

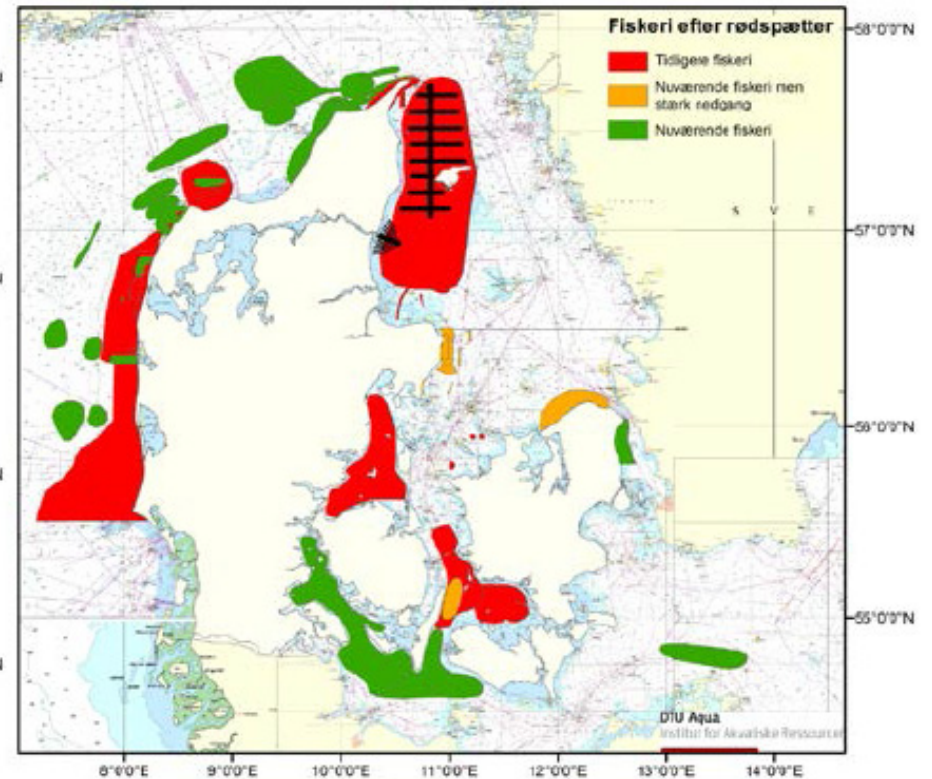
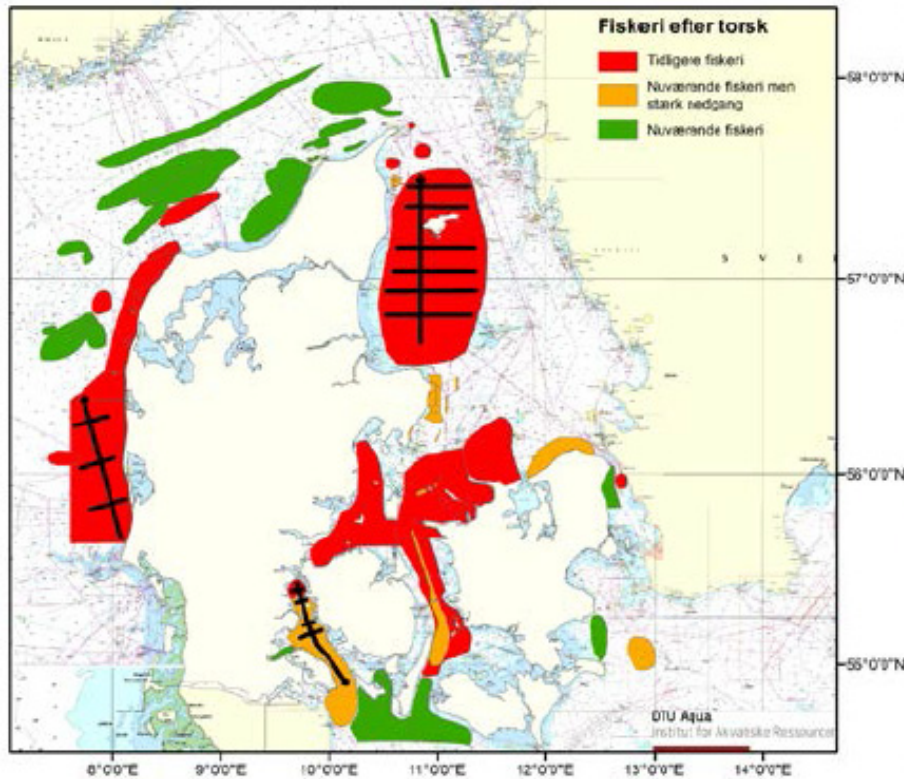
# WP 5, Task 5.6: Fish distribution and productivity in inner Danish waters

**A Systems Approach Framework  
for Coastal Research and Management  
in the Baltic**

# BALTCOAST WP 5, Task 5.6: Fish distribution and productivity in inner Danish waters

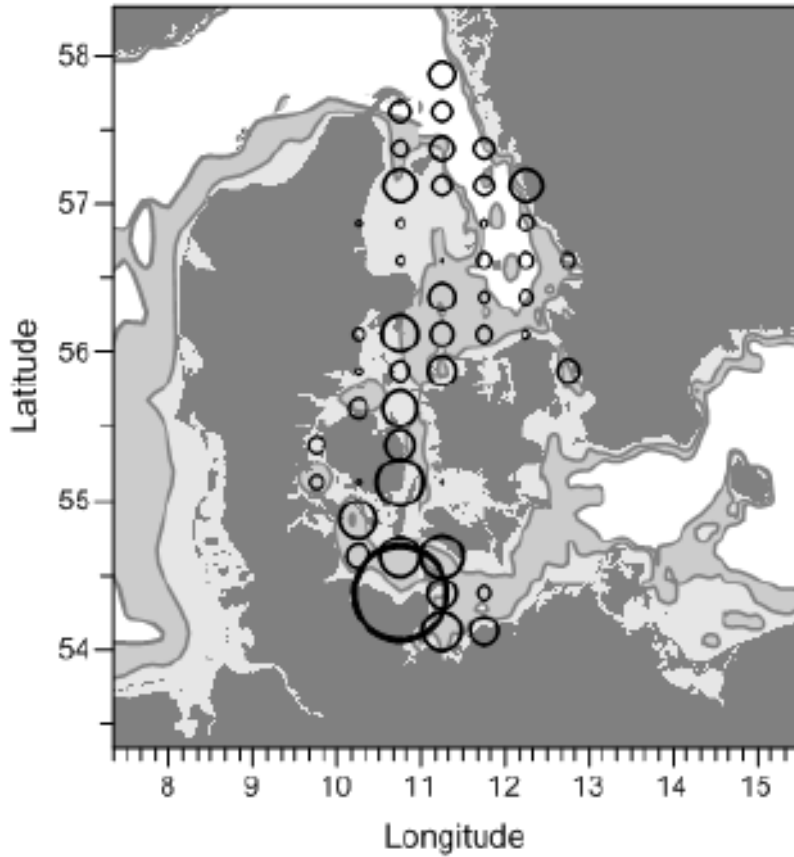


Case study lead: Josianne  
Participation from DTU Aqua and SLU.

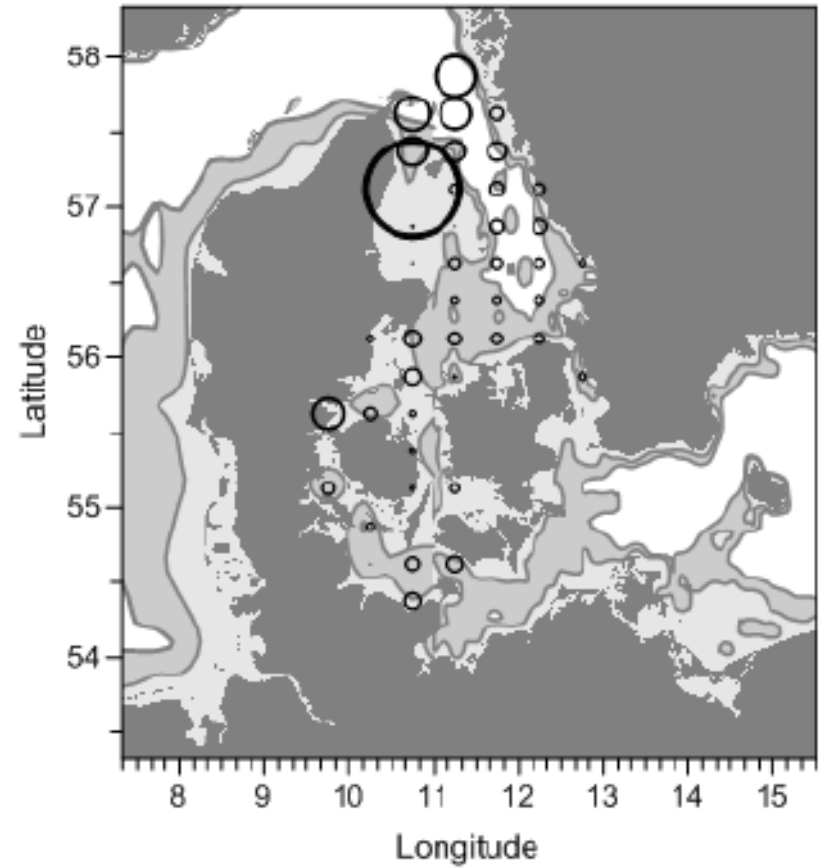


Map over fishermen's former and present fishing areas for cod (to the left) and plaice (to the right). The figures build upon interviews with 74 fishermen from the areas presented in the maps.

1994-1995



2011-2012



Distribution of age 1+ cod in 1994/5 compared to 2011/2. Light grey indicates depth < 35 m, dark grey depth > 35 m.

# Statistical differences in the temporal development of scientific catch rates between < 35 m depth and >35 m depth?

		Age group	range of years	no obs	r-square	Significance
Data from IBTS 1st Quarter	Cod south-eastern NS	1-group	1971-2013	43	0.03	p > 0.25
		2-group	1971-2013	43	0.04	p > 0.18
		3-group	1971-2013	43	0.05	p > 0.15
	Cod eastern Kattegat	1-group	1971-2013	36	0.01	p > 0.79
		2-group	1971-2013	36	0.24	*p < 0.003
		3-group	1971-2013	36	0.11	*p < 0.048
Data from IBTS 3rd Quarter	Cod south-eastern NS	1-group	1991-2013	18	0.09	p > 0.23
		2-group	1991-2013	12	0.19	p > 0.15
		3-group	1991-2013	9	0.02	p > 0.71
	Cod eastern Kattegat	0-group	1991-2013	21	0.12	p > 0.11
		1-group	1991-2013	21	0.16	p > 0.07
		2-group	1991-2013	21	0.32	*p < 0.009
		3-group	1991-2013	15	0.41	*p < 0.009
Data from IBTS 1st Quarter	Plaice south-eastern NS	1-group	1991-2013	17	0.46	*p < 0.003
		2-group	1991-2013	23	0.56	*p < 0.001
		3-group	1991-2013	23	0.42	*p < 0.001
	Plaice eastern Kattegat	1-group	1991-2013	16	0.01	p > 0.78
		2-group	1991-2013	23	0.01	p > 0.61
		3-group	1991-2013	23	0.04	p > 0.35
Data from IBTS 3rd Quarter	Plaice south-eastern NS	1-group	1991-2013	17	0.63	*p < 0.001
		2-group	1991-2013	17	0.61	*p < 0.001
		3-group	1991-2013	17	0.26	*p < 0.036
	Plaice eastern Kattegat	1-group	1997-2013	14	0.14	p > 0.08
		2-group	1997-2013	14	0.04	p > 0.49
		3-group	1997-2013	14	0.01	p > 0.88

Identify causal relationships

Explore management options

# Causal relationships candidates:

- Changed population dynamics (link to Bonus INSPIRE)
- Changed fisheries
- Nutrient loadings (link to Bonus COCOA)
- Temperature, salinity, oxygen

# Explore management options:

- Scenario simulations
- Linking Water framework directive to Marine Strategy framework directive indicators in a management evaluation framework
- Stakeholder participation
- Socio-economic indicators