

# Measures for coastal fish in the Baltic Sea

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# Current connection points for work in Helcom

- Update of the Baltic Sea Action Plan by 2021
- Sufficiency-of-measures analyses
- Call for suggestions for new measures (“synopsis”)
- Coordination of knowledge to support national measures (!)



# Questions in the SOM surveys circulated

- What improvements can be achieved with existing measures by 2030-2035?  
Existing measures are those which have been, are being or are planned to be implemented in the time frame of the analysis
  - Are additional measures are needed?
- 1) Survey on the effectiveness of measures in reducing pressures
  - 2) Surveys on the effects of pressures on state components: Migratory fish, Commercial fish, Coastal fish

# Response rate so far (acc. Helcom Secretariat)

Coastal fish	Gulf of Bothnia	Gulf of Finland	Gulf of Riga	Central (Swedish coastal areas only)	Eastern Gotland Basin (Latvian and Lithuanian coastal areas only)	South (Polish coastal areas only)	Southwest (Danish coastal areas only)
<b>Perch and other piscivores</b>	3	3	2	2	2	2	NA
<b>Cyprinids and other mesopredators</b>	3	3	1	2	2	2	NA
<b>Coastal Flounder</b>	NA	NA	NA	2	1	5	2



## Response rate so far (acc. Helcom Secretariat)

Commercial fish	Submitted surveys
Herring SD 20-24, spring spawners	5
Herring SD 25-29, 32 (excl Gulf of Riga)	8
Herring SD 28.1 (Gulf of Riga)	1
Herring SD 30-31	4
Sprat SD 22-30, 32	9
Cod, western	6
Cod, eastern	10
Plaice	5

## Response rate so far (acc. Helcom Secretariat)

Migratory fish	Submitted surveys
Salmon AU 1-2	3
Salmon AU 3	3
Salmon AU 4	5
Salmon AU 5	4
Salmon AU 6	4
Sea trout - Gulf of Bothnia	2
Sea trout - Gulf of Finland	3
Sea trout - Western Baltic	3
Sea trout - Eastern Baltic	3
Sea trout - Southern Baltic	6
Eel - Entire Baltic Sea	7

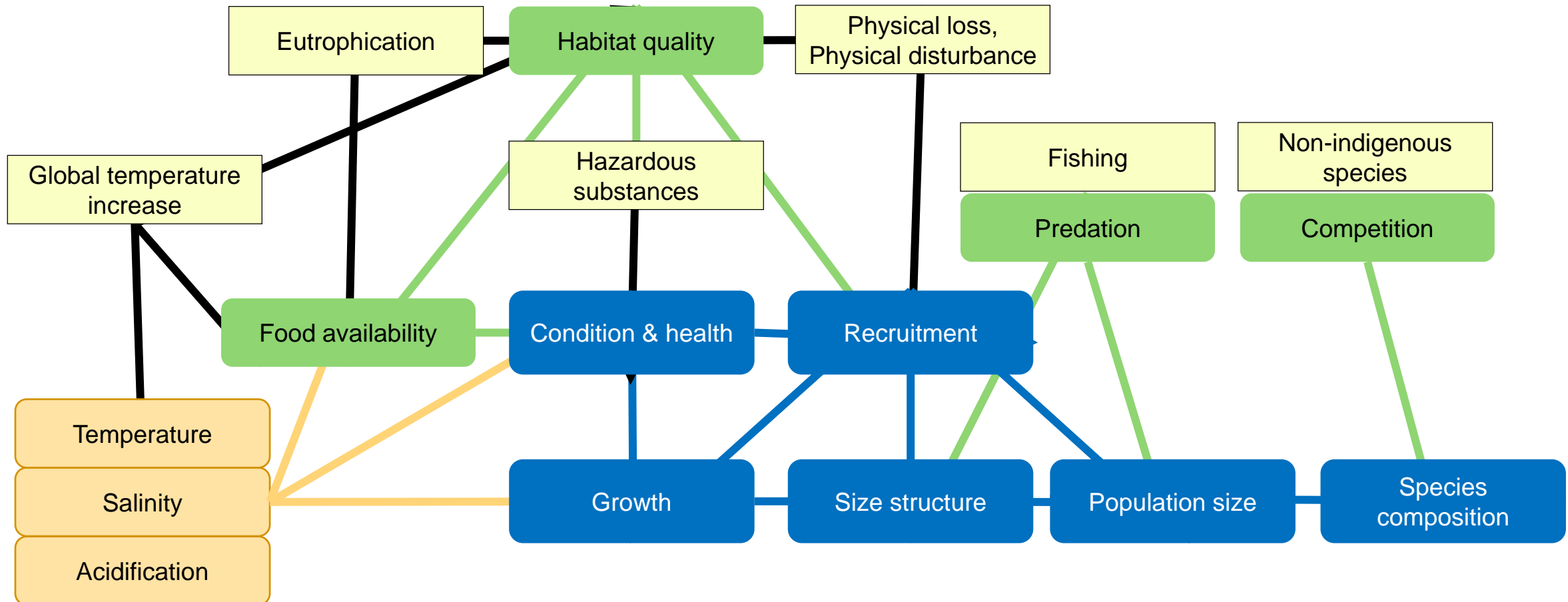


# Evaluation of measures

- Reviewed by HELCOM Fish Pro in "Thematic Assessment of Coastal fish 2011-2016"



# Factors affecting (coastal) fish





# Measures to **reduce mortality**

Measure name	Link to major pressures	Scientific support for effectiveness for fish in the Baltic Sea
Permanent fisheries closures (no-take areas)	Fishing	Yes
Partial fisheries closures	Fishing	Yes
Regulation of fishing gears and catch	Fishing	Yes

Source: HELCOM Thematic Assessment of Coastal Fish 2018



# Measures to support productivity

Measure name	Link to major pressures	Scientific support for effectiveness for fish in the Baltic Sea
Stocking of young fish	Fishing	No
Nutrient reduction	Eutrophication	No
Habitat protection	Physical exploitation	Yes
Habitat restoration (see next slide)	Physical exploitation, Eutrophication	Yes, but mainly local effects
Reduction of hazardous substances	Input of hazardous substances	No
Biomanipulation (extraction of e.g. Cyprinids/sticklebacks)	Fishing, Eutrophication	No

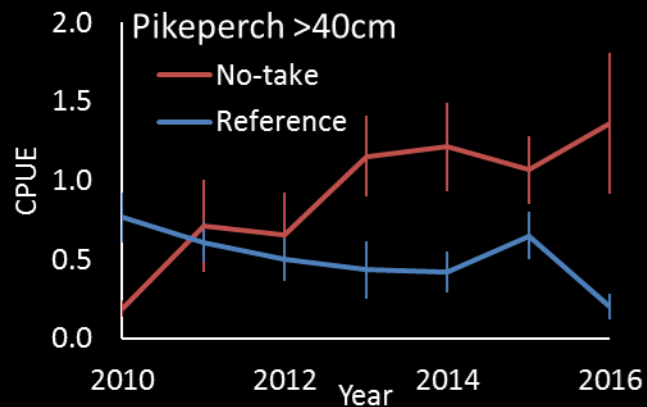
# Restoration measures for habitats

Measure name	Link to major pressures	Scientific support for effectiveness for fish in BS
Restoring eelgrass and freshwater angiosperms	Eutrophication, Physical exploitation	No
Restoring unvegetated soft bottoms	Eutrophication, Physical exploitation	No
Restoring hard bottom macroalgae	Eutrophication	No
Restoring blue mussel reefs and blue mussel bottoms	Eutrophication	No
Restoring stony reefs, placing out artificial reefs	Physical exploitation, Eutrophication	Yes
Restoring wetlands (pike and perch factories)	Agriculture and forestry, Food web measures, Physical exploitation, Eutrophication	Yes

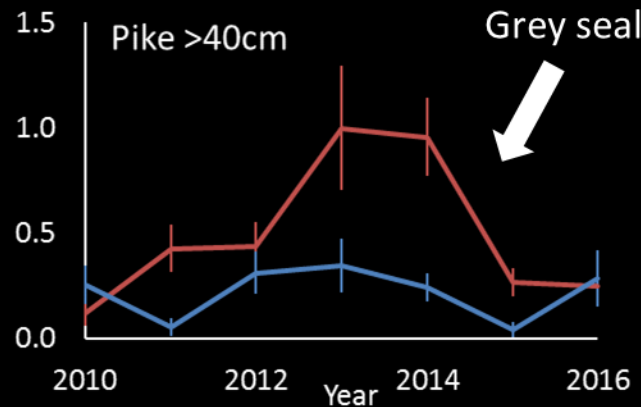
# Effects of fishing and predation

”pikeperch reserve”

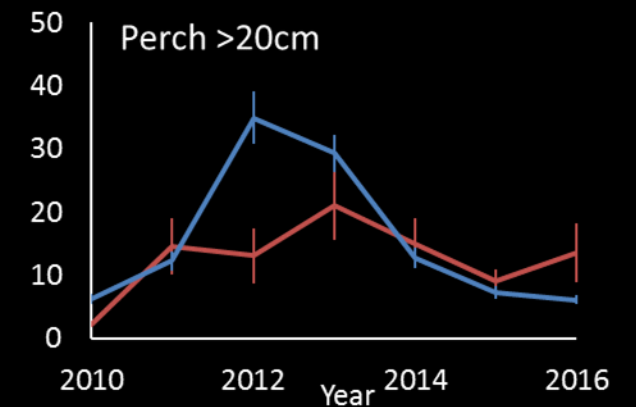
- Fishing: strong increase in no-take area
- Seal predation: negative effect on pike, perhaps also perch
- Cormorant predation: negative effect on perch



Increase in no-take area



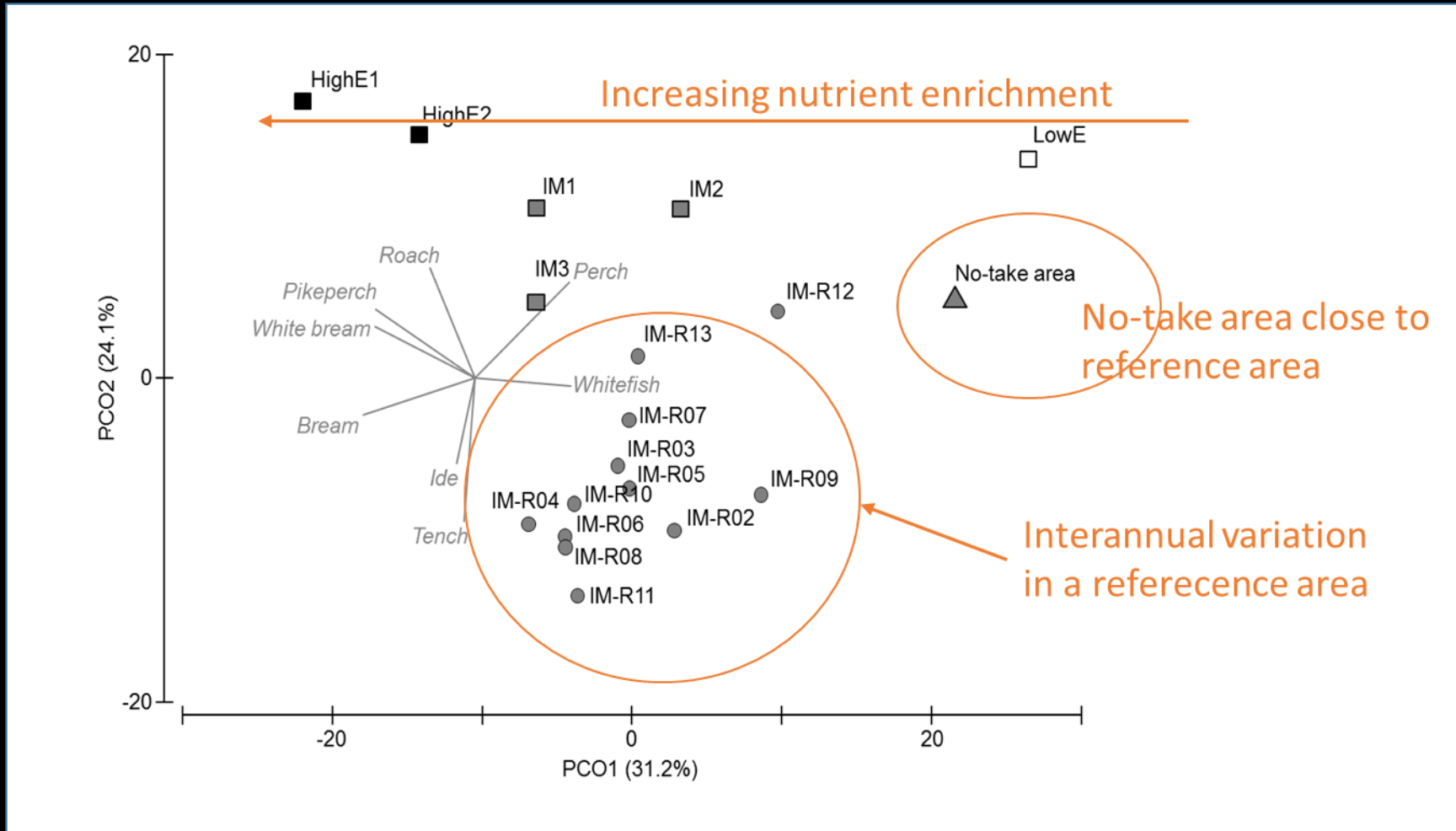
Initial increase, then decrease after seal came in



No increase, possibly due to predation  
 Source: Bergström U et al In prep.

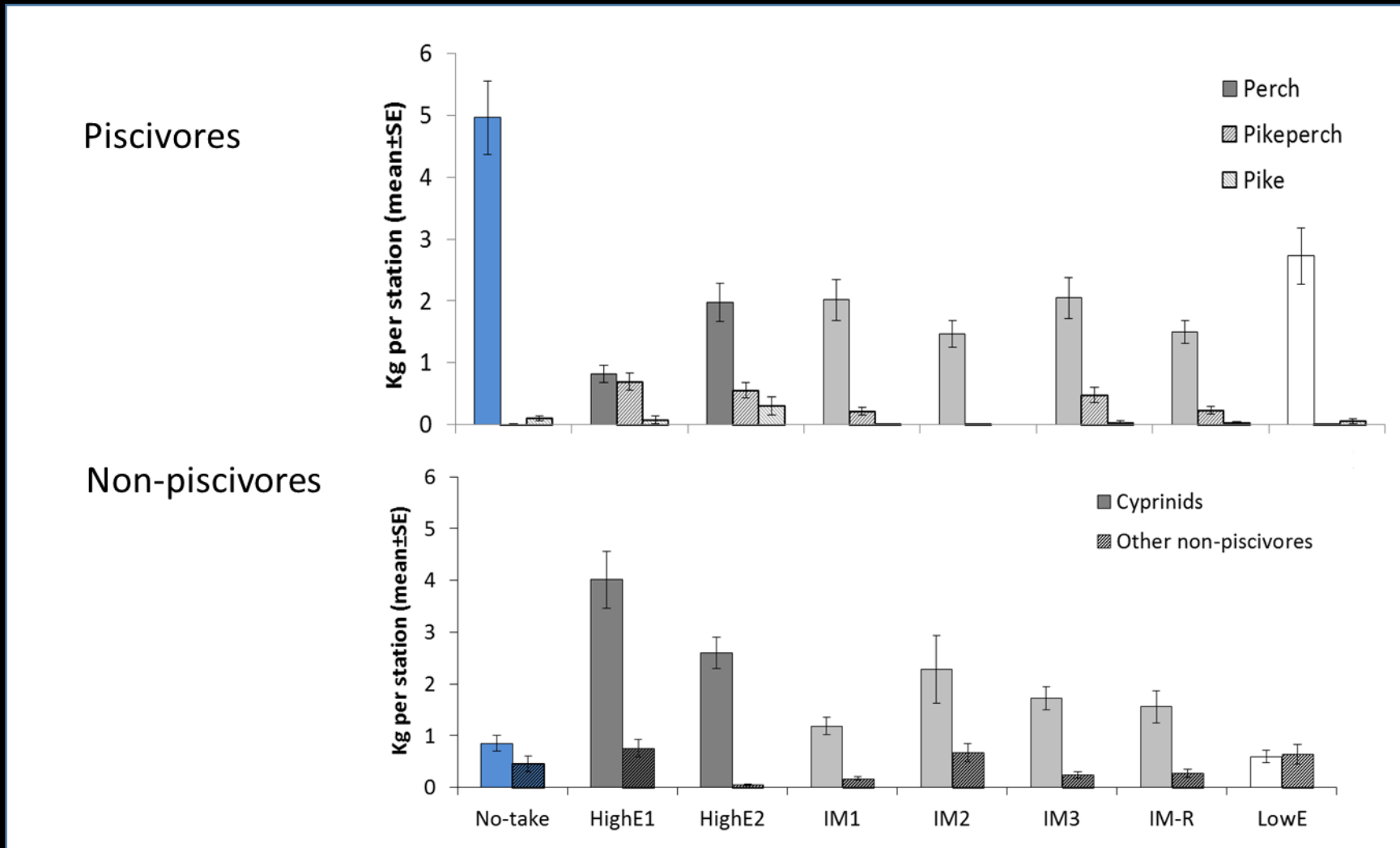
# Other effect sizes: Comparing effects of fishing and eutrophication (A)

Differences in species composition



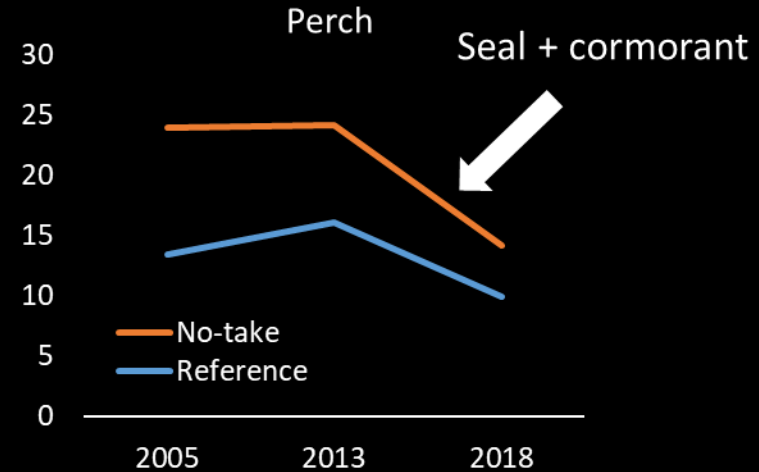
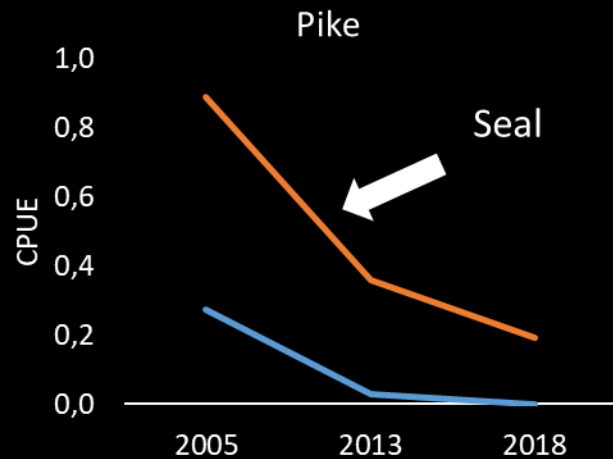
# Other effect sizes: Comparing effects of fishing and eutrophication (B)

Differences in species Biomasses



# Effects of fishing and predation

- Fishing: 2-4 times higher abundance in no-take area
- Seal predation → decrease in pike
- Cormorant + seal predation → decrease in perch





## Key factors to consider

- ✓ No-take areas are valuable management measures to restore fish
- ✓ Fishing, cormorants and seals all contribute to declines in coastal predatory fish. The impact of cormorants and seals is increasing
- ✓ To restore fish populations, we have to manage both fisheries and top predators

# Measures – some general considerations

- Climate perspective
- Food web perspective
- Precautionary approach and how to deal with uncertainty
- Knowledge sharing

# Synopsis for new measures

- Submitted to Helcom upon open call
- Those potentially relevant for fish presented on the next slide



Title	Submitted by	Tentative WG to review	Initial categorization
Analysis of pressures affecting fish stocks	Denmark	Fish	Knowledge
Restore functional populations of Baltic sturgeon by implementing HELCOM Baltic Sea Sturgeon Action Plan	EG STUR	State&Conservaton	Measure
Measures related to restoration of coastal habitats	SLU Aqua, Sweden	State&Conservaton	Measure
Restocking of marine areas with fry of European Eel ( <i>Anguilla anguilla</i> )	National Marine Fisheries Research Institute in Gdynia	FISH	Measure
Phase out all recreational fishing on eel by 2022	CCB	Fish, State&Conservation	Measure
Prioritising mitigation measures in rivers for eel and other fish migration	CCB	Fish, State&Conservation	Measure
Ensure effective implementation of the Landing Obligation (LO) as required by Common Fisheries Policy (CFP)	WWF Poland	Fish	Monitoring, implementation of existing regulation
A set of 7 measures for coastal fish	SLU Aqua	Fish, State&Conservation	Measure
Agree to collect fisheries data on both large and small-scale vessels	BirdLife	Fish	Data
Establish an effectively and equitably managed, ecologically representative and well-connected system of highly protected marine protected areas (MPAs), covering a minimum of 30 % of the Baltic Sea area by 2030. All MPAs shall include fully closed zones (complying with IUCN 1a category <sup>1</sup> ) or be fully closed in their entirety, depending on the conservation objectives and needs of the specific site.	CCB	State&Conservation	Measure

## What's in the "7 measures"?

(As submitted by SLU Aqua, presented individually in the synopsis)

1. Restoration of coastal spawning habitats
2. Restoration of lost stony reefs
3. Enhanced protection of coastal fish habitats
4. Establishment of no-take areas
5. Seasonal closures
6. Catch regulations
7. Follow-up and knowledge sharing

(Based on Thematic Assessment Coastal fish 2011-2016)



# Why a set?

To facilitate synergistic effects, taking into account the presence of cumulative pressures and impacts on fish.

The set allows for adapting to the local situation by focusing in each specific area on those measures that are most likely to be effective there.

Implementing more than one of the measures in each area is advocated, as they are expected to enhance each other giving increased overall efficiency.

