the dogwood dyer

FREE EcoPrinting Socks with Your Local Plants Guide



Hi I'm Liz, & I will be your Natural Dye & EcoPrinting Guide! This process is satisfying & beautiful- allowing you to connect more with nature while making wearable art! For more tips & advice see the troubleshooting section at the end & please share your work with me- I would love to see what you create!

Forage Local Plants Responsibly- All plants should be responsibly collected with consideration to the balance & health of local ecosystems. Make it a practice to only forage 10 to 20 percent of what is available from a stand of plants (unless it is invasive- in which case taking more can be better while being mindful not to spread seed if applicable) & only foraging once each season ensures that each plant has a chance to regenerate. Always identify species before harvesting to ensure you're not taking a threatened plant or working with a plant that can cause allergic/adverse reactions. Always leave native flowers enough for local pollinating insects & wildlife who depend on them as foodstuff. Make arrangements with the appropriate local land management coordinating body or institution before harvesting whether it is a private landowner, a water district, or Bureau of Land Management. In the US, National and State parks are no-harvest areas, while National Forests, Water Districts and BLM can grant harvesting permission for personal use. Consider finding books about native local species at your library that can help you identify & better understand where to look for specific plants you may be keen to find, and just as importantly identifying- those **plants that are best left alone if they're classified as rare or threatened.**





(above) working with some of my favorite local plants including walnut, california sagebrush, & sage to eco print socks.

Finding Your Local Dye Plants- If you find a plant you are curious about- you can use a plant identification app like **PictureThis** or **Inaturalist**. Once you have the name of the plant, you can internet search (I like to use a reputable Academic or Scientific Research Database like **Science Direct** or **Research Gate**) specifically with the **Botanical Name** of the plant (for example- with Crown Daisy I would keyword search : Glebionis coronaria AND Chrysanthemum coronarium since the botanical name was somewhat recently changed - making sure you can find older research too). The research articles will oftentimes list the dye chemical compounds found within. This will give you a better picture of the flavonoids, tannins, and other dye compounds the plant may have.




(above) working with some of my favorite local plants including eucalyptus, walnut, maple and oak to eco print wool, cotton & hemp socks. **(above right)** For dramatic eco prints with dark background color see the Troubleshooting & More section below. This can be a fantastic way to make botanical shapes & work with plants that do not print particularly well or that do not contain high levels of dye compounds.

/// What you will need

- Something to naturally dye- choose natural fibers like organic cotton, linen, hemp, silk, wool, alpaca, etc. And yes you can naturally mordant & over dye on top of synthetic dyes or previously naturally dyed clothing!
- Natural dye fixative -or- Mordant- This Tutorial uses either Alum Lactate (made from fermentation of renewable starches in the food industry) or Alum Acetate and Calcium Carbonate (optional). You will need 5-10% of the weight of the item being dyed. So if your socks weigh 100g you will need between 5-10g alum. Mordanting can be done in many different ways all depending on the desired look & preferred saturation of color & clarity of prints. Plant tannins, Plant proteins, Metal Salts, & combinations of all these can be employed. Mordant fixing agents such as chalk and bran can also be used to best secure the mordants and dye to your fibers. Learn more about other mordant processes in the Troubleshooting & More section below.
- Kitchen scale, jar, stir stick/spoon, gloves & large bowl/bucket for mordant measuring & mixing
- Plants to dye with (fresh or dried/pressed- both will work)- Learn more about the advantages of Dried/Pressed Flower EcoPrinting in the Troubleshooting & More section below.
- Pot with well fitting lid, tongs & steaming rack/veggie steamer
- Heat source- hotplate, propane stove, etc.
- Twine/String/Rubber Bands- even dental floss can be used in a pinch
- (Optional) Dowel, Chopstick, Pencil, Metal Straw etc. for rolling your ecoprint bundle
- Scrap piece of clean fabric for full plant print coverage

/// Scouring - hot water wash for new materials (especially cotton)

Skipping on a good & thorough cleaning & scouring process for new fabrics and fibers (especially for cellulose/plant fibers) can result in inferior print quality and dye saturation. For plant fibers like cotton- use a washing machine on the hottest wash cycle with detergent. This removes naturally occurring wax/pectin/lignin/starch/dirt/sizing etc that can prevent good mordant & dye uptake. The washing machine method works- I will say though, that scouring is MOST efficiently done by hand in a pot with ample water. Learn more about efficient scouring in my **Solid Foundations Workshop**. Protein fibers like wool and silk require a more gentle approach to scouring with less alkaline detergent.




/// Natural Fixatives- Mordants

Mordants ~ Alum, Iron, Etc.- Metal mordants allow an **insoluble** bridge between the dye molecules and fiber to be dyed. They're the most effective natural fixative (especially when used in tandem with tannins) for most plants that will keep the color on the cloth through washing and wear. You can achieve good plant dye saturation and Ecoprint results using the mordant process included in this tutorial. For more about other mordant options see the Troubleshooting & More section below.

***Please protect your skin & lungs when working with concentrated metal salts like alum acetate. Wear a mask when measuring fine powdered substances and work in a well ventilated place. Wear gloves when skin may come into direct contact with metal salts either in dry or wet form. KEEP CHILDREN & PETS AWAY FROM METAL SALT- ACCIDENTAL INGESTION CAN BE DANGEROUS

Mordant Process (for silk & any cellulose/plant fibers like cotton, hemp, linen. etc.)-

This mordant will bring out the brighter toned colors from your plants. No extended heat necessary & this can be done in a bucket/bowl, not requiring a pot to be heated over a stovetop or heat source. Use containers & tools that will be reserved for future dyeing only.

1. Weigh fabric/garment and note the weight.
2. Wet out textile or garment to be mordanted thoroughly, letting it soak while you prepare the mordant bath.
3. Using the weight of the textiles/garment, measure between 5-10% **alum lactate** or **alum acetate**
4. Dissolve alum in hot water and add to the mordanting vessel with enough additional water so fibers can move easily.
5. Add wet textile to the mordanting vessel, stirring frequently at first & then occasionally.
6. Keep fibers in mordant bath for 1-2 hours making sure they stay submerged. Fibers can remain in the mordant bath for an additional 12 hours for more mordant uptake.

7. Remove fibers from mordant bath & hang to fully dry. DO NOT RINSE, but be sure to wring out well to dry so that the fabric is damp but not sopping wet and hang up taught. Be sure the fabric is bone dry before proceeding to the optional fixing step.





(above) measuring, dissolving & diluting alum acetate for a mordant bath. Remember to abstain from rinsing your alum acetate mordanted goods and allow them to dry fully before giving them a chalk/calcium carbonate bath.

8. **Optional- FIXING**: Alum acetate is best utilized when 'fixed' (Learn the science behind why fixing is necessary & many other common natural materials that can be used instead of chalk/calcium carbonate for fixing here).
   Use 25g chalk (calcium carbonate) for up to 10lbs fiber. This chalk bath can be continually reused as long as it remains clean. Measure out chalk and dissolve in enough water for fibers to move freely. Add the mordanted fibers and with a gloved hand or spoon mix aggressively for a few minutes to ensure all parts of the fiber have been exposed and fixed.




(above) using chalk (aka calcium carbonate) to fix the alum acetate mordanted materials

9. Rinse fibers well in cool water & proceed to dyeing or dry and store fiber for future dyeing.

/// EcoPrinting

1. Fabric/garments can be printed either still damp from the post mordant rinse or if they were dried after mordanting, they can be soaked in water, removed, wrung out and left to partially dry so that they're damp but not sopping wet. You may like to use a spray bottle with plain water to spritz them before starting the plant/flower composition. If the fabric is too wet you may see excessive bleeding when they're steamed.
2. You can use a scrap piece of clean fabric to act as an extension at the end of the socks in the direction of anticipated rolling that holds extra flowers/plants. This will ensure the last section of the socks will have plant prints. It doesn't matter what kind of fabric you use & it doesn't need to be mordanted. Fine weave cheesecloth works nicely. Here I'm using some leftover muslin from sewing projects. You can practice roll your socks without plants/flowers to know the approximate outer circumference of the socks roll. Then you will know about how much scrap fabric you need.
3. Lay your socks down flat on a clean surface with the scrap fabric at one end. As you're laying out the socks, you may like to slightly stretch them and open up the knit structure in both sideways and vertical directions which helps create densely colored prints in the end.

4. Create a composition of plants/flowers on the socks. Turn some facing up & some facing down for balance of prints throughout. I'm using pressed/dried crown daisy flowers, but fresh also works. Learn more about pressed flower printing in the Troubleshooting & More section below.
5. You will be rolling the socks firmly & evenly either in on itself or by using something rigid to apply pressure against such as a stick, dowel, pencil or metal straw. Work slowly to even out any wrinkles gently as you go.

6. When you approach the end add a few more plants/flowers if you haven't already, to the scrap fabric.
7. Once rolled all the way, including the extra length of scrap fabric at the end- secure with rubber bands to keep the bundle firmly rolled while you tie on twine.
8. Use twine or string to firmly bind your bundle well.




9. The bundle is steamed in a pot with a tight fitting lid for the steamiest environment possible.
   Your pot will need just a small amount of water at 1-2 inches level. This way the bundle will steam but not be submerged in the water. Let the pot get steamy with the lid on before carefully introducing the bundle.
   Lid the pot and set a timer for 4 minute intervals, turning every 4 minutes to get even steam application.
   Monitor your water level as the bundle steams to ensure the water has not fully evaporated off- adding more water if needed. These socks were steamed for 12 minutes. Depending on your plant type, steaming can take up to 20-30 minutes for most plants with tougher leaves usually taking the longest and more delicate flowers not needing as much.




10. After steaming carefully remove the bundle & allow it to cool and then unbind. Plants/Flowers are removed & the socks are left to dry overnight. Lay flat if possible to avoid bleeding of dye while socks are still wet.

(above) unwrapping the bundle- you can see that the unmordanted scrap fabric barely has any color or prints from the flowers showing how important the mordanting process is for plant prints.

11. Rinse & wash gently in cool water. I often do a hand rinse in an ample amount of cold water to reduce bleeding of dye & then a hand wash with detergent. For all future laundering, my preferred way to wash is with cold water on a gentle cycle in the washing machine. Enzyme free detergent can help prevent excessive natural dye washout over the life of the fabric.

(above) laundering naturally dyed garments in my washing machine with cold water to keep the prints vibrant for as long as possible.

/// Troubleshooting & More!

- If your results are not complete prints or are not as saturated as you would like, you can carefully roll them back up and then steam for a few more minutes. Take note of the steam time for future reference. Be sure that your pot is as steamy as possible before introducing the bundle. If you add the bundle, and then lid the pot & turn on the heat, you may experience prints that bleed and are hazy. This is because they will have spent too much time in the pot altogether including the time for the steam to increase. Fresh flowers especially and some dye potent leaves can bleed. **Consider working with pressed & dried flowers or leaves**.

(above) EcoPrinting cotton socks with purple basil. **(right)** you can see the distinct difference between the results from this plant (fresh vs. dried) on socks mordanted and printed in the same manner- the pair of socks on the left used fresh basil leaves/flowers and the pair on the right used dried/pressed basil leaves/flowers.

- **Tip:** test your local plants first on a mordanted thrifted garment or an old stained garment or linen that is not precious to save on new resources. This way you can experiment freely without feeling like you're wasting money. If you find that your local plants just aren't creating stellar prints, **this workshop** comes complete with a long list of plants that work wonderfully for EcoPrinting, many of which are available & accessible around the world.
- Did you know you can **ecoprint over previously worn & stained clothing** to give them a new colorful life? The cotton socks printed with crown daisy flowers were previously worn & stained by my son. I used a DIY stain treatment included in **A Year in Natural Dyes** before mordanting to bring the socks back to a more bright white base to allow the yellow flower prints to really shine.

(above) **breathing new life into these previously stained socks** by eco printing with crown daisy flowers for my son.

- For **deeper & more varied range of colors** from the same plants you can change your mordant process- learn more with the 2 additional mordant recipes & instructions in **A Year in Natural Dyes** -or- a unique flexible Mordant Method that results in the clearest, most saturated color prints shared **here**.
- If you find that your **prints are blurry**, less crisp and lacking clarity or saturation. Fabric types & mordant methods can vary greatly & impact the quality of your prints. For a fast track to the best EcoPrints possible (including lessons on barriers to avoid bleeding/shadow prints & eco printing garments in different ways)- see **here**.
- Learn how to create **background colors** in your eco prints **here**. This is a wonderful way to make botanical shapes & work with plants that do not print particularly well or that do not contain high levels of dye compounds.




(left & center left) this pair of socks was divided with the left & right mordanted differently while using the same leaves- prints can vary dramatically depending on the mordant process employed even when using the same plants! **(center right)** eucalyptus leaves eco printed on socks with different pre-treatment processes. Both identical pairs of wool socks were eco printed in the same manner with eucalyptus leaves from the same tree, however their colors are quite different (orange and deep red) because of the separate methods of pre-treatment. And some special plants can be used to **eco print with NO MORDANT** process whatsoever. **(right)** Socks eco printed with maple leaves & a **background dyeing method** using an alternative mordant that produces bright orange colors!

- Looking for excellent **tools** & **sustainable fabric** & **dyeable garment recommendations**? Find extensive lists of my favorite mordants, dyes, fabrics, and blank garment suppliers in **A Year in Natural Dyes**. Suggestions for the best pots, heat sources, etc as well as tips for getting high quality tools for the least cost can be found **here**.
- You can find MUCH more about how to prioritize your **invasive** plants (like the Crown daisy used in this tutorial) and more on **testing your local plants** for dye as well as the **classifications of plant flavonoids** and their **durability/wash fastness** AND how to **grow your own dye plants** in **A Year in Natural Dyes.**
- And for even MORE on mordant possibilities including **plant proteins** and all about the **wonders of tannins**: My most comprehensive offering on mordants is **here.**