Subj : Smoked fish

TS> Fish filets are very unpopular in this household (with
TS> everyone but me!). They hate to be fed anything that
TS> resembles it...

How to make fish lovers out of fish haters:

Set up a steamer array: Large pot u don't mind scorching, and a steamer basket with at least half-inch legs.

In bottom of pot put 1 piece crinkled aluminum foil which covers bottom and lips up slightly around sides.

Place on foil one handful of uncooked brown rice, 2 tablespoons brown sugar, one crushed cinnamon stick, a few rosemary stems, or about 1 tablespoon dried rosemary.

Place steamer basket with legs on top of rice, etc, and lay fish fillets on basket. NO WATER IS USED. Works with any firm white fish like catfish, cod, snapper. Sole, flounder, turbot are too delicate and will fall apart.

Cover pot and use LOW heat. A glass lid is preferable, since u can see if u have enough smoke without causing a fire.

USE LOW HEAT ONLY ON STOVE TOP. WATCH CLOSELY. THE DANGER OF FIRE IS REAL IF THE BURNER IS ON TOO HIGH.

Smoke until fish is done, turning once if desired. 20 minutes should do it.

For fatter fish like salmon, marinate for a few hours. Papaya juice with 1 tablespoon ginger makes a great marinade for fresh salmon filets. Defrosted salmon should be marinated overnight.

This method will make a fish eater out of anyone. What comes out tastes like nothing cooked through any other method.

Smoking and Drying Fish

by Chris Janowsky

(The author is founder of the World Survival Institute [POBox 394C, Tok, Alaska 99780; 907-883-4243] in Alaska where he teaches wilderness survival and produces instructional videos on survival - The Editors.)

Winter has released its grip on the land and water. The ice has left the lakes and rivers for yet another season. The salmon have left their ocean home and are headed back to the place they were born. All salmon spawn in the fresh water streams of their birth except Sockeye (Red) Salmon. A Sockeye will spawn in the lake where it was born.

As these fish move upstream each year, respective to their species and age, they feed many animals including man. Animals eat the fish right on the spot, while man usually ops to save some for the future. This is especially true for those like myself who choose to live a subsistence lifestyle.

I use a fish wheel to procure the fish I need for the year. It is a

very effective way to go when you are living off the land. I catch as many as 300 6 to 8 pound Sockeye Salmon in one evening. Then the work begins!

There are many ways to put fish up for a later date; but probably none is more well known, and at the same time so misunderstood, as smoking fish. Many people are of the opinion that smoking fish preserves them. Nothing could be further from the truth, as we shall soon see.

Let's start with why a fish spoils and exactly what we are fighting. Also at this time we should consider the many parasites that live in all fish. Besides these parasites that may or may not be dangerous to us, bacteria is the number one cause of spoilage.

In the process of preserving fish, bacteria is the enemy. The more we know about the enemy, the easier it is to defeat. Bacteria need the proper environment to exist in, which is one that consists of warmth and moisture. Most bacteria thrive in a temperature range of 65 degrees F. to 100 degrees F. If we store fish in a location with an ambient temperature of less than 65 degrees F., bacterial growth will be slowed. Bacteria growth will stop at temperatures below 0 degrees F. Unfortunately, once the fish thaws bacterial development will start again.

If we increase the temperature to certain ranges over 100 degrees F., bacterial growth will again be slowed. Should we further raise the temperature to 200 degrees F., the resident bacteria on a healthy fish will be destroyed.

We also know that bacteria needs a moist environment to grow and thrive. As we remove moisture from the fish, we are removing the bacteria's home. Ideally, for a maximum preservation time, the moisture should be reduced to 15-20 percent.

Now that we know our major enemy's weaknesses, we can safely start the smoking process.

There are two basic methods of smoking fish or red meat. One is called cold smoking; the other is called hot smoking, or smoke cooking. Let's take a look at the cold smoking process.

COLD SMOKING --

The fish is placed in a confined space. This can be anything from a wooden box to a large walk-in smokehouse. The fish is either suspended by strings, metal or wooden hooks, or racks to allow good smoke flow all around the meat. Never use galvanized steel racks or hooks in any smoking or cooking operation, as the galvanized steel will poison the meat and make you very sick, or outright kill you.

Smoke is now added to the smokehouse from a wood stove that is outside the structure; and the meat inside starts to pick up the flavor of the smoke. The temperature is kept low. The temperature should be kept below 138 degrees F. With some methods the temperature never rises above 90 degrees F.

This process may take several hours or even days to achieve the desired results. The finished product will be very moist and not very hot. As you can see, cold smoking has done nothing to destroy any bacteria, especially at 90 degrees F. In fact, those cute little parasites are also alive and well; but a temperature of 160 degrees F. will most certainly ensure their demise.

If properly smoked with the right wood (more about this later), the fish will have a good flavor; but remember, it is not cooked or preserved in any sense of the word. This fish must be refrigerated

and consumed in a short period of time or it will spoil. It can also be canned or frozen.

One way to increase the shelf life of cold smoked fish is to soak it in brine solution before it goes to the smoke house. One brine recipe that has been used for generations is to add salt to a volume of water to the point that it will float an egg. The brine is kept cool; and the fish is left to soak with frequent stirring for 24 hours. The fish is then rinsed with fresh water and taken to the smoke house.

HOT SMOKING --

Hot smoking is the method that I prefer for many reasons. First of all, I like my fish cooked. I also like to ensure that all those cute little parasites don't get any older; and I like to eliminate all bacteria that is in the fish. This can be easily accomplished by hot smoking (smoke cooking).

When hot smoking, more care must be taken when constructing the smoke house because of the high temperatures that will be created within it. Unlike cold smoking, here the wood stove will be inside the smoke house.

The fish are placed in the smoke house in the same manner as in cold smoking. Next, a fire is built inside the stove. Any type of wood can be used for this purpose. The stove should have a damper in the flue pipe, and a way to control its intake air. With these two adjustments, you can easily fine tune the temperature of the smoke house. Place the smoking wood on the flat surface on top of the stove and start a small, controlled fire. By adjusting the smount of wood and its dryness, the amount of smoke can also be easily controlled. I keep two piles of smoking wood: one is bone dry; the other has been soaked in water. This gives me a lot of

latitude for controlling the smoke.

With this set-up, both heat and smoke can be controlled separately. I start with a temperature of 120 degrees F. with a medium smoke for about two hours. Next I raise the temperature to 140 degrees F. for approximately three hours with a heavy smoke. At this point a sockeye salmon fillet will start to take on a nice red color. The temperature is now raised to 160 degrees F. for approximately one hour with a medium smoke. The salmon will now have a deep rich red color bloom. We know now that the parasites have definitely had their day ruined. Finally, the temperature is raised to 200 degrees F. This is the temperature that destroys most bacteria known to man. Maintain this temperature for about 45 minutes to one hour with no smoke.

The fish are now ready to eat; and any bacteria has also been destroyed. The final product looks and tastes great. Remember that even here the fish is not preserved, and must be dealt with as we talked about earlier. This fish will last longer than the cold smoked fish, but it is still subject to attack from airborne bacteria mainly due to its moisture content.

SMOKE DRYING --

One other way of preserving fresh fish, which goes back to the beginning of time, is the smoke drying process. We know that the natural bacteria and parasites in the fish need a moist environment to grow. This being known, we remove as much moisture as possible.

Again, this process can be broken down into two basic methods. I teach both of these methods in my wilderness survival classes. The first is dehydrating, smoking, and cooking the fish at the same time. The second mehtod is one that has been used by Native Americans for generations; it is simply dehydrating and smoking at

the same time.

The first method is accomplished by taking a split open fish, hanging it in front of a fire by means of a stick, then slow cooking it until it is completely dehydrated. Then the fish can be eaten as is, or rehydrated later at any time by adding water. As long as the fish is kept dry, it will not spoil.

The second method is accomplished by air drying. The fish is either split open and hung up to dry, or cut up into strips and hung up to dry. In the previous method, the fire adds both heat and smoke. With this method, the fire is constructed to add smoke only. The fish will be tough and leathery when it is completely dry. The Native Americans call it fish jerky. During the drying process the smoke not only flavors the meat, but also keeps the insects away. Fish in this condition will keep for a very long time if kept dry.

The drying/smoking process can be accomplished either in your smoke house or in the field. Good dry airflow around, over and under the fish is critical. All fish pieces should be separated and never allowed to touch each other. Enough smoke must be added to keep insects away. Insects like flies carry bacteria that will contaminate the fish; and if they lay eggs, the larve will spread bacteria everywhere.

A well-designed smoke house should have louvers installed near the roof and the floor, so that airflow can be easily regulated by opening and closing them. As well, the smoke in the smoke house can also be easily controlled.

FIELD SMOKING/DRYING --

Although smoking in the field is a challenge, it can be

successfully accomplished. A tripod can be lashed and erected with a shelf constructed halfway up. The shelf will consist of a grid of green sticks to allow for proper air flow. A simple canopy is then constructed over the top of the tripod. The bottom of the canopy should fall no lower than 6 inches above the shelf level, again to promote the airflow necessary for drying. The canopy helps hold the smoke, keep away the insects, and keep out rain or dew.

A small smokey fire is then built directly under the structure to create the smoke. As soon as the canopy fills up with smoke, insects will be driven away and the fish will start to pick up the desired smoke flavor.

Improvising drying structures such as this are limited only by the imagination and the materials that are readily available in your particular area. For example, the canopy can be made by using large leaves, muskeg, bark, or even a tarp that you may have with you.

The type of wood that you use to create the smoke is very important. You will want to use a desiduous wood and not any type of conifer. Conifers (soft woods) like pine or spruce trees contain a lot of pitch. The smoke from this kind of wood will blacken the fish with what is basically creosote. This is not a good situation, nor is it what you are trying to achieve.

The desiduous (hard) wood that you choose will be dictated by the area that you are in. Some fine smoking woods that I have used are alder, hickory, cherry, apple, and aspen. I prefer alder over all of these, apple second, but that is just my own personal taste. Note that hickory and cherry produce a good but very harsh smoke, and should be used only by the experienced smoker.

The smoke fire is started with very dry wood and then green wood is added to create a good heavy smoke. You have to keep a constant eye on the fire. You may have to add more dry wood to keep it going, or more green wood to make more smoke.

MARINATING --

If you are planning a smoking operation and it is not an emergency survival situation, you may well want to soak the fish in a brine or marinade solution before smoking. We already talked about a brine solution that will float an egg. This solution is not intended to enhance the flavor, but rather to aid in preservation.

When fish are properly soaked in a good marinade and then smoked with a fine hard wood, the final product will have a beautiful look and texture to it. The flavor will be unrivalled by the most accomplished gourmet restaurant; most importantly, you will have done it all yourself.

My favorite marinade for salmon and trout is to take a large plastic container like a 30 gal. garbage can with a lid and fill it 2/3's full with clean ice cold water. This container should be spotless and made of food grade plastic. (No matter what, never use a metal container to brine/marinade in. The brine will attack the metal and some of that metal will be absorbed into your fish. The only exception would be a good grade stainless steel. Stick to food grade plastic or wood, and you can't go wrong.) Add 2 pounds of brown sugar, two cups of garlic powder, and one cup of onion powder. Salt can be added to taste if you wish. If I use salt at all, I use no more than two cups. Then mix well with a large clean wooden paddle.

The marinade is now ready for the fish. Some people leave the skin

on the fish filets or strips. I prefer to remove the skins when cleaning the fish. There is no reason to leave the skins on if the fish are placed on racks and not hung on hooks. The skin acts as a barrier to the marinade and to the smoke. Also, when in the marinade, the skin will give off a slime. The fish will have to be rinsed before going to the smoke house. If the fish are split and hung by hooks for smoking or drying the skins will have to be left on to hold the fish together.

Add your fish to the marinade until the liquid almost reaches the top of the container and mix well. Keep in a cool place and mix well every two or three hours. Keep the container covered when not mixing and continue for 24 hours.

The fish is now ready for drying or any one of the smoking methods. If the skins were removed from the fish prior to soaking, transport immediately to the drying racks or to the smoke house. If the skins were left on the fish should be rinsed in cold clean water first, then moved to the smoke house.

Smoked fish can be eaten like it is or mixed with other things. Take smoked salmon and put it in a blender with mayonaise, and you'll have one of the best sandwich spreads you've ever tasted.

In the near future we will look at other ways of curing, preserving and pickling fish and red meat. I've run out of space in this article, but this should get you going safely in the right direction. If you have any further questions on getting started with smoking fish or smoke house construction, feel free to call or write me at the World Survival Institute.

One word of caution: once you have built a fine smoke house and you have it in use, the unique aroma of fresh smoked fish has a tendency to attract neighbors of all sorts; ..... and somehow

they always seem to know exactly when the fish is done. So make
plenty if you want some for yourself. Happy Smoking!!

American Survival Guide   June 1993 page 28

Newsgroups: rec.food.preserving,rec.food.cooking
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wln.com!calliope.wln.com!news.uoregon.edu!news.sprintlink.net!howland.reston.ans.net!vixen.cso.uiuc.edu!sdd.hp.com
!hp-pcd!hpcvsnz!news
From: doug_smart@hp-corvallis.om.hp.com (doug smart)
Subject: Re: need help with smoking a fish
Sender: news@hpcvsnz.cv.hp.com (News)
Message-ID: <DFoAp5.3pt@hpcvsnz.cv.hp.com>
Date: Fri, 29 Sep 1995 15:22:17 GMT
References: <449414$9ve@usenet.srv.cis.pitt.edu>
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X-Newsreader: WinVN 0.90.6
Lines: 32
Xref: calliope.wln.com rec.food.preserving:1672 rec.food.cooking:68826

In article <449414$9ve@usenet.srv.cis.pitt.edu>, tylka@engrng.pitt.edu (FRED W. TYLKA) says:
>
>Hello everyone, I need some help on a recipe for smoking a fish in my
    -- snip! --

Fred, this isn't a recipe, but it is good information and does offer
 something on the strength of the brine:
Pacific Northwest Cooperative Extension publication PNW 238 advises
 the following (somewhat paraphrased) for safety in smoking fish:
- Fish must be heated to 160F internal temp and held there for at least
 30 minutes during the smoking process.

- Fish must be brined long enough to absorb adequate salt for preservation. A brine solution containing 1 part salt to 7 parts water by volume for 1 hour will usually suffice.
- Oily fish such as salmon, steelhead, shad, and smelt take longer to absorb brine, but tend to absorb smoke faster.
- Fish should be air dried before smoking for better smoke absorption and to minimize the chance of spoiling during smoking.
- It is best to smoke at a low temp for 3-5 hours before elevating to the 160F cooking temp. This helps eliminate "curd" formation as juices boil out. To avoid spoilage during smoking, the magic 160F temp should be reached within 6-8 hours.
- Commercial smoked products must meet an FDA requirement of at least 3 1/2% water phase salt after smoking. Since most home smokers cannot make that measurement, refrigeration is essential for safe storage of home-smoked fish.
- Use only hardwoods for smoking. Maple, oak, alder, hickory, birch and fruit woods are recommended. DO NOT USE WOODS FROM CONIFERS.

Have fun and good luck,
doug smart
doug_smart@hp-corvallis.om.hp.com

Path:
wln.com!calliope.wln.com!news.uoregon.edu!news.dacom.co.kr!news.kreonet.re.kr!usenet.kornet.nm.kr!news.sprintlink.net!buffnet2.buffnet.net!buffnet1!krieder
From: krieder@buffnet.net (Kurt Rieder)
Newsgroups: rec.food.preserving,rec.food.cooking
Subject: Re: need help with smoking a fish
Followup-To: rec.food.preserving,rec.food.cooking
Date: 26 Sep 1995 20:40:11 GMT
Organization: BuffNET
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X-Newsreader: TIN [version 1.2 PL2]
Xref: calliope.wln.com rec.food.preserving:1646 rec.food.cooking:68290

FRED W. TYLKA (tylka@engrng.pitt.edu) wrote:
: Hello everyone, I need some help on a recipe for smoking a fish in my
: smoker. What I need is a brine or dry rub cure to put on the fish
: before I put it in the smoker. Hopefully something not too salty, but
: any help would be appreciated. The last time I made smoked fish it was
: so salty it was nearly inedible. Thanks for your help.

    Fred... I'm not into smoking, but can tell you that sometimes
    an overly salty product can be caused by fear of too much salt.
    That is my conclusion from hearing about people's failures in
    salt curing salmon/trout. You need plenty of salt to get a
    good flush of liquid which will carry away the excess salt and
    leave only what has been absorbed by the flesh. The same seems
    also to apply to some vegetables... like eggplant slices... lots
    of salt gives more liquid and hence a stronger flush.

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t2.buffnet.net!buffnet1!krieder
From: krieder@buffnet.net (Kurt Rieder)
Newsgroups: rec.food.preserving,rec.food.cooking
Subject: Re: need help with smoking a fish
Followup-To: rec.food.preserving,rec.food.cooking
Date: 27 Sep 1995 01:29:10 GMT
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Lines: 10
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References: <449414$9ve@usenet.srv.cis.pitt.edu> <449ofb$lkj@buffnet2.buffnet.net>
<44a5mp$9jq@ixnews6.ix.netcom.com>

NNTP-Posting-Host: buffnet1.buffnet.net
X-Newsreader: TIN [version 1.2 PL2]
Xref: calliope.wln.com rec.food.preserving:1651 rec.food.cooking:68348

Scott Watson (wsw@ix.netcom.com) wrote:
: Well, you probably used a dry brine, and when you do it's difficult
: to end up with anything other than the taste of a blind robin. (O.K.,
: I never heard of a "blind robin" until I moved to Pennsylvania, but
: the best way to describe it is kinda like a fish jerky).

> Suggest trying "Gravloks"... dry cured salmon... tender
> as butter and not particularly salty. Made with plenty
> of salt.