

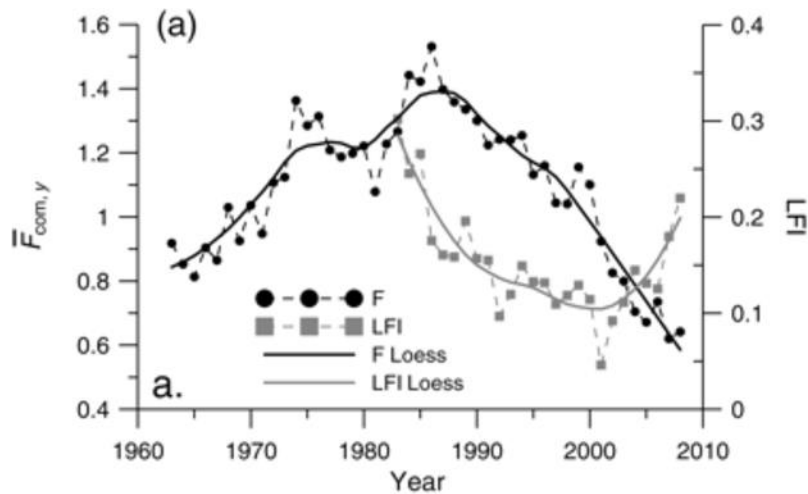
# Size-based indicators of coastal fish across the Baltic Sea

Update at Helcom Fish-Pro II

Gothenburg 15 Feb 2018

# Gradients in size based indicators of coastal fish

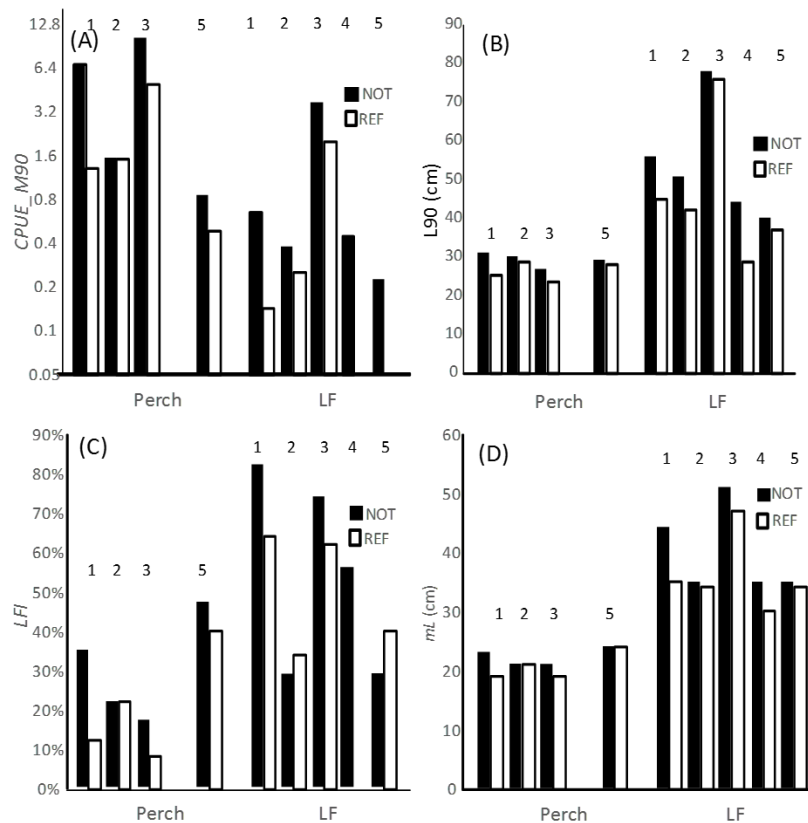
- Size based indicators have been applied to offshore fish communities (data poor) targeted by mixed trawling fisheries
  - Responding to fishing pressure



Greenstreet al. 2010 ICES J MAS

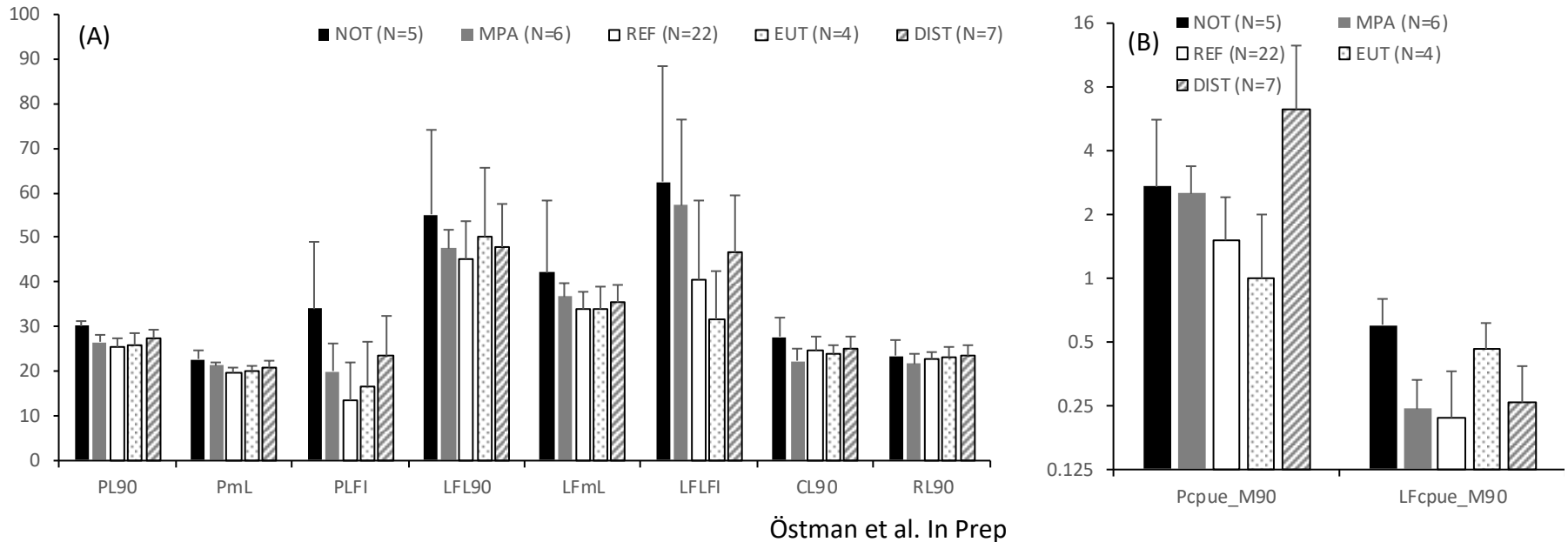
# Gradients in size based indicators of coastal fish

- Higher in no-take areas in Swedish coastal waters



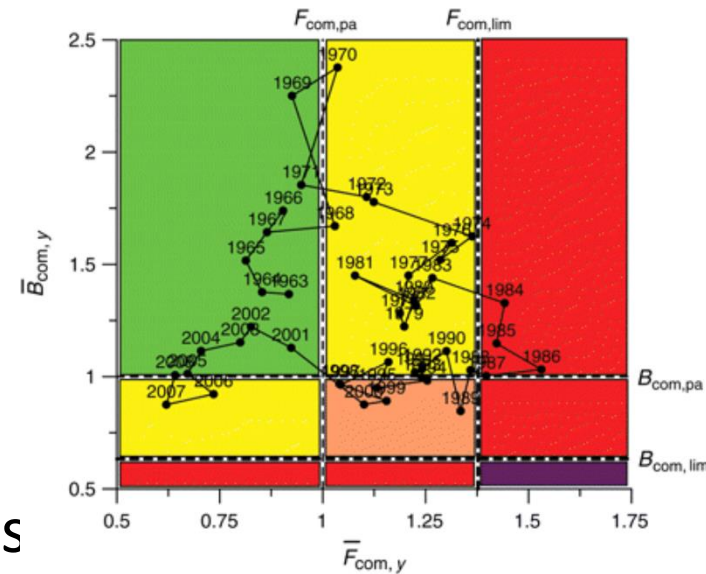
# Gradients in size based indicators of coastal fish

- Some size based indicators, relative to abundances, spatially invariant along the Swedish coast



# Gradients in size based indicators of coastal fish

- Easy to measure for all species
- Possible to identify 'regional' assessment criteria?
  - Spatial consistency of gradients in size based indicators?
  - Temporal consistency?
  - Influence of season and gear?
  - Relation to other reference points
- Size based indicators could increase the spatial resolution of assessments for many species



# Data

- Data from around 30 fishery independent surveys from Poland, Estonia, Finland, and Sweden
  - A lot of additional patchy data from Sweden
- Some commercial data from Finland
- Different gears, gillnets dominating but fykenets and trawl data as well
- Data over the whole ice-free season, summer dominates

# Distribution of monitoring areas



# Size based indicators

- Data on cod, flounder, perch, pikeperch and whitefish
- Primarily focus on length distributions
  - L90 – length at 90-percentile
  - ‘Large Fish Index’ (LFI) – proportion of individuals above a threshold size (25 cm for perch and flounder, 35 for cod, pikeperch and whitefish)
  - Mean length
- A general threshold to exclude 0-1 year old fish and reduce variation in recruitment (15 cm for perch and flounder, 25 cm for cod, pikeperch and whitefish)



# Cod 2001-2010 (fyke-nets, gillnets)



# Cod 2011-2016 (fyke-nets, gillnets)



# Flounder 2001-2010 (fyke-nets, gillnets)



# Flounder 2011-2016 (fyke-nets, gillnets)



# Pikeperch 2001-2010 (fyke-nets, gillnets, trawls)



# Pikeperch 2011-2016 (fyke-nets, gillnets, trawls)



# Whitefish 2001-2010 (gillnets)



# Whitefish 2011-2016 (gillnets)

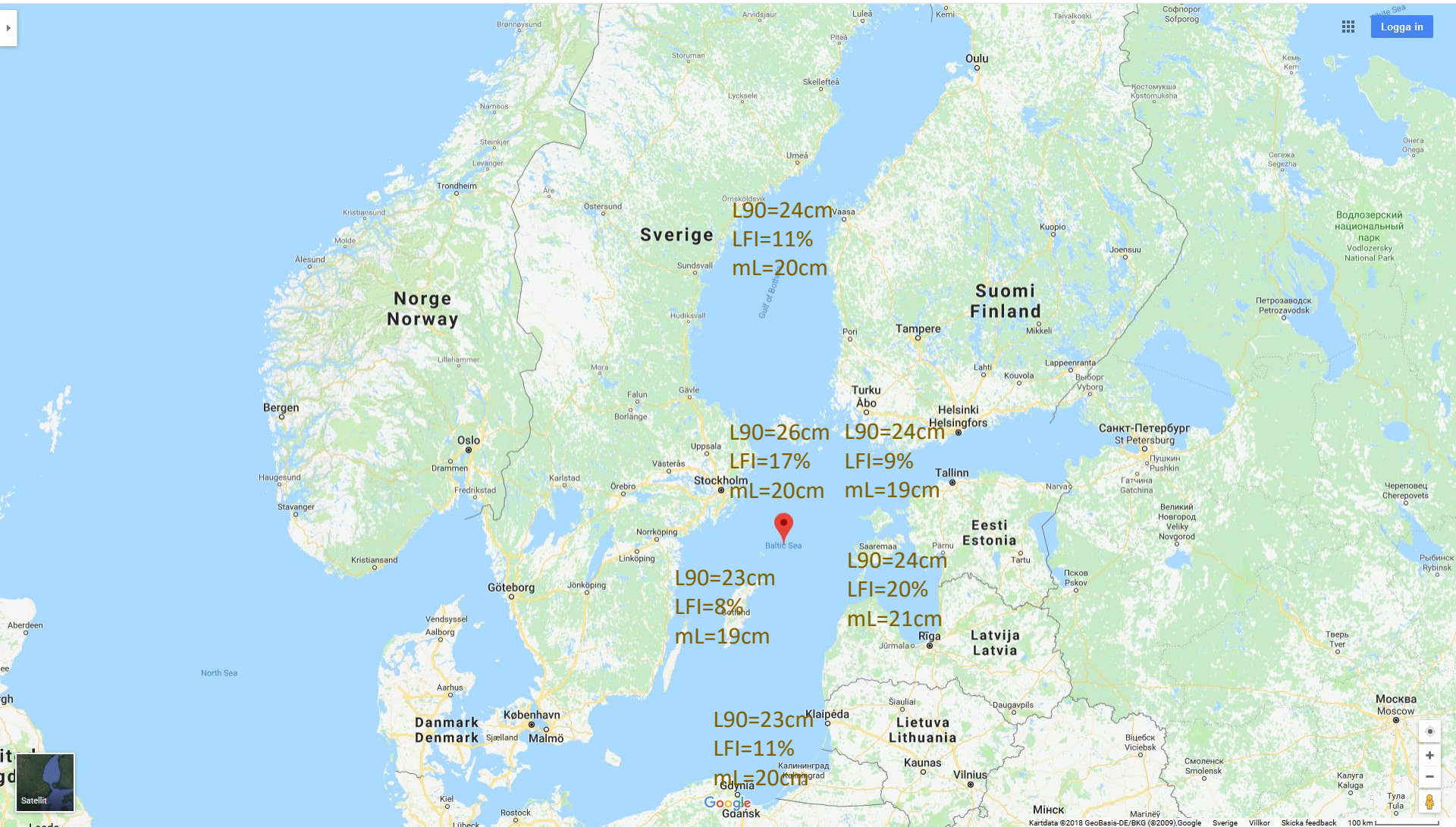




# Perch 2001-2010 (gillnets)



# Perch 2011-2016 (gillnets)



# Issues

- Anomalies?
  - What do spatial anomalies depend on?
  - Temporal anomalies, cohort-effects?
- Patchy data from Sweden, what about other countries?
- Minimum sample size?
- Time periods for assessments