Icelandic Fisheries Laboratories

ANNUAL REPORT 1999

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Icelandic Fisheries Laboratories

Annual Report for 1999

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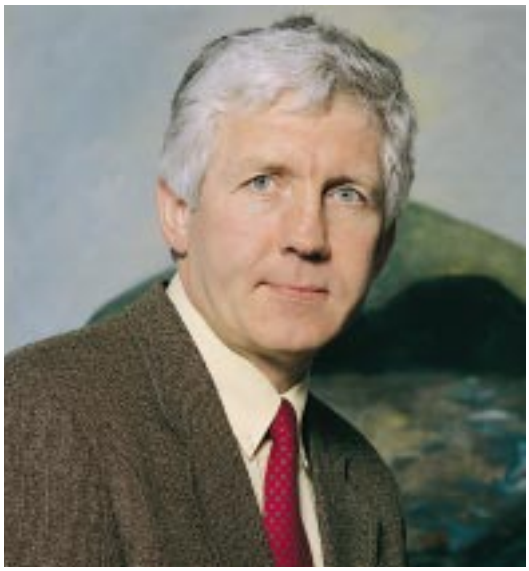


The comprehensive scope of the projects undertaken by the Icelandic Fisheries Laboratories bears clear witness to the staff's intention and skills in implementing the IFL's principal objectives. The year 1999 saw continued efforts to strengthen and ensure the IFL's professional and financial basis which is the necessary prerequisite to enable it to undertake research, carry out analyses and tests, offer advice, disseminate information and provide training for the benefit of the fishing industry, other food industries and related fields. IFL staff sit on various boards and committees within its professional sphere, so making their knowledge and skills widely available.

Research into the quality of seafood and other food products formed a large part of the year's activities. Work was done on methods to define and measure the quality of seafood. One of these methods could be developed into an international standard for the appraisal of fresh fish.

One of the IFL's roles is to offer advice. This was already being done, but changed conditions and increased need caused a new division, an Advisory Services Division, to be established to further strengthen this activity. There are high hopes that this will be of still further benefit to the IFL's clients.

Development of the IFL's branch offices continued last year. Two of the branches, in Ísafjördur and Neskaupstadur, moved into new premises; this will enable the IFL to upgrade its services in the rural areas, which is part of its policy.

There was a further increase in revenue, which amounted to ISK 356 million for 1999, compared with ISK 304 million for the previous year, an increase of 17%. Operating expenses came to ISK 349 million, leaving a c. ISK 7 million operating surplus. In view of external circumstances, these are excellent results which were achieved by the concerted effort of the IFL's staff and management.

Obviously, the IFL's operating environment has changed greatly during the past few years, and is still changing. In recent years, the IFL's growth has chiefly been supported by grants from various public funds. The staff has had excellent results in obtaining special grants from various research funds, and according to the rules applying to most such funds we are approaching the maximum possible grant level. However, a high grant ratio may make it difficult to develop the IFL's activities in the long run. Grants from domestic funds for which the IFL has applied in recent years have been limited, and allocations have been unacceptably unsystematic. At the same time, industry's need for knowledge and skills within the IFL's sphere keeps increasing, and it is expected that the export of this knowledge will increase greatly in the coming years. For this purpose, these activities must be built up systematically.

Last year, there were wide discussions on the future structure of research in Iceland. Clearly, considerable rationalization can be achieved by wider co-operation between the various institutes. The IFL is of the opinion that such discussions must concentrate on what projects are to be tackled rather than where they are to be tackled. The importance of the food-processing industry for the Icelandic economy, and changed conditions, make it imperative to take action as soon as possible. If this is not done, Icelandic seafood, and other Icelandic food products, may lose their competitive edge. The IFL is ready to take the lead in this process, and has the size and the skills to do it.

Hjörleifur Einarsson, Director General

Conferences and meetings in 1999

The IFL held several conferences and meetings in 1999, including the symposium "From Catch to Consumers" which was held at the Kópavogur Concert Hall on 1 and 2 September. The symposium was divided into two parts, the first day covering "The Handling of Catch Aboard Fishing Vessels". The subject of the second day was "Global Trends in the Marketplace for Seafood", and was held in English, as three foreign lecturers and one Icelandic one delivered their lectures in English. A total of 90 people attended the symposium, many on both days. This conference was supported by the New Business Venture Fund. Also, a well-attended Nordic conference, "Sensory Evaluation and Quality", took place from 9 to 11 September. Seventeen lecturers, including 12 foreign ones from various parts of the world, addressed the conference which was attended by more than 100 people. Both conferences were considered to be very successful.

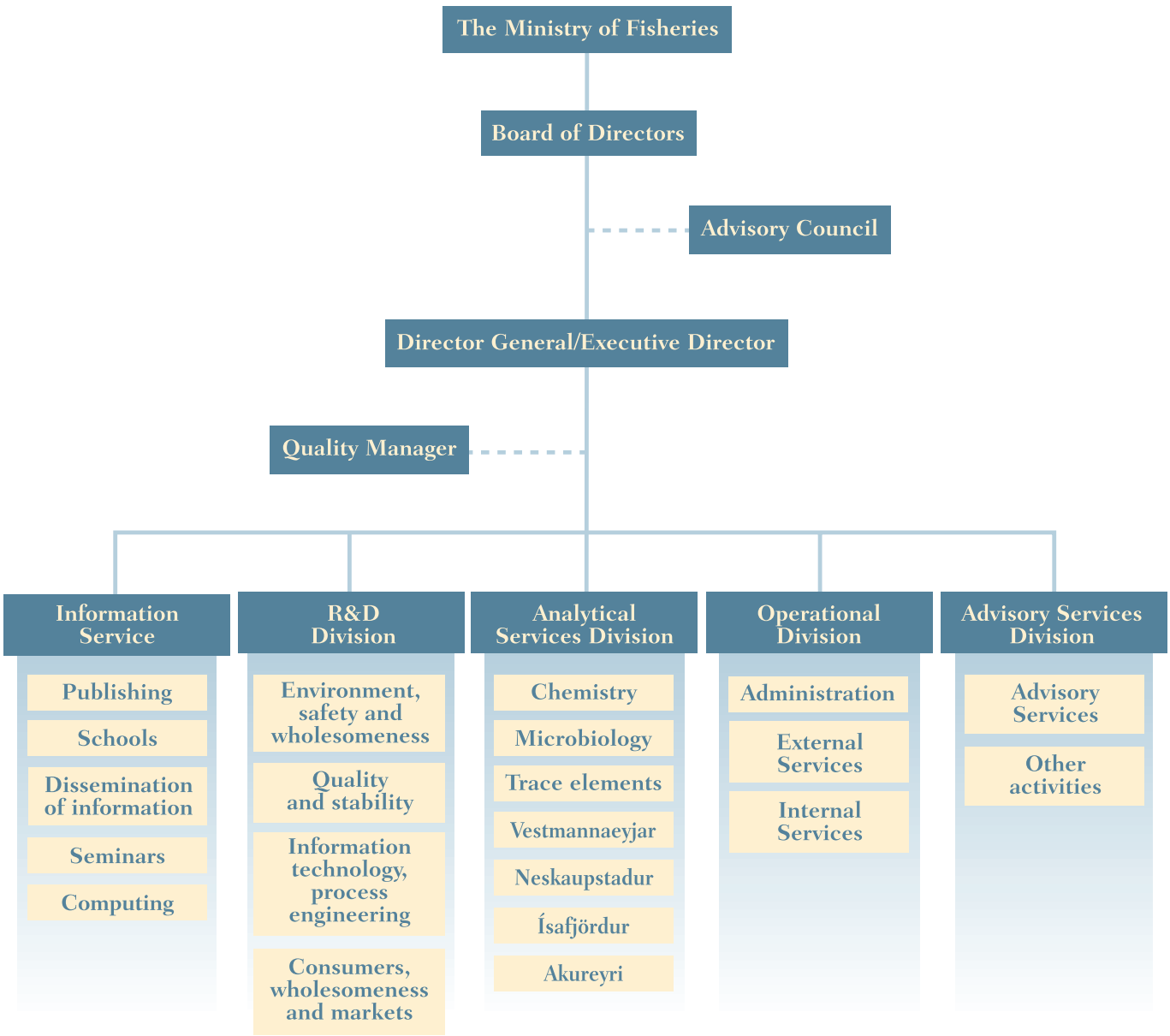
Two smaller conferences under the heading of the European project "Flair-Flow Europe" were held during the year, one in June and the other in November; the IFL is the Icelandic participant in this project. The first one was a so-called Ready-to-use European Research (RETUER) conference with the heading "Managing the Cold Chain". Three foreign lecturers addressed the conference, which was attended by 40-50 people. The second conference was held in November under the heading "European Research on the Shelf-life of Food Products". This conference was attended by more than 20 people. Two specialists from the IFL and two specialists from the Technological Institute of Iceland gave lectures on research in which they have been involved.

During the year, several project meetings were held under the auspices of the IFL, and its staff attended such meetings abroad as required. The year's largest meeting at the IFL was one concerning the MUSTEC project which was held from 12 to 21 November. MUSTEC is a co-operative project of seven countries on multiple technology for the evaluation of fish. In attendance were scientists from seven countries for the purpose of each testing his own method of evaluating the freshness of fish.

A seminar was held on 28 May on the quality markings by the IFL in connection with a European project in this field. At this meeting, results were announced of a survey on the need for quality markings and methods of evaluating the freshness of fish. About 30 people attended the seminar.

Finally, it might be mentioned that the IFL took part in the Icelandic Fisheries Exhibition which was held in Kópavogur from 1 to 4 September where it shared a booth with the companies Taeknival and Origo.

The IFL's organizational chart

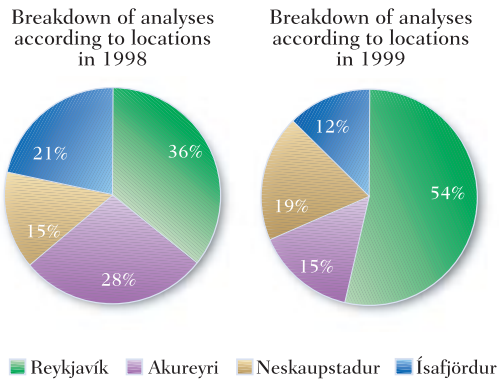


Analytical Services Division

The chief objectives set for this division at the beginning of 1999 included:

- The accreditation of the IFL's branches in Akureyri, Neskaupstadur, Vestmannaeyjar and Ísafjördur.
- To establish an effective register of samples.
- The adaptation of the operation of the Analytical Services Division to competitive marketing.

As in previous years, during 1999 the services varied along with fluctuations in the fishing industry, such as catches of herring, capelin and blue whiting and rises and falls in the shrimp catch. Furthermore, mergers and rationalization in the operations of fishing-vessel operators has influenced the operations of the IFL's Analytical Services Division. In keeping with increased demands made of companies regarding quality systems, there has been an increase in service contracts with such companies in which the number of samples, the methods used and their quality assurance is specified.



A comparison of the number of analyses in 1999 and 1998 shows that the majority of chemical and microbial analyses were performed in Reykjavík. While analyses have been somewhat curtailed at our Akureyri and Ísafjördur branches, the activities at the Neskaupstadur branch were similar to those of the previous year. It is often difficult to express in figures information about the IFL's service analyses. The number of samples does not give the correct picture because many tests may be carried out on each sample. The number of analyses does not always give the correct picture either because the time spent on the analyses can be very different, subject to the nature of the analyses.

The Ísafjördur and Neskaupstadur branches moved into attractive new premises during the year. On this occasion they were furnished with some new equipment for the purpose of achieving increased automation and better utilization of manpower. Representatives of the Bureau of Standards and SWEDAC (Styrelsen för ackreditering och teknisk kontrol) carried out an appraisal of the branches in August 1999 in consultation with IFL staff in each location and in Reykjavík. The entire quality system was examined to ascertain whether it met the demands made for accreditation. The accreditation of the IFL's branches marks a certain watershed in its operations and is good news for its clients as well as the foreign customers of Icelandic fishing vessel operators. Since 1994, EU regulations have specified that all analyses should be carried out by accredited testing bureaus.

Work on the Navision Financials sample accounting program was almost completed in May, enabling us to commission it formally in the beginning of June. Improvements were made to it concurrently with the experience gained from its use. Comments by our clients were important in this respect. We are now of the opinion that the system serves our basic needs for registration, the issuing of results and the issuing of invoices. The next step would be to process this information further for our clients, both within and outside the IFL. Research projects which are carried out within the IFL, and purchase analyses from the Analytical Services Division, can now integrate information from this system directly into their research; this will facilitate the processing of data. However, clients often need information in the form of summaries, e.g. concerning changes in product characteristics in the long run.

Systematic efforts have been made during the past 3-4 years to separate the operations of the Analytical Services Division from other IFL divisions. It is the objective of the Analytical Services Division to be independent and competitive without breaking off its connection to other IFL divisions. The IFL's rate of charges is now reviewed annually to take account of inflation.

R&D Division

The function of the R&D Division is to increase the competitiveness and profitability of the Icelandic food-processing industry through research and development. This is done through the accumulation of practical knowledge of environmental matters, the wholesomeness, safety, and the quality of food products, processing and information technology and consumer attitudes. Such knowledge is disseminated to our clients and through the publication of articles in scientific and professional journals.

In 1999 the R&D Division's turnover amounted to ISK 200 million, having more than doubled during the past two years. Last year saw a considerable investment in new equipment, primarily the purchase of a new fluorimeter, additional equipment for research on volatiles and the purchase of a refrigerating and freezer unit for a DSC equipment (for thermodynamic analyses). The Division undertook about 75 projects. As previously, the Division's largest projects were international, with financing from the EU (11) and Nordic funds (10). Most of the projects were carried out in close co-operation with food-processing companies, many partially financed by grants from the Icelandic Research Council (Rannís) (25). Companies seldom finance research projects in full. A statistician was engaged to enhance the professional quality of the research. Nine students of the University of Iceland started MSc projects at IFL under the supervision of the R&D Division's specialists, including two who graduated during the year.

The environment

Projects in this category have the objective of increasing knowledge in environmental matters, safety and nutritional value. The chief projects were environmental projects for the Ministry of Fisheries (e.g. concerning dioxin, technetium, toxaphene and polycyclic aromatic hydrocarbons), monitoring research on the biosphere (AMSUM) and projects on sewage disposal for the City of Reykjavík. Research was also continued on the effects of antibiotics on the number of microbes and the composition of the microflora in farm-raised halibut larvae.

Quality and stability

The objective of projects in this group is to increase knowledge of changes occurring in food products from the time the raw materials are acquired to the time when the products are consumed, and their influence on quality and stability. European projects constituted a considerable part of this group. One of the largest projects was a co-operative R&D between IFL and a Dutch organization on the computerization of sensory evaluation in fish processing. Other co-operating parties are software manufacturers, fish markets and fish-processing companies in Iceland and the Netherlands. The results of this project include the WiseFresh computer program, which is used for freshness evaluation of fish. Work was concluded on a project on the quality and safety of smoked fish, the Maillard-browning of food products and a European project on lamb. European research was continued on rapid-acting and

simple chemical methods for assessing the freshness of fish (Qualpoiss) and the possibility of using olfactory sensors. New European projects were started on the development of multi-faceted sensor technology for the assessment of freshness and the possibility of preserving fish in MA systems on board fishing vessels. Other large projects conducted during the year, in co-operation with SR-mjöl, concerned the stability of capelin meal and research into the processing of cod roe in co-operation with Bakkavör hf. and Mills of Norway.

Information and processing technology

The role of this group is to develop information, processing and measuring technology. Work continued on two large European projects: The development of technology to process meat from the heads of tuna fish and the utilization of capelin for human consumption. Both projects are being carried out in co-operation with domestic and foreign companies and institutions. Also in the offing were large projects on the possibility of processing protein (surimi) from capelin (in co-operation with HB hf. and the development of fish sauces from capelin (in co-operation with the University of Iceland). Extensive researce was also carried out on salt fish processing from thawed fish. One project was started in co-operation with the Marine Research Institute on the effects of fishing gear on the quality of shrimp for processing.

Consumers and the market

The role of this group is to carry out research to promote product development and the marketing of food products. Also to accumulate knowledge of the markets and the attitude of consumers with a view to increase the value and variety of the products of Icelandic food-processing plants, and also to demonstrate the unique quality of Icelandic food products, thus ensuring their public image. The main research conducted involved the “sous vide” processing of food products and a European project on the quality markings of fish.

The results of research projects in 1999 were mostly published in IFL reports (15). Three articles were published in scientific journals/books/conference literature of which the Division’s staff were either the authors or co-authors. In addition, Division staff publicized their research projects at domestic and foreign conferences and promotional meetings.

Advisory Services Division

A new division, the Advisory Services Division, was established within the IFL at the end of 1999. Like the Analytical Services Division, the Advisory Services Division is an independent unit within the IFL, competing with other companies that serve the food-processing industry in an advisory capacity. The operation of the new division will be completely separate from the state-run part of the IFL, and will be expected to be entirely self-sufficient financially through its own revenue. The objective of the Advisory Services Division is to serve the food-processing industry in an advisory capacity in improving and changing the manufacturing processes of companies and in organizing new manufacturing processes.

The Advisory Services Division was formally established on 1 October 1999, starting immediately with the preparation of a needs analysis which included visits to companies active in the industry. As it is the objective of the new division to serve Iceland's rural areas as well as the Reykjavík metropolitan area, emphasis was put on visiting companies in the West Fjords from the outset. In the wake of these visits, many interesting projects were started, as many fine ideas were acquired during such visits.

The Advisory Services Division will put great emphasis on maintaining the confidence of its clients, as its services will often involve advice to innovators who are working with new ideas and marketing new products and therefore need to maintain their lead for as long as possible.

The Advisory Services Division will carry out a systematic policy formulation in the beginning of next year on the factors which are to be emphasized initially.

The staff of the Advisory Services Division will work systematically at building up good relations with manufacturers, putting emphasis on offering high-quality services and promoting the IFL's knowledge within as many fields as possible. Efforts will be made to acquire the expertise needed by the market at any given time within the IFL's Advisory Services Division.

Information Services Division

While the Information Services Division is responsible for the general promotion of the IFL, its role is also to collect, preserve, publish and disseminate information from all the professional divisions. The Information Services Division is also responsible for the IFL's educational programmes, i.e. seminars offered by the IFL, and its relations with educational institutions. It is also responsible for computer services for the IFL.

In 1999 the Information Services Division published a series of articles in [the daily] Morgunbladid on various aspects of the fishing industry under the heading "Information on Fish", written by the IFL's staff. These articles were meticulously prepared, care being taken to write them in a manner to appeal to the public.

During the year a home-page committee was established to prepare the IFL's home page; the staff of the Information Services Division are in charge of the home page. The committee members come from all IFL divisions to ensure that its work is inter-disciplinary and the interests of all the divisions will be taken into account. The committee submitted proposals for the redesigning of the home page, and it is expected that it will be redesigned in the year 2000.

A high-quality, multi-coloured promotional brochure was prepared for the IFL in 1999, containing information on its operations, monitoring, research, advisory services and educational activities. The brochure has attracted attention and requests have been made to have it translated into English.

Rf-tídindi (the IFL newsletter) was published three times during the year, containing information on the IFL's main activities. During the year the Information Services Division published four advisory notes, making a total of fifteen since 1997.

The year saw the number of specially-designed seminars for various companies rising rapidly. One of the most popular seminars, which was held in various parts of the country, concerned the handling of catches on board ship. The total number of seminars was 23, including 18 specially-designed seminars. These seminars were attended by a total of almost 500 people.

The IFL has reached agreements with several

educational institutions regarding theoretical and practical teaching, e.g. written contracts with the Fish Processing School of Iceland, the United Nations Fisheries' Training Programme and the University of Iceland, and in addition the IFL's staff serve as teachers at the University of Akureyri and several other schools. IFL staff also did some teaching at the Sudurnes Secondary Comprehensive School. In the year 2000 the intention is to renew our contracts with the University of Iceland and the University of Akureyri.

Computing at the IFL is the responsibility of the Information Services Division, and it is the chief task of staff working in this field to maintain the IFL's computer system, i.e. the hardware, the software, conduits, connections with the IFL's branch offices and other co-operating parties.

There was a large increase in the use of computers at the IFL during the latter part of 1999. Its accounting and planning system was also adopted by the Technological Institute of Iceland (Iti), the Building Research Institute of Iceland (Rb), the Agricultural Research Institute (Rala), the Icelandic Research Council (Rannís), the Joint Office of the Industry Research Institutes (SRA) and the funds managed by it. The chief net server for this system is located at the IFL's headquarters, and connections have been made to the SRA and [the research centre at] Keldnaholt for this purpose. So as to utilize this connection to the utmost, it was decided that the IFL would serve as the Internet server for the Technological Institute of Iceland (Iti), the Building Research Institute of Iceland (Rb) and the Agricultural Research Institute (Rala).

Operations Division

The IFL's operating turnover has risen greatly in recent years, by almost 50% from 1996 to 1999.

The total revenue for 1999 amounted to ISK 356 million, a 17% rise from the previous year. The state contribution for the year was ISK 132 million, 37% of the total revenue.

The IFL's total annual expenditure came to almost ISK 349 million, compared with ISK 307 million for the previous year, an increase of 13%. Wage expenditure rose by 13%, including a 7% increase in manpower, on the one hand, and a 6% rise in wage cost per man-year. Various expenses rose by 17%; this is mostly explained by a rise in investments and internal development. Thus, the IFL had an operating surplus of ISK 7.2 million, 2.1% of turnover, in 1999.

Great efforts have been made to define the IFL's competitive element better, so enabling its financial separation to be as clear as possible under the current organizational structure. Systematic efforts have been made to meet the demands involved in this, as this is in keeping with the IFL's policy on commercial operations notwithstanding the fact that the IFL is a state institution. Part of this development was the establishment of the IFL's Advisory Services Division overseeing the advisory service which is subject to competition. The first steps have been taken in the organization of this division and the prospects look promising.

During the year, work was started on developing retraining and the training of new recruits. The Quality Manager was entrusted with the education of staff and was responsible for formulating staff retraining policy. This is done in co-operation with division managers and staff, e.g. in connection with employee dialogues.

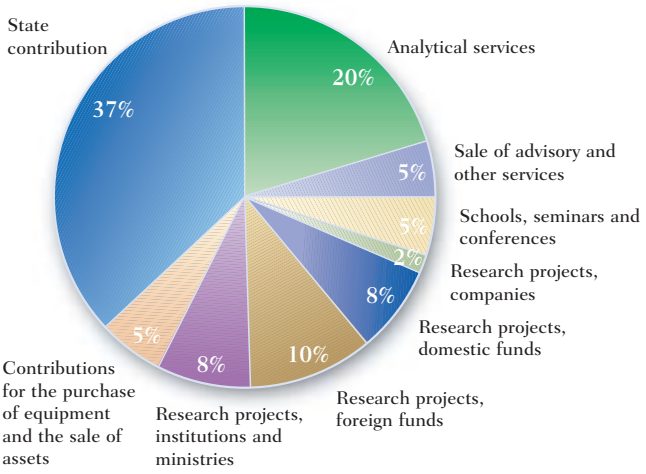
During the year, emphasis was also put on matters of staff safety and the working environment, especially in the form of increased education. Staff were offered courses in fire prevention and the handling of fire extinguishers, and systematic efforts were made to improve staff's access to information on matters of safety.

This was done in connection with employee dialogues and is part of the development of the IFL's comprehensive personnel system.

The Icelandic Fisheries Laboratories/Operations in 1998 and 1999

	1999	1998	Change
Revenue in thous. ISK			
Own revenue	223,965	195,970	14%
State contribution	132,200	107,900	23%
Total revenue	356,165	303,870	17%
Expenditure			
Man-years	70.0	65.5	7%
Wage expenditure	213,903	188,488	13%
Various operating expenses	107,477	91,617	17%
Purchase of assets	27,436	27,736	-1%
Total expenditure	348,816	307,841	13%
Operating surplus	7,349	-3,971	
Percentage of turnover	2.1%	-1.3%	

Breakdown of IFL revenue for 1999



Branch activities

Akureyri

IFL Akureyri operates an Analytical Services Division and an R&D Division.

Analytical Services Division

Operations in 1999 were similar to those of the previous year, with the emphasis on accreditation and an increase in in-company analyses. During the year, an important goal was reached when the Akureyri branch obtained accreditation for specific chemical and microbial analyses. Primarily, the branch carries out analyses of fish and fish products, shrimp, processing water and raw milk (udder samples). Also, analyses of meat and meat products and hygienic inspection in processing plants. Two employees, and one standing in during the summer, carried out analytical services.

R&D Division

The R&D Division had two employees at the end of the year, as one employee resigned in the middle of the year. Various projects were conducted during the year including integrated storage techniques looking at the effects of oxidation, ethanol vapour and gas packaging on the quality and shelf life of fresh fish, both as separate factors and in combination so as to establish the comprehensive effect. Work was continued on the project "Microflora in farm-raised halibut larvae in Iceland", the Maillard project and shelf-life-prediction models. The project "Pulse Field Gel Electrophoresis (PFGE)" of staphylococcus aureus stocks was carried out partly at the branch even though its project manager was located in Reykjavík

Ísafjördur

The year proved eventful in the IFL's operations in Ísafjördur, specifically regarding alterations made to its premises and the engaging of an employee in a specialist's position.

Work was started in January 1999 on fitting out the present premises, which were then commissioned at the end of May and formally opened on 18 June 1999. The IFL shares the premises at Árnagata 2 with the Marine Research Institute, Skipaafgreiðsla Gunnars Jónssonar ehf. (Gunnar Jónsson Ship Chandlers ehf.), Fjórðungssamband Vestfirðinga (the Association of Local Authorities in the West

Fjords), the West Fjords' Employment Innovation Centre hf. (Atvinnuþróunarfélag Vestfjarða hf.), the West Fjords Educational Centre (Fræðslumiðstöð Vestfjarða) and the West Fjords Regional Employment Agency (Svæðisvinnumiðlun Vestfjarða). These companies and institutions co-operate in the running of the West Fjords Development Centre (Þróunarsetur Vestfjarða). The premises in question are owned by [the company] Vestri ehf. The IFL has leased premises from this company since the branch was established in 1974. These are elegant premises, both within and on the outside, the facilities being designed to meet the demands for accreditation of the European standard EN45001.
While the accreditation of the branch has already been carried out, formal approval is expected in the year 2000.

There was an increase in branch staff when a specialist in fishing-gear research was engaged. The total number of the Ísafjördur staff is thus four people in 3.8 full-time-equivalent positions. The field of work of the new specialist is fishing-gear research, the first projects involving fishing trawls and shrimp trawls.

Sales of services by the branch decreased between 1998 and 1999 by about ISK 3 million, which is mostly explained by a reduction in shrimp processing within its service area, in addition to other events with accumulative effects, such as the closing down of some fish-processing plants. In spite of the reduction in shrimp processing in the area, most of the samples analyzed were of shrimp, the others consisting of fish, fresh water and sea water.

Branch staff continued their work on the *Listeria* project which was started in 1998; the objective of this project being to attempt to exclude *Listeria* from the processing environment and then, if applicable, to try to trace the origins of the *Listeria* stock found in the products.

Neskaupstadur

In April the branch was moved to new and splendid premises at Mýrargata 10, Neskaupstadur. The IFL leases the premises from the Eastern District's Vocational School (Verkmenntaskóli Austurlands), thus ensuring excellent facilities for the work at hand and for the staff. This means a great change from the previous facilities which were much too limited and in no way met the demands made to the activities of the branch.

During the year the branch reached the important milestone, as have other IFL branches, of obtaining accreditation for part of the chemical and microbial analyses carried out there.

The main activities at the Neskaupstadur branch are service analyses. There are eight fish meal factories in the area, which process up to 70% of all fish meal produced in Iceland. For this reason, most of the branch's activities involved service analyses for fish meal factories, about 90% of all such analyses.

There was an increase in the number of samples received, and the total number of analyses carried out during 1999, both microbial and chemical analyses, was about 11,000. The rise in the number of samples is partly explained by large catches of blue whiting and a rise in the number of microbial analyses carried out on frozen herring fillets.

The Neskaupstadur branch participated in a project on processing blue whiting for human consumption last year. This project is being carried out in co-operation with the Neskaupstadur Herring-Processing Plant.

The staff consists of three employees in full-time-equivalent positions.

Vestmannaeyjar

As in recent years, the IFL's activities in Vestmannaeyjar were, first and foremost, in the field of service analyses. Among individual clients, the two fish meal factories, Vinnslustödin and Ísfélag Vestmannaeyja, are the largest ones. The number of samples received was similar to that of 1998; there was, however, a considerable increase in the number of analyses, mostly through a substantial rise from the previous

year in the number of microbial analyses of herring fillets and capelin roe. There was continued service for Keiko [the renowned killer whale], both involving analyses of the sea water in the Klettsvík bay and of the fish used to feed the killer whale, and other incidental analyses.

An accreditation assessment was carried out at the branch in August. Representatives of SWEDAC visited Vestmannaeyjar and appraised the premises and the analyses made by the branch. Subsequently, the branch was granted accreditation for all the main analyses performed under its auspices.

One of the branch's regular activities involved a contract between it and the Town of Vestmannaeyjar regarding the monitoring of public health in the town. A large increase in this activity is expected in 2000.

At the end of 1999, an agreement took effect between the Fisheries Laboratory of Vestmannaeyjar and the IFL, on the IFL's taking over the running of the branch. This involved all the activities of the branch, both operations and personnel management, being transferred to the IFL from the Fisheries Laboratory of Vestmannaeyjar which had previously been operated as a private institution.

One employee in the field of microbiology resigned at the end of summer and his replacement was not engaged until at the end of the year. The other three employees divided between themselves the almost 2 1/2 full-time-equivalent positions.

Publications in 1999

Published reports

Guðrún Ólafsdóttir and Áslaug Högnadóttir: Air pollution in the fish meal industry. *IFL Report 1-99.*

Eva Yngvadóttir and Helga Halldórsdóttir: Pollution monitoring in the sea off Iceland in 1997 and 1998. *IFL Report 6-99.*

Gunnar Páll Jónsson: Comparison of Cryovac cooling mats and gel and water cooling mats. *IFL Report 9-99.*

Magnús Freyr Ólafsson and Sigurjón Arason: Status and possibilities of Icelandic seafood. *IFL Report 11-99.*

Kári P. Ólafsson: The effects of dry ice on fresh cod fillets. *IFL Report 13-99.*

Sigrún Guðmundsdóttir: Rapid-acting methods for analyzing halophilic bacteria. *IFL Report 15-99.*

Classified reports

Magnús Freyr Ólafsson and Sigurjón Arason: The charting of raw materials for the processing of flavouring. *IFL Report 2-99.*

Helga R. Eyjólfsdóttir: Shelf-life of fillets frozen at sea and fillets frozen at land-based plants in consumer packaging. *IFL Report 3-99.*

Guðjón Atli Auðunsson: Sewage from shrimp-processing plants. *IFL Report 4-99.*

Gunnar Páll Jónsson and Sigurjón Arason: Increased quality of cod as raw material with the use of Brontec ice mass on board fishing vessels. *IFL Report 5-99.*

Helga R. Eyjólfsdóttir, Soffía V. Tryggvadóttir, Kári P. Ólafsson and Rúnar Birgisson: Fillets processed at sea as raw material for further processing at land-based processing plants. The tempering and quality assessment of fillets. *IFL Report 7-99.*

Helga R. Eyjólfsdóttir and Soffía Vala Tryggvadóttir: Fillets frozen at sea as raw material for processing at land-based plants; quality rating of double-frozen fillets. *IFL Report 8-99.*

Ása Þorkelsdóttir: Shelf-life of ready-made fish dishes. *IFL Report 10-99.*

Sigurjón Arason, Gunnar Páll Jónsson and Sigurður Bogason: Effects of rigor mortis on saltfish processing. IFL Report 12-99.

Richard Hansen: Processing and drying of blue whiting. *IFL Report.*

Project reports

Six project reports were prepared in 1999, three for the Icelandic Research Council (Rannís) and three for the EU. The project reports are interim reports, not intended for general distribution.

IFL Advisory Notes

No.12 Food poisoning caused by bacteria. *Hannes Magnússon.*
No.13 Freezing and storage of frozen marine products. *Sigurjón Arason and Guðmundur Stefánsson.*
No.14 Shrimp processing for freezing. *Sigurjón Arason and Jónas Bjarnason.*
No.15 Nutritional value of seafood. *Jónas Bjarnason.*

Articles in reviewed journals

Guðjón Atli Auðunsson. The effect of the nutritional status of the Icelandic cod (gadus morhua) on macroconstituents and trace elements in the liver. Publication of the Fisheries Division, 16 (1999), pp. 111-129.

Joop Luten og Emilía Martinsdóttir, 1998. QIM: A European tool for fish freshness evaluation in the fishery chain. In Methods to Determine the Freshness of Fish in Research and Industry. Proceedings of the Final meeting of the Concerted Action "Evaluation of Fish Freshness" AIR3 CT94 2283. Nantes, Nov. 12-14, 1997. International Institute of Refrigeration, pp. 287-296.*

Emilía Martinsdóttir, 1998. Sensory evaluation in the research of fish freshness. In Methods to Determine the Freshness of Fish in Research and Industry. Proceedings of the Final meeting of the Concerted Action "Evaluation of Fish Freshness" AIR3 CT94 2283. Nantes Nov 12-14, 1997. International Institute of Refrigeration, pp. 306-312.*

Grímur Valdimarsson, Hjörleifur Einarsson, Birna Guðbjörnsdóttir and Hannes Magnússon. Microbiological quality of Icelandic cooked-peeled shrimp (pandalus borealis). International Journal of Food Microbiology 45 (1998), pp. 157-161.*

*Articles from 1998, not mentioned in the list accompanying the report for 1998.

Other Articles

Þyrí Valdimarsdóttir, Stefán Scheving Thorsteinsson, Guðjón Þorkelsson and Rósa Jónsdóttir. Sensory evaluation of meat from autumn-fattened male lambs and geldings. Meeting of ministries 1999, pp. 121-130

Henrik Hauch Nielsen, Rasmus Bro, Guðmundur Stefánsson and Torstein Skåra. Salting and Ripening of Herring-Collection and Analysis of Research Results and Industrial Experience within the Nordic Countries. Nordic Council of Ministers.

New projects for 1999

No.	Description	Responsible party

The environment and safety

The role of the group is to acquire knowledge within the fields of environmental issues and safety.

1421 Listeria-contaminated shrimp as raw material . . . . . .Hannes Magnússon
1427 Listeria data bank . . . . . .Sigrún Guðmundsdóttir
1429 AMSUM-99 . . . . . .Eva Yngvadóttir
1444 Technetium content of seaweed . . . . . .Guðjón Atli Auðunsson
1449 Non-organic trace elements in agricultural products . . . . . .Guðjón Atli Auðunsson
1450 Campylobacteriosis . . . . . .Sigrún Guðmundsdóttir
1454 LCA Workshop . . . . . .Helga R. Eyjólfsdóttir
1457 Listeria in milk . . . . . .Rannveig Björnsdóttir
1464 Staphylococcus aureus PFGE . .Sigrún Guðmundsdóttir
1467 Viruses in food products - fast-acting analyses . . . . . .Sigrún Guðmundsdóttir
1468 PAH in the marine biosphere in the vicinity of pollution . . . . .Helga Halldórsdóttir

Quality and stability

The role of the group is to obtain knowledge of changes occurring in food products from the time of the acquisition of the raw materials to the consumption of the products, and their effects on quality and stability.

1433 Fish fillets in air-changed packaging . . . . . .Emilía Martinsdóttir
1434 Exact shelf-life-prediction models . . . . . .Guðrún Ólafsdóttir
1440 A shrimp trawl and the quality of raw materials . . . . . .Magnús Freyr Ólafsson
1453 Shelf-life properties of vinegar-pickled herring . . . . . .Guðmundur Stefánsson
1466 Research into ram taste . . . . . .Guðjón Þorkelsson
1470 Flavouring and aromatics in seafood . . . . . .Rósa Jónsdóttir

Information, processing and analytical technology

The role of the group is to strengthen research in the fields of information, processing and analytical technology, putting emphasis on projects and working methods.

1432 Fish sauces . . . . . .Kristberg Kristbergsson
1436 Carbon-dioxide refrigeration . . .Kári P. Ólafsson
1438 Status and possibilities of the by-products of seafood . . . . . .Sigurjón Arason
1439 Plasma from winter capelin . . . .Heiða Pálmadóttir
1445 Polysaccarides in seaweed and kelp . . . . . .Guðjón Atli Auðunsson
1451 Registration and supervisory systems in fish-rearing basins . . .Páll Gunnar Pálsson
1456 Synthetic shrimp - olfactory sensors . . . . . .Guðrún Ólafsdóttir
1458 Utilization of tempering in the thawing out of fillets . . . . . .Gunnar Páll Jónsson
1459 Processing of blue whiting for human consumption . . . . . .Sigurjón Arason
1462 Complete drying out of marine products . . . . . .Sigurjón Arason
1465 Brontec Liquid Ice . . . . . .Gunnar Páll Jónsson

Consumers and markets

The role of the group is to carry out research to support product development and the marketing of food products.

1435 Utilization of flavouring . . . . . .Kári P. Ólafsson
1447 Fish proteins . . . . . .Kristberg Kristbergsson
1471 Analysis of problems in the utilization of game . . . . . .Gunnar Páll Jónsson

Other projects in 1999

1422 Seminars for the crews of freezer trawlers . . . . . .Sigurjón Arason
1425 Conference on sensory evaluation . . . . . .Emilía Martinsdóttir
1428 Sewage disposal from shrimp-processing plants . . . . . .Guðjón Atli Auðunsson
1441 Fisheries Exhibition 1999 . . . . .Ragnar Egilsson
1442 NNF Conference in Vestmannaeyjar . . . . . .Björn E. Auðunsson
1443 Basis of co-operation between the IFL and KEA . . . . . .Hjörleifur Einarsson
1461 Extra equipment for DSC . . . . .Margrét Geirsdóttir
1469 Fatty acids in Faroese lamb . . . .Rósa Jónsdóttir

Management and staff 1999

Board of Directors

Friðrik Friðriksson
Manager at Iceland Telecom hf. Chairman of the Board since 1999, appointed by the Ministry of Fisheries.

Alda Möller
Food Scientist - Advisor Member of the Board since 1998, appointed by the IFL's Advisory Services Board.

Pétur Bjarnason
Managing Director of the Fisheries Association of Iceland. Member of the Board since 1999, appointed by the Fisheries Association of Iceland.

Forstjóri

Prof. Hjörleifur Einarsson
Microbiologist, with the IFL since 1987.

Operations Division

The Operations Division staff.

Jón H. Ríkharðsson, B.Sc, MBA
Industrial Engineer, IFL since 1989. Director of Finance.

Guðlaug Guðmundsdóttir
Clerk, IFL since 1990. Reception.

Guðlaug Marínósdóttir
Office Manager, IFL since 1995. Office supervisor.

Hjördís Bergstað
Clerk, IFL since 1991. Reception and archivist.

Kristinn Hörður Guðmundsson
Driver for the Fisheries House

Agnar Harðarson
Janitor of the Fisheries House since 1999.

Helga R. Eyjólfsdóttir, MSc
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Research and Development Division

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