



## Wild or farmed?

Recent legal proceedings taken by the FSAI highlights a fish labelling issue of which consumers should be aware.

Earlier this year a case was taken by the Food Safety Authority of Ireland (FSAI, see *Useful contacts*) against Wrights of Howth, Galway. The FSAI brought the proceedings following an investigation into breaches of food legislation found during routine labelling and traceability audits conducted between December 2006 and September 2007. The seven charges to which Wrights of Howth, Galway Ltd. pleaded guilty include the false declaration of the method of

production for salmon darnings which described them as 'caught at sea', whereas they were actually farmed, and the false declaration of the catch area for salmon darnings as 'FAO 27' – 'N. East Atlantic', whereas the true country of origin of the product was Norway. Another charge related to not being able to produce on inspection, marking or labelling or commercial documentation as required under law to ensure traceability, for several products including salmon and

scallops, and therefore being unable to authenticate their origin or method of production. The company also pleaded guilty to the incorrect use of a Portuguese premises approval which was being applied to whole cooked crab, whereas in fact the product was processed in Ireland not Portugal. The FSAI welcomed the ruling stating that "the legal proceedings should send a strong warning to all food businesses that breaches of food legislation will not be tolerated."

### AT A GLANCE

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## Smoked salmon labels

Further legal proceedings were brought by the FSAI against Simro Limited, trading as Wrights of Howth, West Pier, Howth, Co. Dublin in March 2009 and another company in the group, Ireland's Eye Seafoods, located at Dublin Airport. It was alleged that they supplied or placed on the market a product with incorrect or misleading labelling, namely, smoked salmon which bore the details "Ingredients: Irish Smoked Wild Salmon Sliced" and which identified the catch area as "Area 27". This indicates that the salmon was caught at sea, in the north east Atlantic, when it was, in fact, farmed. Judge Ann Watkins ruled "I am satisfied that the State has established beyond a reasonable doubt that these fish did not come from the sea"... and that they "remained the property of the natural or legal person throughout the rearing or culture stage, up to and including harvesting..."

However, she also ruled that there was insufficient proof that the farming referred to was aquaculture within the meaning of the Act, stating, "I have no sufficient evidence that techniques designed to increase the production of the organism in question beyond the natural capacity of the environment were used." Accordingly, all 42 summonses against the company and directors were dismissed with costs awarded to the accused against the FSAI. The FSAI stated that they will "continue to pursue investigations into cases where it is felt that the interests of the consumer are being undermined."

## Fish labelling regulations

The labelling of fish at each stage of marketing is governed by European Regulations (EC) No. 104/2000 and 2065/2001, in relation to informing consumers about fishery and aquaculture

products. The regulations apply both to fish sold loose and in a pre-packaged form. 'Fish' means raw fish to which no other ingredients (including additives, colourings, flavourings) except salt have been added. The rules also apply to fresh, chilled and frozen fish and also those that have been smoked or dried. Products containing fish as an ingredient e.g. sandwiches and sandwich fillings, fish fingers, battered fish fillets, seafood chowders etc. are outside the scope of the Regulations. At retail level the following information must be provided on the labelling or packaging of the product (a counter label at the point of sale placed in close proximity to the fish would also suffice):

- The commercial designation of the species of fish i.e. the name associated with the particular species of fish e.g. the commercial designation for *Gadus morhua* is Cod.
- The method of production e.g. 'caught at sea' or 'caught in freshwater'. In the case of products resulting from aquaculture, they must state clearly that they were 'cultivated' or 'farmed'.
- The Catch Area – for fish that has been caught, the origin must be specified by reference to one of the 12 catch areas eg North East Atlantic. For products of aquaculture the member state or third country where the fish have been reared must be clearly stated.

These labelling requirements do not apply to small quantities of fishery products sold directly to consumers by either fishermen or producers provided these products do not exceed the value of €20 for each purchase.

## Fish DNA Profiling

A recent project, undertaken jointly by the FSAI and University College Cork (UCC), shows the potential of DNA profiling to confirm if salmon sold in

Ireland are from a wild population or from a farmed strain. The forensic identification of salmon products carried out by the Department of Zoology, Ecology and Plant Science, UCC, is now possible due to the recent development of the National Atlantic Salmon Genetic Database. The database provides a reference baseline against which to compare DNA from samples taken from salmon products on the market. While the difference between a farmed and a wild salmon might be obvious from its physical characteristics, once the fish is processed the distinctions become less apparent. Consequently, technologies that can establish the origin of a sample, irrespective of processing, provide an extra element of assurance for consumers that claims being made as to the wild origin of the product are genuine.

Additionally, robust and accurate DNA techniques can also provide an important enforcement tool for food regulatory agencies in deterring fraudulent or misleading practices through inaccurate or misleading labelling or traceability of salmon products. DNA samples can be taken from fresh, chilled, frozen or processed salmon (including smoked products) and screened for variation at 15 genetic markers (microsatellites) using techniques similar to those used in human forensics. Each individual fish possesses a unique genetic 'fingerprint', and certain genetic attributes characterise the populations from which they are taken. This allows a close look at the DNA of any individual, therefore determining from which population or strain it is most likely to have come. The analytical techniques involved have been rigorously tested using a blind testing approach and are demonstrated to be accurate, with salmon of known origin being correctly identified as being either from a farmed strain or wild population, and indeed more specifically to which wild population or farmed strain they belong. The baseline is already being used by the Marine Institute, the Central Fisheries Board and the Department of Agriculture, Fisheries and Food in the formulation of future management strategies for wild Atlantic salmon populations in Ireland. This approach is now accepted internationally as being a powerful aid to salmon stock management. The wider application of DNA technology for traceability and authentication of a variety of fish products is currently being developed

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## choice comment

Fish, both farmed and wild, contains an abundance of nutrients including protein, vitamins and essential omega-3 fats, and is an important food for a heart-friendly diet. However, labelling a product 'Irish smoked wild salmon' when it is in fact farmed, and listing a product as Irish when it was really farmed in Scotland is deliberately misleading to consumers and a wholly unacceptable practice. Initiatives such as the DNA profiling project from the FSAI are to be welcomed as they can be used to deter such fraudulent activity and to raise food standards on behalf of the consumer. Nevertheless it is still important to verify the authenticity of your fish. The price differences between wild and farmed fish are significant, and consumers should not be paying high prices for a product when they are in fact getting one of an inferior quality. Before purchasing, ask the fishmonger to clarify whether the fish is farmed or wild, and where exactly it was caught.

and this will facilitate increased value and consumer confidence in produce currently available for purchase in the Irish market.

### What is the difference?

Wild salmon is caught by fishermen in the Atlantic off the Irish coast. There has been a ban on driftnet salmon fishing since 2006 to alleviate the pressure on the wild salmon population. Stocks of wild salmon have been over-fished for years resulting in an 80% decline in the population in recent decades. This has led to a growth in the fish farming or 'aquaculture' industry with many salmon farms locating on the west coast of Ireland. Much controversy has arisen regarding the growth in aquaculture. Problems exist with species contamination, declining omega-3 levels and the effects on the environment. In 2004, a report in *Science* journal described a study during which researchers tested 700 wild and farmed salmon for contaminants including PCBs (polychlorinated biphenyl) dioxins, toxaphene and dieldrin. Farmed salmon was found to have up to seven times more contaminants than wild salmon, and European farmed salmon had greater levels of contaminants than American farmed salmon. Farmed salmon are frequently raised in large numbers in overcrowded conditions similar to battery hens. The practice of using antibiotics to control parasites is widespread, leading to the added problem of these substances entering the environment.

The term 'organic' does not necessarily mean that the salmon has lived in its natural environment. Much organic salmon is farmed fish which is fed an organic diet. A smaller amount of fish may be kept in the cages but the conditions are clearly different from those of wild salmon which swim and feed naturally in seas, oceans and rivers. Wild salmon is free of antibiotics, pesticides and artificial colourings. It has a much higher level of essential omega-3 oils which are good for the heart and the brain. Fortunately many tasty and cheaper alternatives to wild salmon such as mackerel and herring are available to consumers who wish to avail of the benefits of eating fish. These fish are also high in omega-3s but they are not endangered so there is no need for them to be farmed and they are much less expensive than wild salmon. At retail



level there is a difference of up to €40 per kilo between farmed and wild salmon which may increase the temptation for manufacturers to falsely label produce.

*Consumer Choice* looked at a number of smoked salmon products available in retail outlets and found that some manufacturers are using both the words 'wild' and 'organic' on the labels to describe their products. For example the description on one product reads 'Organic Smoked Salmon Reared in the Wild Waters of the Atlantic'. This salmon is farmed although this may not be made clear to consumers. Another product's label has the word 'Wild' on the corner of a package of 'Irish Organic Salmon'. Organically produced fishery products within the meaning of regulation (EC) No. 834/2007 are products of aquaculture. Consequently a farmed product cannot also be wild so a label stating two different methods of production is incorrect and misleading to consumers.

### Fish farming impacts

There is evidence indicating that salmon farming may have a negative impact on wild salmon populations. Crowded salmon farms act as breeding grounds for sea lice, and farmed fish spread these parasites to wild salmon and sea trout if they escape and migrate to sea. The lice are generally not dangerous to adult salmon but young salmon are at risk because their scales and skin are not strong enough to protect their vital organs from flesh-eating lice.

The escape of farmed salmon from fish farms also leads to interbreeding between wild and farmed salmon, thus reducing the long-term ability of wild salmon to survive. A 2008 report in the *National Geographic* (see *Useful websites*) described the results of research which used official data from Canada, Ireland and Scotland to compare the survival of wild salmon and sea trout in regions with salmon

farms to nearby farm-free areas. Scientists noted a dramatic fall in salmon catches and quantities since the 1980s in areas of the North Atlantic and northeast Pacific where salmon farming increased over the same period. The findings appear in the journal *Public Library of Science Biology*. It has been suggested that fish farms should not be situated within a certain distance of the sea or major salmon rivers in order to prevent the spread of sea lice and to curb the problems arising from interbreeding between wild and farmed salmon.

### Recommended consumption

Despite the negative issues that have been highlighted, fish indisputably remains an important source of nutrients in the diet, and current recommendations state that consumers should eat two portions of fish per week, one of which should be oily such as salmon. Oily fish are a rich source of omega-3 fatty acids, essential for foetal brain development and linked to reductions in the occurrence or symptoms of autoimmune diseases, inflammatory diseases, and coronary heart disease. The Marine Institute, Bord Iascaigh Mhara (BIM) and the FSAI closely monitor the levels of contaminants in Irish produce in order to protect the health of consumers.

Nonetheless it is important that consumers are fully aware of the issues in order to be able to make informed choices. Great damage is done by companies trying to further their own profits at the expense of the consumer. Mislabelling products has wide ranging consequences, and impact on the reputation of Irish goods that are sold in international markets. BIM's Salmon Market Comment 2007 states that 'Irish farmed salmon has created a niche offering in the market and is more expensive than farmed salmon from other origins, demonstrating consumer recognition for the Irish origin and high quality nature of the product.'

### Useful contacts

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