Product development and marketing of Artic Charr – How to contribute to increased demand among consumers

Sjöfn Sigurgísladóttir

Páll Gunnar Pálsson
• Value can be defined as the ratio between consumer’s benefits and the consumer’s costs and effort
  • Benefits = quality, nutrition, convenience, sensory appeal etc.
  • Costs = money spent, time, energy and expertise needed for preparation

• Studies on seafood value addition: Alda B. Möller
Most of them fit to the Arctic Charr

Sustainable
Nutritional value
Traceable
Green profile
Organic?
Animal welfare
Safe
Natural and healthy
Quality
Low environmental impact
No additives
Natural and healthy
Quality
Low environmental impact
No additives
Natural and healthy
Quality
Low environmental impact
No additives
Health, convenience, food safety and quality in top

Consumption trends in the 5 coming years

- Demand for low prices: 72%
- Health and wellbeing: 45%
- The need for convenience: 41%
- Climate change: 36%
- Food safety and product quality: 33%
- Increased demand for local sourcing: 32%
- Growing ageing population: 24%
- Ethical food production: 13%
- Increased demand for organic foods: 3%
- Indulgence and luxury: 0%

Source: IGD Global Retail Survey, August 2008 and IGD Global Retail Outlook Survey, August 2007
Poultry consumption is increasing

Protein Trends – Europe - € millions

*Please note that Poultry excluding Turkey
Focus

Health and Nutrition

Safety

Sustainability and design

Shelf life and new products

Facts for Marketing
Health = Value

- Effects on health?
- Scientific evidence?
Fish and omega 3 fatty acids

AHA Recommendation

Omega-3 fatty acids benefit the heart of healthy people, and those at high risk of — or who have — cardiovascular disease.

- We recommend eating fish (particularly fatty fish) at least two times a week. Fish is a good source of protein and doesn’t have the high saturated fat that fatty meat products do. Fatty fish like mackerel, lake trout, herring, sardines, albacore tuna and salmon are high in two kinds of omega-3 fatty acids, eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA).

- To learn about omega-3 levels for different types of fish — as well as mercury levels, which can be a concern — see our Encyclopedia entry on Fish, Levels of Mercury and Omega-3 Fatty Acids.

- We also recommend eating tofu and other forms of soybeans, canola, walnut and flaxseed, and their oils. These contain alpha-linolenic acid (LNA), which can become omega-3 fatty acid in the body. The extent of this modification is modest and controversial, however. More studies are needed to show a cause-and-effect relationship between alpha-linolenic acid and heart disease.
Omega 3 fatty acids

EPA (Eicosapentaenoic acid - 20:5n3)

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DHA (Docosahexaenoic acid - 22:6n3)

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α-Linolenic acid (18:3n3)

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Artic Charr is nutritious food

<table>
<thead>
<tr>
<th></th>
<th>Protein g/ 100g</th>
<th>Fat g/ 100g</th>
<th>Omega 6 g/ 100g</th>
<th>Omega 3 g/ 100g</th>
<th>PUFA g/ 100g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wild salmon</td>
<td>20,4</td>
<td>9,7</td>
<td></td>
<td></td>
<td>1,6</td>
</tr>
<tr>
<td>Farmed salmon</td>
<td>20,0</td>
<td>14,9</td>
<td>0,8</td>
<td>2,5</td>
<td>3,4</td>
</tr>
<tr>
<td><strong>Farmed Artic charr</strong></td>
<td><strong>18,9</strong></td>
<td><strong>12,4</strong></td>
<td><strong>0,6</strong></td>
<td><strong>2,2</strong></td>
<td><strong>2,9</strong></td>
</tr>
<tr>
<td>Tilapia</td>
<td>20,1</td>
<td>1,7</td>
<td>0,3</td>
<td>0,2</td>
<td>0,5</td>
</tr>
<tr>
<td>Pangasius</td>
<td>13,6</td>
<td>1,8</td>
<td>0,14</td>
<td>0,06</td>
<td>0,2</td>
</tr>
<tr>
<td>Chicken</td>
<td>18,2</td>
<td>12,4</td>
<td>1,8</td>
<td>0,2</td>
<td>2,1</td>
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<tr>
<td>Pork</td>
<td>19,5</td>
<td>17,2</td>
<td>0,9</td>
<td>0,1</td>
<td>1,0</td>
</tr>
</tbody>
</table>
Fish against:
- Coronary and hearth diseases (*evidence strong*)
- Diabetes: (*evidence some*)
- Obesity: (*evidence weak*)

Example:
High fish and seafood intake may reduce the risk of type 2 diabetes in populations with a high prevalence of obesity.

Diabetes and Metab 2003, 29, 635-42 by Nkondjock and Receveur
Fish proteins can be used to manage bodyweight and to prevent obesity and minimise development of high blood pressure and high cholesterol in blood.

Lavigne et al. 2001; Moei et al. 1999, Yahia et al. 2003 & Trembley et al. 2003
Eat more fish - twice a week

Ten reasons to eat more fish

Fish is healthy and delicious as you'll read below.

1. All types of fish and shellfish are a great source of protein, vitamins and minerals. The Food Standards Agency advises we eat at least two portions a week, one of which should be oily fish.

2. All varieties of white fish are low in fat; 100g of haddock, for instance, contains less than 1g of fat. Lower in fat also means lower in calories.

3. White fish is light and delicate, making it easy to digest - hence it's great for weaning babies. Remove any bones and poach it in water or baby milk, then puree it with veg.

4. A diet that is rich in long-chain Omega 3 fatty acids may help to improve a person's ability to concentrate.

5. Omega 3 fats have an anti-inflammatory effect that may help relieve the symptoms of rheumatoid arthritis as well as skin problems such as psoriasis.

6. Omega 3 fats may help keep the heart healthy by making the blood less likely to clot, lowering blood pressure and encouraging the muscles lining the artery walls to relax, improving the flow of blood to the heart.

7. Oil-rich fish are one of the few foods which contain vitamin D, essential for calcium absorption. They also provide iodine and selenium, important trace elements.

8. Though some shellfish is high in cholesterol, this isn’t responsible for raised levels in the blood. The cause is a diet high in saturated fats which the body then turns into cholesterol in the blood.

9. During pregnancy, the Omega 3 fats that are found in oil-rich fish are an important factor in the baby's eye and brain development.

10. Although you can find Omega 3 fats in plant sources, the long-chain Omega 3s found in oil-rich fish are the most useful sort for the body.
Fish is brain and heart food - but trying to balance its health - boosting benefits with concerns about contaminant level can leave you floundering! Sad and true, contaminants are in most foods, but don’t give up on fish, because fish are still an excellent health choice.

The American Heart Association recommends eating fish twice a week. Why? Because fish are a great source of protein, vitamins, and nutrients. Fish are loaded with omega-3 fatty acids, which provide protection from heart disease and are great brain food for you, your children and if you are pregnant, for your unborn child. It is important to continue to eat fish to gain the healthy heart and brain benefits. The key is to make smart choices and choose fish that are low in mercury, Polychlorinated Biphenyls (PCBs), and other contaminants.
Is seafood safe and healthy?

HEALTH

Panel urges more fish-mercury safety advice

WASHINGTON (AP) -- The government should provide clearer advice on which fish have too much mercury for
Recommendations can be found on the internet on safety and variety of parameters.

Is it the right picture?

### PSR/ARHP Guide to Healthy Fish

<table>
<thead>
<tr>
<th>Clams</th>
<th>LOWEST MERCURY LEVELS</th>
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<tbody>
<tr>
<td>Oysters</td>
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<tr>
<td>Shrimp</td>
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<td>Tilapia</td>
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<tr>
<td>Crawfish</td>
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<tr>
<td>Haddock</td>
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<tr>
<td>Trout (freshwater)</td>
<td></td>
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<tr>
<td>Catfish</td>
<td></td>
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<tr>
<td>Flatfish (includes flounder and sole)</td>
<td></td>
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<tr>
<td>Mackerel (Atlantic)</td>
<td></td>
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<tr>
<td>Scallops</td>
<td></td>
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<tr>
<td>Crab (Blue, King, and Snow)</td>
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<tr>
<td>Pollock</td>
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<tr>
<td>Shad (American)</td>
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<tr>
<td>Squid</td>
<td></td>
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<tr>
<td>Tuna (canned chunk light)</td>
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<tr>
<td>Lobster (spiny)</td>
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<tr>
<td>Mackerel Chub (Pacific)</td>
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<tr>
<td>Cod</td>
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<tr>
<td>Perch (Freshwater)</td>
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<tr>
<td>Skate</td>
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<tr>
<td>Halibut</td>
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<tr>
<td>Mackerel – Spanish (S. Atlantic)</td>
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<tr>
<td>Monkfish</td>
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<tr>
<td>Snapper</td>
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<tr>
<td>Weakfish (Sea Trout)</td>
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<tr>
<td>Bass (saltwater; includes sea bass/striped bass/rockfish)</td>
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<tr>
<td>Lobster (Northern/American)</td>
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<tr>
<td>Tuna (canned, white albacore)</td>
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<tr>
<td>Tuna (fresh/frozen)</td>
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<tr>
<td>Mackerel-Spanish (Gulf of Mexico)</td>
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<tr>
<td>Marlin</td>
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<tr>
<td>Orange Roughy</td>
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<tr>
<td>Grouper</td>
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<td>Salmon (fresh/frozen)</td>
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<tr>
<td>Sardines</td>
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<tr>
<td>Herring</td>
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<tr>
<td>Bluefish</td>
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<tr>
<td>Mackerel – King (Atlantic &amp; Gulf of Mexico)</td>
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<tr>
<td>Shark</td>
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<tr>
<td>Swordfish</td>
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<tr>
<td>Tilefish (Gulf of Mexico)</td>
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</tr>
</tbody>
</table>

- **FOLD**
- **KEY**
  - X contain PCBs or other pollutants
  - ? rarely tested for mercury
  - * overfished

For more information, visit: [www.mercuryaction.org](http://www.mercuryaction.org).
Feed ➔ Fish health ➔ Quality ➔ Health
Facts about facts

- **Artic charr is:**
- Is one of the highest species in omega - 3
- Is very rich in protein
- Selen content is high
- Mercury (Hg) is low
- One of the best food source available for vitamin D
Add value - not cost

- All of those terms add value to the product for some consumers
- But what about cost?
- Important to add value but not cost
- Could a responsibility report for Artic Charr be of help?
  - A report that systematically describes the production of the Artic charr and includes all those new important terms
  - A report that includes abstracts from research projects
Artic charr production yield

1 kg

Whole cutted fish
- 85-91% (850-910 g)
- Viscera: 9-15% (90 - 150 g)

Boneless fillets with skin
- 85-91% (600 g)
- Calcium: 60% (Ca 60%)

Head, bones, and viscera
- 9-15% (400 g)
- Calcium: 40% (Ca 40%)
Colour:
Fat in Atlantic salmon fillets in relation to fish size

% Fat in Flesh

Fish Weight (g)

- Control
- High fat
- Medium fat
- Low fat
Value in chilled and frozen

Chilled Fish vs Frozen Fish
Average price per Kg

- Frozen Fish: 5.38 (+5%)
- Chilled Fish: 8.68 (-1%)

52 w/e Aug 9 2009

© Worldpanel™ division of TNS 2009
Chilled vs Frozen fish

Chilled Vs Frozen Fish – Expenditure £m

Growth in chilled fish slows, however frozen fish has picked up in recent years

Chilled = Thawed up and fresh fish

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^ = 52 w/e July 2009

agra informa
Chilled vs Frozen Fish – Volume

The spend growth seen in chilled fish is also seen in volume until recent years when frozen has recovered

© Worldpanel™ division of TNS 2009

* = 52 w/e July 2009
Superchill

![Graph showing Torry score over Days from packing for different cooling methods: Air superchilled, MAP superchilled, Air conventional cooling, MAP conventional cooling. The graph indicates that Air superchilled has the highest Torry score, followed by MAP superchilled, Air conventional cooling, and then MAP conventional cooling. The horizontal line at Torry score 5 is reached by 8 days for Air superchilled, 12 days for MAP superchilled, and 14 days for MAP conventional cooling.](image)
• Temperature is the core factor for maintaining quality
• Increased shelf life on fresh fillets
• Reduced quality loss during transport
• Environmental friendly transportation - no airfreight needed
• Improved quality - more value
Product development

- Identifying new consumer trends
- Identifying packing technology
- Identifying processing technology
Packaging does matter

- Self-service - Merchandising - Appeal
- Food waste - Freshness - Health
- Less time - New cooking - Enjoy

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Cook in the pack in microwave for frozen

1. Remove the outer packaging and place the tray in the microwave. No need to peel off or puncture the film.

2. Heat on high for 4 minutes. The film expands to form a bubble during heating, and then sell vents and relaxes over the food.

3. Just remove from the microwave and let cool for two minutes. Then, simply peel off the film, and serve straight from the package.

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Less time spent on cooking

Home Cooking Time

<table>
<thead>
<tr>
<th>Year</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1934</td>
<td>2.5 hrs</td>
</tr>
<tr>
<td>1954</td>
<td>1 hr</td>
</tr>
<tr>
<td>1974</td>
<td>0.5 hrs</td>
</tr>
<tr>
<td>1994</td>
<td>15 mins</td>
</tr>
<tr>
<td>2010</td>
<td>8 mins</td>
</tr>
</tbody>
</table>

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High price = greater value

- The benefits
- Convenience has been very important the last 10 years and still is.
- Convenience was mainly:
  - Different fillet portions
  - Ready meals
- The consumers are “cash rich and time poor” and homes with “double income and no kids” were increasing
What does customer want?

- Add value not cost
- More for the same
- The same for less
- Simple meal solutions
- Something WOW
- Replicate the dine out experience at an affordable price
- Diversity where relevant
- Great quality and service
Value - local foods

- Raw material
- Product
- Service
- Experience

Consumer interest vs. Product price
High vs. High
Eat on part fresh, freeze the other

CRYOVAC Darfresh®

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VISIT JOKULSARLON

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THE VATNAJOKULL REGION WOW!
Total Organic Products

Annualised Value = £1bn
Latest 12 weeks 13% decline
Do we need a certification program or is it enough to have a transparent and reliable information available for the Artic charr?
Food issues and policies

Naturally, customers want to know the food they are eating is safe and healthy. They want to know where it comes from, how it has been produced and what it contains. And so does Waitrose.

Waitrose recently came out top... sustainable fishing

Waitrose recently came out top in the latest Marine Conservation Society (MCS) League Table. The survey examines the main UK supermarkets’ commitment to sourcing fish from responsibly managed fisheries.

Waitrose was commended for not selling any fish from the MCS List of Fish to Avoid and sourcing the greatest number of fish from the MCS Fish to Eat List (26 species).

In 2006, Waitrose became the first UK supermarket to sell only line-caught fresh and smoked cod and haddock in place of trawled net fish. It was also the first retailer to announce its intention to remove beam trawled fish from its assortment. Read more about our sustainable fishing policy here.

Listen to our sustainable fish podcast and leave a comment in our forum.
With its pristine waters and pure environment, Iceland is the ideal location to cultivate an outstanding arctic char. Raised with the utmost care on an employee owned and operated fish farm, Icelandic Arctic Char is a top quality fish and a great pick for people and the planet.
In developing the newly enhanced Seafood Quality Standards for farmed seafood at Whole Foods Market, I had the amazing opportunity to visit farms in remote locations around the world to learn about the wide range of aquaculture practices used to raise farmed seafood. I’m often asked, “What’s the most amazing place that you’ve visited?” While every country and the people that I’ve met have been incredibly different and interesting, I often answer, “Iceland.”
• **Few important terms on fish buyers websites:**

- Responsible, sustainable, traceable, legal, safety, transparancy, eco-labelling, animal welfare, environmental impacts, genetic modified, endangered species, quality, product history, ethical trading, organic, no additives, no artificial substances, no use of persistent pesticides, carbon foodprint, local food, slow food, nutritional value, antibiotics, natural and healthy, green profile, food miles, .....
Traceable

MORRISONS

Fresh Food

Trafalgar Fisheries, Wiltshire

Golden trout, supplied exclusively to Morrisons by Trafalgar Fisheries, is a bit of a freshwater star among fish. Sandy golden in colour, it has a firmer texture than its rainbow cousin and is just as mouthwateringly tasty. So it's not surprising that it's been causing quite a stir since its introduction to the UK from the Rocky Mountain region of America.

"Morrison's are really open to new ideas, we're always talking to buyers Janine Vlcek and Matthew Bailey. There's real enthusiasm with everything they do, it makes for a really good working relationship."

Jim Love, Trafalgar Fisheries

Trout specialists

With over thirty years' experience, Trafalgar Fisheries is one of the earliest commercial fish farms in the UK. Situated on the picturesque banks of the Hampshire Avon, their environmentally friendly farm is stocked with the river's beautiful clear and fresh water - ideal for golden trout. With plenty of room to swim free and mature naturally, the fish are reared using only the highest and most modern hygiene and quality standards. The oxygen levels of the free flowing water are continuously checked to ensure that the fish are kept in a tip top healthy condition. The end result is deliciously tasty golden trout, something our in-store fishmongers are always more than happy to fillet and prepare for you.

Notice: An egg tracker on the website

Information about the producer
Artic charr: The most efficient meat producer!

100 kg feed

65 kg edible part

20 kg edible part

13 kg edible part