Borrowed from the Soil

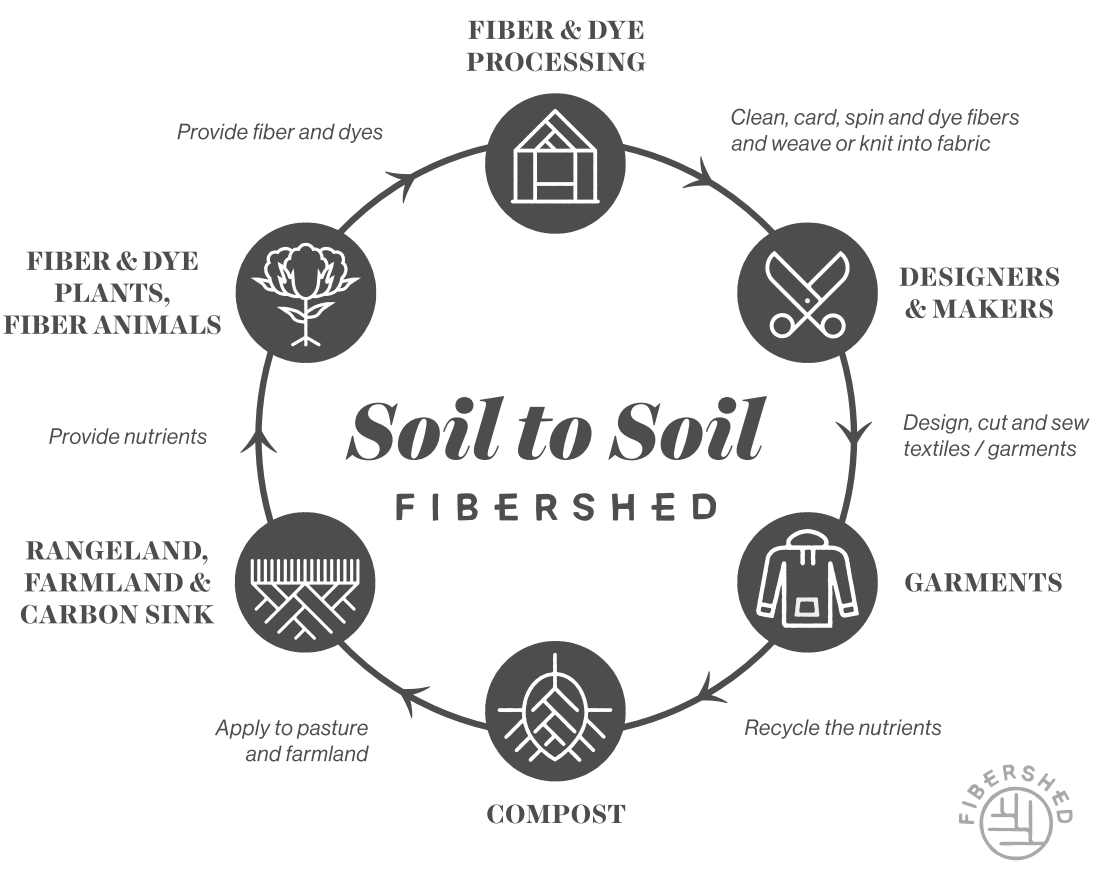
A Farm-to-Closet Design Exhibition

November 10–16, 2023

An introduction...

Today's clothing relies on transnational supply chains, petroleum-based materials, and land and labor exploitation. ***But what if your clothing could build ecosystem and community resilience, while regenerating healthy soil and land?***

The *Borrowed from the Soil* Exhibition explores a future vision where the way we produce and use one of our most basic human necessities – clothing – can support the longevity and health of our local ecosystems and communities. Explore the process behind the production of locally-grown and made clothing that connects you to California farms, mills and designers. This exhibition follows the journey from cotton and flax fields to sheep ranches and alpaca farms through the transformations of raw materials into beautiful textiles, embedding into the design process an understanding of how these materials can be healthfully returned back into our soils. We invite you to help build a collective understanding on the interconnectedness between material, design, and consumer choices, and the land and people whom these choices impact.



FIBERSHED

Local Fiber, Local Dye, Local Labor

Fibershed is a non-profit organization that develops regional natural fiber systems that generate lasting prosperity for our local economies, global climate, and the health and diversity of our ecosystem. Our program activities focus on one goal: the development of systems from soil to soil, where textiles are grown, processed, designed, sewn, sold, worn, and eventually composted.

As you walk around the perimeter of the room, you'll follow Fibershed's soil-to-soil vision for a truly circular textile system that both begins with the soil and returns to the soil.

Local farms and ranches

Who grows your clothes? Fibershed works with a network of farmers, ranchers, designers, sewers, weavers, knitters, felters, spinners, mill owners, and natural dyers living and working within 51 counties in the North and Central regions of California. There are five printed images – photographed by Paige Green – capturing wool, cotton, flax, and alpaca farms from around our region.

Northern California fiber farms and ranches, photographed by Paige Green

Digital photography printed on hemp paper

Bodega Pastures in Bodega, CA

Barinaga Ranch in Marshall, CA

Stoneland Farms in the San Joaquin Valley, CA

Alpacas of Marin in Nicasio, CA

Chico Flax in Chico, CA

Soil samples

Soil plays a vital role in the Earth's terrestrial ecosystems, and its health directly impacts human and non-human life. Soil contains an intricate network of various life forms, minerals, organic matter, nutrients, water, air, and other gases. As one of the major carbon pools on Earth, soil holds a crucial role in our ability to sequester (or draw down) carbon from the atmosphere and help mitigate climate change. Currently, our atmosphere has too much carbon, while the carbon content of soils around the world have been significantly depleted. Engaging with agriculture can help to balance the carbon cycle and stabilize climate through carbon farming, which moves carbon from the atmosphere into plant life and soil ecosystems.

Soil samples from local fiber farms

(Top row) Cotton Farm Soil Samples from Pedretti Ranch, San Joaquin Valley, CA; Flax Farm Soil Samples from Chico Flax, Chico, CA

(Bottom row) Wool Ranch Soil Samples from Spring Coyote Ranch, Marshall, CA; Alpaca Farm Soil Samples from Alpacas of Marin, Nicasio, CA

Natural Fibers

In the exhibition, you will be able to interact with the four main natural fibers grown and processed in our California Fibershed region: Wool, Cotton, Alpaca, and Flax/ Linen.

How natural fibers are grown defines whether they contribute to, or ameliorate the global climate crisis. Fiber farming has the ability to be done in a manner that enhances the drawing down of atmospheric carbon into the soil. This 'enhanced photosynthetic capture' is done through natural and time-honored processes that are also known to create dynamic and highly productive soils. When fiber farming is conducted to enhance organic soil carbon levels and ensure the clean recharge of ground water; and when farming is implemented by using little to no synthetic molecules to fertilize, or control weeds and pests; it can be a significant contributor to the enhancement of earth's biosphere health.

Through Fibershed's Climate Beneficial™ Verification program and label, we support farmers and ranchers in landscape level stewardship that centers their work to build healthy soil. Developed in 2015 in collaboration with The Carbon Cycle Institute, scientists, and technical service providers, our Climate Beneficial™ Program engages fiber producers and provides financial and technical support to enhance the drawdown of carbon from the atmosphere. Impact to the climate is measured using a combination of direct soil measurement, computer modeling via dynamic environmental systems models, as well as localized peer reviewed data from our region's land grant universities.

Wool

California produces nearly 3 Million pounds of wool per year, thanks to sheep grazing upon the vegetation of rangeland, pasture, perennial and annual cropland systems. From large ranches to backyard homesteads, Fibershed has engaged over 55 producers in the Northern and Central California Fibershed network.

Wool cloud

California wool grown at Three Bags Full Wool Farm in Zamora, CA. Wool processed at Valley Oak Wool Mill in Woodland, CA

Cotton

Flowering cotton fields are part of an annual agricultural cycle of food and fiber production in California. Following Fibershed's Climate Beneficial Verification process, California cotton growers and researchers are currently piloting the incorporation of carbon farming practices such as multispecies cover cropping, compost application, and reduced tillage in cotton farming systems, creating a measurable impact on ecosystem health and cultivating markets that return value for this work.

Naturally colored cotton boll arrangement arranged by Marilu Rivera

Colorganic® cotton grown at Viriditas Farm, a Climate Beneficial verified farm. White cotton bolls from Pedretti Ranch, San Joaquin Valley, CA, a member of the California Cotton & Climate Coalition.

Alpaca

Soft and luxurious alpaca fiber is most frequently raised on small to mid-scale farms in California.

Alpaca roving

Processed alpaca fiber from Alpaca Shire, Sonoma, CA

Flax

Linen (from flax plants) produces strong, breathable fabrics from sturdy plants. Chico Flax is an example of a project (chicoflax.com) within our Northern California region growing Climate Beneficial flax, working to develop and demonstrate local flax production and processing.

Flax for linen arrangement by Marilu Rivera

Dried flax plants and processed flax. Grown and processed at Chico Flax Farm in Chico, CA.

Regional Manufacturing

California is the largest wool producer in the United States and we manufacture less than 1% of our wool supply into yarn.

We predominantly send raw, low cost fibers to other countries who add value to our material and see economic benefit from those manufacturing processes.

Over 900,000 pounds of the wool produced in California is soft enough to be considered next-to-skin quality and over two million pounds of our coarser wool could be spun and manufactured into durable goods and outerwear, or felted for use in a range of textile applications.

In an effort to develop California's spinning capacity, the first new industrial spinning frame was purchased from Italian manufacturers in 2019 and has been in operation at the Mendocino Wool & Fiber Mill, owned and operated by Matt and Sarah Gilbert.

The new spinning frame, fondly named "Giovanni," has warmed hearts and hands with its incredible throughput capacity and mechanical ability to produce high grade yarns from a range of conservation livestock breeds and small flocks that graze pasture, rangeland and chaparral throughout our region. This spinning frame is a small example of the kind of mechanical capacity that we need to resuscitate across the entire state. We are still nowhere near the manufacturing capacity required to significantly add value to our state's raw material.

Since 2013, Fibershed has worked to establish an understanding of California's wool supply and demand for wool goods. We have both mapped and advocated for the bio-circular economic opportunities that are putting the "Restoration Economy" into being. We will continue to coordinate stakeholders, build external capacity with entrepreneurs, and raise capital with partners to continue to bring more "Giovannis" and many other manufacturing components to our soils.

You may be asking yourself... what about alpaca, cotton, hemp, or flax – can we spin those fibers in our region? The answer is that we currently have no effective manufacturing capacity for these fibers at any level outside of cotton ginning. While we can process these materials at an artisan/hand scale, and a small percentage of these fibers can be blended and spun on a "Giovanni," there is even less opportunity for these cellulosic and camelid fibers to make their way to our skin through regional processing at this time.

Design School Partnerships

Fibershed collaborates with design schools in Northern California and beyond to help shape the future of fashion. Through these collaborations, we connect the next generation of sustainable fashion designers to regional textile material sourcing and supply chains. Students gain an understanding of how a soil-to-soil approach is not only urgently needed, but possible.

SACRAMENTO STATE × FIBERSHED

This year, Fibershed partnered with the Fashion Merchandising and Management Program (FASH) at California State University, Sacramento (CSUS). This program prepares students for careers in the fashion industry, emphasizing the contemporary and historical ways of meeting consumers' economic, physiological, aesthetic, psychological, sociological, and cultural needs.

The partnership with Fibershed is the start of a new direction for FASH. Fibershed's support of students and sustainability initiatives has been a significant step in fostering sustainable knowledge and practices within the program. This partnership has prompted reflection on CSUS' position amongst the region's farmers, producers, designers, and lawmakers. Faculty aim to strengthen the program's relationship with the area and are committed to incorporating sustainability into fashion education. Donations of regional materials, dyestuffs, and educational opportunities provided by Fibershed have significantly impacted the students participating in the design challenge. The outcomes created with these resources model alternative design and production methods, now visible to all students in the program.

FASH students Kayley Kirkaldie and Andrea Armstrong completed a research assistantship with Professor Emily Oertling, Ph.D. in summer 2023 that supported the design and construction of the garments displayed here. See Artist Statement sections for more information on each student designer.

Design Challenge

All of the other designers featured in this exhibition are a part of Fibershed's yearlong "Borrowed from the Soil" Design Challenge. Fibershed launched its year-long Design Challenge in March 2023 as an opportunity for textile designers and makers in Northern and Central California to explore a new soil-to-soil vision for the future of our material culture. Throughout this 12-month challenge, designers have had the opportunity to create a prototype following the Commitments and Technical Design Focus Areas below.

See Artist Statement section below for more information on each designer.

Design Challenge Commitments

All design challenge participants have agreed to following the below commitments:

- All participants are from the Northern and Central CA Fibershed region (from San Luis Obispo to the Oregon border).
- All designs must utilize 100% natural fibers and dyes.
- All designs must utilize regionally grown and processed/ manufactured materials. We encouraged designers to build a relationship with place, and explore the current sourcing possibilities within California and honor the intimacy of the local textiles available. We also understand there are material, dye, and manufacturing limitations within our textile region. As Fibershed continues to work to invest and uplift our regional systems to grow more textile options in our state, we also value the important work happening in other regions. Designers are welcome to explore pan-regional textile options, and sourcing natural thread, notions, and dyes regionally when possible.

Technical Design Focus Areas

Throughout this challenge, we have encouraged designers to incorporate the following technical design focus areas into their prototypes:

- Compostability: Utilization of natural fibers and dyes that begin and end with the soil, including notion material choices such as threads and closures.
- Longevity: High quality designs and materials that reflect long-lasting use, repairability, adaptability, and mobility in every component of the piece.
- Zero Waste Design: Garment and pattern design to prevent fabric waste.

Portraits of California farmers and ranchers

Who grows your clothes? Fibershed works with a network of farmers, ranchers, designers, sewers, weavers, knitters, felters, spinners, mill owners, and natural dyers living and working within 51 counties in the North and Central regions of California. There are six printed images, photographed by Paige Green, capturing wool and cotton farmers/ ranchers from our region.

Portraits of California farmers and ranchers, photographed by Paige Green

(Bottom row) Cotton farmers from Stoneland Farms, Vreseis/Veriditas Farm, Bowles Farming Co.

Digital photography printed on hemp paper.

Wool ranchers

Emigh Livestock in Dixon, CA

McCormack Ranch in Solano County, CA

Bare Ranch in the Surprise Valley, CA

Cotton farmers

Stoneland Farms in the San Joaquin Valley, CA

Vreseis / Veriditas Farm in the Capay Valley, CA

Bowles Farming Co. in the Central Valley, CA

Compostability: Countering the Legacy of Microplastic Pollution from Synthetic Textiles

Microplastics are reported with increasing concentration in our oceans, lakes, rivers, tap water, rain and clouds, soil, indoor and outdoor air, and inside of animal and human bodies. Like other plastics, microplastics accumulate in ecosystems and bodies because they do not biodegrade.

This accumulation of microplastics reflects a growing disconnect between human-made materials and the natural cycling of carbon and other elements through our biosphere. With escalating use of fossil fuel-derived synthetic (plastic) fibers in our textile and fashion industries, over 60% of the content of textiles globally is currently plastic. According to leading microplastic researchers at the San Francisco Estuary Institute, "Fibers...are one of the most ubiquitous forms of microplastic pollution reported globally." (Moran et al., 2021. SFEI) Microplastic fibers are primarily derived from the continual release of fibers from synthetic textiles during wearing/use, washing, and at the end of their use/disposal.

Because fibers are continually released from our textiles, we need to consider that all of our textile materials are slowly and consistently making their way into our ecosystems, and by extension, into our bodies.

When materials are compostable, they are able to decompose into natural, nontoxic components at a specifically defined rate, consistent with other organic materials. Natural fiber materials that are not treated with harmful chemicals can easily cycle through our ecosystems like other organic materials.

Fibershed has conducted textile compost trials at our Learning Center outside Point Reyes Station since June 2022. In partnership with Harvest & Mill, a local clothing manufacturer that uses untreated and naturally dyed organic cotton textiles to make their clothing, we have been incorporating manufacturing textile waste scraps into our compost piles to demonstrate the ease with which cotton decomposes in compost, and its ability to help nourish the soils of our our gardens.

Compostability becomes a lens through which we can understand parameters for healthy textile products whose contents can be safely taken in and decomposed within our ecosystems across their lifespan, including the making of soil-enriching compost at the end of a long and useful material life.

→ Want to learn more?
Read ***The Hidden Story of Plastics in Our Clothes***

Artist Statements

Alma Heffernan
Carmel, CA
Textile Designer

Alma Heffernan is inspired by surrounding nature and wildlife. Rendering whimsy and personality into her works using color and imagination, with the ultimate objective of presenting in the form of quality wearables that stand the test of time. Alma hopes to positively impact people and the planet by maintaining integrity and authenticity to the local environment in the clothing making process.

Andrea Armstrong
Sacramento, CA
Design Student at California State University, Sacramento (CSUS)

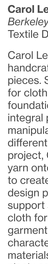
Andrea Armstrong is a senior in the Fashion Merchandising and Management program at California State University - Sacramento. She will earn her Bachelor's in Science in May 2024. Originally from Northern California, Andrea is considerate of the regional spaces and committed to positive growth in the region. She hopes to continue working with regional textiles and artisans to strengthen consumers' understanding of sustainability and honor her home.

Symbiotic Connections: Visualizing the Relationship between Split-Gill Mushrooms and Oak Trees with Mokume Shibori

This work aimed to visualize the relationship between death and beauty during decomposition. Aspects of the design were inspired by fungus, specifically the split-gill mushroom and its thriving lifecycle on perishing oak trees. This inspiration prompted deep reflection on the nature of longevity and the challenge of borrowing from the soil.

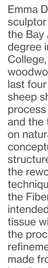
In the design and apparel production process, Andrea sought to understand strategies for zero-waste pattern cutting and composability. She applied a geo-cutting method to preserve the climate-beneficial rambouillet wool (McQuillian & Rissanen, 2016). The garment was dyed using oak galls foraged in West Sacramento then modified with ferrous sulfate (iron). This additional step, achieving a gray color, decays the fiber, referencing the rotting oak. The textile design on the garment's elongated center front panel used a Mokume (wood grain) Shibori technique (Wata et al., 2012). The technique was used to express her vision of an oak tree. Applications of ruffles on the garment represent the blooming split-gill mushrooms.

This final garment, a jumper dress, highlights place-based design efforts in sustainability. It is adjustable and suitable for all genders.



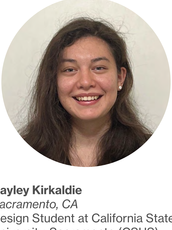
Carol Lee Shanks
Berkeley, CA
Textile Designer

Carol Lee Shanks designs and handcrafts clothing and textile art pieces. She has a great reverence for cloth allowing it to be the foundation of her inspiration. An integral part of her work is manipulating the cloth to create different surface textures. For this project, Carol has been stitching yarn onto and into cloth, not only to create interesting surface design patterns but also to provide support and reinforcement to this cloth for its life as a wearable garment. The shared characteristics of the soft wooly materials complement each other nicely as patterns develop upon the cutout blank "canvas." These garment shapes are intentionally simple for ease in construction and waste prevention as the smaller cut-away pieces can be used to create pockets, collars and other details to enhance the garment design.



Emma Doven
Bay Area, CA
Woodworker, Sculptor, Fiber Artist

Emma Doven is a woodworker, sculptor and fiber artist based in the Bay Area. She received a BA degree in Studio Art from Mills College, apprenticed for woodworkers and sculptors for the last four years, and is a beginner sheep shearer. Doven's sculptural process weaves together craft, art and the trades with a strong focus on natural materials. She conceptually investigates tension, structure and sensuality, as well as the reworking of traditional craft techniques. The body of work for the Fibershed Design Exhibition is intended to act as a connective tissue within the space, articulating the process of raw fiber refinement. The fiber nets are made from wet felted wool with locally sourced cotton, flax fibers and dye flowers enmeshed between the layers. Taking the shape of an organic, cyclical network, these nets mirror the materials used by the participating textile designers and offer a visual spectrum of composition, decomposition, and transparency.



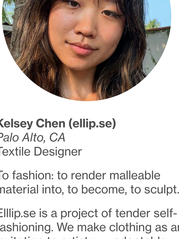
Kayley Kirkaldie
Sacramento, CA
Design Student at California State University, Sacramento (CSUS)

Kayley Kirkaldie will graduate from the Fashion Merchandising and Management program at California State University – Sacramento in December 2024. Her design process is reflective of her Mexican-American identity and culture. After graduation, she aims to pursue a career in design.

Grandma's Hope for Kaylita: Negotiating Mexican-American Appearance with Regional Materials

Grandma's Hope for Kaylita was for her to connect to her Mexican-American heritage. After her passing, this connection faded. Through the design process and prompted by reflections on longevity, Kayley tasked herself with visualizing her relationship with her culture. The design was heavily inspired by the Lady of Guadalupe, a central figure in her beliefs and household, matriarchal figures in her life, and generational knowledge.

In the design and apparel production process, Kayley sought to understand strategies for zero-waste pattern cutting and composability. She applied geo and slit methods to create a poncho-style blusa and a jigsaw strategy to craft wrapped trousers (McQuillian & Rissanen, 2016). The blusa is dyed with marigolds, a design decision representing her grandmother's use of the flower in medical teas. This practice has been passed down to her. The blusa's center front panel was designed using an itajime (fold and clamp) shibori technique (Wata et al., 2012). The Climate Beneficial™ Rambouillet wool in its original white color and the dye of the trousers with indigo are referential to the color schemes in depictions of the Lady of Guadalupe. Dyestuffs were provided by Fibershed and grown at Point Reyes Station.



Kelsey Chen (ellip.se)
Palo Alto, CA
Textile Designer

To fashion: to render malleable material into, to become, to sculpt.

Elllip.se is a project of tender self-fashioning. We make clothing as an invitation to artistry— adaptable pieces which mold to us—rather than things we must fit our bodies to.

Instead of clothing which inscribes external demands of what shape, size, and posture of the body must be, we re-make clothing again as fashion, as sensitive, sensible textile that invites you to re-make it and yourself with it in a tender project of self-fashioning.

Beginning with principles of tender playfulness, we make pieces that are modular, recomposable, and adjustable—adaptable to many different forms and functions, inviting you to experiment, play, and fashion.

Designed with at least six ways of wearing in mind, each piece contains infinite possibility for play and reimagination. We invite you into the ellipses, into the ellipse: What comes after is unspeakable, is undesignable, is up to you. The trailing off.

What we wish to offer you are tender objects; things which you can trail off together with.

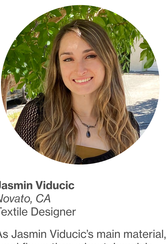
Janice Paredes
Alameda, CA
Textile Designer

"I make traditional workwear altered for a woman's sensibility."
—Janice Paredes

Janice Paredes is inspired by textiles. As she begins creating clothing, it's important for the fabric to speak to her. Once Janice understands a fabric's characteristics, hand, drape, color and silhouette possibilities, she is able to move from the visioning stage into the making stage of her process. Much trial and learning and trial again.

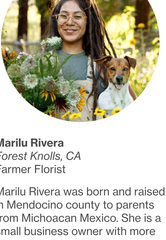
Vreseis' hombre plaid is both traditional and modern. Colors from nature are an obvious choice for a menswear inspired western shirt. The garment's style lines, plackets and pockets are tailored, the top stitching, subtle. The biascut curved yokes blend soft shapes with the shirt's tailored details.

California Cloth Foundry's natural 8 oz. twill is soft and strong. I love the way the fabric holds structure through top stitching and layered seams while the fabric drapes and curves in order to fit and flatter a woman.



Jasmin Viducic
Novato, CA
Textile Designer

As Jasmin Viducic's main material, wool flows throughout Jasmin's whole fiber art process – sourcing yarns locally from farms and mills in Northern California, and dyeing them with natural plant dye that Jasmin grows herself to create her own hand knitted or crocheted clothing. Inspiration for Jasmin's clothing designs comes from the natural landscapes and natural feeling of the wool that it comes from, creating clothing that can seamlessly blend in with patterns and textures from the beautifully wild and rugged Northern California terrain. Jasmin aims to create staple wardrobe pieces that emulate modern design – meshing both my love for fashion and sustainability – showcasing that fashion can hold beauty and innovation with long lasting and compostable materials.



Marilu Rivera
Forest Knolls, CA
Farmer Florist

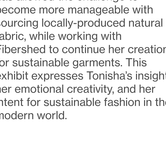
Marilu Rivera was born and raised in Mendocino county to parents from Michoacan Mexico. She is a small business owner with more than 10 years of agriculture and horticultural background, currently focusing on ancestral food, dye and cut flower cultivation, along with floral arranging and installations.

Mira Musank
Castro Valley, CA
Textile Designer

Mira Musank is an interdisciplinary fiber artist who tackles overconsumption and waste in climate art activism. Through an intuitive process of sewing, weaving, and hand embroidery, Mira aims to give second chances to so-called textile waste with intimate yet expressive intentions. Through Fibershed's 'Borrowed from the Soil' Design Challenge, Mira has had the opportunity to contemplate a better approach to create garments that encompasses user needs, regional textile chain supply, end of life treatments, and everything else that comes up between and across all points of the journey. Throughout this year-long challenge, she aspires to be purposeful and responsible in bridging the intersectionalities throughout the act of creation. Mira hopes her garment prototype will resonate with many potential wearers!

Paige Green
Petaluma, CA
Photographer

Paige Green is a documentary and portrait photographer in Petaluma, California, whose storytelling approach to photography focuses on women, social justice and environmental activism. In 2010, Paige began working with Rebecca Burgess, Founder and Executive Director of Fibershed, to capture the stories of local natural fiber and the textile community, from fiber farmers, ranchers, small manufacturers, artisans, and designers, helping define Fibershed.



Tonisha Sade
San Jose, CA
Textile Designer

Tonisha Sade, a designer for Set The Tone NYC, born and raised in the city of New York, has always focused on her unique approach of tying her expression into fashion. The challenges to express her sense of fashion arose once she became aware of her carbon imprint within the world. With a change of intent, Tonisha shifted her creativity and focused more on developing a sustainable approach to life, including her approach to fashion. Moving to the West Coast has allowed the challenge to become more manageable with sourcing locally-produced natural fabric, while working with Fibershed to continue her creation for sustainable garments. This exhibit expresses Tonisha's insight, her emotional creativity, and her intent for sustainable fashion in the modern world.

Thank you for visiting our Fall *Borrowed from the Soil* Design Exhibition.

We will also be hosting a Spring Exhibition in 2024.

If you would like to learn more about fiber and dye systems, climate beneficial agriculture, Fibershed initiatives, and more...

- Visit our website, fibershed.org
- Join our email newsletter.
- Follow us on Instagram and Facebook
- Read: *"Fibershed: A new "farm-to-closet" vision for the clothes we wear"* by Fibershed Founder and Executive Director, Rebecca Burgess
- Listen to the Weaving Voices podcast
- Read our blog