



Health and welfare monitoring of fish used in research

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<http://oslovet.veths.no/fish>

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- **Short presentation of the project**
 - National platforms for Alternatives
 - The 3 R's (Replace Reduce, Refine)
 - International conference
- **Health monitoring of fish used in research**
 - Why is it so important?
 - Why is it so difficult?
- **Welfare monitoring**
 - What do we know of the wellbeing of fish?



Currently existing ecopa membership platforms



ecopa members

click on a country for
further informations.

-  ecopa member
-  membership planned



Pilot project
for the plans
of a
Norwegian
platform for
alternatives
approved by
ecopa

What is a national platform for alternatives?

- Members from
 - Animal welfare organizations
 - The industry
 - Academia
 - Governmental institutions
- 3 R's strategy
 - **Reduce** the number of animals used in research
 - **Replace** animals with *in vitro* methods
 - **Refine** methods to reduce the number of animals used

ecopa  european consensus-platform for alternatives

ecopa | members

Currently existing ecopa membership platforms

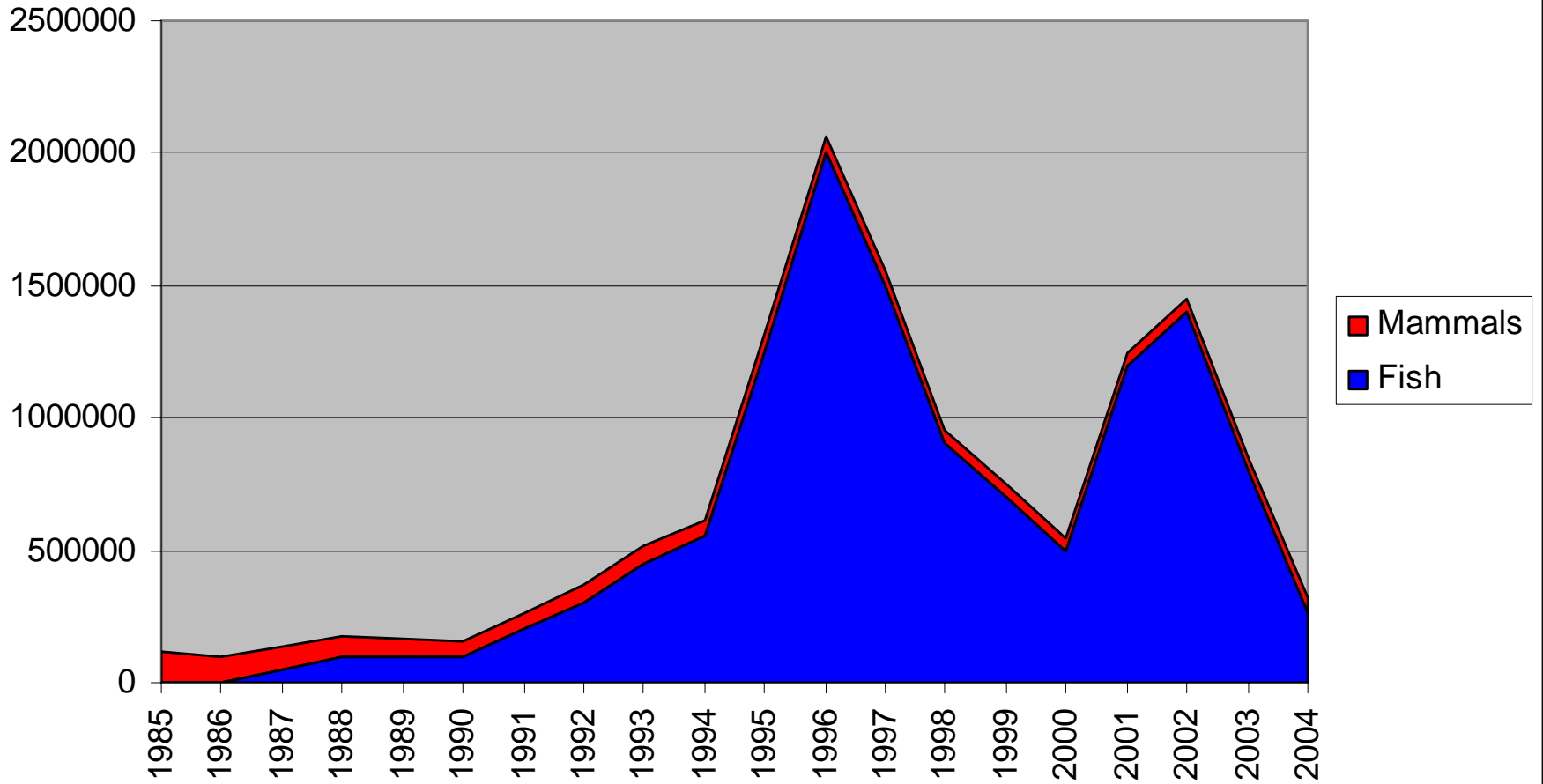
 ecopa members
click on a country for further informations.

 ecopa member
 membership planned





Number of research animals in Norway





What do we want to **reduce**?

The aim should be to obtain as much information as possible from each fish used in research

3 R's strategy

Reduction by **R**eplacement and **R**efinement

Increase NOT decrease research results

What is a research fish?
Which fish are included in the statistics?

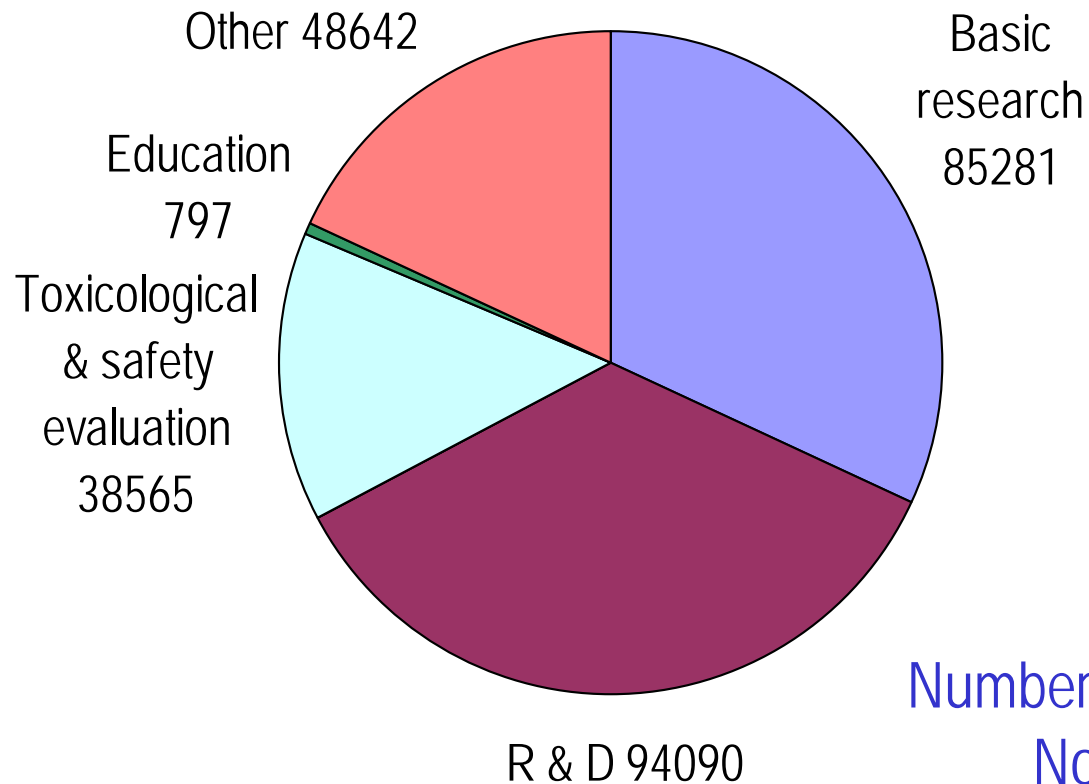
Research fish or
fish used in research

Better definitions are needed!





What are research fish used for?



Number of research fish
Norway 2003



International consensus meeting “Harmonisation of the Care and Use of Fish in Research”

- Gardermoen, Norway 23rd - 26th May 2005
- 99 researchers from 10 countries
- Great need for harmonisation
 - Definition of research fish
 - “Best practice” for care and use
- <http://oslovet.veths.no/fish>



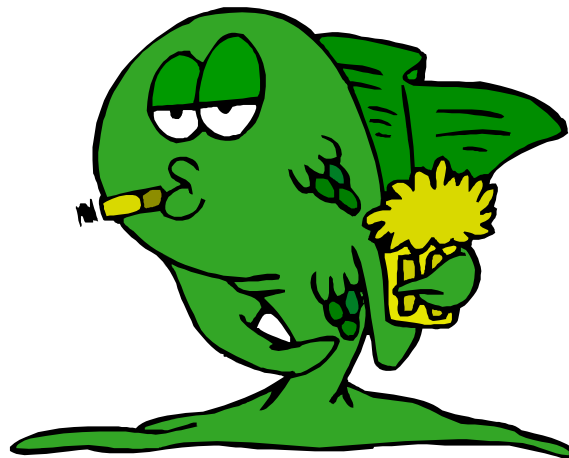
3 main reasons why the number of fish used in research are so high

- **Set regulations with no alternatives**
 - The pharmacopoeia states how many fish that has do be used for acceptance of vaccines and medicines
- **Lack of alternatives**
 - Research on alternatives have not been focused
 - Basic knowledge often sparse
- **Lack of standardization**
 - Fish and physical conditions
 - Difficult to compare results
 - Some models established for fish species like zebrafish
 - **Lack of knowledge of the health status of the research fish**

Health monitoring of fish used in research

What's the point?

We use only healthy fish in our research,
or?



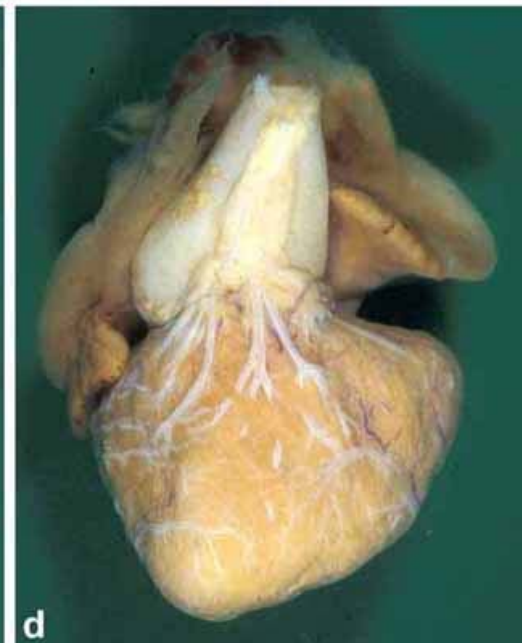
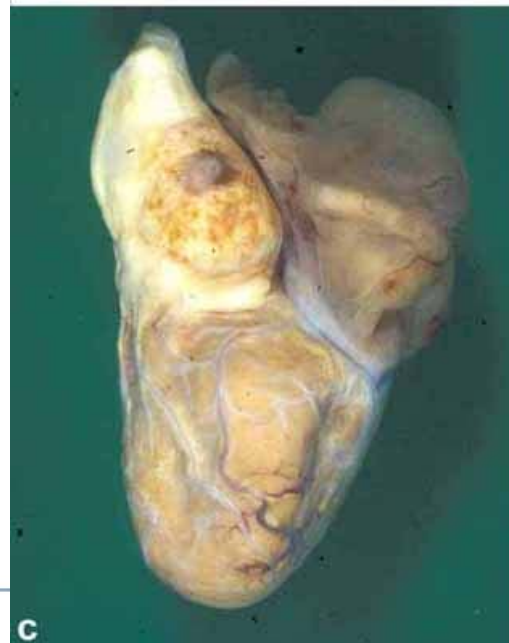


....healthy fish were randomly sampled
at a commercial fish farm...

Is monitoring of health by only looking at
the fish sufficient?

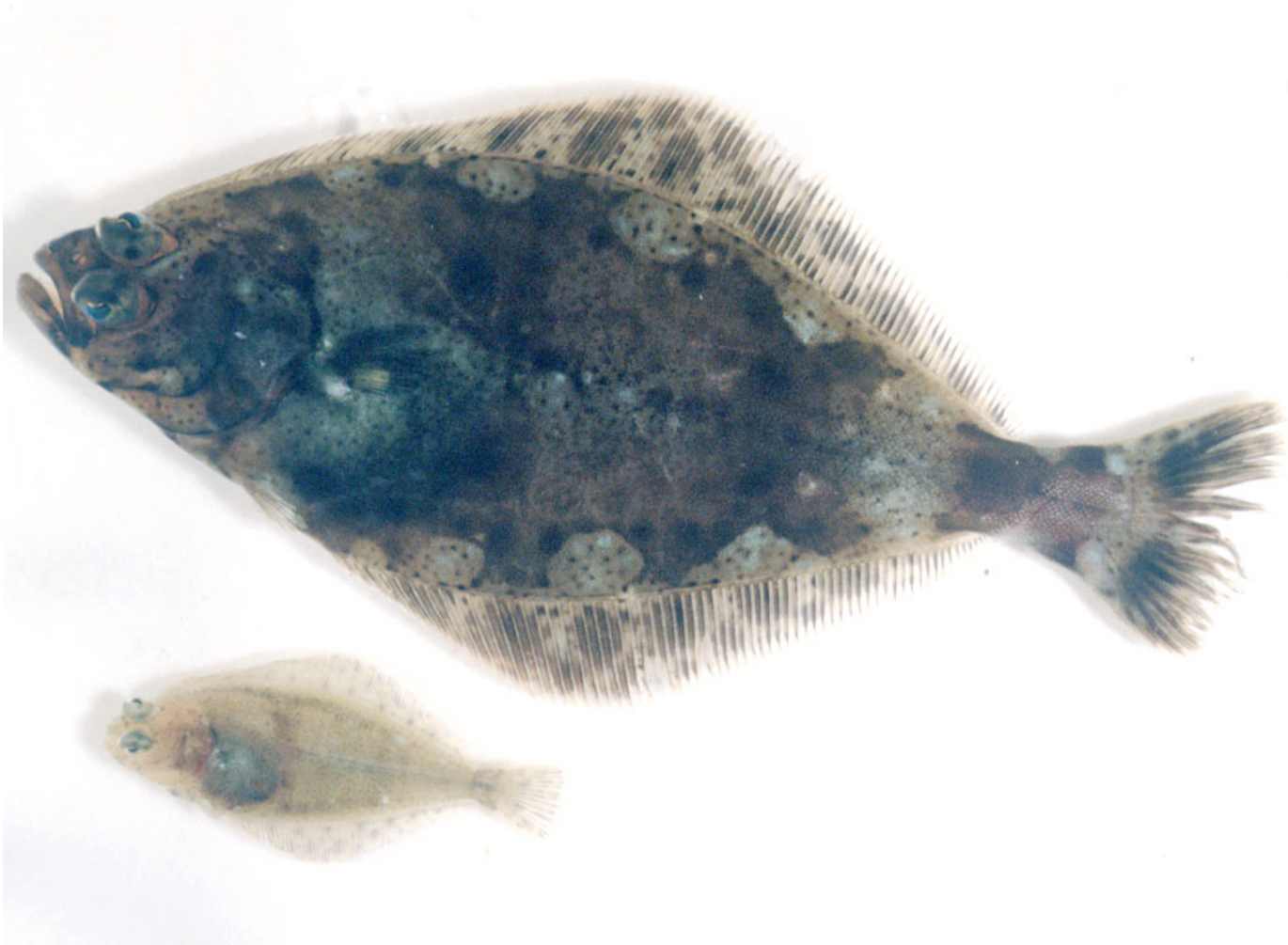
Wild Rainbow trout

Farmed Rainbow trout





1 year old Atlantic halibut





Two studies of heart inflammation (epicarditis) in **clinically healthy** farmed halibut

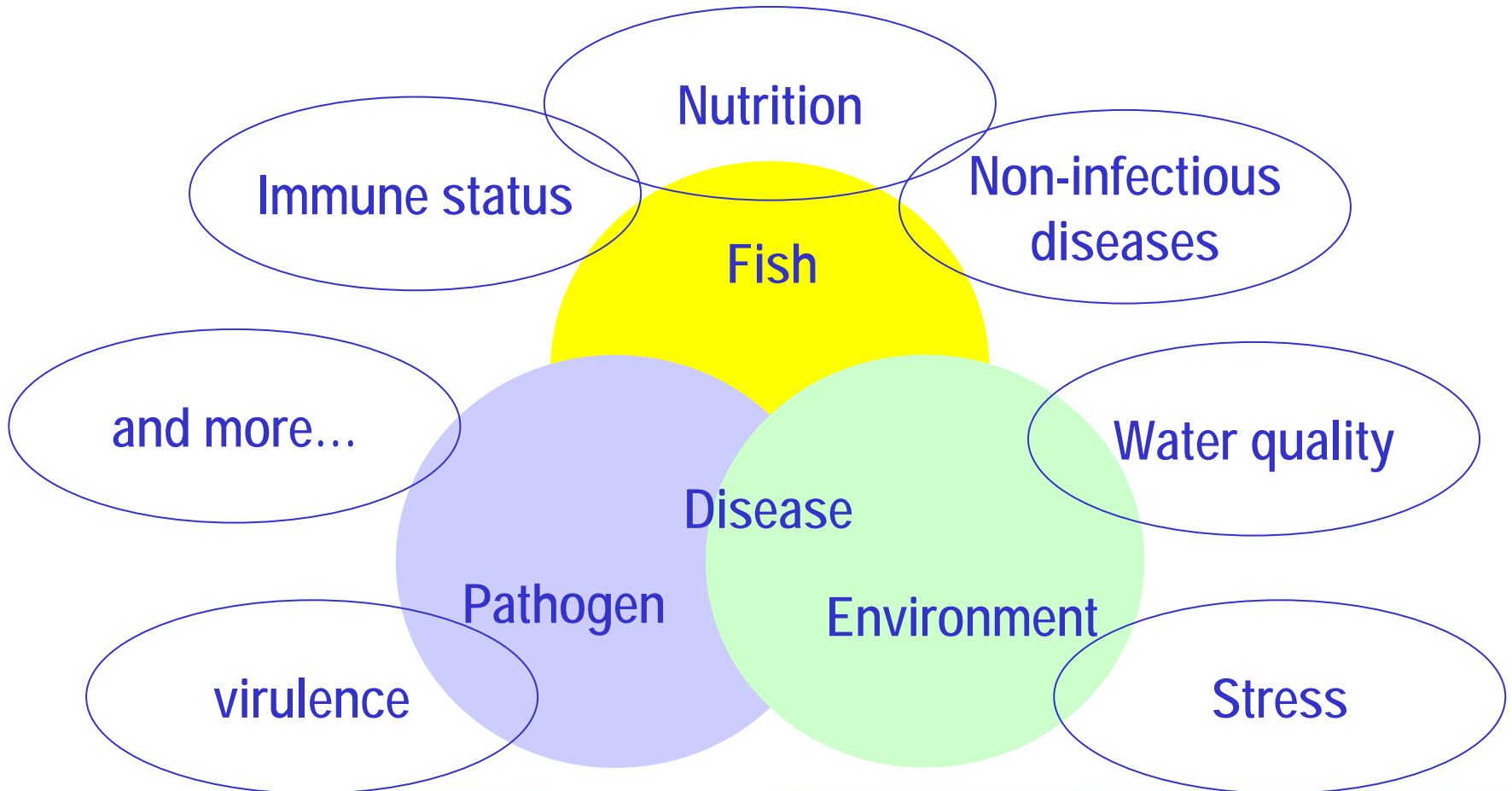
Halibut	Epicarditis Farm I	Epicarditis Farm II
Low growth rate	4% (1/23)	10% (1/10)
High growth rate	45% (25/55)	90% (18/20)

Farm I: Johansen et al. (2004)

Farm II: Johansen and Poppe (2002)



Health monitoring





The widest definitions of
health

includes welfare
and the widest definitions of

welfare

includes health

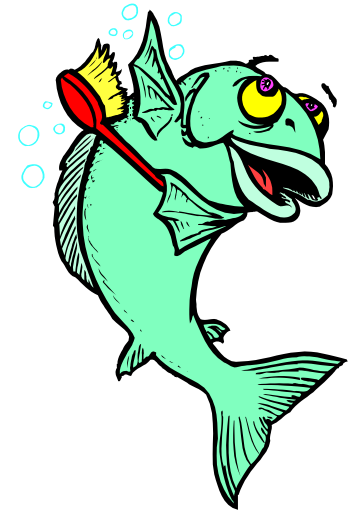
still health and welfare are not the same

Monitoring of fish welfare

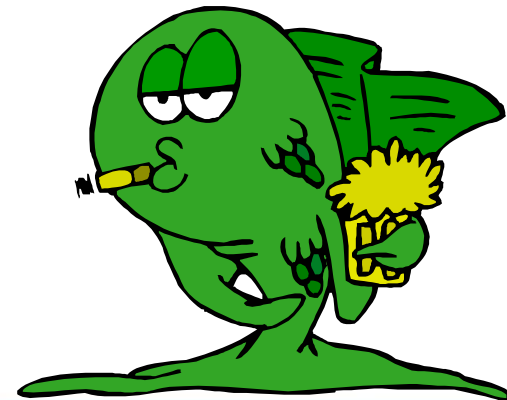
- **The Fisheries society of the British Isles**
 - Briefing paper on web
<http://www.le.ac.uk/biology/fsbi/welfare.pdf>
 - Review in Journal of fish biology 2006
 - Pain, stress, definitions etc.
- **2 Norwegian reports on fish welfare**
 - Needs for research on fish welfare (NFR)
 - "Forskningsbehov innen dyrevelferd i Norge"
 - Possibilities for welfare monitoring (Mattilsynet)
 - "Dyrevelferd i akvatisk dyrehold herunder fremtidens dyrehold"



Plenty of guidelines for the
"care and use"
of fish in research
<http://oslovet.veths.no/fish>



When it comes to monitoring the
health and welfare
they state that a
"fish health specialist"
needs to be consulted





Even **fish health specialists** need guidelines,
especially if you want
harmonisation and standardisation

We need
species specific
guidelines for health monitoring
in each
research discipline



Thank you for your attention!

<http://oslovet.veths.no/fish>

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