Farming Atlantic Salmon

Eyed Ova
Broodstock are used to breed the new generation of fish for the farm so they must be carefully selected on the basis of desired characteristics. Broodstock are grown to maturity over a 2-4 year period.

Hatcheries
In freshwater production units circular tanks can be used to ongrow parr to the smolt stage. Usually the hatchery is nearby and broodstock are kept in similar tanks or in the sea if it is adjacent to the site.

Growth Factors
Successfully growing healthy farmed fish requires a careful control of many factors including high quality broodstock, good water quality, appropriate stocking densities, nutritious feed and minimal stress.

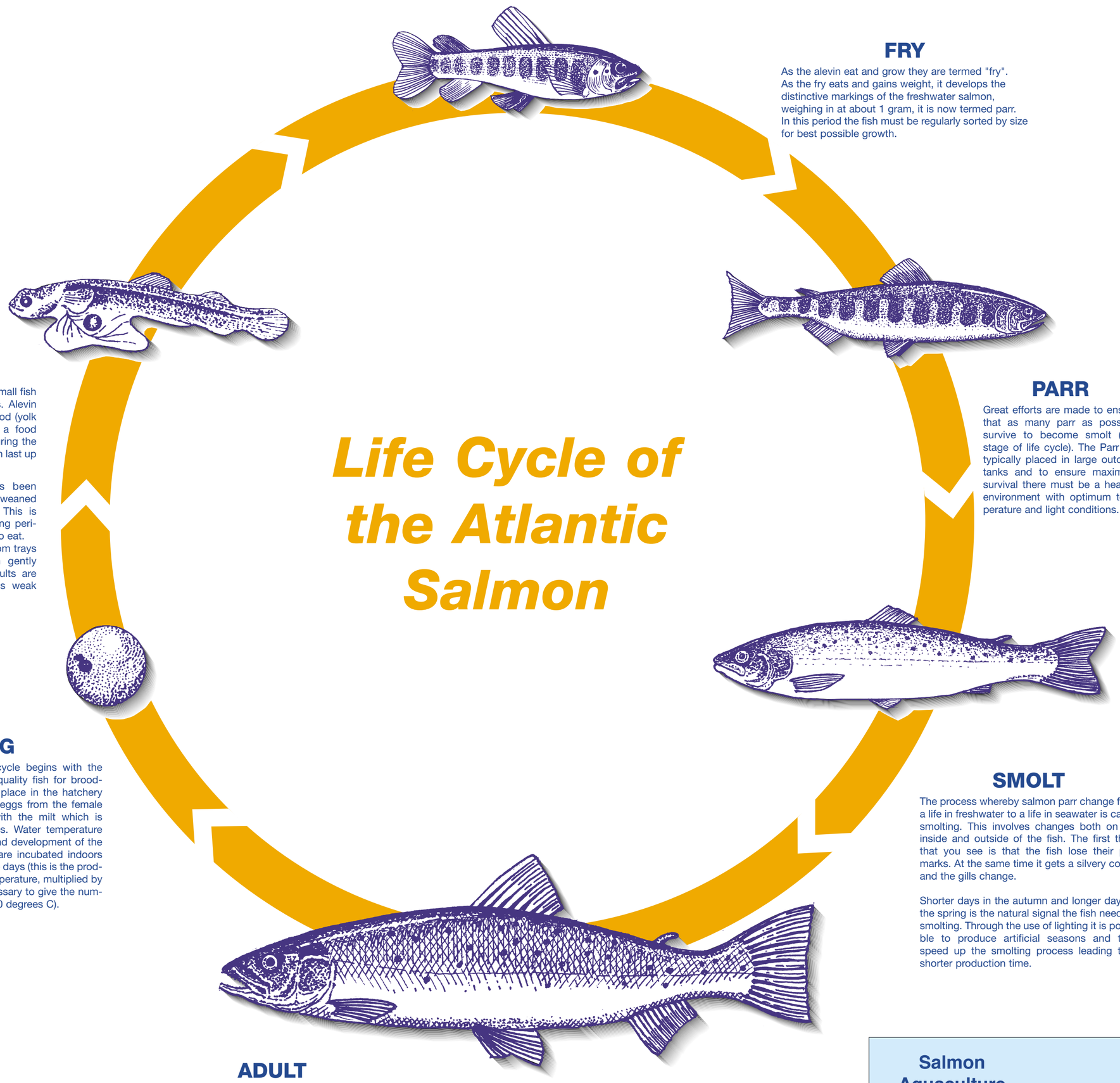
Marine Ongrowing
Salmon smolts are transferred into cages in the sea via canisters slung underneath helicopters or via wellboat. Cages can be square, circular or rectangular and may be made from steel and rubber or plastic. Smolts can grow to commercial size in this environment within 18 months.

Quality Control
Quality can give the edge in a competitive marketplace. Most salmon farms belong to a quality scheme for salmon resulting in traceability from point of sale through processing back to the various life stages of the product.

Versatile Food
Salmon can be eaten marinated, smoked or cooked. Essential fatty acids (in particular Omega-3) as well as protein, vitamins and minerals present in Salmon are a valuable part of a healthy human diet.

Wild Atlantic Salmon, Salmo salar occur naturally along both the East and West Coasts of the North Atlantic. On the East Coast of North America, Atlantic salmon range between the Connecticut River, USA (South) to Ungava Bay, Canada (North). On the east Atlantic, salmon range between northern Portugal (South) to the Barents and White Sea areas of Russia (North). Farmed Salmon is now firmly established as a major commercial species in Europe where the combination of good environmental conditions and suitable sites has led to the establishment of a thriving industry. The industry has grown rapidly due to improved environmental management, production efficiency and new technologies and is now a major supplier of high quality fish to world markets.

It is estimated that circa 80,000 people (54,000 full time equivalents) are employed in aquaculture activities in the EU, 3.3 per 10,000 of the active population (aquamedia). Each full time equivalent job accounts for approximately 20 tonnes of production including upstream and downstream activities. Ireland has the greatest proportion of its active population employed in aquaculture followed by Spain and Greece (Macalister Elliot). European aquaculture is recognised as having great potential for countering the negative development in many peripheral areas of Europe. Aquaculture can help counteract the depopulation of rural areas that the declines of traditional workplaces have caused. It is the recommendation of the European Commission that aquaculture in the Union should increase its rate of growth to 4% per year and provide an additional 10,000 jobs by 2008.



Life Cycle of the Atlantic Salmon

EGG
In salmon farming the cycle begins with the careful selection of top quality fish for broodstock. Fertilisation takes place in the hatchery by gently squeezing the eggs from the female fish and mixing them with the milt which is pressed out of the males. Water temperature determines the growth and development of the fish. The fertilised eggs are incubated indoors for a period of 490 degree days (this is the product of the daily water temperature, multiplied by the number of days necessary to give the number 490, i.e. 49 days at 10 degrees C).

ALEVIN
When the egg opens, a small fish called an alevin emerges. Alevin emerge with a sack of food (yolk sac) attached, which is a food reserve that it lives off during the first period. This stage can last up to 290 degree days.

After the yolk sac has been absorbed the alevin is weaned onto a formulated diet. This is known as the “first feeding period" where the fish learn to eat.
The alevins are moved from trays into feeding tanks with gently flowing water. Good results are obtained with continuous weak light over the tanks.

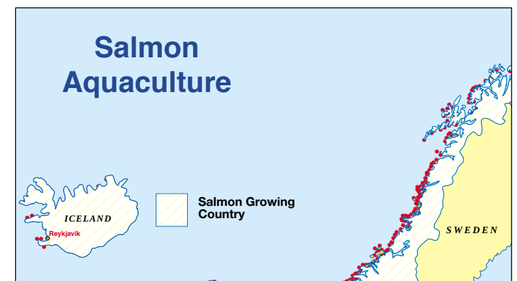
FRY
As the alevin eat and grow they are termed "fry". As the fry eats and gains weight, it develops the distinctive markings of the freshwater salmon, weighing in at about 1 gram, it is now termed parr. In this period the fish must be regularly sorted by size for best possible growth.

PARR
Great efforts are made to ensure that as many parr as possible survive to become smolt (sea stage of life cycle). The Parr are typically placed in large outdoor tanks and to ensure maximum survival there must be a healthy environment with optimum temperature and light conditions.

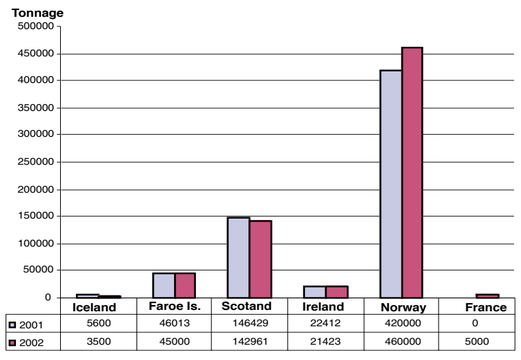
SMOLT
The process whereby salmon parr change from a life in freshwater to a life in seawater is called smolting. This involves changes both on the inside and outside of the fish. The first thing that you see is that the fish lose their parr marks. At the same time it gets a silvery colour and the gills change.

Shorter days in the autumn and longer days in the spring is the natural signal the fish need for smolting. Through the use of lighting it is possible to produce artificial seasons and thus speed up the smolting process leading to a shorter production time.

ADULT
Feed is the largest variable cost on a fish farm. The feed must contain all the nutrients that the fish needs to become a healthy animal. Compared to other farmed animals, fish are the most efficient converters of nutrients in their feed. After as little as 10 months in the sea some of the fish are large enough for harvest. Harvest size is typically 2-6 kg.

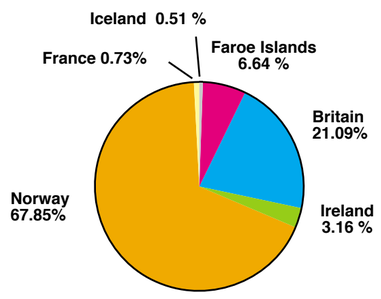


European Salmon Production 2001/2



	Iceland	Faroe Is.	Scotand	Ireland	Norway	France
2001	5600	46013	146429	22412	420000	0
2002	3500	45000	142961	21423	460000	5000

Production by Country 2002



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