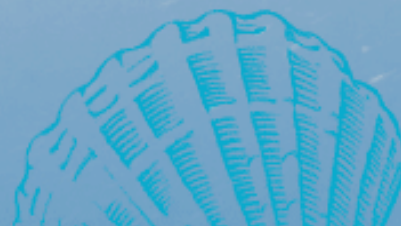
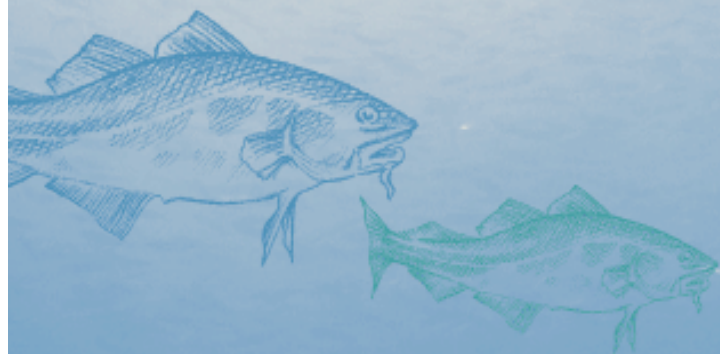


INSTITUTE OF MARINE RESEARCH
HAVFORSKNINGSINSTITUTTET





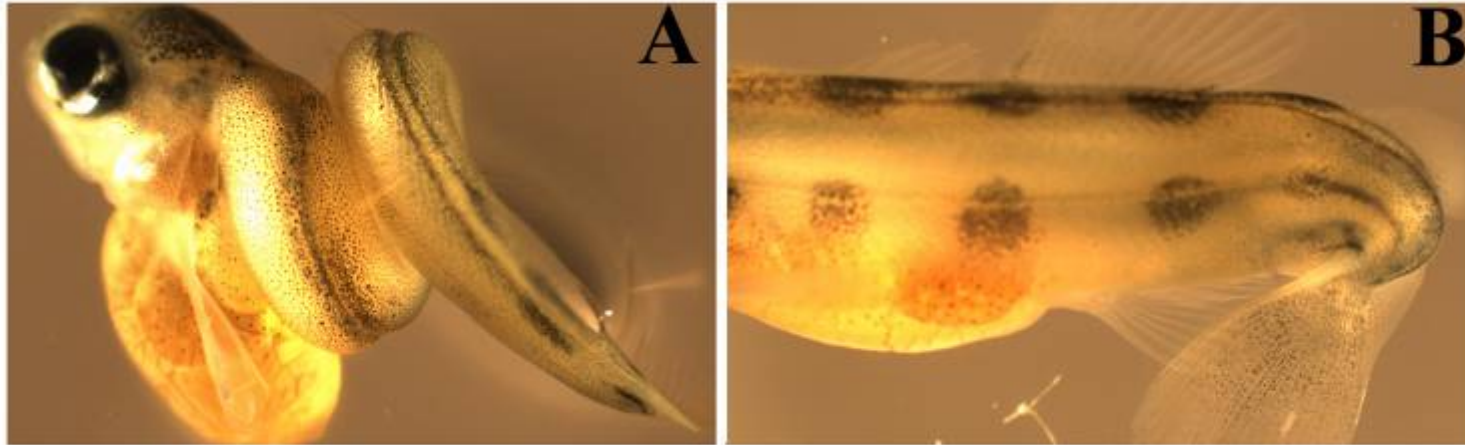
Aquaculture from an animal welfare perspective

Ole Torrissen

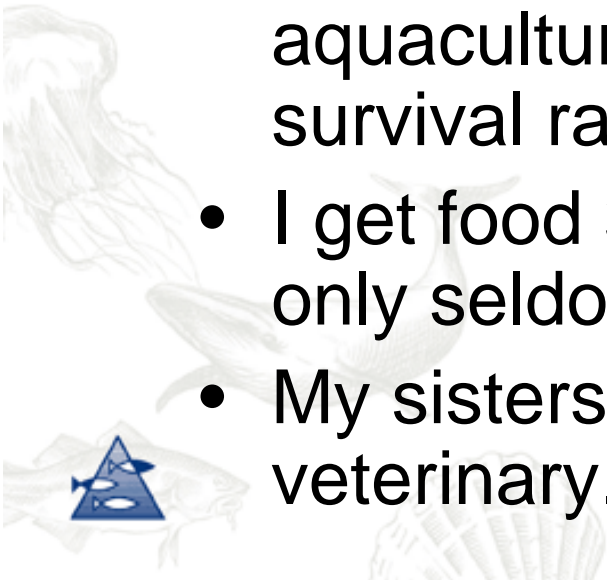


INSTITUTE OF MARINE RESEARCH
HAVFORSKNINGSINSTITUTTET

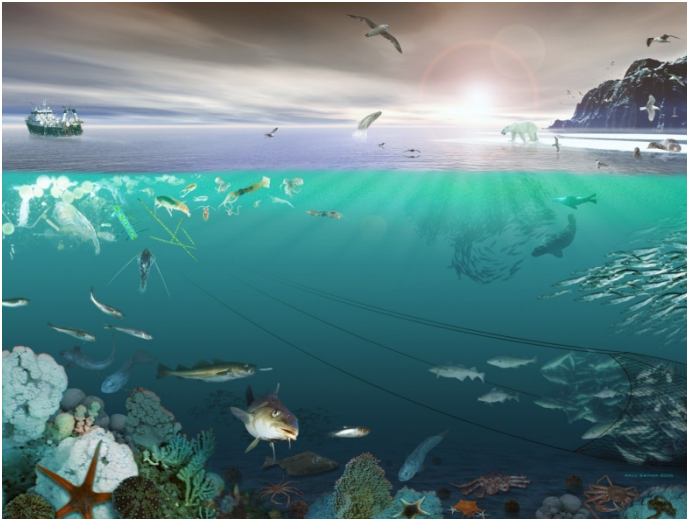
I was lucky after all?



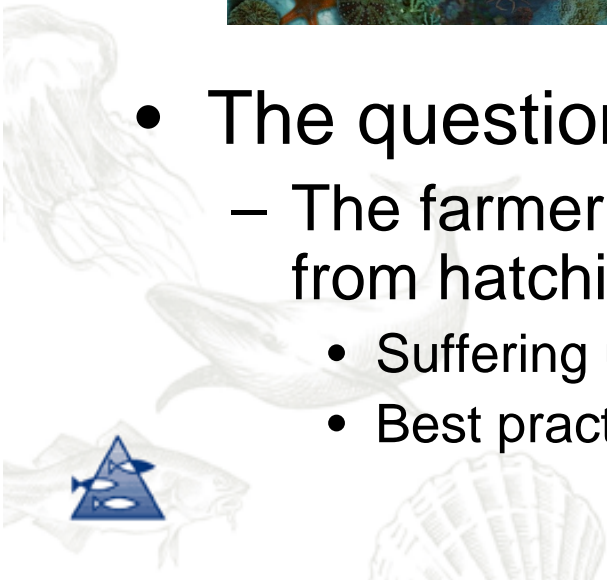
- Only 0,01% of my wild sisters survive, we aquaculture fish has a 3 000 fold higher survival rate!
- I get food 3 times per day, my wild sisters only seldom fill their belly.
- My sisters fight for life every day, I have a veterinary. He knows what's best for me!



Wild or farmed: Where do the fish suffer less?



- The question is wrong!
 - The farmer is responsible for farmed animal welfare from hatching through harvest
 - Suffering under other conditions is irrelevant
 - Best practice is generally a requirement

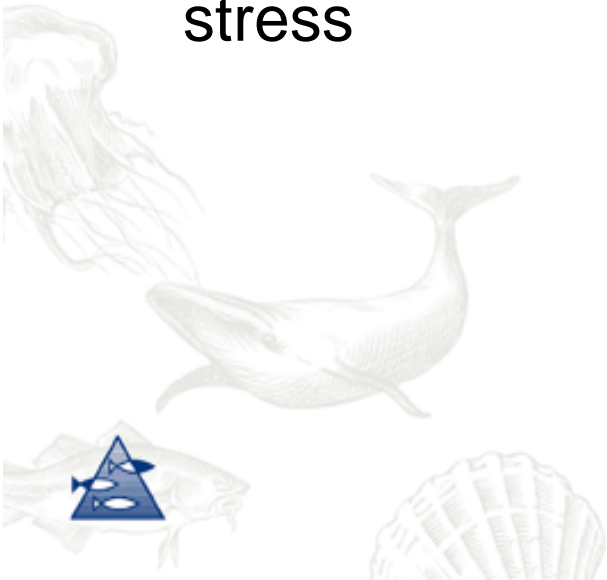


Animal welfare

e.g. Huntingford et al. 2006

Different definitions:

- Feelings based – subjective mental state, fear, pain, pleasure
- Function based – health, biological functioning
- Nature based – normal behaviour, psychological stress



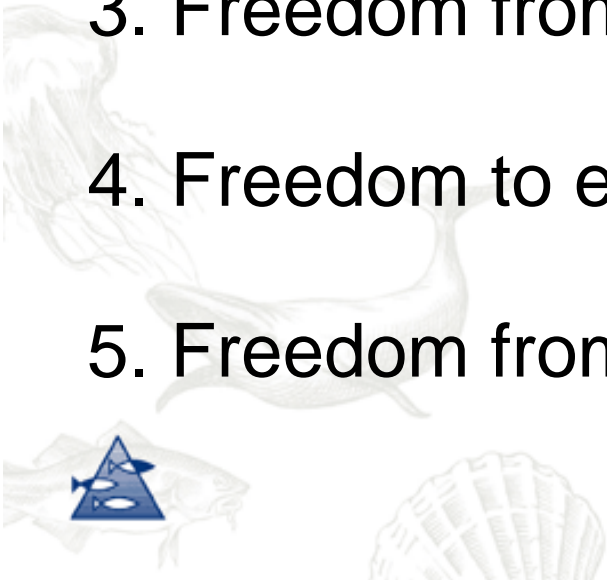
Johansson, David, 2007

Brambell commission (1965)

The Five Freedoms

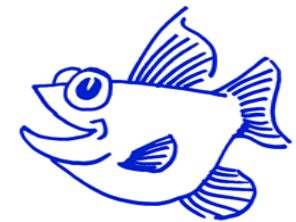
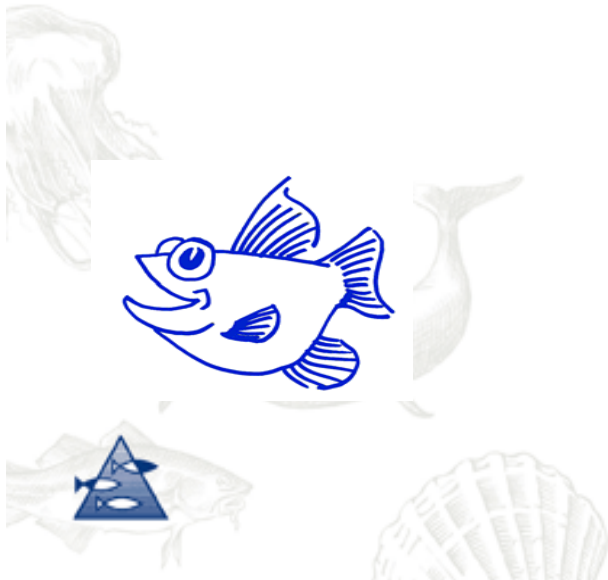
1. Freedom from thirst, hunger and malnutrition.
2. Freedom from discomfort
3. Freedom from pain, injury and disease
4. Freedom to express normal behaviour
5. Freedom from fear and distress

Johansson, David, 2007



- **Animal welfare is the individuals subjective experience of its mental and physical condition as a consequence of attempting to cope with its environment. (Anon, 2005)**

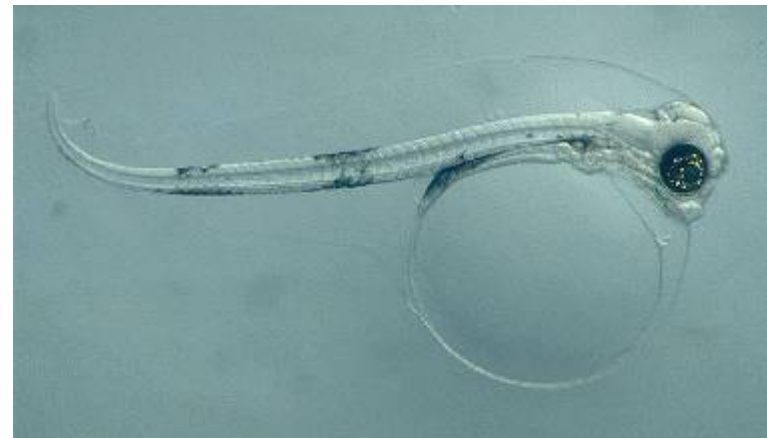
Quality of life



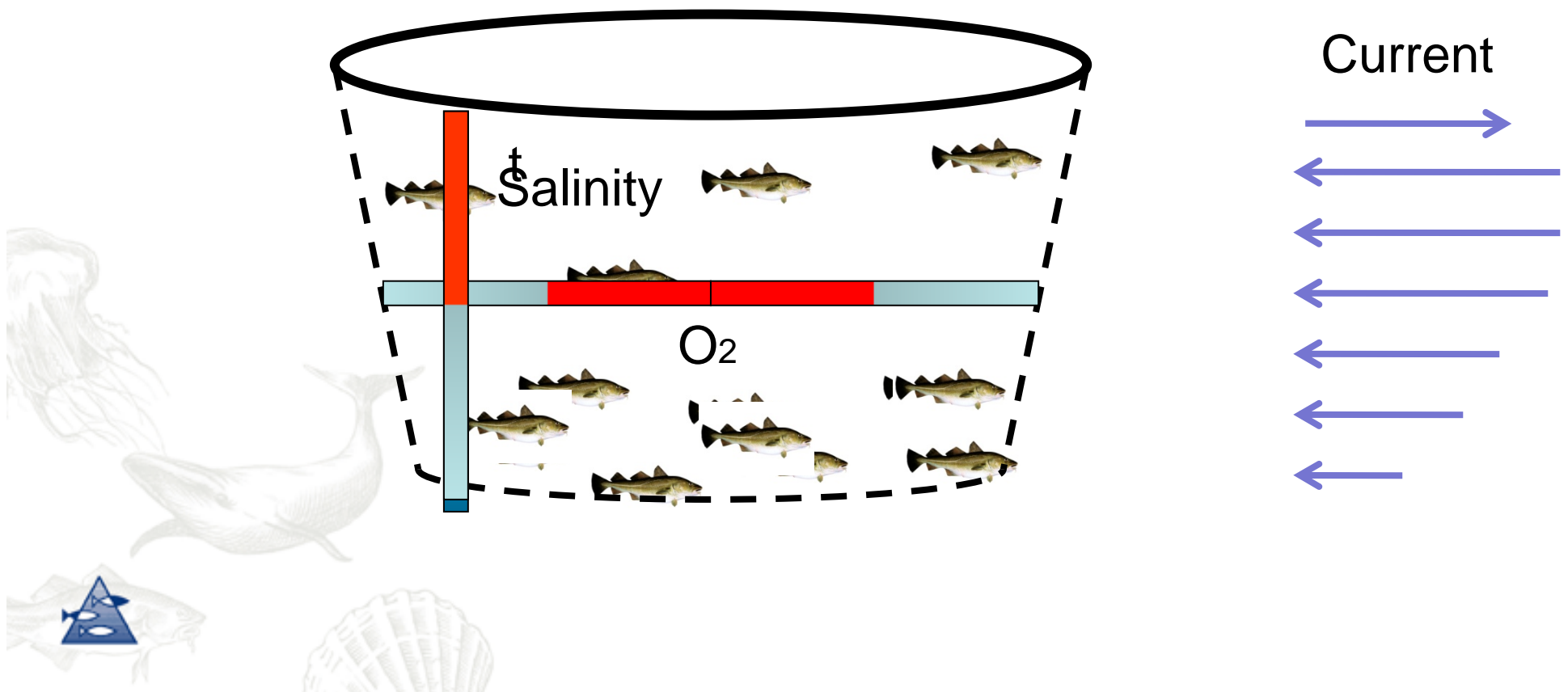
Johansson, David, 2007

Welfare indicators

- Direct methods for accessing welfare:
 - Behaviour and responses
 - Physiological stress or pain responses
- Indirect methods:
 - Relative growth rate
 - Survival
 - Disease resistance
 - Product quality



Cage environment a multifactorial choice



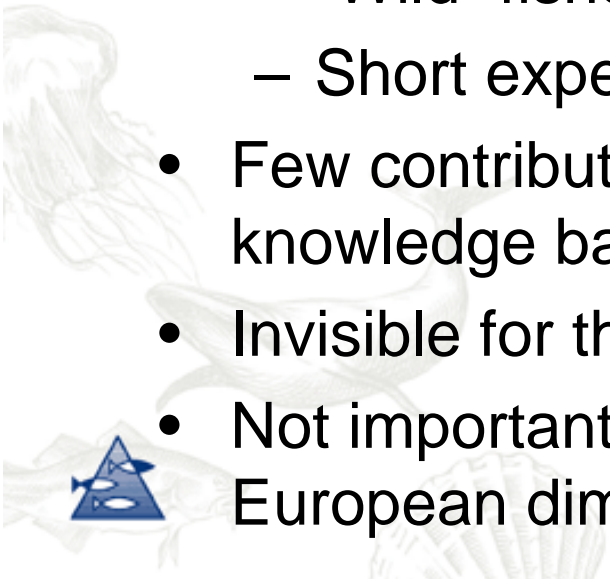
Welfare and ethics

- Regulations accept that farmed animals is exposed to stress or pain limited by ethical considerations
 - Values and customs determine what's acceptable
 - Knowledge
 - Relative to other animals or farm systems
 - Specie dependent
 - Changes by time
 - Social geographical factors
 - Purpose

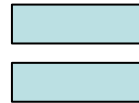


Lack of knowledge

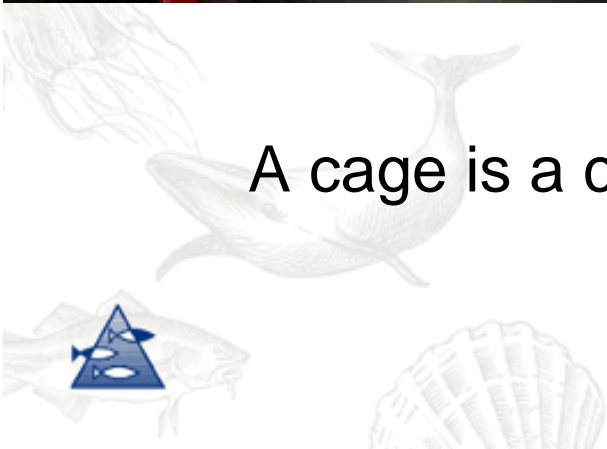
- Ethics require a best practice approach and an active seeking for new knowledge
- Aquaculture is a "new" industry in Europe with many different species
 - "Wild" fishes in captivity
 - Short experience period
- Few contributing to the knowledge basis
- Invisible for the society
- Not important in the European dimension



Relate to other farming systems



A cage is a cage and a farm animal an farm animal!



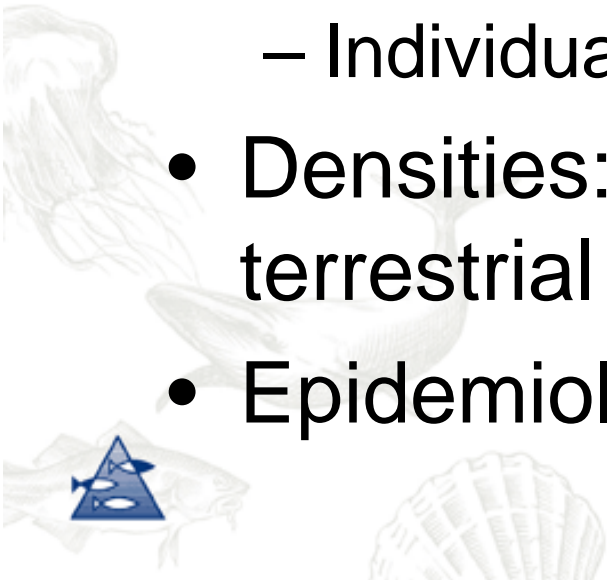
“Similar systems” and common problems?

- Production
 - Ag
 - De
 - Ide
- Disease
- Density
- Transport
- Slaught



Transfer of experience requires fundament in knowledge

- Domesticated terrestrial versus wild aquatic
 - Handling stress and handling environment
 - Sexual maturation and spawning
 - Individual handling versus group
- Densities: Aquatic volume versus terrestrial area
- Epidemiology: air versus aquatic



Handling is also a question of what's possible



192 kg, wild halibut caught in Hjeltefjorden, Norway



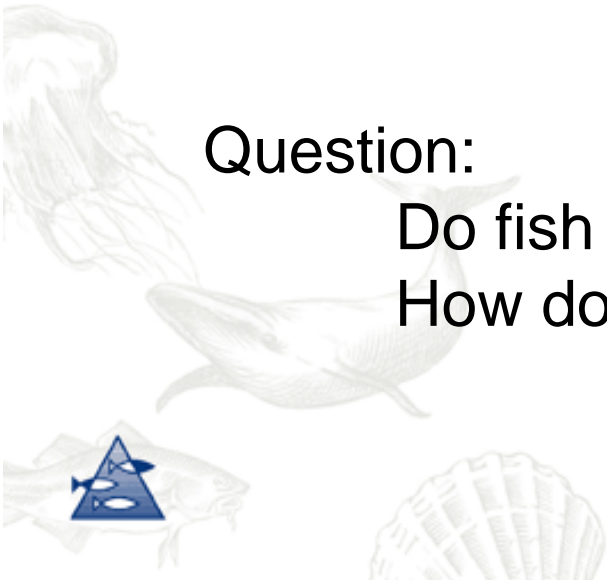
The pitfalls

- To accept “truths” based on insufficient evidence or old traditions
- To use human welfare standards on fish welfare.

Question:

Do fish feel hunger?

How does the fish feel pain?



Food is not a daily pleasure for a wild cod!

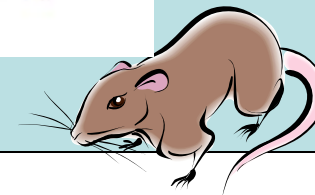
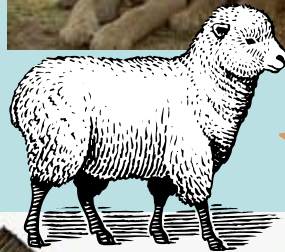
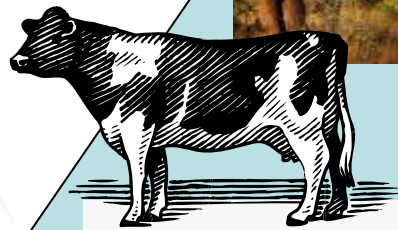


The animal aristocracy

- Close relationship with us
- Our friends
- Large Zoo mammals living in other countries or preferable continents
- Our servants
- Wild domestic mammals or birds
- Other animals not bother us
- Animals who are a pain in the neck



The Ecosystem Pyramid



The acceptable standard of handling will depend on specie.

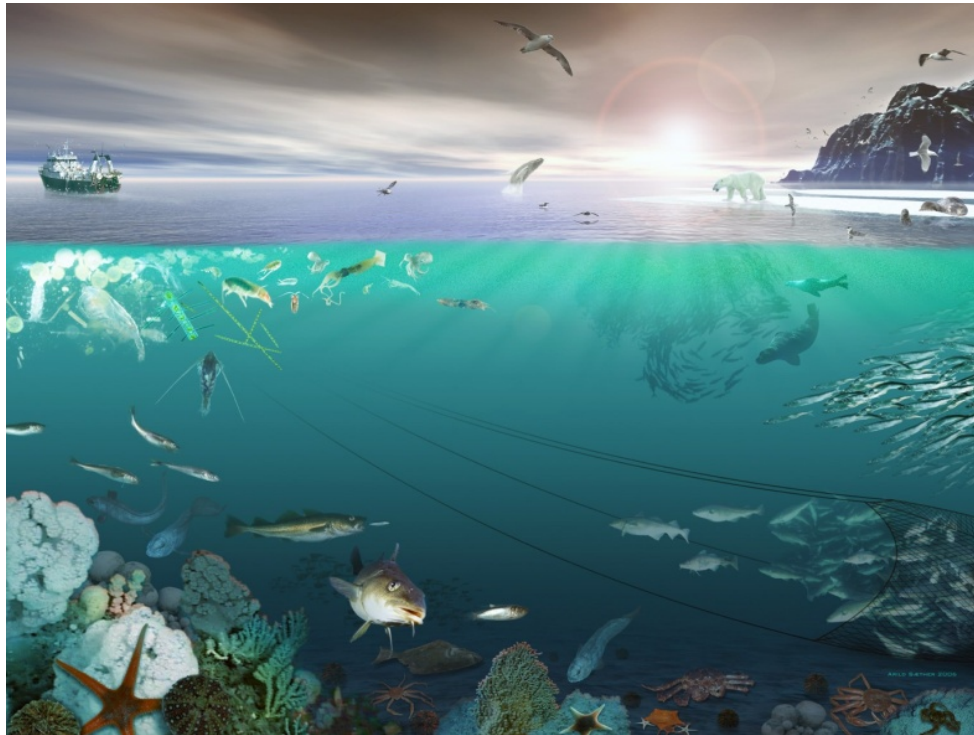


A wild cod has the option to leave





Purpose

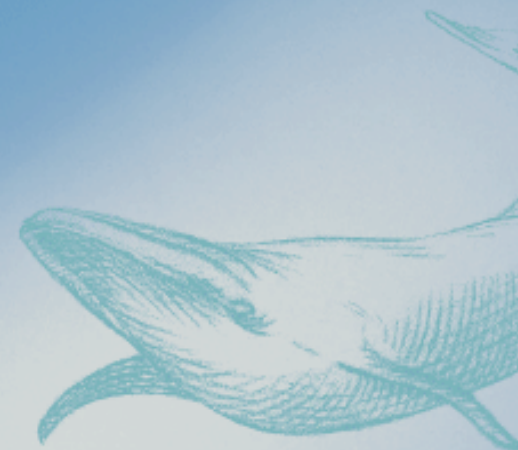


Aquaculture in an animal welfare perspective?

Animal welfare for who?







INSTITUTE OF MARINE RESEARCH
HAVFORSKNINGSINSTITUTTET

