TURBOT SCOPHTHALMUS MAXIMUS IN THE BALTIC SEA - WHAT COULD WE LEARN FROM THE LAST TWO DECADES?

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Integrating SPatial pRocesses into Ecosystem models for sustainable utilization of fish resources

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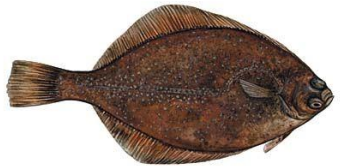
Flatfish in the Baltic Sea

- Few species
- Mainly by-catch
- High variations of discards
- For most of the stocks- no analitical assessment

flounder

plaice



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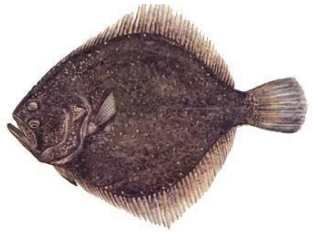
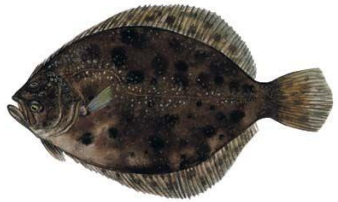


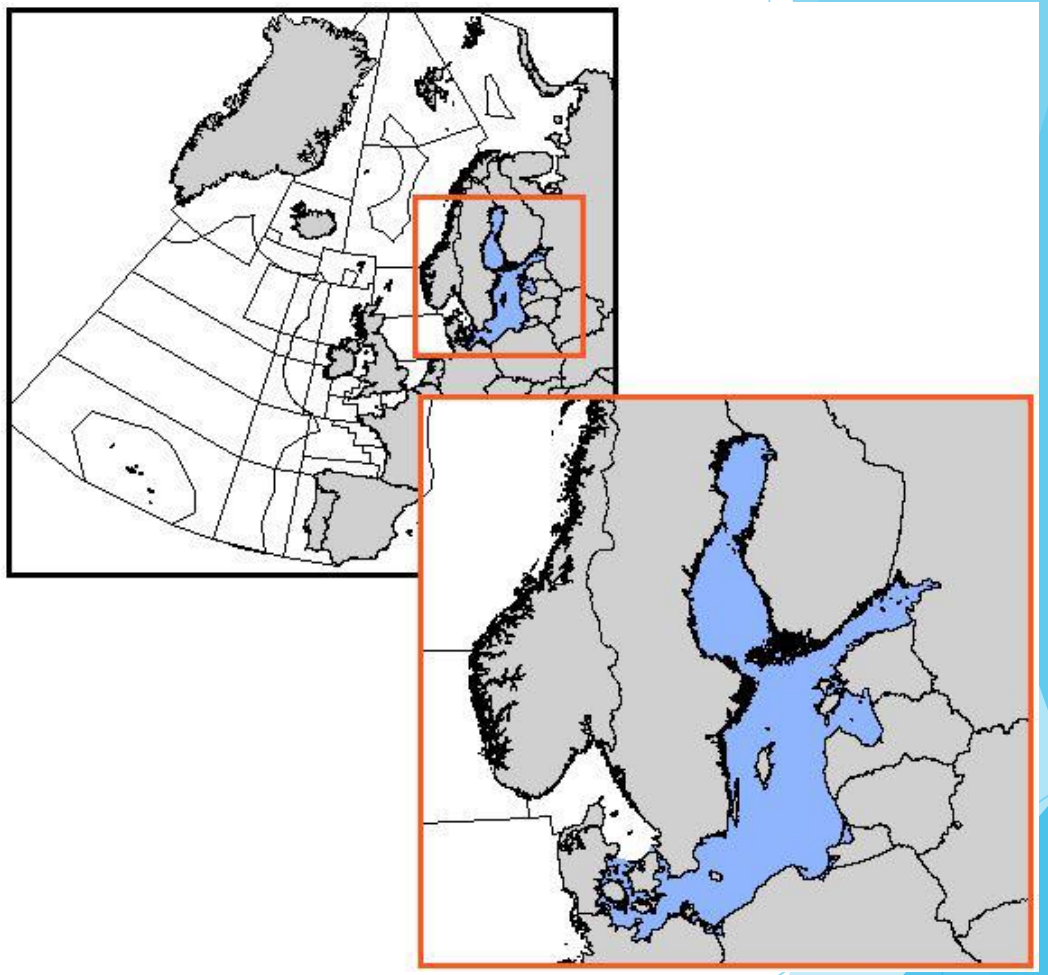
turbot



brill

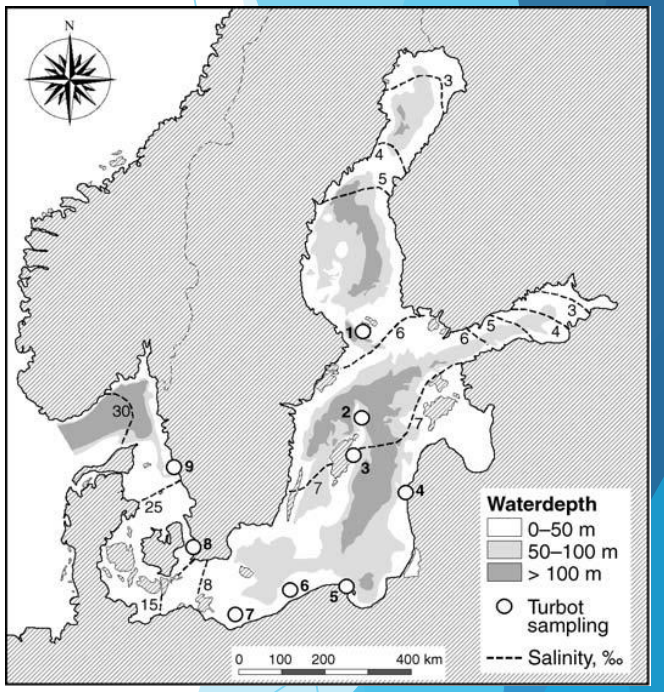
Turbot in the Baltic Sea

- A shallow water, fast-growing, coastal flatfish
- Lives in various habitats at depths up to 70 metres
- Spawning occurs from April to August in shallow waters.
- Nurseries are located on sandy beaches
- Turbot is a predator
- High market price



Stock structure

- Stock structures was analysed in ICES/HELCOM workshops WKFLABA in 2010 and 2012
- Genetic information did not show any stock structure
- while tagging data indicated the existence of small local stocks.
  - Three tagging studies: migration range - 30 km
- Further investigations, especially in the Eastern part of Baltic Sea were recommended.

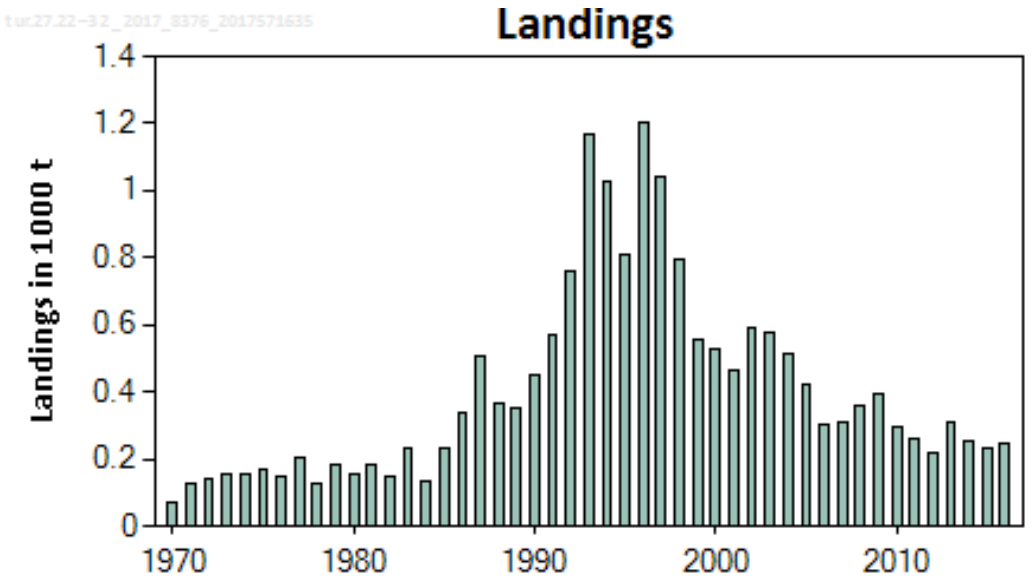


Florin, 2006

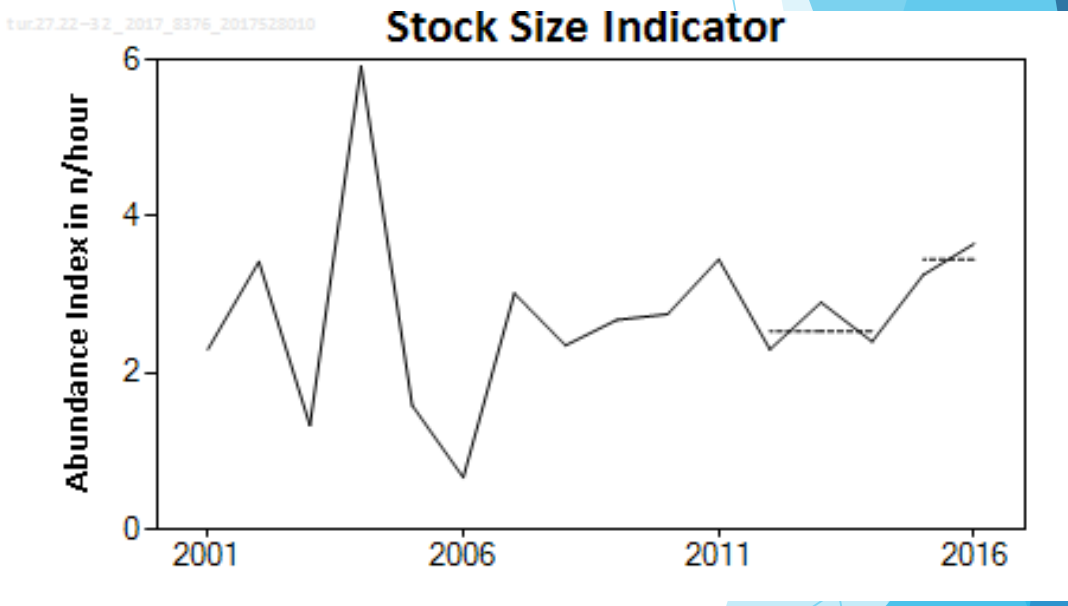
Management of turbot in the Baltic Sea

- No TAC
- Category 3 stock
  - Assessment is survey based – BITS surveys in 1st and 4th quarters
  - Low abundance in surveys
  - Far away from spawning time
- Fishing ban in spawning time: June-July
- National fishing regulation in some countries
- Main fishing in the south part of the Baltic Sea

ICES Advice



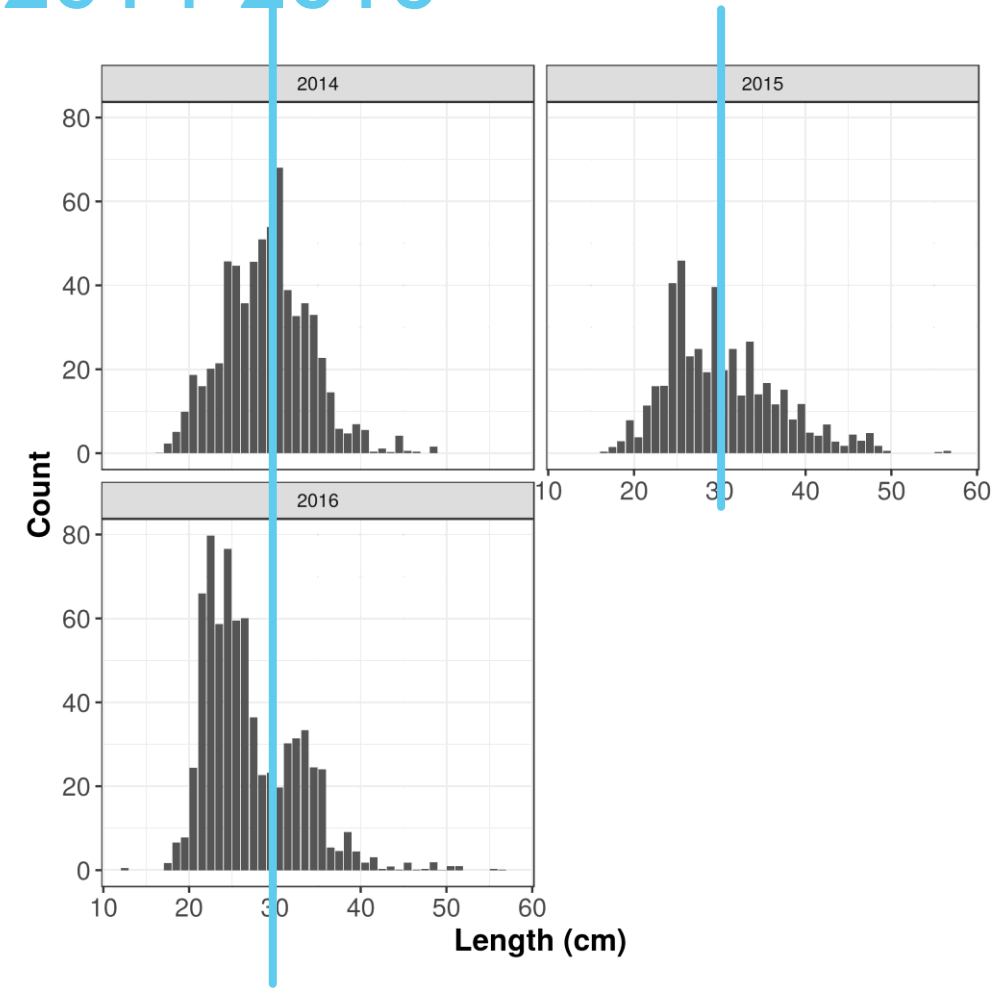
Gradual decrease of landings

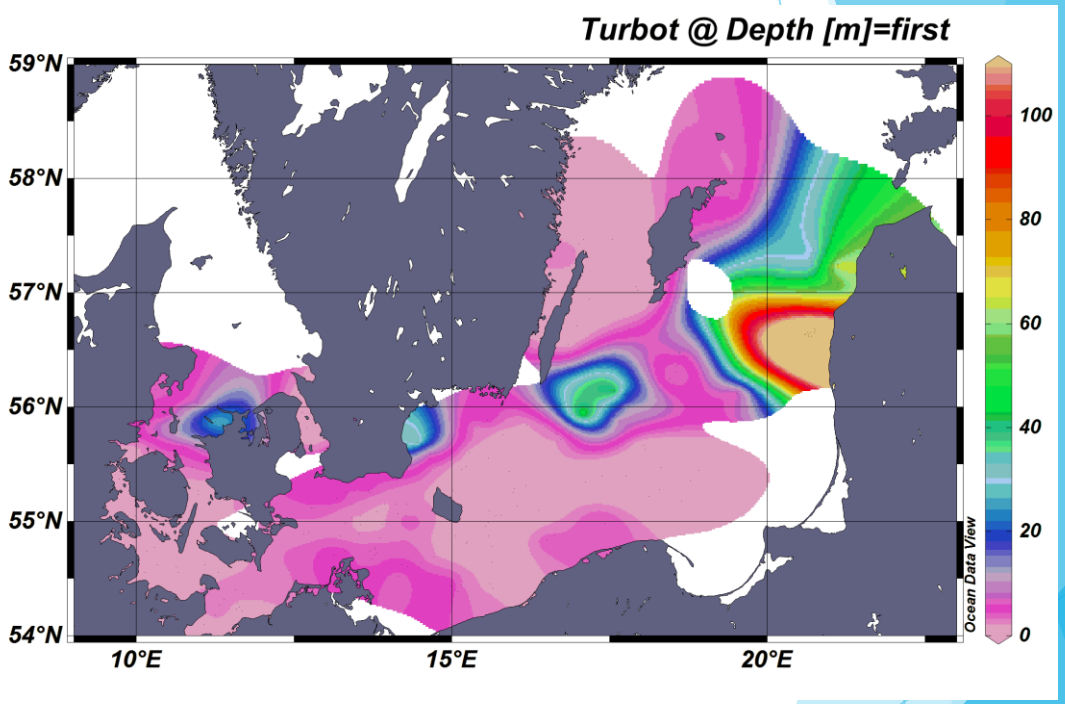


Low abundance in stock size indicator

ICES, 2017

Length distribution in BITS surveys, 2014-2016



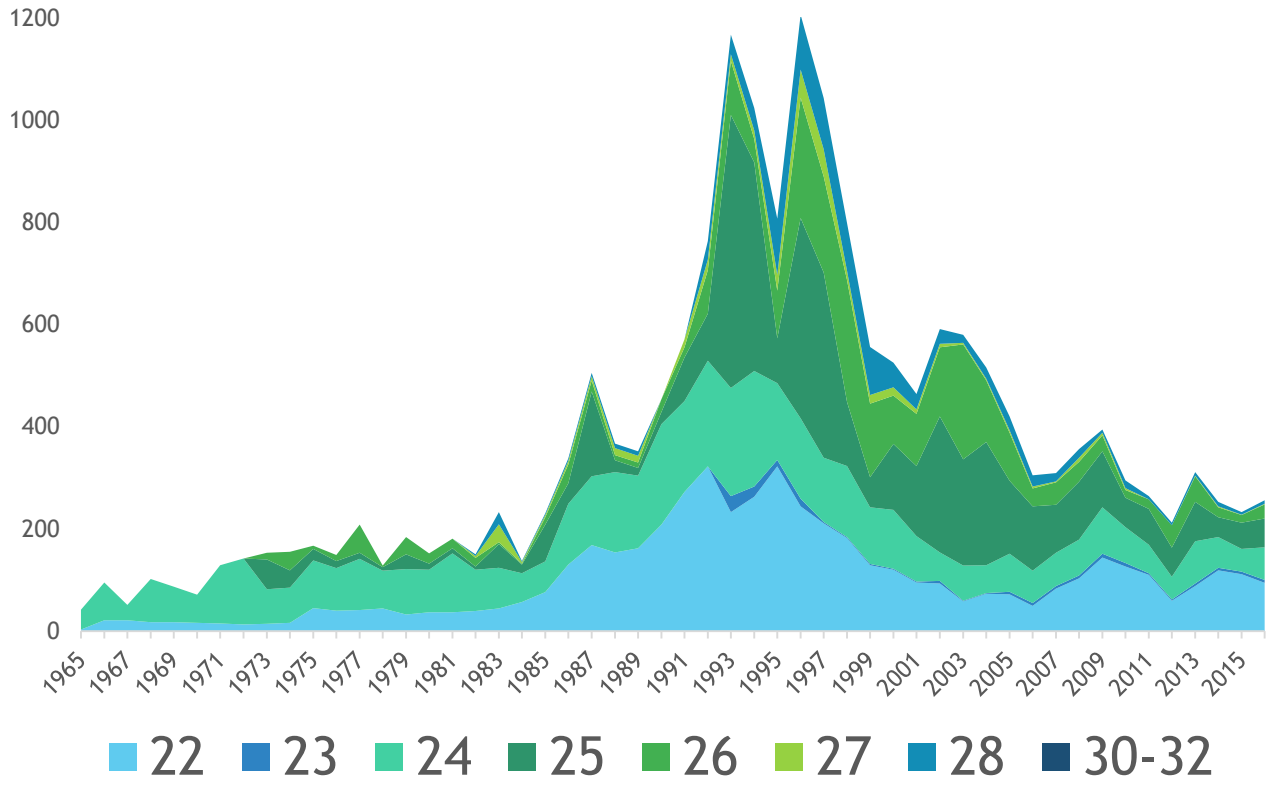


Stock annex, tur23-32

ICES WGBFAS, 2017

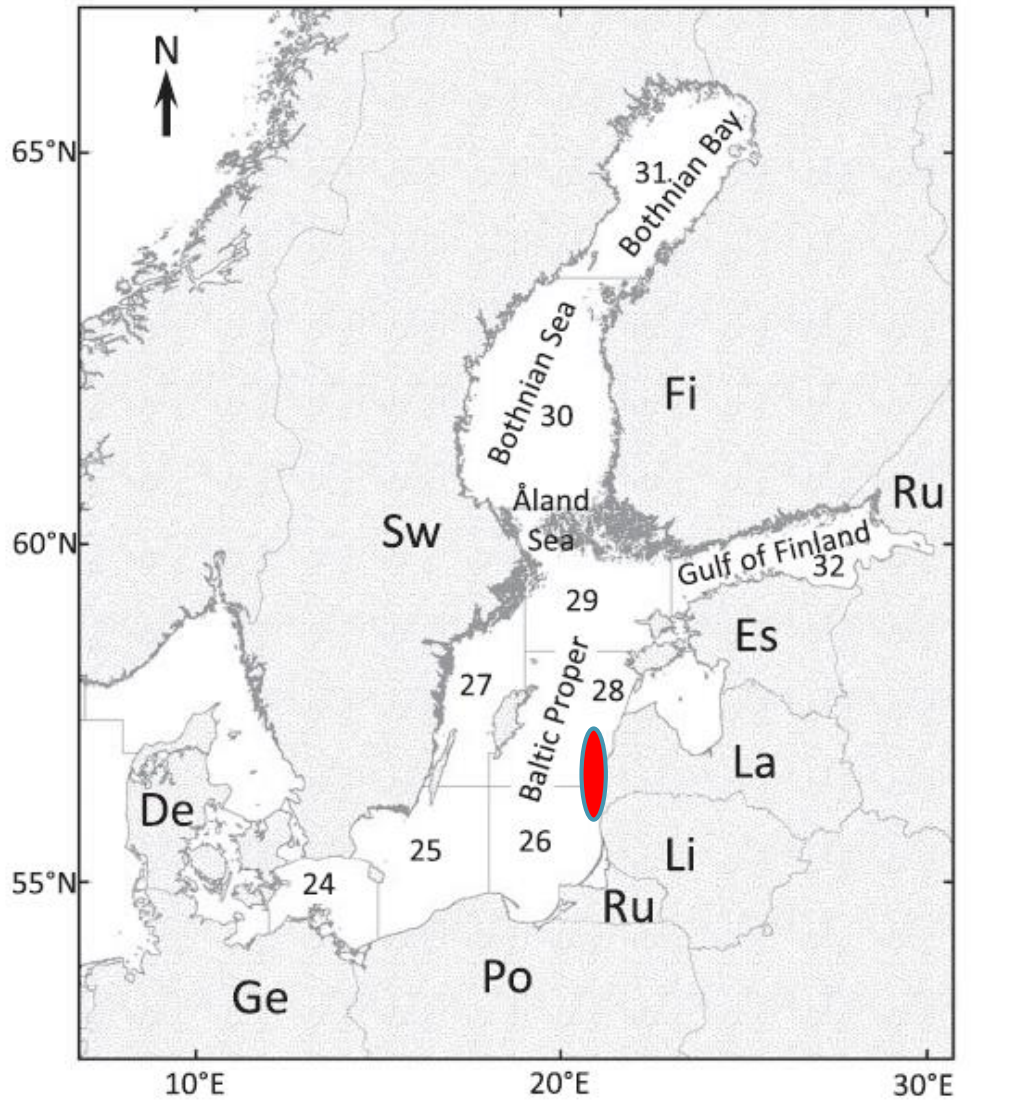
Almost no turbot above 35 cm are caught.

Landings of turbot in the Baltic Sea

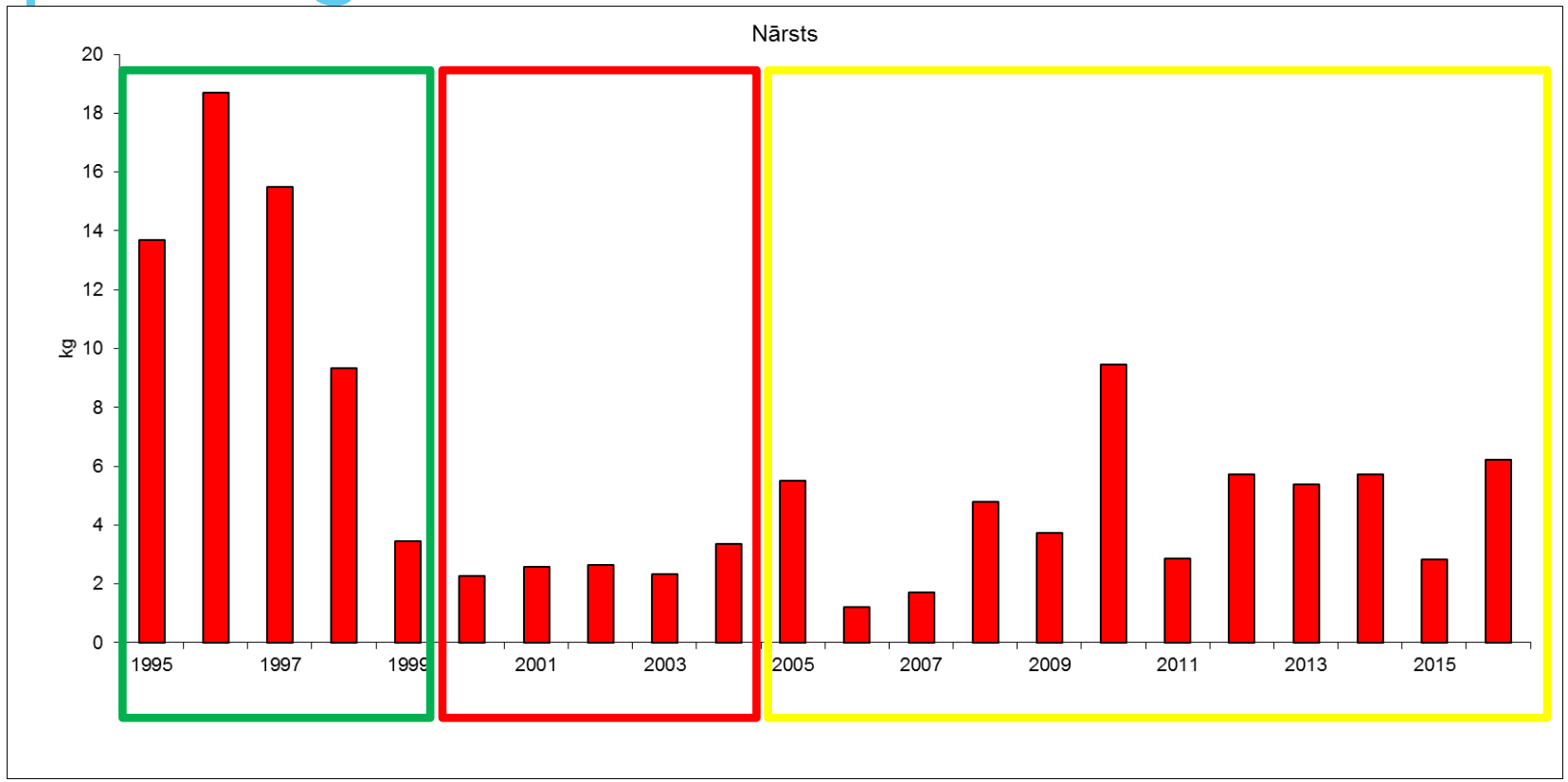


Latvian turbot survey

- Time 1995-2017
- Area – ICES SD 26-28 (northern border of distribution area)
- Sampling time- June-July
- Sampling intensity – 10 days each month
- Sampling gear – gillnets 240 mm



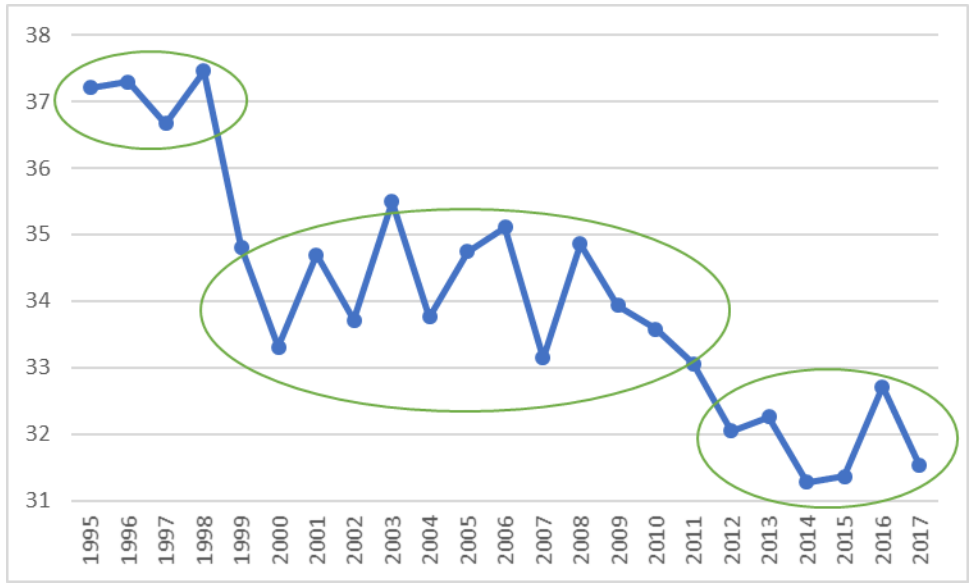
Spawning stock index

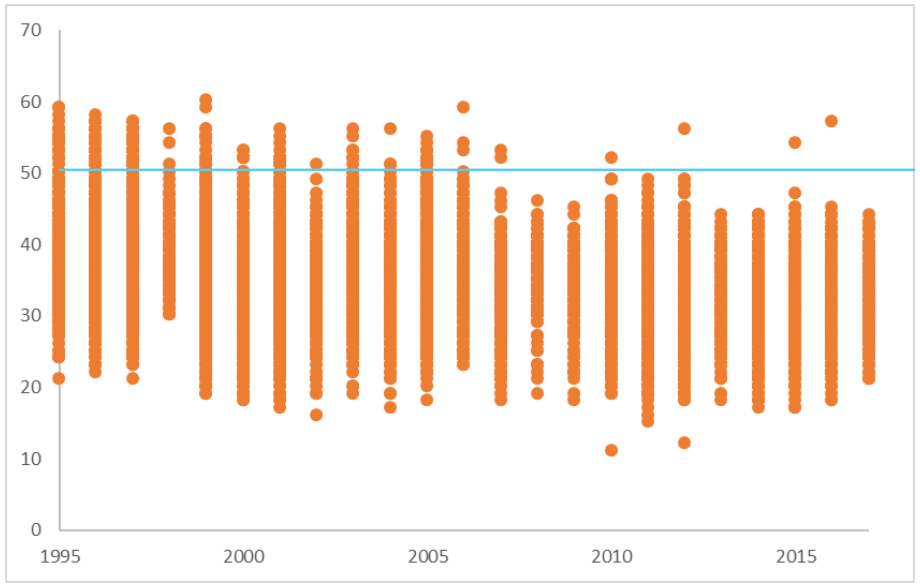


National managenment actions

1) 1995-1999 – start of fishery, high effort
2) 2000-2004- decrease of fishing effort
3) 2005 – small scall fishery only

Length of turbot

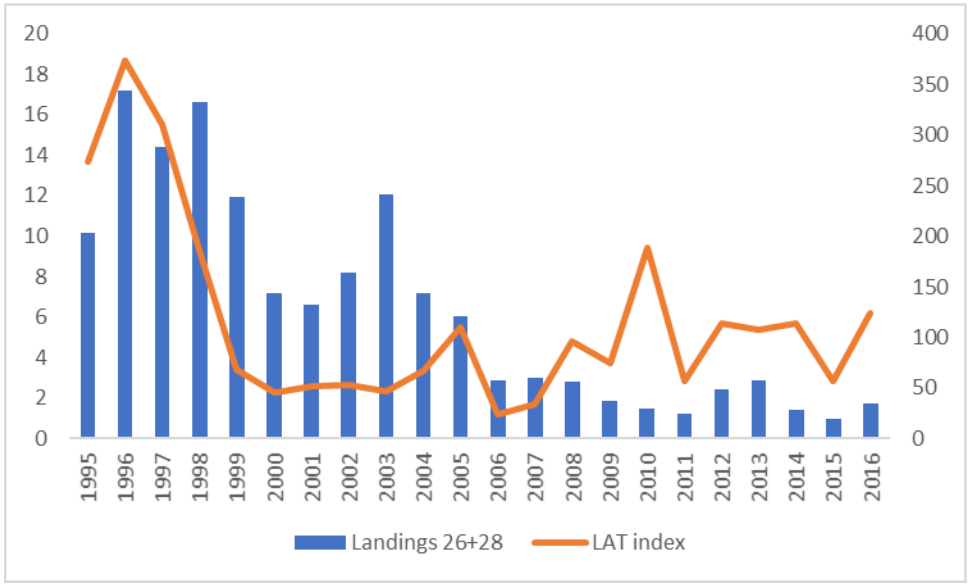


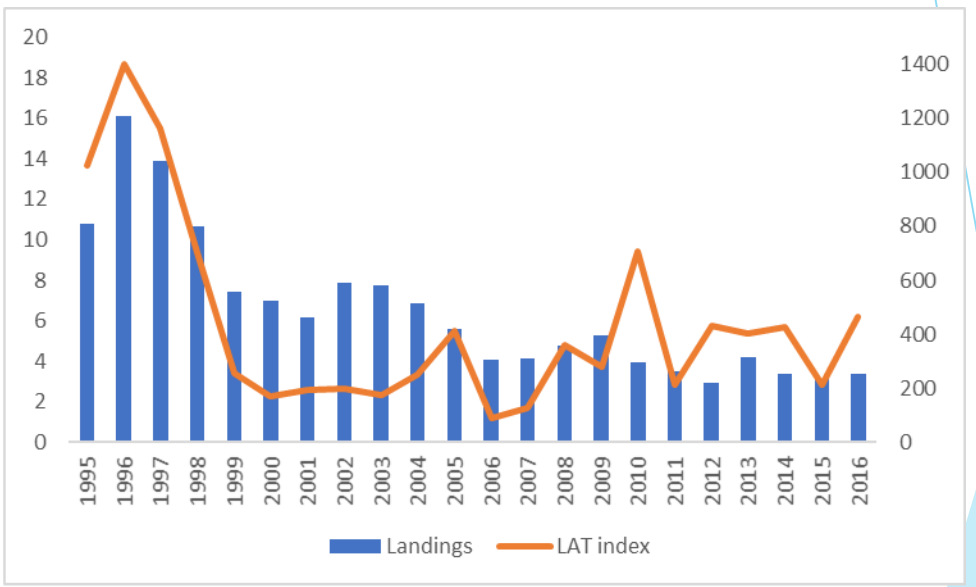


Significant decrease of mean lenght of turbot

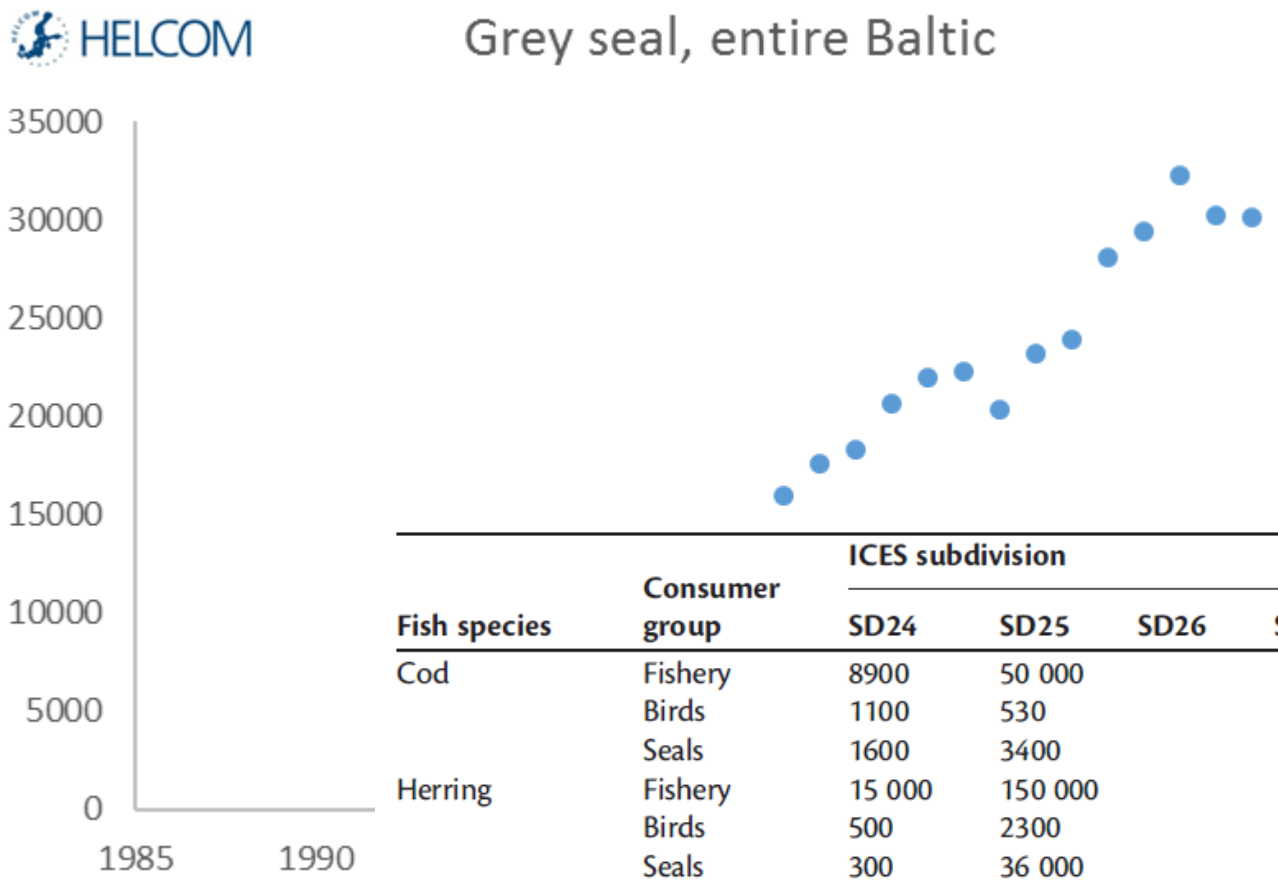
255 turbot bigger than 50 cm
Only 4 in last 10 years

Latvian index and landings





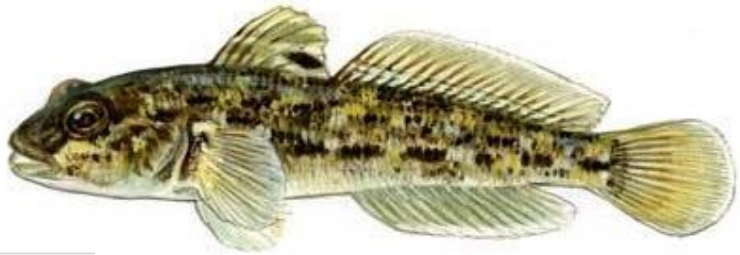
Seals and flatfish

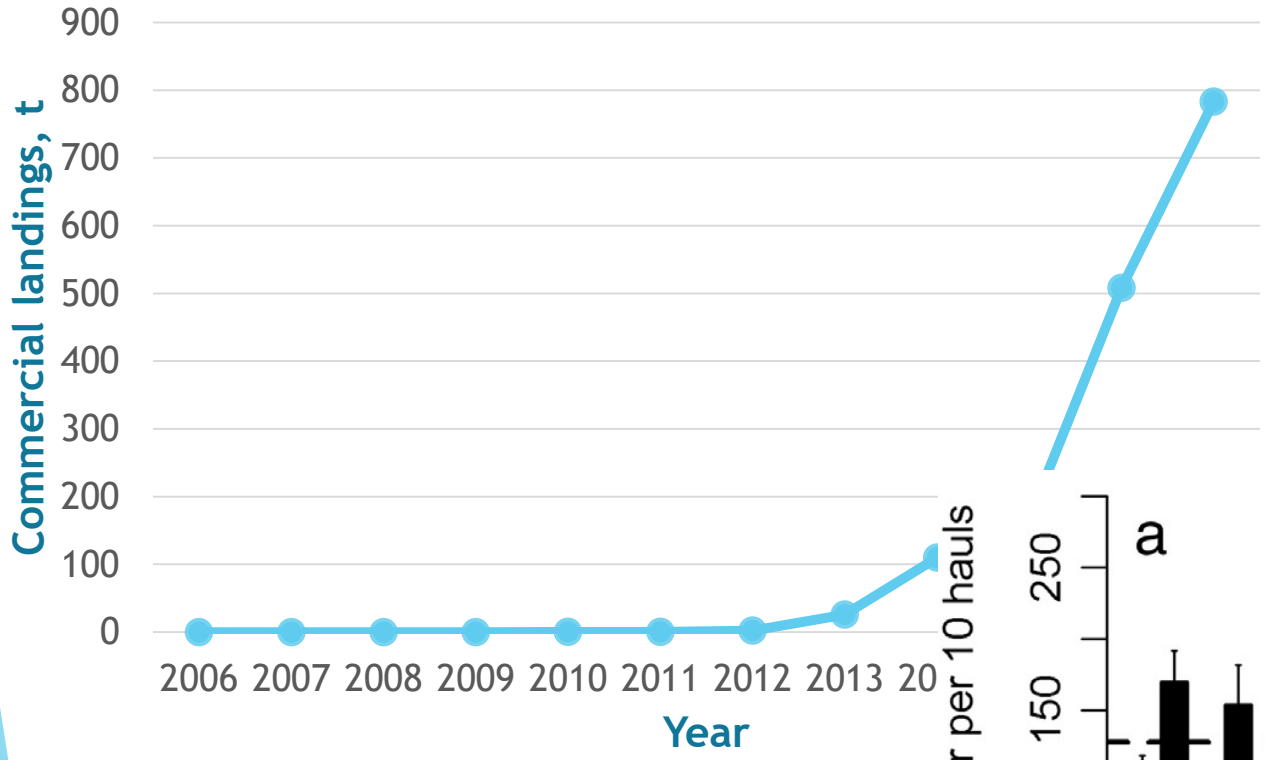


Fish species	Consumer group	ICES subdivision SD24	SD25	SD26	SD27	SD28	SD29	SD30	SD31	SD32	Entire Baltic
Cod	Fishery	8900	50 000								59 000
	Birds	1100	530								1600
	Seals	1600	3400								4900
Herring	Fishery	15 000	150 000					72 000	2 100	incl. in	240 000
	Birds	500	2300					800	63	SD25-29	3600
	Seals	300	36 000					4200	7600		48 000
Sprat	Fishery	350 000									350 000
	Birds	22 000									22 000
	Seals	8300									8300
Flatfish	Fishery	3600	8600	3200	90	410	100	0	0	99	16 000
	Birds	130	180	84	150	30	0	0	0	0	570
	Seals	1600	220	18	740	800	0	0	0	0	3300

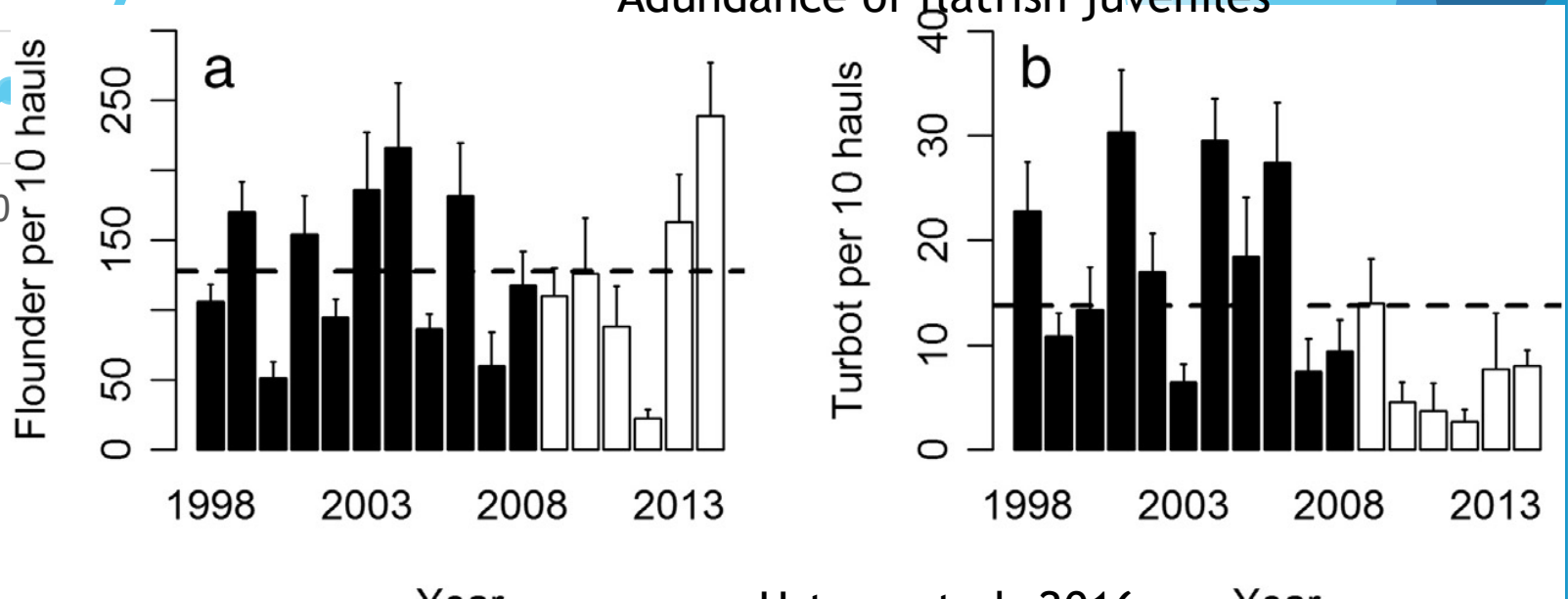
Hansson et al., 2017

Invasive round goby





Adundance of flatfish juveniles



Ustups et al, 2016

Conclusions

- Gradual increase of spawning stock is observed in last years
- The biggest turbots disappeared from the spawning stock
- New threats or challenges for turbot in the Central Baltic sea – seals and round goby

Thank you!