Venus and Iris, paco-vicuñas at Switzer-Land.

PHOTO BY DAVE SWITZER



Swatches A and B and swatches (C) for the scarf and the headband (D).

Paco-vicuña fiber

Color: Varied shades from creamy white to rich cinnamon brown.

Fineness: 14–23 microns with an occasional coarser fiber.

Staple length: Depends on frequency of shearing, normally done every 2 to 3 years. From my sample fibers, I found 4 inches as an average.

Strength: High tensile strength similar to alpaca and silk. It's possible that importation and quarantine may have stressed some of the animals and weakened the fibers. Such stress should not be a problem in subsequent American-bred fleeces.

Sheen: Similar to cashmere.

Elasticity: Paco-vicuña exhibits little crimp but some *crinkle* (waviness in individual fibers). Finished yarns have a bounce similar to cashmere.

Ease of spinning: Very easy to card or comb; spins easily with a worsted or woolen drafting technique.

Price: Raw paco-vicuña fiber sells for \$25 to \$42 an ounce. Compare that to alpaca roving that sells for \$2 to \$4 per ounce, ready-to-spin cashmere that sells for \$12 to \$15 per ounce, guanaco (another Andean camelid) that sells for \$30 per ounce, and pure vicuña that sells for a whopping \$250 per ounce.

Directions for the headband are available
at Spinningdaily.com



Before the Spanish invasion of the Andes, the luscious vicuña fiber was so prized that it was reserved for royalty. Commoners were executed if they were caught wearing vicuña garments. Harvesting the fiber has always been difficult because vicuñas are strong and very wild. As a consequence, many animals were killed to obtain their valuable fiber and pelts. This slaughter reduced population so dramatically that, in the late 1960s, vicuñas were on the Endangered Species list. Strong conservation efforts by the Andean countries and ethical harvesting (government sanctioned roundups in the wild called *Chacus*) have enabled the population to grow once again, and the vicuña has been elevated to threatened status. A vigorous wild animal, the vicuña still roams freely in large areas, and it's difficult to keep in captivity or train.

The vicuña has a slow growing double-coated fleece. The *coarser hairs* (intermediate-sized medullated fibers) range around 25 microns and protect the soft, dense under down. Dehairing is required after shearing. In Peru, hand-dehairing yields only 75 percent down, about 1 to 2 inches in length. Select mills in Peru are licensed to harvest, process, and weave or knit vicuña fiber. The fabric is sold for \$1,200 per square meter, with scarves selling for \$400 and shawls for \$800.

Alpaca

Some archaeologists suggest that as far back as 6,000 to 8,000 years ago the Andean people began domesticating the wild vicuña and creating what we now call the alpaca. Alpacas are heavier than vicuñas, weighing 125 to 185 pounds, with a dense fiber that grows longer and faster than vicuña fiber. The average annual weight of alpaca fleece is 4 to 7 pounds. Alpacas have been bred for many features including a wide variety of colors. They're very trainable, breed well in a domestic herd, and, with their large soft brown eyes, have very endearing personalities.

Alpaca fiber is soft and slick with a sensuous feel. The micron count ranges between 20 and 32, and the annual growth averages 5 inches per year. Twenty-two natural alpaca hues (in the ranges from grays to black and all shades of brown and white) are recognized by the Alpaca Owners and Breeders of America.

Paco-vicuña in North America

One of the first documented alpaca-vicuña breeding programs was held in the 1840s by Father Don Julio Cabrera of Peru, but eventually these animals

characteristics vary, though they typically don't contain the coarse hairs that have to be removed from pure vicuña fleeces. Nearly all the debris was picked clean from the raw fiber; the fine, small pieces fell out during processing.

I carefully washed each fleece (about 4 ounces at a time) with mild dishwashing detergent in warm water. I rinsed it in warm water and laid the fibers out on a screen to air dry. To prevent breakage, you should refrain from handling the fiber while it's wet.

When the paco-vicuña was complete-



Eleo (pictured here with her newborn cria).

PHOTO BY CHRIS FITZGERALD

were released to the wild and assimilated into alpaca herds. In the mid 1960s, a brief test breeding of vicuña and alpaca by Professor Rigoberto Calle Escobar of Peru created a new breed, the paco-vicuña.

The North American program of interbreeding paco-vicuñas has created a distinct animal whose soft, fine fleece offers the characteristic vicuña color range. The population is limited (see Resources for the list of breeders).

Spinning paco-vicuña

I spun a few ounces from four paco-vicuña fleeces from Switzer-Land Alpacas to sample the fiber and make a few small projects. Each fleece is individual and the

ly dry, I drumcarded the fibers to align them for easy spinning. I blended some fiber with silk on the drumcarder and found that the paco-vicuña blends easily without breakage. For the finest possible preparation, I combed the fleece with minicombs to make a top from which it was easy to spin a fine, smooth, and very soft yarn.

Paco-vicuñas offer several shades of color in each fleece. In order to maintain a completely even color throughout a garment, card all the fibers together before combing.

Carding paco-vicuña and spinning woolen-style

Like alpaca fiber, paco-vicuña has a long

staple length and a smooth outer surface. These features allow the fibers to line up easily during preparation and spinning, and the resulting yarn is worsted in character. I like to encourage woolen aspects in my own yarn¹ by carding the fibers (I use a Patrick Green drumcarder with fur

Swatch B

Fibers: Medium beige paco-vicuña and tussah silk roving, 70/30 blend. I first washed and drumcarded the paco-vicuña fiber on my Patrick Green drumcarder with the fur cloth several times for even color distribution. Then I added the tussah roving by recarding three times for thorough blending. I thought that using 30 percent silk might overpower the paco-vicuña, but I was surprised how well they blended. The paco-vicuña did not break or noil with repeated passes through the drumcarder, but the silk did begin to ball up a little after the third time through. In the spinning, the silk worked as a good extender for the paco-vicuña

without significantly changing its inherent qualities. The yarn's sheen was only slightly enhanced, while the softness and strength characteristic of paco-vicuña was maintained.

Yarn: 2-ply, drumcarded, and spun woolen-style (the yarn might have exhibited more sheen had I spun a worsted yarn, but I wanted the softness and lightness of a woolen yarn). 10 twists per inch in the single, 5 twists per inch in the ply; 17 wraps per inch; 1,200 yards per pound, 20-degree twist angle.

Finishing: Wash gently in warm water with a drop of wool-safe detergent; rinse and hang to dry unweighted.

Pattern: Elfin Lace from page 208 of *A Treasury of Knitting Patterns*.

Gauge: 22 sts and 33 rows = 4 inches, multiple of 8 sts plus 9 sts.

Finished size: 6 inches by 5½ inches.

The softness of the paco-vicuña is incredible. The hand, sheen, and elasticity are similar to cashmere, but the staple length makes it easier to spin than cashmere and produces a stronger yarn. I found myself feeling almost regal while I spun the paco-vicuña fiber, honored to have a piece of the "gold of the Andes" in my hands.

KAYE D. COLLINS of Fort Collins, Colorado, enjoys teaching, spinning, and knitting at conferences and retreats and locally at the recently opened fiber arts store, *The Indigo Thread*, in Fort Collins. She'd like to extend a special thanks to the hardworking alpaca breeders for providing constant genetic improvements that in turn produce super spinning fibers.

Resources

- Collins, Kaye. "Andean Adventures." *Spin-Off* 25, 4 (Winter 2001), 74–79.
- . "Spinning Suri Alpaca." *Spin-Off* 24, 3 (Fall 2000), 40–46.
- . "Spinning Alpaca for Knitting." *Spin-Off* 23, 2 (Summer 1999), 61–69.
- Hoffman, Eric. *The Complete Alpaca Book*. Santa Cruz, California: Bonny Press, 2003.
- LeCount, Cynthia Gravelle. *Andean Folk Knitting: Traditions and Techniques from Peru and Bolivia*. Saint Paul, Minnesota: Dos Tejedoras Fiber Arts Publication, 1990.
- Switzer, Chris. *Spinning Llama and Alpaca*. Estes Park, Colorado: Switzer-Land Enterprises, 1994.
- Walker, Barbara G. *A Treasury of Knitting Patterns*. Pittsville, Wisconsin: Schoolhouse Press, 1998.

Fiber Sources

- Cienega Creek Farm**, alpaca and paco-vicuña. John and Margaret Cokely, (520) 586-3920; www.cienegacreek.com.
- Fiber to Fabric**, custom spinning and designs. Luxury and exotic fibers including alpaca, yak, guanaco, vicuña. kaye@ancientarts.us.
- Jefferson Farms Natural Fibers**, alpaca and paco-vicuña. Jane and Arthur Levene, (303) 870-3056; www.jeffersonfarmsnaturalfibers.com.
- Switzer-Land Paco-Vicuñas and Alpacas**, alpaca and paco-vicuña. Chris, Dave, and Phil Switzer, (970) 586-4624; www.alpacaland.com.

Organizations

- Alpaca Owners and Breeders of America**, 5000 Linbar Dr., Ste. 297, Nashville, TN 37211. (615) 834-4195; www.alpacainfo.com.

cloth) and spinning woolen-style (see page 74); this method puts more air in the yarn so it is lighter, softer, and less compressed than traditional worsted yarn. Although occasional irregularities (slubs or softly spun areas) may appear when you're spinning woolen, they rarely show in a finished knitted piece.

Swatch A

Fiber: Medium beige paco-vicuña, prepared as top from a second combing using the waste from the first combing.

Yarn: 3-ply, drumcarded, and spun woolen-style. 4.5 twists per inch in the ply; 16 wraps per inch, 1,200 yards per pound, 25-degree angle of ply twist.

Finishing: Light wash in warm water using Dawn dishwashing liquid; rinse and hang unweighted to air dry.

Pattern: Germaine Stitch, a combination of Little Arrowhead and simple cables, from page 275 of *A Treasury of Knitting Patterns* by Barbara G. Walker.

Gauge: 24 sts and 32 rows = 4 inches. (Multiple of 11 sts, plus 7) plus 3 sts each side for border.

Finished size: 6 by 6 inches.

¹See Kaye's article, "Spinning Alpaca for Knitting" in the Summer 1999 issue of *Spin-Off*, pages 61–69.

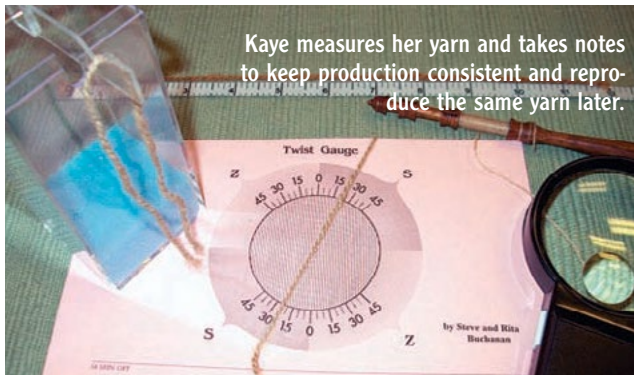


PHOTO BY KAYE D. COLLINS



PHOTO BY DANA FOSS

Guanacos from
Dana Foss's ranch
Royal Fibers,
Midget with her
cria, Moon.

South America's Wild Ones, Vicuña and Guanaco

BY KAYE COLLINS

Thousands of years ago the family Camelidae roamed the central plains of North America. By 10,000 B.C., the camelids had all migrated, leaving them extinct on this continent. Those migrating to South America include the guanaco, llama, vicuña, and alpaca. The guanaco is the wild progenitor of today's llama, and the vicuña is the wild progenitor of the alpaca. Both guanaco and vicuña have a rich tawny fleece, yet there are several differences between the two species.

In the mid-1990s, I was invited to visit an alpaca garment mill in Peru to set up a spinning and weaving display to look similar to an American fiber arts studio. I met the manager of Conscorcio del Pacifico, S.A., after giving a lecture at an Alpaca Owners and Breeders of America (AOBA) conference in Estes Park, Colorado. At that time, alpaca fiber was processed by hand as a cottage industry in the United States. I displayed a drumcarder, spinning wheel, table loom, umbrella swift, ball winder, and other small pieces of equipment to illustrate what a fiber-arts studio would include. The mill manager was amazed at the quantity of fiber equipment American artists own, with each a small version of the industrial equipment used in a large mill. He invited me to visit the Lima mill to set up spinning wheels and a loom for an in-house display. When I arrived I was asked to teach an employee how to spin alpaca fiber so she could demonstrate wheel-spinning after I was gone. In the one hour we were allotted, in spite of not speaking each other's language, she became a spinner. I guess we did share the language of fiber, and it helped that she was familiar with the equipment used in the mill.



PHOTO BY KAYE COLLINS

Kaye being kissed by a vicuña in a private reserve, Lima, Peru.



PHOTO BY DANA FOSS

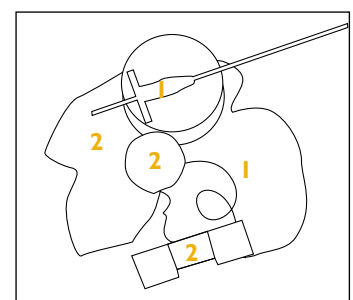
Lady Galadriel and her hours-old *cria*, Arwen.



Later during my mill tour, I was handed a small amount of tawny fiber and asked what I thought it was. I was surprised to hear it was vicuña because I thought processing vicuña fiber was still illegal. Yet I saw the dehairing room filled with women seated at lighted desks spending eight hours to dehair by hand 1 ounce of this valuable fiber. I saw prototypes of knitted and woven items, which felt so incredibly silky and soft that they were like no other fiber. Later that week, I was touring a monastery in Arequipa and, in the distance, saw a woman wearing a gorgeous flowing cape. By its color, I knew it was vicuña. Sure enough, the mill was doing a photo shoot for a magazine advertisement, and what I saw was a model wearing a full-length hooded vicuña cape priced at nearly \$30,000.

VICUÑA (pronounced “vī KOO nyuh”)

Living in the high Andes of Peru, Chile, and



1. Guanaco and 2. vicuña prepared fibers and yarns.



The image of the vicuña graces Peruvian coins and is a national symbol. These coins were made into jewelry that Kaye bought in Peru.

Argentina, vicuñas are the spirit and lifeblood of camelid families. They are the smallest breed in the family, weighing less than 100 pounds and standing less than 3 feet tall at the shoulder. Graceful, with long slender necks and legs, they have small triangular ears, large rounded eyes, and a dense tawny coat. The undercoat is a dark cinnamon color, so distinct that “vicuña” has become a specific color name. At the chest and base of the neck is a long, coarse mane of silky white hairs measuring 8 to 12 inches in length.

Very shy and constantly alert, vicuñas flee at the slightest danger. They can run at speeds up to 30 miles per hour aided by a heart that is 50 percent larger than that of any other animal of similar size and weight. A newborn vicuña, called a *cria*, is up on its feet within minutes after birth and can outrun a grown man. Vicuña hooves are sharp and deadly when used as a defense against predators, slicing their throats with one rapid thrust.

Vicuñas are very adaptable, living on grasslands and plains at high altitudes of 13,000 to 16,000 feet with hot days and cold nights. They must drink daily, and that can limit their migrating territory.

The Incas elevated the status of vicuña to royalty by banning the killing of vicuñas and highly prizing the fleece. The soft and fine fleece was so valuable only Inca rulers and the court were allowed to wear garments made from it. No commoner was allowed to possess a vicuña fleece and offenders were put to death.

After the Spanish arrived and until the 1970s, the vicuñas were no longer sheared live but were hunted and killed for their valuable fleece, leading to near extinction. Where once several million vicuñas graced the pasturelands of the Andes, by 1960 only 6,000 remained. Due to great efforts of the Peruvian

government and international conservationists, the vicuña was declared endangered. The antipoaching efforts have led to a dramatic comeback of the vicuña—it is estimated that today there are nearly 125,000. Commercial harvesting of the vicuña fiber is now permitted, yet no international exporting or hunting is allowed. By involving locals in the renewal of the ancient *chacu* (round-up and shearing), Alfonso Martinez, president of Council of National Camelids of South America (CONACS) has drawn their support in managing and protecting this fine animal. In addition, local harvesting creates a viable and stable source of income for struggling villagers.

GOLD OF THE ANDES

Vicuñas are usually sheared every two years producing a fleece weighing a mere 8 ounces. The somewhat coarser guard hairs must be removed before spinning. The staple length of the undercoat is less than 1 inch. The distinct reddish cinnamon vicuña color is rarely dyed and most often left in its natural color. A micron count of 10 to 13 makes vicuña one of the finest fibers harvested legally in the world (a micron is 0.000039 inch or $\frac{1}{1000}$ of a millimeter). The cost of prepared vicuña fiber is \$300 per ounce.

SPINNING VICUÑA

I regretted that I wasn't able to take home or spin the small amount of vicuña fiber I was handed in the mill. Years later, after submitting a great deal of paperwork, Melissa Laughlin of Peace of Yarn was able to import both guanaco and vicuña fiber for handspinners. She offers dehaired vicuña prepared in a light, ready-to-spin cloud. It is necessary to pull off only a small piece and begin drafting. I also rolled a small puni of the vicuña fiber (as is often done for spinning cotton) and found it was easier to hold while drafting the fibers. I pulled the fibers apart slightly and wrapped them around a small size knitting needle—no recarding was necessary.

I first tried spinning vicuña on spinning wheels, using several different wheels with a wide variety of spinning ratios. It was very difficult; the yarn broke constantly from first too little twist, then from too much. Every time I laid a small piece of broken twisted yarn on my lap, I thought, “There go more dollars.” Soon it became apparent that a slower, more controlled method of spinning was required; I chose a small supported spindle.

I found that vicuña had an interesting characteristic; it seemed to collapse slightly when spun worsted-style, possibly due to its hollow core. This made a yarn with little body. It reminded me of

spinning cotton with a short staple and easy compression. The yarn seems best suited for crochet or weaving, although I saw it used in some knitted sleeves on sweaters with the yarn spun really fine.

I spun a small amount of vicuña on a tahkli support spindle, twirling the spindle clockwise, then drafting the fibers using my front hand to hold the partially spun fibers, while my back hand pulled the fibers out to draft. I then turned the spindle slowly to wind the yarn on at the base of the spindle, and repeated the process. I spun more vicuña on another tahkli spindle in the same way and then placed the spindles in a makeshift lazy kate made from a shoe box. I was able to ply the yarns using my spinning wheel at a 17:1 ratio with fairly fast treadling.

Although the cost of vicuña is the highest of any legally harvested fiber, a very little goes a long way. It can be spun quite fine and used as an accent or trim or in a small project.

GUANACO (“pronounced “whah-NAH-co”)

Guanacos are somewhat smaller than llamas, yet very similar. They have a brownish upper body and neck, with the fronts of the limbs colored brown, while the backs of the limbs, chest, and underbelly are white to cream colored. The head is gray to black. The adult guanaco weighs between 200 and 380 pounds, measures 39 to 47 inches at the shoulder, and lives from twelve to twenty-five years.

The wild and graceful guanaco roams from sea level to snow line, residing throughout the high Andes of Peru and Bolivia at altitudes up to 17,000 feet, and on the Patagonian plateau of Argentina. They are both grazers and browsers, making them quite adaptable. They survive in the driest deserts (Atacama, Chile) as well as the wet archipelago of Tierra del Fuego (on the southern tip of Chile) and can go relatively long periods without drinking water.

At the time of the Spanish conquest in the mid-1500s, guanacos were the most abundant camelid in South America, with numbers from ten million to thirty million. They were prized by native peoples for their meat and pelts. Uncontrolled hunting as well as competition for grazing lands due to fencing for sheep soon reduced their numbers to just a few thousand. Due to South American camelid research and conservation beginning in the 1970s, guanaco hunting was outlawed in Peru and Chile, but it is still allowed in Argentina. Though more than 600,000 guanacos live in South America today, only 2,000 live in Peru, and just a few are found in Bolivia.

The guanaco is difficult to capture in the wild and hard to control during shearing, which may be

why the fiber is underutilized industrially. However, a handful of farms in the United States are raising guanacos with numbers between 200 and 300 total. Dana Foss of Royal Fibers raises a small herd of guanacos in California and says, “They are easily maintained in captivity and thrive on pasture, a variety of hays, supplemental protein block, and an occasional treat of whole grains.”

GUANACO FIBER

The fleece is highly desirable and produces an annual yield of 1 to 2 pounds. Though the fleece has only 1 to 2 percent guard hairs, it is necessary to remove these. The downy undercoat fibers are relatively short, averaging 2.2 inches, and come in shades from rich cinnamon brown to light honey. The fiber is very fine with a micron count ranging from 14 to 18.

SPINNING GUANACO

From my personal experience, I find guanaco fiber has characteristics that remind me of cashmere. Guanaco’s fine fibers slightly adhere together, making them easier to draft than other short fibers and giving the yarn a little bounce and fullness. The carded cloud of guanaco fiber from Peace of Yarn was a spinner’s delight with no further preparation needed. The dark guanaco had a longer staple than the light, about 2 inches, and was easiest to spin. I pulled off a section of fiber from the large, loose batt, holding it lightly with my back hand; using my spinning wheel, I drafted the fibers by pulling backward slightly as I allowed twist to enter the fibers between my front and back hands. Often called “point of contact,” this style of spinning is easily done as the fibers slip effortlessly while drafting. Occasionally the batt of fiber had a dark or even white guard hair that was easily removed as I spun.

The light guanaco was shorter than the dark, measuring about 1 inch. I found a short draw and a worsted style of spinning to be appropriate. A forward draft of 1 to 2 inches was followed by the front hand smoothing the fibers as it moved backward toward the back hand and then fed the twisted yarn into the wheel. I repeated a mantra of “pinch, pull, slide, feed.” This made a smooth and even yarn that is less likely to pill. Also, I found that a little more twist was necessary to hold the shorter fibers of the light guanaco in place.

Though the guanaco fiber is similar to vicuña, little is used for garments industrially. I found I really enjoyed handspinning and knitting the guanaco for several reasons. The color range is broader, and the

Kaye spun guanaco on a tahkli spindle and knitted fingerless gloves with vicuña trim. She says that "somehow it felt right, using a small support spindle to give the fiber the time and control it deserved because of its considerable value." You can find the pattern for these fingerless gloves on Spinningdaily.com.



fibers are longer, making it easier to work with. The yarn has some body and elasticity, and the price is significantly less than the vicuña at \$30 and up for 1 ounce. ❧

Kaye Collins teaches knitting and spinning at local and national guilds and conferences. She owns a custom spinning and design business, Fiber to Fabric, and sells exotic fine fibers.

Kaye has earned a Certificate of Excellence in Handspinning through the Handweavers Guild of America and is a Master Knitter and Certified Knitting Instructor with Knitting Guild of America.

RESOURCES

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