



European Commission

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Fisheries and aquaculture in Europe

○ The Baltic Sea Tailor-made management



○ **Resources**
A plan for cod

○ **Technical measures**
Simplifying the regulations

○ **Aquaculture**
Sturgeons and energy savings

Calendar

Shows and exhibitions

• IATTC, meeting of the parties, Busan (Korea), 26-30 June 2006

The Inter-American Tropical Tuna Commission is the regional fisheries organisation that has managed tuna stocks in the eastern Pacific for over 50 years. At its annual meeting, the organisation establishes management measures based on the recommendations of its Scientific Committee.

> For more information:

Tel: +1 858 546 71 00

E-mail: info@iattc.org

Web site: <http://www.iattc.org>

• ACUI 2006, Vilagarcía de Arousa (Spain), 5-7 September 2006

ACUI is an annual aquaculture trade show that gives large numbers of Spanish and international aquaculture professionals the opportunity to spotlight their products. Inaugurated last year, the second exhibition will be held in Galicia.

> For more information:

Tel: +34 981 58 75 38

E-mail: info@acui.es

Web site: <http://www.acui2006.com>

• NAFO, annual meeting, Dartmouth (Canada), 18-22 September 2006

This regional organisation, which manages fisheries in the waters of the northwest Atlantic (between Greenland and the eastern coast of Canada), initiated a reform process last year aimed at modernising its decision-making bodies, control system and management approach. Fishing possibilities will be set at this annual meeting.

> For more information:

Tel: +1 902 468 55 90

E-mail: info@nafo.int

Web site: <http://www.nafo.ca>

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Note to readers

We welcome your comments or suggestions at the following address:
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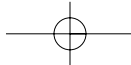
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The Baltic Sea in the news

The Baltic Sea has an important place in our common history. From its banks departed the barbaric invasions, the Viking conquests and the considerable influence of the Hanseatic League, the first important trading power extending to all of Europe. It was also one of the 'frontiers' inherited from the post-war division of Europe and is today the only region of Europe where the European Union has a common border of over 1 000 kilometres with Russia.

While economic activity in the Baltic Sea is largely steered towards industry and trade, fishing is also very important. As in many other fishing regions, the conservation of resources is the overriding concern.

Certain features specific to the Baltic make the situation very sensitive, however. The Baltic, like any other enclosed sea, is a fragile ecosystem. Due to the narrow channels linking it to the North Sea, its waters take 6 to 30 years (depending on the source) to be fully renewed. The different species also communicate little with other seas. With its very low salinity, it is subject to freezing on its northern coasts several months a year and in certain places it is even home to freshwater species. As a result of these very specific conditions, fewer than 100 species live in the Baltic Sea.

On top of that, the pollution flowing into the sea from rivers is also trapped and takes longer to disappear due to the slow circulation of waters. This has led to higher pollution rates than in other European seas. The Baltic and the species living in it therefore require protection through measures adapted to these specific characteristics.

Fisheries management used to be the responsibility of the States bordering the Baltic, which acted through the regional fisheries organisation, IBSFC⁽¹⁾. That organisation has become obsolete because, following enlargement, only two parties remained: Russia and the European Union. For that reason, the European Union now directly manages its Member States' fishing activities.

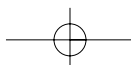
In this context, the European Union has taken a number of measures aimed at maintaining strict management of resources in the Baltic Sea. These include the setting of fishing possibilities for 2006 and the technical measures recently laid down through specific regulations. A long-term plan in support of cod stocks is expected to be presented soon.

To guarantee the effectiveness of the strategy for protecting resources and the marine environment, it is important for the parties concerned to be involved. The Baltic Sea RAC, set up in March 2005, will play a crucial role in that regard. The RACs are Regional Advisory Councils established to facilitate dialogue between the different players concerned with the fisheries sector. At international level, good collaboration between the EU and Russia is also crucial and the EU is resuming the negotiation of a bilateral fisheries agreement with that country.

The Baltic, a European sea with unique characteristics, faces numerous challenges. The future of fisheries in this region will depend on the solutions contributed by all the parties concerned.

The Editor

(1) International Baltic Sea Fishery Commission.





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The Baltic: a very special sea

Inshore fishing is important in the Baltic Sea:
70 % of the fleet is made up of vessels less
than 10 metres in length.

Baltic Sea fisheries can be summed up in three figures: 25 000 fishermen, 6 000 vessels and 735 000⁽¹⁾ tonnes of catches. The Baltic has often been in the news of late, thanks to enlargement, the creation of a Regional Advisory Council, the adoption of a separate regulation on fishing possibilities for 2006, and the implementation of a tailor-made technical regulation, among other reasons. In the pages that follow, we will take a look at these different measures, all of which will contribute to making these fisheries more sustainable. We begin by looking at the Baltic's history and its specific characteristics.

Following the enlargement of May 2004, the Baltic Sea is almost entirely enclosed within the European Union. The majority of its coastline now belongs to Member States, with the exception of the the Gulf of Finland and the enclave of Kaliningrad, which give Russia access to this sea.

This change has had a major impact on fisheries management.

Since 1974, issues concerning fishing beyond territorial waters had been addressed by the IBSFC, a regional fisheries organisation which brought together the European Union and the other coastal states. This organisation recommended management measures for shared stocks, such as annual TACs, an action plan for salmon (1997) and strategies for the management of cod (1999) and sprat (2000). These matters are now dealt with bilaterally between the European Union and Russia. This means that the European Union can manage the fisheries of its Member States directly, as it does in the North Sea, for instance. The EU therefore withdrew from the IBSFC, which ceased all operations on 31 December 2005.

The Baltic Sea has two major physical characteristics which distinguish it from other European waters, and which we need to keep in mind if we are to understand the special nature of the fisheries management issues which it poses.

Low salinity

The first is its low salinity. The Baltic is almost totally enclosed, and only communicates with the open seas through the straits that separate Denmark and Sweden. It thus receives more fresh water from the many river basins which surround it than it does salt water from the North Sea. Salinity levels drop gradually as one moves away from Denmark. As a result,

of the 100 or so different kinds of fish that have been identified in the Baltic, some 30 are freshwater species that can be found in inshore waters, or even further out. In some places, fishermen's nets will haul up herring and perch, sole and trout all in the same catch. There are also limits to salinity levels below which certain kinds of seafood cannot survive. This is the case for cod, which is not found any further north than the Finnish islands. Herring and sprat, on the other hand, can be found throughout the Baltic.

The large inflow of fresh water has other consequences as well. In winter, ice blocks the northernmost coasts for several months each year and the severity of this phenomenon has a major influence on the state of certain stocks, such as sprat, from one year to the next. Such large quantities of fresh water have environmental consequences, too: pollution from the rivers creates problems of eutrophication and leads to higher dioxin rates than in other European seas⁽²⁾, though both these trends are now flattening out.

Shallow waters

The other striking characteristic of the Baltic is the nature of the seabed. Generally speaking, the sea is quite shallow, although there are deeper sections where sea species can find enough salt water (which is heavier than fresh water) to reproduce and lay their eggs. These deeper areas are therefore particularly rich in resources and are much sought-after by fishermen, particularly those looking for cod. Examples are the Bornholm, Gdansk and Gotland deeps.

In this narrow body of water, where there is not much open sea, coastal fishing is relatively more important. 70 % of the Baltic fleet is made up of vessels measuring less than 10 metres. Inshore fishing also targets the greatest variety of fish, using several types of gear: trap-nets, lines, gill nets, Danish seines and in some places, demersal trawls. Fishing on the high seas, by contrast, is practiced by larger vessels, and concentrates on three species: sprat and herring, caught with pelagic trawls, and cod, caught primarily with demersal trawls, but also with bottom-set gillnets.

All these distinctive features make the Baltic a fragile sea whose stocks must be managed very carefully to ensure they are fished sustainably and responsibly. The European Union has established the instruments needed to achieve that objective. In the pages that follow, we outline the management measures now in place.

(1) 2004 figure.

(2) See *Fishing in Europe*, No 11, March 2002, pp. 4-7.

The Baltic Sea Regional Advisory Council

Priority on dialogue

The Baltic Sea Regional Advisory Council held its first general assembly on 15 March last in Copenhagen, Denmark. The fourth Regional Advisory Council to be set up, it brings together all fisheries stakeholders from the countries bordering the Baltic. Reine Johansson, of the Swedish Fishermen's Federation, chairs the new RAC. He discusses the objectives and priorities of the new body.

The creation of Regional Advisory Councils (RACs) was one of the fundamental issues of reform of the Common Fisheries Policy. The RACs are bodies which, in different fishing zones or for certain types of fisheries, bring together fishing sector professionals and different interest groups affected by the Common Fisheries Policy: environmental associations and consumer protection groups, representatives of sport and recreational fishing, fisheries sector women's networks, and so on. Scientists also participate as experts.

The aim of the RACs is, on the one hand, to give rise to dialogue between the different players and, on the other, to enable all stakeholders to contribute to the development of the Common Fisheries Policy by giving their opinions on the management issues that affect their area of activity or fisheries.

The European Union has provided for the creation of seven RACs. The Baltic Sea RAC is the fourth to be created, following in the footsteps of the North Sea, North-western Waters and Pelagic Stocks RACs. The Baltic Fishermen's Association carried out the many formalities required for creation of the RAC. The Council's secretariat is based in Copenhagen.

Management and environment

Reine Johansson emphasizes straight away the singularities of the activity zone of this RAC: the Baltic Sea is special for a number of reasons. First, fishing concentrates on three species – cod, herring and sprat. This is very limited compared to the 20 or 30 commercial species found in the North Sea or Atlantic Ocean. Second, the Baltic is an 'enclosed' sea; its waters take six years to be completely renewed so it is extremely sensitive to all forms of marine pollution.

The Chairman consequently wishes to see stock management and protection of the marine environment become the two main thrusts of the work of the Baltic Sea RAC.

Reine Johansson is the Chairman of the new Baltic Sea RAC: *'What is most important for us is to foster dialogue between members.'*



'We have to look after the quality of this water. That is a crucial point,' he declares. *'There are too few species in the Baltic Sea. So we have no alternative to managing those three species as best we can.'* Restrictions on fishing possibilities for cod and sprat, as well as the long-term plan for cod management will be the focus of the RAC's attention, *'because competition is going to become tougher between Baltic fishermen, especially in an increasingly international market.'*

The new Member States

Another distinctive feature of the Baltic Sea RAC is that a large number of its representatives are from the new Member States. *'It will be important to give special attention to these new members, to respect their expectations and listen to them, because we too have a lot to learn from them,'* explains Reine Johansson. *'We are not alone. The Baltic states and Poland are going to bring added value to this RAC and will contribute to our success.'*

In this context, Reine Johansson intends to attach priority to establishing real dialogue between different members of the RAC, *'in particular between professionals and NGOs,'* he notes. *'That is the first thing we have to do, even before we start to organise our work.'*

For its launching, the Baltic Sea RAC set up three working groups – on pelagic species, demersal species and salmonids –, an arrangement likely to evolve in terms of the positions that emerge from its members' discussions.

Practical information

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Resources

Three leading species



© Nordic Photos

The two Baltic Sea cod stocks are overexploited today. The Commission is launching a long-term plan to protect this important resource.

Fisheries in the Baltic Sea focus on three saltwater species: sprat, herring and cod. The stocks of cod are currently overexploited, and this is a cause of grave concern for scientists. A recovery plan will be put in place this year in order to bring this fishery back into balance. But the European Union will also be keeping a close eye on trends with regard to other commercial stocks, including herring, sprat, flatfish and salmon.

In 2004, sprat, herring and cod accounted for 90 % of catches by the European Union fleet, which broke down into 70 000 tonnes of cod, 226 000 tonnes of herring and 363 000 tonnes of sprat out of a total catch of 735 000 tonnes. The remaining 10 % was made up largely of flatfish, mainly flounder (16 000 tonnes in 2004, or 80 % of all catches of flatfish).

Cod now outside safe limits

Cod stocks have suffered, mainly due to overfishing. The problem first emerged in the late 80s, when catches collapsed from 440 000 tonnes in 1984 to 70 000 tonnes in 1994.

In 1999, under the impetus of the European Union, the IBSFC (the regional fisheries organisation for the Baltic) launched a long-term management strategy for Baltic cod to try and halt their decline. A number of measures were introduced, including: total allowable catches (TACs) were reduced, minimum landing sizes were raised, access to breeding areas was limited, mesh size was increased for certain gears, a limit was set on by-catches of cod in pelagic fishing, and trawls were obliged to incorporate an exit window, etc.

After enlargement in 2004, the European Union, which now represented all the coastal States except for Russia, took charge of the management strategy and reinforced certain measures. The cod population is now divided into two stocks, one to the west and the other to the east of Bornholm Island. (Stocks to the east of Bornholm are in worse condition than their neighbours to the west). The summer closure of fishing activity is now a general rule. The Commission has announced that a multi-annual plan will be implemented to rebuild both stocks and bring them back up to a sustainable level during the course of this year (see box).

By-catches of herring

Industrial fishing is undoubtedly the most important fishery in the Baltic Sea in terms of tonnage caught. Pelagic trawlers catch large quantities of sprat, used mainly to produce fish meal and fish oil. Sprat stocks in the Baltic Sea are thriving, especially because of the declining population of cod, their main natural predator.

On the other hand, scientists are increasingly worried about by-catches of herring during pelagic fishing for sprat. Since

catches in industrial fisheries are not sorted, the European Union introduced statistical sampling programmes in 2005 to assess the composition of catches and assess the real impact of industrial fishing on herring stocks.

Current concerns are focused on one of the five stocks identified in the Baltic Sea: the central zone stock, which is the largest of the five, and whose biomass level is now quite low. In its report of October 2005, the International Council for Exploration of the Sea (ICES) stated that this stock was 'at risk' due to the large by-catches by industrial vessels.

That is why the European Union has decided to reduce the fishing possibilities for this stock a little, and at the same time has reduced TACs for Baltic sprat by 15 %. This measure is offset by higher TACs for other herring stocks, which are in good condition and for which fishing activities are fully justified. The overall result is that Baltic Sea fishermen will be able to catch 12 % more herring (31 000 tonnes) in 2006 than they did in 2005.

Flounder, turbot and salmon

We have relatively little information about the state of flatfish stocks and further scientific research is needed. Plaice is the only species for which a TAC is currently in place in the Baltic. The growing success of flatfish – especially flounder, catches of which have risen sharply since 2004 – has led the European Union to establish specific management measures for these stocks. The Commission has agreed to prepare TAC proposals for 2007 for flounder and turbot. In the meantime, in 2006 a closed period has been decided for both these species in the eastern part of the Baltic: from 15 February to 15 May for flounder (30 May in the Gulf of Finland), and in June and July for turbot.

Baltic salmon is showing encouraging signs of recovery, according to ICES. This migratory species, which lives in both fresh and salt water, had suffered considerably in the past from deteriorating environmental conditions and the growing

number of hydroelectric dams that prevent it from swimming back upstream to its spawning grounds. The management measures introduced by the IBFSC, and the overall improvement in the quality of inland waters, offer hope for recovery. According to ICES, half of the catches of salmon in coastal fisheries are now individuals that have been hatched naturally rather than being brought in from restocking farms.

For a number of years, the pre-enlargement EU and the IBFSC coastal states had been carrying out actions to protect resources. With the exception of the alarming state of cod, Baltic Sea fish stocks do not show signs of overfishing. These actions will now be extended and improved through measures which will henceforth be taken within the enlarged Union. In a sea with a fragile environment, vigilance is the rule if we hope to maintain the ecological balance that is vital for a thriving fishing industry.



Herring is one of the main species caught in the Baltic, along with cod and sprat.

Managing cod in the Baltic

Both the eastern and western cod stocks in the Baltic Sea are suffering from overexploitation with the eastern stock being already outside safe biological limits. During the course of 2006 the European Commission will table a proposal for a multi-annual plan for cod stocks in the Baltic Sea. The aim of the plan is to rebuild the stocks and lower fishing mortality gradually, which will ensure that the stocks can be exploited under sustainable economic, environmental and social conditions in the long term.

The plan will come into force in 2007. Management measures for 2006, adopted by the Council in December 2005, have already been developed within the projected framework. Beyond annual TACs and quotas, the plan will include:

- a procedure to set annual TACs and quotas in response to an annual 10 % reduction of the fishing mortality rate;
- a summer ban on fishing with trawls, seines, and entangling and trammel nets with a mesh size of 90 mm or greater for a two month period in the western Baltic (15 March to 14 May) and for three months in the eastern Baltic (15 June to 14 September);
- a certain number of additional closed periods for fishing vessels with the abovementioned gear, to be allocated by Member States; these closed periods will be set so that they correspond to an annual 10 % reduction of the fishing mortality rate which in effect constitutes a ban on fishing for an additional 30 days outside the closed periods for the western Baltic and for 27 days in the eastern Baltic for this year;
- three areas corresponding to the Bornholm, Gdansk and Gotland deeps where fishing is prohibited from 1 May to 31 October;
- specific control measures for cod: fishing permits for vessels longer than 8 metres, prior notification conditions and the obligation for vessels with a certain tonnage of cod on board to land that fish in designated ports.

The multi-annual plan will set a target rate of fishing mortality to be achieved. If the mortality target in any one year is not achieved, the closed periods will be extended and TACs and quotas set according to an additional 10 % reduction of the fishing mortality rate in the following year.

Technical measures

Simplifying the regulations



To protect juveniles, the regulation imposes minimum landing sizes for several species, including cod. The sizes vary from one fishing zone to the next.

This simplification coincided with the Commission's drawing-up of an action plan⁽²⁾ to streamline and improve fisheries legislation. In that context, the Baltic Sea regulation can be seen as launching a more general trend from which other European Union seas will benefit in the near future.

The concern for simplification can also be seen in the way the regulation is formulated. The measures are described precisely and in detail, so as to avoid all ambiguity. This is meant to make them easier for fishermen to apply and for fisheries inspectors to monitor. In a sea where vigilance is vital if commercial stocks are to be preserved, strict application of technical measures is indispensable to guarantee sustainable fisheries.

The measures laid down by the new regulation are meant to contribute first and foremost to sound resource management, as required by the reform of the Common Fisheries Policy in 2002. They will help establish targeted and selective fishing activity in the Baltic Sea, thus limiting by-catches, accidental catches and juvenile mortality.

On 1 January 2006, all technical measures relating to gears, by-catches, minimum landing sizes, and closed zones and periods in the Baltic Sea were brought together in a single legislative text. In addition to being easier to consult in this form, the measures are also worded more clearly and precisely, to facilitate implementation and control. Thanks to this new approach, the European Union hopes to improve the working conditions of fishermen and national fisheries administrations alike and to encourage effective, efficient and transparent application of the Common Fisheries Policy.

The new regulation⁽¹⁾ is the result of a determination to simplify the rules. Due to the special situation of the Baltic Sea, the regulations which used to apply to it were quite complex and distributed between many different legal instruments. Prior to 2006, it was necessary to consult a large number of European regulations as well as the different recommendations issued by the IBSFC, the regional fisheries organisation that has since ceased operations.

The European Commission therefore proposed grouping all these different elements together into a single regulation that would cover all the technical measures which apply to the Baltic Sea, whether concerning gears, target species, by-catches, minimum landing sizes or geographical and seasonal restrictions.

Mesh size

The measures concerning mesh size are intended to reduce the number of young fish caught. The idea is to allow as many young fish as possible to reach maturity, because recovery prospects depend on the size of the breeding stock. That means mesh size must be small enough to catch adult fish but big enough to permit young fish to escape.

The minimum mesh size depends on the species targeted. Cod, for example, can only be caught with trawls having a mesh size of not less than 105 mm and fitted with highly selective gears (Bacoma or T 90). For certain species, this minimum mesh size also varies according to the fishing zone (see box).

The regulation also establishes a number of highly technical measures to guarantee the proper selectivity of trawls.

By-catches

Mesh standards are matched with provisions on by-catches. These aim to prevent fraudsters from finding a way around the regulation, for example by catching salmon with gear designed for cod and then falsely representing the salmon as by-catches. By-catch is therefore strictly limited.

For each category of mesh, authorised species must represent at least 90 % of the catch retained on board. The surplus must immediately be thrown back into the sea.

(1) Regulation (EC) 2005/2187.

(2) See *Fishing and Aquaculture in Europe*, No 28, March 2006, p. 11.



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Trawls with mesh of at least 105 mm, used to fish for cod or flatfish, must be fitted with highly selective gears such as the Bacoma window or T 90, which allow small fish to escape.

Take the example of a trawler fishing for herring off the shores of Poland, with mesh size of 35 mm. With this category of mesh size, it is only authorised to catch sandeel, sprat and herring. These three species must make up at least 90 % of its catch. If it takes other species, such as flatfish (as it might if its path takes it through an area of shallows), their total weight may not exceed 10 % of the catch. If cod are among the other species caught, the fishermen must abide by special provisions for this species, which can now make up no more than 3 % of catches.

Only the species listed in the regulation are concerned by this provision. By-catches of freshwater fish, for example, are not limited and are not included when calculating proportions.

Structure and use of gear

To avoid technical changes that might reduce the selectivity of active gears (trawls and Danish seines), the regulation defines very precisely the way they must be structured and the accessories that may be used with them. For more information, these measures are described in detail on the website of the European Commission's Directorate-General for Fisheries and Maritime Affairs: <http://ec.europa.eu/fisheries>.

When it comes to passive gears, i.e. gill nets, entangling nets, drift nets and trammel nets, the regulation focuses on how they are used. There are two main problems with the use of these gears: the high level of fishing effort they exert, and accidental catches, particularly of porpoises.

The European Union has therefore limited the length of passive gear to 9 km for small vessels and 21 km for bigger vessels. Immersion time is also limited to 48 hours, except when fishing under the ice cover.

The problem of accidental catches is currently the subject of a scientific study being carried out which covers all European waters. Its conclusions should be available in late 2007. As a precautionary measure, the European Union has already banned the use of drift nets in the Baltic Sea as from 2008⁽³⁾ so as to protect the porpoise populations which have suffered a severe fall-off in their numbers.

Minimum landing sizes

In order to protect young fish, the regulation also imposes minimum landing sizes. Any fish smaller than the limit for its species must be returned immediately to the sea after being caught. Actual minimum sizes may vary according to the fishing zone (see box).

Closed periods and zones

To go yet further in protecting resources, the EU has temporarily prohibited fishing in certain geographical areas for cod, flounder and turbot. These closures are not defined in the regulation on technical measures, but as part of annual discussions on fishing possibilities (see box p. 7).

In addition, certain fisheries must respect closed periods: this is the case with fishing for salmon and sea trout during the summer (except with trap-nets) and fishing for eel throughout the year (except with passive gear).

The regulation also contains specific provisions for the Gulf of Riga, the structure of certain types of gears and industrial fishing. Taken together, all these measures will contribute to establishing sustainable fisheries in the Baltic Sea and thus ensuring the long-term survival of these precious resources.

Sub-regional differences

Although the Baltic Sea is a geographically coherent body of water, the state of stocks varies appreciably from the Belts to the Gulf of Bothnia. For geographical reasons (winter freeze-over, salinity, and temperature) or because of past management, the state of stocks is not identical across this range. What is more, fishing traditions vary: the same species is not fished using the same gear everywhere or the same kind of vessels.

The regulation takes account of all these sub-regional criteria. That is why the rules on mesh, by-catches and landing sizes vary according to the fishing areas. In the Belts and Øresund, for example, a trawler can fish for flatfishes with 90 mm mesh, which is prohibited in the rest of the Baltic, where trawls must have a mesh size of at least 105 mm and be fitted with highly selective devices (Bacoma or T 90).

(3) See *Fishing in Europe*, No 20, December 2003, pp. 6-10.

Out and about Finnish caviar

Throughout Europe, the aquaculture sector is diversifying to expand its market. Six years ago in Karelia, a region in south-east Finland, the town of Imatra launched a sturgeon farming project that is particularly adapted to the extreme climatic conditions of the Baltic. Today, after a trying start, the project is developing very positively.

Few Europeans can imagine what winter is like in Karelia. In early February, the thermometer drops to -30 °C at night. On the coast of the Gulf of Finland, ports are frozen and most fishing vessels await spring in dry dock. Inland, lakes covered with ice and snow merge with the surrounding fields and only the widest rivers still have a current. One of them, the Vuoksi, waters the small industrial town of Imatra, some 20 kilometres from the Russian border.

The winter does not keep Imatra from working. The town is home to two large factories: Imatra Steel, which manufactures steel for the automotive market, and Imatra Mills, which produces paper and cardboard for packaging. At the heart of this huge paper complex owned by Stora Enso Group lies the subject that concerns us: a fish farm that raises sturgeon and zander.

After crossing the different paper production units, following the steaming water treatment basins and skirting mountains of wood shavings covered with snow, we reach a deserted section of the site. A hangar measuring some 20 metres wide stands between two abandoned brick buildings. Inside are 10 or so large plastic tanks, around 15 smaller basins and a maze of pipes. This is where most of the activities of the young firm, Imatran Kala ja Kaviaari – Imatra Fish and Caviar – take place.

Good Finno-Russian relations

It all began in the year 2000. As part of its twinning with the neighbouring Russian town of Svetogorsk, Imatra wanted to launch an initiative to symbolise the good relations between the two communities. The idea of producing caviar was suggested, in tribute to the Russians, who particularly appreciate it, and in reminiscence of the past, when sturgeons used to swim back up the Vuoksi River that links the two towns. What is more, in a country with a million sport fishermen (20 % of the population), the possibility of reintroducing sturgeons into the river can create attractive prospects for tourism.

The Imatra Environment Department, which is responsible for managing local aquatic fauna, was assigned the task of turning the project into a reality.

'At the time, there was talk of building a gas-fired power plant in Imatra,' explains Ilppo Silakoski, Director of the Department. 'We teamed up on this project with the idea of recovering heat from the turbine cooling waters to heat our basins. For various reasons, though, the power plant was not built. So then we turned to another industry that produces a lot of heated water: the paperworks.'



The Imatra farm was selected to raise Siberian sturgeon (*acipenser baerii*), the species best suited to farming.


Heat transfer

In the Nordic countries, energy is the crucial element of all aquaculture projects. In nature, fish can make it through the winter and freezing temperatures by seeking out areas favourable to their survival. In basins of limited size, however, that is not possible. To keep the winter's rigours from slowing down the productivity of fish farms, it is vital to keep the water at a constant temperature, which consumes a lot of energy. Recovering the heat produced by a factory represents a real economic advantage. It also contributes to rational use of energy, which is highly beneficial to the environment.

As part of its sustainable development programme, Stora Enso Group agreed to participate in this pilot project and to host it at its complex based in Imatra.

The project required complex infrastructure, particularly from the standpoint of plumbing. The tanks are filled with river water which first goes through a heat transfer unit where it is heated to 33 °C by hot water from the paper processing plant. The first thing that had to be done was to develop a piping system to get the hot water from the plant and the cold water from the river.

Internally, the firm opted for a re-circulation system, which is more environmentally friendly: dirty water is not returned to nature, but is purified and re-oxygenated and 90 % of it is returned to the tanks. The remaining 10 % of waste water is discharged via the plant's processing station.



Female sturgeons need to hibernate for several weeks in tanks of unheated water. Without this rest period, their reproductive cycle is not triggered.

The total cost of this infrastructure was € 350 000. The town of Imatra received 40 % public funding, partially from the European Union's Financial Instrument for Fisheries Guidance (FIFG).

At the end of 2001, everything was in place. All that was missing were the fish.

Siberian sturgeon

Tonni Menna is in charge of the farm. He was sent to Russia, on the banks of the Black Sea, to be trained in sturgeon breeding techniques. He dips his landing net into a tank and pulls out a magnificent specimen a meter long. 'A female,' he comments proudly, holding up the struggling fish. It is hibernating for now in the only unheated tank on the fish farm. The females have to spend a month or two in wintry conditions, otherwise their reproductive cycle is not triggered.

As elsewhere in Europe, the Imatra farm chose to breed the species best suited to farming: Siberian sturgeon (*acipenser baeri*). It is also the easiest to find. The Imatra stocks were obtained from French and Italian farms, but they reached their destination after a chaotic process.

'In addition to the sturgeons, we had hoped to raise other species of fish that have disappeared, with the aim of reintroducing them into the Vuoksi,' continues Ilppo Silakoski. *'We were also interested in catfish, which was present in large numbers 100 years ago, and in Germany we found specimens of both species. But then our luck ran out... Due to the stress of the two and a half-day trip by truck, the catfish came down with a disease. The farm was declared infected and none of our fish could be transferred from it.'*

The isolation measure did not keep the new farm from persevering in its learning process. Two years later, its production was close to 25 tonnes, proving that the infrastructure was effective. The prohibition on the transfer of live organisms, however, barred plans for the reintroduction and production of caviar, since the pregnant females could not be sent to a processing firm.

Privatisation

New prospects emerged in 2005. The Finnish aquaculture group Saaristomeren Kala became interested in the small farm. A producer mainly of sea trout, the group was diversifying and decided to acquire 81 % of the Imatra farm, with the town keeping the minority share.

In the spring of 2005, the premises were completely disinfected to put an end to their isolation. All the fish were destroyed and production started over from scratch. Sturgeon remained the star species, with new specimens imported from Italy and France. Another species was also introduced, zander. With a reputation among gourmets and its fast growth in warm water, zander offers attractive commercial prospects. One year on from its new start, the farm had 2 000 individuals of each species. The goal is to reach the 40 tonnes maximum authorised production for the farm's capacity by the end of 2006.

In this new context, the Imatra farm will play the role of a hatchery. Its task is to produce sturgeon and zander fry, which will be transferred to the new owner's fattening sites, as well as pregnant female sturgeons whose caviar will be removed and processed at the group's processing plant in Uusikaupunki.

'The system we have developed is particularly well adapted to cold countries,' explains Ilppo Silakoski. *'It makes it possible to reduce our energy and environmental costs significantly. These would be very high under normal conditions.'* The example has borne fruit. A new sturgeon breeding farm, bigger than the one in Imatra, is being built in Varkaus, in central Finland, also on the premises of a paper plant.

In brief

> Improving the sector's profitability

The European Commission has presented a communication that aims to identify ways of improving the economic viability of the fisheries sector, and in particular of fishing fleets. Weakened by the fragile state of many commercial stocks and by stagnating prices, certain fleets are having difficulty coping with unexpected situations such as the recent steep increase in fuel prices. In the short term, the Commission proposes to activate rescue and restructuring aid which can be granted under certain conditions. It also provides for one-off aid to finance, with specific arrangements, equipment to reduce energy use (more energy efficient fishing methods and other methods). For the longer term, in keeping with the principles underlying the reform of the Common Fisheries Policy, the aim is to establish productive, profitable and sustainable fisheries based inter alia on long-term stock management, reinforced controls, more active participation by the sector in the CFP, diversification of fishing-related economic activity, combating illegal fishing and improvement of market mechanisms. For details, see the press release of 9 March 2006 on the DG Fisheries website: http://europa.eu.int/comm/fisheries/news_corner/press/index_en.htm

> Illegal fishing: acting on the economic incentive

The OECD (Organisation for Economic Cooperation and Development) study group on high-sea fishing has turned in its report on illegal fishing. The group was set up in 2003 as part of the OECD round table on sustainable development. Its aim is to identify solutions for the problem of illegal, unreported and unregulated (IUU) fishing on the high seas. Its members included representatives of the European Union, United States, Canada, Australia and other countries concerned. The report provides a detailed analysis of the phenomenon of illegal fishing, whose development is a serious threat to the health of most of the world's stocks. Combating fish piracy on the high seas is a necessity imposed by strict management of fish resources. The fishing zones most affected are those in the southern hemisphere, where the FAO estimates that illegal catches can amount to 30 % of legal catches. In addition to threatening resources, illegal fishing disregards social laws and the safety of seamen. The report stresses the primarily economic motivation for illegal fishermen, who make quick profits in this activity. Combating these practices must primarily seek to increase the costs of illegal fishing so as to cut profits. That could involve, among other things,

increasing the chances of being caught, increasing penalty levels uniformly, increasing controls in port, developing a system of traceability for catches, developing trade retaliatory measures against the flag state, and so on. The European Commission has welcomed the report's conclusions and its proposals will be taken into account as part of European measures to counter illegal, unreported and unregulated fishing. The report is available on the OECD website: www.oecd.org

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