



Trashmagination Podcast #114 – Fish Scales, Bones and Skin

Welcome to Trashmagination, a podcast about reimagining trash. I'm Carla Brown. In today's episode, we'll talk about how to creatively reuse fish scales, fish bones and fish skin. Maybe those items are not the materials you are most hoping to creatively reuse but this episode is packed with fascinating stories so let's go!

Fish Scales

Let's start by talking about fish scales. Fish scales come in a huge variety of shapes. Some scales are harder and some are more elastic. You can even find different types of scales on one fish. Not all fish have scales, or they have such tiny ones that you can't see them but they are embedded in the fish skin. Sometimes scales overlap each other and sometimes they fit together like a puzzle. Scales are made from many materials that are similar to teeth or bone with layers of substances called dentine, enamel and keratin.

I recently was looking at fish scales through a microscope. I am an Assistant Scoutmaster and we were researching how to calculate the age of a fish by looking at the fish's scale. This is a requirement for the Fish and Wildlife Management merit badge – which is such a cool merit badge, don't you think?

A fish scale has rings similar to tree rings. If the fish lives in the wild, you can see that the rings get closer together during the winter, when it has less to eat. Every summer, the rings get wider again. You can calculate the age of the fish by counting each dark ring. I went to the fish shop, and I asked at the fish counter for scales for this project. They gave me tilapia scales. It was tricky explaining why I wanted scales and I even did it in Spanish!

When I looked at the scales under a microscope, I didn't see that pattern of wider and denser scales. Then I realized two things. Tilapia is a fast-growing fish that is often farm-raised. If a fish is farm-raised, it gets food all the time without seasonal variation. Also, the reason why tilapia is inexpensive is because it's big enough to eat after only one year – so it's not a very interesting fish scale to analyze. I'm going to keep gathering other fish scales for this project. In the meantime, if you want to give this a try, I'll link to a video that explains how to calculate the age of a fish by looking at its scales [<https://youtu.be/aCy6W0Ob1KM>].

Fish Scale Jewelry and Shellcraft

If you want to make something from fish scales, you don't have to go to a fish shop. You can buy clean fish scales on Etsy. There is a type of fish called a gar and there are lots of gar scales for sale and I'm guessing it is because they have such a cool shape – not a circle but more like a diamond. These type of scales fit together like a puzzle rather than just overlapping each other. Native American people used scales from the alligator gar to make arrowheads.

Fish scales are also used by artisans who like to sculpt with sea shells. This type of work is called shellcraft. One type of shellcraft is called a Sailor's Valentine which is a box where the lid is covered with an intricate symmetrical mosaic design [https://en.wikipedia.org/wiki/Sailor%27s_valentine, <https://www.atlasobscura.com/articles/sailors-valentines>].

The company Reel AK Jewelry makes fish skin and fish scale jewelry [<https://www.etsy.com/shop/ReelAKJewelry>]. In their name the word "reel" is spelled R-E-E-L. Their slogan is "He catches, she creates" which is about how Mark Walker catches the fish and then Colleen Walker makes the jewelry. This company just celebrated their one-year anniversary [<https://www.instagram.com/reelakjewelry/>].

Fish Skin as Food

Next let's talk about fish skin. In many places, fish skin is delicious [<https://guide.michelin.com/en/article/features/fish-skin-delicacy-around-the-world>]. In Hong Kong, fried fish skin with salted egg yolk is sold as a packaged snack. In China, there is a fish skin salad. In Taiwan and Japan, you can eat pickled fish skin. I was born in the 1970s when jellied food was popular. Aspic is a savory gelatin dish often made from fish skin. Some chefs talk about how fish skin can be the most delicious part of the fish if you cook it properly.

Fish Skin as Leather

If you are not into eating fish skin, maybe you would be more interested in wearing it. Many indigenous peoples from coastal and river regions made fish skin leather for a very long time.

Janey Chang teaches fish skin tanning classes in British Columbia and online [<https://www.janeychang.ca/>]. She made a series of videos showing how she makes fish skin leather. Janey is so excited in her videos because she is processing spring or king salmon and their skins have a beautiful speckled pattern. It's lovely to see her excitement as she handles this material that most people would just view as trash [https://youtu.be/iLgS_AiQyi4].

In the tutorial video, Janey shows how she really has to scrape with a lot of force to get all the meat off the fish skin. She says it is easier to scrape if you freeze the fish first. It would seem like the skin would be too delicate but clearly it is very strong. She takes off the meaty part of the fish and a layer of membrane right next to the skin. If you leave any on the fish, it will rot and give the leather a fish smell. It also keeps tannins from soaking into the skin, and the tannins are necessary to make it into leather.

In her next video, she shows how to tan fish skin with an egg yolk, some canola oil and hand soap [<https://youtu.be/OuY4DOLDmAo>]. Other artisans make a solution from deer brains mixed with water. This method of tanning makes the leather shiny and strong but it doesn't change the color of the skin. Once she has massaged the fish skin for about 20 minutes, she lays it out flat on a board. She will massage periodically over the course of the day to soften it. After a few days, you rinse it, re-oil it and continue with the softening process.

In another video, Janey shows how she does bark tanning which will change the fish skin to a brown color. She makes it a tea from tree bark or purchased tannin solutions. She has learned is to start with a weaker solution of bark tea and then add it to stronger solutions over time. The goal is to ensure the tannins have gone all the way to the center of the skin which takes 1-2 weeks. During the soaking process, people soften the skins in many ways – by scraping them against a wire, a shell or an antler.

In 2012, the Smithsonian hosted three artists from Alaska who had each been individually experimenting with making fish leather to come to Washington DC [<https://youtu.be/u38rPWITkjc>]. They were able to look at many items collected by the Smithsonian made from fish leather and to share what they had learned in their work. Unfortunately, when collectors gathered these items, they did not find out how they were made, and a lot of knowledge was lost.

There is a company called Seven Leagues making boots from fish leather [<https://www.7leagues.com/>]. It was started by Tasha Nathanson [<https://www.instagram.com/7leaguesleather/>]. The boots are not available yet but hopefully soon.

It's possible that more companies will become interested in making fish leather. As you know from my episode on leather, leather made from animal hides is problematic because of the chemicals used. In contrast, fish leather is made with plant-based tannins.

- <https://www.instagram.com/janeychangart/>
- <https://www.hakaimagazine.com/features/the-art-of-turning-fish-into-leather/>
- Mary Babic & Peggy McDaniel tutorial - <https://www.youtube.com/watch?v=EOhpcTDb-lw>
- Coral Chernoff - https://www.instagram.com/coral_by_the_c/, Earrings - <https://www.instagram.com/p/ByGIwpnn4Ph/>

You can also make clothing from fish skin. As you know, I love the Irish trash fashion contest Junk Kouture, In 2018, the team that won the “Most Unusual Material” prize made a vest from fish skin. The name of their entry is in Irish and I can’t pronounce it [Fear Leighis na Mara Plaisteach] but it translates to Plastic Marine Man [<http://traleetoday.ie/gaelcholaiste-chiarrai-students-win-prize-at-national-junk-kouture-awards/>].

Vivian Ross-Smith makes tapestries by sewing together haddock skins with big stitches [<https://www.instagram.com/p/BxN8bfkpJ30/>]. Vivian is from the Shetland Islands and she explores the theme of being from an island or what she calls “islandness” through many materials – not only fish skins. She says that people sometimes associate living on an island with being isolated, but she does not find that at all. She said when people live on an island, often their connections with the other people on that island run very deep.

I was pleased to learn that Vivian did a collaboration with Newfoundland artist Jane Walker on this theme of islandness. Newfoundland is where my family comes from originally. On a personal note, I sometimes wonder if being from an island makes me want to waste less. When it takes so much effort to bring things to the island, or there is nowhere to put waste, it can make you more creative about how you consume and produce things. I first started thinking about creative reuse when living on Hornby Island in British Columbia. They were thinking about these issues many decades ago and were ahead of their time.

- <https://youtu.be/2q5e3dAirik>, <https://youtu.be/jV9NOFyEeVA>
- <https://www.vivianrosssmith.com/new-page>

Fish Bones

Next let’s talk about fish bones. On Etsy, you can buy beads made from fish bones. Some are carved with designs. Some are round and white, made from fish vertebrae. They make great beads because they already have a hole down the middle where the spinal cord goes.

When Cynthia Gibbon wanted to make a dress from salmon bones, she did not get her 20,000 bones from Etsy. She gathered the vertebrae from almost 300 fish. She found bones on the beach. She figured out how to make something like a crab pot where she put the beads back in the ocean, and when she pulled them out a few weeks later, they were picked clean. The bones she found were from pink, silver and chum salmon. She needed more bones so she asked Sitka Sound Seafood if they had more. They gave her bones from king salmon which were bigger and some had spikes on them which needed to be sanded down. But sewing the larger bones did speed up the process. She used the smaller bones for the top half of the dress and the larger bones for the bottom. One of the big challenges of working with these bones is that they smell of fish, even long after the dress was made, but Cynthia says the smell reduces as time goes by.

Cynthia designed the dress inspired by the flapper styles of the 1920s. It has a black underlayer and it is covered by many swooping loops of these bones. There is a video called The Bone Dress where you can see how it looks when it is in motion [<https://youtu.be/9TLz4ElezlI>]. Cynthia says she wanted the dress to swish like a fish when you wear it. She made the dress in 2017 for Sitka Wearable Arts Fashion Show. The dress is now part of the permanent collection at the University of Alaska Museum of the North.

- <https://www.adn.com/arts/2017/05/28/sitka-artist-designs-slinky-dress-from-20000-salmon-bones/>
- <https://news.uaf.edu/salmon-bones-inspire-wearable-art-new-museum-piece/>

High Technology Upcycling Fish Waste

Next let’s talk about how people are upcycling fish scales with high tech. In 2019, Lucy Hughes won the James Dyson award, which is a design award program for students. She invented a biodegradable plastic made from fish scales and skin. It can compost in a home composter in six weeks. It doesn’t require an industrial composter. It’s called MarinaTex [<https://www.jamesdysonaward.org/2019/project/marinatex/>]. Her design won out of more than a thousand entries.

She got the idea after visiting a fish processing plant. She researched the waste streams of the plant and got most interested in fish scales and skin due to their flexibility and protein structure. She then researched materials called binders to hold the product together. She wanted to find a binder that was also organic and came from the ocean. She experimented with many binders and finally found her solution with red algae.

Lucy says that more than 172,000 tonnes of fish waste are produced annually by UK processing plants alone. She was inspired to work on this project because she loves the ocean and is very concerned about the amount of plastic in it. Winning the James Dyson award will go a long way in helping Lucy bring her plastic to market, but it's not available yet.

- <https://www.marinatex.co.uk/>
- <https://www.smithsonianmag.com/innovation/bioplactic-made-from-fish-scales-just-won-james-dyson-award-180973550/>
- <https://youtu.be/AHKaChoCDW8>

The next technology can be huge help to address all this fish waste. It's called the Power Knot liquid food composter. This device digests food waste in 24 hours right in the kitchen and outputs just gray water – which is similar to the water you create when you wash dishes in the sink. Since the food waste is reduced so quickly, it means the kitchen can have less space for waste storage. It means workers don't have to transport the waste out into a dumpster, and then the restaurant doesn't have to pay for dumpster fees. It also saves carbon emissions from carrying the food waste to a landfill or industrial composter. And the food doesn't sit in a landfill taking up space. It also means there is no rotting food smell. This product is being used by some fish processing plants. It is also popular on cruise ships where space is at a premium. It's popular on islands where there is limited landfill capacity. A small one is the size of the dishwasher and a big one is the size of a car.

- <https://www.powerknot.com/lfc/>
- <https://youtu.be/tLZu9pa9ch8>
- Zero Waste Countdown, episode 90, May 2020 - <https://open.spotify.com/episode/5zncHgDJUBbcRhCs5VUqB>

Painting with Fish - Gyotaku

I didn't want to end this episode about fish parts imagining them getting ground up into grey water, so I'll share two more stories about creative reuse of fish. There is a type of painting that creatively reuses a whole fish. It's called gyotaku, a traditional Japanese form of nature printing. Gyotaku was invented by fishermen who wanted to memorialize a great catch before cameras were invented. In one method, the artist puts ink right on the fish, and then lays it on the paper. In another method, the artist lays wet paper on the fish and then taps ink over top of it. I will share a video made by Great Big Story where they interview Naoki Hayashi who lives in Hawaii and practices gyotaku [<https://youtu.be/yga-uaYEWHQ>]. Naoki uses water-based paints to make his prints so he can wash off the fish and eat it after the art is made.

Crocheted Seafood

And of course there are thousands of artists inspired by the beauty of fish. It was challenging to research for this episode because if you search on fish scale or fish bone art, almost all the results are people who are making paintings and sculptures of fish, but not actually creatively reusing fish. It would take me many hours to tell you about all the artists who are inspired by fish, so I'll just talk about one of my favorites, who is Kate Jenkins. She crochets all kinds of food. When crocheting seafood, she adds sparkly sequins that look like fish scales [<https://mymodernmet.com/kate-jenkins-modern-textile-art/>]. She attaches tiny red sequins to lobsters and tiny pink ones to prawns. She crochets little sardines that stick out of a tin. In 2015, she crocheted an entire fish counter with every kind of seafood, all glittering with tiny sequin fish scales [<https://katejenkinsstudio.co.uk/kates-plaice-the-stitchmongers/>]. She designed fish-themed ornaments for Anthropologie such as Three Wise King Prawns (which show 3 prawns on a skewer), a Fish-mas Tree and a lobster holding a sprig of mistletoe. She crocheted a series of seafood dishes for Viking Cruises that they display on their ships that look more yummy than the real food. They all feature her signature fish scale sequins. So if the idea of working with real fish scales has no appeal to you, maybe you can be like Kate and work with sequins.

- <https://katejenkinsstudio.co.uk/>
- <https://katejenkinsstudio.co.uk/commissions/anthropologie/>
- <https://katejenkinsstudio.co.uk/commissions/international-corporate-art-viking-cruises/>
- <https://www.instagram.com/kjcardigan/>
- <https://www.instagram.com/p/CHSNHD0nyoT/>

Thank you!

Thank you for listening! Please let me know if you have ever creatively reused fish scales, skins or bones at trashmagination@gmail.com. Until next time, may you see most fish scales, skins or bones as a source of art in your life!

Pinterest board - <https://www.pinterest.com/Trashmagination/fish-scales-bones-and-skin/>