Canning Seafood

A Pacific Northwest Extension Publication
Oregon State University • Washington State University • University of Idaho
PNW 194

Canning Fish

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Coastal waters, lakes, and streams in the Pacific Northwest provide a variety of seafood, including clams, oysters, shrimp, crab, salmon, tuna, and other fish. You can enjoy these delicacies throughout the year if you preserve them when supplies are abundant.

Canning is a popular method for preserving seafood. When canned correctly, seafood products are high in quality and safe to eat. It is important to pack and process seafood as directed to guarantee safety. Processing recommendations in this publication are based on reliable research and should be followed carefully.

Handling fresh fish

Use top-quality, fresh seafood. Can it as soon as possible after you catch or buy it. The longer you wait, the poorer the quality will be.

- To prevent spoilage, keep fish and shellfish cold, either on ice or in your refrigerator, so that they stay below 40°F.
- If you are unable to process the seafood soon after catching or buying it, wrap and freeze the fish to process later. Thaw completely in a refrigerator or cold water before canning.
- Avoid rough handling. Do not stack fish on top of one another—this causes crushing and bruising, which speeds up spoilage.
- Keep live shellfish (clams, oysters, mussels) moist and cold. Place them in a bowl, cover them with a wet cloth, and store in the refrigerator.
- Keep live crab cold on ice.
- Handle raw seafood safely. Raw seafood may contain microorganisms that cause food poisoning. Make sure that you wash your hands, utensils, and work surfaces (such as cutting boards) after handling raw seafood. Do not let raw seafood come into contact with cooked seafood.

Preparation tips

- Prepare fish and shellfish as directed.
- When you can fatty fish, use nonporous equipment that you can clean easily (such as an acrylic cutting board). Cover work surfaces with a layer of plastic or paper (such as freezer wrap). Use paper towels rather than cloth towels for cleanup.
- Pack fish into hot pint or half-pint jars. Quarter-pint jars can also be used; process quarter-pints using the half-pint processing time.
- To can fish (other than tuna) in quarts see the USDA Complete Guide to Home Canning at http://www.uga.edu/nchfp/. *Safe processing times have not been determined for canning tuna or shellfish in quart jars.*

- To get a good seal, wipe jar rims clean with a wet paper towel before putting on the lid. Moisten the paper towel with vinegar when you pack fatty fish (such as tuna and salmon).

Processing in a pressure canner

- Process seafood in a pressure canner as directed (Figure 1). The high temperatures reached under pressure are necessary to destroy the bacteria that cause spoilage and food poisoning.
- Use a pressure canner that is in good condition. Replace the gasket if necessary. If you use a dial pressure gauge, check it for accuracy at least once a year. If the pressure is off by more than 2 pounds, replace the gauge. (Your local Extension office can tell you where you can have the gauge tested.)
- Process foods at the correct pressure. At sea level, use 10 pounds pressure for a weighted gauge and 11 pounds for a dial gauge. Increase pressure, as directed for each item, if you are canning at high altitudes.

Photo: Jeanne Brandt, © Oregon State University

Figure 1. Process seafood in a pressure canner as directed.

Using a pressure canner

1. Read the manufacturer's directions for use, particularly to check the canner before and during processing and the functions that involve audible hissing, jiggling, or rocking of the weighted gauge.
2. Have 2 to 3 inches of hot tap water in the canner. For raw packed foods, the water should not be over 140°F. Note: Use 4 to 5 inches of water when canning fish, including tuna, because of the long processing time. (Optional: Adding ¼ cup distilled white vinegar to the water in the canner will reduce the odor during processing and will make cleaning the jars and canner easier. It might darken the jar rings but will not damage them.)
3. Arrange jars on a rack so steam can flow freely around each one. Keep jars upright at all times. If a double layer of jars is necessary, use an additional rack to separate the layers. Stagger the placement of the jars over the first group.
4. Fasten the canner lid securely so no steam escapes around the rim. Leave the weight off the ventport or open the petcock.
5. Turn the heat on the range to the highest setting. Heat until steam flows freely from the ventport or petcock. While maintaining high heat, let steam exhaust continuously for 10 minutes.
6. After venting your canner, place the weight on the ventport or close the petcock. The canner will pressurize during the next 3 to 10 minutes.
7. Start timing the process when the pressure reading on the dial gauge indicates the recommended pressure has been reached or when the weighted gauge begins to jiggle as the manufacturer describes.

Photo: Jeanne Brandt, © Oregon State University

Figure 2. Using a jar lifter, remove jars from the canner without tilting them.

8. Regulate the heat under the canner to maintain a steady pressure at or slightly above the recommended pressure. Be sure to adjust pressure for altitudes over 1,000 feet if using a weighted gauge canner, or over 2,000 feet with a dial gauge canner, as indicated in each of the following instructions.

> If at any time the pressure goes below the recommended level, bring the canner back to pressure by increasing the heat and begin timing the process over from the beginning, using the original processing time.

9. When the timed process is complete, turn off the heat and remove the canner from heat. Let the canner cool naturally; do not force cooling with cold water or by opening the vent port.
10. After the canner is completely depressurized, remove the weight from the ventport or open the petcock. Wait 10 minutes to help the jar lids to seal. Then unfasten the canner lid and remove it with the underside away from you so that steam does not burn your face.
11. Using a jar lifter, remove jars from the canner without tilting them (Figure 2).

Cooling jars

Carefully place the jars on clean towels or a cooling rack, leaving 1 inch of space between each (Figure 3). Avoid placing jars on a cold surface or in a cold draft. Let jars sit undisturbed for 12 to 24 hours. Do not touch the rings or lids until the jars are completely cooled.

Photo: Jeanne Brandt, © Oregon State University

Figure 3. Place the jars on clean towels or a cooling rack, leaving 1 inch of space between each jar.

Testing for seal

When the jars are cool to the touch (about 12 hours), test each for a seal. Jars with flat, metal lids are sealed if:

1. The lid is dipped down in the center.
2. The lid does not move when pressed down.
3. Tapping the center of lid with a spoon gives a clear, ringing sound.

Reprocessing

If a jar is not sealed, refrigerate or freeze the contents or reprocess within 24 hours of the initial processing. To reprocess, use a new lid and process for the full raw-pack time. Foods that were under-processed or improperly processed and kept over 24 hours, should be destroyed.

Storing

Remove lid rings. Wipe jars. Label with the date, contents, and processing information. Store jars in a cool, dark, dry location.

Instructions

Salmon, trout, steelhead, and other fish, except tuna

These instructions are for plain, raw fish. To can smoked fish, see PNW 450 *Canning Smoked Fish at Home*.

1. Bleed and eviscerate fish immediately after catching (never more than 2 hours after they have been caught). Chill the cleaned fish immediately and keep on ice until you are ready to can.
2. If the fish is frozen, thaw completely in the refrigerator before canning.
3. Before you can, remove the head, tail, and fins. Wash fish carefully in cold water.
4. Split fish lengthwise. Cut into lengths suitable for jars. (About ¾ pound of filleted fish will fill one pint jar.) The bones can be left in and the skin can be left on for canning, or they can be removed (Figure 4). For halibut, remove the bones and skin.
5. Pack fish tightly into hot half-pint or pint jars, leaving 1-inch headspace. If desired, add 1 teaspoon salt per pint. Do not add liquids.
6. Wipe rims of jars with a paper towel dampened with vinegar. Adjust lids.
7. Process in a pressure canner as follows:

Process time for *fish* in a *dial-gauge* pressure canner

Style of pack	*Jar size*	*Process time*	*Canner pressure (PSI) at an altitude of (feet)*			
			0–2,000	2,001–4,000	4,001–6,000	6,001–8,000
Raw	Half-pints or pints	100 min	11 lb	12 lb	13 lb	14 lb

Process time for *fish* in a *weighted-gauge* pressure canner

Style of pack	*Jar size*	*Process time*	*Canner pressure (PSI) at an altitude of (feet)*	
			0–1,000	Above 1,000
Raw	Half-pints or pints	100 min	10 lb	15 lb

Photo: Jeanne Brandt, © Oregon State University

Figure 4. Salmon, trout, steelhead, and other fish (except tuna) can be canned with or without the skin on.

Tuna

1. You may can tuna either raw or precooked. Precooking removes most of the oil that tends to have a strong flavor; however, many people find it easier to can the tuna raw in its own juices.
2. When you can raw tuna, it is easier to fillet the fish when it is partially frozen. You can skin raw tuna before or after filleting. It is not necessary to remove the viscera before filleting.

> Note: If you choose to precook the tuna before canning, remove viscera and wash fish well in cold water. Allow blood to drain from the cavity. Place cleaned tuna belly down on a rack or metal tray at the bottom of a large baking pan. Bake at 250°F for 2½ to 4 hours, depending on size; or bake at 350°F for about 1 hour. In place of baking, tuna may be steamed for 2 to 4 hours. The internal temperature of the fish should reach 165°F to 175°F. Refrigerate the fish overnight to firm the meat.

3. For either raw or precooked tuna, peel off the skin with a sharp knife. Scrape the surface lightly to remove blood vessels and any other discolored flesh.
4. Separate the fish into quarters by cutting meat away from the bones. Pull off and cut out all bones and fin bases. Scrape and cut out all of the very dark flesh. The dark flesh has a stronger flavor and can affect the delicate tuna flavor.

Photo: Susan Gravens, Douglas County (OR) Master Food Preservers

Figure 5. For tuna, cut quarters crosswise with a sharp knife into lengths suitable for jars.

5. With a sharp knife, cut quarters crosswise into lengths suitable for jars (Figure 5). (About ¾ pound of filleted fish will fill a pint jar.) Pack pieces into hot half-pint or pint jars, pressing down gently to make a solid pack. Leave 1-inch headspace.
6. For raw pack tuna, no additional liquid is needed. For precooked tuna, add vegetable oil or water, leaving 1-inch headspace. Salt is optional. If desired, add ½ teaspoon salt per half pint or 1 teaspoon salt per pint.
7. Wipe rims of jars with a paper towel dampened with vinegar. Adjust lids.
8. Process in a pressure canner as follows:

Process time for *tuna* in a *dial-gauge* pressure canner

Style of pack	*Jar size*	*Process time*	*Canner pressure (PSI) at an altitude of (feet)*			
			0–2,000	2,001–4,000	4,001–6,000	6,001–8,000
Described above	Half-pints or pints	100 min	11 lb	12 lb	13 lb	14 lb

Process time for *tuna* in a *weighted-gauge* pressure canner

Style of pack	*Jar size*	*Process time*	*Canner pressure (PSI) at an altitude of (feet)*	
			0–1,000	Above 1,000
Described above	Half-pints or pints	100 min	10 lb	15 lb

Clams, whole

1. Keep live clams cold or on ice until you are ready to can.
2. Scrub shells and then steam for 5 minutes. Open shells, remove meat, and save the juice.
3. Wash meat in a weak salt brine consisting of 1½ to 3 tablespoons salt per gallon of water (Figure 6).
4. Boil meat for 2 minutes in boiling water containing 2 tablespoons lemon juice or ½ teaspoon of citric acid per gallon of water. Heat the reserved clam juice to boiling.
5. Drain meat and pack loosely into hot half-pint or pint jars, leaving 1-inch headspace. Pour hot juice over clams. Add boiling water, if needed, leaving 1-inch headspace. Remove bubbles.
6. Wipe rims of jars with a paper towel dampened with vinegar. Adjust lids.
7. Process in a pressure canner as follows:

Process time for *whole clams* in a *dial-gauge* pressure canner

Style of pack	*Jar size*	*Process time*	*Canner pressure (PSI) at an altitude of (feet)*			
			0–2,000	2,001–4,000	4,001–6,000	6,001–8,000
Hot	Half-pints	60 min	11 lb	12 lb	13 lb	14 lb
Hot	Pints	70 min	11 lb	12 lb	13 lb	14 lb

Process time for *whole clams* in a *weighted-gauge* pressure canner

Style of pack	*Jar size*	*Process time*	*Canner pressure (PSI) at an altitude of (feet)*	
			0–1,000	Above 1,000
Hot	Half-pints	60 min	10 lb	15 lb
Hot	Pints	70 min	10 lb	15 lb

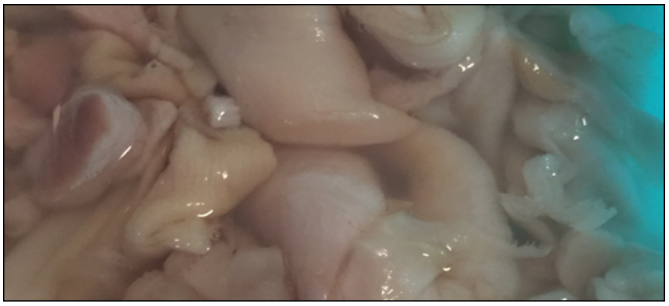

Photo: Terri Emrich, Clark County (WA) Master Food Preservers

Figure 6. Wash clam meat in a weak salt brine.

Clams, minced

1. Follow steps 1 through 4 for whole clams.
2. Drain blanched meat and grind, using a meat grinder or food processor (Figure 7).
3. Pack 4 ounces (about ¾ cup) into hot half-pint jars or 7 ounces (about 1½ cups) into hot pint jars, leaving 1-inch headspace. Cover with hot clam juice. Add boiling water, if necessary, leaving 1-inch headspace. Remove bubbles.
4. Wipe rims of jars with a paper towel dampened with vinegar. Adjust lids.
5. Process in a pressure canner as follows:

Process time for *minced clams* in a *dial-gauge* pressure canner

Style of pack	*Jar size*	*Process time*	*Canner pressure (PSI) at an altitude of (feet)*			
			0–2,000	2,001–4,000	4,001–6,000	6,001–8,000
Hot	Half-pints	60 min	11 lb	12 lb	13 lb	14 lb
Hot	Pints	70 min	11 lb	12 lb	13 lb	14 lb

Process time for *minced clams* in a *weighted-gauge* pressure canner

Style of pack	*Jar size*	*Process time*	*Canner pressure (PSI) at an altitude of (feet)*	
			0–1,000	Above 1,000
Hot	Half-pints	60 min	10 lb	15 lb
Hot	Pints	70 min	10 lb	15 lb

Photo: Terri Emrich, Clark County (WA) Master Food Preservers

Figure 7. Minced clams ready to be put in jars.

Photo: Lynn Ketchum, © Oregon State University

Figure 8. Keep crab alive and on ice until you are ready to can.

Crab

Crab meat canned according to the following procedure may have a distinctive acidic flavor; freezing may be the preferred method of preservation.

You may cook crab either whole or in sections before you can. Bleeding live crab in sections before cooking may minimize darkening.

1. Keep live crabs on ice until ready to can (Figure 8). Wash crabs thoroughly, using several changes of cold water.
2. Simmer crabs 20 minutes in water containing ¼ cup of lemon juice and 2 tablespoons of salt (or up to 1 cup of salt, if desired) per gallon.
3. Cool in cold water, drain, remove back shell, then remove meat from body and claws.
4. Soak meat 2 minutes in cold water containing 2 cups of lemon juice or 4 cups of white vinegar, and 2 tablespoons of salt (or up to 1 cup of salt, if desired) per gallon.
5. Drain and squeeze meat to remove excess moisture.
6. Fill half-pint jars with 6 ounces of meat and pint jars with 12 ounces, leaving 1-inch headspace.
7. Add up to ½ teaspoon of citric acid or 2 tablespoons of lemon juice to each half-pint jar, or add 1 teaspoon of citric acid or 4 tablespoons of lemon juice per pint jar.
8. Add hot water, leaving 1-inch headspace. Remove bubbles.
9. Wipe rims of jars with a paper towel dampened with vinegar. Adjust lids.
10. Process in a pressure canner as follows:

Process time for *crab* in a *dial-gauge* pressure canner

Style of pack	*Jar size*	*Process time*	*Canner pressure (PSI) at an altitude of (feet)*			
			0–2,000	2,001–4,000	4,001–6,000	6,001–8,000
Described above	Half-pints	70 min	11 lb	12 lb	13 lb	14 lb
Described above	Pints	80 min	11 lb	12 lb	13 lb	14 lb

Process time for *crab* in a *weighted-gauge* pressure canner

Style of pack	*Jar size*	*Process time*	*Canner pressure (PSI) at an altitude of (feet)*	
			0–1,000	Above 1,000
Described above	Half-pints	70 min	10 lb	15 lb
Described above	Pints	80 min	10 lb	15 lb

Oysters

1. Keep live oysters cold until ready to can. Wash shells and steam to open or heat 5 to 7 minutes in an oven preheated to 400°F. Cool briefly in ice water. Remove meat.
2. Wash meat in water containing ½ cup salt per gallon.
3. Drain meat and pack into hot half-pint or pint jars. Salt is optional. Add ¼ teaspoon per half pint or ½ teaspoon per pint, if desired. Cover with boiling water, leaving 1-inch headspace. Remove bubbles.
4. Wipe rims of jars with a paper towel dampened with vinegar. Adjust lids.
5. Process in a pressure canner as follows:

Process time for *oysters* in a *dial-gauge* pressure canner

Style of pack	*Jar size*	*Process time*	*Canner pressure (PSI) at an altitude of (feet)*			
			0–2,000	2,001–4,000	4,001–6,000	6,001–8,000
Described above	Half-pints or pints	75 min	11 lb	12 lb	13 lb	14 lb

Process time for *oysters* in a *weighted-gauge* pressure canner

Style of pack	*Jar size*	*Process time*	*Canner pressure (PSI) at an altitude of (feet)*	
			0–1,000	Above 1,000
Described above	Half-pints or Pints	75 min	10 lb	15 lb

Shrimp

1. Remove heads as soon as you catch shrimp. Chill until you are ready to can.
2. Wash and drain shrimp.
3. Cook shrimp 8 to 10 minutes in boiling acidic brine (¼ to 1 cup salt and 1 cup vinegar per gallon of water). Rinse in cold water and drain.
4. Peel shrimp.
5. Pack into hot half-pint or pint jars, leaving 1-inch headspace. Cover with boiling salt brine (1 to 3 tablespoons salt per gallon of water). Remove bubbles.
6. Wipe rims of jars with a paper towel dampened with vinegar. Adjust lids.
7. Process in a pressure canner as follows:

Process time for *shrimp* in a *dial-gauge* pressure canner

Style of pack	*Jar size*	*Process time*	*Canner pressure (PSI) at an altitude of (feet)*			
			0–2,000	2,001–4,000	4,001–6,000	6,001–8,000
Described above	Half-pints or pints	45 min	11 lb	12 lb	13 lb	14 lb

Process time for *shrimp* in a *weighted-gauge* pressure canner

Style of pack	*Jar size*	*Process time*	*Canner pressure (PSI) at an altitude of (feet)*	
			0–1,000 ft	Above 1,000 ft
Described above	Half-pints or Pints	45 min	10 lb	15 lb

Before eating your canned seafood

As you select each jar for use, examine it for signs of spoilage. With the jar at eye level, look for streaks of dried food on the outside of the jar. Inside the jar, look for cloudy canning liquid, rising air bubbles, or any unnatural color. When opening the jar, watch for spurting liquid or cotton-like mold growth on food surfaces or the underside of lid. Smell for unnatural or off odors. Never taste food from a jar with an unsealed lid or with food that shows signs of spoilage.

Carefully discard any jar of spoiled food to prevent possible illness to you, your family, or your pets. Spoiled, low-acid foods should be treated as having produced botulinum toxin and handled in one of two ways:

1. If the suspect jars are still sealed, write on the jar POISON DANGER: DO NOT EAT. Place the jars in a heavyweight, plastic garbage bag. Close the bag and place it in a regular trash container or dispose of it in a nearby landfill.
2. If the suspect jars are unsealed, open, or leaking, they should be detoxified before disposal.

Detoxification process

Wear rubber or heavy plastic gloves when handling suspect foods and cleaning up. Remove the jar lids and carefully place the suspect jars on their sides without splashing (along with the lids) in a large pot. Wash your gloved hands well. Carefully add water until the level is 1 inch above the jars. Put a lid on the pot and heat the water to boiling. Boil for 30 minutes to detoxify the food. Cool and discard the containers, lids and food in the trash or dispose in a nearby landfill.

Spray or wet contaminated surfaces and equipment with a household chlorine bleach solution (1 part unscented 5% to 6% sodium hypochlorite bleach to 5 parts clean, room-temperature water) and let stand for 30 minutes. Wipe up treated spills with paper towels and put them in a plastic bag before discarding in the trash. Repeat the process and then rinse all surfaces. Finally, thoroughly wash all detoxified surfaces and items. Discard gloves when the cleaning process is complete.

If the food shows no signs of spoilage

An invisible toxin can form if canning instructions have not been followed exactly. Heating canned fish before serving gives an extra margin of safety. There are two ways to destroy botulinum toxin. One is to boil canned seafood for 10 minutes on the stovetop. The other is to heat home-canned fish in the oven, using the instructions below. Oven heating may be better for most uses because it can prevent texture changes in the fish.

Oven heating fish for safety

- Open the jar of fish and examine it for spoilage as described above. Wash the lid before discarding or reusing it on the opened jar.
- Insert a meat thermometer upright into the center of the jar. The tip should be at the approximate center of the fish.
- Cover the jar loosely with foil and place in an oven preheated to 350°F.
- Remove the jar from the oven when the internal temperature of the fish reaches 185°F. It will take about 30 to 35 minutes to reach this temperature.
- Let the jar stand at room temperature for about 30 minutes. This will let the temperature become uniform throughout the jar.
- Serve the fish hot or refrigerate immediately for later use.
- If you prepare canned fish in a casserole, bake at 350°F and check the temperature at the end of the cooking time, making sure the internal temperature of the product has reached 185°F.

Frequently asked questions

Is it safe to can shellfish that show no sign of life?

It is safe but not advisable. Although any harmful microorganisms and toxins would be destroyed during processing, the quality of the product most likely would be poor. For example, if crabs die before cooking, the meat may look off-color after canning.

To get the best quality product, raw shellfish (oysters, clams, and mussels in the shell) should be alive until you can them. Look for tightly closed shells. If the shells are gaping open or do not close when you tap them or put them in cold water, discard the shellfish.

Is it safe to process seafood in a boiling water canner?

No. The temperature must be above the boiling point of water to destroy *Clostridium botulinum* spores. If you do not process seafood in a pressure canner, these spores will grow and produce the toxin that causes botulism.

What causes canned crab to darken?

Darkening is caused by changes in blood pigments. Canned crab will not be as light in color as fresh crab. However, you can keep the color as light as possible by adding acid (vinegar or lemon juice) to the cooking water or to the packed jars before processing.

Another way to minimize darkening is to “bleed” live crab before canning by removing the backs, cleaning away the viscera and gills, and soaking the clusters of legs (sections) in running water to remove blood.

Is it safe to leave salt out of canned seafood?

Yes. Salt is added only as a flavoring. Add an amount that suits your taste.

Glass-like crystals sometimes form in canned salmon or tuna. Are they harmful?

No. These crystals of magnesium ammonium phosphate are safe to eat. There is no way for the home canner to prevent their formation, but they usually dissolve when heated.

What about canning smoked oysters or clams?

No safe processing times have been determined for canning smoked shellfish. It can be frozen instead.

Can previously frozen fish be canned?

Frozen fish may be canned. Before canning, thaw the packages of frozen fish by placing them in the refrigerator for at least 24 hours for every 5 pounds of weight, or by submerging them under cold water and changing the water every 30 minutes until thawed. Thawing frozen fish in a microwave is not suggested.

Where can I find additional information?

For additional information on preserving fish and other seafood, see these Extension publications:

- PNW 238 *Smoking Fish at Home Safely* (https://catalog.extension.oregonstate.edu/pnw238)
- PNW 450 *Canning Smoked Fish at Home* (https://catalog.extension.oregonstate.edu/pnw450)
- PNW 586 *Home Freezing of Seafood* (https://catalog.extension.oregonstate.edu/pnw586)
- PNW 183 *Pickling Fish and Other Aquatic Foods for Home Use* (https://catalog.extension.oregonstate.edu/pnw183)

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Revised by Jeanne Brandt, Extension family and community health educator and professor, Washington County; original publication by Carolyn A. Raab, former Extension food and nutrition specialist, professor, and registered dietitian; both of Oregon State University. Information in this publication, which is based on U.S. Department of Agriculture recommendations, was reviewed by Extension specialists in food and nutrition at Washington State University, and the University of Idaho.

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Revised November 2011. Revised November 2016.