Fisheries management in Iceland, ITQ's, results and effects.

Support material for presentation held in Waterford October 2011

+ Addendum: The period 2011-2017

V.1.3

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www.fiski.com/english/eindex.html

Introduction

A public consultation on the reform of the Common Fisheries Policy was held at the Tower Hotel Waterford Friday 14th October, 2011

Part of the CFP reform includes transferable quotas and discards ban. Iceland has an EU application pending and some Icelandic politicians belive that Iceland's experience and expertise could be of help for EU and could even be an advantage in the negotiations with the EU.
Foreign politicians have got the information that the Icelandic fisheries management is very good and should serve as an example to follow.

The quota holders are satisfied with the quota system but the **majority of Icelandic fishermen are of the opinion that the system is a total failure and and should be discarded** or at least totally reformed. According to polls, 80% of the nation is against the system.

Iceland's experience of its ITQ system can be summarised as follows:

1. It has failed to "build up" the fish stocks. The cod catch is now 150-170 thousand tons against around 450 thou. tons for decades, before the system was implemented. Catches of other demersal species have also decreased. When the journey started the scientist told the people that if their advice was followed, the annual catch would be 500 thousand tons - every year.

2. It has concentrated the fishing rights on fewer hands an in many instances all quotas have been sold or taken from numerous fishing villages around the cost.

3. As fisheries companies try to maximize the value of the quotas, they avoid grounds with less valuable fish, if caught they throw it overboard. There are cases that boats throw overboard boxed fish if they find that the market price is lower that the price of their leased quotas. Discards are banned but that does not work.

4. It violates the UN resolution of human rights because all people do not have the same equities or access to fishing rights.

5. The interests of quota holder, banks, fisheries manager, scientific clan and politicians are tied together so tightly that is seems impossible to get rid of or even change the system.

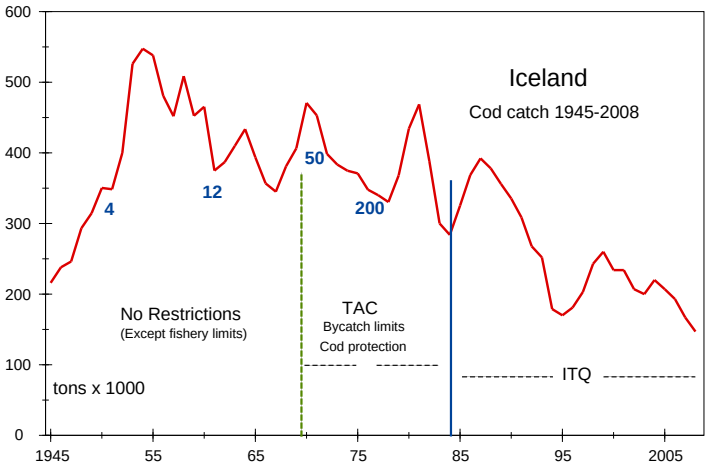
6. Empirical evidence has shown that it is not possible to increase fish stocks by fishing less and protect small fish by selective fishing

Therefore Icelandic fishermen are concerned that if implemented the reform possibly would become a new guideline for fisheries management.

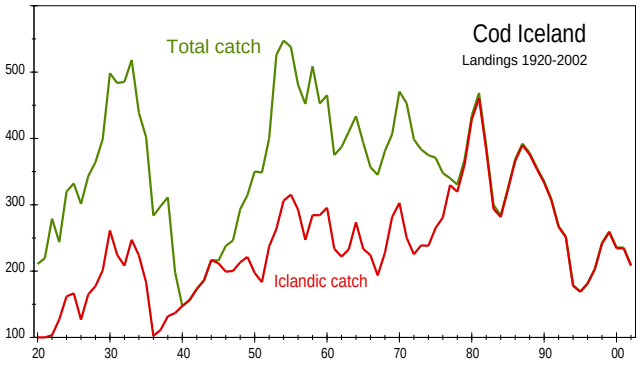
Management failure and introduction of the ITQ system

This graph shows the catch of cod on Icelandic grounds from after the WWII until 2008. Fishery limits, in nautical miles (nm) are shown by blue numbers.
During the war, foreign fishing fleets disappeared from the fishing grounds. Gradually, the fleet reappeared and catch reached a maximum in 1955.

Fisheries scientists had since long maintained that by limiting the catch of small fish they would gain more weight and the harvest would increase proportionally. But as foreign fishing fleets were fishing on Icelandic grounds, it was no point to only manage the Icelandic fleet. The benefit would be swallowed by the foreign fleets, but their share in the cod catch was more than 50%. We were told by the scientists that the cod stock was over-fished and had to be protected.
In order to protect the fishing grounds the fishery limit was increased from 4-12 nm in 1960. The fishery limit increased to 50 nm in 1972 and finally to 200 nm in 1975. Then management started.



Catch of cod at Iceland 1945-2007. Blue numbers represent the size of the fishing limits at various times.

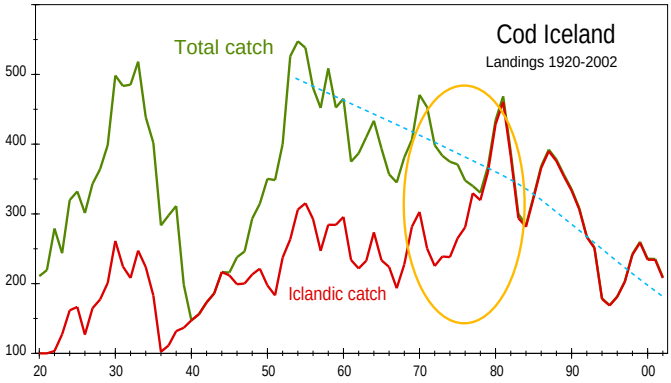


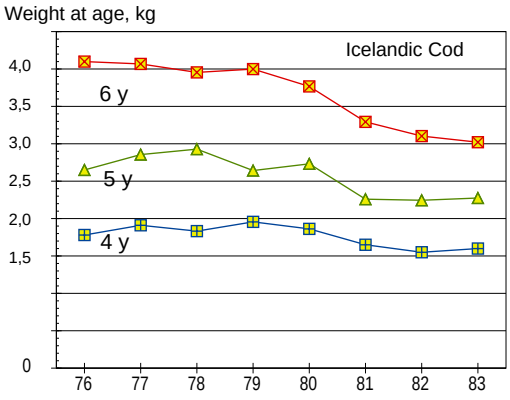
The period 1950-1970

The fishery was uncontrolled except for the fisheries limits. Trawl mesh were small, 80-110 mm. There were no limits for the size of the fleet and there were no catch limits. On the average 400 thou tons/year of cod were landed, half of it by foreigners and total annual catch never went below 350 thousand tons.

1970-1975

Up to that time fisheries scientists were working hard for the fishing fleet in order to find more fish, new fishing grounds and increase the catch. This can be called "positive research".
As the fishery limit was increased to 50 nautical miles and the foreign fleet pushed out, the Icelandic fishing fleet increased rapidly from 1970. Gradually the scientists started to use the fishing models Beverton and Holt had introduced the decade before. Soon their calculations convinced them that the cod stock was over fished, and started to introduce protective measures, gear restrictions, area closures, etc. They tried to reduce the catch, and that be named "negative research" .





Growth reduction in Icelandic Cod, a result of protection of young fish, resulting in overcrowding (?)

1975-1983

The 200 mile EEZ came into force 1975 and all foreign vessels disappeared form Icelandic grounds. Now the fisheries could be managed for the benefit of the country.
The policy "Fish less now and fish much more - later". was implemented.
Trawl mesh was increased to 155 mm in order to protect small fish.
The result was that 3 year fish almost disappeared from the catch, cod was now allowed to grow for one more year before they were caught. This meant larger stock, less harvest in %.

The protected young cod gained weight and the catch increased. So much that restrictions were put on the Icelandic fleet. Direct fishery for cod was limited and by-catch rules were set to reduce the cod harvest. The intention was to increase the cod stock further, increase the size of the spawning stock, the believe was that it would lead to increased recruitment - in turn increase in stock size and increased and more stable harvest - the dream of the managers.

But that did not happen. From 480 thousand tons in 1980, the cod catch dropped sharply to only 300 thousand tons, the lowest since 1949. ant the Quota system, later ITQ system was implemented. But why did the stock collapse? The main reason for lower stock at that time was that individual weight of the fish had dropped, thus the stock total biomass was less than before. The outcome of this experiment was that the stock size overshot the food regime resulting in starvation.
But he fisheries scientists recommended still reduced catch and recommended a TAC of 200 thou. tons, - in order to build up the stock.

From 1984 - ITQ period

In 1984 the parliament decided to introduce a quota system for one year at a time. That lasted for 3 years and later this came permanent. In the beginning, the ships were allocated catch (quotas) according to their catches 3 years prior to the onset of quotas.
The quotas were transferable between vessels, if an owner found it more rational to use fewer vessels he could do that without loosing quotas. In the beginning quotas could only be transferred within companies, not between companies.
Quotas were allocated free, even if the fishing grounds were owned by the whole nation. Later, quotas could be transferred between companies. Soon money came into the picture; the quota holders could sell quotas permanently or hire them out one year at a time.
In 1992 it became legal to mortgage the quotas. That is, they could get loans, the security for the banks was the company's quota share.
The quotas became a value in the company. Therefore, it became vital to keep the quota price high. It is of interest for the quota holders to create demand, i.e. high prices.
Companies started to by and sell quotas to each other to raise the (fictive) price. Increase in quota for a species, lowered the quota price of that species and visa versa.
As an example, the haddock quotas were increased in 2003 as a result of a sudden increase in the stock. Immediately the quota price sunk by 70% and the "value" of the haddock quotas decreased. That lowered the "value" of the quota holding companies. - Now the haddock quotas have been cut, price has increased and all is good again. At present quotas are hired out, for a price that amounts 80% of the market value of the fish, if they are sold permanently, the price can go up to ten times the market value.
High oil prices and low shrimp prices makes fishery for shrimp unprofitable. The price of quotas is almost zero. But strangely, the quotas are still there without being needed to control the harvest. (there might come better days for the quota holders!)

Some points:

The ITQ system has failed to "build up" the demersal fish stocks. Catch of cod is now only one third of what is was prior to the system.

10% of the fishing companies hold more than 50% of the fishing rights. and the 40 largest hold 84% of the fishing rights.

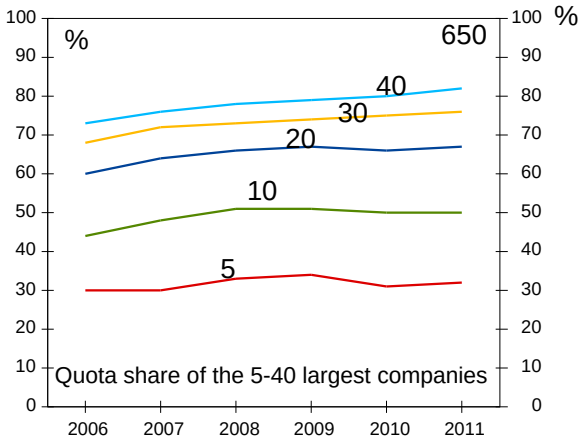
Small scale sector is badly hurt.

The gill net fleet, medium sized vessels targeting spawning cod, is almost absent. Previously, his fleet caught 30% of the total catch.

Fishing rights have been bought from fishing villages and accumulated elsewhere. House prices fall, people move away, - if they can sell their properties.

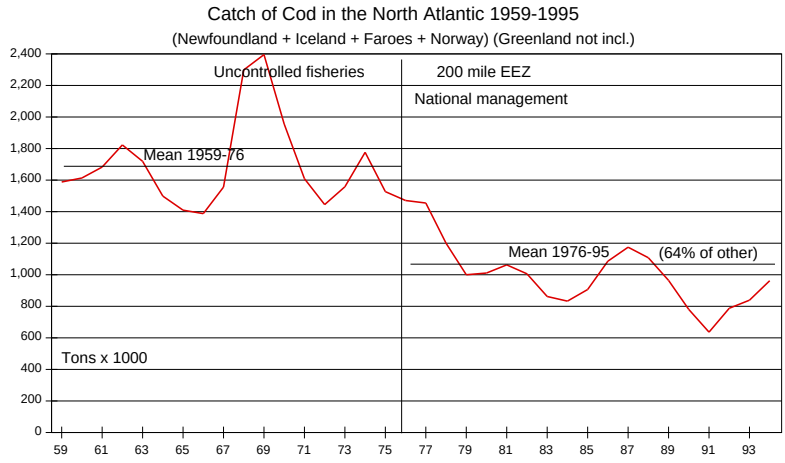
Discards are high.

The total debt of the fishing companies amounts 3000 million Euro , much of it to foreign banks and it is possible that Iceland will loose some of its fishing rights to foreigners.



Generally, the management of cod in the N-Atlantic is a failure.

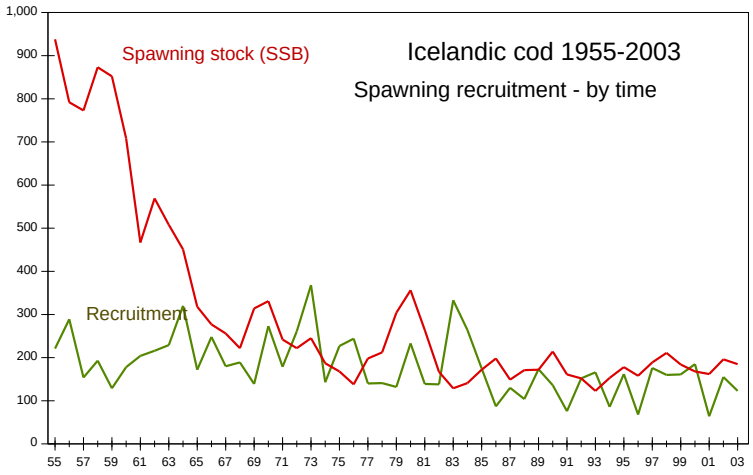
When 200 mile EZZ's was implemented, the nations started to manage their fish resources and the declination began. Less fishing lead to undernourishment , slower growth and less fish production.



Success of management?

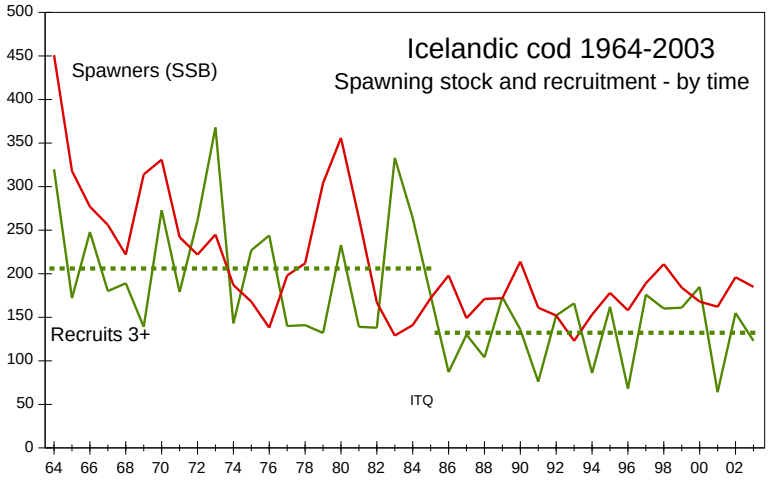
This figure shows the catch of cod in the North Atlantic 20 years before and 20 years after general start of management when fishery limits became 200 nautical miles.
Is the lowering of the catch a result of (wrong) management?

One key goal of the Management Science is to "build up" a large spawning stock in order to secure good recruitment. - Is that a false argument?



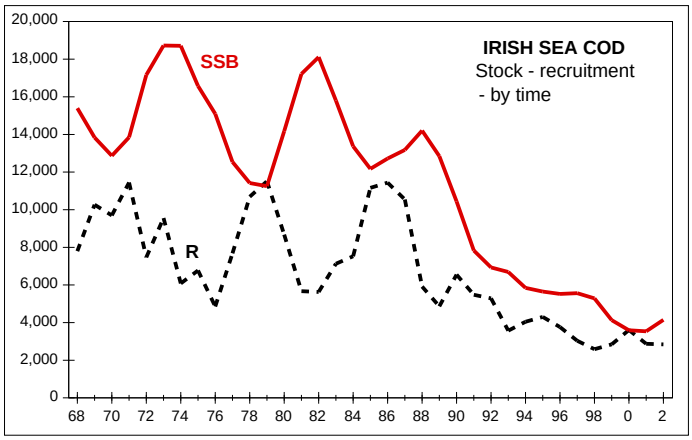
Large spawning stock?

Stock recruitment relationship in the Icelandic cod stock.
One argument in the scientific fishery management policy is that the spawning stock has to be large - to secure good recruitment.
The large spawning stock did not produce more recruits than much smaller stock later.
This graph shows quite the contrary.
It is rather the opposite; large spawning stocks tend to give rise to poor recruitment, and vice versa.



Effect of ITQ?

It is a significant step down in the recruitment after ITQ is introduced.
Probably because large year classes are "knocked down" by to low quotas.
Cautious "sustainable" harvesting ?



Spawning stock (SSB), upper line, and recruitment (R) by time (three year running average) in the Irish Sea1968-2002.

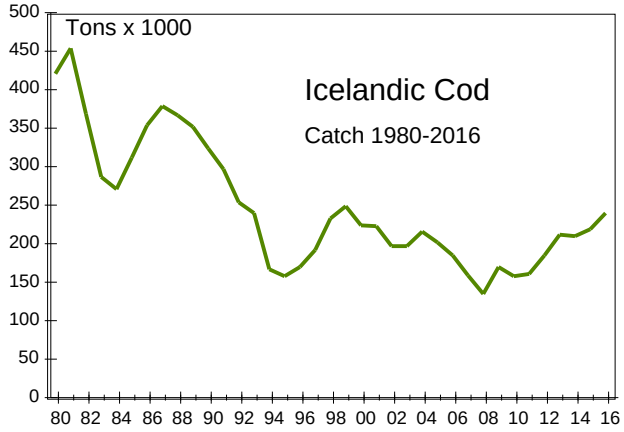
The Irish Sea:

The spawning stock in the Irish Sea oscillates in a regular manner until 1990. Surprisingly, the recruitment swings regularly in an opposite phase. This can be regarded as a self-regulation of the stock size: When the (spawning-) stock is big there is no room for recruits.

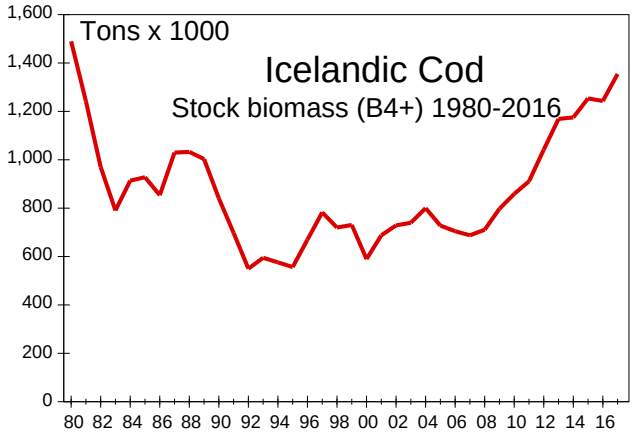
It is not about the size of the spawning stock or effects of fishing.
It is about food and competition

Addendum: The period 2011-2017

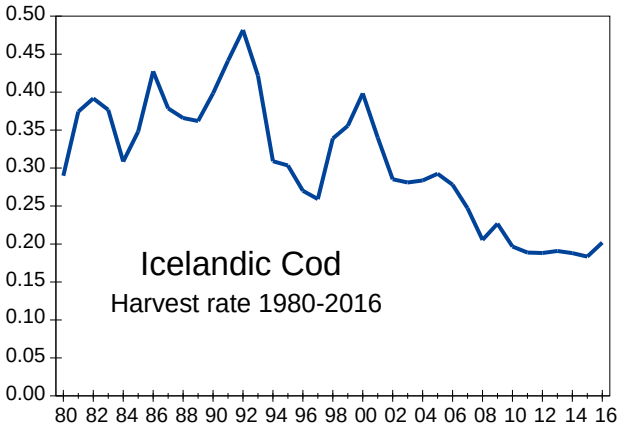
Above, data on Icelandic cod parameters, catch, spawning stock and recruitment end in 2003. What has happened since then?



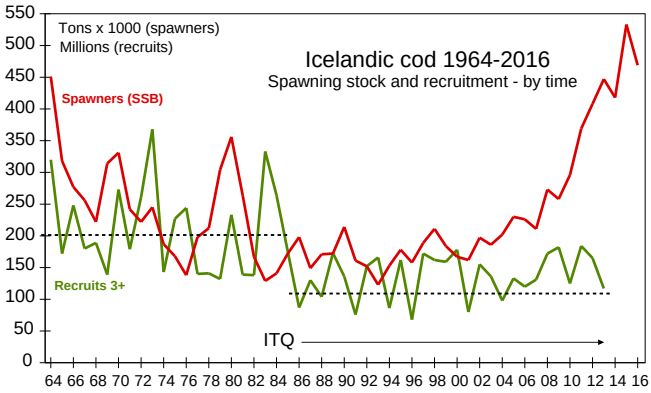
This is catch of cod 1980-2016. There is a small increase in the cod catch since 2008, from 150-230 thousand tons. There is now a catch rule, the quota is 20% of the 4+ stock, as determined (guessed) by the stock survey.



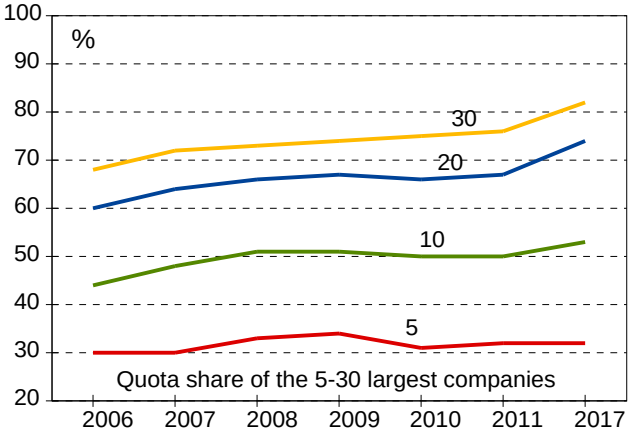
This is the stock biomass 1980-2016. There is a big increase in the stock since 2008 especially in older part of the stock. The reason is the invasion of mackerel to Icelandic grounds which started in 2006. Then suddenly there was food for big fish, i.e. post spawners. The mackerel, and herring also, appear on the grounds in late June and serve as food for the hungry post spawners.



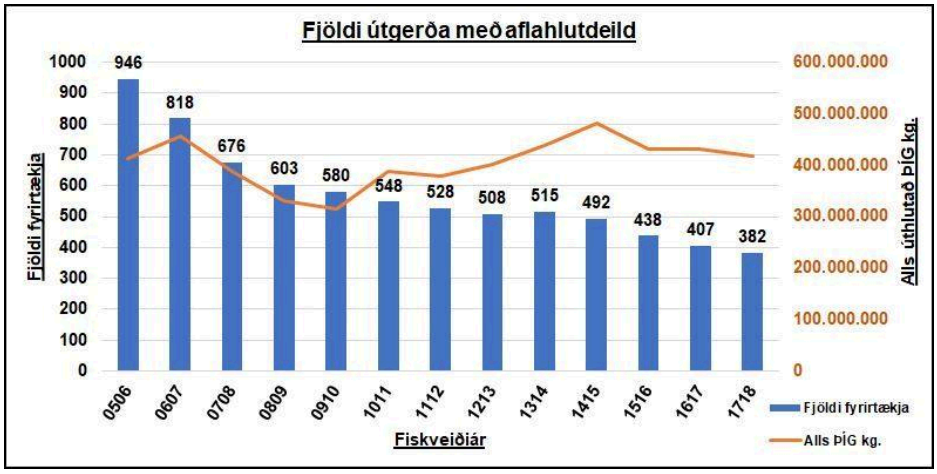
This is the harvest rate 1980-2016. It has decreased since the quota system was implemented in 1984. A 25% catch rule was put into force in 1996, and decreased further to 20% in 2007.
In 1988 the stock size was around 1 million tons, the catch was 360 thousand tons at a 36% harvest rate. Now, when stock is reaching 1.4 million tons the catch is only 230 thousand tons because the harvest rate is only 20%.
This is to play with fire; if something changes that will affect the food supply in a negative manner, the stock may collapse, as it has done many times in the recent past with this "fish less now and more later " management plan.



This is the latest from the spawning stock and recruitment. SSB vastly increasing but the recruitment in a steady low state. Why is that? One explanation is cannibalism.
Mackerel and herring leave Icelandic grounds in the fall and migrate to the North sea and further south. But then the big cod is still hungry and start to feed on their own and other big pray.
Here is a video taken aboard an Icelandic trawler It shows stomach content of big cod in September, https://www.youtube.com/watch?v=_Zh7YkZoM-A



The quota share of the biggest companies has risen sharply between 2011 and 2017.
The largest five possess around 30% of the quotas. There is a cap of 12% quota for each company.
Ten 20 largest have 74% and have increased their share from 67% in 2011.



This figure shows how n.of companies that have quota share has decreased from 946 the fishing year 2005-2006 to 382 companies 2017-2018 (blue columns). Fishing year starts 1. September each year. The yellow line shows the total quota, all demersal species, from 2005-2018.

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