

sushi tradition by hiroko shimbo author of *the sushi experience*

sushi history

Sushi originated from the need to preserve fish, an important protein source. Fish were caught in abundance during the monsoon season in the rice-growing region of northern Southeast Asia (today's Thailand). The rains caused rivers to flood rice paddies, allowing fish to swim into the rice fields where they were caught by farmers. Locals pickled and preserved the fish by packing it with cooked rice in wooden barrels for dry season consumption. The cooked rice fermented in the hot and humid climate, producing lactic acid that preserved the fish and provided a sharp, tart flavor. This style of sushi traveled through China and reached Japan some time during the early centuries A.D., though no one is sure of the exact date. In Japan this primitive sushi gradually evolved into today's popular nigiri-zushi (a small ball of sushi rice topped with a slice of seafood) and maki rolls.

seasonality of sushi fish

The varieties of fish served at sushi restaurants in Japan change according to the season. Diners eagerly await their favorite seasonal choices: amaebi (Sweet Shrimp), hirame (halibut), and hotate (scallops) in winter; Mackerel, Sardines, and Skipjack Tuna through summer and autumn. Many people think locally-caught (in-season) wild fish taste better than out-of-season or farmed varieties. Catching fish that are locally in-season also aids the sustainability of the species by shifting the sushi diners' interest among many species over the course of the year. No single species should be consumed to extinction.

perfect sushi: fish quality, proportion, and temperature

Sushi fish should be the highest quality, undamaged by the catch method, and very fresh. Ideally, fish should be caught by pole and line, transported properly, and slaughtered using ikejime (instantaneous killing), a method that allows the fish to stay fresh longer. Expert sushi chefs are well aware of how and when fish for sushi are slaughtered—and the proper stage for serving it.

A nigiri-zushi should be a one-bite size. The moist and tender rice ball underneath a slice of seafood should weigh about 3/4 ounce—one-third the weight of a large egg. Classically, this is the lunch-time nigiri-zushi size in Japan. For dinner, chefs make smaller rice balls so diners can enjoy many pieces with a variety of fish. A rice ball should be around body temperature, and the raw seafood on top should be refrigerator-cold. All too often, bad sushi consists of cold, dry, hard rice and lukewarm fish. The size of seafood also matters—1 1/4 by 2 3/4 inches is recommended. Oversized fish on top of a rice ball may look like a bargain, but this combination destroys the delicate flavor and temperature balance of sushi rice and fish. A larger portion of seafood usually means lower quality. For sushi, the quality of fish and rice, combined with the chef's skill, are what counts.

To learn more about sushi traditions, fish, and preparation, see Hiroko Shimbo's book, *The Sushi Experience*, or visit www.hirokoskitchen.com.

how to eat sushi by trevor corson author of *the story of sushi*

Traditionally, sushi is eaten at the sushi bar without a menu. Sitting at the bar, getting to know the chef, and talking with the chef while you eat are the keys to getting good sushi—and could help our ocean, too.

sushi bar tips

talk with the chef

In Japan, sushi chefs often act like neighborhood bartenders, chatting with customers and giving them personalized service. Shop around—if you find a chef who is friendly and attentive, cultivate a relationship with that chef (hint: it helps to arrive early when the chef is less busy filling table orders). The result could be a more traditional sushi experience, with a wider, more ocean friendly selection of seafood.



ask for advice

What does the chef recommend? Invite suggestions for ingredients that are in-season. If you don't like something, be honest so the chef learns your preferences.

the truth about chopsticks

Don't use them. Ask the chef to squeeze your nigiri-zushi together loosely and then pick the sushi up with your fingers so it won't fall apart. Good sushi should disintegrate on your tongue. Use chopsticks only when eating sashimi—slices of fish without rice—and, if you like, maki rolls.

the truth about soy sauce

The very best chefs actually season each nigiri-zushi perfectly before serving it, using sauces and garnishes they've prepared. Try requesting this from your chef, then skip the soy sauce altogether. If the chef is too busy for this special preparation, add soy sauce yourself but use only a very small amount, and dip the fish side in the sauce, not the rice side, so the sushi won't fall apart.

the truth about wasabi

The chef has already added the proper amount of wasabi inside the sushi. Any more prevents you from tasting the subtle flavors of his carefully selected ingredients.

the truth about ginger

The pickled ginger is a palate cleanser. Eat it between each piece of sushi to enjoy the distinctive flavors of each fish.

ocean friendly tips

tastier and more sustainable

A skilled chef will probably steer you away from more standard selections such as tuna, salmon, Yellowtail, and boiled shrimp and serve toppings that are fresher, more traditional, and more flavorful. Some of the tastiest sushi includes saba (Mackerel), sawara (Spanish Mackerel), and katsuo (Skipjack Tuna), along with amaebi (raw Sweet Shrimp) and squid. These are more sustainable, more authentic, and healthier to eat.

making a difference

When you invite chefs to educate you about sushi, they'll value you as a customer. It may be up to you to educate the chef regarding your concerns about the environment and overfishing. You can encourage your chef to find and feature seafood that has been ranked as sustainably caught. One conversation at a time, sushi customers and sushi chefs can make a difference for the ocean.

For more information on the fascinating world of sushi and its ingredients, see Trevor Corson's book, *The Story of Sushi*, or visit www.storyofsushi.com.

Print the first page of this guide then flip the sheet of paper over to print the second page on the back. Cut along the dotted lines and fold where indicated to fit in your wallet.



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other offerings

Surimi/Kanikama: Walleye Pollock

Although often labeled as imitation crab, surimi is actually made from puréed Walleye (or Alaska) Pollock. Living on both sides of the North Pacific, Walleye Pollock grow rapidly and are highly fecund, factors that help them withstand high fishing pressure. Managers closely monitor the large-scale Pollock fishery, which primarily uses mid-water trawls and has low bycatch. Possible impacts on declining Steller Sea Lions, which prey on Pollock, continue to concern managers and environmental groups.

Ika: Squid

Many squid species exist worldwide. Squid grow fast and often reproduce before they are a year old, characteristics which help them withstand high fishing pressure. Most are vulnerable to changes in environmental conditions.

Tako: Octopus

Although octopus are wide-ranging and have short life spans, some populations are declining due to heavy fishing pressure. Most octopus are caught using bottom trawls, causing habitat damage and bycatch of unwanted wildlife. Management and monitoring of octopus fisheries are weak in many countries.

Unagi: Freshwater Eel

Most freshwater eels are farmed in net pens where waste is not treated before being discharged, causing serious environmental pollution. Freshwater eels can also escape from net pens, transferring diseases to wild populations. Freshwater eels are highly carnivorous and require a high protein diet, consisting mostly of fish meal and oil. Because of their complex life history, farming is dependent on wild-caught juveniles, or glass eels, causing wild populations to decline.

fish key

- Species is relatively abundant, and fishing/farming methods cause little damage to habitat and other wildlife.
 - Species has medium to high levels of abundance, or fishing/farming methods cause some damage to the environment.
 - Some problems exist with this species' status or catch/farming methods, or information is insufficient for evaluating.
 - Species abundance is generally low, or fishing/farming methods typically have high environmental impact.
 - Species has a combination of problems such as overfishing, high bycatch, and poor management; or farming methods have serious environmental impacts.
 - A fishery targeting this species has been certified as sustainable and well managed to the Marine Stewardship Council's environmental standard. Learn more at www.msc.org.
 - These fish contain levels of mercury or PCBs that may pose a health risk to adults or children. Please refer to www.oceansalive.org/eat.cfm for more details.
- * The health advisory for this group refers to this species.



Blue Ocean Institute works to inspire a closer relationship with the sea through science, art, and literature.



Text "FISH" and the species name to 30644 for instant sustainability info when you need it.
Cell phone and PDA users visit www.fishphone.org to download a cell phone-friendly seafood guide.

Created in collaboration with Environmental Defense Fund and the Monterey Bay Aquarium.

blue ocean institute
guide to

ocean friendly sushi

Please use this guide as a starting point for enjoying ocean friendly sushi. Rankings may change over time and there are more species available on our Web site, so please visit www.blueocean.org/sushi often for the most up-to-date information. Please keep in mind that Japanese names for sushi offerings can sometimes apply to multiple kinds of fish. Ask your chef if he or she knows exactly what fish is being served.

tuna

Diners should be aware that the term toro is sometimes used incorrectly in the U.S. In Japanese, toro refers to fatty meat taken from a tuna, commonly from the tuna's belly. These fatty cuts can come from a number of tuna species. In the U.S., the term toro is sometimes used to refer to tuna in general or sometimes Bluefin Tuna. Be sure to ask your chef how the term toro is used to make sure you know what you're getting.

Katsuo: Skipjack Tuna, pole- and troll-caught

Skipjack Tuna are prolific breeders and grow fast, factors that help buffer populations from overfishing. But with catches of Skipjack Tuna accounting for almost half of the global tuna catch, they are only at moderate levels of abundance. Pole and troll fisheries have very low levels of bycatch and cause no damage to habitat.

Bin'naga maguro: Albacore Tuna, U.S. pole- and troll-caught

Albacore Tuna are predatory fish with a high reproductive rate found throughout the world's temperate and tropical seas. Highly exploited in the North Atlantic, Albacore Tuna populations are at a medium to high level of abundance in other regions. Bycatch in pole- and troll-caught fisheries is low and does not include endangered species, in contrast to longline Albacore fisheries.

Maguro: Yellowfin and Bigeye Tuna, pole- and troll-caught

Tunas are fast-growing, prolific breeders, and wide-ranging, but many populations remain depleted. The low bycatch associated with pole- and troll-caught tuna makes them a better alternative to longline-caught tuna.

Bin'naga maguro: Albacore Tuna, longline-caught

Worldwide, most Albacore Tuna are caught using longlines, which incidentally kill high numbers of seabirds, sea turtles, sharks, and other fish.

Maguro: Yellowfin and Bigeye Tuna, longline-caught


Globally, few regulations exist for tuna longline fisheries, and longline boats targeting tunas also catch high numbers of marine mammals, sea turtles, sharks, and young tunas.

Kuro maguro/Hon maguro: Atlantic Bluefin Tuna


Highly valued by sushi connoisseurs, Atlantic Bluefin Tuna have been exploited heavily since the 1970s and are extremely depleted. Since 1996, the World Conservation Union has listed the western population of Atlantic Bluefin Tuna as critically endangered and the eastern population as endangered. Bluefin Tuna can also be caught as juveniles and fattened in net pens. This "farming" method prevents the fish from spawning, further reducing Bluefin numbers.

salmon

Sake: Salmon, Alaska wild

 With good management and fairly healthy habitat, wild Alaska Salmon remain abundant. There are concerns, however, that more needs to be done to protect natural spawning habitat and to properly manage hatcheries. This ranking also applies to roe from these fish.

Sake: Salmon, farmed

 High environmental costs of farming salmon include water pollution, spread of diseases to wild fish populations, high content of wild fish in feed, and overuse of antibiotics. In addition to Atlantic Salmon, farmers are now raising Chinook and Coho Salmon. All Atlantic Salmon sold in the U.S. are farmed. This ranking also applies to roe from these fish.

shellfish

Amaebi: Sweet Shrimp

Sweet Shrimp are relatively abundant in the northern waters of the Atlantic and Pacific. They grow rapidly, mature quickly, and produce many young—factors making them relatively resilient to fishing pressure. Most Sweet Shrimp are caught using bottom trawls over muddy substrate so habitat damage is relatively low. The use of bycatch reduction devices has greatly reduced bycatch of depleted groundfish.

Hotate: Bay Scallop, farmed

Since native U.S. Bay Scallops suffer from depletion, most Bay Scallops come from coastal aquaculture farms in China. There, growers reportedly produce all their scallops using suspension methods, with relatively low impact to the environment. Be aware that some Calico Scallops may be labeled as Bay Scallops. Calicos are severely depleted and taken with habitat-damaging dredges.

Ebi: Shrimp, U.S. farmed

Farmed shrimp require high amounts of fishmeal and fish oil in their food compared to other farmed fish and shellfish. U.S. farmers usually treat discharged water to decrease pollution.

Kani: King, Dungeness, and Stone Crabs, U.S.

These crab species are fairly abundant thanks to wise management. Crab fishers use relatively low-bycatch traps (or pots).

Hotate: Sea Scallop, wild

While no longer overfished, controversial management measures for wild Sea Scallops inadequately address high fishing pressure. Bottom dredges and trawls used to catch Sea Scallops damage habitat, and there is unintended catch of endangered sea turtles, depleted Atlantic Cod, and other groundfish.

Ebi: Shrimp, imported, farmed and wild caught

Bottom trawls used to catch most wild shrimp damage habitat and unintentionally kill many invertebrates, fish, and sea turtles. Coastal shrimp farming ruins life-supporting ecosystems such as mangroves and causes water pollution. Shrimp fisheries and farms in the U.S. are generally better monitored and regulated.

roe

Ikura: Salmon roe, Alaska wild

See listing under Salmon, Alaska wild.

Masago: Capelin roe

Capelin (a.k.a. Smelt) live in the northern waters of the Atlantic and Pacific and represent one of the largest fisheries in the world. They grow fast, reproduce in 3-4 years and then die. Most Capelin is caught using purse seines, which cause little habitat damage and produce limited bycatch. Capelin is an important source of food for many seabirds, marine mammals, and commercially important fish species.

Uni: Sea Urchin roe


Uni comes from Green and Red Sea Urchins, which are reasonably abundant along the coast of the northeastern Pacific. Both Urchin species are prolific breeders and can live more than 20 years. They are hand-caught by divers so bycatch is minimal with no damage to the habitat. Sea Urchins graze kelp and are eaten by many animals like Sea Otters, and therefore are an important link in the marine ecosystem.

Ikura: Salmon roe, farmed


See listing under Salmon, farmed.

whitefish

Suzuki: Striped Bass

 Striped Bass are wild caught* and hybrids are farmed. Effective fisheries management helped wild Striped Bass recover from severe depletion in the 1980s to high abundance today. Farming Striped Bass results in few escapes and minimal pollution. However their feed is derived from wild fish populations.

Hirame: Pacific Halibut

 Related to flounders, Pacific Halibut are far larger. Although they grow slowly and can live more than 50 years, Pacific Halibut remain abundant due to responsible management that limits annual catches and bycatch. Fishers own shares of the total annual catch, eliminating the dangerous incentive to fish competitively. Seabird bycatch, especially of North Pacific albatross species, is a concern in the Alaska longline halibut fishery.


Hamachi: Yellowtail, U.S. farmed

U.S. Yellowtail is related to Japanese Yellowtail and is also farmed in net cages. There are fewer pollution concerns, however, because cages are situated in areas of deeper water and strong currents, promoting the dispersal of waste.

Tai: New Zealand Snapper

Tai Snapper are a commercially important fish in New Zealand. Due to prudent fisheries management and relative resilience to fishing pressure, most Tai Snapper populations are stable or recovering from their previously overfished status. Most Tai Snapper are caught using bottom longlines, which can result in the incidental catch of seabirds.

Hirame: Atlantic Flounders

 Long-term overfishing and high bycatch plague Atlantic groundfish fisheries. Naturally vulnerable to fishing pressure, most Atlantic flounders and soles remain depleted. Strong management measures are helping Summer Flounder* (fluke) rebound.

Hamachi: Yellowtail, Japanese farmed

Japanese Yellowtail is one of the most economically important marine species farmed in Japan. Yellowtail is farmed in net cages with little or no treatment of effluent, which can cause localized pollution and damaging red tides. The biggest concern, however, is the dependence on wild juveniles to stock farms.

Tai: Red Snapper

Although true tai is a different fish, what some restaurants serve as tai is Red Snapper, a group comprising several species. They generally grow slowly and have long life spans, making them vulnerable to overfishing. Much remains unknown about the impact of fisheries on snapper populations because management and monitoring are generally poor. However, the available fisheries data indicates that many snapper populations are declining.

shiny-skinned fish


Iwashi: Sardines

Sardines are abundant in most temperate waters in the Pacific and Indian Oceans. They grow rapidly and are eaten by many fish, seabirds and marine mammals. Sardines are caught using purse seines, which cause minimal habitat damage and result in little bycatch.

Saba: Mackerel

Saba is typically Atlantic or Chub Mackerel. Both Mackerels grow fast and produce many young, qualities that have allowed their populations to rebound from depletion to healthy levels of abundance. Fishing methods used to catch most Mackerel cause no habitat damage and little bycatch.

Sawara: Spanish Mackerel

 Spanish Mackerel inhabit coastal waters along the Eastern seaboard of the U.S. and have recovered from years of overfishing to high abundance today. They are important to recreational and commercial fishers. The main fishing methods for Spanish Mackerel have no adverse effects on habitat and result in little bycatch.



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