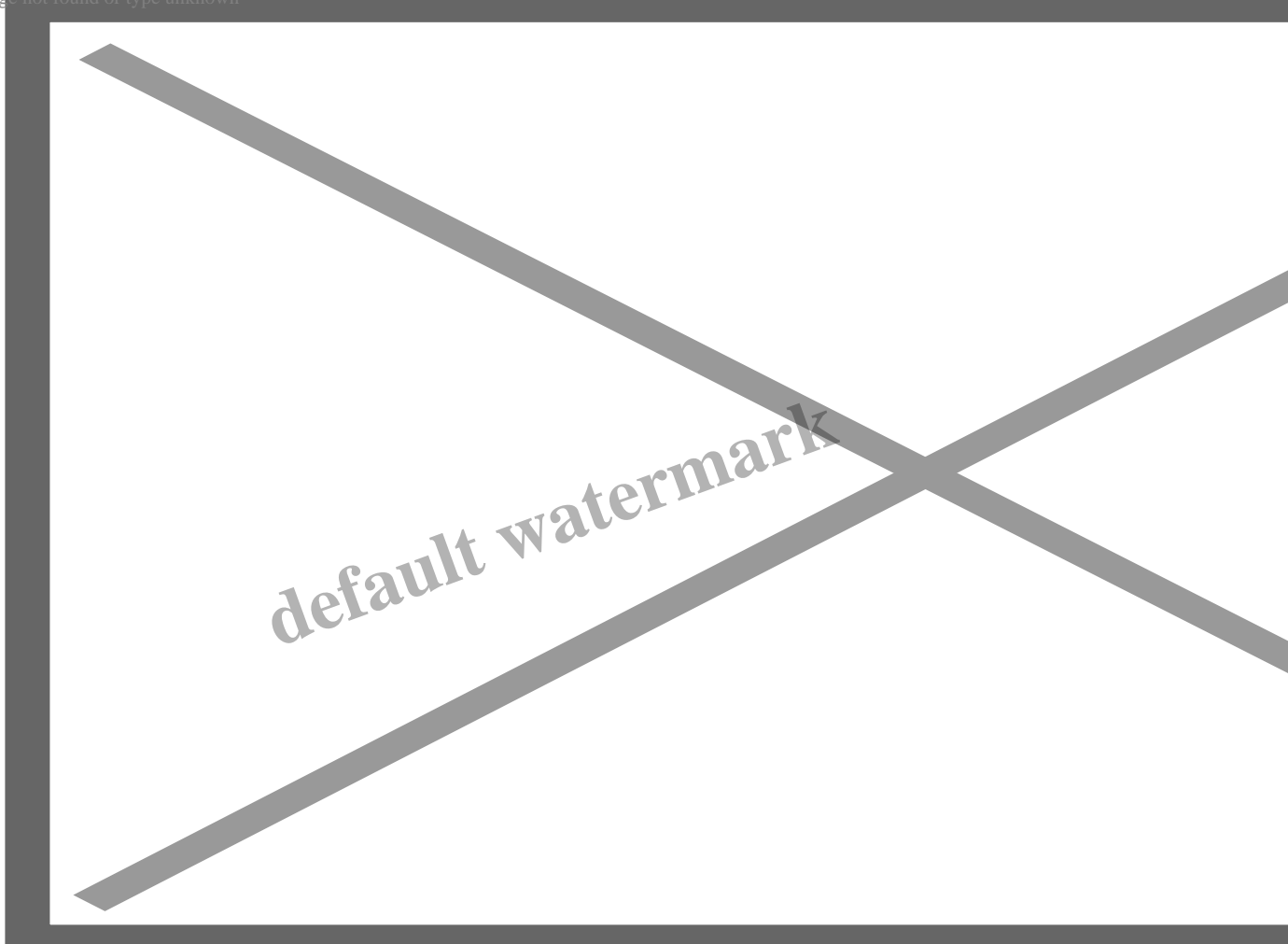


## “Diaperwood” and dead trees: guitar makers find new sources of Sitka spruce

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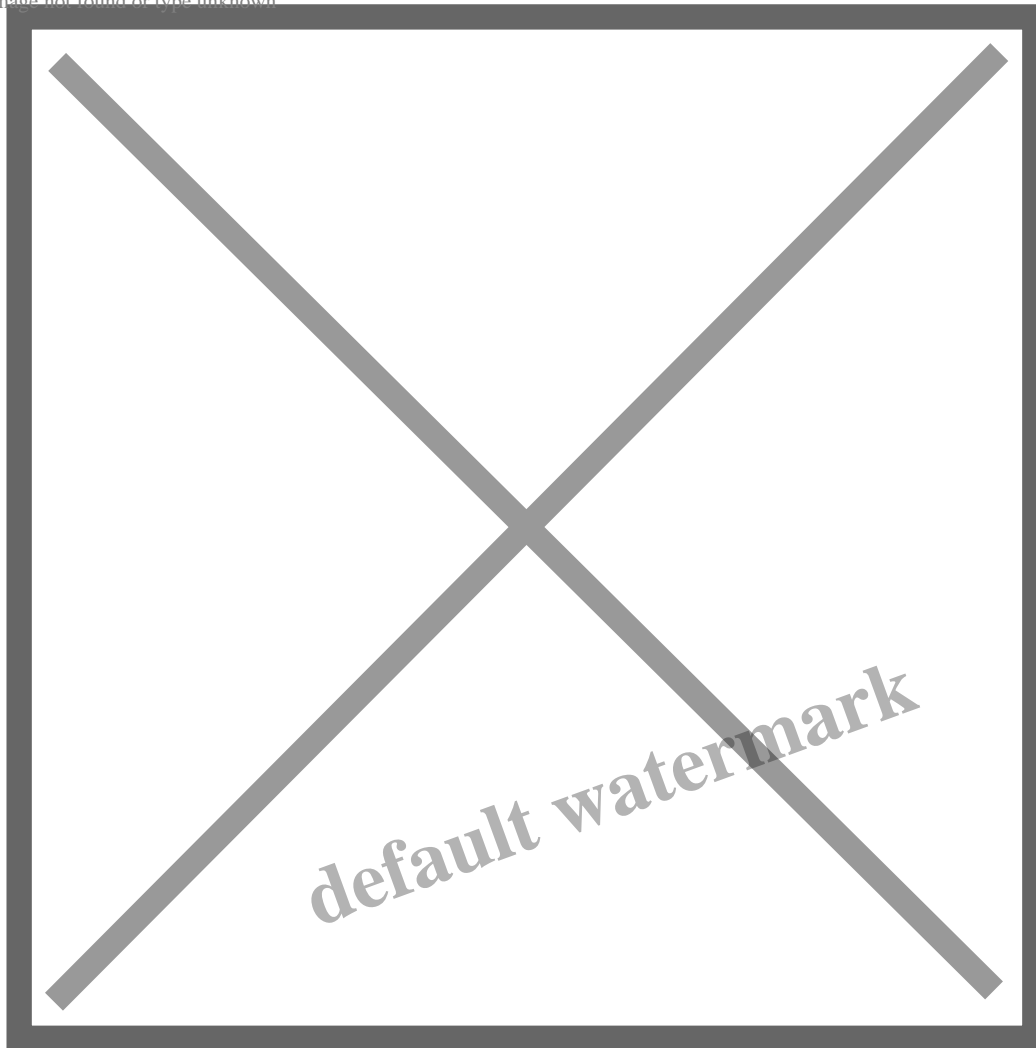
*High quality Sitka spruce logs destined for pulp to be made into diapers is “rescued” by Martin Guitars to instead be made into guitar tops. (Photo Sources: [Ebay](#), [Paper Vietnam](#), [Northpac](#))*

*The previous post delved into the world of Sitka spruce, focusing on the conflicts surrounding its conservation and use. Here we look at how two guitar makers – Larrivé and Martin – have adapted to using different, more sustainable sources of high-quality wood.*

### Sitka takes flight and makes music

Sitka spruce is notable for its [high strength-to-weight ratio](#), which makes it ideal for a wide range of commercial uses, ranging from construction timber through aeroplane parts and boatbuilding. It was used to construct the aeroplane that made the world’s first powered flight – the [Wright Flier](#) in 1903.

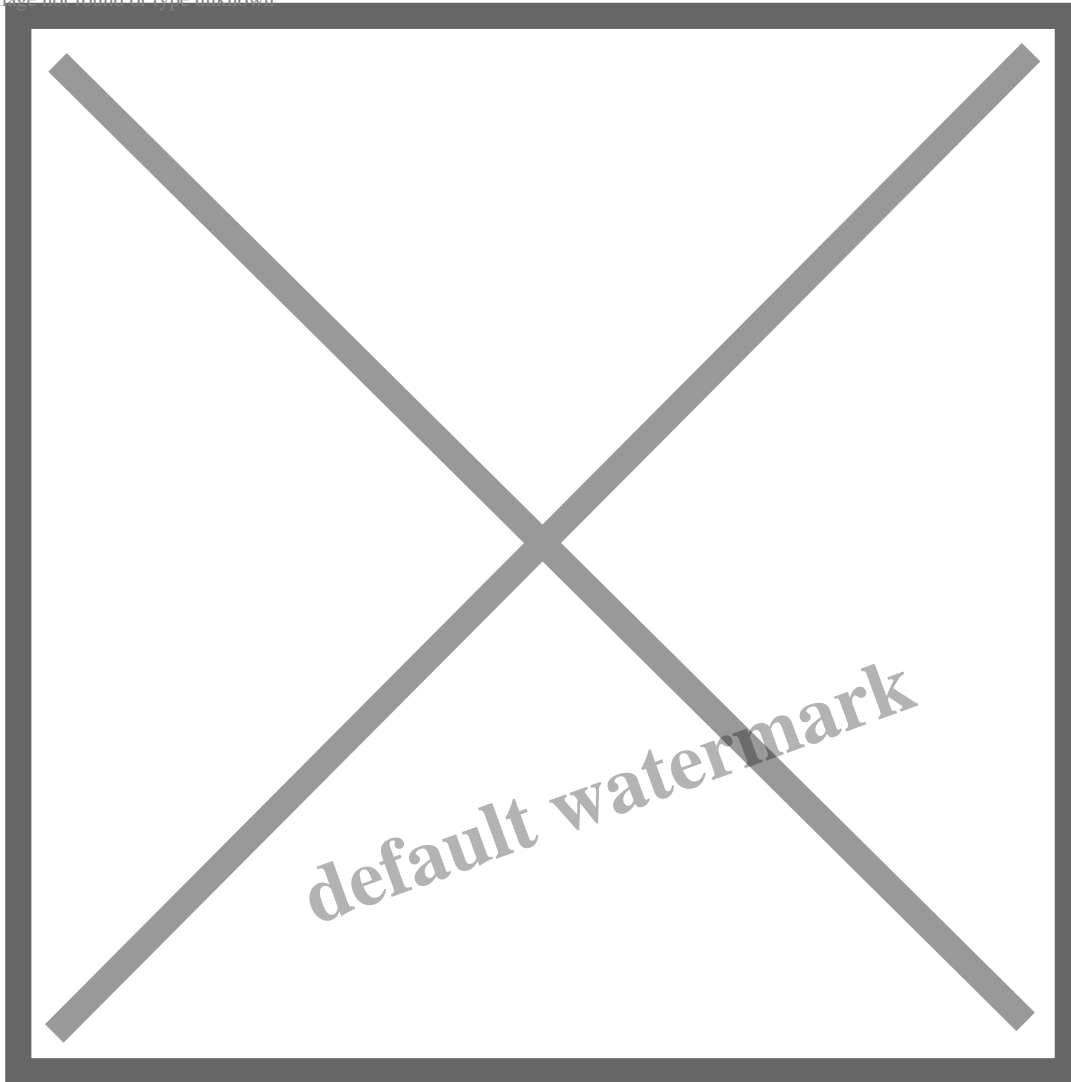
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*The first powered flight at Kitty Hawk, North Carolina in December 1903. The Wright Flier, designed by Orville and Wilbur Wright. Photo: [Wright Brothers](#)*

Large quantities of spruce were needed in the First World War to construct aeroplanes. Demand for Sitka to build warplanes was so high that in 1917 the US Army formed the [Spruce Production Division](#). This “[army in the woods](#)” provided manpower for the lumber industry, deterred labour disruptions, and helped produce huge amounts of aeroplane-grade spruce for the Allies. Even in World War II, one of the most successful planes of the war – the [De Havilland Mosquito](#) – was largely constructed from spruce and other woods.

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*De Havilland Mosquito: multi-role combat aircraft during World War II. Photo: [Bae Systems](#)*

The wood needed for these aeroplanes needed to be of the highest quality – big lengths of slow-grown straight timber with tightly-packed growth rings. And this mostly came from large old trees in the old growth forests. This high-quality wood is also highly valued for making soundboards for musical instruments, including guitars.

It's precisely these large old trees that have been the focus of all the controversy that was covered in the [previous post](#). There are a lot of Sitka spruce remaining in the forests of the Pacific Northwest and Alaska, but not all of them are going to be suitable for providing wood for guitars. Indeed, fewer and fewer suitable trees are available as more of the remaining old growth forests become protected while others are logged-out by ongoing clear-cut forestry.

Once logged, the old growth forests will regenerate and grow new trees – but, as Tom Kollasch of the Nature Conservancy pointed out in a [2015 article](#), “... it’s gonna take 600 years to get a 600-year-old tree.” The young regrowth trees grow fast, which is good in terms of getting good timber volumes quickly. These stands can be harvested again in less than 100 years – but the trees will likely not have the type of timber that makes good guitar tops.

## Why worry?

Guitar makers, in the big scheme of things, don’t use a lot of wood – in comparison to the many other industries that rely on wood such as construction, furniture, paper production and so on. That may make people question why any of this matters.

I like this quote from a 2019 Acoustic Guitar Forum thread on Sitka Spruce from Alaska:

*I see way too many replies which basically say “guitars are only a small percentage of wood use therefore we’re not the problem.” This is wrong. There is a worldwide epidemic of mismanaged forests and overharvesting. While it is true that we are only a small part of the use, it still contributes to the problem and therefore we all need to be part of the solution. Don’t just dismiss the problem just because there are worse offenders. I’m not advocating giving up sitka or any other wood, but I am suggesting we shouldn’t just ignore the problem because we’re only a small part.*

[Acoustic Guitar Forum](#)

Although we’ve seen in many other posts on the Nature of Music that excellent guitars can be made from virtually anything – from [old closet doors](#) to [bamboo](#) – most guitar makers seek out wood with specific qualities that are seen to make good “tone wood”.

Certain species of tree are considered optimal in terms of tonewood characteristics – Sitka and the other spruces are examples of this. But even within a species, wood characteristics will vary depending on a range of factors including tree age and rate of growth, local climate, and prevalence of pests and diseases.

So not all Sitka wood is equal. Here are a couple of examples of how guitar makers seek out “good” spruce.

## Go west, young man!

[Jean Larrivé](#) started making guitars in his home-town of Toronto in the late 1960s and steadily grew a guitar-building business through the 1970s. By 1976, Larrivé Guitars employed 8 people, making 25-30 guitars a month.

In 1977, Jean decided to move the company to Victoria, British Columbia – partly because of the more equable climate and amazing natural landscapes of BC, but mainly because that’s where Sitka spruce grew. Moving to BC not only provided better access to Sitka timber, but also allowed Jean to inspect and select timber personally.

The Larrivée website has [photos](#) of Jean and his son John Jr seeking out woods for Larrivée guitars. Jean was not satisfied with going to lumber yards, instead jumping on to the giant [log booms](#) floating in the Fraser River and having an up-close look at the quality of the wood in individual logs.

Jean and John Larrivee walking log boom

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Jean Sr and John Jr walking booms in search of Sitka Spruce

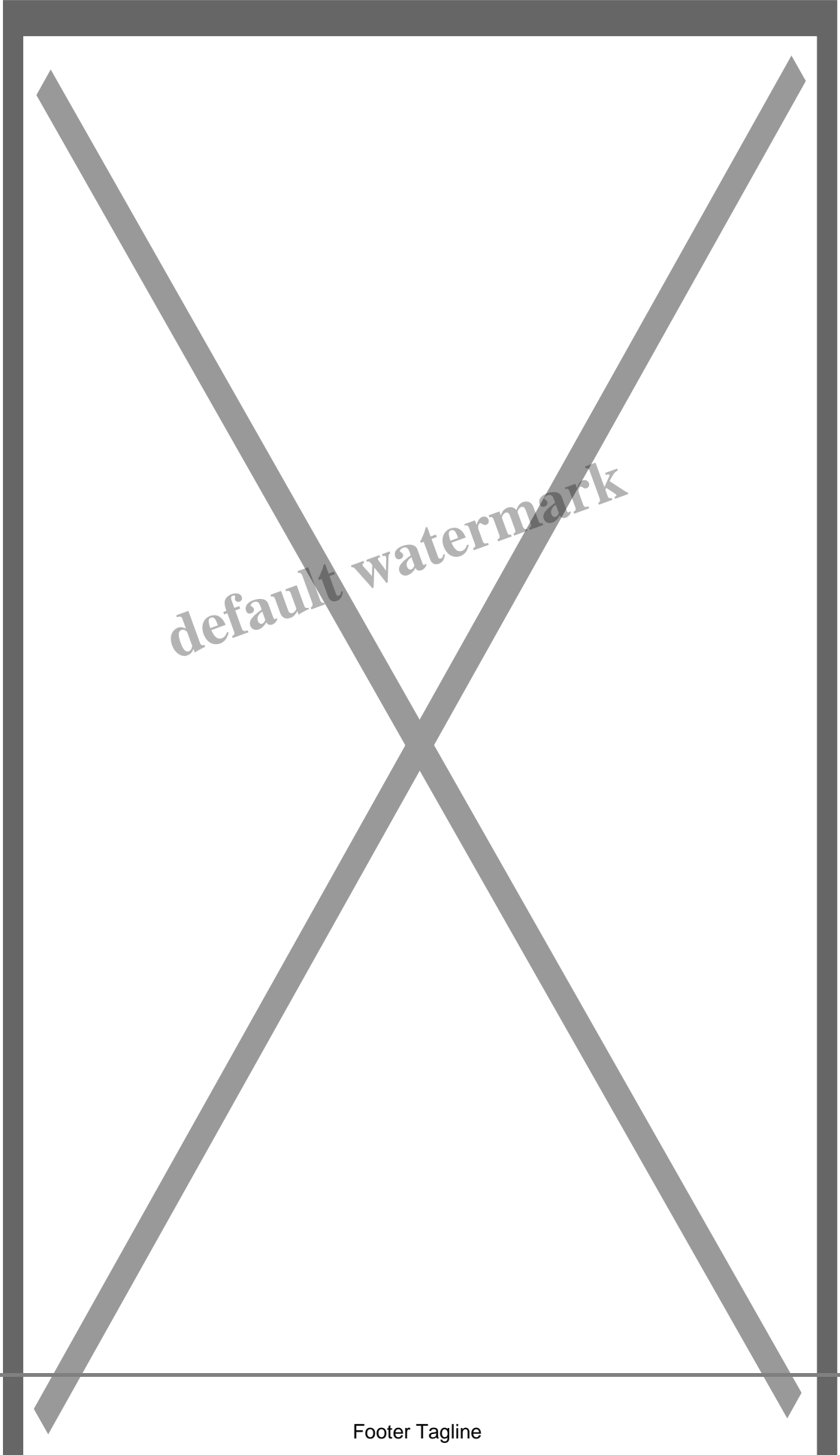
## Jean Larrivee inspecting Sitka log

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### Jean Sr. inspecting grain width and pattern

Larrivéé stayed in Victoria until 1982 when practical considerations caused the company to move over to Vancouver on the mainland. Continued expansion of the company resulted in several changes of location, and in 1998 Larrivéé also opened a new factory in California, where the company is now based. Today, Jean Larrivéé is still going strong, and his sons continue the business of building excellent guitars.

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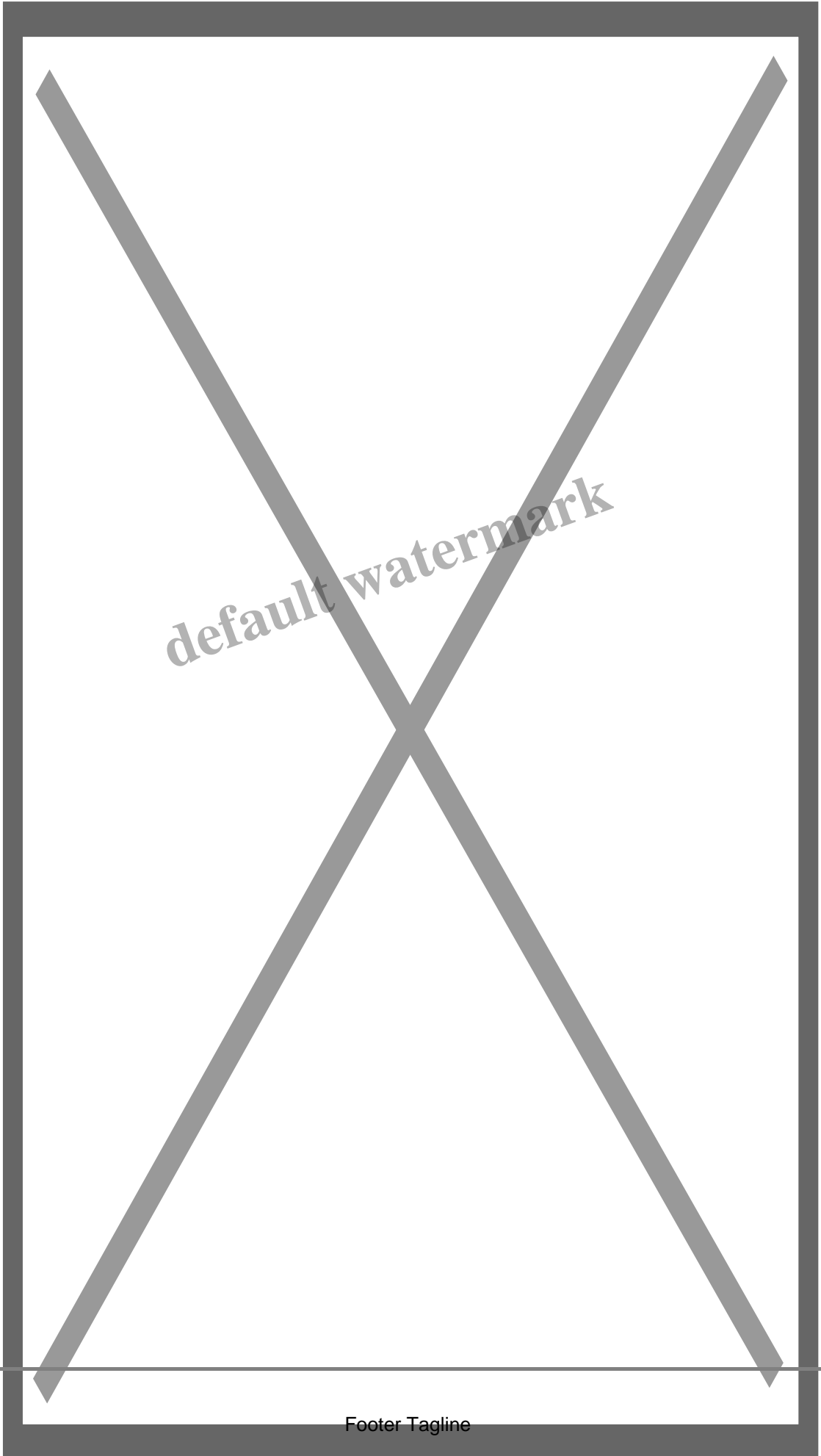


Sitka top on Larrivée L-09 built in BC in 1983

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Larrivée L-09 built in BC in 1983

## Finding Sitka without harming the forest

Larrivée has built a reputation for producing very fine guitars – including the first guitar in space, as featured in an earlier post. They still use Sitka spruce for tops, but the process of finding good quality spruce has changed somewhat from the old days of Jean jumping from log to log on the Fraser River.

The ongoing industrial extraction of timber from BC forests has resulted in less high grade timber being available. In addition, there's more emphasis on aiming to minimise environmental impact from extracting timber for guitars. The Sitka used by Larrivée now is mostly salvaged timber or individually-selected dead trees that are carefully felled and cut up in-situ for transport out of the forest. This significantly reduces the damage to the forest caused by the normal methods of hauling large logs out of the forests and transporting them on trucks along logging roads.

Here's a video about John Larrivée Jr doing one of these specialised operations:

*THE HUNT FOR SPRUCE – Birth of a Larrivée Guitar. 2012*

Interestingly, you can also watch a 2007 video of Bob Taylor of Taylor Guitars explaining pretty much the same process – in this case cutting up a 300 year old Sitka that had been blown down in a windstorm. Note the comment that the blowdown was caused by the opening up of the forest in an adjacent clearcut.

*Taylor Guitars: Spruce Pt. 1. 2007. Bob Taylor and a team from Pacific Rim Tonewoods brave the Alaskan wilderness in search of a fallen spruce tree.*

If you're interested in following the wood back to the guitar factory, here's a follow up video of how the wood is then cut into guitar tops and bracing: [Spruce part 2](#).

## Martin's journey from Adirondack to Sitka spruce

Since its foundation in New York in 1833, [C.F. Martin & Co](#) has produced a heck of a lot of guitars with spruce tops.

Although the first guitars made in the 1830's may have had [tops of Alpine Spruce](#) from Europe, most vintage Martin guitars built before World War II had tops made from [Red Spruce](#). Usually referred to as "Adirondack", after the mountains in which it is found, this was the locally available spruce that proved to be an excellent wood for guitar tops.

There's a whole other [story](#) to be told about Red Spruce. Suffice to say here that Red Spruce preceded Sitka Spruce in being over-exploited to the point that wood for guitar tops became hard to get.

Martin apparently experimented with Sitka Spruce, known at the time as "Airplane Spruce", for the tops of some guitars in 1918. Chris Gibson and Andrew Warren discovered when researching their 2021 book "[The Guitar: Tracing the Grain Back to the Tree](#)" that Martin had received several batches of Sitka over the period between 1918-1940 and made quite a few guitars with it. But it wasn't until after

World War II that Sitka became the mainstay for Martin guitar tops – largely because supplies of Red Spruce had dried up. [1945-6 marked the end](#) of Red Spruce and the beginning of the reign of Sitka as the prime topwood.

## ‘Rescued’ Sitka

The Sitka era has lasted nearly 80 years. Over the last couple of decades, however, Martin has been getting creative about where it sources its Sitka. As part of the company’s commitment to greater sustainability, it’s been seeking out alternative sources that do not rely on primary extraction from native forests.

The Sustainable Wood Series of guitars was introduced in the early 2000s. In a [2004 interview](#), Martin’s Dick Boak discussed the process Martin went through to become certified with the Forest Stewardship Council.

At that time there was no certified spruce available, and so Martin developed their own approach that used FSC certified wood where possible, but sourced its Sitka for the Sustainable Wood Series in an unusual way. They “rescued” wood that was destined to become pulpwood.

Boak explained:

*“The wood is quite valuable but the paper pulp industry buys and harvests Sitka spruce in the Pacific Northwest and sometimes they harvest trees that have no business being made into pulp. Wood that is appropriate for a guitar is very, very valuable. Wood that is harvested for pulp wood deserves nothing more than weeds. Our spruce vendors regularly visit pulpwood yards looking for trees which have been purchased by the paper industry that would make good guitar tops. We buy them at a premium price.”*

As well as heading to paper mills, some of the rescued wood was also destined to become disposable baby diapers (AKA nappies). The wood “rescued from a fate worse than death” became jokingly known around the Martin factory as [“diaperwood”](#).

The idea that a towering Sitka spruce tree can end up absorbing whatever comes out of a baby’s bottom perhaps epitomises the absurdity of today’s world.

## A short aside on babies and diapers

Anyone who has had babies or observed those with babies will know the arduous, frequent, and often stinky task of changing diapers/nappies. Parents can elect to use re-usable or single-use disposable diapers, and the increased convenience and reduced effort associated with disposables often pushes tired and busy parents to use them. But as with many single-use products, disposable nappies use a lot of resources and produce a lot of waste that ends up either being incinerated or dumped in landfill.

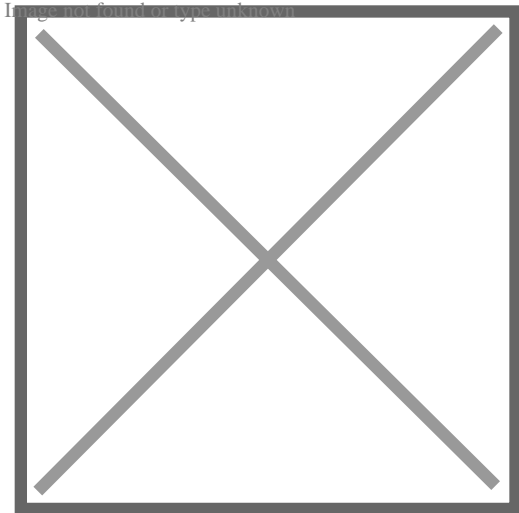


Image: [Spreadshirt](#)

An average baby will go through about [8000 diapers](#) before being toilet trained. There's a lot of babies in the world and hence a lot of diapers being made, bought, dirtied and disposed of. Making diapers is big business and involves not just wood pulp but also various plastics and chemicals. According to a 2023 [UNEP article](#), the disposable diaper market is worth US\$71 billion a year and is among the biggest contributors to public waste globally. And while you might think that reusable diapers make a lot more sense, the [difference in environmental impact](#) is not as great as you might expect.

Much better to think of good quality Sitka ending up on a guitar rather than on a baby's behind. Despite the name, the diaperwood was actually pretty much as good quality as the Sitka acquired through normal channels.

Martin Sustainable wood series guitars - cherry and red birch, both with rescued Sitka tops.

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*Martin Sustainable Wood Series guitars – cherry and red birch, both with rescued Sitka tops.*

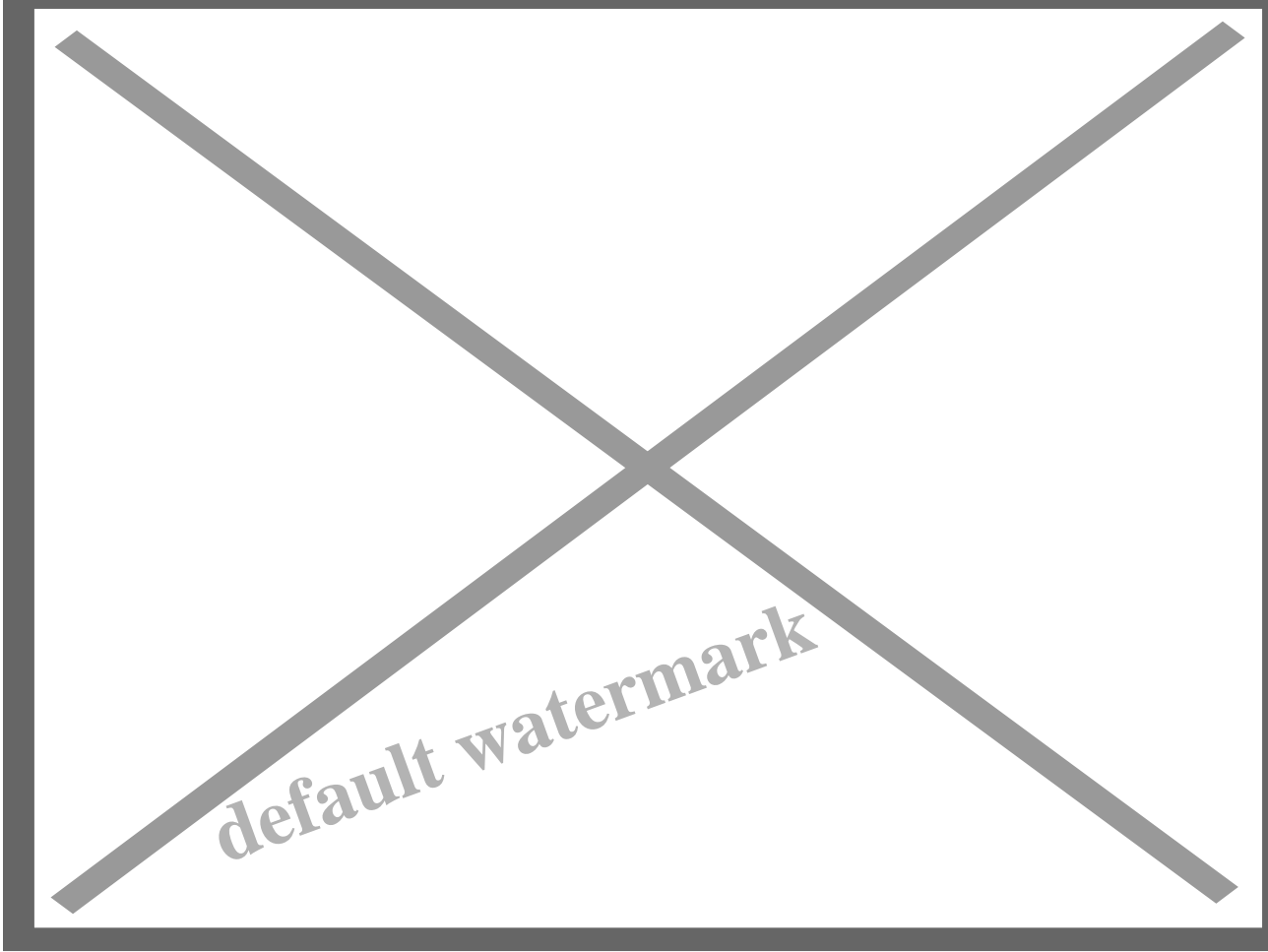
We saw the Sustainable Wood Series cherry guitar in a [previous post](#), and we'll hear about the Red Birch version in an upcoming story. Both have diaperwood -or rescued Sitka, to use the nicer name – tops, and both sound fantastic.

## Making guitars from Canadian bridges

Another guitar from Martin featured Sitka obtained from a different source – the [GPCPA4 Sapele guitar](#), introduced in 2012, featured Sitka that was reclaimed from dismantled Canadian bridges – recalling an [earlier story](#) of redwood being recycled from old railway tunnel timbers.

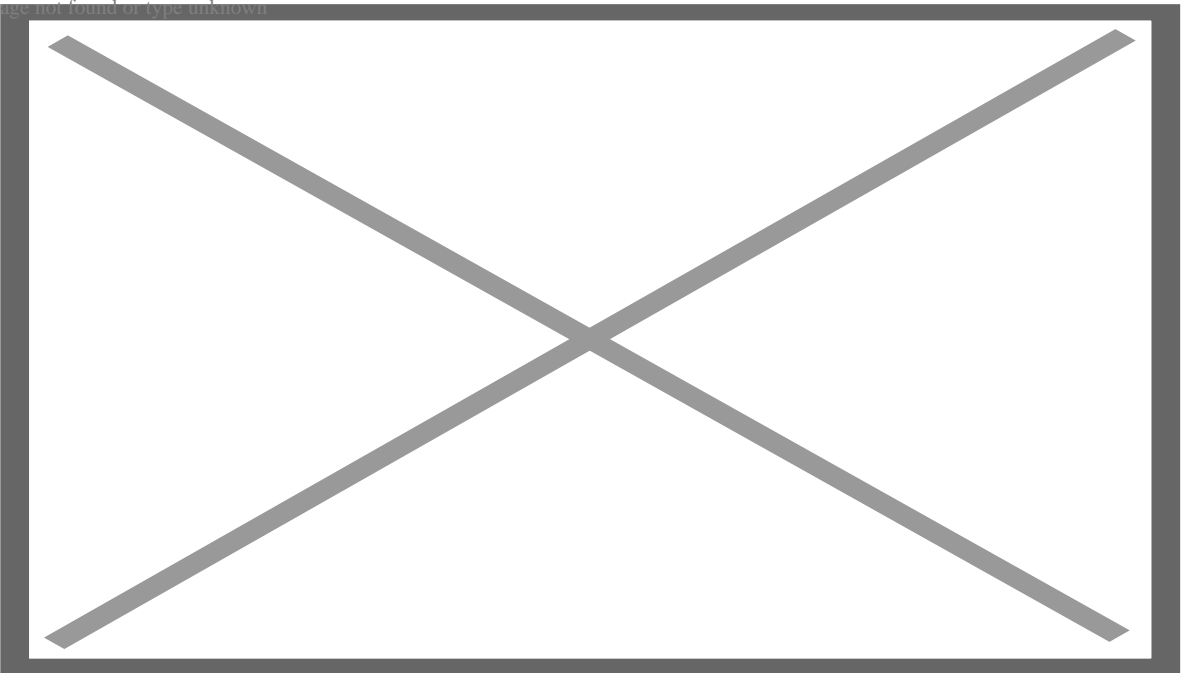
There would appear to be plenty old wooden bridges in Canada – from large urban structures to small logging bridges – that need to be decommissioned. Often the wood is burned. But companies such as [Urban Timber Reclaimed Wood Co](#) and [Bridge Furniture](#) salvage the wood and turn it into beautiful furniture. And some makes its way into Martin guitars.

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*Logging bridge in BC scheduled for decommissioning (Source: [Bridge Furniture](#))*

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*The Cloverdale Footbridge in Edmonton before it was demolished (Source: [CBC](#))*

## Recycling a floating lodge in BC

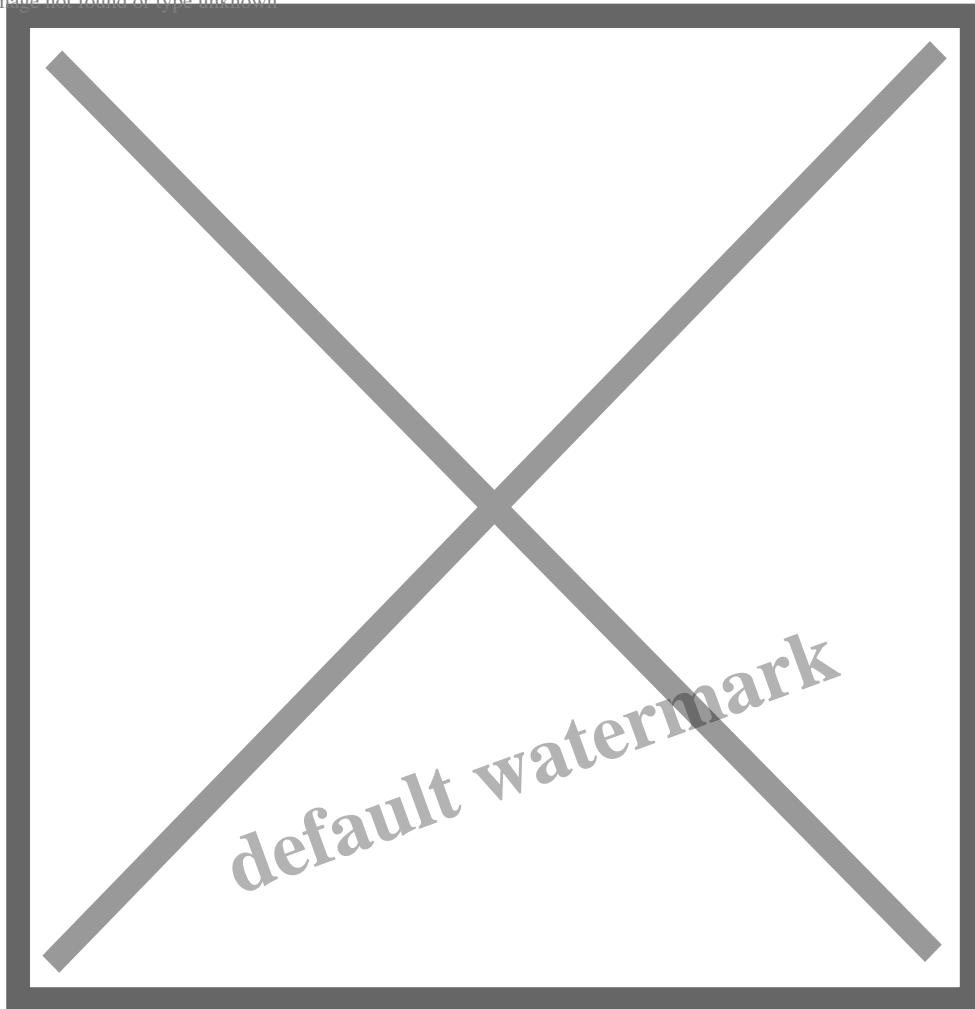
Martin's Michael Dickinson recently told me that Martin continues to use both rescued and recycled Sitka, often without advertising the fact. This comes from some pretty interesting sources. He put me in touch with Dean Wyatt, who for many years ran a grizzly bear operation in Knight Inlet in British Columbia and now runs an outfit called North Island Tonewoods (email: [wyattdean1@gmail.com](mailto:wyattdean1@gmail.com)). Dean told me the story of the floating lodge that was the base of their operations.

Jumping back to the start of this post and the use of Sitka spruce for aeroplanes, a lot of timber was cut in BC's Haida Gwaii, or the Queen Charlotte Islands as they were known then, during the Second World War. This was destined for use in the De Havilland Mosquitoes being built for Britain's Royal Air Force. Towards the end of the war, however, it was determined that too much Sitka had been logged and the logs were returned to the logging contractors.

The logging company saw an opportunity to use the returned logs and floated them over to Knight Inlet and constructed three large floats on which they could base their logging camps – these could be moved along the inlet to wherever logging was taking place. The floats became redundant, however, as logging declined, and they were purchased to form the base of a fishing lodge. Dean Wyatt bought this in 1996 and transitioned the business to grizzly bear tourism.

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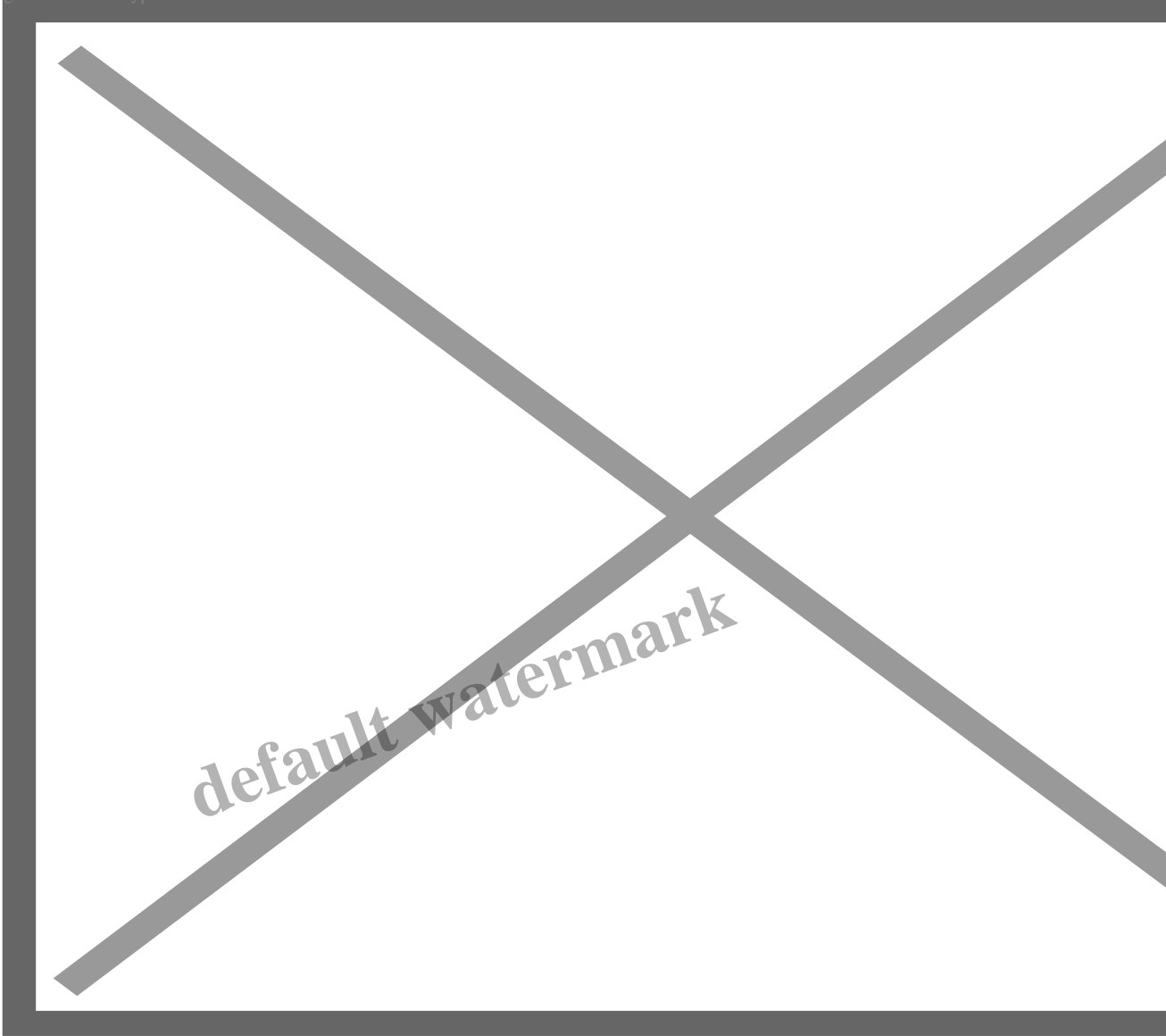
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The floating lodge in Knight Inlet (photo: Dean Wyatt)

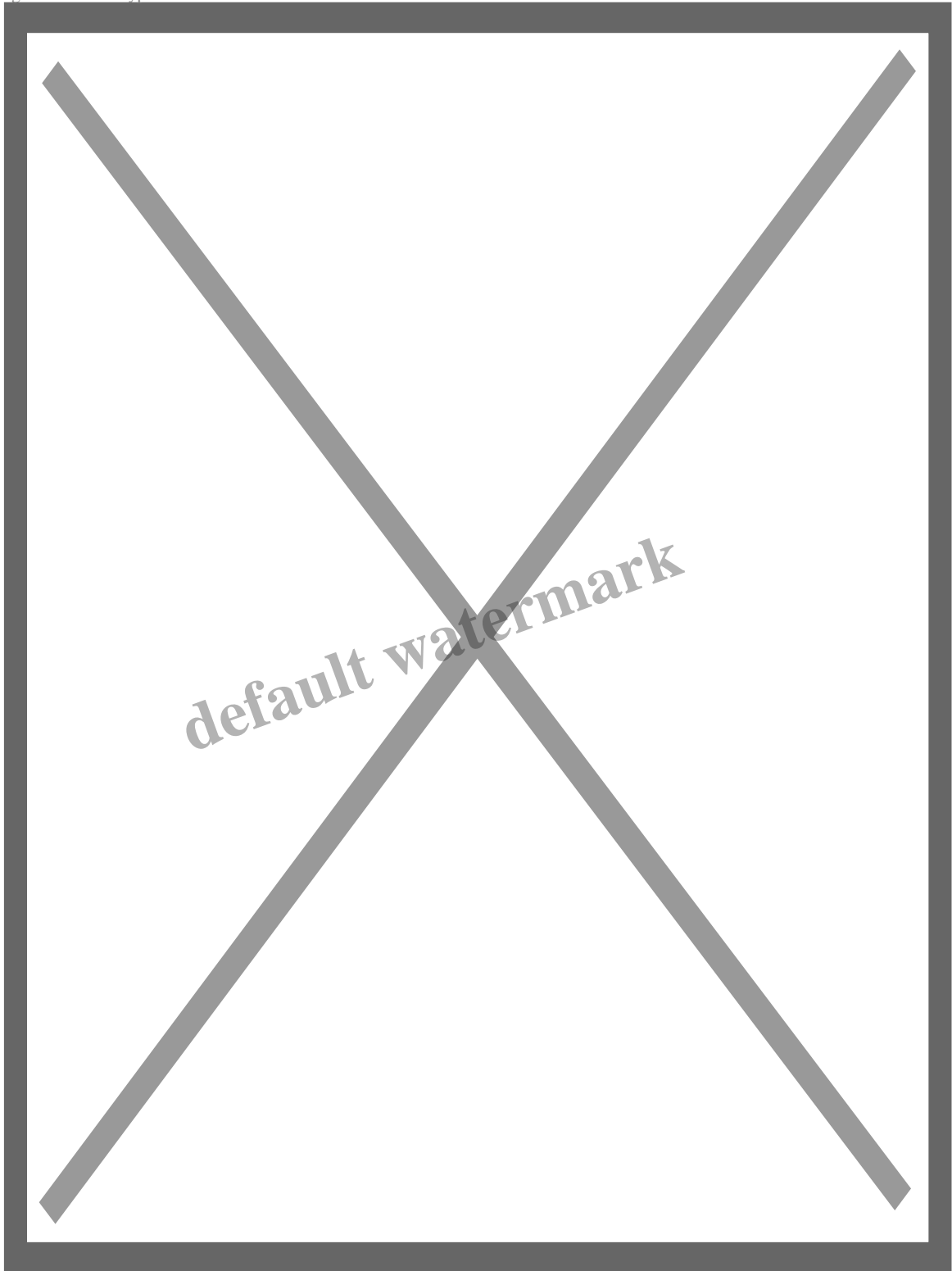


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After the fire in 2012, all that remained were the floats (Photo: Dean Wyatt)

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The remains of the logs making up the floats (Photo: Dean Wyatt)

This continued until 2012 when a huge fire consumed all the lodge structures above water. The lodges were rebuilt, but without using the floats that remained after the fire. The timber from the floats was taken back to Vancouver Island and brought onto dry land for the first time since the Second World

War. Despite the fire damage and the impact of shipworms, it turned out that there remained some pretty nice Sitka spruce timber – some of which is now making its way into Martin guitars.

## 4-piece tops and Lutz spruce

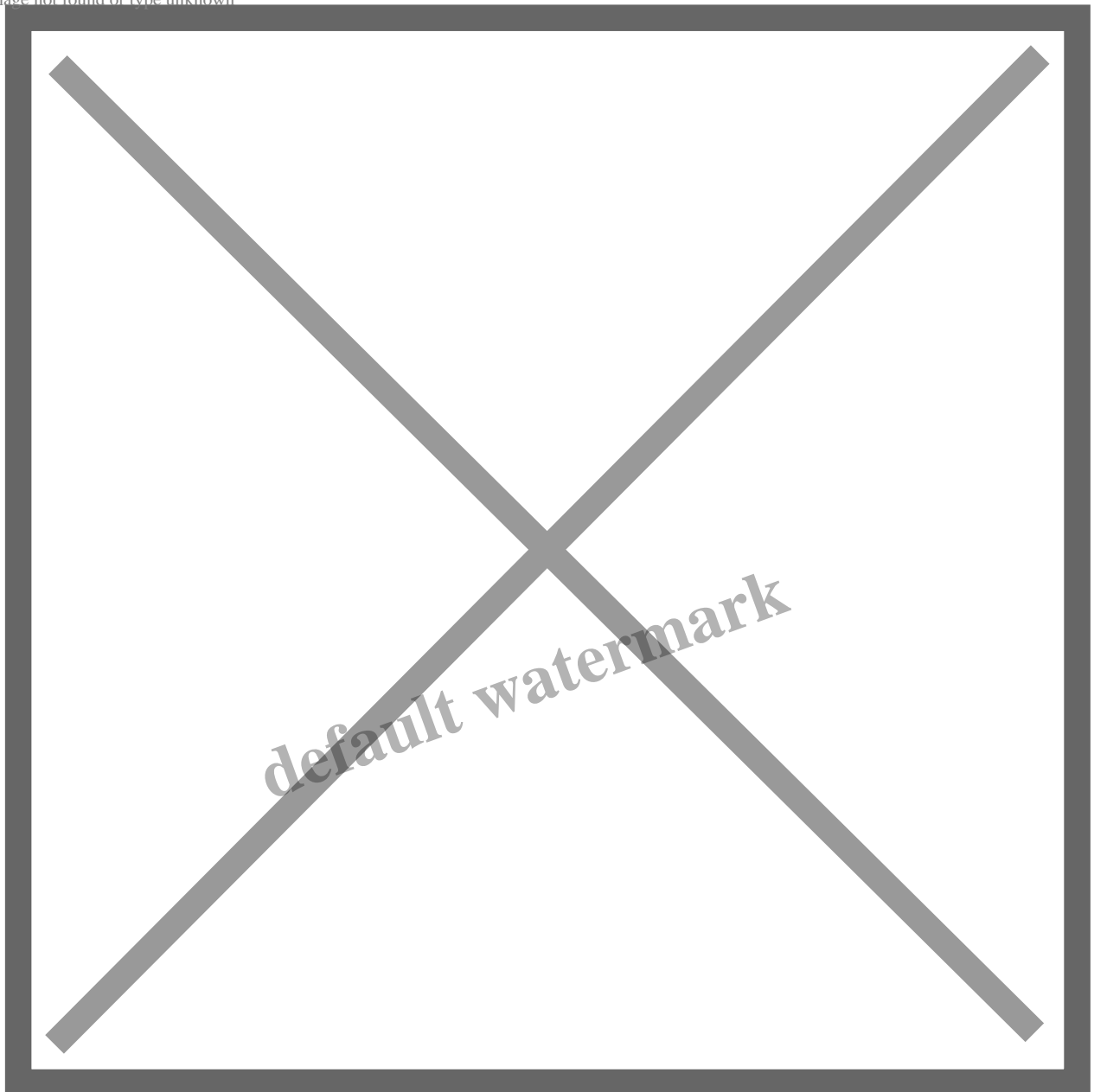
Martin are also looking at other ways of keeping Sitka in their guitars. They have also recently introduced [4-piece tops](#) (instead of 2-piece) which allows the use of smaller logs. Using four pieces of Sitka instead of two doesn't appear to alter the tonal quality of the guitar top, but it does require twice as much handling (cutting, glueing etc). Interestingly, Taylor Guitars have also recently introduced a 4-piece top (in this case Adirondack spruce) on one of their top end [Builder's Edition guitars](#).

In another adaptation to increased constraints on procuring good quality Sitka, [Martin have signalled](#) that they will also be using wood from a natural [hybrid](#) between Sitka and White spruce (*Picea glauca*) – known as [Lutz spruce](#). Lutz is found at the intersection of Sitka's coastal range and White spruce's more inland range -known as a hybrid zone. [A recent study](#) suggests that the hybrid may slowly take over White spruce's existing range in response to changing climatic conditions.

Lutz is recognised as a pretty nice tonewood that's quite similar to Sitka. Martin is changing their product descriptions from "Sitka Spruce" to just "Spruce", to cover the inclusion of Lutz in the mix. Michael Dickinson suggested that Martin had been using Lutz for some time already and pondered on where you draw the line between pure Sitka and the hybrid anyway, given the likely different [genetic mixes](#) across the hybrid's range.

## A future for Sitka..

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*Sitka spruce in the Olympic National Park, Washington – growing in a line after germinating on a downed “nurse” log*

Seeking out dead and downed trees, rescuing logs destined to be pulped, recycling timber salvaged from old structures, using smaller sizes of timber and bringing hybrid types into the mix – all of these add up to a kaleidoscope of approaches to ensuring that Sitka spruce will remain an important wood for guitar tops. Adapting to changing circumstances is the name of the game these days for both tree species and guitar makers.

But as well as reacting to the situation, there are opportunities to proactively try to change things too – the third part of the Sitka trilogy looks at the Musicwood story, where guitar makers tried to catalyze change in how Sitka was managed in Alaska.

For a full list of past posts, go [here](#).

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