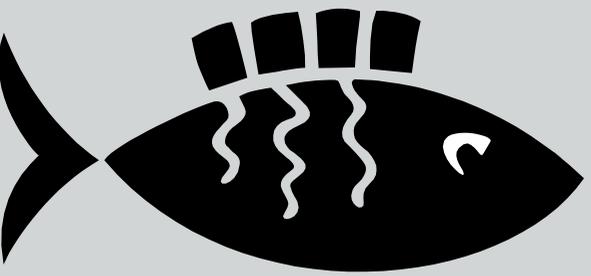


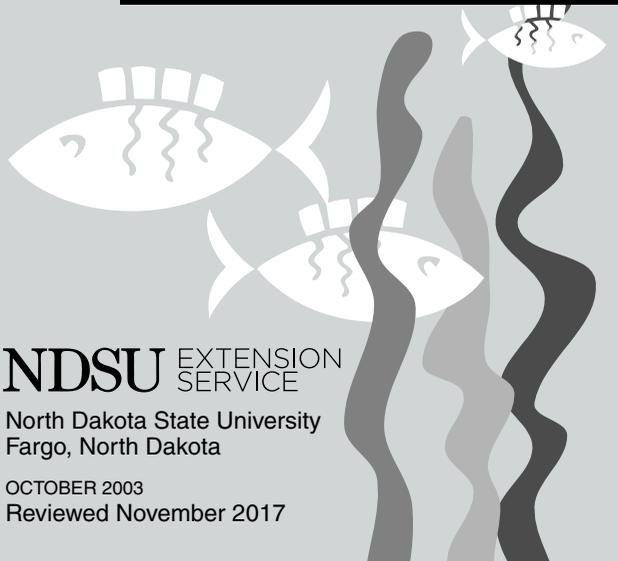
FN535 (Revised)

A Pocket Guide to Care and Handling of



FISH

from Stream to Table



NDSU EXTENSION SERVICE

North Dakota State University
Fargo, North Dakota

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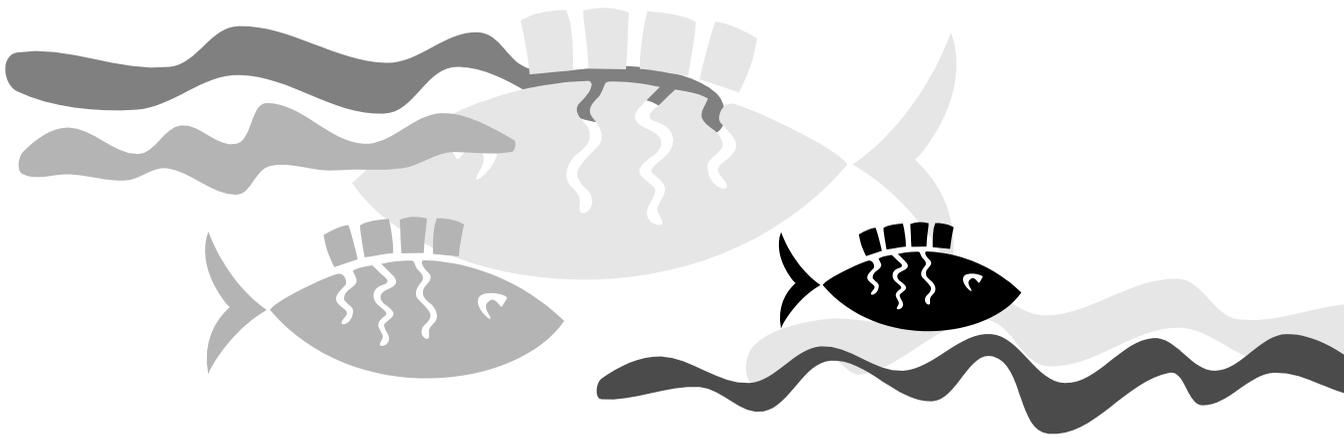
For more information about food safety,
or the publications listed below, visit the
NDSU Extension Service Web site:
www.ag.ndsu.edu/food

For further information, see:

- A Pocket Guide to Care and Handling of Deer and Elk from Field to Table (FN536)
- A Pocket Guide to Care and Handling of Game Birds from Field to Table (FN537)
- Wild Side of the Menu No. 1 - Care and Cookery (FN124)
- Wild Side of the Menu No. 2 - Field to Freezer (FN125)
- Wild Side of the Menu No. 3 - Preservation of Game Meats and Fish (FN155)
- Sausage Production in the Home - An Art (FN176)
- Food Freezing Guide (FN403)

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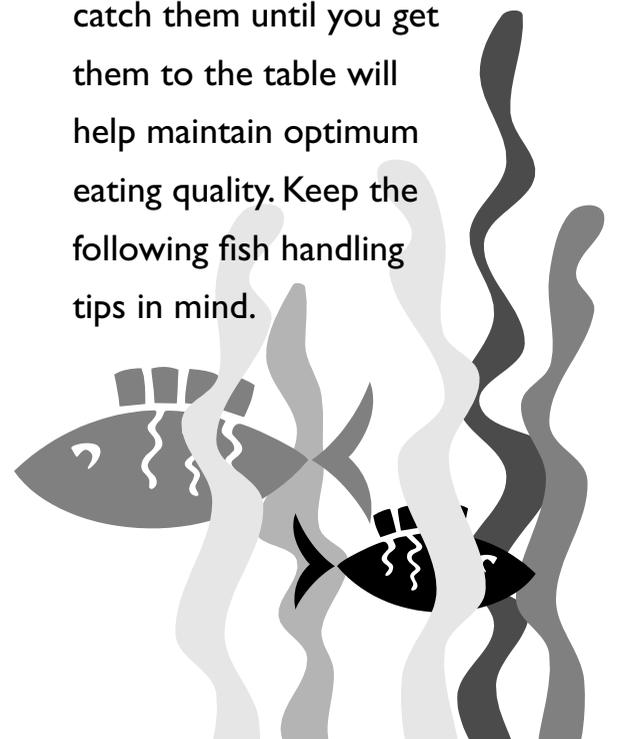


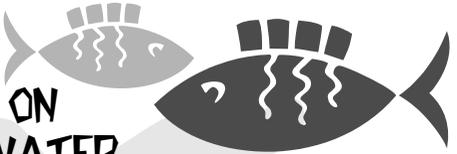
ENJOY YOUR CATCH AT ITS BEST

Fish are fun to catch and nutritious to eat. They are high in protein, rich in vitamins and minerals, and low in saturated fat. Fish oils are high in polyunsaturated fats that may function in lowering blood cholesterol.

Proper handling of fish from the time you catch them until you get them to the table will help maintain optimum eating quality. Keep the following fish handling tips in mind.

A 3½-ounce portion of fish (before cooking) provides about half of the daily adult protein requirement and has, depending on the species of fish, only 100 to 150 calories.





CARE ON THE WATER

■ Keep fish alive as long as possible.

Fish flesh is very perishable.

- A metal link basket or live box is best. A stringer can damage the flesh and increase chances of bacterial contamination.
- If the water is warm, place the fish on ice or keep them in cool water.
- Don't toss fish into the bottom of the boat where they will dry out or where their flesh may become bruised and susceptible to contamination.
- Keep fish out of sunlight and direct heat.

■ During winter fishing trips, keep fish covered to prevent them from freezing and drying out.

- For optimal eating quality, fish should not be frozen by throwing them out onto the ice. Put fish in an ice chest or styrofoam cooler to prevent freezing and dehydration. Clean them prior to freezing.

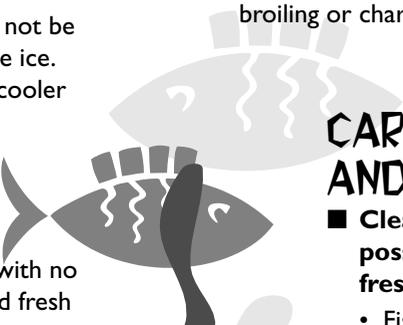
■ Check fish for signs of disease or parasites.

- A healthy fish should have firm flesh with no signs of discoloration/browning, a mild fresh smell, bright clear eyes and red gills.
- A diseased fish may have sunken eyes or "pop-eyes," discolored skin, loose scales, open wounds or gills that are white and slimy or bloody.
- In some cases, the fish is edible if the diseased area is removed. Fish should be thoroughly cooked.
- After removing the usable flesh, do not throw the remains back in the water. Dispose of them properly.

- Decide on the fate of the fish immediately. If you do not want them, release them right away instead of waiting to decide at the end of the day, when they may have a reduced chance for survival.
- Check with your local game and fish representative if you find abnormal growths in the flesh.

■ Fish in safe waters.

- Some waters may be contaminated by pesticides or other substances. For information on the safety of fishing waters, contact your local health department.
- Contaminants are concentrated in the fatty parts of the fish. To reduce your risk of consuming contaminants, remove the skin and fat deposits when you clean fish, or use fillets instead of whole fish. Choose a cooking method that removes additional fat, such as baking, broiling or charbroiling.



CARE IN CLEANING AND STORAGE

■ Clean and cool fish as soon as possible. Time and heat can rob freshness and flavor.

- Fish spoil rapidly due to their strong digestive juices. If fish are not cleaned promptly, off flavors may develop.
- You will need a sharp knife, a clean towel or paper towels (to wipe the fish after rinsing), plastic bags and crushed ice in an ice chest.
- Use a clean fillet knife to clean the fish. Bleed the fish. Cut the throat as you would any game animal, and remove the gills and entrails. Wipe the surface of the fish with a clean cloth or paper towel, put the fish in a plastic bag, and put on ice.

- If making fillets, rinse the fish in clean cold water to remove blood, bacteria and enzymes.

■ Don't cross-contaminate. Clean the knife after each use.

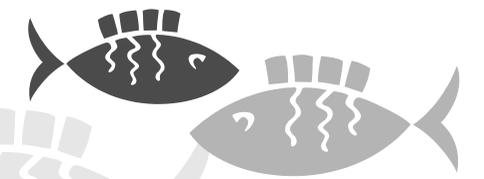
- When you clean fish at home, wash your hands, the knife and the cutting board with warm soapy water after each use.

■ Store cleaned, fresh fish in the refrigerator at 40 F or lower in a covered container and use within two days.

- Fish should be kept moist but not wet.

■ Cleaned fish may be frozen whole or as fillets.

- Traditionally, fish have been frozen whole, as they come from the water. This practice is **not recommended**, because deterioration may occur, and poor eating quality may result.
- Improperly wrapped frozen fish may become dehydrated — that is, suffer "freezer burn" — due to contact with air. This condition negatively affects taste and texture.
- Divide fish into family-size servings and use a plastic cling-type wrap as an inner covering and moisture/vapor-proof freezer wrap as an outer covering. Bread bags, waxed paper and cellophane wraps are poor freezer wraps.
- Remember to press air from the package to help prevent off-flavors or odors characteristic of rancidity.
- If freezer space is available, smaller fish may be placed in water in plastic containers, in clean wax- or plastic-lined milk containers, and then frozen.
- Label each package with the contents and date.
- The temperature of the freezer should be 0 F or lower. When freezing large amounts of food, scatter the packages throughout the freezer so the food freezes quickly.



CARE IN PREPARATION AND PRESERVATION

■ Prepare fish properly. Cook fish until it flakes with a fork.

- Don't cross-contaminate. Keep raw fish and cooked fish separate.
- Thaw fillets in the refrigerator, in the microwave or under cold running water. Food defrosted in the microwave should be cooked immediately. Other thawed fish should be used within one to two days.
- Undercooking fish can be risky, while overcooking can result in an unpalatable product.
- Fish is generally low in fat and very tender. Moist heat cooking methods are unnecessary. Methods that develop flavor, such as broiling, baking or frying, are preferred.

■ Fish may be safely preserved by proper smoking procedures.

- After cleaning the fish, cut it into uniform pieces. Do not allow fish to stand unrefrigerated for more than two hours.
- Salt is a preservative. Fish **must** be salted in the proper brine solution for an appropriate length of time. Generally, soaking the fish in a strong brine (1 cup salt/7 cups water) for 1 hour is adequate.
- After salting, the fish **must** be heated to an internal temperature of 160 F and held at this temperature for at least 30 minutes during the smoking cycle.
- Store smoked fish in the refrigerator if it is to be used within two weeks.
- For long-term storage, smoked fish should be frozen. It also may be preserved by following current pressure canning recommendations.