

By Fred Snyder
District Specialist
Ohio Sea Grant
Extension Program

**Ohio Sea Grant
College Program**
The Ohio State University
1314 Kinnear Road
Columbus, OH 43212-1194
614/292-8949
Fax 614/292-4364
<http://www.sg.ohio-state.edu>

Sea Grant forms a unique partnership with public and private sectors to combine research, education, and technology transfer for service to the public. Sea Grant provides a national network for universities to meet changing environmental and economic needs in our coastal, oceans, and Great Lakes regions.

Ohio Sea Grant, based at The Ohio State University, is one of 29 state programs in the National Sea Grant College Program of the National Oceanic and Atmospheric Administration (NOAA), Department of Commerce. Ohio Sea Grant is supported by the Ohio Board of Regents, Ohio State University Extension, other universities, industries, and associations.

Jeffrey M. Reutter
Director
reutter.1@osu.edu

Karen T. Ricker
Communications Coordinator
ricker.15@osu.edu

OHSU-FS-032
1986. Revised 1989.
Reprinted 1991 and 1996.

This publication is produced by the Ohio Sea Grant College Program (projects A/EP-1 and M/P-2 under grant NA46RG0482).



© The Ohio State University
Printed on recycled paper.

Fish smoked at home

Smoked fish have been around ever since prehistoric people contemplated ways to preserve the unused portion of their catch. Today, smoked fish is regarded as a delicacy by just about all who try it.

Any species of fish can be smoked, and nearly everything that comes out of the smokehouse tastes good. Species having a relatively high fat content, however, do absorb the smoke flavor better and are less likely to dehydrate than lean fishes. Salmon, catfish, trout, sheephead, and carp are among the favorites in the Lake Erie region. White bass, white perch, and buffalo also smoke very well. Walleye, yellow perch, black bass, crappie, and sunfish are better suited for the frying pan.

Smoking your own fish is relatively easy once you have the basic equipment assembled. The four-step process includes

1. cleaning and preparation,
2. brining,
3. smoking, and
4. proper storage of the fish.

Information on woods used for smoking and smokehouse construction and its operation are provided.

Step 1 Cleaning and Preparation

Fish for smoking are usually not filleted. Instead, they are gutted, thoroughly washed, and the kidney or “blood line” along the backbone is scraped out. With the exception of carp, most fish are not scaled prior to smoking. After cleaning, the fish may either be cut into chunks a couple of inches thick to be smoked on racks, or left whole to be suspended in the smokehouse on hooks.

Frozen fish may be used for smoking. For the best quality, clean and wash them before freezing. Be sure the fish have completely thawed in the refrigerator or under cold running water prior to brining.

Step 2 Brining

Soaking the fish in a salt solution is one of the most critical steps in producing a safe and tasty product. Remember that wood smoke has no preservative effect—it is only a means of flavoring. A final salt content of 3 1/2 to 5 percent water phase salt (WPS) is recommended; however, without chemical analysis, it is hard to tell whether or not it has been achieved. That’s why proper cooking and refrigerated storage are so important. A final product that has a definite yet pleasant salt flavor has probably achieved a 3 1/2 percent WPS.

A basic brine is made by dissolving 4 cups of table salt into a gallon of water. Avoid using iodized salt, which can impart a bitter taste. One hour in such a brine is sufficient for most fish. If this doesn’t produce a uni-

formly salty flavor in your product, try dissolving only 1 1/2 cups of salt into a gallon of cold water, but allow the fish to soak for 12 hours at refrigerator temperature (about 40°F). One gallon should be prepared for each five pounds of fish. Large, thick pieces of fish will absorb salt more slowly and may require longer brining time than small, thin pieces.

After brining, rinse the fish in clean water and dry them. Smoke will not deposit easily on a wet surface. Drying also allows a shiny, skin-like pellicle to form on the fish surface, which prevents the loss of natural juices while smoking.

Step 3 The Smoking Process

Many portable smokers come with recipes for quick-smoking fish at high temperatures, but to achieve thorough penetration of the smoke flavor throughout the meat, the fish must stay in the smoke for several hours. A smoking time of eight to ten hours in addition to the cooking time should produce an excellent result.

For thorough cooking, fish must be held at an internal temperature of 180°F for at least 30 minutes. The cooking temperature should be achieved sometime within the first six hours of the process to prevent spoilage while the meat is in the warm smoker. A long-stemmed meat thermometer inserted into one of the larger chunks through a hole in the smokehouse will allow easy monitoring of temperature without opening the door.

A 180°F internal temperature can usually be reached if the smokehouse itself can reach temperatures ranging from 200 to 225°F. If not, finish cooking the fish in an oven. To reduce dehydration, during the remainder of the smoking period the smokehouse temperature can be lowered to 140 to 150°F.

Step 4 Storage of Smoked Fish

Smoked fish may be eaten while hot from the smoker, but most folks agree that the flavor is enhanced when the fish is cold. The flavor also seems to improve a day or two after smoking, as the smoke permeates deeper into the flesh.

For storage, cool the fish thoroughly, wrap it in waxed paper or plastic wrap, and store it in a refrigerator. Smoked fish should be consumed within two weeks. It can be stored for longer periods in the freezer, but the texture of the meat may become softer and moister.

If you’ve never tried smoked fish, your first batch, if properly prepared, will be a surprising treat. A smokehouse is a great equalizer; any fish species, no matter how humble, usually tastes great when smoked. Or as one Lake Erie smokehouse operator was heard to say, “Sure, some fish smoke up better than others, but none of them are bad!”

Ohio Sea Grant Extension Program

Mary H. Bielen

The Ohio State University
Sea Grant Extension
Toledo Department of
Development
One Government Center
Suite 1850
Toledo, OH 436604
419/245-1470 Fax 419/245-1462
bielen.1@osu.edu

John Hageman

F. T. Stone Laboratory
The Ohio State University
P. O. Box 119
Put-in-Bay, Ohio 43456-0119
419/285-2341 Fax 419/285-4754
hageman.2@osu.edu

David O. Kelch

The Ohio State University
Sea Grant Extension
Lorain County Extension Office
42110 Russia Road
Elyria, OH 44035
440/322-0127 Fax 440/329-5351
kelch.3@osu.edu

Frank R. Lichtkoppler*

The Ohio State University
Sea Grant Extension
Lake County Extension Office
99 East Erie Street
Painesville, OH 44077
440/350-2582 Fax 440/350-5928
lichtkoppler.1@osu.edu

Fred L. Snyder*

The Ohio State University
Sea Grant Extension
c/o Camp Perry
Building 3, Room 12
Port Clinton, OH 43452
Phone/Fax 419/635-1022
snyder.8@osu.edu

Walter D. Williams

The Ohio State University
Sea Grant Extension
c/o Greater Cleveland Growth
Assn.
200 Tower City Center
50 Public Square
Cleveland, OH 44113-2291
216/621-3300 Fax 216/621-6013
wwilliams@clevelandgrowth.com

*Program Co-Coordinator

Choice of Woods

Although special brine recipes abound that use sugar and spices, many experienced fish smokers feel that flavor can be fine-tuned most easily by the proper choice of hardwoods.

A sharp, pungent smoke is produced by woods like hickory, beech, oak, birch, ash, and alder. Fruit woods including apple, cherry, and pear produce sweet-tasting smoke. Sassafras generates an extremely sweet-spicy smoke; sugar maple combines pungence with sweetness. Many smokehouse operators prefer to mix hardwoods and fruit woods.

Avoid using softwoods like pine, spruce, and cedar. Resins from these conifers will leave a very unpleasant taste on the fish.

The size of wood chunks you will use depends upon your smoker's heat source. Sawdust or small chips work best with electric hot plates. Firepans using charcoal can accommodate tennis ball-sized chunks of wood, which prolong the burning time and require less tending. Wood for smoking is sometimes soaked in water in an attempt to slow the burning rate, but many commercial smokehouse operators bypass this step.

Smokehouse Construction and Operation

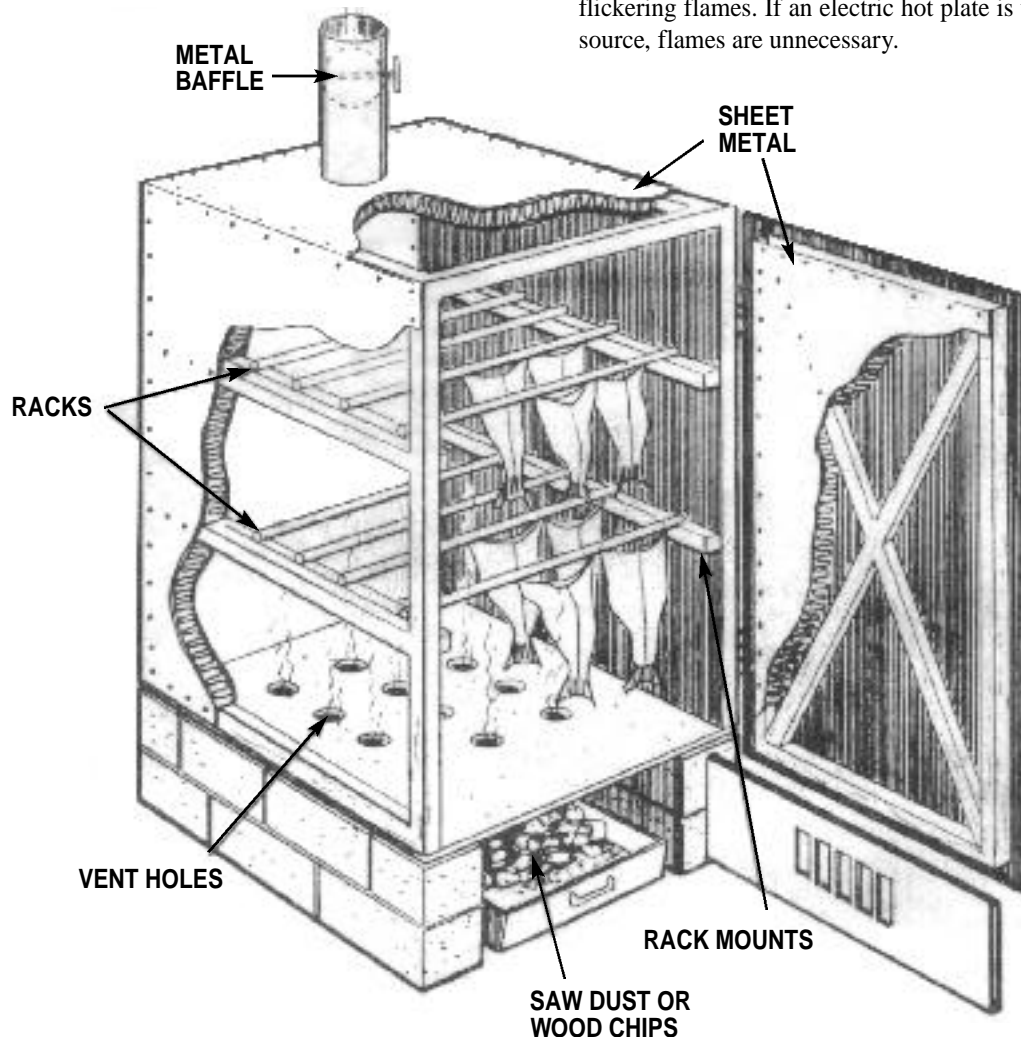
It seems that no two homemade smokehouses are alike. But they all have the same essential components. A proper smoker must have

1. a controllable draft at its bottom,
2. a controllable vent or flue at the top,
3. a heat source,
4. a drip pan to keep grease out of the fire, and
5. racks or crosswires to hold the fish.

Useful smokehouses have been constructed from metal drums, old refrigerators, plywood boxes, and many other available materials. The accompanying diagram shows a sample of all of these components in operation.

The greatest poundage of meat can usually be smoked in one session by hanging whole or split fish from hooks on crosswires. Large fish may pull off the hooks as they cook and fall into the drip pan. This can be prevented by trussing the fish in simple harnesses of cotton string and then looping the hooks through the harnesses.

The hard woods in the fire pan should smolder but not blaze. This is controlled by regulating the draft at the top and bottom vents. Cooking temperatures can usually be reached by regulating the draft to allow a few small, flickering flames. If an electric hot plate is used as a heat source, flames are unnecessary.



SMOKEHOUSE BUILT FROM AVAILABLE MATERIALS.