

Sea Change

THE SEAFOOD WE EAT TODAY HAS AN ENORMOUS IMPACT ON OUR HEALTH AND THE FUTURE OF OUR OCEANS. A LEADING SCIENTIST MAKES A CASE FOR CHANGING OUR TASTES AND THREE TOP CHEFS SERVE UP DELICIOUS SOLUTIONS.

BY CARL SAFINA | RECIPES BY JOHN ASH, EMERIL LAGASSE & BARTON SEAVER

FOOD PHOTOGRAPHY BY KEN BURRIS

The future of fish looks bright here in the Channel Islands National Park, off Santa Barbara, California, a protected area, where a school of sardines swims amid kelp. Parks like this have allowed Pacific sardines, a fast-reproducing fish, to rebound to the point where they are sustainable.

The weekend after Thanksgiving, I steer my boat, *First Light*, out of the harbor knowing this will be my last fishing trip of the year. It's become a tradition. What my partner, Patricia, and I seek will provide reason enough to give abundant thanks.

Off the very tip of Long Island, migrating ducks and loons enliven the sea's wintery surface. Already a few seals from the north are appearing. Gannets on long wings have come from coastal Canada following the same prey that we are after today, and we watch the birds carefully. When I see them raining into the sea like white missiles, I turn the wheel toward them.

They're all here for the same reason I am: the strong currents keep this place awash in plankton, enriching the whole food chain, concentrating wildlife of all kinds.

As soon as I drop a line, I will become part of this complex web of interdependence—that's what I most love about being here.

Today, though, the fish we pursue are different from what you might expect or what I would have sought several years ago. I've fished these waters since I was a teenager in the 1970s, and I've seen the ocean change. The big offshore fish—the swordfish and sharks I once thrilled to see, catch and eat—are now so scarce I just don't feel good about hooking them anymore. U.S. fishermen now often catch less than 20 percent of the bluefin tuna they're allowed because they can't find enough to fill their quotas. Hammerhead sharks—common when I started fishing offshore in the 1980s—are down about 90 percent and other shark populations are severely depleted too.

The dominoes often fall in unpredictable ways, upsetting the natural balance. As sharks off the East Coast have been fished down to

low levels, the stingrays they used to eat have proliferated. So much so that the rays now demolish shellfish beds, putting some clambers out of business.

In the North Atlantic, commercially important fish like cod and halibut declined by two-thirds between 1950 and 2000. Atlantic cod had been a source of riches for 500 years, but in the early 1990s Canada's cod fishery "collapsed" (declined more than 90 percent) due to overfishing, bringing long-term devastation to communities up and down the seaboard.

In 2006, an international team of scientists analyzing global fisheries data wrote in *Science* magazine, "*Accelerating loss of populations and species... is increasingly impairing the ocean's capacity to provide food, maintain water quality, and recover.*" They found that since 1950 about a third of all fished species worldwide have collapsed. They also noted that, at current rates, the rest would collapse by 2050.

Of all the things that are changing the ocean—including pollution, climate change and coastal development—fishing has brought the most profound change so far.

I've often said fishing is the last buffalo hunt—the last wild food we hunt and consume *en masse*. And it's worth recalling the cautionary tale of North America's most abundant bird, the passenger pigeon. In 1810, the pioneering ornithologist Alexander Wilson estimated one "almost inconceivable multitude" of pigeons as being roughly 240 miles long, containing 2.2 billion birds. After a century of being hunted for food, the last passenger pigeon on Earth died in the Cincinnati Zoo in 1914.

Though "there are plenty of fish in the *continued on page TK*



Ocean Institute and is working on a PBS series, Turning the Tide, about food and the environment. When we asked Seaver what type of seafood he would like to include in a recipe for EATING WELL, he suggested the humble canned sardine. He said, "Sustainability isn't just about the oceans—it's about sustainability for people. Anyone can jump in their SUV, drive to Walmart and buy a can of sardines. I love that! It needs to be accessible and easy." We think Seaver has truly elevated the canned sardine with this fresh-tasting and simple appetizer.

Tomato Toast with Sardines & Mint

H X W H H H

MAKES: 12 toasts

ACTIVE TIME: 15 minutes | TOTAL: 30 minutes

TO MAKE AHEAD: Cover and refrigerate the sardine mixture (Step 2) for up to 2 days.

Washington, D.C.-based chef **BARTON SEAVER** *is a passionate advocate for the health of the oceans. He's a fellow with the Blue*

- 1 4-ounce can boneless, skinless sardines packed in olive oil, preferably smoked
- 2 tablespoons finely chopped fresh mint
- 2 teaspoons extra-virgin olive oil
- 1/8 teaspoon salt
- 3 slices multigrain bread or 12 slices baguette, preferably whole-grain
- 1/2 medium ripe tomato
- 1 tablespoon very thinly sliced yellow onion

1. Preheat oven to 350°F.

2. Flake sardines with a fork into a mixing bowl. (The pieces should not be mashed, but should be no bigger than a dime.) Add mint, oil and salt; toss gently to combine.

3. If using whole slices of bread, cut off the crusts and cut each into four triangles. Place the triangles or baguette slices on a baking sheet and bake until crispy and golden brown, 12 to 14 minutes. As soon as you remove them from the oven, rub each slice with the cut side of the tomato. As you progress, the tomato will break down until only the skin remains; discard any remaining tomato.

4. Top each toast with about 1 1/2 teaspoons of the sardine mixture. Top the sardine mixture with a couple of onion slices and serve immediately.

PER TOAST: 41 calories; 2 g fat (0 g sat, 1 g mono); 5 mg cholesterol; 3 g carbohydrate; 0 g added sugars; 3 g protein; 1 g fiber; 113 mg sodium; 63 mg potassium.

PHOTOGRAPHY BY: Ralph A. Cleverger/Corbis (previous spread), Katie Scoops (left).

One fish that you should be eating (and probably are not) is the humble sardine. Naturally packed with more omega-3s and vitamin D than just about any other food, the sardine is a nutritional powerhouse. Canned sardines make an elegant yet inexpensive appetizer when served with fresh mint, tomato and onion on toast.





Cioppino

H♥H

MAKES: 10 servings, about 2¾ cups each
ACTIVE TIME: 1¼ hours | TOTAL: 1¼ hours
TO MAKE AHEAD: Cover and refrigerate the strained broth (Step 1) for up to 2 days.
COST PER SERVING: under \$4.50

Cioppino is a fish stew traditionally made by Italian fishermen who settled in the North Beach/Fisherman's Wharf section of San Francisco. It was originally made on fishing boats with whatever fish were at hand. Wine was always an important component of the dish and red was used as often as white—it's all about what you prefer. This cioppino comes to us from California chef and cooking teacher JOHN ASH, who has been an advocate for sustainable-food issues for years and is currently on the board of advisors of Seafood Watch—the advocacy arm of the Monterey Bay Aquarium. Ash chose a variety of shellfish for this recipe, all of which are on the Best Choices list from Seafood Watch (see page TK).

- ¼ cup extra-virgin olive oil
- 3 cups chopped onions
- 3 tablespoons chopped garlic
- ⅔ cup chopped celery or fennel
- 6 cups fish stock (see Tip, right)
- 1 28-ounce can whole peeled or diced tomatoes
- 2½ cups light- to medium-bodied red wine, such as Pinot Noir or Merlot
- 2 large bay leaves
- 1 tablespoon chopped fresh oregano or 2 teaspoons dried
- 2 teaspoons fennel seed
- ¼ teaspoon crushed red pepper, or to taste
- ½ teaspoon salt
- Freshly ground pepper to taste

- 5 thick slices sourdough bread, halved
- 2 tablespoons garlic-flavored olive oil (see Tip, page TK)
- 2 pounds shellfish, such as oysters, mussels and/or clams (see box)
- 1 pound dry sea scallops (see box)
- 1 pound raw shrimp (21-25 per pound), peeled and deveined (see box)
- 1 2- to 3-pound Dungeness crab, steamed, cleaned and cut into sections (see box), or 8 ounces lump crabmeat, drained, any shells removed
- ¼ cup chopped fresh basil and/or parsley

1. Heat oil in a large, deep soup pot or Dutch oven over medium heat; add onions, garlic, and celery (or fennel). Cook, stirring, until the vegetables are lightly browned, 7 to 9 minutes. Add stock, tomatoes, wine, bay leaves, oregano, fennel seed and crushed red pepper. Bring to a boil. Reduce heat to a simmer and cook, partially covered, for 20 minutes. Strain, discarding solids, and return the broth to the pot. Season with salt and pepper.
2. Meanwhile, brush bread with garlic oil. Toast in a toaster oven or under the broiler until golden brown.
3. Bring the broth to a gentle boil. Add shellfish, scallops and shrimp and cook, gently stirring, until the shellfish just begin to open and the shrimp are no longer opaque, about 4 minutes. Add crab, cover and cook until heated through, about 2 minutes. Discard any unopened shellfish.
4. To serve, place a slice of toasted bread in the bottom of each soup bowl and ladle the cioppino over it. Sprinkle with basil (and/or parsley).

PER SERVING: 377 calories; 11 g fat (2 g sat, 7 g mono); 112 mg cholesterol; 23 g carbohydrate; 0 g added sugars; 34 g protein; 1 g fiber; 691 mg sodium; 533 mg potassium. NUTRITION BONUS: Folate (26% daily value), Iron (23% dv), Magnesium & Zinc (21% dv), Potassium (15% dv).

TIP: Look for fish stock near other canned or boxed broths in the soup aisle or in the freezer section of the seafood department. Or use reduced-sodium chicken broth instead. To add seafood flavor to the chicken broth, peel and devein the shrimp and add the shells to the broth in Step 1 when you add the wine and tomatoes.

SEAFOOD SAVVY

Shopping & Prepping Tips

Shellfish

To prep shellfish (oysters, mussels and clams), use a stiff brush to scrub the shells under running water. Discard any with broken shells or any whose shells remain open after you tap them lightly. Some mussels have a black fibrous “beard”—pull it off before cooking.

Scallops

Be sure to buy “dry” sea scallops, a Seafood Watch “Best Choice” (see page TK). “Wet” scallops, which have been treated with sodium tripolyphosphate (STP), are mushy and less flavorful. Some scallops will have a small white muscle on the side; remove it before cooking.

Shrimp

To peel shrimp, grasp the legs and hold onto the tail while you twist off the shell. To devein shrimp, use a paring knife to make a slit along the length of the shrimp. Under running water, remove the black digestive tract with the knife tip.

Dungeness Crab

Dungeness crab, also a Seafood Watch “Best Choice,” is abundant on the West Coast and is easy to find whole at many local markets there. If it's not at your market, check a local



warehouse store, such as Costco, or have it shipped direct to you from Pike Place Fish Market in Seattle (pikeplacefish.com). For convenience, ask your fishmonger to steam, clean and cut your crab into sections for you. Store the cooked crab on ice in the refrigerator until you're ready to use it (ideally no more than 8 hours after purchase). Learn how to steam, clean and section a whole Dungeness crab at eatingwell.com/go/crab.

PHOTOGRAPHY BY Est Alona (top left)



The fresh flavors of the sea come together in this easy cioppino, or stew, of sustainably caught fish seasoned with wine and fresh herbs. The shells of mussels, clams, oysters and crab actually add flavor to the stew and make it an impressive dish to serve.

Fresh, U.S.-caught shrimp taste best when given the lightest touch, as Emeril Lagasse suggests here with his delectable ceviche flavored with cucumbers, citrus fruits and chiles. A New Orleans native, Lagasse has helped the Gulf Coast improve its shrimp fisheries, many of which are still recovering since Hurricane Katrina.



Shrimp Ceviche

MAKES: 8 servings, about ½ cup each
ACTIVE TIME: 50 minutes | **TOTAL:** 2 hours 20 minutes
TO MAKE AHEAD: Prepare through Step 2 and refrigerate for up to 4 hours.

*Traditional ceviche consists of raw seafood tossed with an acidic marinade (think: citrus juice or vinegar) that “cooks” the fish. We cook the shrimp before marinating it. This recipe originally appeared on Emeril Green, **EMERIL LAGASSE**'s cooking show on Planet Green. Lagasse has his own brand of frozen*

wild American shrimp, which meet strict U.S. environmental standards. The shrimp taste sweet and “they just smell like the sea,” according to Emeril. Serve this with tostones (fried plantain chips) or tortilla chips. (Recipe courtesy of Emeril Lagasse, Martha Stewart Living Omnimedia, Inc.)

POACHING LIQUID

- 2 quarts water**
- ¼ cup kosher salt**

CEVICHE

- 1 pound raw shrimp (21-25 per pound; see box, page TK), peeled and deveined**
- Juice of 2 lemons**
- Juice of 2 limes**
- Juice of 2 oranges**
- 1 cup diced seeded peeled cucumber (¼-inch dice)**
- ½ cup finely chopped red onion**
- 2 serrano chiles, seeded and finely chopped**
- 1 cup diced seeded tomato**
- 1 avocado, chopped into ½-inch pieces**

- 1 tablespoon roughly chopped cilantro leaves, plus more leaves for garnish**
- ¼ cup extra-virgin olive oil**
- ¼ teaspoon kosher salt**

1. Combine water and ¼ cup salt in a large saucepan; bring to a boil over high heat. Add shrimp and immediately turn off the heat. Let the shrimp sit until just cooked through, about 3 minutes. Transfer to a cutting board until cool enough to handle, about 10 minutes.

2. Chop the shrimp into ½-inch pieces and place in a medium nonreactive bowl (see Tip, page TK). Add lemon, lime and orange juice. Stir in cucumber, onion and chiles. Refrigerate for 1 hour.

3. Stir tomato, avocado, chopped cilantro, oil and ¼ teaspoon salt into the shrimp mixture. Let stand at room temperature for 30 minutes before serving. Garnish with cilantro leaves, if desired.

PER SERVING: 189 calories; 12 g fat (2 g sat, 8 g mono); 86 mg cholesterol; 9 g carbohydrate; 0 g added sugars; 13 g protein; 2 g fiber; 229 mg sodium; 394 mg potassium. **NUTRITION BONUS:** Vitamin C (48% daily value).

FISHING FOR ANSWERS

You are at the fish market faced with a variety of choices. What do you do?

○ **Carry a Pocket Guide.** Carl Safina's Blue Ocean Institute (blueocean.org) and Seafood Watch (seafoodwatch.org) have handy wallet-size guides for seafood and sushi that you can download or order.

○ **Ask the Fish Phone!** Text 30644 with the word "fish" followed by a space and the seafood you are considering. In about 10 seconds you will get up-to-date information from the Blue Ocean Institute, which has facts and sustainability ratings for more than 90 species of seafood.

○ **Look for the MSC blue eco label.** The independent, nonprofit Marine Stewardship Council (MSC) certifies wild fisheries that are well-managed and sustainable. At present it does not look at farmed fish.



continued from page 4 sea—or were—abundance doesn't make them immune from overexploitation. But the same researchers who warned of a total fisheries collapse before 2050 added that "at this point, these trends are still reversible," if we improve management and declare ample no-fishing zones where fish can reproduce. The buffalo herds are gone and the passenger pigeon has passed—but there remains hope for the ocean.

PLEDGING TO EAT RIGHT

This may take a sea change in how we eat. Last fall, more than two dozen top chefs, including Alton Brown, Rick Bayless, John Ash and Barton Seaver, pledged not to serve any fish on Seafood Watch's red or "avoid" list. That means no more farmed salmon. Goodbye to Chilean sea bass and red snapper. Orange roughy and monkfish are also off their menus. Walmart, which currently spends \$259 billion on sustainably sourced seafood, has pledged that it will purchase all wild-caught fish for the U.S. market from Marine Stewardship Council (MSC)-certified fisheries by 2011. It will also work with Global Aquaculture Alliance and Aquaculture Certification Council, Inc. (ACC) to certify that all foreign shrimp suppliers adhere to Best Aquaculture Practices standards in the U.S. Gradually, food-service giants, such as Sysco, The Compass Group and Aramark, are making the shift too.

Will it work?

It has before. In the late 1990s, when Atlantic swordfish reached an all-time low, environmental groups and high-profile chefs began working together to promote a ban on eating swordfish. They reduced demand enough to soften the price and bring commercial fishing groups to the bargaining table. Environmental groups also won a lawsuit to close fishing areas where juvenile swordfish congregate. Consequently, swordfish numbers are about 150 percent of what they were in the mid-1990s. The population is rebounding and may soon be sustainable again.

Around that same time, a conservation magazine asked me to create a list that evaluated popular seafood from most sustainable to least. Before that, a piece of fish was simply a piece of fish. You didn't think about it, you just ate it, like a piece of bread. Today that database has grown and spawned various regional sub-lists (*see Good Fish/Bad Fish, page 12*) making it easier for consumers to make the right choices.

And America's fisheries have gotten better, realizing that their own future livelihood is at stake. Though they still have problems, they also

have some of the better management rules in the world. U.S. fisheries must now be evaluated bi-annually, and since 2006 federal fishery managers have been required to establish annual catch limits that allow depleted populations to begin rebuilding. Better yet, they're required to end all overfishing in U.S. waters this year. Alaska, the state with the highest seafood landings, has perhaps the best-managed fisheries in the world with tight quotas, strict environmental regulations and close monitoring so that fisheries are closed before they exceed critical limits.

THE SIMPLEST, HEALTHIEST SOLUTION

When people ask me now what fish to eat, I pause. The answers can seem confusing: Atlantic cod is not sustainable but Pacific is. Alaskan salmon is fine. Farmed salmon—even organic—is not, as many salmon farms are infecting and threatening the wild species. Most domestic shrimp is caught in ways that limit by-catch of fish and sea turtles. Much of the shrimp caught overseas is not.

So my new rule of thumb is very, very simple: If a whole fish is small enough to fit on your dinner plate, it's probably a good choice for both the environment and your own health.

Here's why: smaller fish that are lower on the food chain tend to be abundant, fast-reproducing, and more resilient to fishing pressure. Bigger fish usually live longer, taking years to mature and begin breeding. Because they're near the apex of the food pyramid, there are fewer of them to begin with. So they're much more vulnerable to overfishing and easily depleted. And slow-growing, long-lived, late-maturing fish like sharks and big tunas can't just bounce back. Rebuilding will take time. And so far, we're not giving them much of a chance.

Consequently, though I used to love grilled mako steaks, I won't kill sharks anymore; it's not good for them, and just as importantly, eating them is not good for me. Most of the mercury people acquire gets into the environment from burning coal, but we usually get it into our bodies through eating seafood.

Most animals we eat are killed when they are young (6 weeks for a chicken) and have not accumulated that much mercury. By contrast, the large bluefin tuna we catch are 10 years old. Simply put, big, older fish accumulate more mercury than small and younger ones. Contaminants like mercury, pesticides, PCBs, and other metals and toxic chemicals aren't just passed along in the food chain; they accumulate and concentrate toward the top. Think of the ocean food chain as a simple food pyramid, with, say, a shark at the top, a large number of herring in the middle, and a vast horde of plank-

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THE BEST SOURCE OF OMEGA-3s

When researchers looked into why native Alaskans have such low incidence of heart disease, they discovered their high-fish diet might be the answer. Fish, seafood (including seaweed) and breast milk are the only significant natural dietary sources of docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA), omega-3 fats that promote heart health and may improve symptoms of inflammatory conditions like arthritis. The American Heart Association recommends eating fish high in omega-3s at least twice a week, and getting at least 250 mg per serving. The fish with the highest levels of omega-3s tend to be "oilier," cold-water fish, such as sardines (1,950 mg per 3-oz. serving), wild salmon (950 mg per 3-oz. serving) and even mussels (700 mg per 3-oz. serving). Farmed fish are often fed diets high in vegetable oil and usually have much lower levels of omega-3s.

GOOD FISH/BAD FISH

A number of environmental organizations have created lists that help identify fish that are sustainable and those that are not. In October 2009, Seafood Watch, the program run by the Monterey Bay Aquarium, combined data from leading health organizations and environmental groups to come up with the list “Super Green: Best of the Best”: seafood that’s good for you and good for the environment.

To make the list, fish must: a) have low levels of contaminants—below 216 parts per billion [ppb] mercury and 11 ppb PCBs; b) have at least 250 mg of omega-3s per 4-oz. serving; and c) come from a sustainable fishery, classified as a “Best Choice.” The complete “Super Green” list is below.

Many other options are on the program’s list of “Best Choices” (seafoodwatch.org) and receive high sustainability ratings from the Blue Ocean Institute (blueocean.org), which has more detailed information.

6 SUPER GREEN FISH TO SERVE

Albacore Tuna (troll- or pole-caught, from the U.S. or British Columbia)

Many tuna are high in mercury but albacore tuna—the kind of white tuna that’s commonly canned—gets a Super Green rating as long as (and this is the clincher) it is “troll- or pole-caught” in the U.S. or British Columbia. The reason: smaller (usually less than 20 pounds), younger fish are typically caught this way (as opposed to the larger fish caught on long lines). These fish have much lower mercury and contaminant ratings and those caught in colder northern waters often have higher omega-3 counts. The challenge: you need to do your homework to know how your fish was caught or look for the Marine Stewardship Council (MSC) blue eco label.

Mussels & Oysters (farmed)

Farmed mussels and oysters are good for you (a 3-oz. serving of mussels contains 700 mg of omega-3s and oysters pack 44 percent of the daily recommend daily values of iron). Better yet, they are actually good for the environment too. Both feed off the natural nutrients and algae in the water, which actually improves water quality. They can also act as natural reefs, attracting and providing food for other fish. One health caveat: Raw shellfish, especially those from warm waters, may contain bacteria that can cause illnesses.

Pink Shrimp (wild-caught, Oregon) & Spot Prawns (wild-caught, British Columbia)

Most shrimp are plentiful and reproduce quickly. But whether they are sustainably harvested and farmed is the big question. In an effort to reduce the by-catch caused by netting and prevent ocean floors from being scraped clean by dragging, the U.S. has strict regulations on farming and trawling. The best choices are wild-caught MSC-certified pink shrimp (aka cocktail shrimp) from Oregon or their larger sisters, spot prawns, also from the Pacific Northwest, which are caught by traps. Avoid: imported shrimp, farmed or wild.

Rainbow Trout (farmed)

Though lake trout are high in contaminants, nearly all the trout you will find in the market is rainbow trout. Here in the U.S., rainbow trout are farmed primarily in freshwater ponds and “raceways” where they are more protected from contaminants and fed a diet based on other fish in the form of fishmeal.

Salmon (wild-caught, Alaska)

To give you an idea of how well managed Alaska’s salmon fishery is, consider this: biologists are posted at river mouths to count how many wild fish return to spawn. If the numbers begin to dwindle, the fishery is closed before it reaches its limits, as was done recently with some Chinook fisheries. This close monitoring, along with strict quotas and careful management of water

quality, mean Alaska’s wild-caught salmon are both healthier (they pack 950 mg of omega-3s and carry few contaminants) and more sustainable than just about any other salmon fishery.

Sardines, Pacific (wild-caught)

The tiny, inexpensive sardine is making it onto many lists of superfoods and for good reason. It packs more omega-3s (1,950 mg!) per 3-oz. serving than salmon, tuna or just about any other food; it’s also one of the very, very few foods that’s naturally high in vitamin D. Many fish in the herring family are commonly called sardines. Quick to reproduce, Pacific sardines have rebounded from both overfishing and a natural collapse in the 1940s.

...AND 6 THREATENED FISH TO SAVE

A number of environmental organizations have also advocated taking many fish off the menu. The large fish listed below are just six examples we chose to highlight: popular fish that are both depleted and, in many cases, carry higher levels of mercury and PCBs. The Environmental Defense Fund has also posted health alerts on some of these fish at edf.org. Any fish with an asterisk (*) indicates levels of contaminants so high EDF recommends not eating it at all.

Bluefin Tuna*

In December the World Wildlife Fund put the bluefin tuna on its list of 10 threatened species, alongside the giant panda, tigers and leatherback turtles. Though environmental groups are advocating for protected status, the bluefin continues to command as much as \$177,000 a fish. Bluefin have high levels of mercury and carry an EDF health alert.

Chilean Sea Bass (aka Patagonian Toothfish)

Slow-growing and prized for its buttery meat, Chilean sea bass has been fished to near depletion in the cold Antarctic waters where they live. The methods used to catch them—trawlers and longlines—have also damaged the ocean floor and hooked albatross and other seabirds. At present, there is one well-managed fishery that is MSC-certified.

Groupers

High mercury levels in these giant fish have caused EDF to issue a health advisory. Groupers can live to be 40 but only reproduce over a short amount of time, making them vulnerable to overfishing.

Monkfish

This strange fish resembles a catfish in that it has whiskers and is a bottom dweller, but its light, fresh taste made it a staple for gourmets. The fish is recovering some after being depleted but the trawlers that drag for it also threaten the habitat where it lives.

Orange Roughy*

Like groupers, this fish lives a long life but is slow to reproduce, making it vulnerable to overfishing. As Seafood Watch puts it: “Orange roughy lives 100 years or more—so the fillet in your freezer might be from a fish older than your grandmother!” This also means it has high levels of mercury, causing EDF to issue a health advisory.

Salmon (farmed)*

Most farmed salmon (and all salmon labeled “Atlantic salmon” is farmed) are raised in tightly packed, open-net pens often rife with parasites and diseases that threaten the wild salmon trying to swim by to their ancestral spawning waters. Farmed salmon are fed fishmeal, antibiotics to combat the diseases and have levels of PCBs high enough to rate a health advisory from EDF. Recently, some inland closed-system coho farms have earned a Best Choice status from Seafood Watch. There is hope consumer pressure will encourage more farms to adopt better practices.

IS THAT FISH TOXIC?

All foods we eat contain some toxins—including mercury, PCBs and pesticides. These toxins originate on land (often released by industry or agriculture) and leach into the waterways, where mercury becomes even more toxic as it converts into methylmercury. These contaminants then accumulate up the food chain. The highest levels of toxins are in large fish, such as swordfish or sharks, wild freshwater fish, such as lake trout, and fish like striped bass that spawn in rivers near industrial or agricultural regions. Since high levels of mercury may harm an unborn baby or young child's developing nervous system, the Food and Drug Administration and the Environmental Protection Agency advise women who may become pregnant, pregnant women, nursing mothers and young children to avoid some types of fish and to choose those that are lower in mercury. To see a list of fish with a health advisory, visit edf.org or learn more at eatingwell.com/go/TK.

continued from page 12 tonic plants and animals at the base. (In real life, it's more complicated of course, with more steps.) The plant plankton absorb minute quantities of contaminants as they turn nonliving components of seawater into living cells. Think of the total of all the contaminants in all the plankton along the pyramid's base, and imagine it all concentrating into fewer herring and ultimately in the one big old shark. Basically, that's what happens.

The higher on the pyramid you eat, the more likely you'll be getting a larger portion of concentrated contaminants. Dining on plankton-eating herring is better than eating the shark that ate all those herring. Herring, anchovies, Atlantic mackerel, clams and oysters (small plankton-eaters) have among the lowest mercury concentrations; sharks and tunas (big fish-eaters) have among the highest. And even with farmed fish, smaller is better. Big, carnivorous fish must be fed smaller fish that have been caught in the ocean. Many of those nutrient-rich smaller fish that are turned into fishmeal—like herring and sardines—are healthy for people and would be better used as human food.

But what if everyone ate herring and sardines; wouldn't that further skew the foodweb? You'd think so, but not if we were to eat these nutrient-rich fish in place of some of the meats we currently consume. Consider this: right now, about a third of the world catch of those fish is fed to farmed fish, pigs and chickens. This is a great waste of potential human food, because several pounds of fish—edible, nutritious, delicious wild fish—must be fed to the farmed livestock in order to produce one pound of meat.

So, farmed freshwater fish that can be fed a vegetable-based diet, like tilapia or catfish, are better choices than large carnivorous fish. Better yet are farmed clams, oysters, and mussels, which require no feeding and actually filter the waters around them (that's how they eat), helping improve water quality and helping prevent plankton from overproducing and then crashing, which can devastate oxygen availability and kill many other creatures.

CATCH OF THE DAY

By the time I reach the diving birds, the sonar shows dots representing schools of fish near the bottom in 50 feet of water. Patricia and I have two fishing rods, each rigged with a row of six tiny lures the length of my thumbnail. Here in the same ocean where I've decked big tuna and battled bruising sharks and fought 40-pound striped bass, this is decidedly—and deliciously—small game fishing.

Our sinkers mail the rigs to the bottom. I feel a bump and my rod tip dips, dips more, then more. Pat's already reeling up. And we've struck silver all right. Into view come the wiggling, shimmering shapes we're looking for. I lift six herring, each about 10 inches long, over the side and into the cooler. Patricia has four herring and two mackerel about the same size. At this rate, it doesn't take long to get about five dozen before we hang up our rigs and head for the dock.

We'll smoke some of these, cook some up fresh, and fillet and pickle most of them. They'll show up on our tables, as snacks and in gift jars. For weeks they'll give us good food and a good story. ■

*Marine biologist Carl Safina is the founder of the Blue Ocean Institute, author of *Song for the Blue Ocean*, and winner of the Pew Scholar's Award in Conservation and Environment, the MacArthur Prize and the Lannan Literary Award.*