

A brief summary of cod farming and research in Iceland

Valdimar Ingi Gunnarsson

6 February 2004

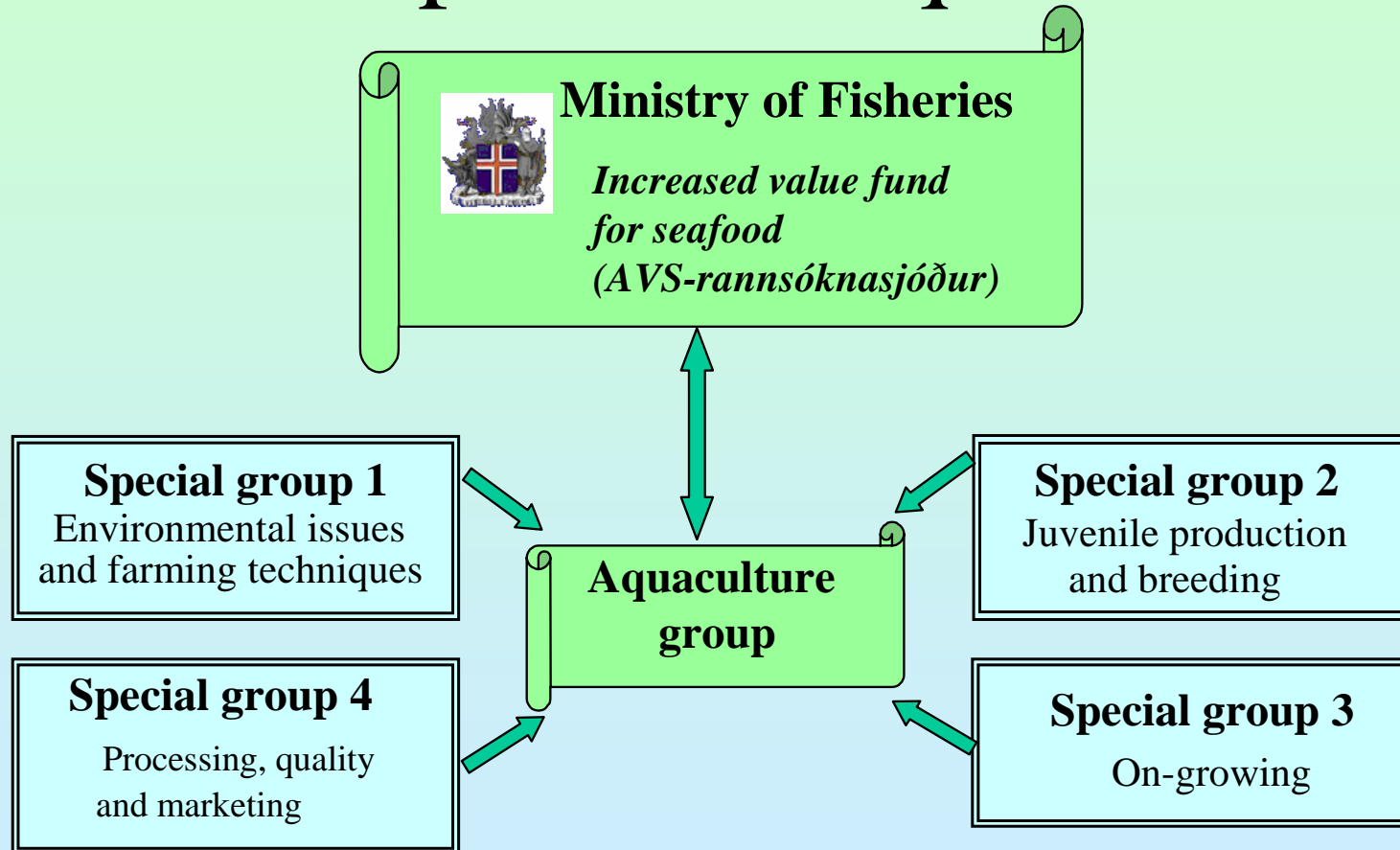
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Introduction

- Aquaculture group (The Icelandic Cod Farming Project)
- Special groups under Aquaculture group
- Communication of information
- Production and location of cod farms in Iceland
- Researchers and development projects



Strategy in research and development in aquaculture



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Aquaculture group

- Project management team
 - Guðbrandur Sigurðsson, chairman, Brim ehf.
 - Eyjólfur Guðmundsson, Department of Resources University of Akureyri
 - Finnbogi Jónsson, Samherji hf.
 - Ingimar Jóhannsson, Ministry of Agriculture
 - Jóhann Sigurjónsson, Marine Research Institute
 - Kristinn Hugason, Ministry of Fisheries
 - Kristján G. Jóakimsson, Hraðfrystihúsið-Gunnvör hf.

Fiskeldishópur AVS Project management

- The objectives would be:
 - Be a liaison to the ministry of marine affairs and to the AVS-project management group
 - Be leading for the work of special-topic groups to ensure further strategic work within the industry
 - Acquire more information regarding competitive competence
 - To take possess/initiative in regular assessment of the progress of research and development

Special groups

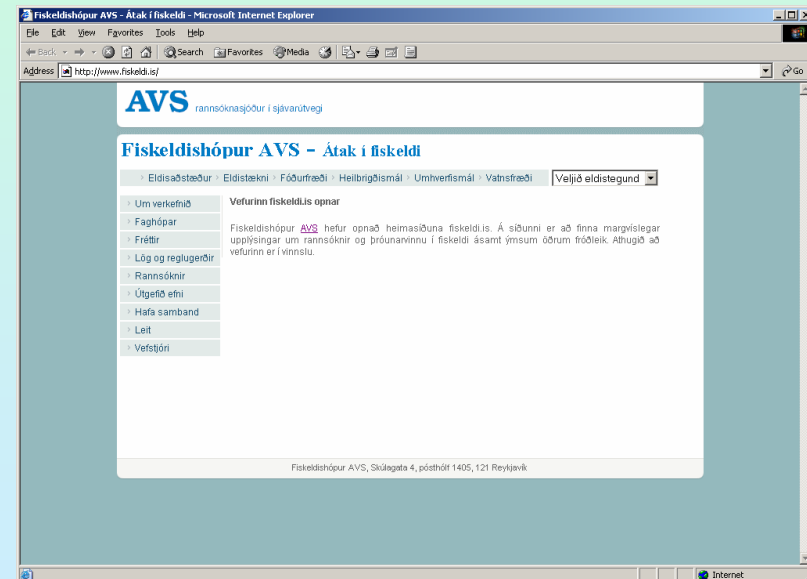
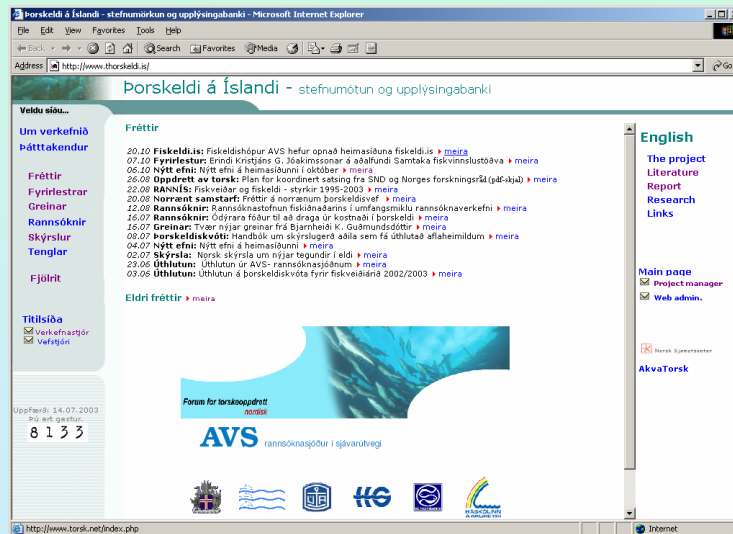
- The objectives would be as follows:
 - Execute important research projects
 - Establish research groups and make connections with foreign scientists
 - Be consultative/advising to the project management team

Communication of informations

Internet site

The internet site for cod farming
(www.thorskeldi.is)

The internet site for aquaculture
in Iceland (www.fiskeldi.is)



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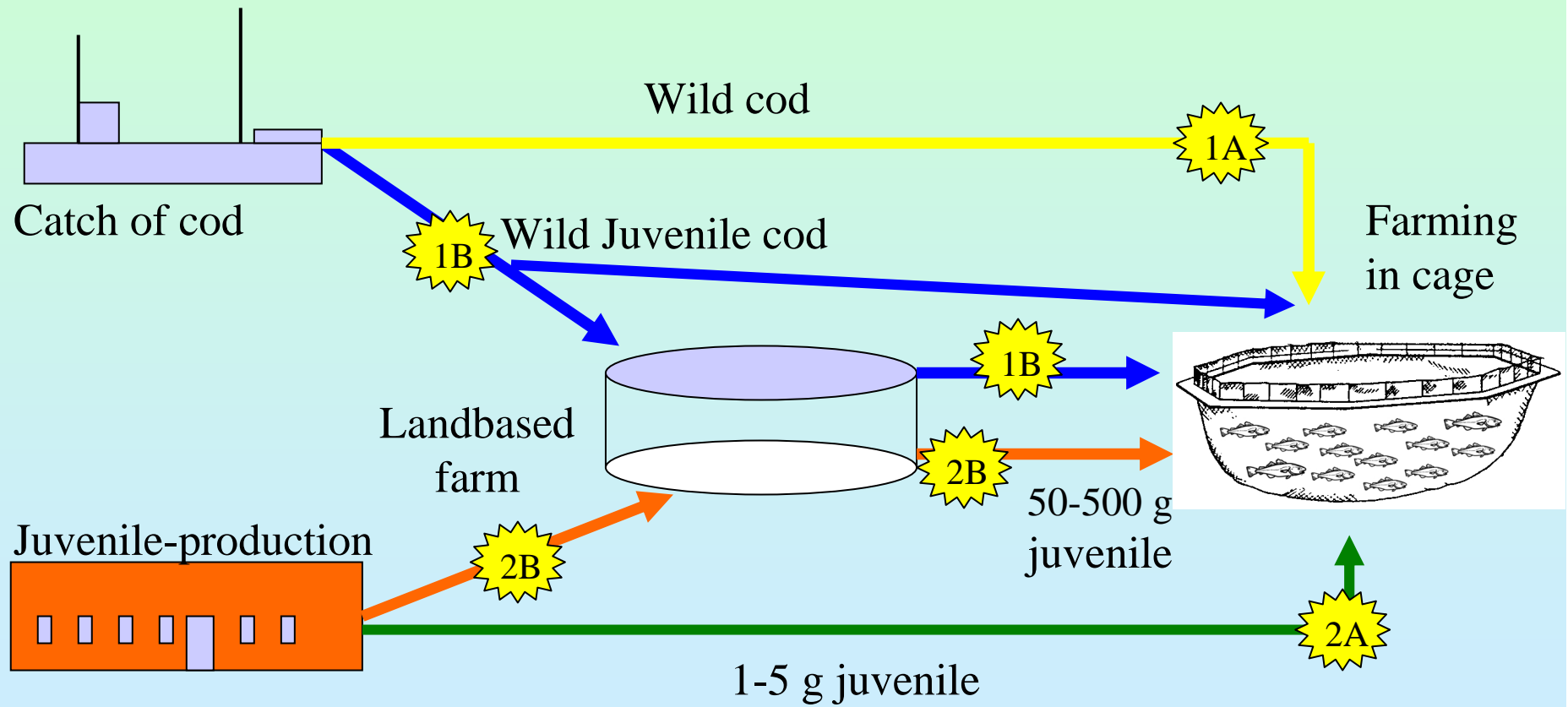
Communication of informations

Reports

- Report and brochure from project management group
 - Cod farming in Iceland: Strategy in research and development
 - Catching and ongrowing of cod
 - Report of the Marine Research Institute
 - Article about cod farming



Farming methods



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Production based on

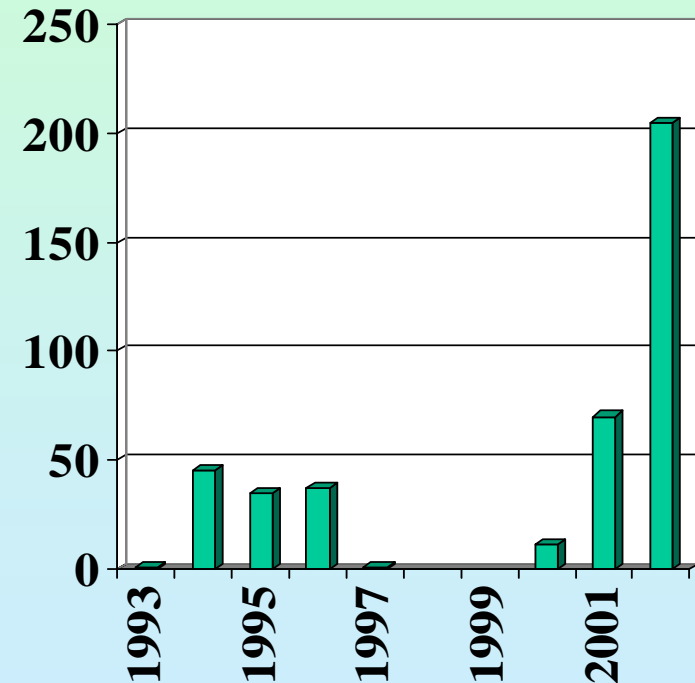
- 500 ton quota of wild cod per year in five years (2001/2002 - 2005/2006)
- Wild juveniles next years ?
 - Ca. 700.000 juveniles (0+group) in year 2003
- Farmed juveniles
 - Ca. 250.000 juveniles in year 2003



Production of farmed cod

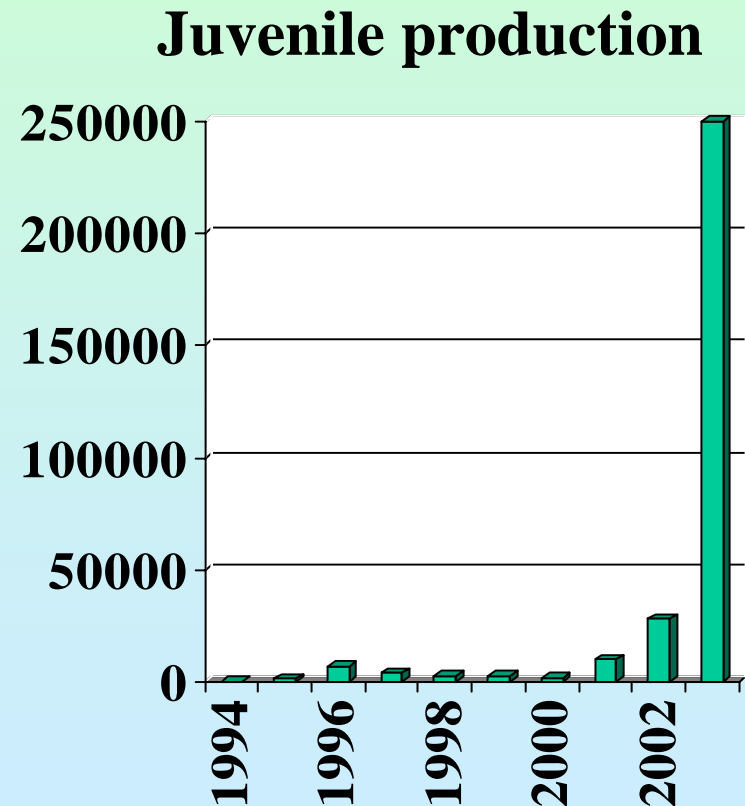
- **On-growing of wild cod**
 - Production next 2-3 years mainly based on farming of wild cod
 - 500 ton quota every year
 - Production next years will be around 1.500 tons every year?
- **Production with wild juveniles**
 - Around 1.000 tons after 2-3 years?
- **Farming with reared juvenile**
 - Started in 2002, few tons slaughtered in year 2003
 - Around 1.000 tons after 4-5 years?

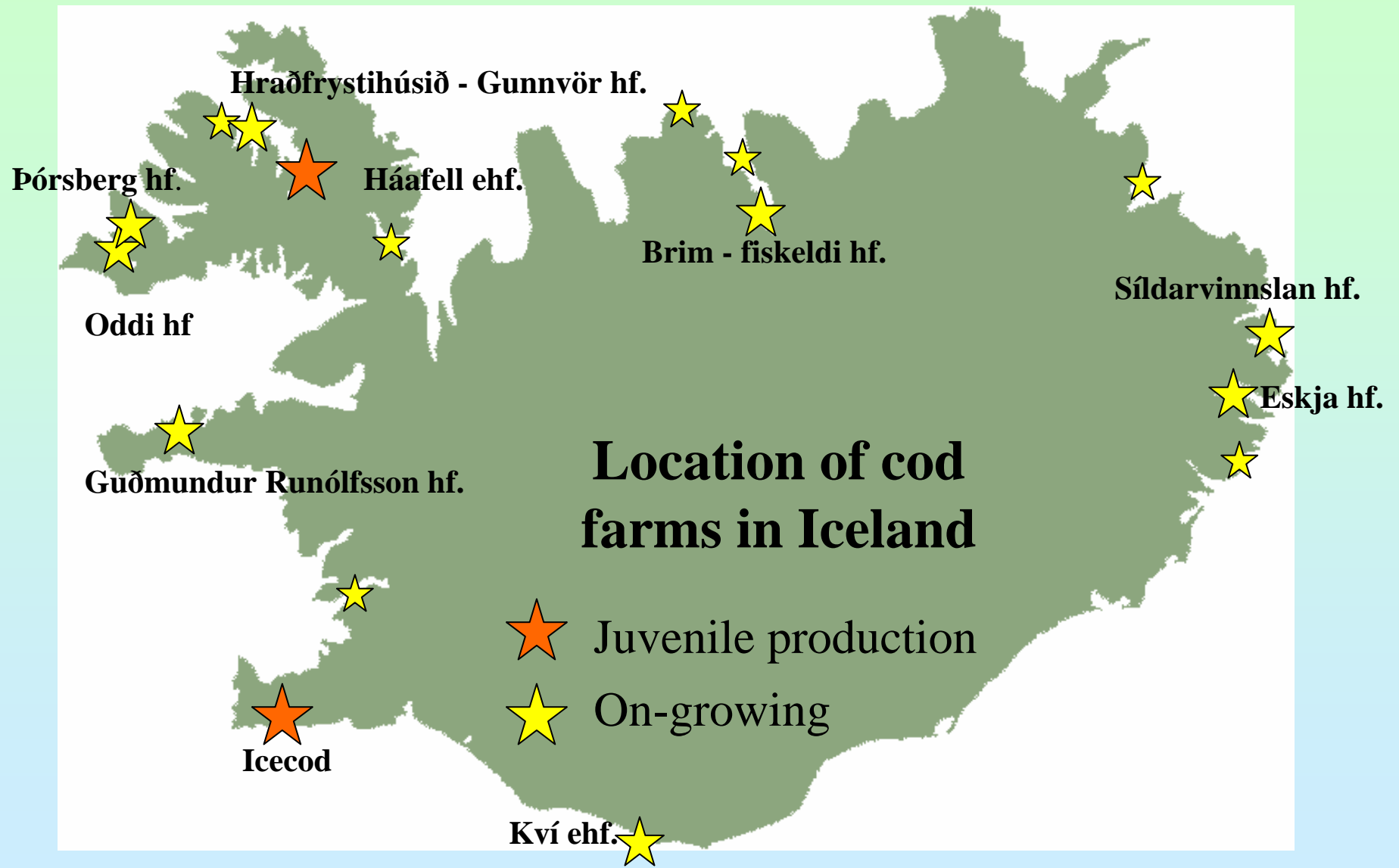
Production of cod in tons



Production of cod juveniles

- **IceCod, owner:**
 - Marine Research Institute, Stofnfiskur hf., Fiskeldi Eyjafjarðar hf. in collaboration with other Icelandic research institutions and companies.
 - Main objectives - Selective breeding of cod





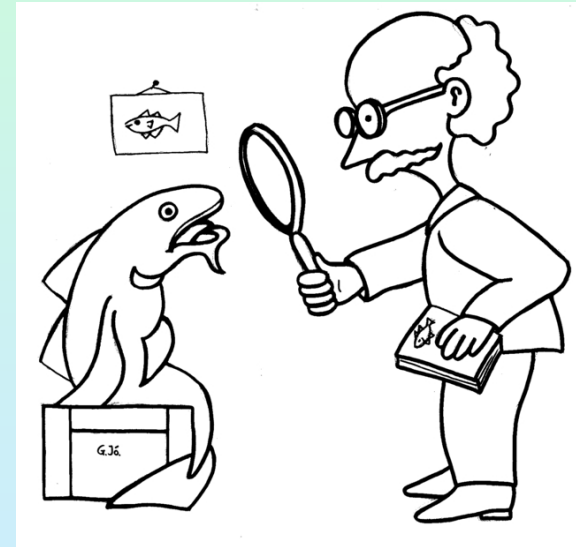
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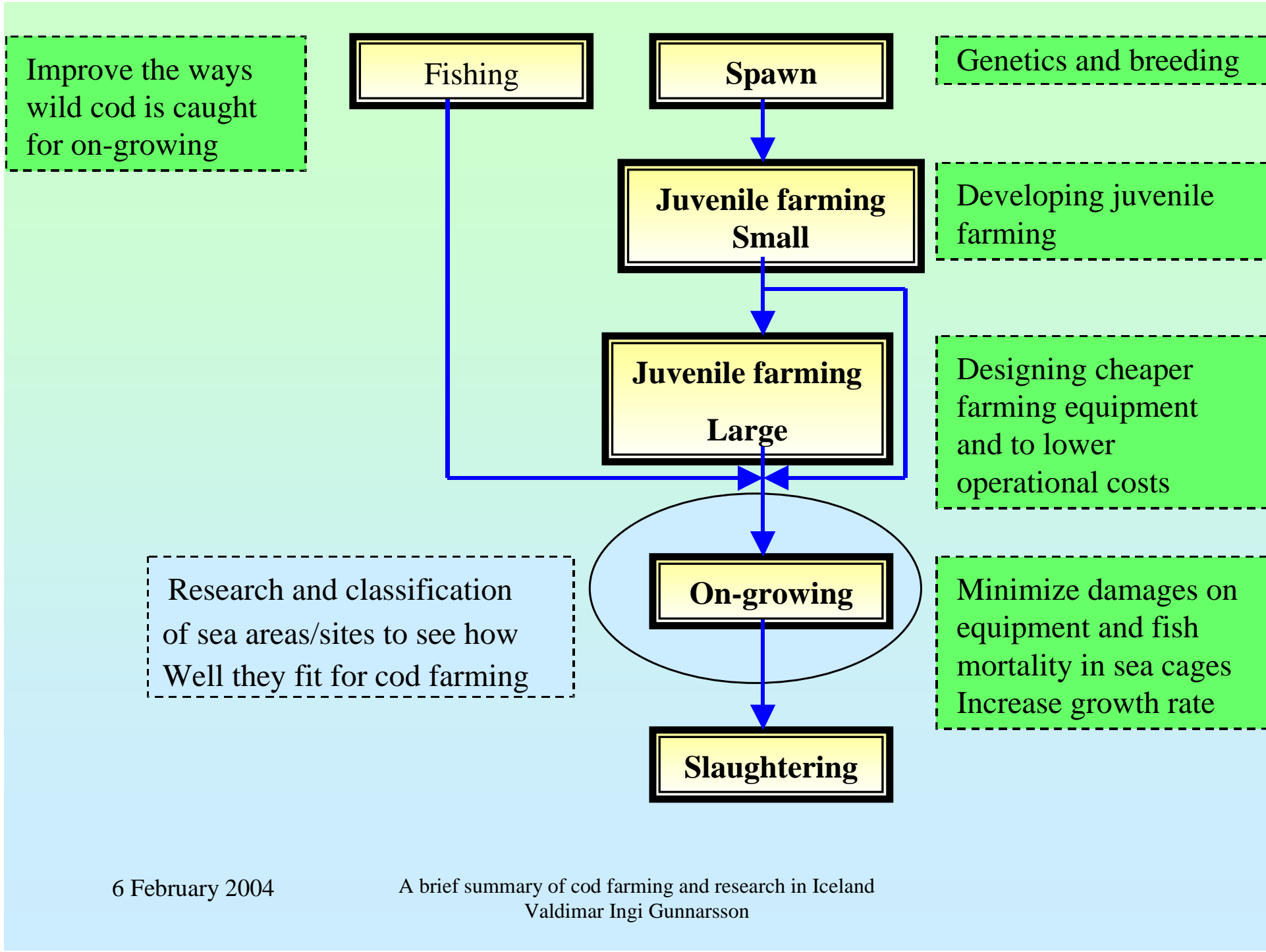
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Cod conference in October 2002

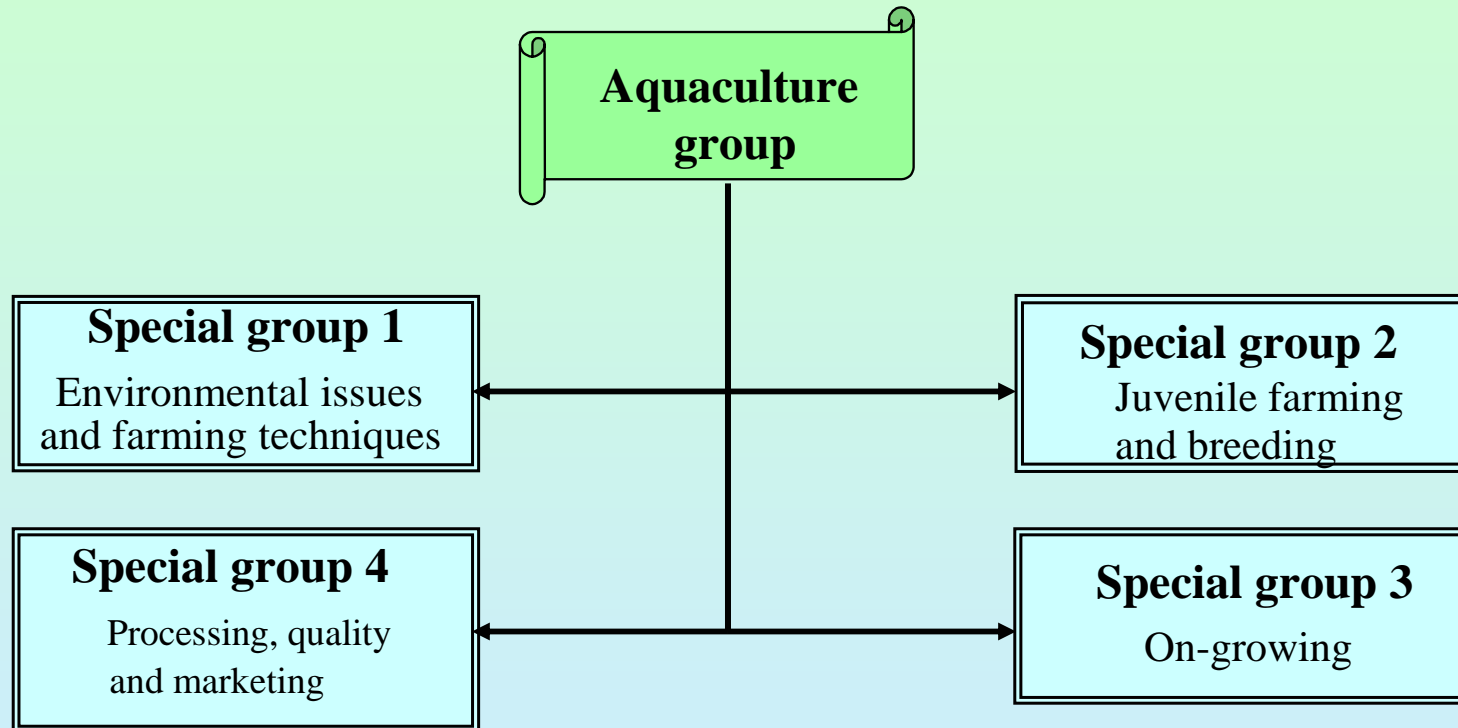
Strategy in research and development

- **Participants:**
 - 70 participants, researchers, farmers, from governmental administration and association....
- **Main objectives:**
 - Strategy in research and development in cod farming in Iceland
- **Reports**
 - Cod farming in Iceland: Strategy in research and development





Further strategy in research and development



This work will be finish in end of this year

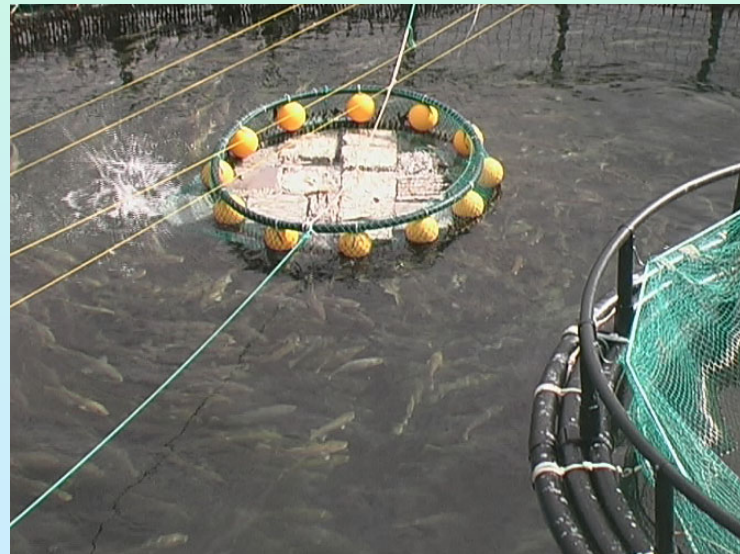
Researchers of cod farming in Iceland

- Feed and feeding
- Health studies
- Larval culture and selective breeding
- Slaughtering and quality
- Growth and mortality
- Catch and on-growing



Feed and feeding

- Effects of fat content in dry feed on growth rate and sexual maturity of cod in the 1. and 2. year of age
- Cheap protein in cod feed
- Feed for Atlantic cod



Health studies

- The improvement of preventive measures in cod fry cultivation
- The effect of immunostimulants on cod larvae
- Stimulation of cod larval defence mechanism against infectious diseases
- Study of the innate complement system of cod (*Gadus morhua* L.) and halibut (*Hippoglossus hippoglossus* L.)
- Phagocytes in Atlantic cod, *Gadus morhua* L.
- Vaccinations against bacterial diseases in farmed cod
- Cod farming in the Westfjords-health studies
- Preventive measures in aquaculture (first feeding of marine larvae)

Larval culture and selective breeding

- Larval culture of Atlantic cod
- Selective breeding of Atlantic cod
- Simulated cod - Base-population for cod breeding

Slaughtering and quality

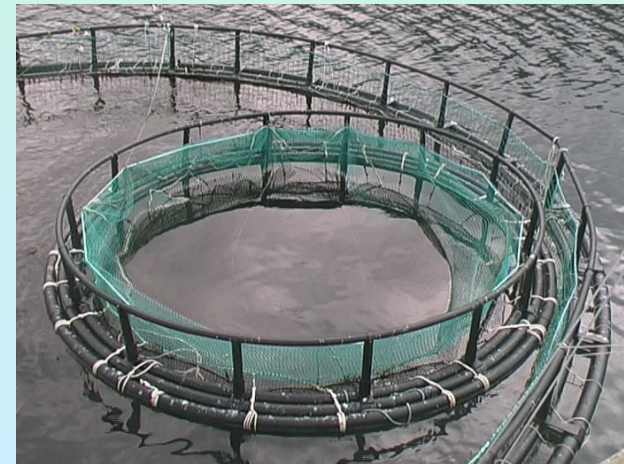
- The influence of different feeding strategies on the flesh quality of farmed Atlantic cod (*Gadus morhua* L.)
- Effects of various slaughtering methods on flesh quality of wild-farmed Atlantic cod
- Optimization of slaughtering method of Atlantic cod on-grown in sea-pens

Growth and mortality

- Effect of stocking density and water quality on the growth rate of cod in the first year of age
- Spawning related mortality of cod
- Effects of continuous additional light on growth and sexual maturity in wild-farmed Atlantic cod, reared in sea cages
- Effects of stocking density on wild-farmed Atlantic cod, reared in sea cages
- Grading and growth in cod farming

Catch and on-growing

- Catching of wild Atlantic cod for on-growing, with Japanese cod trap
- Catching of cod fry in pelagic trawl
- On-growing of wild and cultured cod fry



Wild cod quota and cod farming Development projects

- Cod farmers that are allocate 500 tons quota return every year report about:
 - Natural conditions in cod farming locations...
 - Catching methods, gear modifications, transport and adaptation of wild cod to farming environments...
 - On-growing, farming techniques, feed and feeding, mortality...
 - Slaughtering, processing, marketing and economy
- Summary in Report of the Marine Research Institute