

## Are the oceans half full or half empty?

**A**t the world's fisheries in a crisis, made worse by the environmental impact of fish farms, as conservationists claim? Or are global marine resources — and thus the U.S. seafood supply — in pretty good shape, except for a few fixable problems, as industry leaders claim?

The ocean-wide gap between the two views is one reason an increasing number of seafood buyers seek additional assurance of sustainability, whether it be from a third-party organization, internal science experts or their supplier.

By publicizing the often-quoted statistic that 70 percent of the world's fisheries are fully or over-exploited, conservation groups over the last decade have cast doubt upon the performance of government fisheries managers. The statistic is a conservation-community view of United Nations Food and Agriculture Organization numbers. Seafood industry leaders look at the same numbers and come up with a much greener picture: 75 percent of the world's fish stocks are operating at a sustainable level, they contend.

According to the FAO's most recent report on the state of world fisheries and aquaculture in 2002, 10 percent of stocks are significantly depleted, 18 percent are over-exploited, 47 percent are at maximum sustainable yield and 25 percent are under-exploited. So are the oceans half full, or half empty?

Which view is accurate depends on whether maximum sustainable yield (MSY) should be the goal, a controversial issue among fishery-manage-

ment scientists. MSY may not be good enough, because the margin of error may be too small and is subject to seasonal and climatic shifts, says Barry Costa-Pierce, a fisheries professor and Sea Grant director at the University of Rhode Island.

The bar measuring sustainability may rise, as fishery managers shift their view from a single-stock to an ecosystem approach. An ecosystem view weighs climate changes, vulnerability of the stock to overfishing, pressures of non-fishing activities upon the stocks as well as the effects of fishing on other species in the ecosystem and on other parts of the ecosystem like bottom habitat, says Costa-Pierce. U.S. and international managers are weaving that philosophy into their work, according to FAO and U.S. reports.

Industry leaders acknowledge that while there are problems to address, such as pirate fishing, overfishing and holes in the global fishery-management network, the overall supply picture is positive.

Recent reports indicate progress toward sustainability. The FAO in September issued a global-bycatch analysis that shows fish discards dropped to 7.3 million tons, a decrease of about 12 million tons from its 1996 estimate of 20 million tons.

On the domestic front, the picture also is brightening, says the National Oceanic and Atmospheric Administration in its 2003 status report issued in May: "The number of stocks that are overfished or subject to overfishing



Global bycatch is declining, says the FAO.

has declined, and the number of stocks with sustainable harvest or stock levels has increased," wrote Dr. William T. Hogarth, assistant administrator for NOAA Fisheries.

Overfishing occurs in just 60 stocks out of a total of 894. Federal scientists classify 76 stocks as overfished, meaning the population is too low to replenish itself. Rebuilding plans are either in place or in the works for all overfished stocks. (The full report is available online at <http://www.nmfs.noaa.gov/sfa/reports.html#sos>.)

To give an ecologically sustainable seafood supply, Costa-Pierce recommends better fisheries management and enforcement of the rules, avoiding harvesting practices that damage the ecosystem, finding alternatives to fishmeal, since foreign fish stocks are maxed out, reducing bycatch and increasing processing efficiency.

But for busy seafood buyers who want to make sure they purchase fish harvested in an environmentally responsible manner, the most important thing to find out is whether a species is overfished, says Costa-Pierce. — L.D.

product," says Williams. "We are feeling our way through this and primarily dealing with selected suppliers to understand how it might have application to the product they're selling."

SySCO plans to define its sustainable principles in a written document that buyers will use as purchasing guidelines for Sysco-branded seafood, says Pollock.

The criteria will become part of the annual plant inspections for every facility approved to pack Sysco-branded product.

For now, Sysco steers its purchasing to abundant, underutilized species to help relieve pressure on traditional stocks. Sysco's aim, says Pollock, is to be one of the visionaries and world-class companies that go beyond what fisheries rules and regulations require.

SySCO and Darden are likely to build assurance of

environmental responsibility into their brand rather than use an eco-label.

Pollock is not a fan of third-party certification like the MSC's, because he questions the agenda, which he feels should balance sustainability with feeding the world.

"I don't necessarily need the blessing of those types of groups, because I know we're doing it right," says Pollock. "Ultimately, I would hope the Sysco classic shrimp based on our reputation as a company would have equal, if not more, weight than that from a third-party certification."

While Sysco and Darden want to go a step above what the law requires, several distributors say they define sustainable seafood as product harvested or farmed under existing laws and regulations.

Some distributors say they do not see increased

demand for sustainable or environmentally responsible seafood.

Dominic Stramagino, president of Supreme Lobster and Seafood Co. in Villa Park, Ill., says conservation groups — not average customers on the street — are talking about sustainable seafood.

Poseidon Seafood, a distributor in Charlotte, N.C., is careful to make sure it buys only legally caught fish and the largest tuna, swordfish and sea bass it can. The company supports regulations to ensure future supply, says VP Mike Heninger.

Customers are focused much more on price than environmental responsibility, he says.

"Organic salmon is a good example. People are used to paying \$3 for salmon and don't want to pay \$6 for [organic] salmon," says Heninger.

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# 'Avoid' and 'enjoy' lists attempt to steer seafood purchases

Guides have grown increasingly sophisticated and broadened reach

**T**ony Vidal, executive chef of restaurants at four New York zoos and the New York Aquarium, orders only species deemed environmentally sustainable by the Wildlife Conservation Society, which manages the aquarium and zoos. Vidal serves Alaska salmon and halibut because they are green, or "least problematic," on the society's Gofish seafood list, developed in 2002 with the National Audubon Society's Living Oceans program for distribution to visitors.

Vidal is among an increasing number of chefs who rely upon conservation groups to guide their sustainable seafood purchases.

Eager to advance marine conservation and simplify the complexities of sustainability for seafood buyers, several environmental groups publish purchasing guides for consumers and wholesale buyers.

This month the Seafood Choices Alliance, created by SeaWeb in 2001 to promote sustainable seafood purchasing at the wholesale level, will

publish a buying guide of 40 species, each considered sustainable by at least

four of the West Coast, Southeast and Midwest. A New England version is scheduled for release this month, and a Hawaii card is in the works.

Audubon and Monterey Bay were the first groups to publish seafood-purchasing lists in the late 1990s. Audubon, which in 2000 published its first guide, *The Fish Scale*, as part of *The Seafood Lover's Almanac*, in 2002 issued an updated *Seafood Wallet Card* (still available online at <http://seafood.audubon.org/>). Audubon since dissolved its Living Oceans program but is planning a future edition of its guide.

Monterey Bay issued its first guide soon after a 1997 exhibit highlighting fishing gear with low environmental impact, says Jennifer Dianto, Seafood Watch program manager. To make its restaurant menu consistent with the exhibit's message, the aquarium created an internal purchasing guide and published it when members requested copies. The program grew from there and has distributed 3.76 million cards.

"What we're trying to do here is create a market incentive for environmentally responsible fishing," says Dianto.

The lists sparked fierce criticism from the industry, which called them biased, oversimplified and lacking scientific basis.

"They send an overall inappropriate message about the state of fishery resources to the public," says Justin LeBlanc, VP of government relations for the National Fisheries Institute. "Because they are biased with regard to presentation of information about stocks, they actually mislead the consumer and are doing a disservice to the public."

The lists told consumers to avoid sablefish, for example, without distinguishing between Alaska sablefish, considered well-managed, and depleted Pacific Northwest stocks, says Bob Alverson, a member of the Pacific Fishery Management Council and manager of the Fishing Vessel Owner's Association, a Seattle association that represents 90 longline halibut, sablefish and Pacific cod boats.

Government scientists asked Monterey Bay to correct the listing, and it obliged, says Alverson. Alaska and British Columbia sablefish is now listed as a "best choice."

"[The list] has created some marketing problems potentially for some people who didn't deserve to have a problem, so it forced [Monterey Bay] to upgrade its scientific input, and that's good. I think they're doing a reasonable job at this point," says Alverson.

"[Monterey Bay] is becoming more sophisticated at it, and some of the industry is capitalizing on that because if they can get on their list, it does assist people in selling fish," he says.

To improve the science behind its list, Monterey Bay hired a team of scientists and research analysts, strengthened its methodology and regularly consults with a 13-member board of scientific advisors, says

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**Professional Seafood Checklist**  
The purpose of this checklist is to help you make the best choices when purchasing seafood. It is based on the best available scientific information and is intended to help you make the best choices when purchasing seafood.

**THE FISH LIST**  
An Ocean Friendly Guide to Making Better Seafood Choices

**ENJOY!**  
These species are considered to be the most sustainable choices available. They are abundant, well-managed, and have low environmental impacts.

**AVOID!**  
These species are considered to be the least sustainable choices available. They are overfished, poorly managed, and have high environmental impacts.

**How to use this Guide**  
Use the Fish List as a guide to help you make better choices when purchasing seafood. It is not a guarantee of sustainability, but it is a good starting point.

Several environmental groups joined forces on a single, national seafood-buying guide early this year.

one organization, says Howard Johnson, a seafood consultant in Jacksonville, Ore., who worked on the first edition of the guidebook: *Sourcing Seafood: a Professional's Guide to Procuring Ocean-Friendly Fish and Shellfish*.

Early this year, several groups joined forces to create one national list. The Fish List ([www.thefishlist.org](http://www.thefishlist.org)) is a national guide published by Blue Ocean Institute, Environmental Defense and Monterey Bay Aquarium Seafood Watch.

Monterey Bay publishes its own national guide and regional cards

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**Where to from here?**

Estimating the market for fish produced with more attention to environmental responsibility than the law dictates is impossible. And it's equally tough to prove whether the total effect of all sustainable-seafood initiatives is making the U.S. seafood supply more environmentally responsible.

That's why Packard commissioned the Bridgespan Group, a Boston consulting firm specializing in non-profit strategies, to study the market effect of certification-group efforts. A Bridgespan study of certification efforts in the forest products, coffee and

seafood industries highlighted the importance of buy-in among major corporate purchasers like Starbucks, Dunkin' Donuts and Home Depot to effect change.

Robert Searle, the study's author, says commitment from major seafood purchasers like Darden, Sysco, Marriott and Ahold means there is potential for widespread change. Political, philosophical and business motivations aside, now that sustainable sourcing is on the minds of the seafood market's biggest buyers, a sea change toward ecological sustainability is brewing.

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Dianto. Staff analysts consult government reports and peer-reviewed, published studies to judge a species' stock status, vulnerability to overfishing, the fishery's bycatch, ecosystem impacts and management. Researchers write reports to back their recommendations.

Outside scientists review the reports, which are posted online at [www.seafoodwatch.org](http://www.seafoodwatch.org). "The first card had a methodology nowhere near where it is today," says Dianto.

But Monterey Bay's efforts have done little to change the lists' overall reputation for being inconsistent with science. Lists based on science would be helpful to consumers. Instead the lists are full of misleading information, says LeBlanc.

Consumers should instead get their information about stock status from U.S. government sources, says NFI President John Connelly.

Conservationists maintain their criteria for judging sustainability is a step above what domestic and international management requires, because faults in those systems have led to stock crashes and declines.

Dianto defends Monterey Bay's approach: "We err on the side of caution on behalf of the environment. That, I think, is our bias."

She adds, "We realize there will be costs in harvesting anything in the environment, including fish. Things in the green [on the lists] are not the picture of perfection. There are still [bycatch or habitat] impacts, but those are minimized."

But controversy hasn't deterred Monterey Bay from expanding its reach. Bon Appetit

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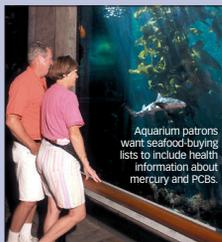
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Aquarium patrons want seafood buying lists to include health information about mercury and PCBs.

Management Co., a Palo Alto, Calif., company that provides dining services to 148 customers, including corporations and colleges in 26 states, publicly pledged last summer to serve only seafood purchased in line with the Monterey Bay list.

Aramark's Parks & Resorts division in Olympic National Park, Wash., a national parks concessioner, last spring added several sustainable menu items made with seafood Monterey Bay recommends as "best choices," like striped bass, Alaska halibut, clams and mussels.

Reports from mainstream-market seafood distributors indicate the lists have influenced only niche, high-end markets.

That's progress, says Dianto. "What we see the cards doing is maintaining an undercurrent of demand for more sustainable seafood products," she says.

— L.D.

## Farmed-salmon controversy takes a toll

In many ways, farmed salmon is a seafood buyer's dream come true. Available year-round in consistent, consumer-friendly fillets and steaks, the fish is high in heart-healthy omega-3s and competitively priced compared to other proteins. But in the past year and a half, seafood buyers concerned about environmental responsibility have wrestled with whether to purchase farmed salmon.

A fierce anti-farmed-salmon campaign conducted by many conservation groups, including some representing wild salmon, generated an onslaught of headlines about dyes, PCBs, antibiotics, pollution and fish escapes.

The Coastal Alliance for Aquaculture Reform in British Columbia, for example, launched its Farmed and Dangerous consumer campaign in 2002. Farmed salmon, it says, are "raised like cattle in ocean pens in a stew of antibiotics, pesticides and chemical additives."

The public-relations clincher occurred early this year with media coverage of a Pew Charitable Trusts-funded scientific study showing higher PCB levels in farmed versus wild salmon.

Consumers are asking tough questions, and the dark cloud hanging over farmed salmon's public image has taken a toll on sales. After more than a decade of steady increases, U.S. imports of Atlantic salmon for the first time fell by 24.1 million pounds, or 10 percent, for the first seven months in 2004, compared to the same period in 2003.

Farmed-salmon-industry leaders acknowledge that their product has an image problem and that they must do a better job of telling consumers they are environmentally conscious.

Salmon of the Americas, a year-old trade group, and the newly formed Salmon of Europe are making progress on telling the industry's side of the story, says Hans den Bieman, COO of Nutreco Aquaculture, the Dutch fish-farming and feed company that just merged with Stolt-Nielsen to become the world's largest aquaculture company (see *Newswire* story, page 6).

The aquaculture industry must constructively address its critics and better communicate its selling points to consumers, says den Bieman. He spoke at AquaVision, a biennial forum Nutreco hosts for industry, scientists, non-governmental organizations and government officials to share perspectives on aquaculture. Economic and environmental sustainability topped the agenda for the conference held this June in Stavanger, Norway.

Hosting the conference is one way the company shows its commitment to environmental responsibility, says Nutreco's annual report, along with minimizing the environmental impact of its farms and using as few chemicals, colorants and antibiotics as possible. The company also is researching vegetable replacements for some of the fish used in salmon feed in order to take pressure off wild stocks, says Nutreco's annual report.

"In this case, ecology and economy go hand in hand," says Viggo Halseth, managing director for Nutreco's Aquaculture Resource Center in Stavanger.

Nutreco spends about \$4 million a year researching fish oil and fishmeal replacements. The cost of fishmeal is high and climbing, and landings from the forage stocks that supply the fish used in meal are not expected to grow. Expansion in the farmed-salmon industry means finding new ways to stretch the available fishmeal.

"When it comes to looking ahead, there won't be more [fishmeal] so we need other sources, and that's why vegetable oil and vegetable protein will be bigger and bigger ingredients," says Halseth.

In 10 years, the fishmeal portion of salmon feed has dropped from 50 percent to 30 percent, says Halseth, through use of vegetable protein.

The challenge facing the salmon industry is to find a new formula to effectively grow healthy salmon, while at the same time maintaining the fish's positive selling points of taste and omega-3 fatty acid content.

Nutreco has figured out how to use rapeseed and canola oils to replace fish oil but only recently started transitioning feed formulas for some of its products because fish oil has been cheaper than the other oils. Soy, wheat gluten and corn gluten are the likely vegetable protein substitutes for meal, but the cost of refining those ingredients is still too high, Halseth says.

Finding fishmeal alternatives is one patch of common ground between environmentalists and the aquaculture industry. The feed issue was among criticisms raised by Jason Clay, VP of the World Wildlife Fund in Washington, D.C., during the AquaVision conference.

WWF's strategy is to identify six to eight environmental impacts that cause 70 to 80 percent of the environmental community's concerns and then forge partnerships with companies like Nutreco to develop scientifically sound, economically viable best-management practices, says Clay. Generally, better management practices pay for themselves in two to three years, he says.

A farmed-salmon working group made up of representatives from industry and environmental groups met in Stavanger and will meet for the third time this fall. It's a positive step, and there has been some general agreement on several key issues, says Clay.

WWF and the industry's effort may someday help farmed salmon improve its battered image. Meanwhile, buyers are left to sort through environmentalists' criticisms and a more organized industry response to them. —L.D.

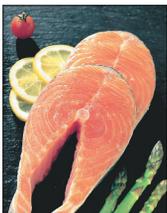
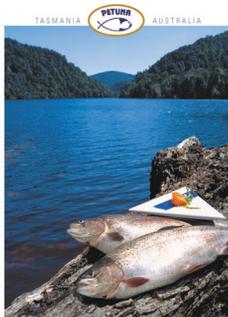


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## Shopping for a third-party

Buyers looking for third-party assurance of sustainability need to choose their information source carefully. Chet Chaffee, a certifier with Scientific Certification Systems of Emeryville, Calif., who has reviewed fisheries for the Marine Stewardship Council and co-wrote a book on third-party fisheries certification programs, recommends buyers ask the following questions, which are accompanied by the answers for the third-party agents profiled in this story.

QUESTION	Marine Stewardship Council	New England Aquarium/ Ahold EcoSound program	Monterey Bay Seafood Watch
<b>What is the organization's agenda?</b>	Promote responsible fisheries management and improve the health of the marine ecosystem through use of an eco-label.	Influence large-scale seafood buying toward environmentally sound options.	Use the best available science to judge seafood sustainability, as defined through an ecosystem approach that favors conservation in the face of scientific uncertainty.
<b>Who will do the review (internal staff or external consultants)?</b>	An MSC-accredited independent certifier, who works with a team of qualified scientists to facilitate the review.	Aquarium staff	Aquarium staff and external consultants
<b>What is the education level of the reviewer(s) and length of time they've worked in fisheries science?</b>	Assessment-team members have five to 10 years senior-level experience and typically a M.S., Ph.D. or law degree in either fish-stock assessment, biology/ecology, fishing impacts on aquatic ecosystems or fisheries management. Requirements are outlined in MSC's certification methodology.	Team's credentials range from a bachelor's in fisheries science and three years' experience to a Ph.D. with 25 years' experience in marine science, conservation and policy.	Staff and consultants have at least an M.S. in marine science (ecology and evolution, fisheries, aquaculture). A marine ecologist with a Ph.D. oversees staff and consultants, whose experience ranges from recent Master's degree graduates to many years of experience.
<b>Are the reviews peer-reviewed?</b>	Yes, and the peer reviewers' qualifications must be consistent with the qualifications for MSC assessment-team members.	Yes, by three external marine-science experts.	Yes, by at least two external science experts.

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