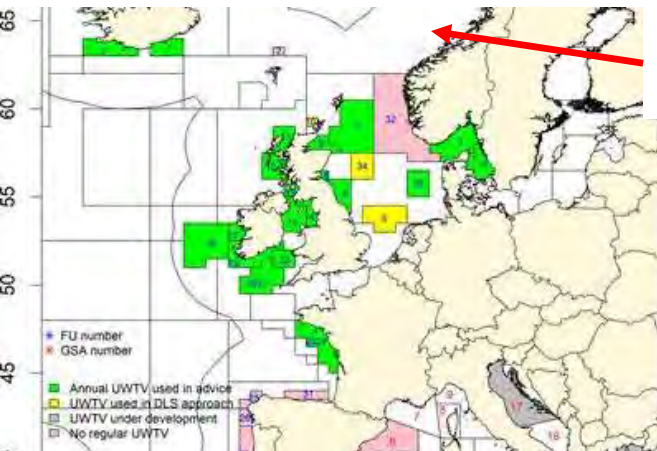




Stock trends and assessment in Norway

Norway lobster workshop, Copenhagen, May 13 2024
Fabian Zimmermann, IMR

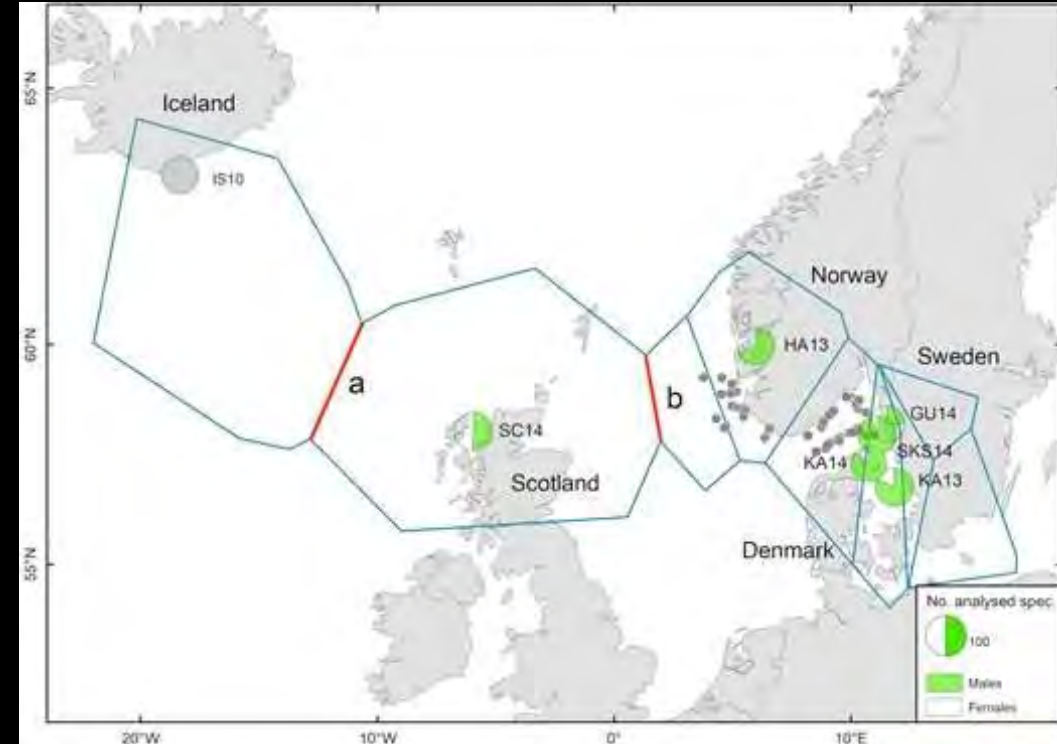
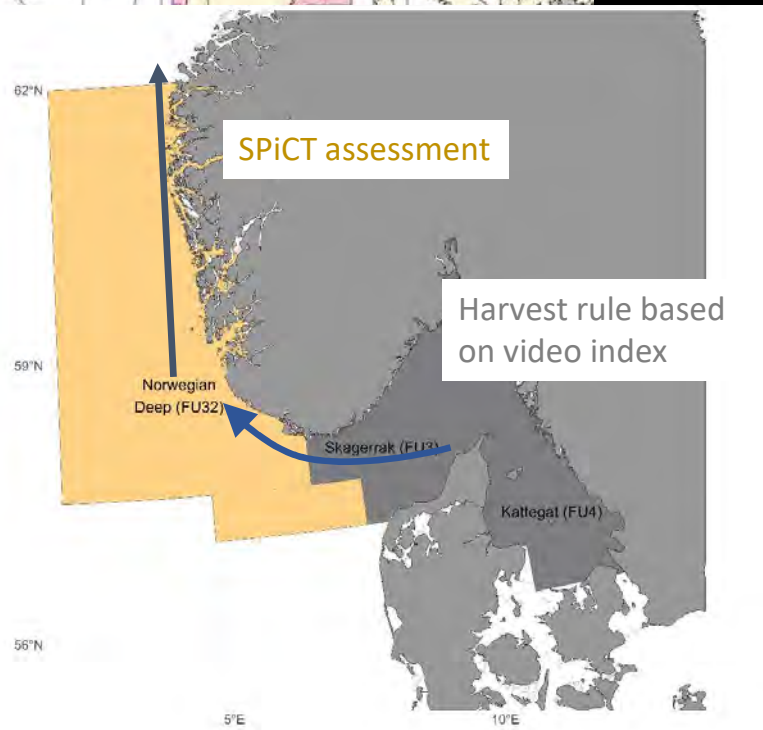




Valuable coastal fishery..
..but no stock unit or assessment

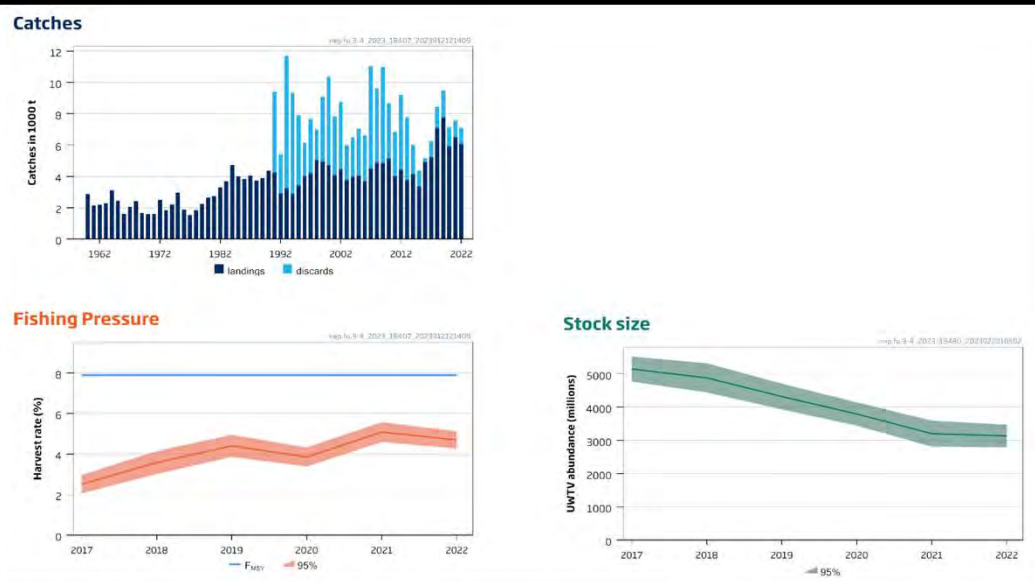
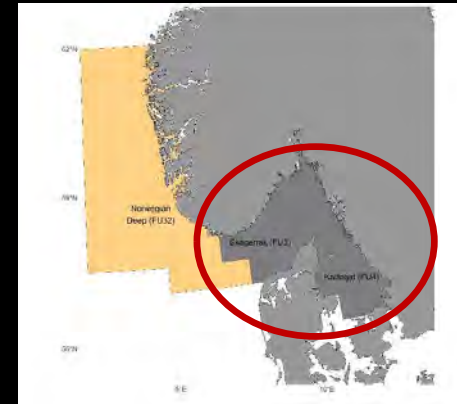
«Functional unit» vs. biological stock vs. population

- Small stock units based on fleet structure, bottom habitat
- While genetics show little to no difference..



Westgaard et al. 2023

Nephrops in FUs 3 and 4



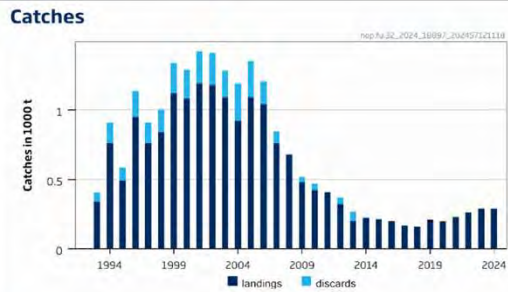
- Nephrops-specific survey-based assessment
 - Underwater TV survey
 - Yield-per-recruit from length data
 - Commercial catches

ICES 2023

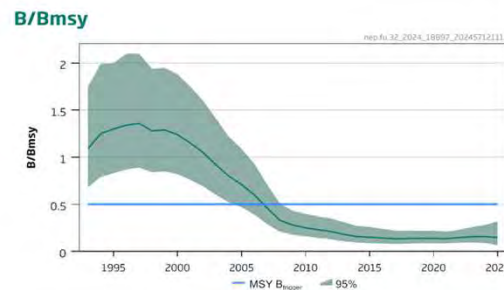
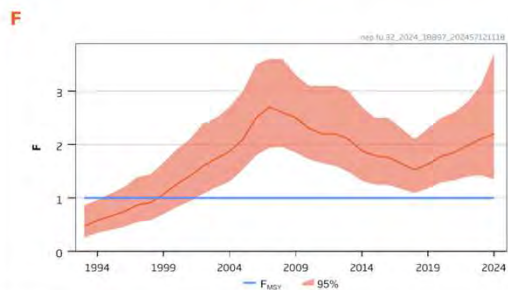
- No reference points
- Status: OK (?)

Basis	Total catch	Dead removals	Projected landings (PL)	Projected dead discards (PDD)	Projected surviving discards (PSD)	% harvest rate*	% advice change**
	PL + PDD + PSD	PL + PDD				For PL+ PDD	
ICES advice basis							
MSY approach: F _{MSY}	11863	11418	10082	1336	445	7.9	-1.69
Other scenarios							
F = MAP^ F _{MSY} lower	8410	8094	7147	947	316	5.6	-30
F = MAP^ F _{MSY} upper***	11863	11418	10082	1336	445	7.9	-1.69
F _{35%SpR}	15768	15176	13400	1776	592	10.5	31
F = F ₂₀₂₂	7058	6793	5998	795	265	4.7	-42

Nephrops in FU32



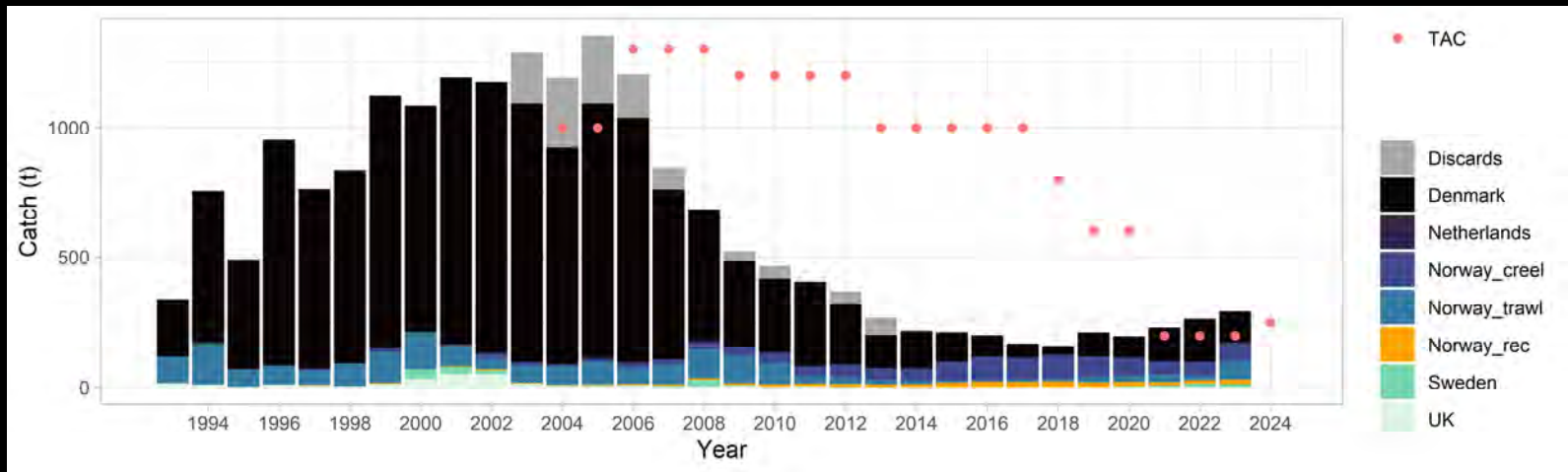
Preliminary, not yet released



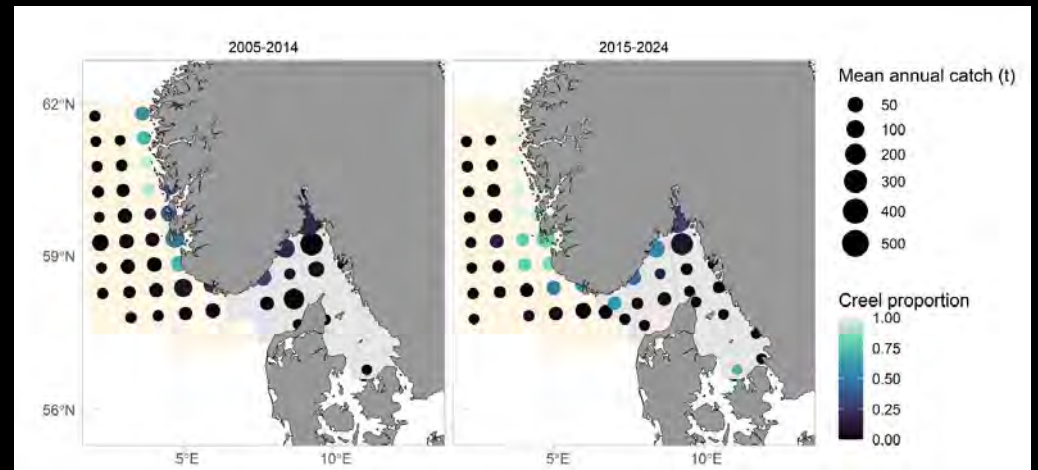
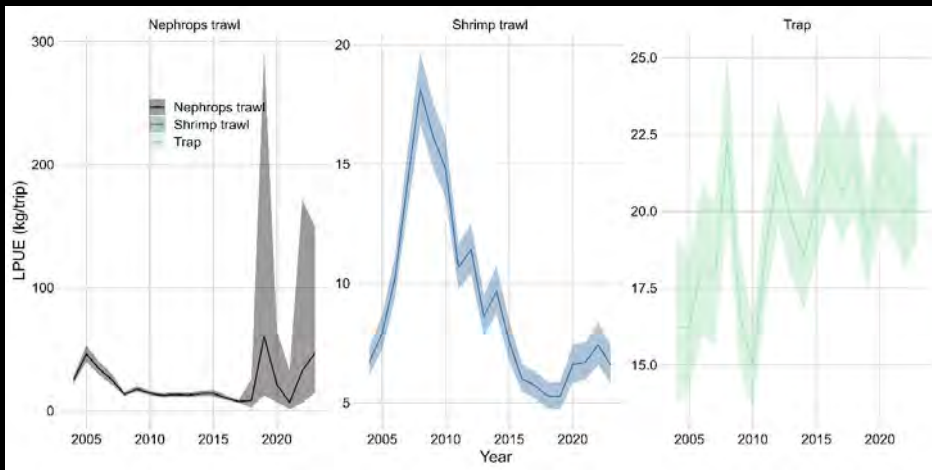
- Benchmarked in 2024, with upgrade to
 - Category 2
 - Assessed with SPiCT
- Inputs:
 - Total catch + discards + recreational catch
 - Survey index from shrimp survey
 - Priors on growth and initial depletion
- Status: depleted
 - Overfishing or environment/poor recruitment?

Basis	Total catch (2025)	Fishing mortality F_{2025}/F_{MSY}	Stock size B_{2026}/B_{MSY}	% B change	% Advice change
ICES advice basis					
MSY approach (35 th percentile of predicted catch distribution under $F = F_{MSY}$)	39	0.27	0.20	36	-89
Other scenarios					
MSY approach (15 th percentile of predicted catch distribution under $F = F_{MSY}$)	34	0.23	0.20	36	-87
F_{MSY}	134	1.00	0.180	23	-56
$F = F_{2024}$	270	2.3	0.130	-11.5	-11.6
$F = 0$	0.00	0.00	0.21	43	-100

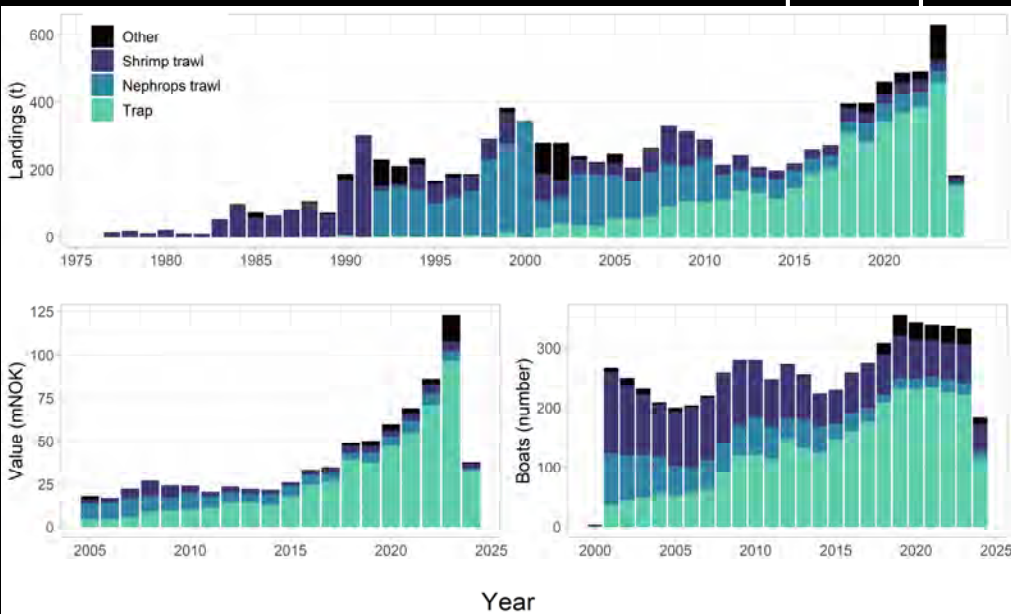
Nephrops in FU32



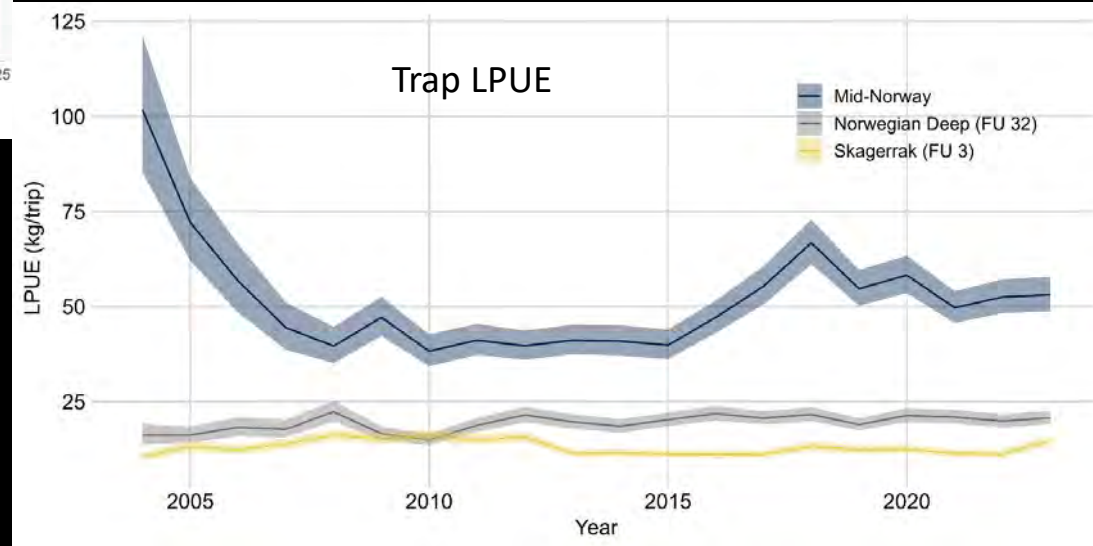
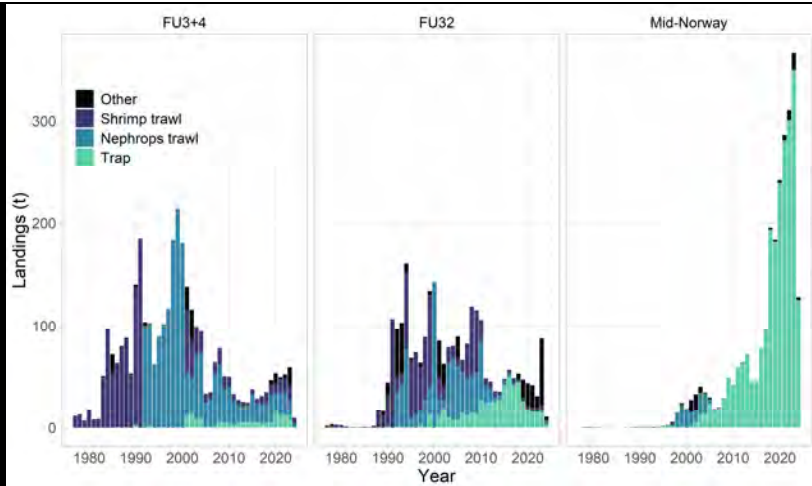
Unclear stock structure: inshore vs. offshore component



Nephrops in Mid-Norway



- Switch from trawl- to trap-based fishery
- Shift in gear composition = shift in spatial distribution
- Significantly higher LPUEs than in FU3 and FU32



Discussion points

- Spatial structure: local stock/fleet dynamics vs. connectivity
 - FU4 vs FU3 vs FU32 / offshore vs coast
 - Both entirely separate or unified assessments not ideal
 - Meta-stock assessment framework with multiple components as solution?
- Need for better integration between FU3+4 and FU32
 - Calibrating UWTV and shrimp survey against each other
 - UWTV survey in FU32?
- Lack of monitoring and assessment in Mid-Norway
 - Category 3 harvest rule based on LPUE indices?
 - Survey unlikely, but what about expansion of commercial data collection?



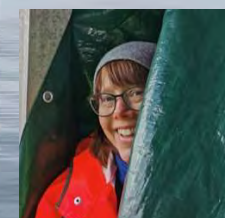
G. Søvik

J. Marcussen



M. Jensen

H. Danielsen



Nærings- og fiskeridepartementet

Foto: G. Sætra