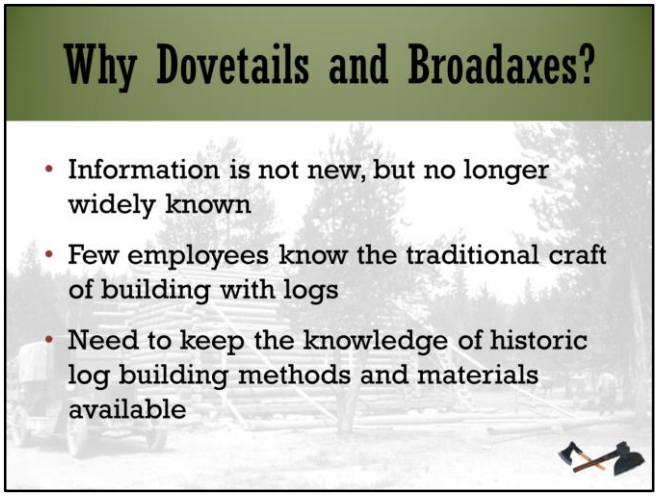
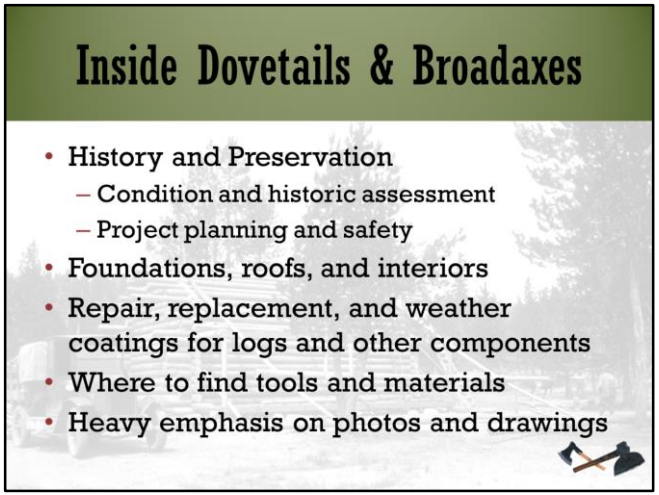
Good afternoon. At long last, a comprehensive publication on log cabin preservation is available and I'm here to tell you about it and some of the "secrets" inside it. Well, they're not really secrets, but there's an amazing amount of information in the publication that has nearly disappeared from our society's collective memory. This publication has been YEARS in the making. It was begun before I started work for the Forest Service technology & development program in 2001. Various people have worked on it over the years in fits and starts, but finally Cathy Bickenheuser, who is running the Northern Region Historic Preservation Team and couldn't be here today, and I have finished it – with a lot of help from a lot of other people.

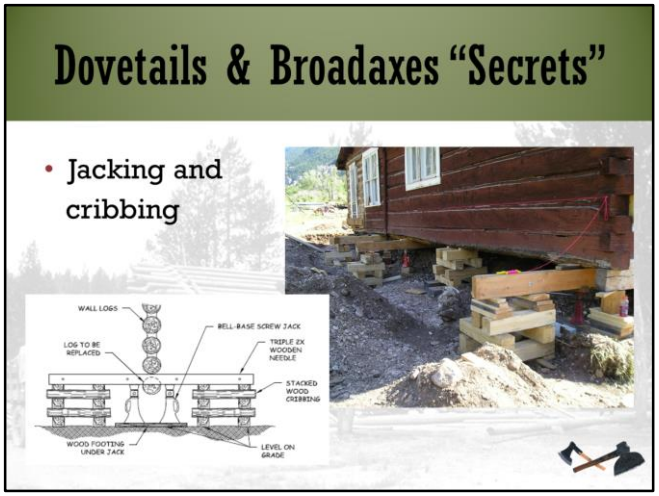


In the early days of the Forest Service, each employee was expected to "be able to take care of himself and his horses in regions remote from settlement and supplies. He must be able to build trails and cabins and to pack in provisions without assistance." Over a hundred years later, most employees are specialists who routinely deal with complex ecological or technical issues. Some still use pack horses and mules or build trails, but they don't hand craft their own offices. Yet, we still have and use hundreds of historic log structures, and we need to make them last for the next 100 years – for both their value as historic structures and their usefulness in support of Forest Service work.

If you have log buildings, you might want to get a copy of this publication. Unfortunately, it takes us a while to get our publications through the Forest Service headquarters and USDA approval processes, so it's only available right now if you can access the Forest Service intranet. Hopefully, we'll have print copies available soon after the new year. If you want to pre-order a copy, see me later and I'll get the information needed to send you a copy.



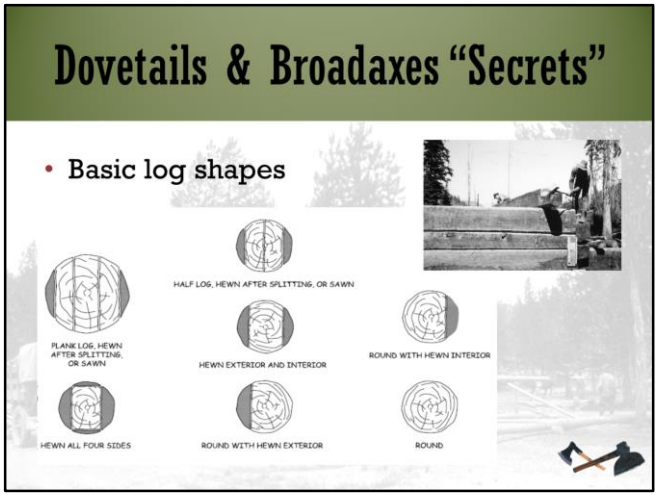
Most of the content of Dovetails and Broadaxes is about hands-on work. Of course it addresses log selection, shaping, replacing, patching, splicing, and repairing. But it also includes foundations, floors, roofs, doors, windows, fireplaces and wood stoves, chimneys and flues, plumbing and wiring, and interior features, as well as paints, stains, and other coatings. History and building styles, condition evaluations, project planning, safety, and reducing flammability and dealing with wildfire are all in there. But the coolest thing about the book is that it doesn't just say how to do stuff, it shows everything using photos and drawings – everything from building part terminology to the details of scribing and shaping a full dovetail corner notch.



So let's look at some of the "secrets" in Dovetails and Broadaxes. Starting at the bottom. In order to replace a failing foundation or rotten logs, you have to jack the building up and support it with cribbing. If not done very slowly and carefully, raising the building can break the building. That's the biggest "secret" in jacking and cribbing. Dovetails and Broadaxes takes you through the process step by step, including the use of survey levels and markerboards.

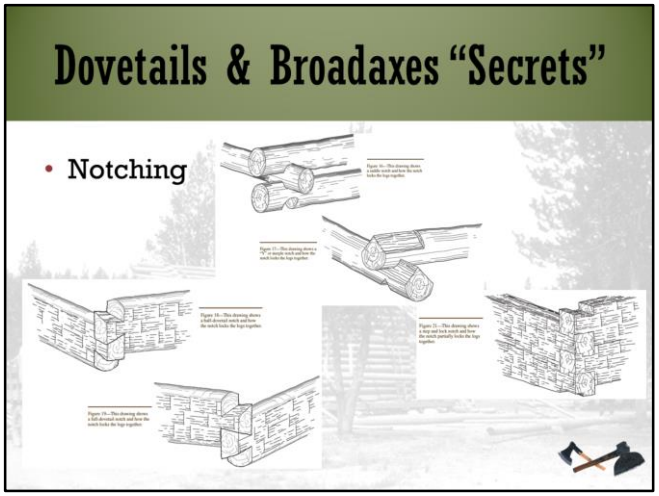
Whether it's a full concrete foundation or stone piers or something in between, it's important to keep the appearance of the original foundation. Check out the original corner detail on the replacement concrete foundation, which also has a new footing under the frost line that wasn't part of the original foundation. Footings should almost always be added to replacement foundations – that's the biggest "secret" for foundations, if you want them to last well into the future.

Log peelers and knives, broadaxes, tongs, cant hooks, peaveys, and mallets are all important tools for working logs, and these tools aren't found in most government agency shops. Dovetails and Broadaxes tells you where to find them and their approximate cost.

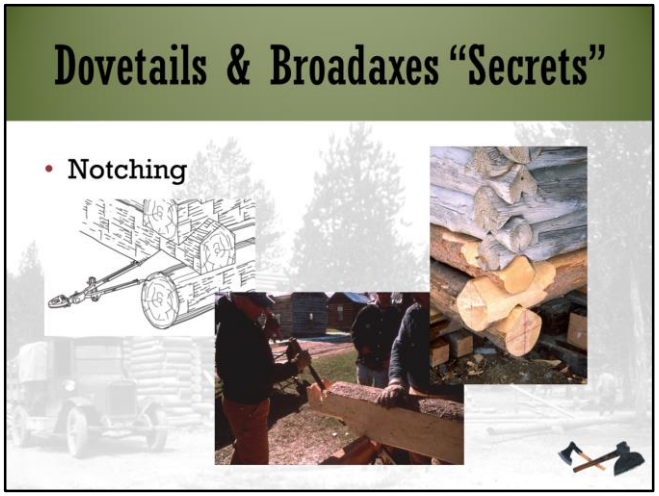


Historic log cabins were made from a number of different log shapes from round to split and hewn. Besides duplicating the size of the original log, it's important to replicate the original log shape if you have to replace any logs. You have to get the size right or the replacement log won't fit into place. Getting the shape right is more about keeping the historic appearance.

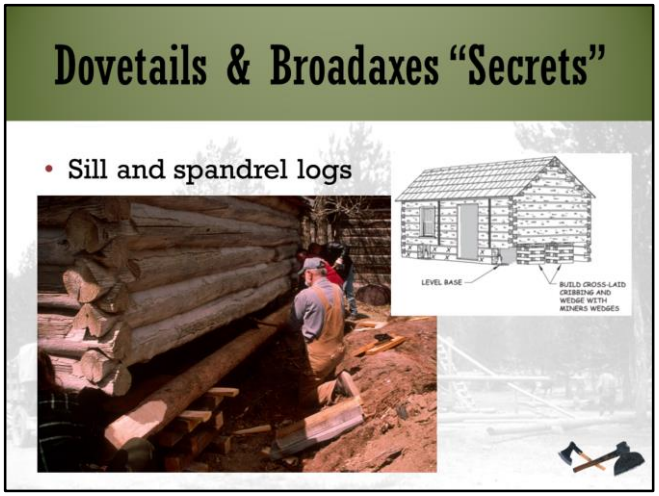
You can use modern power tools or historic tools to get the basic log shape right. Power equipment has its uses, even for repairing historic structures. However, power tools will seldom produce the finished texture and appearance you need. Appearance is affected by how the bark is removed and the method used to "finish" the logs. Dovetails and Broadaxes explains and shows how and when to use modern tools and how and when to use historic tools.



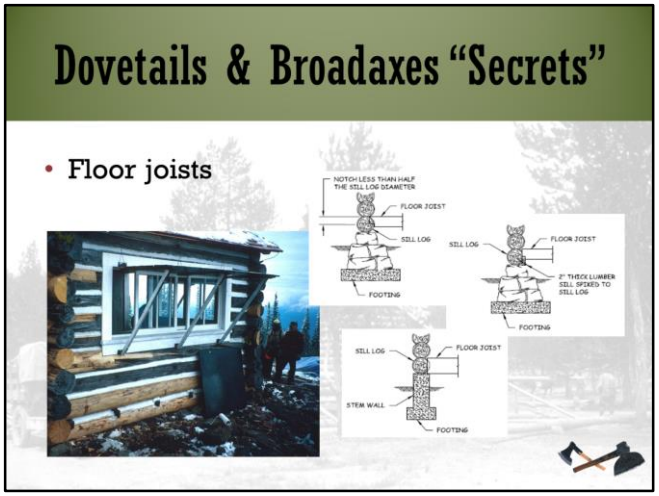
The corner notching style is one of the most important and distinctive features of log buildings. Here are a few of the notching drawings from Dovetails and Broadaxes. They show notching styles and how the notches fit together. Can you tell the difference between the half dovetail and full dovetail notches?



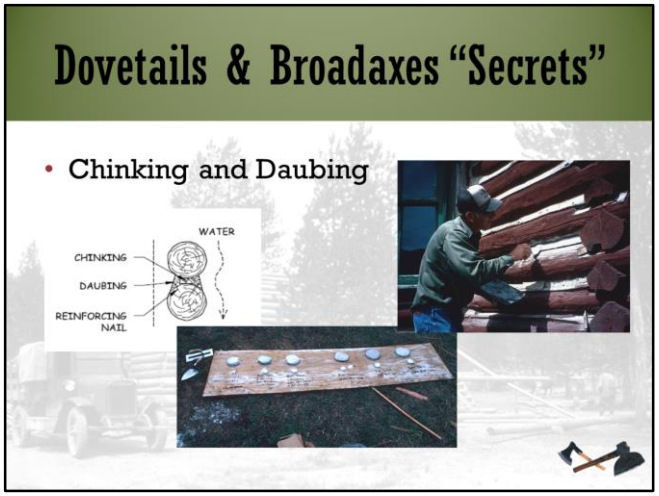
Here are a few of the photos from Dovetails and Broadaxes that show how to create corner notches: scribing a V notch onto a replacement log, shaping a V notch, and new v-notched logs in place.



Sill logs are the lowest wall logs on a cabin. They usually support the floor joists. Spandrel logs are perpendicular to and rest directly on the sill logs at the corners. In some cases, the sill logs support a central floor beam and the spandrel logs and beam support the floor joists. Sill and spandrel logs tend to be the first logs to rot, because they are closest to the soil and tend to be wet more of the year, especially in snow country. This means one of the most common repairs to log cabins is sill or spandrel log replacement, which necessitates cribbing the whole building, in most cases. Drawings and photos in Dovetails and Broadaxes show how.



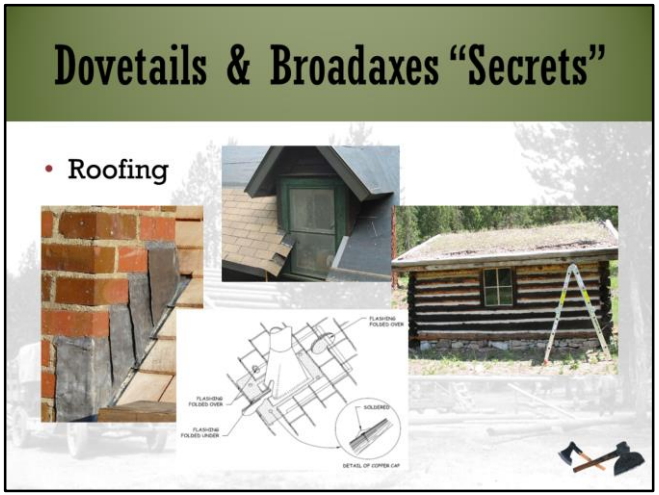
Here's a really handy secret: if the floor joists don't show from the outside of the cabin (as they do in the lookout cabin in the photo), you might not have to use replacement joists that replicate the historic joists. You can use dimensioned lumber in many cases. This often makes it a lot easier to reinforce floors that were not originally built to support the weight of filing cabinets or other heavy furnishings or equipment.



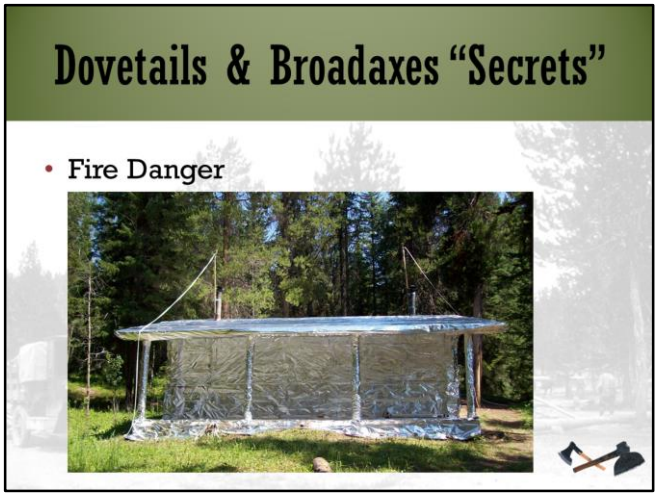
Chinking is material used to fill the gaps between logs – stones, sticks, oakum, newspaper - whatever. Daubing is the surface coating over the chinking that sheds water and provides a finished surface. Sometimes daubing is made of clay, but it's more commonly a lime or cement mortar-like mixture. When repairing it, you must create a mix that will match the color and texture of the original daubing, and then apply it to match the width, tool marks, and appearance of the original daubing. Dovetails and Broadaxes shows and tells you how.

Coping keeps the weather out without chinking and daubing. Coping is a lot of work. You may be able to cut the basic coping notch with a saw, but will need to use an adz or axe to achieve the finished shape of the cope. Dovetails and Broadaxes shows and explains how.

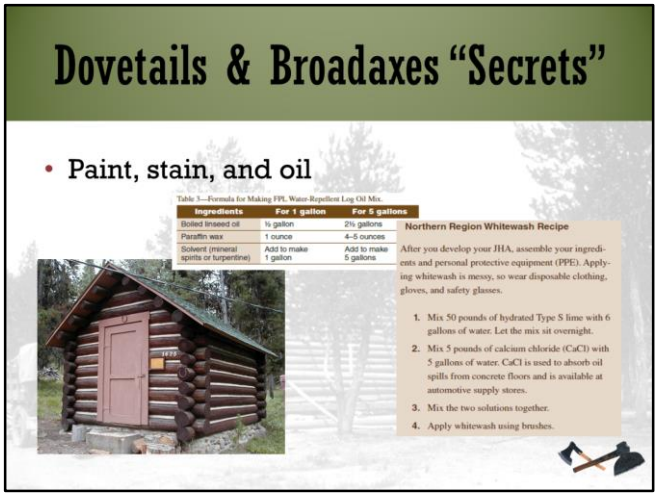
Sometimes you can repair a log with epoxy or splice a new section onto an existing log, rather than replacing the whole log. Instructions and drawings in Dovetails and Broadaxes explain how. The left photo shows 2 nearly completed half-log splices and 2 logs that have been cut to receive face splices. The middle photo shows 3 types of crown end repairs in various stages of completion. In cases where the historic logs are extremely important, it's possible to repair interior rot using epoxy, as shown in the right photo. The crew split the log, dug out the rot, patched using epoxy and small diameter wood, then rejoined the two halves using techniques explained in the Structural Wood Splicing section of Dovetails and Broadaxes.



Most cabins originally had wood shake or shingle roofing. Some had sod, corrugated metal, rolled asphalt, or asphalt shingle roofing. Dovetails and Broadaxes shows and explains every aspect of re-roofing a historic log cabin, from discovering the original roofing material to repairing sheathing, adding insulation, installing roofing, and details of applying flashing.



Log cabins are made of wood. Wood burns. For some reason, people think log cabins won't burn if they don't have combustible roofs, so they want to eliminate wood singles or shakes. Sometimes replacing the roofing material makes sense, but there are fire resistant treatments that can protect wood shingles and shakes. Regardless of roofing material, log cabins may still catch fire due to sparks and cinders, especially if the fire is wind-driven or the cabin has a wood porch. Dovetails and Broadaxes explains how to protect log cabins – most measures are not as extreme as the one shown.



Color is one of the strongest influences on perception and is an important part of log cabin preservation. Restoring the original color(s) can greatly affect the character of the cabin, inside and out. Dovetails and Broadaxes explains how to determine the original color, how to strip deteriorated coatings, including how to deal with lead paint, how to properly stain roofing shingles, and so on. It even provides recipes for making water-repellent log oil and whitewash – products not available commercially – and advice on how to obtain products that are available commercially, but not easy to find.

Ever heard of a window zipper? What do you know about weather stripping on historic windows? How do you provide Code-required egress windows or doors that meet accessibility requirements? Dovetails and Broadaxes is your complete guide to addressing these questions and more.

Once you get the exterior of your log cabin repaired and weather-tight, you can tackle interior repairs. Dovetails and Broadaxes walks you through a complete how-to for floors, walls, ceilings, propane, plumbing, wiring, fireplaces and wood stoves, flues and chimneys, and even cabinetry.

These two photos show the same lookout before and during restoration. There was nothing that could be salvaged from the original wood floor, so a new floor was installed using the same species of wood in matching tongue and groove board sizes.

When your log cabin is all fixed up, you don't want to lose it due to heavy snow or a chimney fire. Dovetails and broadaxes provides a guide for what routine maintenance should be done, how frequently it should be done, and what materials and methods you'll need to use.

Thanks to you all for listening to me today.
Do we have any time left for questions?

Cathy and I are really excited about this new resource. Be sure to let me know if you want a copy.