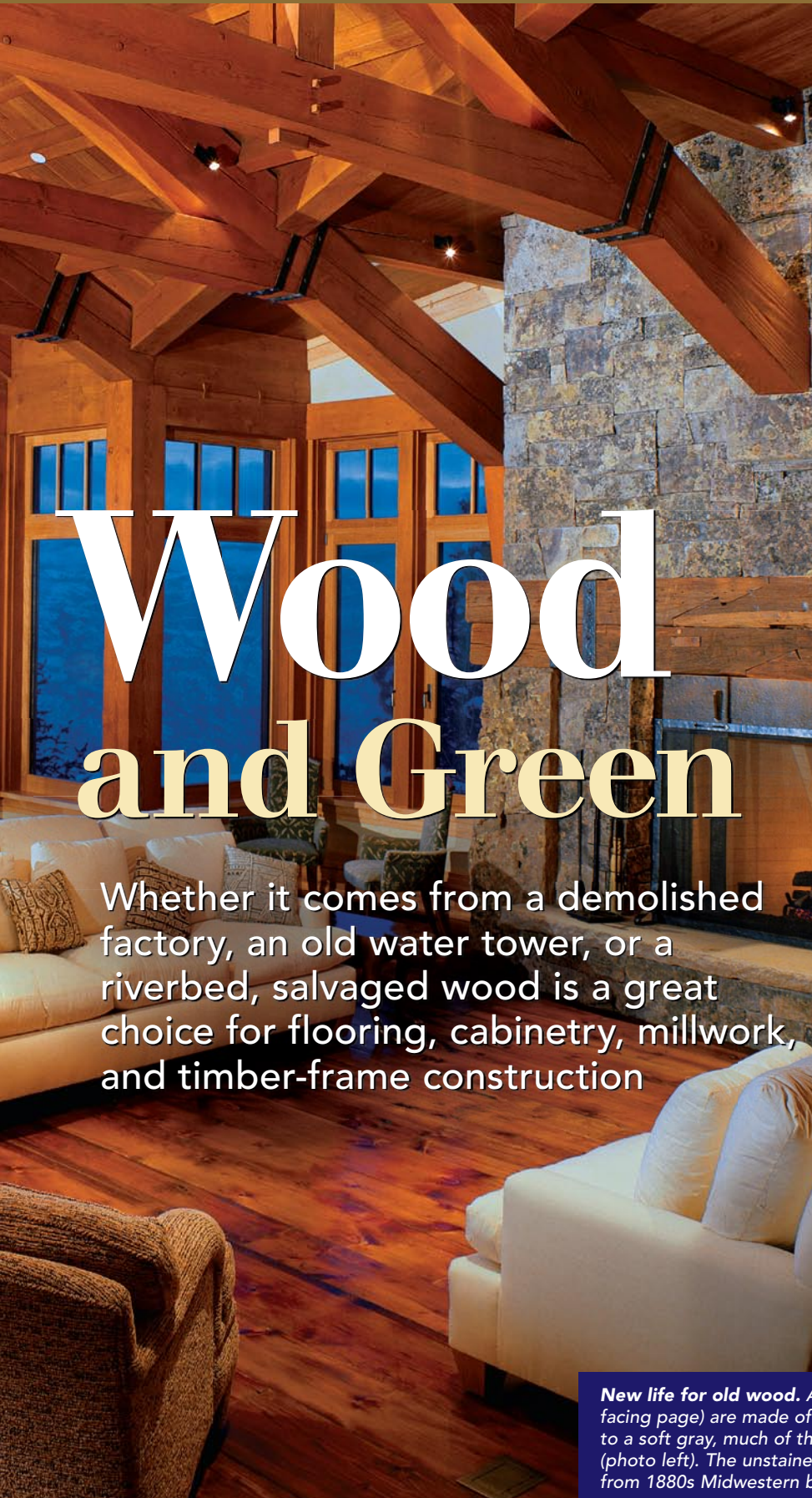


Reclaimed Is Beautiful





Wood and Green

Whether it comes from a demolished factory, an old water tower, or a riverbed, salvaged wood is a great choice for flooring, cabinetry, millwork, and timber-frame construction

BY SEAN GROOM

They don't make wood like they used to. Don't take my word for it, though. Just compare a recently milled Douglas-fir 2x4 with a piece of the same species from a century-old building. The tightly spaced growth rings, straight grain, and harder, heavier feel indicate that the older wood came from an old-growth forest. When it comes to salvaged wood, environmentalists can use old-growth timber without any qualms. In fact, the boom in green building has fueled an explosion of reclaimed-wood purveyors.

From hippieish to hip

When the reclaimed-wood business was in its infancy some 30 years ago, it was the province of a small group of dedicated recyclers, wood aficionados, and timber framers. Everyone involved in this small community knew practically everyone else.

The first real boom for reclaimed wood occurred around 1990, when efforts to protect the spotted owl and the relatively few remaining stands of virgin timber made old-growth wood hard to come by.

Merle Adams, founder of Big Timberworks in Gallatin Gateway, Mont., started buying reclaimed wood at this time because he wanted to build with big, dry, stable timbers.

There were only one or two companies that he bought from, and Big Timberworks was the only mill in the area selling salvaged wood to carpenters and woodworkers. Today, he regularly buys from nearly a dozen wood salvagers, and there are a half-dozen milling operations selling reclaimed wood on his stretch of road alone.

Demand is so high that Jim Stafford, president of Restoration Timber, says business has doubled every year for the past seven years. What's driving the demand? Largely, it's interest in green-building products coupled with a newfound appreciation for the character of reclaimed wood.

Dried for a century, the wood is green

Reclaimed wood gets its green bona fides on several counts: It's wise reuse of a natural resource,

New life for old wood. All 24 of the 100-ft.-tall legs of this water tower (photo facing page) are made of 12-in. by 12-in. old-growth redwood timbers. Weathered to a soft gray, much of the bracing is now siding. Old wood looks good inside, too (photo left). The unstained wide-plank hemlock floor comes from wood salvaged from 1880s Midwestern barns; the Douglas-fir beams are from a factory near Seattle.

it preserves carbon-sequestering trees, and it also reduces habitat-destroying logging.

Stafford and nearly every person I spoke with involved in the sale of reclaimed wood—from the salvage companies to the retailers—point to the green-building programs, especially LEED, as the stimulus for reclaimed-wood demand. The U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) programs for commercial buildings and houses are nationwide green-building programs that include reclaimed wood on their lists of preferred, environmentally friendly products.

Because a building gets points for using reclaimed wood, architects on LEED projects are specifying salvaged wood for flooring and paneling in situations where they wouldn't have considered it in the past. In large buildings with public spaces, the reclaimed wood serves as a display attracting new customers.

LEED's effect on the market prompted Pioneer Millworks, a reclaimed-wood company in the Finger Lakes region of New York, to become a certified supplier with the Forest Stewardship Council (FSC).

"For a long time, it seemed pretty foolish to get FSC certification," says sales manager Jered Slusser, because the wood is clearly recycled. However, the FSC certification is also intended to verify that the reclaiming process is both legal and safe. Slusser continues, "FSC certification helps our business because for customers getting a LEED rating, it is worth an additional point above the one for using salvaged wood."

Slusser's comments raise an interesting point: How do you know you're buying reclaimed wood? When I posed this question to people selling reclaimed wood, they typically chuckled and said, "It's easy to tell reclaimed wood just by looking it."

The nail holes and metal staining would be laborious (read: expensive) to replicate. And the density of old-growth wood that's been air-dried for 100 or more years can't be replicated. That's not to say people haven't tried.

Max Taubert, owner of Duluth Timber Company, has been at the game since the early 1970s, and he says it's extremely rare to see this kind of deception. He does recall an instance years ago when a company filling a timber-frame order must have had trouble finding enough reclaimed wood because several of the timbers were clearly green wood.

As when purchasing any material, your best protection is to do a little online research (sources p. 51). Companies that have been around for years and have an extensive inventory of wood in their yard are

COMMON USES FOR RECLAIMED SPECIES

Timber frames

Douglas fir
Southern yellow pine

Flooring

Red oak • White oak
Chestnut • Maple
Heart pine • Beech
Hickory • Douglas fir

Exterior

Redwood • Cypress
Cedar

Millwork

Redwood • Cypress
Heart pine • Red oak
White oak • Chestnut
Maple • Douglas fir



From framing to flooring. Salvaged from a school in Vancouver, B.C., these 12-in.-wide floor planks were milled from 3x14 floor joists. The square-edged, drum-sanded Douglas-fir planks proudly bear the metal staining and diagonal nail holes from decades spent as framing lumber.

BUYING RECLAIMED WOOD

Placing an order for reclaimed wood isn't like running down to your local supply yard and picking the pieces you like best. Reclaimed wood is generally held in raw form, just as it came out of the barn, mill, or river. If you don't live near a supplier, the first time you see your purchase could be when it's delivered by a freight carrier.

Either way, instead of picking through milled wood, you'll be talking with a salesperson about how your wood should look and examining samples to understand the grading process.

The grade characteristics and the number of grades vary greatly by dealer.

Some dealers have a specific grading process. With its river-recovered heart pine, for instance, Goodwin Heart Pine Company uses the 1904 Lumberman's Yellow Pine Grading Reference—the last publication for specifying 100% heart pine. Goodwin's river-recovered heart pine is available in six grades based on grain structure, and size and frequency of knots. For heart pine recycled from buildings, the company assigns one of five grades based on grain structure, knots, frequency of nail holes and degree of staining.

Other dealers are more likely to engage you in a conversation: What look are you after? How much character should the wood have? Would you be disappointed if there were several nail holes per square foot in the wood?

Although many dealers have showrooms and can send you a box of 12-in.-long samples and photos of flooring or cabinet projects using reclaimed wood, these props might not give you a true sense of what a floor or a wall of cabinets will look like with a "moderate" amount of nail holes and staining.

To be confident that your wood will look like you envision it, read through a dealer's Web site carefully, and press him or her to explain the grading. Ask a lot of questions. If you're not happy with the answers, look elsewhere.

An order with a reclaimed-wood company typically takes between two weeks and eight weeks to fill, depending on how busy the milling operation is. Also, be sure to consider how much lead time your project calls for.

your best bet. Unfortunately, there's not a large, active industry group to turn to. A few years ago, the Reclaimed Wood Council was formed by a handful of pioneering salvaged-wood companies that have been around for 20 or so years, but their efforts have moved fitfully.

Tighter grain and years of wear

No matter how green reclaimed wood is, nobody's going to buy it unless they find it attractive. Of course, beauty is in the eye of the beholder, so people find different characteristics of the wood enticing. For some, the beauty of the wood is in its structural strength, and for others, it's in the grain patterns and color. For some, the wood's allure comes from the character acquired during its previous life, and still others find its relative rarity irresistible.

Timber framers were among the first to use reclaimed wood regularly because it met their structural needs. With 20 or more growth rings per inch, the tight, clear grain of a Douglas-fir beam is unrivaled today, and its density provides excellent load-bearing capacities.

And because it has been drying for decades, it's incredibly stable. There is often checking on the timbers, but the checking you see is the checking you get. It won't develop more cracks over time.

Wood distressed by decades of service carries the stories of its previous life. Both Tedd Benson of Bensonwood in Walpole, N.H., and Merle Adams say they are careful to document the sources of their wood because the history is important to their clients. Sometimes the stories are the fodder of dinner-party tales. For example, Adams bought a load of particularly good, large timbers of what his company calls "experienced wood" that caused a few clients to blush when they learned that the wood in their new home came from the Trojan Condom factory in Trenton, N.J.

Other clients have a personal connection with the wood. Benson was guiding a client through his storage yard to choose the timbers for her new house when he mentioned that the particular batch they were looking at was from the Long-Bell Mill. She responded that her grandfather had been the treasurer of the Long-Bell company.

Timbers that have decades of service in old buildings acquire a patina of accumulated dirt, wear, and nail and bolt stains. Most suppliers sell different grades of wood that reflect the degree of patina and character that the wood retains after milling and cleaning (sidebar p. 50).

There are almost as many sources for reclaimed wood as there are suppliers. Some of the most-common sources for wood are industrial buildings, barns, tanks, and rivers and lakes. Reclaimed-wood suppliers tend to develop specific sources, specializing in barn wood or sinker logs, for example. These sources tend to be associated with different wood species or qualities that make their wood better suited for, say, flooring or timber frames, so the reclaimed-wood dealer you use can vary by project.

Timbers from the industrial forest

It's one of the ironies of the logging industry that as loggers ran out of old-growth trees to cut, carpenters have found a steady supply of old-growth wood by dismantling idled sawmills throughout the Pacific Northwest. Large mills as well as old warehouses, factories, and military buildings are some of the best sources for reclaimed wood. Built around the turn of the 20th century and during the First and Second World Wars, when steel became scarce, these buildings, which often cover acres, contain an enormous amount of vertical-

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grain, old-growth timbers. Typically, these timbers are Douglas fir, but industrial buildings are also a source of all-heartwood Southern yellow, or longleaf, pine.

If you're looking for beams for a timber frame or exposed framing that will otherwise play an aesthetic role, they'll generally come from these industrial buildings. Of course, these timbers are often sawn into millwork or flooring because beam interiors are free of holes and staining.

Unfortunately, there's a limited number of old industrial buildings with timber-frame superstructures, and it has become more difficult to source timbers that are 10 in. by 10 in. or larger.

Max Taubert says the next big wave of industrial buildings that will reach the end of their life cycle is 1960s- and '70s-era warehouses. When they hit the recycled market, they will not have the large timbers found in older buildings. In these largely concrete

and steel buildings, the source of wood is the joists in sizes like 4x14 and 3x12, a dimension more suited for use as flooring and millwork (photo p. 46).

Floorboards from barn wood

Flooring from reclaimed wood has become a huge market. Jim Stafford, owner of Restoration Timber, estimates that about 70% of its reclaimed wood ends up as flooring. It's no coincidence that the majority of Restoration Timber's wood comes from old barns. Barn wood is better for use as flooring than as timbers. First, calculating the span rating for a timber with a bunch of old mortises chopped in it gets complicated. Second, barns tend to be built out of whatever the farmer could get his hands on, so there's a mix of woods in a barn. This works fine for flooring because resawing the timbers into floorboards yields a bunch of flooring from each timber and because each

WHAT MAKES IT SO EXPENSIVE?



Salvaging wood requires work. Whether it's hickory from a barn (above) or Douglas fir from an industrial building (right), heavy grunt work goes into deconstructing, and finding and removing nails, bolts, and bits of metal. The flip side to the higher cost is a durable countertop with rich sapwood spots and wormhole character or stable beams for a timber frame that won't develop any further checking.



Deconstruction

Reclaimed wood is not cheap. Demand for limited species and quality keeps the cost up, but mostly, it's the fact that it's a very labor-intensive business and there's a lot of waste involved.

Taking down a building requires a handful of laborers and some heavy machinery. When an industrial building is deconstructed, workers take torches to key bolts in the timber frame, and then heavy machinery—excavators, booms, and skid steers—pull the

barn contributes to inventories of multiple species. Some of these species found in barns—such as chestnut, which is virtually extinct because of blight—are available nowhere else.

Although all flooring should be kiln-dried to ensure an even, low moisture content, wood from agricultural buildings must be kiln-dried to kill insects.

Barn siding has become another popular reclaimed product. Often, weathered, painted barn planks are directly reused on houses. The old, flaking paint and staining offer a rustic character that's popular in western and mountain architecture.

For the moment, there's a good supply of barn wood. The Midwest is littered with listing wooden barns next to large shiny Galvalume farm buildings. Farmers generally want to get rid of these old buildings, and state laws banning the burning of barns coupled with high dumping fees mean that most farmers are happy to pay a crew to tear down their barn and cart away the material for recycling.

Tank wood is knot-free

One common source for beautiful vertical-grain wood is tank staves. Tanks for storing all kinds of liquids (wine, beer, water, vinegar, olive



Tank staves have vertical grain. Storage tanks, such as these Bick's pickle tanks outside Toronto, required clear, straight grain to limit movement and prevent leaks.

oil, and more) were built with the best wood available. The vertical grain minimized movement across the staves, and the boards were completely knot-free to ensure that they were watertight. A typical wine vat might be 20 ft. high and 20 ft. in dia. and built out of 3x6s. While tanks were built of oak, Douglas fir, cypress, and cedar, redwood was frequently used because it didn't impart flavor to the contents in the tank.

Reclaimed tank stock is frequently used as interior millwork, such as paneling. Designers often leave the staining from the tanks' metal bands on the wood and use the consistent pattern as a focal point. When the tank stock is redwood or cypress, its rot resistance makes it ideal for outdoor uses such as siding, decking, gates, and trellises.

This old-growth tank-stave redwood is so well suited for entry doors that it's the only wood the South Mountain Company uses to



Metal removal



Storage



Milling

frame apart. Despite the robust nature of this equipment, the big timbers can withstand a lot of abuse. With reasonable care, a salvage operation can save 80% or more of the timber frame. After the timbers are pulled free, they're stacked on site, then trucked off to the buyer who is paying for them by the board foot.

Once the wood is at the buyer's mill site, the metal-removal process gets under way. It's slow, laborious, hard work. Using handheld metal

detectors and every sort of prying, pulling, hammering, and drilling tool that you can imagine, they remove metal so that the timbers can be safely milled.

Typically, wood is stored in this raw form until it's

deemed the best timber to fill a particular order. It might be planed and remain in beam form, or it could be resawn for use as flooring or millwork before heading to the kiln. The offcuts and waste from the mill-

ing can add up to 30% or more. In response, reclaimed-wood companies try to use this detritus any way they can, from laminates to cutting boards to fuel from scraps with no structural or aesthetic value.



stand up to the harsh, wind-driven rain and salt spray on Martha's Vineyard. The redwood maintains its stability despite being subject to different temperatures and humidity levels on each side. With a 5% change in moisture content, a 12-in.-wide board of vertical-grain redwood will expand or contract by only $\frac{3}{64}$ in. The next-best wood options—mahogany, teak, or vertical-grain Douglas fir—will move twice that amount.

When using tank wood, it's important to keep the contents in mind. Wood from water tanks hasn't changed from its original characteristics, but staves from wine tanks require more care. The wood is full of sugar, so it's hard on tools and can attract bees. Wood from pickle tanks, another typical source, is filled with salt that leaches out. While salty patches might add character to rustic exterior siding (and could make the wood more durable), you don't want to use it for millwork because salt can leach through to the surface. Some people who use wine and pickle wood regularly say it's best to avoid using finishes, but if you must, select an oil-based one.

Sinker logs finally make it to the mill

If you're looking for old-growth wood that is free of nail holes or other character marks, sinker wood might be for you—if you can afford it. Flooring that's made from sinker wood can cost as much as \$30 per sq. ft. Rivers used to serve as the highways for North America's loggers. After felling the trees, they floated the logs downstream to holding ponds at the mill. Along the way, some of those dense, old-growth trees sank. At the time, their loss was inconsequential, although today, some estimates for sinkers range as high as 15% of all logs floated downstream.

Now these logs are prized. The low oxygen content and cold temperatures under water have preserved the wood. Divers locate the logs, which are then hauled to the surface with airbags or winches. Once the silt has been cleaned off, the wood entering the mill is the same as its first-growth brethren, albeit more than a century late. The logs can be found across the continent: cypress and longleaf pine in the southeastern United States, hardwoods in the Great Lakes, and a mix of softwoods in the Northwest of the United States and Canada.

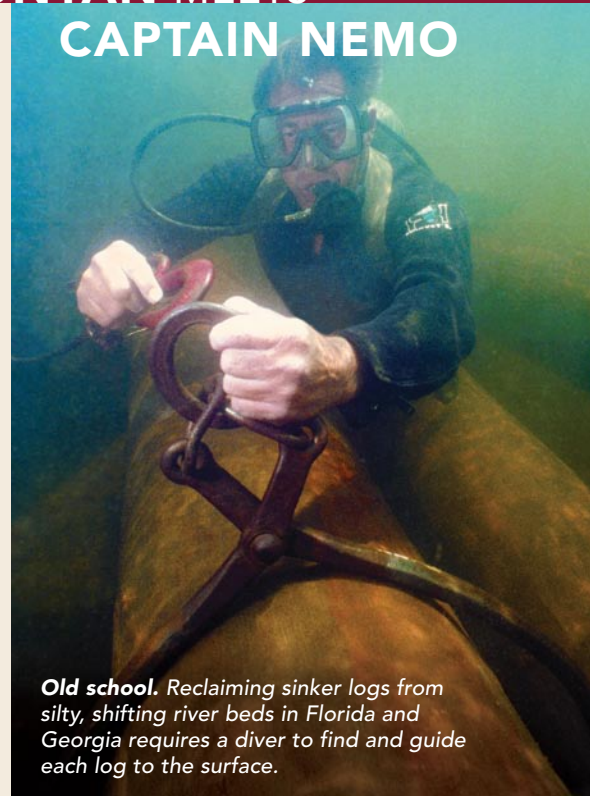
Goodwin Heart Pine, located outside Gainesville, Fla., has made a business of recovering cypress and heart-pine logs. These slow-growing trees are staggeringly old: Recovered heart-pine logs were more than 200 years old when cut, and cypress trees were more than 500 years old. (The oldest tree Goodwin has recovered was around

PAUL BUNYAN MEETS CAPTAIN NEMO

Not all reclaimed wood has been cut down before. Some old-growth wood comes from standing deadwood after a forest fire, and a few innovative companies are harvesting standing wood that has been submerged by reservoirs.

Chris Godsell was working for a salvage company using divers to find sinker logs when someone showed him a photograph of a forest under water—acres of timber in one spot. That got him thinking. He founded a company, Triton Logging, and a few years and more than a million dollars in development later, he had the Sawfish—a remotely operated, tree-seeking, chainsaw-wielding submersible.

It's a wicked piece of engineering. The operator sits at a computer on a



Old school. Reclaiming sinker logs from silty, shifting river beds in Florida and Georgia requires a diver to find and guide each log to the surface.

barge tethered to the Sawfish by 720 ft. of cable that transmits his commands and the electricity to power the 75-hp motor. Using the seven onboard cameras, the driver steers the Sawfish into position in front of a tree. After two pincher arms embrace the tree, an airbag is anchored to the trunk and inflated. Then the 54-in. chainsaw slices through the tree,

THE HOLE STORY

Unlike lumber milled from freshly harvested trees, reclaimed wood isn't considered flawed just because it has nail holes, rust stains, saw marks, and weathered texture. As the prices suggest, these "defects" are part of the history and character of the wood.

TIMELESS TIMBER
4-in. red oak
\$9.95 per sq. ft.

ELMWOOD RECLAIMED TIMBER
6-in. antique heart-pine rustic
\$13.10 per sq. ft.

PIONEER MILLWORKS
3-in. Settlers' Plank
\$8 per sq. ft.

From premium to rustic. Select grades of reclaimed flooring come from the interior of beams or sinker logs (left). For more character, stains and nail holes are common (center). If that's not rustic enough, some dealers leave the weathered face of a board untouched, complete with cracks, holes, rust stains, and saw marks (right).

and the airbag whisks it to the surface for recovery by a tugboat outfitted with a grapple.

Triton is currently clearing Ootsa Lake, a 16-hour drive north of Vancouver. Submerged beneath the 154-sq.-mi. hydro-dam reservoir are Douglas fir, lodgepole pine, spruce, and hemlock worth an estimated billion dollars. The common assumption is that the some 45,000 hydro-dam reservoirs worldwide contain 200 million to 300 million trees, an estimate that Godsell believes is low.



New school. The remotely operated Sawfish clears standing timber flooded by dam projects. The submersible can operate hundreds of feet down.

1700 years old.) Both of these species are high in resin, which protects them from water and insect damage. The logs that sank were more oil-laden than average, so they are exceedingly durable and also are 100% heartwood.

Heart pine is a warm, rich red, and unlike the pine boards of today, heart pine isn't a soft wood. It's about as hard as red oak but is also 29% more stable. This makes it an excellent material for flooring and stair treads. It's generally relatively clear of knots even in lower grades. It's also available with an extremely rare curly grain that's used for furniture, cabinets, and paneling.

Cypress is lighter in color and has a swirling grain, compared to the vertical or arching grain of heart pine. Softer than heart pine, cypress is comparable to Douglas fir. Impervious to weather and insects, cypress is a maintenance-free exterior wood that is ideally suited to trim.

Conservation the second time around

Just like the old-growth forests that the reclaimed wood came from, there isn't an infinite amount of old-growth wood to recycle. Fewer available large-dimension timbers mean some suppliers are limiting the size of the timbers they'll take orders for, and others are trying to shift their business away from timbers toward flooring and millwork. On top of this, despite the fact that demand is at an all-time high, the market is still in the early-adopter phase—driven by wealthy clients with high-end projects.

Nobody really knows how much wood is out there to be reclaimed. Estimates of when it will run out range from 20 years to "not in our lifetime," depending on whom you talk to.

Longtime reclaimed-wood users are advocating careful and creative use of this resource. Big Timberworks's Merle Adams says that reusing wood is an ethic because you're using an irreplaceable resource. That means treat it accordingly by finding the best uses for each timber, board, and species; build so that it will last for centuries; and don't waste anything. That might mean using veneers of old-growth wood in some applications to get more mileage out of good-looking

timbers and finding new uses for cutoffs and waste that might have been discarded in the past. □

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FROM MILL TO MARKET

Located in Longview, Wash., the Long-Bell Mill achieved legendary status for the size, quality, and sheer quantity of the Douglas-fir beams that came of its deconstruction. Over a five-year span beginning in 1991, the mill's 30 timber-frame buildings, including eight identical 800-ft.-long by 80-ft.-wide post-and-beam buildings, yielded some 7 million bd. ft. of reclaimed lumber.

When brisk bidding for the wood ended, the price had more than tripled. This amount of interest in old wood from a mill building that had been sitting idle for nearly 40 years seemed unusual, until it was revealed that Microsoft's Bill Gates wanted about 1 million bd. ft. of timber for his house.

The rest of the buyers were a virtual who's who of the timber-framing world, and they purchased wood by the truck- and railcar-load. Over the next decade, they turned their inventories of Long-Bell timbers into exquisitely crafted homes.

GOODWIN HEART PINE
Engineered vertical-grain heart pine
\$12.83 per sq. ft.

ELMWOOD RECLAIMED TIMBER
End-grain floor tile
\$15.15 per sq. ft.

TIMELESS TIMBER
Red-birch butcher-block countertop
\$60 per sq. ft.

A little goes a long way. To make the most of an increasingly expensive resource, companies are gluing off-cuts and veneers to make countertops, stair treads, and engineered flooring. End-grain tiles are durable material with a unique look. With a 3/16-in.-thick antique-wood wear layer, engineered flooring can be refinished several times.

SOURCES: Aged Woods www.agedwoods.com • Bear Creek Lumber www.bearcreeklumber.com • Big Timberworks www.bigtimberworks.com • Carlisle Wide Plank Floors www.wideplankflooring.com • Duluth Timber Company www.duluthtimber.com • Elmwood Reclaimed Timber www.elmwoodreclaimedtimber.com • Goodwin Heart Pine www.heartpine.com • Hearne Hardwoods www.hearnehardwoods.com • Heartwood Pine www.heartwoodpine.com • McGee Lumber www.mcgeelumber.com • Mountain Lumber www.mountainlumber.com • Pioneer Millworks www.pionermillworks.com • Plankmaker www.wideplanking.com • Restoration Timber www.restorationtimber.com • Timeless Timber www.timelesstimber.com • Vintage Timberworks www.vintagetimber.com • What It's Worth www.wiwpine.com