A photograph showing several fish hanging from a wooden rack in a smokehouse. The fish are arranged in a row, and their scales are glistening. Below the rack, a fire is burning in a hearth, with flames and smoke rising. The background shows wooden walls and some hanging items.

How To Smoke Fish

By Jeff Spira

Spira International, Inc. - Huntington Beach, California

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1. SMOKE THAT FISH

Smoking fish is a practice that's probably as old as man himself. Long ago in some cave, it was most likely discovered by accident. A fish hanging in the vicinity of fire acquired a delectable flavor. Imagine the discoverer's delight when he first tasted it! He probably also discovered that the smoked fish lasted far longer without spoiling than fresh fish or even cooked fish.

Whoever discovered the process, there is no doubt that the practice had a long and lasting effect on food preparation and preservation ever since. Practically every nationality of people in the world has a specialized smoking method for fish. From the French royal courts, to the African jungles, to the South American Indian's homes, to the Igloos of the Eskimos to the homes of the Japanese Samurai, smoked fish has been a favorite fare for a special meal.

By the time Europeans began immigrating to the new world, smoking foods was considered normal. Practically every home had a smokehouse in the back yard. Those that didn't had a special chamber in the fireplace chimney so that foods could be smoked while the nightly fire provided warmth and light for the families.

Smoking in those days was considered a preservation method for foods, not just a flavor enhancer. For this reason, smoking foods as a process nearly dropped out of sight by the time ice boxes, refrigerators and freezers became commonplace. Smoked fish, though, kept its appeal supported by ethnic preferences and long standing tradition. The English country squire simply wouldn't be without his kippered (smoked) herring for breakfast. Jewish families revered their lox (smoked salmon) and smoked whitefish. Japanese would make *ahi himono* (smoked jack mackerel) whenever the fish was available to preserve it in times it wasn't. Indians and Eskimos of the American northwest continued smoking their salmon even when better preservation methods became available.

The recent advent of the portable electric smoker has caused a renewed interest in smoked fish and has brought the practice of smoking fish and other foods into the homes of millions of Americans. Face it, the tastes of most people is growing. If you had offered sushi to many people in 1970, they would have probably turned up their noses in disgust. These are the same people that spend every Friday night in a sushi bar in 2000. To most people when they grew up, eating fish meant eating fried fish. All of that is changing. Fish is now broiled, poached, baked, barbequed, poached, pickled, and yes, even smoked.

I can recall with some humor back a number of years ago when my father came home with one of the first portable electric smokers. He and I used to often go ocean fishing and we'd always either eat right away or freeze our catch. We had been desperately trying to find a way to cook the local mackerel and bonito so that it wasn't so strong. Enter the little smoker. The rest of the family giggled while he set it up, brined some fish and got ready for the first home smoked experiments. Undaunted, he pressed on for the first test smoking of some whole mackerel, some steaks of barracuda and some fillets of bonito. The results were nothing less than fantastic. I simply couldn't believe that the "junk" fish that everyone else fed to their cats or buried in their gardens could be so flavorful. Since then I've been an avid fish smoker and eater.



Japanese *aji himono*

2. THE SMOKING PROCESS

Smoking of foods, especially fish does far more than simply alter the flavor of the food. All meats, including fish contain a lot of water. Some fish contains as much as eighty percent water! Water is the basic breeding ground for yeasts, molds and bacteria. Prior to smoking fish, the fish must be brined, or salted. This process is not for actually salting the food for flavor, since the finished product actually contains very little salt, but rather for pulling much of the excess moisture out of the meat.

The smoking itself actually dries out the meat more than the brining in much the same way as cooking does. So once the fish has been salted, then smoked, only a tiny fraction of the original water content of the meat remains. This in itself offers a considerable increase in nutritional value because the meat is less water and more actual protein as well as offering a level of preservation to the meat.

Hardwood smoke contains many chemicals that were once part of the life process of the living tree. When these chemicals are driven out of the wood, the fish hanging in the smoke absorbs them. This process of driving the chemicals out of the wood is called destructive distillation. It is the process that converts wood to charcoal. In the smoker, the wood chemicals are first driven out of the wood and then the remaining charcoal powder burns just like in your barbeque. The natural chemicals in hardwood smoke have the added benefit of both killing and inhibiting the future growth of mold, yeasts and bacteria. These chemicals are the basic reason for the preservation power of the smoking process.

There are actually two different smoking methods. The first and original is called cold smoking. In a cold smoker, the temperature is generally below 120 degrees F. This is the classic smokehouse method that was used by most people before refrigerators. Cold smoked meats and fish require cooking either before or after smoking. Cold smoking takes a lot of time, too. You can hang a ham in a smokehouse and smoke it with the cold smoking process for three or four days before a good smoke flavor is infused into the meat. The ham must then be cooked before eating.

The modern method for smoking, especially suitable for fish, is the hot smoking process. Hot smoking takes place at temperatures exceeding 140 degrees F. This 140 F temperature is important because it is the temperature that kills all undesirable bacteria. Milk is pasteurized at 140 F to kill any bacteria and render it suitable for storage for a while before it is consumed. In the hot smoking process, the fish is actually cooked while it is smoked.

Hot smoking fish has many advantages. It can be done fairly quickly, in 2 to 4 hours for most cuts and no additional cooking is required. The fish may be eaten as soon as it comes out of the smoker. It also keeps very well. No refrigeration is required for a day or so, if you want to take some along on a fishing trip, but you should refrigerate it to make it last longer. All of the smoked fish you see in the fish markets nowadays is hot smoked.

3. SMOKERS

No one will admit faster than I that fish is smoked in all sorts of devices. I've seen cardboard box smokers, smokers made from old refrigerators, fancy brick smokers, even smokers made from garbage cans. I'm not sure how these all worked but I'm sure smoke got to the food in all of them. The most practical smoker for fish is the trusty electric hot smoker. These can be either store bought or readily made from inexpensive components.

Portable electric smokers are commercially available in many barbeque and sporting goods stores. One popular brand is the "Little Chief". This smoker has been made for quite a number of years and its popularity seems to be increasing rather than waning judging by the number of stores that carry it. The Little Chief has its copiers, too, just like about every other popular product. The price runs about \$35 for the original and usually \$30 or so for a copy.

The Little Chief style smoker is entirely adequate for most home smoking needs. I had one for a number of years and smoked everything from nuts to whole turkeys in it. It is a metal box with a latched lid on top and an electric hot plate on the bottom. Since they are not insulated, this type of smoker is useful only in mild weather. For use in Southern California, though, it will do an excellent job on all but the coldest days.

The only other drawback of the portable metal electric smoker is their size. They will smoke a half a dozen smaller fish or one bigger fish (in pieces), but they aren't really big enough to do some minor production. The smoking process takes some time to do right. You'll spend a day and a half or so fooling around getting some fish done right, so you might as well smoke a bunch of fish while you're at it so you can enjoy the eats for more than a couple of days between smoke batches.

When the electric hot plate in my Little Chief gave up the ghost after years of reliable service, I decided to design and build my own smoker from scratch. Some of the features I thought it should have were more insulation, bigger size, and easier cleaning convenience than the commercial models. I designed all of these features into a convenient smoker, built one and have been using it ever since. In the back of this book are some plans for building your own smoker, like mine. I'm sure with some creative scrounging; you'll be able to build it for less than \$10 or so.

For a heat source, I found an electric hot plate in a thrift store for \$3. It worked perfectly. I also bought an old cast iron frying pan for \$1 at the very same thrift store to use as a fuel pan. That with some



Luhr Jensen "Little Chief" smoker

scrap lumber, a roll of duct tape and some heavy-duty aluminum foil, and viola, a smoker. If you're even a little bit handy, you ought to be able to knock out a home built smoker in less than a couple of hours. In the back of the book, I give you a design for an easily made smoker like the one I've used for years

With the advent of "The Food Network" on TV, many people have become enamored with gourmet cooking, so the explosion of new techniques has brought with it a whole new crop of high quality appliances. Smokers are no exception. Restaurant quality electric smokers have been introduced, some costing thousands of dollars. These are very high quality, long lasting pieces of equipment, and if you've decided you intend to smoke a lot, they may be a good investment. For the newcomer, just wanting to try it out, they're more investment than many care to make, though.

OTHER TYPES OF SMOKERS

In addition to the electric smokers, there are many, many others, both of new types and refreshes of old designs. Perhaps the most common of these is the water smoker, or charcoal smoker. These have been around for many years in many different incarnations, some, inexpensive sheetmetal affairs, others sophisticated ceramic and stainless steel creations.



A restaurant quality electric smoker



Simple sheet metal charcoal fired water smoker

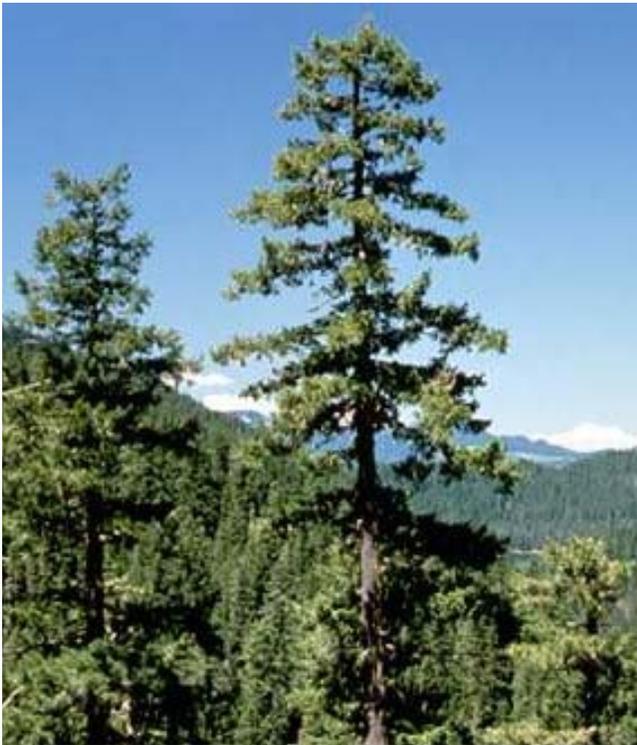


Fancier, charcoal fired water smoker

In, addition there are straight charcoal smokers, propane fired smokers and a few others capable of making very tasty smoked fish from your catch. Each has its advantages and disadvantages. These days I mostly use a water smoker, because it's fast, easy and cheap. Given a choice, I prefer an electric hot smoker though for its ability to give a more smoky taste to the things being smoked.

4. SMOKER FUELS

There are only two basic kinds of trees. These are called deciduous trees (broadleaf) and Conifers (evergreens). Deciduous trees are generally called hardwood trees and include all of the fruit trees, nut trees, oak, ash, hickory, mesquite, cottonwood, and the like. Conifers are needled trees like pine, fir, yew, juniper, and others. For smoking, only hardwoods are acceptable. The conifers contain too much pitch and tar and if used for smoking will cover your food with a gummy, foul tasting residue. By the way for you Californians, palm and eucalyptus are terrible smoker fuels. Don't bother trying them. I experimented with both of them once and regret it.



Fir, Pine, and Spruce are conifers; evergreen trees. They are not suitable for smoking because of their pitch content



Hickory, Oak, Mequite, and most fruit woods come from deciduous, or broadleaf, trees. These are suitable for smoking foods.

Let's take a look at some of the more popular smoking fuels:

HICKORY

Hickory is the old standby. It is the standard by which all others are judged. Hickory imparts the classic smoky taste to fish. Hickory wood almost exclusively comes from the mountains of the eastern US, the Appalachians and Ozarks. It is a light colored wood commonly used for tool handles. It is hard, strong and burns cleanly and evenly.

MESQUITE

Mesquite is becoming extremely popular as a barbeque fuel. All over you can see mesquite barbequed fish specials in seafood restaurants. In truth, mesquite is an excellent wood for smoking fish. I might not recommend it for some other foods, but with fish its tops. Mesquite has a slightly heavier, outdoorsier flavor than hickory. It is kind of a “real man’s” smoker fuel because of the taste. Mesquite is a western tree that grows in the vast deserts of California, Nevada and Arizona. It’s medium dark to light in color. It doesn’t burn quite so nicely and is prone to some sparking.

ALDER

Alder is one of my favorite smoking fuels. It imparts a light delicate flavor to fish. I prefer it with the less oily fish like tuna and halibut whereas with oily fish like bonito and mackerel, I lean towards mesquite. I’m not sure what the tree looks like or where it grows, but alder is a popular smoker fuel that is sold in bags wherever smokers are sold.

CHERRY

Cherry wood is another top choice for smokers. Cherry wood smoked fish has a very mellow flavor that’s very similar to hickory, but slightly less harsh. Fish smoked with cherry have a more likable taste to people who never tried smoked fish before. Once you’ve eaten a lot of smoked foods, though, the cherry may strike you as a bit wimpy.



Orange tree wood makes great smoker fuel

ORANGE

Many years ago when Orange County still had lots of orange groves, I lived across the street from a grove that was bought by a big developer. Well, he didn’t develop the land for several years and never kept up or irrigated the trees. They died, of course and when they were ready to come in with the bulldozers, they sent a crew in with chain saws to clear out the wood. After the crew left, I went in with a big plastic garbage bag and scooped up all of the orange wood sawdust I could haul to try in my smoker. It was great! If anyone knows where a grove is being taken out, drop me a note and I’ll be by. Orange wood flavor smoked fish is a little like alder with more zing.

WALNUT

Walnut is one of the more interesting woods to experiment with if you get the chance. It gives fish a woody flavor that is really good if you’re used to smoked foods. Like mesquite, it is strong and may not be everyone’s cup of tea.

OAK

Oak is another classic smoking fuel. I've tried both the eastern oak used for making furniture, cabinets, and trim in houses and tried California Live Oak that grows all over the central California coast. Both are nearly identical giving the fish a very hickory like taste.

OTHER WOODS

Many, many other woods can be used for smoking, I've smoked fish with apple wood which ended up much like cherry, rose wood that was like walnut, and even a South American hardwood called *nato*, that a company was using to make truck beds.

Just about everywhere that I go that used hardwood, I try to get a couple pounds of sawdust to try smoking with. Just about any hardwood is suitable. Each has its own slightly different flavor and characteristics.

Two other things can be used quite successfully for smoker fuels, corncobs and nutshells. I've never tried corncobs, but they are quite popular in the Midwest from what I hear. I did, though latch on to a bunch of pecan shells once and smoked some meat with them. The results were fine. I understand that walnut shells broken to small pebble size are very available. They're used for a polishing media in vibrating polishing machines. I've never tried them for smoking, but plan to give them a try one of these days.

The perfect shape for the wood used for smoking in electric hot smokers is sawdust. Pieces like are sold for barbequing as hickory chips are usable, but are more difficult to keep even heat with. Bags of smoker fuel consisting of sawdust and small chips are available in most places that sell smokers. If you know of a furniture making or cabinet making shop that uses a lot of walnut or oak, they'll often give you all of the chips and sawdust for free. I used to have a friend that had a very small oak furniture business. Just cleaning out his table saw for him once a week kept me in all of the smoker fuel I could ever need.

For a water smoker or charcoal smoker, the best shape for wood is chunks about the size of tennis balls. They can be a bit smaller or larger, and often in a bag you will get a wide variation in sizes from chips to near logs. Most charcoal smokers aren't fussy about the size and just so long as you can get them into the pan, you should be fine.

PREPARING FISH TO BE SMOKED

Prior to smoking, or any other kind of preparation, for that matter, fish should be cleaned. That is, take out the guts, head and fins. In fact, fish should really be cleaned as soon possible after it is caught. The innards rot very quickly and will start spoiling the meat incredibly fast. I always clean the fish while I still out on the boat. I don't cut off the heads, but I slit open the body cavity and dump the guts right away, even if I plan to fillet the fish when I get home, I still do it. I'm sure you've heard of fish that tastes fishy or game that tastes



California Live Oak

gamy, well you can cut down a lot of these offensive tastes with a quick and thorough cleaning job right after you bag the prey. For smoking, you always want to keep the fish's skin on. It takes the smoke flavor just as well and doesn't let the fish dry out too much while smoking. What you're looking for is smoked fish, not fish jerky. For smaller fish, up to two pounds or so, the fish can be smoked whole. Just clean, remove the head and fins, then cut through the meat from the body cavity to the tail so you can open up the fish a little more. This method works very well for the smaller mackerel that everyone seems to catch too many of in So Cal.

For larger fish, cut the fish into fillets. You can smoke the whole fillets for fish up to about 20 inches long or so. If the fish is larger, cut the fillets into two or more pieces. Better than true filleting, you can simply "slab" these fish, that is fillet it but leave the ribs and skin on.



If You happen to like fish steaks, bigger fish can be steak cut for smoking. Cut the steaks about one inch thick for best results. Some people say that the bone gives the fish meat more flavor, but in my personal opinion, they are confusing fish with beef. In beef it may be true that the meat is better closer to the bone, but in fish, all you do is keep a bunch of small, pesky bones in the meat as far as I can tell. My preference has always been fillets, but I'd recommend anyone to give both ways a try and decide for yourself

SMOKING YOUR CATCH

Smoking is actually a two-step process. The first step is salting. You salt the fish to draw out all of the excess moisture. I always salt the fish the night before I smoke and allow them to sit overnight. You can salt for as little as three hours for thinner fillets or steaks where a lot of the meat is exposed, but for whole fish, overnight is just the ticket.

The perfect salt to use is coarse ground, un-iodized salt. It is sold in most every grocery store. If you can't find coarse ground salt in the salt section, it is often carried in the kosher food section or canning section of the store. Mix three parts salt with one part sugar, either refined or the coarser raw sugar. Add spices if desired. I usually can't resist some garlic powder and some onion flakes. Other goodies you can add are allspice, paprika, cayenne pepper, white pepper, and similar types of spices. Herbs such as basil, oregano, and sage, generally don't do much good. Either the flavors don't make it to the fish, or the smoke flavor overpowers them.

Once you make up your mixture, pack it all around the fish in a shallow dish and stash away in the frig for 3 to 6 hours. Use less time for thin fillets and more for whole fish.

After salting, rinse the fish thoroughly with cold water. Make sure you remove all traces of salt from the surface of the meat. After rinsing pat dry with paper towels, then allow the fish to air-dry for about an hour so that all of the surface moisture is gone.

While the fish is drying, set up the smoker, turn on the hotplate, and let the smoker start warming up. Since you'll have smoldering wood and an electric heater in a closed box, make sure the smoker is outdoors and well away from any flammable materials.

A fire could easily start if something got carried away with the electrical device. I usually pot a pan of fuel on the hotplate about 30 minutes before I put the fish in. This gets the pan started because when you put a new pan of fuel on the hotplate, it usually takes 30 minutes or so to get going and make any smoke.



I always hang the fish in the smoker, especially a hot smoker, but if using a commercial smoker or charcoal and water smoker, you can certainly place the fish, skin down on the racks provided with the unit. In all cases, make sure that the fish pieces in the smoker neither touch each other nor touch the walls of the smoker when they are hanging.

Once you seal up the fish in your the smoker, you shouldn't ever again lift the lid until the fish is done. It's called the no peekie method. Just seal up the lid and trust that everything is going along nicely inside.

For the first hour or so, keep the smoke vent closed and keep an eye on the thermometer. You want to get

that temperature up to 140 and keep it there for at least an hour. If using a hot smoker, about every half hour or so, pull the fuel pan out, shake it to redistribute the smoldering fuel, add a handful of new fuel if needed, and get it back as quickly as possible so that you don't lose the heat you've been working to generate. If using a charcoal smoker, add chunks of water soaked smoker fuel every half hour or so to keep the volume of smoke up. If the smoker starts to cool off, add charcoal also to increase the heat. Also, be sure the water pan doesn't all boil away. Add water as needed. I use a turkey baster and hot water.

After a while the pan may get pretty full of ashes, so you can dump it out into a metal can. I use a coffee can to catch the ashes. Be careful, though, the wood is still burning and there will be lots of live coals in the ashes. Refill the pan and get it back under the fish. Once the smoker gets hot you can regulate the temperature by adjusting the smoke hole on top of the smoker. Open the hole more to cool off the smoker and close it

down to heat it up. Ideally you should keep the unit at 140 F for about 4 hours. Experiment with your smoker until you get the desired results.

There are many, many variables to smoking fish, so experimenting is essential. The outside temperature, the insulation value of your smoker and all sorts of other things go into the finished smoked product. If the fish seems too dry, try a lower heat or less smoking time. If the fish is too damp, salt it longer and smoke it longer. If it's done well but doesn't have enough smoky flavor, salt it for less time and smoke it for longer. If it's moist the way you like it but too smoky, salt it longer and smoke it less. Every smoker is a bit different, so it takes a while to get used to making fish to your own tastes. Remember that salting and smoking both dry the fish out but smoking is the only thing that controls the smoky taste so balance the two to get your own desired end result.

Usually about four pans of fuel in 3 to 4 hours is all that's required to produce delectable smoked fish. Once you try it, I'm sure you'll agree, there's no finer way to enjoy many types of fish.

Good luck with your smoking! I hope you find it as enjoyable a pastime as I do. Once you start smoking your fish, you'll probably never again throw away a "junk" fish. You'll probably also never sit down to watch another football game without a chunk of smoked fish to go along with a six-pack.

Ever Consider Building a Boat?

It's probably a lot easier and less expensive than you might imagine. If that sounds interesting to you, be sure to stop by my website at <http://www.spirainternational.com> where you can download a free e-book entitled, **Everything You Ever Wanted to Know About Building A Boat**. In it I discuss how to select a boat design, how to build a stitch and glue or ply on frame boat, and answer many questions first-time boat builders ask.

Just take a look at what some of these first-time boat builders have been able to do. Isn't it time you gave it a try?



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