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Smoking Fish

The fisherman's catch, if properly preserved, can be a welcome addition to family meals over a period of several weeks or months. Smoking is an excellent way to preserve fish that you don't plan to eat right away. Fish is smoked as it dries over a smoldering fire. Wood smoke adds flavor and color; the brining process helps to preserve the fish.

Smoking Methods

There are two general methods of smoking fish: hot-smoking and cold-smoking.

Hot-smoking (also called barbecuing or kippering) requires a short brining time and smoking temperatures of 90°F for the first 2 hours and 150°F for an additional 4-8 hours. Hot-smoked fish are moist, lightly salted, and fully cooked, but they will keep in the refrigerator for only a few days.

Cold-smoking requires a longer brining time, lower temperature (80-90°F) and extended smoking time (1-5 days or more of steady smoking). Cold-smoked fish contain more salt and less moisture than hot-smoked fish. If the fish has been sufficiently cured, it will keep in the refrigerator for several months.

Parasites In Fish

Freshwater and marine fish naturally contain many parasites. These parasites are killed during the hot-smoking process, if the temperature reaches 140°F.

Use commercially frozen fish for cold-smoked fish and lox, or freeze the fish to -10°F for at least 7 days to kill any parasites that may be present. Freezing to -10°F is not possible in most home freezers.

Smoking Tips

Any fish can be smoked, but species high in fat (oil) such as salmon and trout are recommended because they absorb smoke faster and have better texture than lean fish, which tend to be dry and tough after smoking.

Use seasoned non-resinous woods: hickory, oak, apple, maple, birch, beech, or alder. Avoid: pine, fir, spruce, etc. or green woods.

If heavier smoke flavor is desired, add moist sawdust to the heat source throughout the smoking process.

Control heat by adjusting air flow.

Control temperature:

Hot-smoking	--	90°F for the first 2 hours; 150°F for remaining smoking time
Cold-smoking	--	80-90°F for 1-5 days or more
Lox	--	70-80°F for 1-3 days

Preparing Fish For Smoking

Use only freshly-caught fish that have been kept clean and cold. Fish that have been handled carelessly or stored under improper conditions will not produce a satisfactory finished product. Do not use bruised, broken, or otherwise damaged flesh.

If you catch your fish, clean and pack them in ice before starting home. When you get home, store the fish in the refrigerator until you are ready to prepare them for smoking.

Different fish species generally require specific preparation methods. Salmon are split (backbone removed); bottom fish filleted; herring headed and gutted, and smelt dressed. The following preparation steps can be applied to any fish:

1. Remove scales by scraping against the grain with the dull edge of a knife.
2. Remove head, fins, tail, viscera.
3. Wash body cavity with running cold water to remove all traces of blood and kidney tissue (dark red mass along the backbone).
4. Split the fish by cutting through the rib bones along the length of one side of the backbone.
5. For large fish, remove the backbone by cutting along the other side of the backbone to produce two fillets or boneless sides. For small fish, the backbone can be left attached to one of the sides.
6. Cut the sides of large fish into uniform pieces about 1-1/2 inches thick and 2 inches wide. Small fish halves can be brined and smoked in one piece.

Preparing Brine

Prepare a brine of 3-1/2 cups table salt in 1 gallon of cold water in a plastic, stainless steel, or crockery container. Red or white wine can be substituted for a portion or all of the water, if desired. Stir the salt until a saturated solution is formed.

Spices such as black pepper, bay leaves, seafood seasoning, or garlic, as well as brown sugar, may be added to the brine depending on your preference.

Use 1 gallon of brine for every 4 pounds of fish. Brine fish in the refrigerator, if possible.

Keep the fish covered with brine throughout the brining period. A heavy bowl can be floated on the brine to keep the fish submersed, but do not pack the fish so tightly that the brine cannot circulate around each piece.



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Cold-Smoking

1. To cold-smoke fish, follow steps 1-6 under "Preparing Fish for Smoking."
2. Brine 1/2-inch-thick fillets for 1/2 hour; 1-inch-thick fillets for 1 hour; and 1-1/2-inch-thick fillets for 2 hours. Brining times can be lengthened if the cold-smoked fish are to be preserved for long periods of time.
3. After brining, rinse the fish briefly in cold running water.
4. Place the fish skin-side down on greased racks in a cool shady, breezy place to dry. The fish should dry for 2 to 3 hours or until a shiny skin or pellicle has formed on the surface. A fan will speed pellicle formation.
5. Place the fish in a homemade or commercial smoker. The temperature of the smoker should be kept at about 80°F, and should never exceed 90°F. If a thermometer is not available, the temperature may be tested by hand. If the air in the smoke-house feels distinctly warm, the temperature is too high.
6. Smoke the fish until its surface is an even brown. Small fish that are to be kept 2 weeks or less may be ready in 24 hours. Salmon and other large fish will require 3 to 4 days and nights of steady smoking. To store longer than 2 weeks, smoke all fish a minimum of five days; for larger fish, at least a week or longer.
7. The smoker should not produce a lot of smoke during the first 8 to 12 hours if the total curing time is 24 hours, or for the first 24 hours if the curing time is longer. When the first part of the smoking ends, build up a dense smoke and maintain it for the balance of the cure.
8. If cold-smoked fish has been brined for at least 2 hours and smoked for at least 5 days, it will keep in the refrigerator for several months.

Lox

Lox is similar to cold-smoked salmon, but is moist, lightly salted and lightly smoked. Much practice and experience are needed to prepare satisfactory lox. The appropriate length of brining and smoking to produce lox that suit one's taste is determined mainly through trial. Lox can be prepared following the instructions for cold-smoking with the following modifications:

- Smoke at 70-80°F for 1 to 3 days (temperatures above 80°F will cook the fish).
- To give a sheen to the surface of lox, rub with vegetable oil after the smoking is completed.
- In the refrigerator, lox will keep for 1 to 2 weeks. It will keep longer, if frozen.

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Hot-Smoking

1. To hot-smoke fish, follow steps 1-6 under "Preparing Fish for Smoking."
2. Brine 1/2-inch-thick fillets for about 15 minutes, 1-inch-thick pieces about 30 minutes, and 1-1/2-inch-thick pieces about 1 hour. Brining times can be adjusted to give the fish a lighter or heavier cure.
3. After brining, rinse the fish briefly in cold running water.
4. Place the fish skin-side down on greased racks in a cool, shady, breezy place to dry. The fish should dry for 2 to 3 hours or until a shiny skin or pellicle forms on the surface. The pellicle seals the surface and prevents loss of natural juices during smoking. A fan will speed pellicle formation.
5. Place the fish in a homemade or commercial smoker. For the first 2 hours, the temperature should not exceed 90°F. This completes the pellicle formation and develops brown coloring.
6. After the initial 2-hour period, raise the temperature to 150°F and smoke the fish for an additional 4 to 8 hours. The length of time will depend on the thickness of the fish, and on your preference for dry or moist smoked fish. Generally, 1/2-inch-thick pieces are smoked for 4 hours, 1-inch-thick pieces for 6 hours, and 1-1/2-inch-thick pieces for 8 hours.
7. Store hot-smoked fish in the refrigerator. Freeze hot-smoked fish if it will be stored longer than a few days.

Storing Smoked Fish

Smoked fish is perishable and must be stored in the refrigerator. Wrap each piece of smoked fish in waxed paper or paper towels and store in a paper bag in the refrigerator. Storing smoked fish in a plastic bag or air-tight container can cause moisture to collect inside the wrapping and mold to grow on the fish. Because lightly-smoked fish is so perishable, it is often smoked and then canned or frozen for extended storage. Wrap smoked fish in "cling-wrap" or place in an air-tight container and freeze. For information on canning and freezing smoked fish, consult the Sea Grant Extension Program publications, Canning Fish, and Freezing Fish.

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