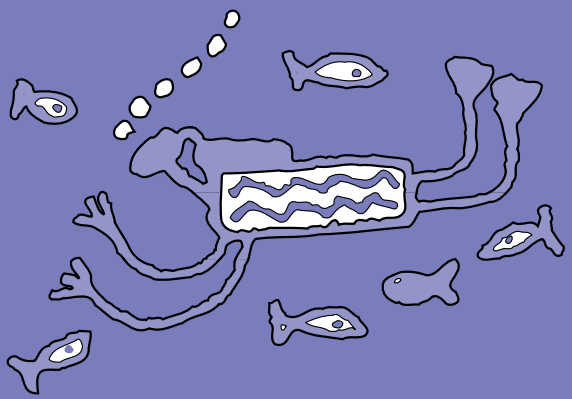
SEAFOOD SOLUTIONS

A CHEF'S GUIDE TO ECOLOGICALLY RESPONSIBLE FISH PROCUREMENT



by Francine Stephens

Chefs Collaborative in partnership with Environmental Defense

for whatever we lose (like a you or a me)

it's always ourselves we find in the sea

*e.e.cummings

Here are solutions to overcome our discouragement around the state of the world's oceans that we as chefs can readily apply to our fish procurement.

Fishing is the single greatest threat to the diversity of ocean life. *US National Academy of Sciences*

SEAFOOD SOLUTIONS

A CHEF'S GUIDE TO ECOLOGICALLY RESPONSIBLE FISH PROCUREMENT

Contents:

Acknowledging the leadership role of chefs in agricultural matters, Chefs Collaborative, in partnership with Environmental Defense, presents *Seafood Solutions* as a way for all of us to become better participants in a sustainable food system.

As chefs, our restaurants are our homes. As members of the *Chefs Collaborative*, we are dedicated to managing our "homes" responsibly. At the very root of economics, Wendell Berry observes in *Home Economics*, is stewardship, or responsible household management. This is why we have applied ecological principles to the way we do business with our produce, buying locally grown, seasonally fresh and whole or minimally processed ingredients. Although we have focused less on the sources of our seafood, a recent study by the Stanford Graduate School of Business informs us that 67% of seafood is sold in restaurants. Recognizing both our influence as chefs and that our oceans' fish supply provide a vital source of food—as well as social, cultural, ecological, and economic well-being—it is time to extend the *Chefs Collaborative* principles towards the world of seafood.

Our oceans' ecosystems are in peril. Many species are disappearing due in large part to unsustainable management practices which lead to overfishing, habitat destruction, and bycatch. An increasing percentage of seafood comes from fish farming, or aquaculture. Not the panacea it was originally intended to be, aquaculture has contributed to the oceans' high level of chemical and biological pollution, habitat destruction, and oceanwide protein loss. We know that in order to ensure a diversity of species for future generations, better management—on both the production and procurement end—must be achieved. It's now time to go further beneath the surface.

What is sustainable seafood? *Seafood Solutions* answers this question, as well as setting out principles, tips and resources for chefs whose goal is to ensure effective conservation, management and development of living aquatic resources. This handbook offers simple solutions for implementing change in your procurement of seafood.

GRASSROOTS ACTIVISM AT WORK

Satisfied by new limits on catching Atlantic swordfish, SeaWeb and the Natural Resources Defense Council (NRDC) have ended a two-year campaign for the ban on swordfish and released 700 chefs, grocery chains, and consumers from a pledge not to purchase swordfish.

The National Marine Fisheries Service announced plans to close more than 100,000 square miles of the Gulf of Mexico and Atlantic Ocean to longline fishing, which is used to catch swordfish and can snare endangered sea turtles. This is the second of two major campaign goals achieved by the group. "[Our] efforts sent a strong message to the government" said Lisa Speer, Senior Policy Analyst with NRDC, "[This] is a major victory for swordfish."

—*The New York Times, August 13, 2000*

WHAT IS

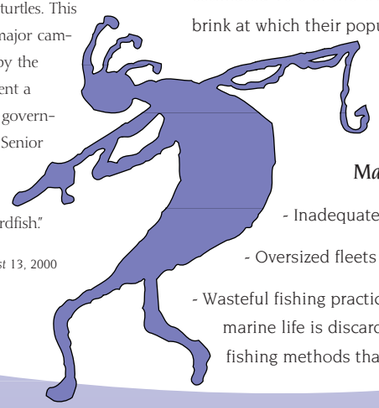
SUSTAINABLE SEAFOOD?

Sustainable Seafood refers to fish that are caught or farmed with consideration for the long term viability of individual marine species and for the oceans' ecological balance as a whole. See FISH PICKS *(pages 4-5) for exactly how to determine which species are sustainable.*

FISHING TO DEPLETION

Humans have historically considered the ocean, with its vast array of life forms, a boundless and eternal food source. It's difficult to fathom that our activities could impact a body of water that covers more than two-thirds of the Earth's surface.

Species depletion Fishing fleets are employing increasingly sophisticated technology to sate the appetites of a human population that's growing in numbers and affluence. As a result, the oceans are quickly being plucked bare. After an all-time peak in 1989, total annual seafood catches have declined, despite increased efforts by fishermen, according to Dr. Sylvia Earle, former chief scientist at the National Oceanic and Atmospheric Administration. At present, an estimated 70% of the world's commercially-fished species have been fished to or beyond the brink at which their populations can easily sustain themselves.



WHAT'S TO BLAME FOR THESE DECLINES?

Major causes are:

- Inadequate fisheries regulation and management.
- Oversized fleets fishing above sustainable capacities.
- Wasteful fishing practices. Approximately one quarter of all fished marine life is discarded each year because of non-selective fishing methods that capture non-targeted species.

- Habitat destruction by fishing methods that damage the ocean floor and by development of coastal wetlands where fish breed.

Quite simply, if we don't ease fishing pressures on these dwindling species, some of our favorite seafoods may not be around for us and future generations to enjoy.

WHY FISH FARMING IS NOT THE WHOLE SOLUTION

More than one-quarter of the seafood consumed in the world is farm-raised, not caught from the seas. Ideally, the adoption of fish farming, or aquaculture, could reduce fishing pressures on declining wild populations, allowing them to recover their numbers unhunted. In reality, however, some aquaculture practices further threaten wild fish.

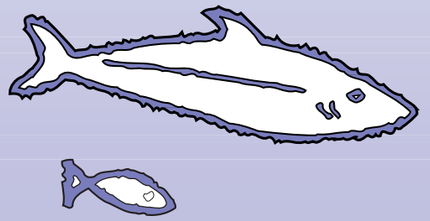
Ecological destruction Shrimp and salmon farms are constructed in or alongside waterways, where they destroy habitat, discharge waste, and may spread disease to wild populations. Shrimp farms have displaced miles of mangrove forests, whose salt water-resistant root systems are crucial nurseries for wild fish.

Protein loss Another disadvantage of fish farming is that raising carnivorous fish such as shrimp and salmon requires catching wild fish to sustain them, depriving ocean fish of food and sometimes resulting in a net loss of fish from the sea. It takes 3.1 pounds of wild-caught fish to raise one pound of farmed salmon.

Chemical and biological pollution Farmed fish frequently escape into waterways, polluting the gene pools of wild species such as the Atlantic salmon, now endangered due in part to interbreeding with farmed escapees. Recently-developed salmon that are genetically engineered to grow twice as fast as their natural counterparts could wreak havoc on wild populations if they escape into the wild. Some farms also release large amounts of untreated waste into surrounding waters.

"In the mid 1980s, I began to notice serious changes happening in my local seafood industry. Once abundant, salmon was growing scarce. At this time, I was working as a chef at a hotel in Portland. My seafood supplier asked me if I wanted to try farmed-raised salmon, which he could get for me whenever the wild salmon was out of season. With not much information, I gave it a try. Cutting the fish, I saw that it was turning my board orange. Also, I didn't care for the flavor. It was then that I began to ask questions. The more questions I asked, the more I realized most people didn't have the answers."

Greg Higgins, chef and owner of Higgins Restaurant & Bar, Portland, Oregon



In the next twenty years aquaculture will surpass capture fisheries in supply seafood to the world. The 1999 Annual Report on the U.S. Seafood Industry

" Eating with the fullest pleasure–pleasure, that is, that does not depend on ignorance–is perhaps the profoundest enactment of our connection with the world." *Wendell Berry*

Is it farmed or is it wild-caught?

FISH PICKS

YOUR **GUIDE** TO SELECTING SUSTAINABLE SEAFOOD

Begin the process of asking questions. While there are few species that will fit ALL the criteria mentioned, a good place to start is to select a fish that fits AT LEAST ONE. The more we use this information to aid in our seafood selections, the more sustainable our menus will be, and the more we will contribute to healthy ocean ecosystems.

IF IT'S FARMED:

Was it raised in a netpen or other potentially polluting system? Fish farms that discharge large amounts of untreated wastewater can pollute surrounding bodies of water with fish feces, farm chemicals, and other wastes. They may also spread parasites and disease, and may disrupt wild fish populations when farmed fish escape. Almost all farmed salmon are grown in netpens or cages that allow pollutants to flow directly intosurrounding coastal waters. Other aquaculture systems are more variable. Trout farms typically discharge large quantities of wastewater with low levels of pollutants. Catfish ponds are drained only about every five years, but then their waste is rarely treated. Most shrimp farms are in developing countries and do little to control pollution. In contrast, mollusks such as oysters, clams, scallops, and mussels are "filter-feeders" that actually clean the water they live in. Thus it's important to check that mollusks were grown in unpolluted waters. All fish labeled "Atlantic salmon" are now farmed, since wild Atlantic salmon populations are precipitously low.

Is it carnivorous or mostly vegetarian? At present, 15% of the global seafood is converted into fishmeal to feed farmed fish every year. In many aquaculture systems, the amount of wild-caught fishmeal outweighs the amount of farmed fish produced, resulting in a net loss of fish from the sea. In fact, it takes around three pounds of wild caught fish to grow one pound of shrimp or salmon. Species fed a mostly vegetarian diet, such as catfish and tilapia, are the best options if you are concerned about protein loss. Otherwise, stick to wild-caught Alaskan salmon or trap-caught spot prawns as an alternative to farmed salmon and shrimp.

IF IT'S WILD-CAUGHT:

Where was it captured? Are fisheries there well-managed, or are stocks of this fish depleted? *The Audubon Seafood Lover's Almanac* or the Monterey Bay Aquarium's and Environmental Defense's Seafood Charts supply this information (*see page 16 for Resources*). Many fish, such as cod, pollock, flounders, halibut, sole, and plaice, are relatively abundant in the Pacific, but depleted in the Atlantic. Inadequate fisheries management, habitat destruction, and pollution can erode the health of regional marine populations. Protective management is especially crucial to the survival of slow-growing fish that breed late in life, such as sharks, skates, rockfish, Patagonian toothfish (Chilean Seabass), which first begins to spawn only after 10-12 years of age, and orange roughy, which reaches maturity after 30 years.

Unfortunately, some popular seafoods are highly overfished. These include the fish mentioned above, as well as groupers, swordfish, black sea bass, rockfish and most snappers. Fish that tend to be abundant or well-managed include striped bass, some crabs, Alaskan salmon, oysters, herrings, sardines, anchovies, mackerel, mahimahi, mussels, Alaskan halibut and Pacific albacore.

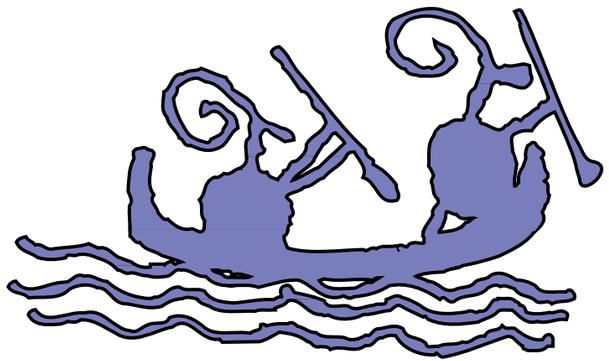
How was it caught? Did its capture result in large amounts of accidental bycatch? Non-selective fishing methods such as trawl nets, purse-seine nets, and longlines—dozens of miles with hundreds of baited hooks—can capture and kill non-targeted species. This accidental "bykill" or "bycatch" constitutes one quarter of the annual seafood catch and is thrown overboard, usually dead or dying. Bycatch can include sea turtles, whales, seabirds, dolphins, and any other creature that's not commercially desirable or juvenile stages of commercial fish. Shrimp trawling throws away an average of five pounds of bycatch for every pound of shrimp caught, including up to 150,000 endangered sea turtles every year. Methods of capture that can result in high bycatch are gill nets, purse seines and bottom trawling (*See pages 14-15 for Glossary of Fishery Terms*).

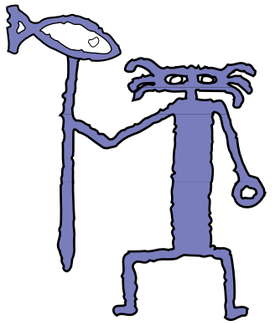
Fish Fact: A US Center for Disease Control and Prevention (CDC) scientist has linked antibiotic resistance in dangerous Salmonella bacteria to the use of antibiotics in fish farming. CDC, October 18, 1999.

"If you want to build a ship, don't drum up the men to gather wood, divide the work and give orders. Instead, teach them to yearn for the vast and endless sea." *Saint-Exupery*

Other species with high bycatch are Patagonian toothfish (Chilean Seabass), orange roughy, oreo dory, dredged clams, and scallops. Low bycatch species include trap or hook-caught creatures such as lobsters; rod-and-reel caught yellowfin tuna, pole-caught skipjack tuna, trolled albacore tuna; non-dredged clams, mussels and oysters. Generally, hook-caught fish are better options, with little or no bycatch problems. Shrimp certified Turtle-Safe, caught in nets with trapdoor-like Turtle Excluder Devices, are another alternative (*see pages* 12-13 *for Suppliers of hook caught and turtle-safe fish*).

Was it captured in a way that damages ocean ecosystems? Hydraulic dredges sometimes used for clams, oysters, scallops and mussels can seriously degrade ocean floor habitats, as can bottom-scraping trawl gear such as those that catch shrimp, flounder, monkfish and other fish.





How to inform your customers of your sustainable seafood choices

Many restaurants use their menus as a tool of consumer education. Contact the ***Chefs Collaborative*** for thoughtful and creative ways to do this.

Display this brochure in your restaurant! Contact the ***Chefs Collaborative*** for additional copies.

Help bring awareness around the issues of sustainable seafood to your customers.

"He is a great fish and I must convince him, he thought.I must never let him learn his strength nor what he could do if he made his run. If I were him I would put in everything now and go until something broke. But, thank God, they are not as intelligent as we who kill them; although they are more noble and more able." Ernest Hemingway, *The Old Man and the Sea*

PRINCIPLES TO EFFECT CHANGE

Given these concerns, how can chefs and consumers determine which seafoods we can, in good conscience, serve?

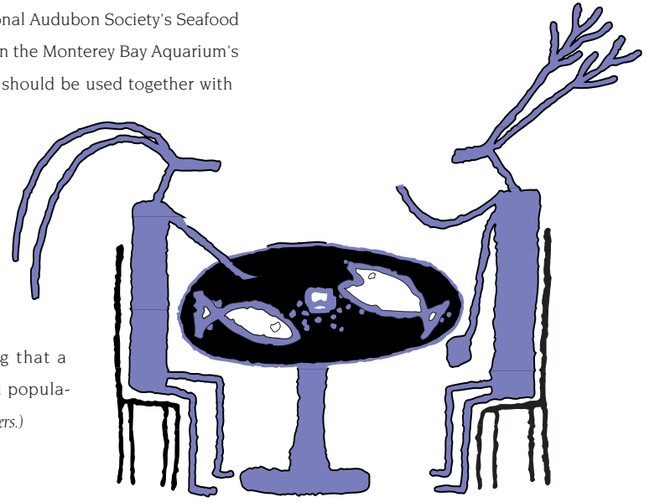
Ask your fish supplier the FISH PICKS *questions.* While your seafood vendors might not know all the answers, the more we ask, the more they will recognize the need to provide better information about sourcing and fishing practices. Use FISH PICKS to aid your decision-making process and guide you to seafood selections that contribute to the long term viability of our ocean's species. According to Mary Moore, Vice President of customer relations at D'Agostino's Supermarkets in New York City, it only takes five customers to ask for a product before a store seeks to carry it. Let's follow this example.

Educate yourself! Research the population status of the seafoods that frequent your menu. If they're abundant and are caught or farmed in an ecologically-responsible fashion, then bon appetit! Consider reducing your servings of depleted species, or replacing them with similar-tasting but plentiful fish (*see page* 10 *for substitutions*). Handy summaries of marine species' conservation and management status are furnished in the National Audubon Society's Seafood Lover's Almanac, Environmental Defense's Seafood Chart, and in the Monterey Bay Aquarium's Seafood Watch Chart (see page 16 for Resources). These lists should be used together with FISH PICKS to help you make sustainable selections.

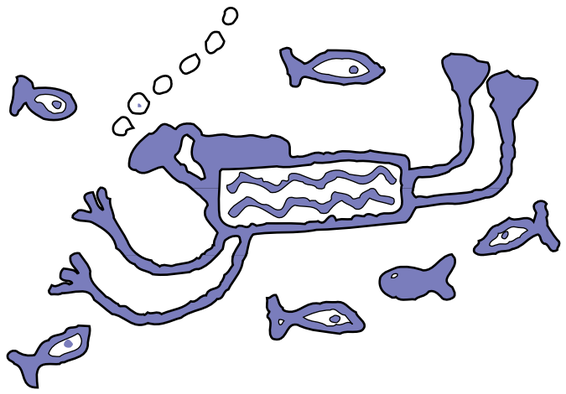
Inform your customers. Public education is vital to conserving threatened fish by decreasing their consumer demand. If you choose to remove an overfished creature from your menu, let your customers know. Consumers are increasingly savvy and interested in making environmentally responsible food choices.

Choose ecolabeled fish. In some cases, ecolabels certifying that a species was sustainably fished from healthy, well-managed populations can aid our selections. *(see page 12 for eco-labeled fish suppliers.)*

Give this guide to your fishmonger.



Reduce the times when you serve seafood that is overfished.



As chefs, consideration for the health of our customers is our concern.

CAN SEAFOOD BE CONTAMINATED WITH INDUSTRIAL POLLUTANTS?

Yes. Fish consumption is the primary route of exposure to mercury and PCBs in humans who eat fish. Since these substances can damage developing nervous systems and impair learning, seafood contamination is mainly a concern for children and for women of child-bearing age, who can expose a developing fetus to stored toxins via the placenta. A July 2000 study by the National Academy of Sciences' National Research Council found that children of women who consume large amounts of fish and seafood during pregnancy may be at special risk of neurological problems, and that approximately 60,000 children are born in the U.S. each year with learning impairments as a result of prenatal exposure to mercury. Since mercury accumulates up the food chain, sharks, swordfish, and tuna contain among the highest mercury levels. Levels of PCBs, dioxins, and other chlorinated chemicals or pesticides can be reduced by certain cooking methods. However, since mercury contamination is systemic throughout fish tissue and muscle, the only way to reduce exposure is to avoid contaminated fish.

COOKING FISH TO REDUCE TOXINS

Can certain cooking procedures reduce the chemical contaminants in fish? *Yes.*

1. Before cooking fish, remove the skin fat, internal organs, tomalley of lobster and the mustard of crabs, where toxins are likely to accumulate.

2. When cooking, be sure to let the fat drain away and avoid or reduce fish drippings.

3. Serve less fried or deep fat-fried fish; frying seals in chemical pollutants that might be in the fish's fat.

4. On the other hand, grilling or broiling allows toxins in fats and juices to drain away.

5. If you serve smoked fish, it is best to fillet the fish and remove the skin before the fish is smoked.

SOURCE:
U.S. Environmental Protection Agency
Office of Water
Fish Contamination Program (4305)
www.epa.gov/ost/fish
Should I Eat the Fish I Catch? U.S. Environmental Protection Agency's Guide to Healthy Eating of the Fish You Catch

Fish Fact: Unlike wild salmon who get their pink color from eating their prey, shrimp-like crustaceans called krill, farmed Salmon steak get their pink color from a synthetic dye called astaxanthin.
Salmon Nation, Ecotrust

SUSTAINABLE IS WIN/WIN!

In a blind taste test hosted by Chefs Collaborative (in May, 2000 at the French Culinary Institute in New York City), five types of salmon were prepared identically and compared. Tested for flavor, texture and aroma, the fish that scored highest proved to be those from the healthiest, most sustainable sources. here's how they ranked:

1st – Wild Alaskan Coho, frozen at sea*

2nd – Wild Oregon Chinook, fresh

3rd – Oregon Hatchery Chinook, fresh

4th – California Hatchery Chinook, fresh

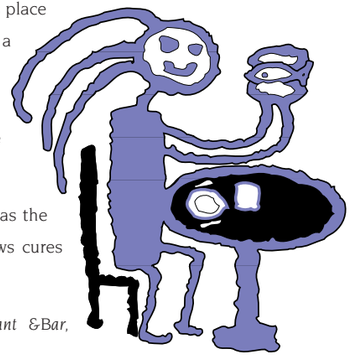
5th – Maine Farm Raised Atlantic, fresh

** See Suppliers (pages 12-13) for contact information*

COOKING TIPS: FROZEN AT SEA SALMON

Frozen at Sea (F.A.S) salmon should be kept well frozen until ready to use. The fish fillets best when 70% thawed. Always thaw the fish gradually in a walk-in. Place the fish on sheet pans in single layers (2-3 fish per pan), cover with film wrap or a plastic bag, and turn fish over twice a day. Most fish will take about two days to thaw in the walk-in.

F.A.S salmon should be partially frozen around the bone when you cut them. Skin and portion the fish fillets as you would normally, yet keep in mind that the freezing process bursts some cells, essentially beginning a process that takes place during normal cooking. Therefore, cook the fish a half-degree less than you would typically, (i.e., if you normally cook fresh salmon to medium rare -medium, cook the F.A.S. salmon to medium rare and allow it to coast toward medium).



F.A.S. salmon cures and smokes extremely well, as the flash freezing process opens the cells and allows cures and marinades to penetrate well.

Greg Higgins, chef and owner of Higgins Restaurant &Bar, Portland, Oregon

"The excreta from one large British Columbia fish farm are estimated to equal the sewage of a city of ten thousand people–all of it flowing straight into the surrounding waters, fouling nearby clam beds and other sea habitat, at too high a concentration to be assimilated easily by natural forces…Salmon excreta are one reason that environmental activists are pushing for fish to be raised only in closed systems, allowing the wastes to be treated before being discharged into the water." Salmon Nation, Ecotrust

About 10 types of fish dominate US aquaculture production for food, with catfish making up almost half–Counter this trend by increasing the diversity of fish you are serving on your menu.

Reduce portion sizes of over-fished species

In an attempt to reduce portion size, I team up protein sources: for example, I serve striped bass with octopus or halibut with farm-raised scallops. This also makes for a more interesting dish.

Peter Hoffman,
owner and chef of Savoy, New York City

Seafood substitutions

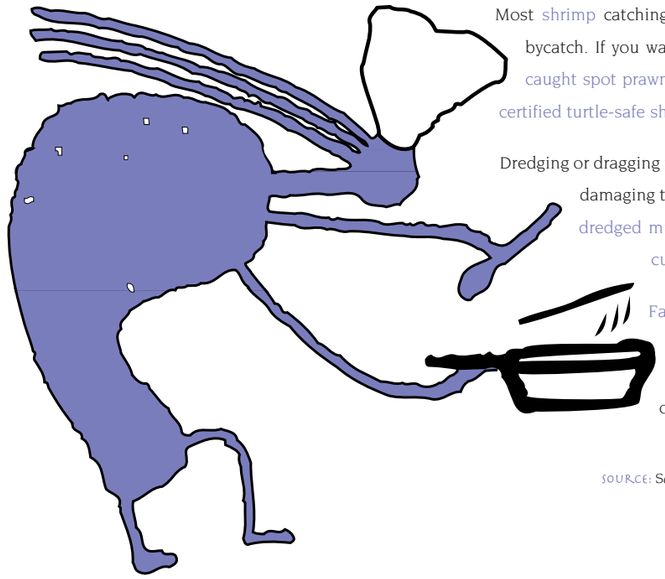
If you live on the east coast and want to serve the overfished Atlantic Cod, try serving hook-caught Atlantic cod instead. If you are on the west coast, Alaskan lingcod or black cod are good replacements. If your supplier is well-informed of the source, you can still enjoy Pacific cod

Striped bass, a well managed species all along the Atlantic coast, can be used as a substitute for many species of depleted fish, such as black sea bass, Pacific rockfish, groupers, snappers, orange roughy and Patagonian toothfish (Chilean Seabass).

Catfish can also be used to substitute for orange roughy.

Substitute Alaskan salmon for farmed salmon.

For meaty warm water fish like grouper, try mahimahi instead.



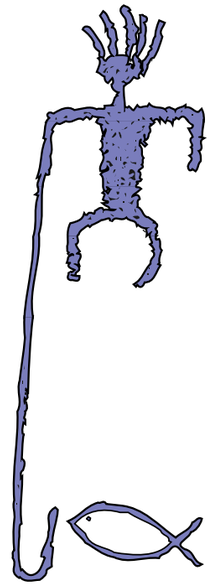
Most shrimp catching entails considerable habitat destruction and enormous bycatch. If you want to serve shrimp, check your source for California trap-caught spot prawns (also excellent frozen), Atlantic northern pink shrimp or certified turtle-safe shrimp.

Dredging or dragging for shellfish such as clams, mussels, oysters and scallops is damaging to the seafloor habitat. Replace dredged clams with farmed; dredged mussels with rope-cultured native; dredged oysters with cultured or farmed; and dredged scallops with farm-raised.

Farmed crawfish make an excellent replacement for lobster, which are abundant but increasingly are caught before they've had a chance to reproduce. Buy fully grown over immature crawfish.

SOURCE: *Seafood Lover's Almanac* (by National Audubon Society's Living Oceans Program)

Q&A



Have you taken a fish off your menu this past year?

Yes. I keep my fishing buying seasonal. We don't run cod in the summer or lobster in July and August. Our clam supplier doesn't work in January or February.

Have you replaced it with any incidental or lesser-known seafood?

We run mackerel and tautog with good response. While it can be hard to 'convert' some people, the customers with a long relationship to Salamander trust the restaurant and our choices. We also get a number of adventuresome diners.

Have you let your customers know about what/why you are doing?

Yes. Overall, we've had a positive response.

(Salamander also optimizes the use of seafood.—Ed.)

At Salamander, we utilize all parts of a lobster including the body to prepare shellfish stocks and broths. A 1 3/4 to 2 1/2 pound lobster yields delicious meat—the tail can be presented as beautiful medallions, the claws are sizeable and one can garnish a chowder or soup. The knuckle meat makes great tempura and the 'pickins' are good for dumpling and spring roll fillings. You can see one lobster can go a long way.

Stan Frankenthaler, owner and chef of Salamander
Boston, MA

"Consider using F.A.S. *(frozen at sea)* salmon — it is an excellent alternative to farm raised salmon." *Greg Higgins, owner of Higgins Restaurant & Bar, Portland Oregon*

SUPPLIERS

Cape Cod Commercial Hook Fishermen's Association
Working with local fishermen and businesses in New England to promote environmentally-friendly methods such as hook caught fish.

210 Orleans Rd.
North Chatham, MA 02650
v: 508.945.2432
f: 508.945.0981
www.ccchfa.org

EcoFish
EcoFish's primary goal is to provide consumers with seafood from ecologically sound fisheries or that has been farmed in a manner that's not damaging to the surrounding environment.

EcoFish.com, Inc.
P.O. Box 72,
Ctr. Strafford, NH 03815
v: 603.269.5555
f: 603.269.8888
customerservice@ecofish.com
http://www.ecofish.com

The Marine Stewardship Council (MSC) Ecolabel
The Marine Stewardship Council (MSC) promotes sustainable fisheries and responsible fishing practices worldwide through developing long term, market based solutions, which meet the needs and objectives of both the environment and commerce. Central to the purpose of the MSC are its Principles and Criteria (i.e. The MSC Standard) against which fisheries are assessed by independent certification companies accredited by the MSC. Fish from a certified fishery is eligible to be labeled with the MSC logo.

On September 5th, 2000, the MSC announced certification of the Alaska Salmon Fishery, the first U.S. fishery to be certified as sustainable.

4005 20th Ave.
Fisherman's Terminal
West Wall Bldg.
Seattle, WA 98199
v: 206.691.0188
f: 206.691.0190
Secretariat@msc.org
http://www.msc.org/

SALMON-SAFE Ecolabel
Launched in 1997, Pacific Rivers Council's Salmon-Safe program works to restore water quality and salmon habitat in the agricultural watersheds of the Pacific Northwest. To date, more than 10,000 acres and more than 40 farms, vineyards, dairies and orchards have been certified Salmon-Safe. 805 SE 32nd St.
Portland, OR 97214
v: 503.232.3750
f: 503.232.3791
Dan@pacrivers.org

Reinholdt Fisheries
National distributor of frozen at sea salmon.

Jerry Reinholdt
62313 S. Canaan
St. Helen, OR 97051
v & f: 503.397.3369

The following suppliers distribute Certified Turtle-Safe® Shrimp
For East Coast chefs, choose from one of the East Coast suppliers listed below. For the West Coast, the shrimp is available in San Francisco, Portland, and Seattle.

Walter's Caviar
Howell Boone
P.O. Box 263
Darien, GA 31305
v: 912.437.6560
www.georgiaseafood.com

Skipper Seafood
Chris Skipper
P.O. Box 653
Darien , GA 31305
v: 912.437.4046

Monterey Fish Market Seafood Inc.
Paul Johnson
Pier 33
San Francisco, CA 94111
v: 415.956.1985
f: 415.956.5851

Osprey Seafood
Michael Weinberg-Lynn
Pier 33
San Francisco, CA 94111
v: 415.291.0156
f: 415.291.9721

Fresh Fish Co.
Timothy Ports
P. O. Box 192885
San Francisco, CA 94119-2885
415.777.5900

Ocean Beauty Seafood
Steve Mickey
301 NW 3rd Avenue
2450 NW 28th St.
Portland, OR 97208
v: 503. 224.1611
f: 503.241.8786
www.oceanbeauty.com

Mutual Fish Co.
Harry Yoshimura
2335 Rainier Ave. South
Seattle, WA 98144
v: 206.322.4368
f: 206.328.5889

University Seafood & Poultry
Dale Erickson
1317 NE 47th St.
Seattle, WA 98105
v: 206.632.3700
f 206.632.3800

"Shrimpers care about our oceans." Driving a boat at age nine and working full-time since the age of twelve, *Howell Boone* has been fishing for over forty years. Owner of Walter's Caviar, Howell Boone is also a shrimper, and has watched the industry develop its conservation practices, primarily through the creation of the Turtle Excluder Device (TED) twenty-three years ago. However, TED was not invented to exclude turtles, but jelly-balls. "There were no turtles back then," Howell commented. "Due to the shrimping industry's harmful practices, the turtle population was in serious decline." Typically, shrimp nets are dragged through the water catching everything in their path, which unnecessarily traps unwanted fish and sea turtles. (As a result of this and other man-made pressures, many sea turtles species are now in danger of depletion.) Now, most U.S. shrimpers are required by law to use TED's, although all have been enthusiastic. Using TED's, Howell's boat, along with over 100 other shrimping boats nationwide, are now certified by the Sea Turtle Restoration Project (STRP) in Turtle-Safe Shrimping, contributing to the increasing populations of sharks, stingrays, horseshoe crabs, sunfish, and turtles. Howell can now market his shrimp as Certified Turtle-Safe based on guidelines and integrity. "But more importantly," Howell feels, "our shrimp taste sweeter and more tender than others."

For more information contact:
Sea Turtle Restoration Project:
PO Box 400, Forest Knolls, CA 94933
415.488.0370
www.seaturtles.org turtlesafe@igc.org

Glossary of Fishery terms

Aquaculture commonly termed "fish farming", but it broadly refers to the commercial growing of marine (mariculture) or freshwater animals and aquatic plants.

Bycatch species taken incidentally in a fishery where other species are the target; bycatch species may be of lesser value than the target species, and are often discarded as 'trash' species.

Bycatch reduction device a modification to fishing gear to reduce the catch or kill of bycatch species during fishing operations.

Discarding the disposal (or 'dumping' or 'trashing') of unsaleable catch, dead or alive, during or after fishing operations.

Driftnet a gillnet suspended by floats so that it fishes the top few meters of the water column.

Dropline a fishing line with one or more hooks, held vertically in the water column with weights and generally used on the continental shelf and slope. Several droplines may be operated by a vessel, either on manually or mechanically operated reels.

Fishery place where fish are caught or reared.

Fishmonger a dealer in fish for food.

Gill nets a net used for catching fish by entangling them in the webbing, usually set on the bottom and usually lethal to the fish caught.

Line fishing a general term used for a range of fishing methods that employ fishing lines in one form or another.

Longline a fishing gear in which short lines carrying hooks are attached to a longer main line at regular intervals. The main lines can be as long as 80 miles and have several thousand hooks.

Non-target species species that are unintentionally taken by a fishery or not routinely assessed for fisheries management.

Pole-and-line fishing (poling) also called pole-and-live-bait fishing, involves attracting schools of fish to the vessel with live or dead bait, then getting them into a feeding frenzy with more bait and water sprayed onto the sea surface to simulate the behavior of small bait fish. Fishermen use a pole with a short, fixed line and lure, 'poling' the fish aboard.

Purse Seines large nets that surround fish and are then drawn closed at the bottom, preventing fish from diving to escape. Used to catch Alaskan salmon.

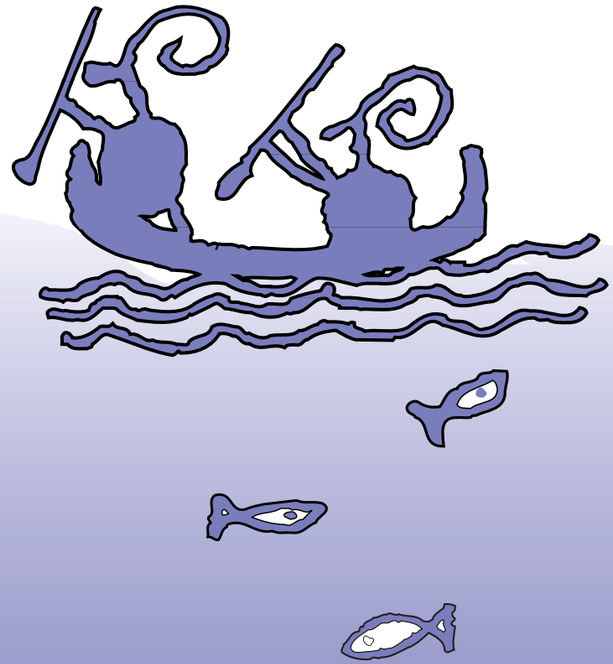
Target fishing (targeting) fishing selectively for particular species or sizes of fish.

Trap fishing fishing by means of traps, often designed to catch a particular species, e.g. rock lobster pots.

Trawl a large wide-mouthed fishing net dragged by a boat along the ocean bottom or through the water. Used to catch clams, mussels and oysters, as well as tunas and sharks.

Trolling a fishing method in which lines with baits or lures are dragged by a vessel at a slow speed. Trolling is used Australia-wide to catch fish such as Spanish mackerel, yellowtail kingfish and several tuna species.

Turtle exclusion device a modification to shrimp trawl nets which, while retaining shrimps, allows turtles to escape.



SOURCES:
Bureau of Rural Sciences Australia: www.brs.gov.au
Fisheries and Marine Institute of Memorial University of Newfoundland Website www.ifmt.nf.ca
Michigan Department of Natural Resources www.dnr.state.mi.us/fish/afrs/glossary.html

Resources

Selected Books

Danger at Sea: Our Changing Ocean
Bruce McKay, Kieran Mulvaney and Boyce Thorne-Miller, foreword by Dr. Sylvia Earle SeaWeb, Pew Charitable Trusts, 1999.
A comprehensive introduction to problems facing our oceans and how to solve them.
www.seaweb.org/campaigns/danger/trouble.html

Murky Waters: Environmental Effects of Aquaculture in the United States
Environmental Defense, 1997.
www.environmentaldefense.org/pubs/reports/aquaculture/

Salmon Nation: People and Fish at the Edge
Ecotrust, 1999.

Seafood Lover's Almanac
Mercedes Lee, Editor, National Audubon Society's Living Oceans Program, 2000.

Song for the Blue Ocean: Encounters Along the World's Coasts & Beneath the Seas
Safina, Carl, Henry Holt and Company, New York, 1997.
Scientist and fisherman Carl Safina tells the stories of fish and fishing people around the world.

Selected Websites & Organizations

Aquaculture Network Information Center
A comprehensive listing of related links and organizations.
http://ag.ansc.purdue.edu/aquanic

Audubon Guide to Seafood
http://magazine.audubon.org/seafood

Center for Marine Conservation
www.cmc-ocean.org

Chefs Collaborative
www.chefnet.com/cc2000

Environmental Defense
www.environmentaldefense.org/
For a list of "Which fish is Best" visit:
www.environmentaldefense.org/pubs/factsheets/s_fishchoices.html

Environmental Protection Agency
Posts fish advisories nationwide, informing the public of chemical contaminants have been found in local fish and wildlife and include recommendations to limit or avoid consumption.
www.epa.gov/ost/fish

FishBase
Searchable database of species by common name.
www.cgiar.org/ICLARM/fishbase/manual/contents.htm

Fisheries Department of the United Nations Food & Agriculture Department
Source of information on the status of world fisheries. Detailed information on fisheries by region. Code of Conduct for Responsible Fisheries and other initiatives. Very informative.
www.fao.org/fi

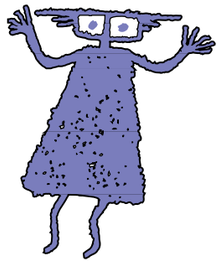
Greenpeace's Ocean Campaign
www.greenpeace.org.au/campaigns/oceans.php3

Monterey Bay Aquarium
www.montereybayaquarium.org

Monterey Bay Aquarium Seafood Watch Chart
Environmental protection based on population abundance, bycatch, and management practices.
www.mbayaq.org/efc/efc_oc/seafood_chart.html

National Marine Fisheries Service
Current U.S. fisheries statistics.
www.nmfs.noaa.gov

Seaweb
SeaWeb is a not-for-profit public education organization designed to raise awareness of the ocean and the life within it.
www.seaweb.org



Environmental Defense

Environmental Defense is a national, New York-based nonprofit organization that represents 300,000 members. Since 1967 we have linked science, economics, and law to create innovative, equitable, and cost-effective solutions to environmental problems. ***Environmental Defense's*** *Oceans Program* works to keep our oceans alive and well by preventing pollution, ending overfishing and altering harmful aquaculture practices.

Contact Information

Environmental Defense National Headquarters
257 Park Avenue South
New York, NY 10010
v. 212-505-2100
v. 800-684-3322 (member services)
f. 212-505-2375
contact@environmentalderense.org
www.environmentaldefense.org

The Chefs Collaborative

The ***Chefs Collaborative*** is a network of chefs, restaurateurs and other culinary professionals who promote sustainable cuisine by teaching children, supporting local farmers, educating each other & inspiring their customers to choose clean, healthy foods. Founded in 1993, ***Chefs Collaborative*** is the only chef-managed organization advocating sustainable cuisine. While celebrating the pleasures of food, Collaborative members recognize the impact of food on our lives, on the well-being of our communities and on the integrity of the environment. And they celebrate the joys of local, seasonal, sustainable cooking.

Statement of Principles

1.*Food is fundamental to life. It nourishes us in body and soul, and the sharing of food immeasurably enriches our sense of community.*

2.*Good, safe, wholesome food is a basic human right.*

3.*Society has the obligation to make good, pure food affordable and accessible to all.*

4.*Good food begins with unpolluted air, land and water, environmentally sustainable farming and fishing, and humane animal husbandry.*

5.*Sound food choices emphasize locally grown, seasonally fresh and whole or minimally processed ingredients.*

6.*Cultural and biological diversity is essential for the health of the planet and its inhabitants. Preserving and revitalizing sustainable food and agricultural traditions strengthen that diversity.*

7.*The healthy, traditional diets of many cultures offer abundant evidence that fruits, vegetables, beans, breads and grains are the foundation of good diets.*

8.*As part of their education, our children deserve to be taught basic cooking skills and to learn the impact of their food choices on themselves, on their culture, and on their environment.*

Contact Information

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