

Gathering Summary: Fish Preservation by Smoking and Canning

Presentation by Jeri Hoogendijk (waterbaby134@msn.com, (406) 257-5574)

Summary by Catherine Haug

NOTE: The urls for all links in this document are provided in the Sources section.

Jeri provided two handouts:

- MSU Extension Service, MontGuide: [Home-Canning Meat, Poultry and Fish](#)
- Jeri's handout "Smoking and Canning Salmon" (digital copy not available; all her information is included in this summary)

She has lived in southeast Alaska for many years, and has much experience with preserving ocean fish, but now will be extending her experience to lake and river fish from our area.

Handling Fish After Catching Them

See also [OSU Extension: Handling Sportcaught Fish](#).

1. First, you need to **bleed** them, as any blood left in the meat alters its flavor. This is done while they are still alive (otherwise it doesn't work well). Lift the gill plate then slice the gill cluster completely. Alternately, cut it's throat. The fish will bleed out quickly and die.
2. Then **gut and clean** the fish, to remove blood, bacteria and other material in the digestive tract, and to remove the gills. This slows down spoilage. If you can't gut it right away, at least bleed it and ice it until you can gut it.
3. **Scrape the veins** toward the stomach to push out the blood.
4. Pack **ice** around the fish right away, to retard spoilage.
5. Wash fish as soon as you get home, in cool, fresh water. Then pack again in ice.

==> Discussion:

What about bones? If you can the fish, the bones get soft and are edible. If you smoke the fish, the skin and bones come off easily.

Brining Fish

There are three reasons to brine:

- firm up the fish meat
- flavor
- preservation

Types of brine:

- **Wet brine** typically contains water or other liquid (such as beer), salt, sugar, and herbs or spices for flavor. After brining in the liquid, the fish takes longer to dry before it can be smoked, than dry brine method.
- **Dry brine** involves two steps: packing in salt, followed by packing in sugar. Because it doesn't get wet, it doesn't take so long to dry before smoking. Note, however, that the sugar pack mixes with the oils in the fish to make a form of liquid around the fish. Jeri prefers the dry method, for ease and flavor.

Dry brine Process:

You will need:

- two 5-gallon buckets or pails
- three 3-pound boxes of kosher or rock salt (or equivalent in bags)
- three 2-pound bags of brown sugar

Method

1. For ocean fish such as salmon, filet it, then cut crosswise (as for steaks), from stomach through the backbone, into strips about 2" to 3" wide. Smaller lake or river fish may not need to be cut.
2. Sprinkle bottom of one pail with rock salt to cover, then lay out a layer of fish, followed by enough rock salt to cover, then another layer of fish and salt, etc., until all the fish has been added. Cover final layer of fish with a layer of salt.
3. Let stand for 10 - 20 minutes, until meat is firm to the touch. Then rinse fish of all salt.
4. Take a clean pail/bucket and add a layer of brown sugar (Jeri prefers dark brown sugar), then add a layer of fish, covered with a layer of sugar. Repeat layering with a final layer of sugar on top.
5. Leave in sugar brine from 2 to 24 hours. Jeri likes to brine overnight (about 12 hours). A 24-hour brine produces a heavy glaze on the fish. For more than a couple hours in the brine, put the whole thing in the refrigerator.

Glazing Fish

Glazing provides a nice presentation, adds flavor, and seals the meat. To glaze:

- Rinse sugar or brine off fish, and lay pieces on smoker racks, skin side down
- Put racks on laid-out newspaper to catch any juice drippings. The racks allow for air circulation, and is very important. Use racks similar to those used for grilling, or in older refrigerators. Or the racks for your smoker.
- Set up a fan so that it blows onto the racks of fish. If no fan is available, set in an area with a good draft, such as in front of a window.
- When shiny glaze appears on the fish, turn off fan; this takes about 1 - 3 hours. Leave fish on the racks, for smoking.

Smoking Fish

The fish:

Best fish for smoking are the oily fish: salmon, steelhead, mackerel, trout, walleye. Whitefish is also good, but it tends to absorb more salt from the brine. This is true of all white-colored fish.

Halibut does not smoke well.

A 5-gallon bucket of fish packed in ice then sugar will fill a Little Chief smoker twice. Refrigerate second half until first batch is finished.

Smoked fish can be kept in a cold root cellar (below 40 degrees) or other cold storage such as a refrigerator for up to 3 weeks. It will keep in a freezer up to 3 months. For longer stor-

age times, the USDA recommends canning the fish after smoking. See [Smoker-Cooking.com: Storing Smoked Meats](#) for more information.

You will need:

- Smoker: You can use manufactured smokers such as [Smokehouse's](#) Little Chief and Big Chief; [Bradley](#); or [Browning](#). Or a homemade smoker or smokehouse; see sketch of [Fran Wade's smokehouse](#) (this file also includes sketch of a simple smoker for tanning hides, which could be adapted for smoking meat).
- Rackss that fit your smoker.
- Wood chips: hard wood or fruit wood are best, such as alder, yellow cedar, applewood, etc.. Pine and fir are not recommended, as they are too resinous. Alder is Jeri's favorite.

Jeri's instructions are for using an electric smoker (she uses Little Chief, which has racks that lift out through the top); I've added information from Fran W. on using a wood-burning smoker.

1. If using a wood-burning smoker, get a good fire going to create a bed of coals (no flames while smoking). If using an electric smoker, preheat it.
2. Add wood chips: If using an electric smoker, put them in the pan without wetting them first. If using a wood-burning smoker, presoak your wood chips, then lay over the coals (soaking prevents them from bursting into flame).
3. Place racks of fish in your smoker, for 1 - 24 hours. 1 hours produces moist salmon; 24 hours produces jerkey. You can also hang the fish in a smokehouse, but they sometimes fall off the hanging mechanism. Or without a smokehouse, you can hang strips of fish over racks raised above the coals.
4. Best to check after 1 hour for desired consistency and flavor.
5. Do not let smoker get over 175 degrees F

Canning Raw or Smoked Fish

Please refer to the MSU Extension Service, MontGuide: [Home-Canning Meat, Poultry and Fish](#) for canning specifics and adjustments for altitude. Most of us fall in the 2001-4000 foot altitude range (for reading processing times in the tables).

Contact Flathead County Extension office with canning questions: (406) 758-5553.

Canned fish will keep for 1 year. It may keep 2 - 3 years if canned properly and remains completely sealed.

You will need:

- Pint size Mason-type canning jars; each will hold about 1 pound of fish.
- Pressure canner, 16 - 22 quart capacity. You cannot use a hot-bath canner for any kind of high protein foods, such as fish. If you have a gauge canner, ensure your gauge is in calibration. Our Flathead County Extension office will do this for free; it's best to have it done annually.
- Timer or alarm clock
- Tongs and jar lifter are recommended
- Saucepan (for heating lids)
- Clean towels

Method:

1. Inspect jars, lids and rings. Jars should not be chipped or cracked. Lids should not be dented, and their seals should be soft and smooth; the rings should be round and not rusty. It is not recommended to reuse lids.
2. Sterilize jars prior to use: Bring water to a boil in canner or other large pot. Add jars carefully (use tongs); sterilize for 10 - 15 minutes. Lay a clean towel on counter. Remove jars with tongs, allowing water to pour out, then place upside down on the towel.
3. Place lids in pan of boiling water and keep in pan until ready to place on lip of jar.
4. Add smoked or raw fish, skin side in, or remove skin all together. It removes very easily from smoked salmon; not so easy with raw fish. The skins are oily, which will add oil to the jar so you may not need to add oil (especially with oily fish like salmon). You do not need to remove bones, as they will soften during the canning process.
5. Leave about an inch of room from fish to top of jar.
6. Important: Wipe lips of jars with clean, damp, warm washcloth or towel and ensure no bits of anything is along the lip to interfere with the seal.
7. Remove a hot lid from pan with tong or magnet, and place on clean jars. Screw rings on to finger-tight.
8. Place pint jars in canner. Some canners will accept two layers. Add water per instructions that come with the canner. Jeri gave specific instructions for her canner, which may not apply to your canner.
9. Secure canner lid on canner. Add gauge or weight and process per specific instructions for your canner. The MontGuide recommendation for fish and altitude between 2001 and 4000 feet: **Gauge Canner:** 12 pounds weight and 100 minutes processing time; **Weight Canner:** 15 pound weight and 100 minutes processing time. Jeri suggests processing for 110 minutes.
10. Turn off heat after processing time and allow the canner to drop pressure naturally. DO NOT attempt to open canner until pressure had dropped fully, and do not attempt to rush the cooling by pouring cold water over the canner or by setting in water bath.
11. After pressure had dropped completely, Release the seal on the canner lid, then lift the lid away from you (to avoid being burned from the steam).
12. Remove jars with jar lifter; put on a dry towel in a draft free area overnight. As the jars seal, you may hear a pop.
13. The next day, inspect each seal to be sure it has snapped down (the center of the lid is down). Fish in jars with incomplete seals should either be consumed or reprocessed with a new lid, within 2 days. REfrigerate uneaten fish. Label and date all sealed jars.

Lutefisk

This section by Catherine Haug

I've helped with lutefisk brine, but that was years ago, so I helped my memory with information from [Wikipedia](#).

Lutefisk is made from dried whitefish (cod or ling cod) and brined in lye, in a sequence of particular treatments. The watering steps of these treatments differ slightly for salted/dried whitefish because of its high salt content.

Mixing water with wood ash produces sodium hydroxide, or lye. Different types of wood can make different types of lye. For example, the Finns use birch ash, which contains high amounts of potassium carbonate and hydrocarbonate, giving the fish a more mellow treatment than would sodium hydroxide (lyestone). (from [Wikipedia](#)).

Modern lye-free brines can also be used, which produce a better, less jell-like product. For example, from Norskstar Seafood in Whitefish MT.

Here's the process for using a lye brine:

1. Soak the fish in cold water for five to six days, changing the water daily.
2. Then soak the fish in a solution of cold water and lye for an additional two days (do not change this solution each day). The fish swells during this soaking and its protein content is decreased.
3. The lye-bath treatment results in a highly alkaline fish (pH 11 - 12), which is caustic and is not edible without further treatment to cold water baths. It can be dried after brining, for keeping. Then reconstitute by soaking.
4. Soak in cold water for 4 - 6 days, changing the water bath daily. Salt may be added to the water to help leach out the lye.
5. Lutefisk can be cooked in boiling, salted water; or simply steamed, with added salt, until warm and flaky. Serve with melted butter and salt, or a mustard cream sauce. DO NOT use sterling or silver-plated utensils, as the fish will ruin the silver.
6. Immediately after cooking, clean all cooking utensils, as the residue from cooking this fish is nearly impossible to remove after more than a few minutes.

Recipes

ESP is not really a recipe-exchange source, but I agreed to include a few recipes that were mentioned during discussion at the event.

Pickled Fish Recipe

from Jean H.

2 T. chili sauce

2 T. vinegar

3 T. oil

4-5 stuffed olives

1 sour pickle sliced

1/2 to 1 t. salt

optional: 1 clove garlic, spring of dill

Fill pint jar with sauce ingredients above. Then pack in the raw fish, process in pressure canner according to your canner's instructions for your altitude. Jean's canner recommends 90 minutes at 10 # pressure.

Jeri's recipes

Jeri has not yet sent her recipes; I will update this document when they are available.

Sources

- MSU Extension Service, MontGuide: Home Canning Meat, Poultry & Fish (msuextension.org/publications/HomeHealthandFamily/MT200903HR)
- OSU Extension: Handling Sportcaught Fish (extension.oregonstate.edu/catalog/html/ec/ec1414/)
- The EssentialList: Home Canning handouts (essentialstuff.org/index.php/2009/02/22/Cat/home-canning-2008/)
- The EssentialList: Sugar and Salt in Food Preservation (essentialstuff.org/index.php/2009/07/08/Cat/sugar-n-salt-food-preservation/)
- Smoker-Cooking.com: Storing Smoked Meats (www.smoker-cooking.com/storing-smoked-meats.html)
- Smokers: Little and Big Chief: www.smokehouseproducts.com; Bradley: www.bradleysmoker.com; Browning: www.browningoutdoorcookware.com
- Wikipedia on Lutefisk: <http://en.wikipedia.org/wiki/Lutefisk>