


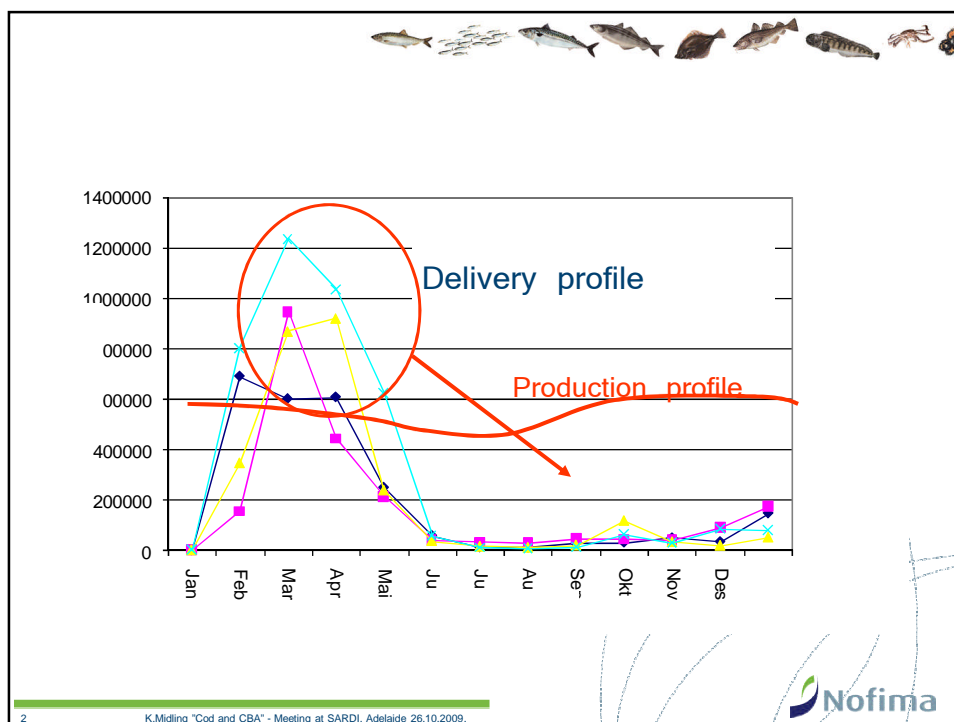
# Status of capture based aquaculture of cod -Where do we go from here?



Kjell Midling – senior scientist and leader of CBA-Norway

Investments in fisheries R&D is done in the perspective of eternity

1 Cod farming in Nordic Countries September 21- 2011 – Kjell Midling, Nofima



**Spotless**



**"Dead in sea"**



**5 levels of CBA on cod**



1. Kept alive for 1-5 hours (fresh/frozen – trawl or seine-net)
2. Kept alive 1-2 days (frozen – large seine-netter)
3. Delivered live for "direct slaughter"
4. Delivered live and stored without feeding
5. Delivered live for ongrowing



## National Centre for Capture-based Aquaculture

  
 Sten Siikavuopio  
 Urchins, Nephrops, King Crab

  
 Philip James

  
 Kjell Midling  
 Leader  
 Capture+++

  
 Bjørn-Steinar  
 Sæther

  
 Chris Noble

  
 Torbjørn Tobiassen  
 Quality

  
 Øystein Hermannsen  
 Economy/Marketing

  
 Ronny Jakobsen

  
 Tor H. Evensen  
 Technical support on "everything"

Physiology  
 Aquaculture/Fisheries

Established by the Ministry in 2010

3 mill NOK/yr

8-10 mill NOK in projects





  
 Bjørnar Isaksen

  
 Odd-Børre  
 Humborstad

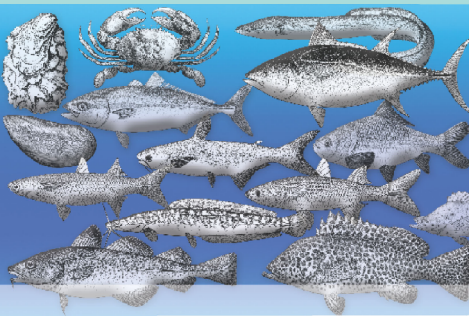






FAO  
FISHERIES  
STATISTICS  
508

## Capture-based aquaculture

Global overview




### Capture-based Aquaculture (CBA)

**The capture of wild aquatic organisms  
In order to increase their value through  
Aquaculture technologies**

FAO og FN:  
*Committee of Fisheries/  
Sub-Committee of Aquaculture:*  
*"use of wild fish and fisheries resources for  
Aquaculture production has been identified  
as a priority for target action"*


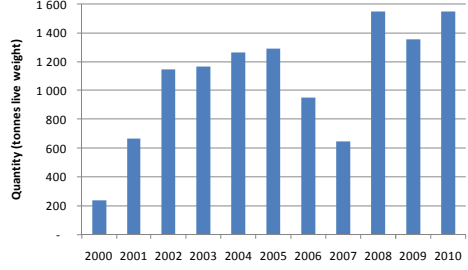
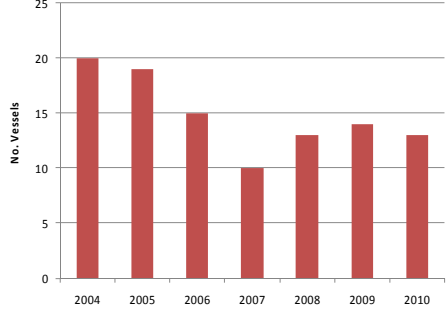

- Fresh and salt water
- Approx. 20 % of all aquaculture production
- Value > 10 Bill. US\$
- Global



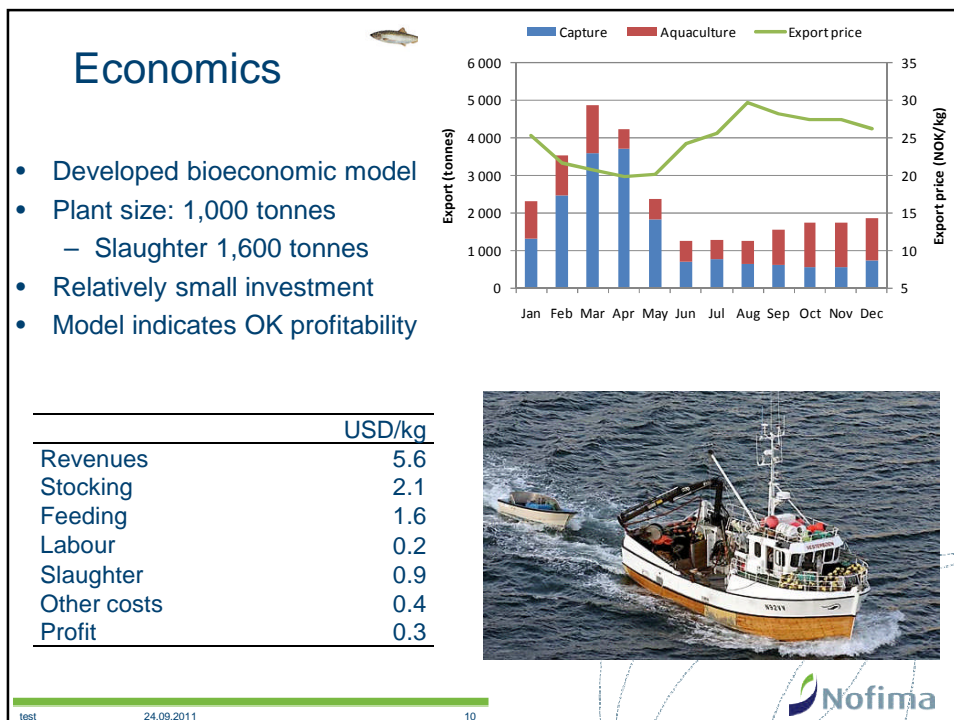
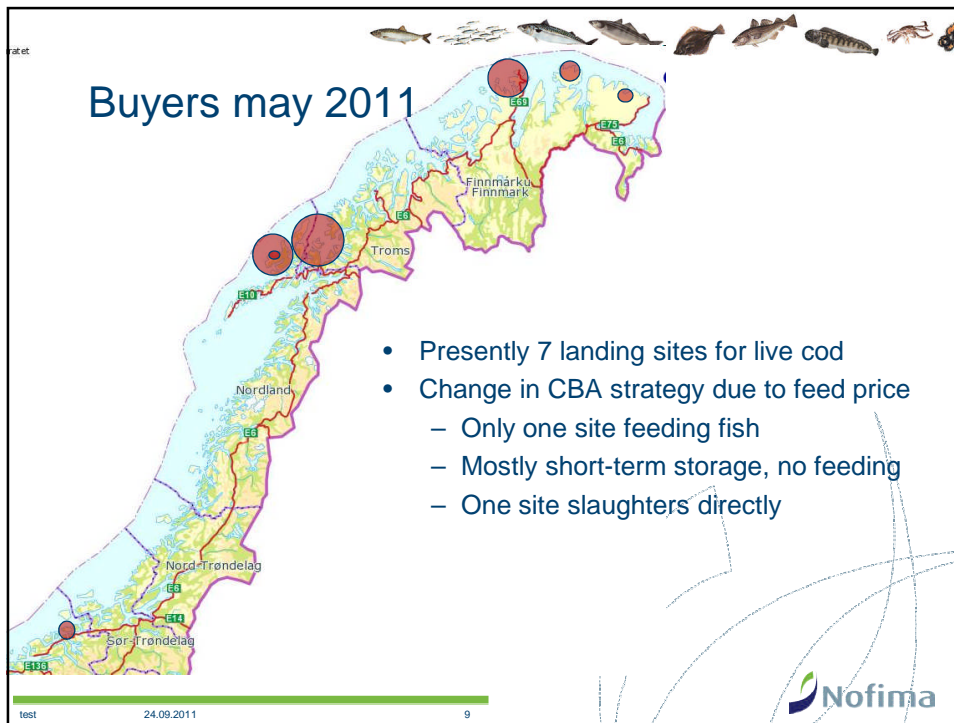
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## Production

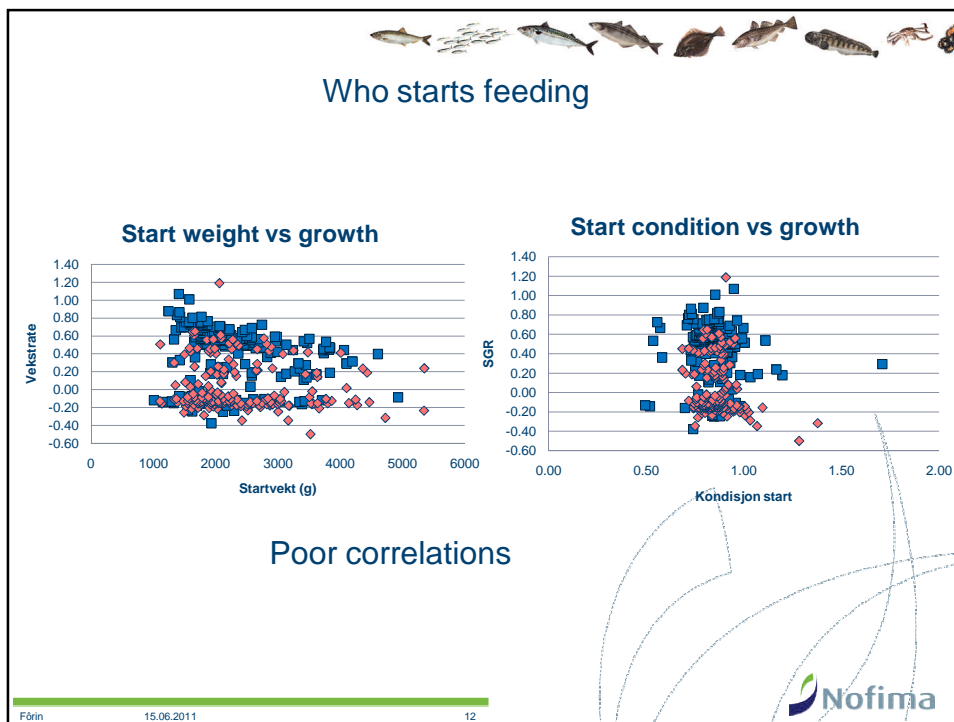
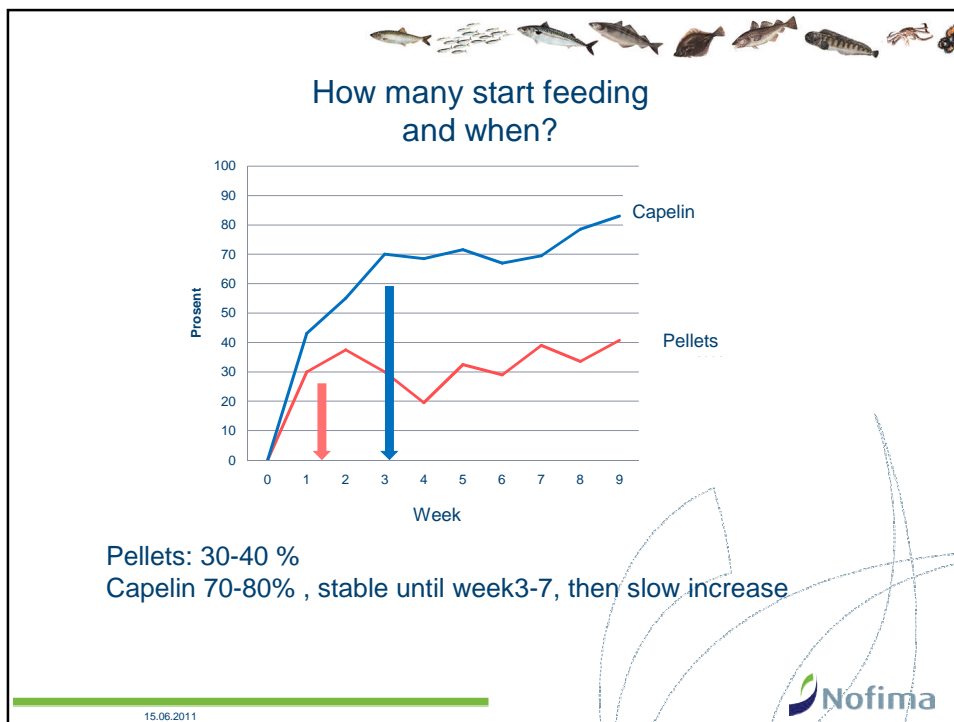
- Modern CBA developed 1980ies
- Production increase from 2000
  - Reduced interest 2007
- Quota bonus introduced
  - Approx. 20 %
- Production increase
- Few fishing vessels
- Many easily converted if demand

test
24.09.2011
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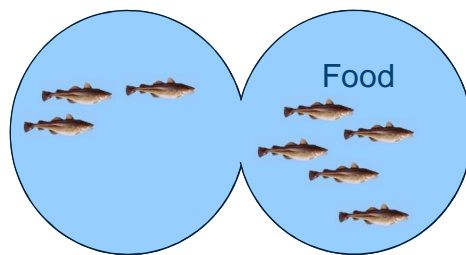








## Behaviour-based grading



	Motivated	Not mot.
Start weight	2440 g	2277 g
End weight	2836 g	2371 g
CF start	0,90	0,84
SGR	0,2	0,04

15.06.2011

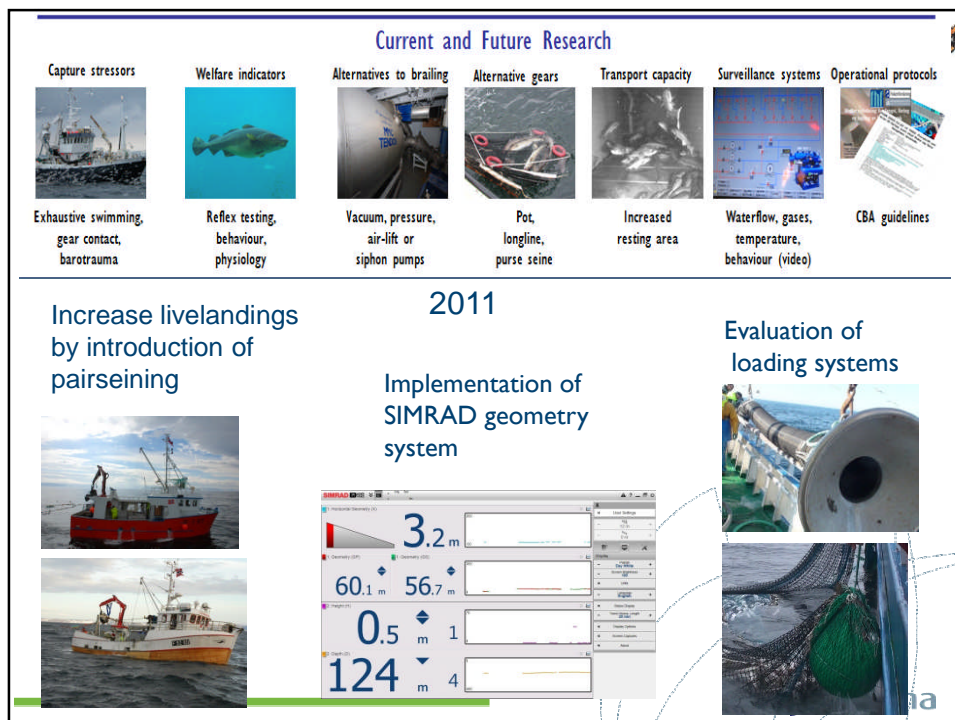
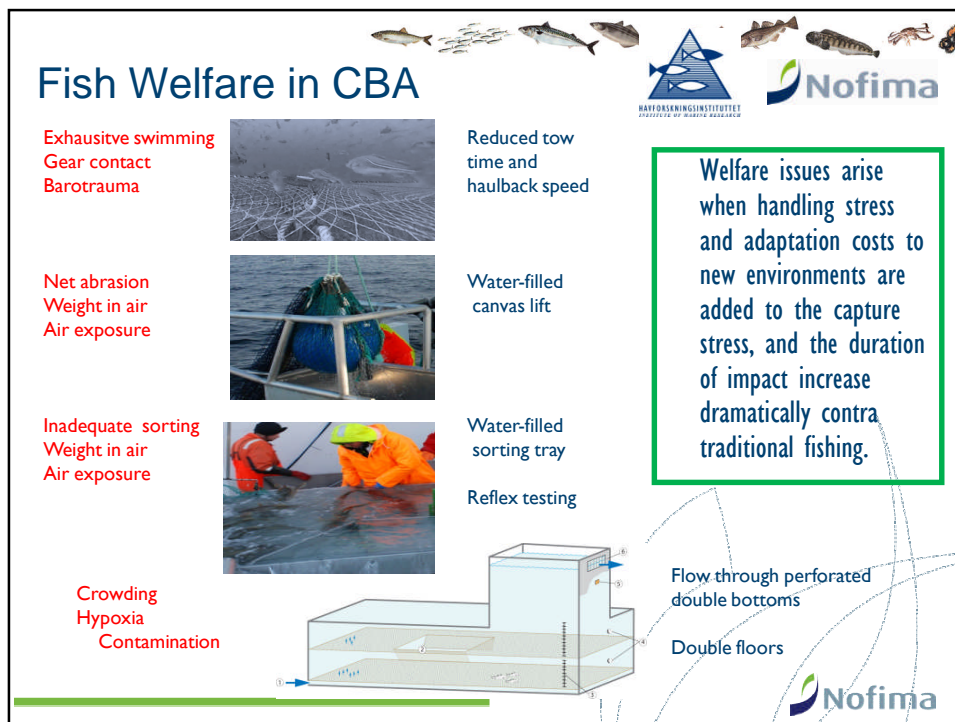
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K.Midling "Cod and CBA" - Meeting at SARDI, Adelaide 26.10.2009.

Nofima





## KILDIN fin damage summary 2010

Does the boat-cage live transfer  
technique affect fish injuries?

24.9

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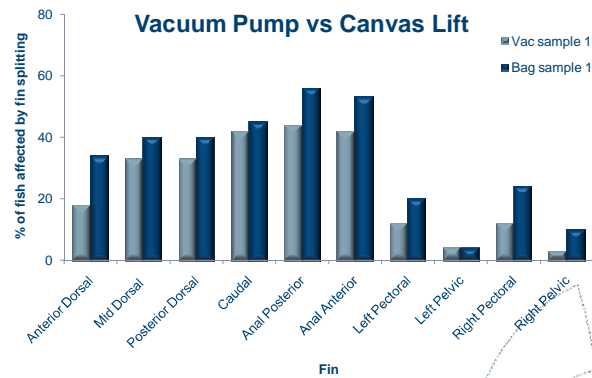
**We picked fin damage (splitting) as an indicator  
of the potential for injuries and asked:**

1. Does the boat-cage live transfer method (vacuum pump vs canvas lift) affect the number of fish affected by fin damage?
2. Does the boat-cage live transfer method (vacuum pump vs canvas lift) affect the severity of damage (number of fins affected per fish)?

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1. Boat-cage live transfer method (vacuum pump vs canvas lift) **does** affect the number of fish affected by fin damage



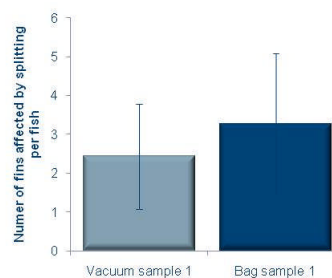
Canvas lift transfer damages more fish than vacuum pumping, especially their anterior fins (anterior dorsal and pectoral)

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2. Boat-cage live transfer method (vacuum pump vs canvas lift) **also affects** the number of fins damaged



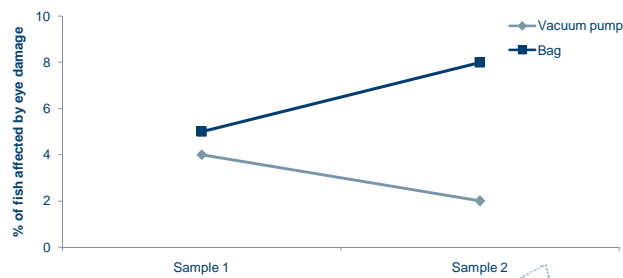
Canvas lift transfer damages more fins than vacuum pumping (ca 35 vs 25% of all fins)

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Also, when looking at the % of fish affected by eye damage (exophthalmia, cloudy lens, haemorrhaging, cataract)



Fish transferred by canvas lift have more damage than pumped fish at both the time of transfer and six weeks later

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Trawling and production from live storage –is it possible?



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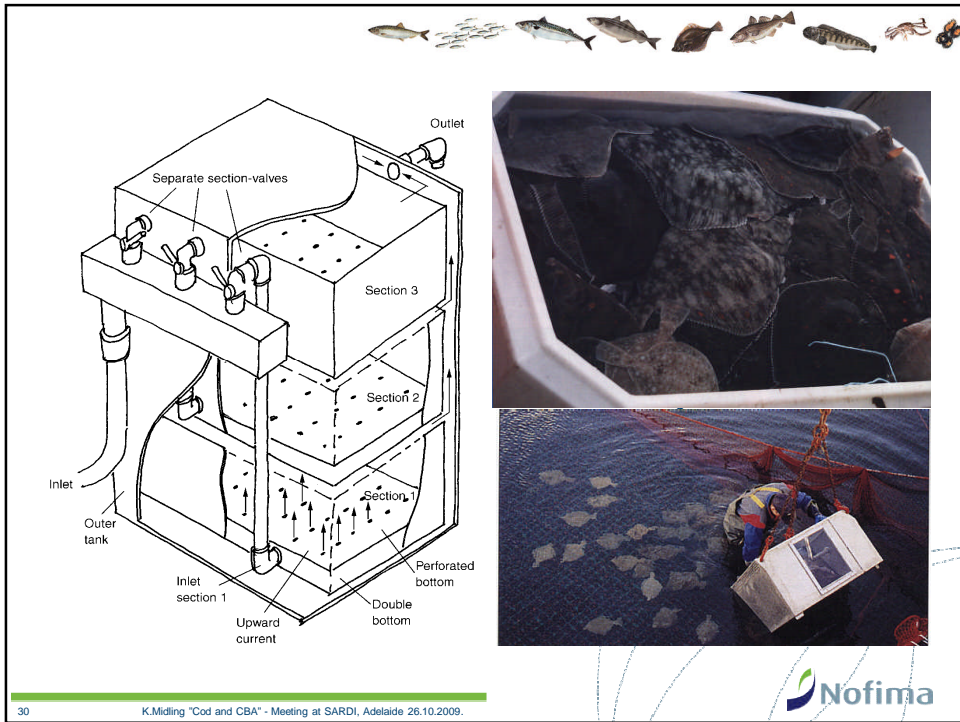
K. Midling: FHF's koordineringsmøte 14. juni 2011



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K. Midling: FHF's koordineringsmøte 14. juni 2011









CBA – Capture-Based Aquaculture  
ABC – Aquaculture-Based Capture



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