

# Seafood consumption in U.S. up for 2006

**A**MERICANS ate 16.5 lb. of fish and shellfish per person in 2006, a 2% increase over the 2005 consumption figure of 16.2 lb., according to a study released by the National Oceanic & Atmospheric Administration (NOAA) Fisheries Service. The increase brings seafood consumption up to slightly under the 2004 record of 16.6 lb.

Americans consumed a total of 4.9 billion lb. of seafood in 2006. The nation imports roughly 83% of its seafood and remains the third-largest global consumer of fish and shellfish, behind Japan and China.

"The National Offshore Aquaculture Act of 2007 would provide American consumers with greater choice and confidence in the sustainability and safety of their seafood selections," said Bill Hogarth, director of NOAA's National Marine Fisheries Service. "This legislation is an important step toward increasing our supply of home-grown seafood."

The U.N. is projecting a 40 million-ton global seafood shortage by 2030 unless something is done. While NOAA works to end over-fishing and rebuild wild stocks, the U.S. still needs aquaculture to narrow the trade gap and to keep up with consumer demand.

Of the total 16.5 lb. consumed per person, Americans consumed a record 12.3 lb. of fresh and frozen finfish and shellfish, up 0.7 lb. from last year. Canned seafood consumption dropped 0.4 lb. to 3.9 lb. per capita. A record 5.2 lb. of fillets and steaks were consumed, up 0.2 lb.

Shrimp continues to be the most-consumed seafood in the U.S. at a record 4.4 lb. of shrimp consumed in 2006, up 0.3 lb. from 2005.

Increased seafood consumption is due in part to the growth in imports of farmed fish and shellfish. The U.S. can become more self-sufficient at producing seafood with expanded aquaculture, the topic of legislation currently pending in Congress.

NOAA Fisheries' calculation of per capita consumption is based on a "disappearance" model. The total U.S. supply is calculated as the sum of imports and landings minus exports, converted to edible weight. This total is divided by the total U.S. population to estimate per capita consumption.

NOAA Fisheries has been calculating the nation's seafood consumption rates

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since 1910 to keep consumers and the industry informed about trends in seafood consumption and trade.

### Norwegian fish meal

The Norwegian Institute of Fisheries & Aquaculture Research, Fiskeriforskning, has detected a substance in fish meal that could lead to substantially increased revenues for the aquaculture industry.

Aquafeed must contain about 30% fish meal in order for salmon to grow and develop normally. However, because fish meal is a scarce resource and an expensive ingredient in salmon feed, producers have been using increasingly larger amounts of vegetable ingredients from agriculture.

Scientists at Fiskeriforskning in Bergen, Norway, have invested a great deal of time working to discover which substances in the fish meal salmon depend on so they can produce a better and more reasonably priced feed.

The research so far shows that one of these important components is hydroxyproline, which is an amino acid and one of the building blocks in proteins. Tests show that feed with an increased hydroxyproline content causes increased growth rates and vigor in salmon. It was previously assumed that the level of hydroxyproline had no limiting effect on the growth and development of the fish.

"With more hydroxyproline in the feed, the salmon eats more. The weight increases by 14% compared with that which is achieved with today's feed," said senior scientist Anders Aksnes.

Because the fish grows faster, production time can be reduced. In addition, health is strengthened: There are fewer sores and fin injuries on the fish. The results also indicate that feed with more hydroxyproline causes fewer deformations in the bone structure.



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Improved fish health means a better-quality fish and, thus, greater earnings.

"We anticipate that these improvements together amount to a significant profit for the Norwegian fish farming industry," Aksnes said.

Using fish meal with more hydroxyproline means that more vegetable products can be used, which are cheaper and found in unlimited quantities. This makes it possible to increase feed production, and thus, much more salmon can be produced in the future.

The amount of hydroxyproline can be increased by using more meal based on fish skin and bones, which are rich in this substance. For the fishing industry, the new results mean that skin and bones, which today are poorly paid residual raw materials, will become a more valuable resource in the future.

"This is new basic knowledge about what fish meal and fish feed contain and how the different biological components affect the growth and health of the fish," said Aksnes.

"This means that we can improve salmon production and can get better economy and increased earnings in the aquaculture industry," he added.

A patent has now been applied for on the use of hydroxyproline in fish feed, and the results will also be published in a scientific article.

## Lifting the ban

The European Parliament adopted a report by Struan Stevenson (EPP-ED, U.K.) calling on the European Commission and the European Council to lift the ban on feeding fish meal and fish oil to ruminants. The report stresses that "there is no scientific evidence to support a total ban on fish meal on the grounds that it may transmit BSE (bovine spongiform encephalopathy) or other TSEs (transmissible spongiform encephalopathies)."

Parliament noted that Regulation No. 1923/2006 of Dec. 18, 2006, which laid down rules for the prevention, control and eradication of certain TSEs and was recently adopted by the European Parliament and the council, prohibits the feeding of animal protein to ruminants but enables the commission to grant derogations for feeding fish meal to young ruminants, provided that such derogations are based on a scientific assessment of the dietary needs of young ruminants and follow an assessment of the control aspects.

The problem of discards from marine fisheries is estimated in Europe to account for up to 1 million metric tons annually. Parliament suggested that the use of discards by the fish meal and fish oil industry should be examined, given the swiftly expanding European Union

aquaculture sector.

Members of the European Parliament also asked the commission to "increase scientific research into blue whiting" in order to obtain improved advice and management in the near future.

Parliament welcomed the €25 million investment by the fish meal and fish oil industry in Denmark and the U.K. aimed at eliminating dioxins and dioxin-like polychlorinated biphenyls and ensuring the creation of a safe and healthy product.

The U.K. is the largest consumer of fish meal in the EU largely due to its extensive aquaculture sector. Germany, France, Spain, Denmark and the Netherlands use fish meal for their agriculture and aquaculture sectors. Greece, Italy and the smaller Mediterranean islands rely on fish meal for their sea bass and sea bream aquaculture.

People do not directly eat fish meal with the exception of very small volume sales of fish meal tablets in Norway sold through pharmacies for dietary supplements of athletes.

About 33% of the fish meal consumed in the EU is fed to farmed fish; the balance is fed to pigs and poultry. Thus, the effect of fish meal on human health is a result of the meat eaten from farmed fish, pigs and poultry fed on the product as a feed ingredient.

Fish meal is rich in both essential amino acids in the form of protein and in the long-chain polyunsaturated omega-3 fatty acids DHA and EPA that provide health and welfare benefits to animals. Meat, milk and eggs from farm animals fed fish meal and oil are, in turn, foods that benefit human health, according to the report.

## Nutreco to invest

Nutreco's aquafeed business, Skretting, announced plans to invest €24 million in production capacity expansion of the Averoy fish feed plant in midwestern Norway.

A new warehouse for final products, improved port facilities and extra storage for raw materials will improve logistics and enhance efficiency. New production technology will create more feed development possibilities with support from Skretting's global research facility, ARC, in Norway.

Up to June 2008, the production capacity will be increased by 60,000 tons to 240,000 tons. In addition to this investment, Skretting is considering increasing capacity with an additional 100,000 tons after June 2008.

The investment in the Averoy plant follows an upgrade of Skretting's fish feed plant in Stavanger earlier this year. Skretting Norway, with three production plants in total, will pass 500,000 tons of annual production by June 2008.

Skretting is the leading global player in the salmon feed market and has 15 production facilities in the major fish farming regions in Europe, the Americas, Asia and Australia.

In 2006, Skretting produced approximately 1.3 million tons of feed for more than 50 different species of farmed fish. Three-quarters of this volume in extruded dry fish feed was destined for salmon and sea trout, while about 25% represents feed for other fish species like trout, sea bass, sea bream, turbot, yellow tail, barramundi, eel and cod.

The company is launching a totally original concept in culture and enrichment feeds for rotifers and Artemia called ORI-GO. It is based on more than a year of research and development, including trials in leading marine hatcheries in the Mediterranean basin, Norway and the U.S.

"The results from these trials show ORI-GO feeds provide higher yields of more nutritious and active live feeds, more reliably and in half the time of traditional feeds," said Eamonn O'Brien, sales manager for marine feeds at Skretting.

ORI-GO is available as four products: a rotifer culture diet and three live feed enrichment diets.

ORI-GO feeds complete Skretting's Spectrum portfolio of feeds for marine hatcheries launched in 2006. Skretting now offers optimized nutrition for all stages and styles of marine hatchery production in order to help hatcheries be more productive and meet the growing demand for high-quality, healthy and vigorous fish. ORI-GO, like Spectrum, is dedicated to marine species such as sea bass, sea bream, turbot, meagre, cod and halibut.

## Astaxanthin approved

At the June meeting of the EU's Standing Committee on the Food Chain & Animal Health, a vote was taken to approve Aquasta natural astaxanthin for use in salmon and trout feed for flesh pigmentation.

This follows the earlier positive evaluation by the FEEDAP panel and the European Food Safety Authority of the safety and efficacy of Aquasta. Following translation and publication in the *European Journal*, the EU aquaculture industry will have the opportunity to use a cost-effective natural pigment for salmon and trout.

Aquasta has been on the market for several years already in Chile, Canada and the U.S., and consumer trends toward more natural foods have been positive for Astaxanthin Partners Ltd., a 50/50 joint venture formed in 2003 between Tate & Lyle PLC and Igene Biotechnology Inc., the producers of Aquasta.

Aquasta astaxanthin is natural, made by *Phaffia rhodozyma* yeast. The yeast

is grown in large tanks using traditional fermentation techniques. The process uses renewable ingredients such as cane sugar, corn and wheat, making Aquasta a sustainable product.

Astaxanthin is an important nutrient for salmonids, as well as imparting the characteristic orange-pink color to the flesh of the fish.

In the wild, salmon obtain a natural source of astaxanthin from their diet of crustaceans, which in turn feed on carotenoid-producing algae and plants. Aquasta is in the same isomeric form as the astaxanthin found in Antarctic krill and, as a free non-esterified form, is absorbed very efficiently. This is enhanced by the high bioavailability of Aquasta that is typically around 90% due

to the unique natural enzyme process employed to crack the yeast cell wall.

Phaffia-based astaxanthin is also an acceptable way of pigmenting salmon for a number of leading organic certification bodies operating in the aquaculture sector.

### Executive placement

Aquafeed.com has joined forces with established agribusiness recruiting company JCB Consulting Ltd. to provide an executive search and placement service for the aquafeed and wider aquaculture sectors.

JCB Consulting's clients range from international agribusiness conglomerates to small, family-owned operations around

the world, including Europe, Asia, the Middle East and Africa.

"We are excited to be working with Aquafeed.com," JCB president John Brown said. "Our recruiting expertise combined with Aquafeed.com's unparalleled knowledge and contacts within the international aquafeed and related industries allow us to provide a very special service."

The new service will focus on finding and placing technical managers, nutritionists, farm and hatchery managers and other top-level managers and executives in aquafeed and aquaculture worldwide. Job seekers and companies looking for senior staff should contact John Brown at [info@jcb-consulting.com](mailto:info@jcb-consulting.com) for more information.