Nephrops **Survey** FU 16 Update / Outcomes

"***Nephrops Survey FU 16***"
in this instance ≡ "Summer" catch sampling
July, August and September"

Jonathan White PhD.
FEAS – Marine Institute
2nd July, 2024

NWWAC *Nephrops*

TACs by Subarea, 6 and 7
Assessments by Functional Units, 11 to 22

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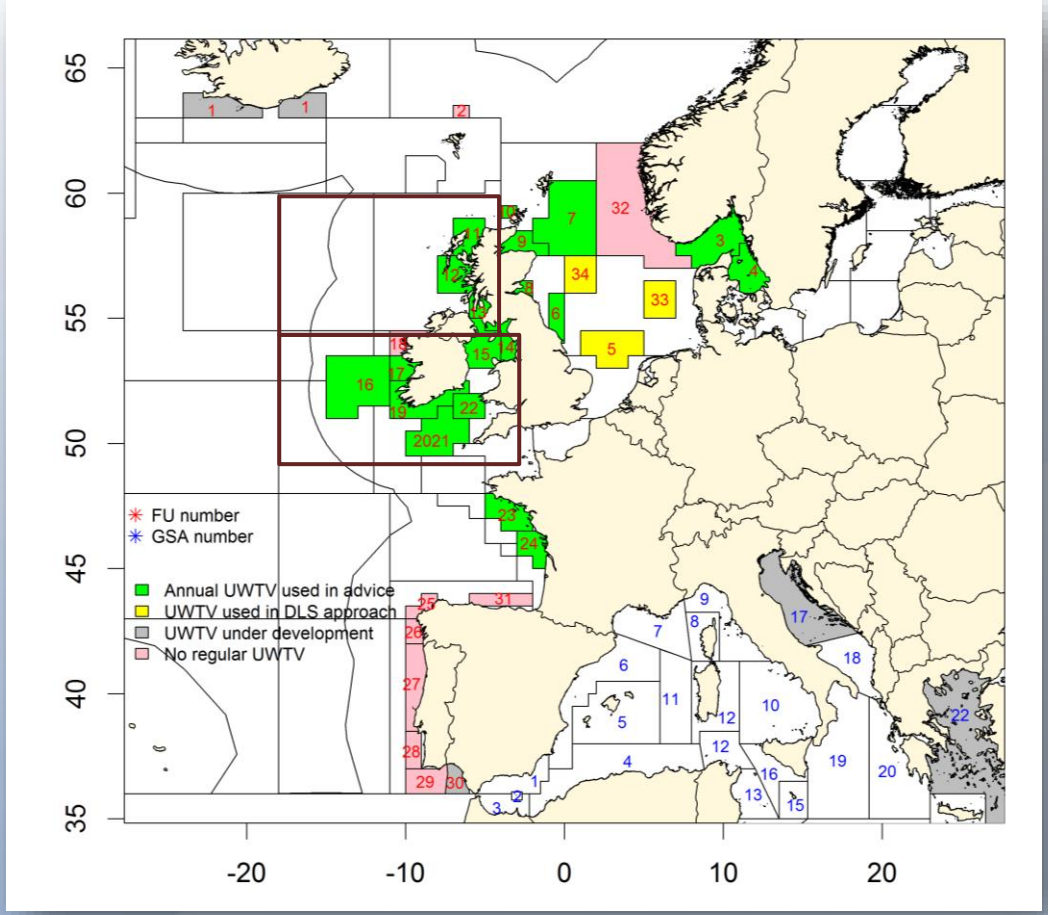
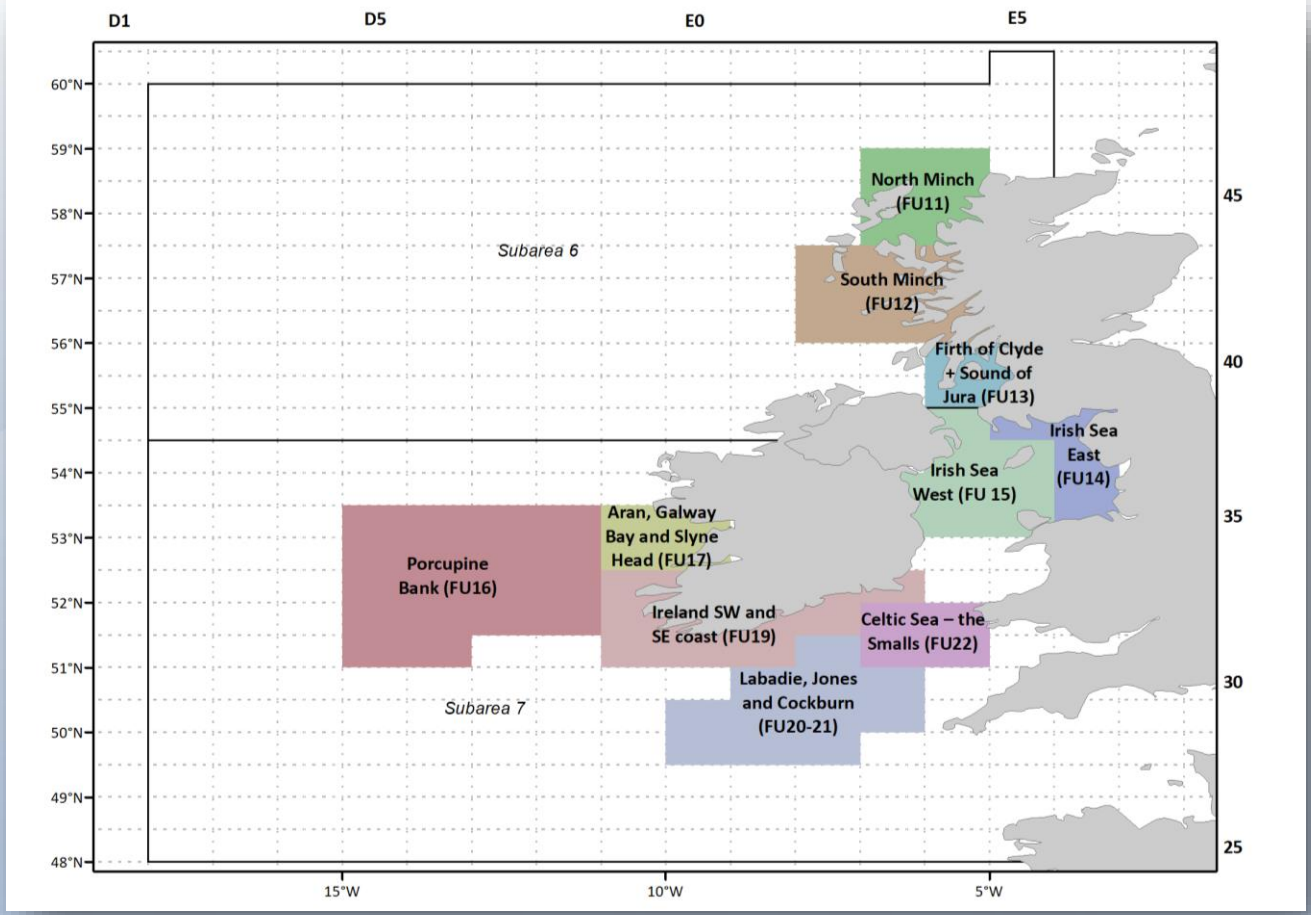
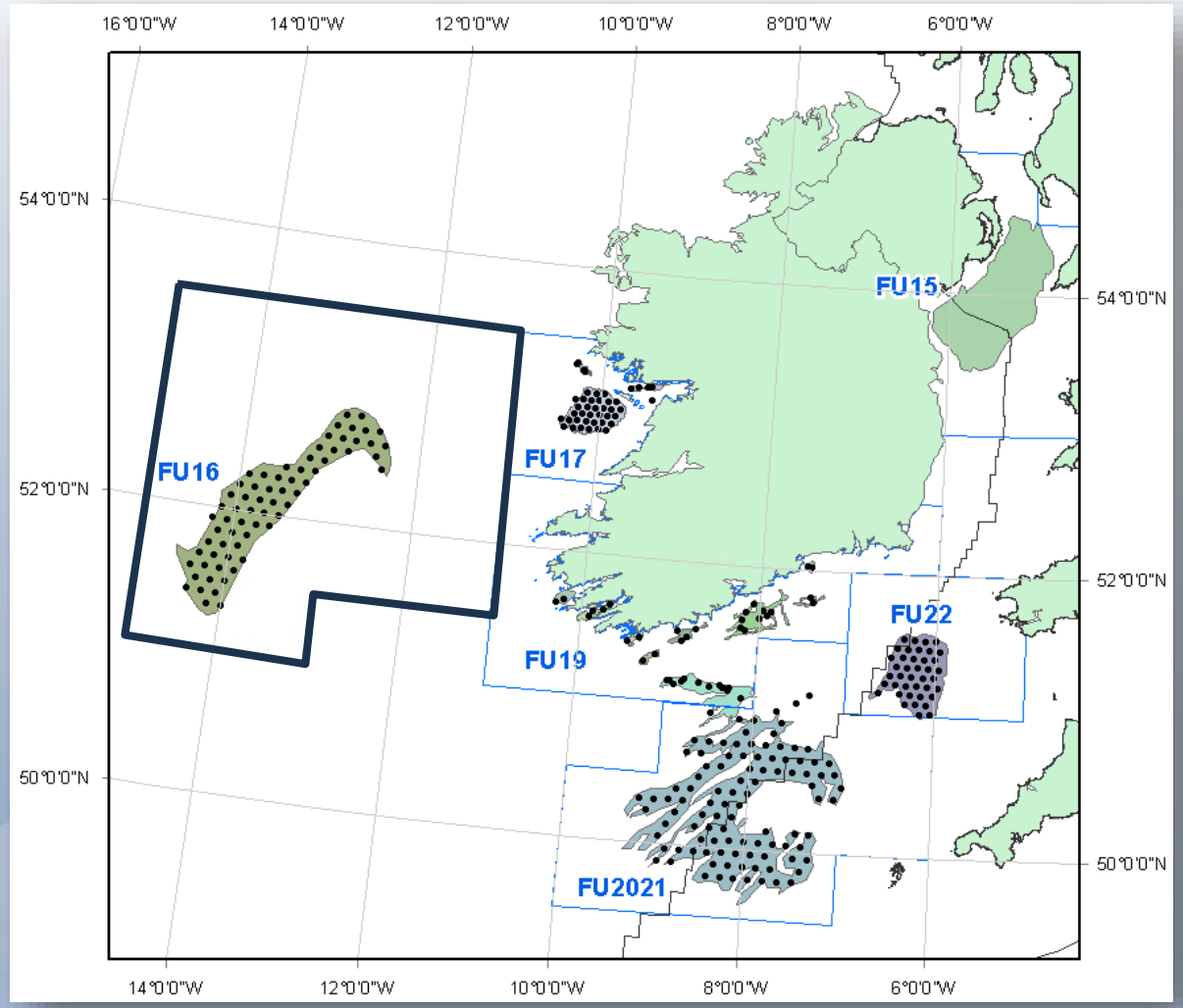
Marine Institute

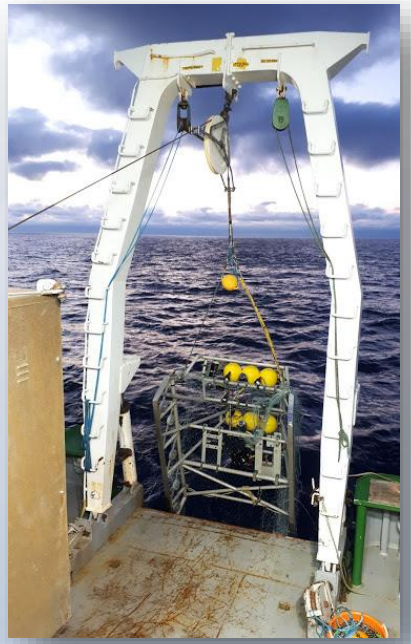


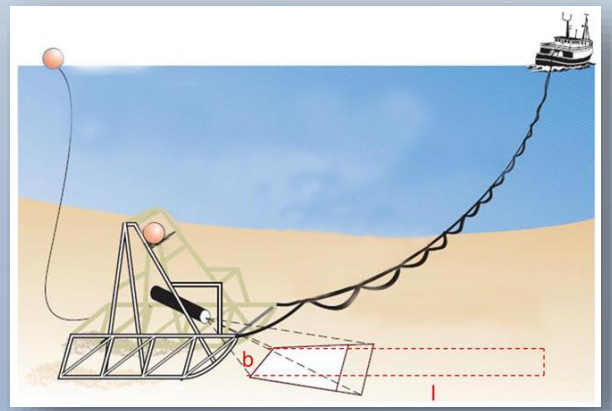


FU16 Porcupine

Marine Institute UWTV Surveys (2012-2023)







Porcupine (FU16):

A long, complex history of fishing:

1981 – 1985 Highest Landings

(3717 t 1981-85 5yr $\bar{x}$)

Contrasts:

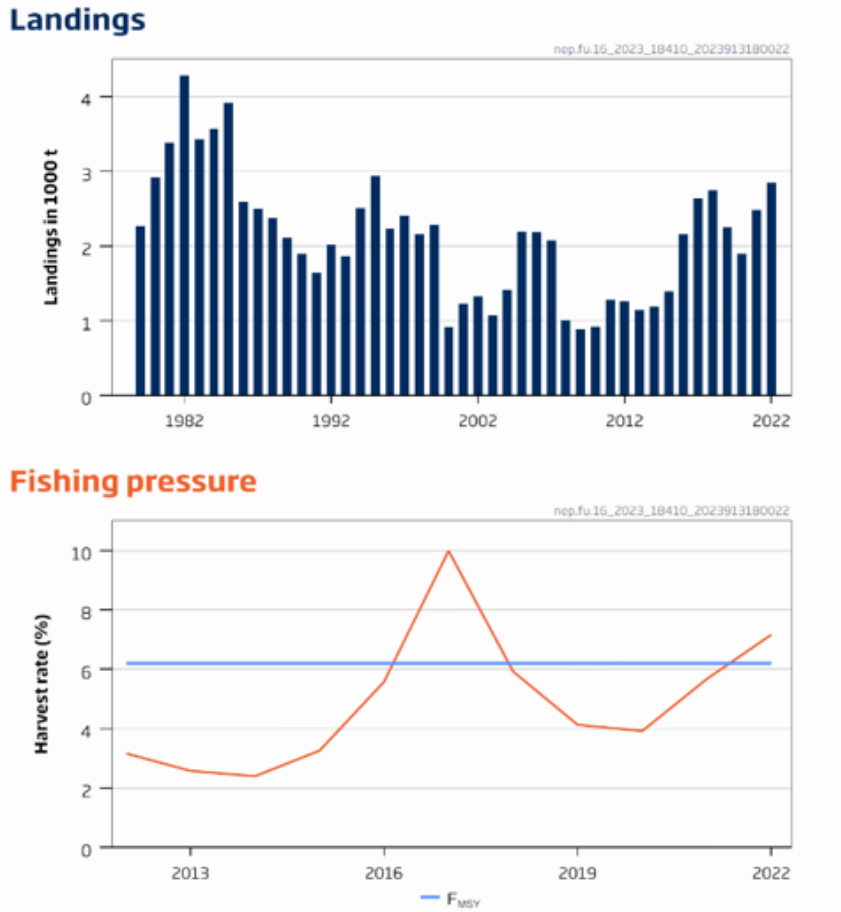
- late 1970s (1807 t 1975-79 $\bar{x}$)
- early 1990s (1904 t 1989-93 $\bar{x}$)
- early 2000s (1186 t 2000-04 $\bar{x}$)
- late 2000s (1068 t 2004-08 $\bar{x}$)

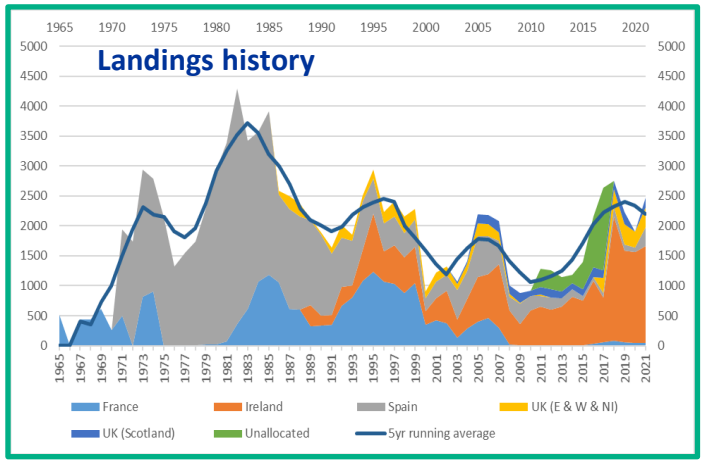
A series of seasonal closures ensued

2022 landings: 2846t

Stock development over time

Fishing pressure on the stock is above F_{MSY}, and no reference points for stock size have been defined for this stock.





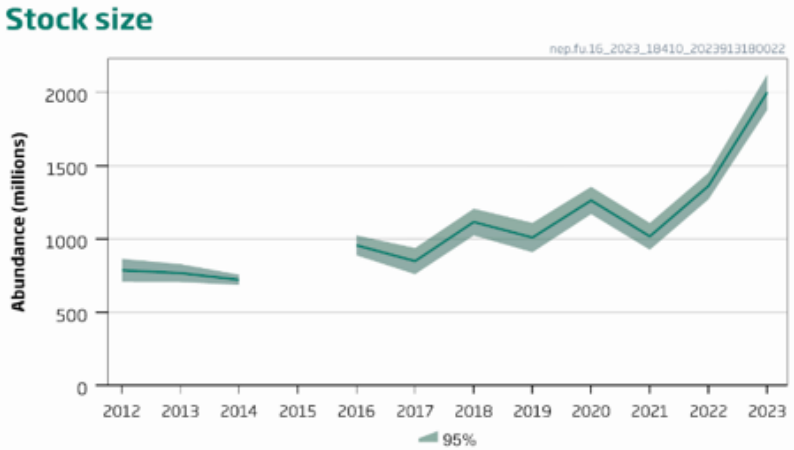


Figure 1 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. Summary of the stock assessment. Landings (between 1979–2015 discarding is considered negligible; from 2016 onwards, discards are not quantified), harvest rate (sum of landings in numbers, divided by stock abundance), and stock abundance (underwater TV survey). The harvest rate in 2015 was calculated using an interpolated value for abundance, as no survey data are available. Harvest rates since 2016 may be underestimated because of the unknown discard levels.

FU16 – Porcupine

Sampling Observations – Variability

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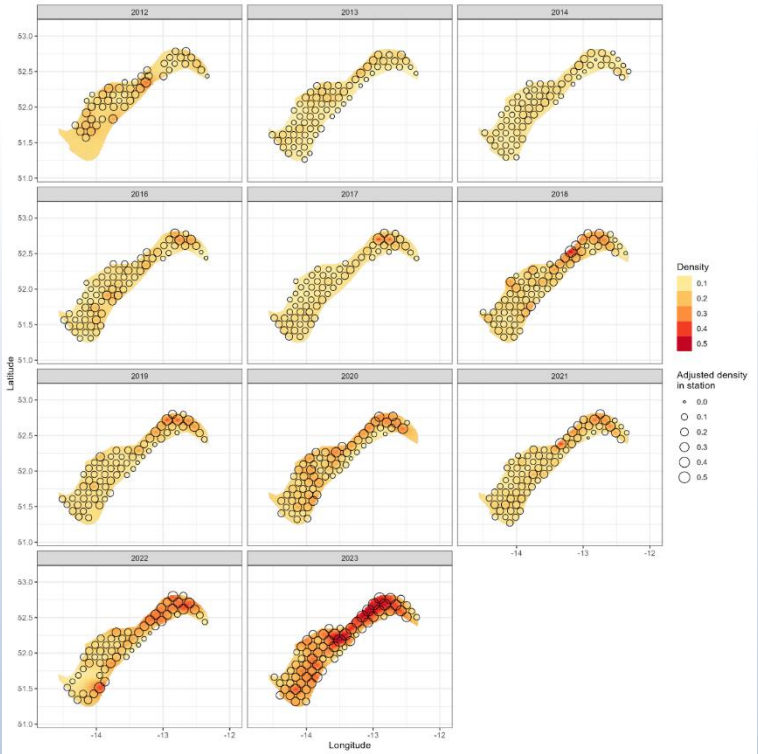
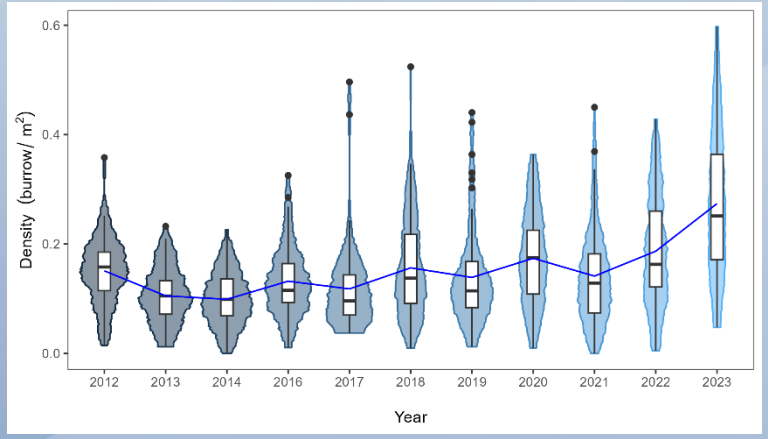
Marine Institute

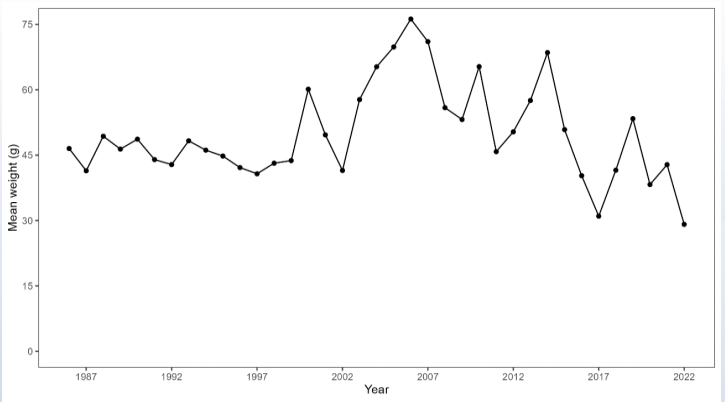
Densities 2012 - 2023



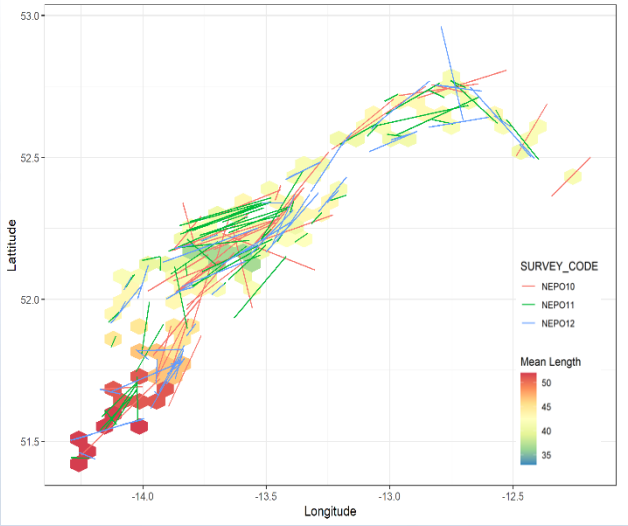


Situations do not remain the same

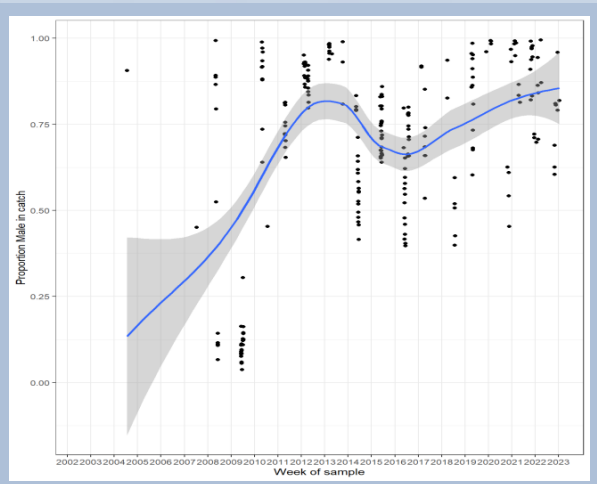
Mean weight



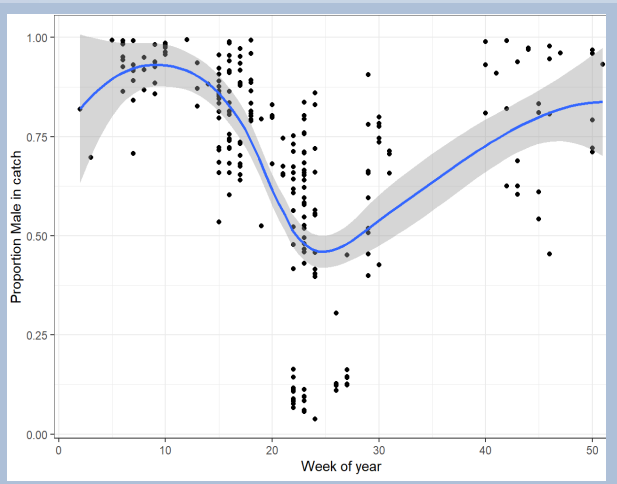
Size distribution



Sex ratios 2004-2022 **Year**



Sex ratios 2004-2022 **Week**



FU16 – Porcupine
Sampling Observations – Variability

View – early 2023

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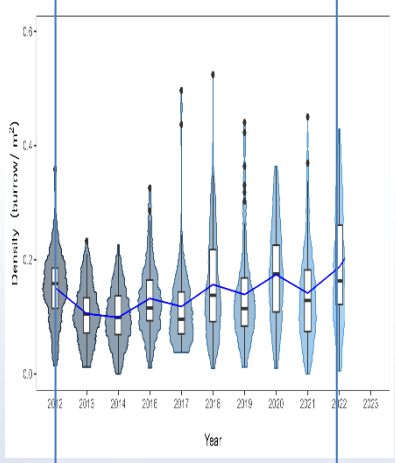
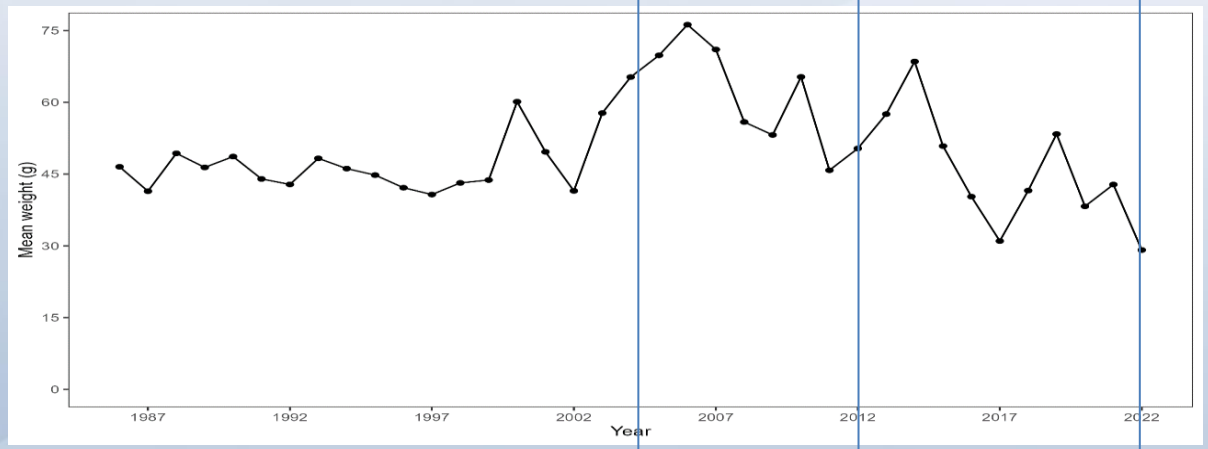
Marine Institute

2005 2012 2022

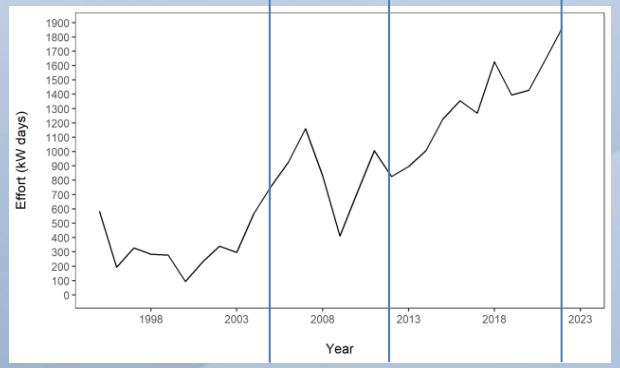


Abundance

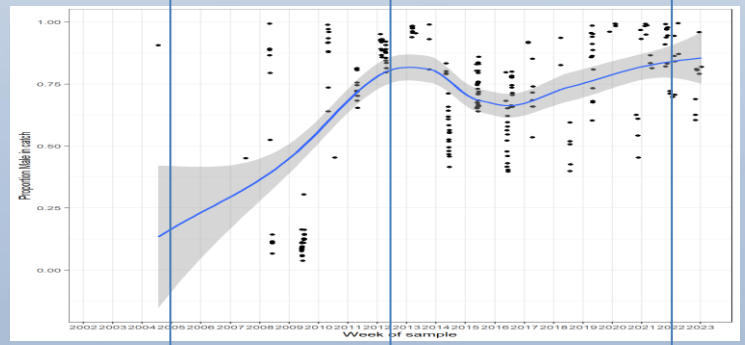


Weight

2005 2012 2022



Effort



Male : Female

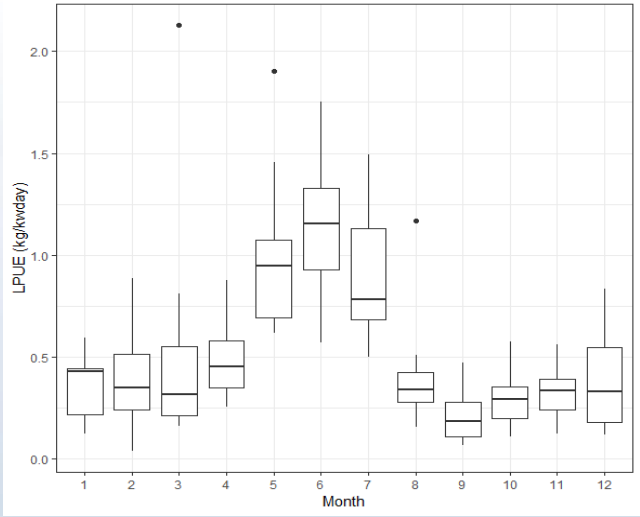
FU16 - Porcupine

Situation changing

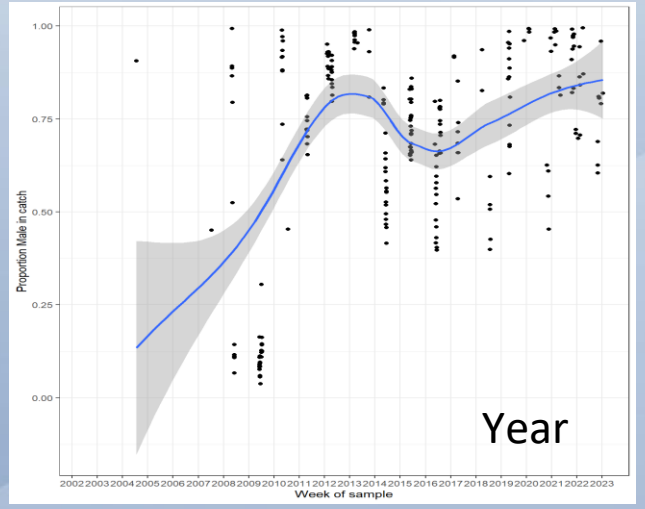
Protect the reproducing population in a year

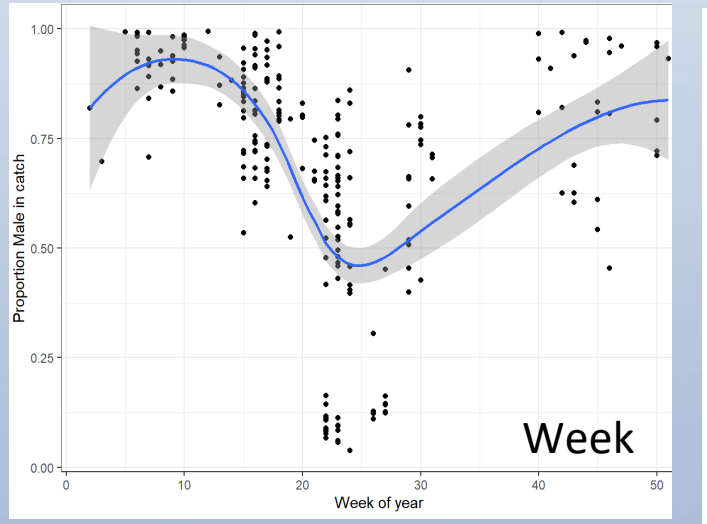
1. Female proportion
2. Fishing pressure

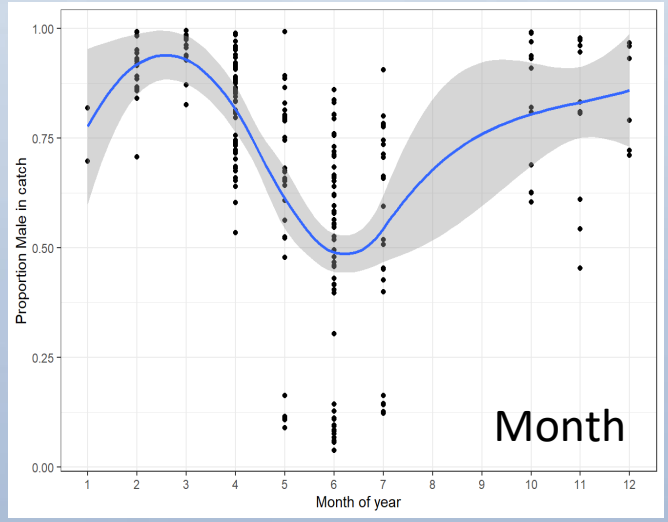
Otter trawl LPUE 1995-2009



Sex ratios 2004-2022







FU16 - Porcupine

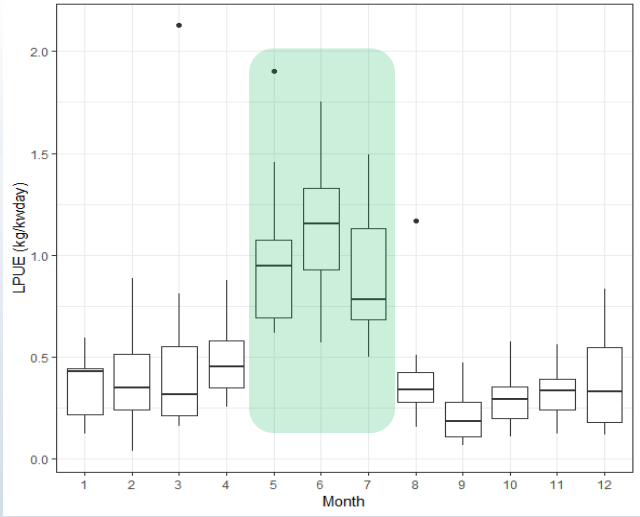
Situation changing

Protect the reproducing population in a year

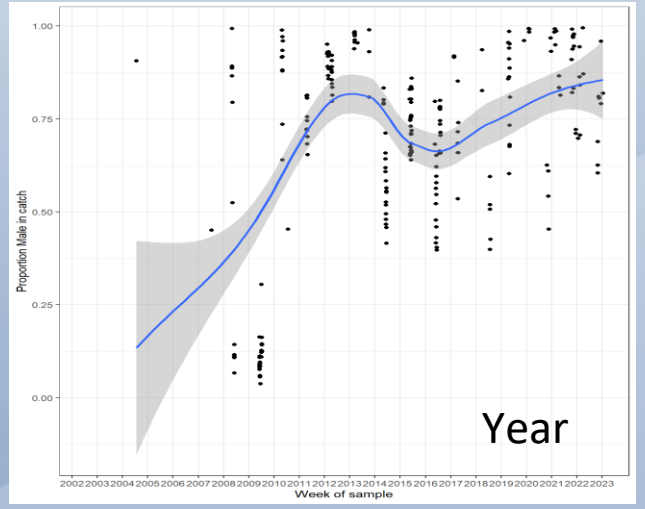
1. Female proportion
2. Fishing pressure

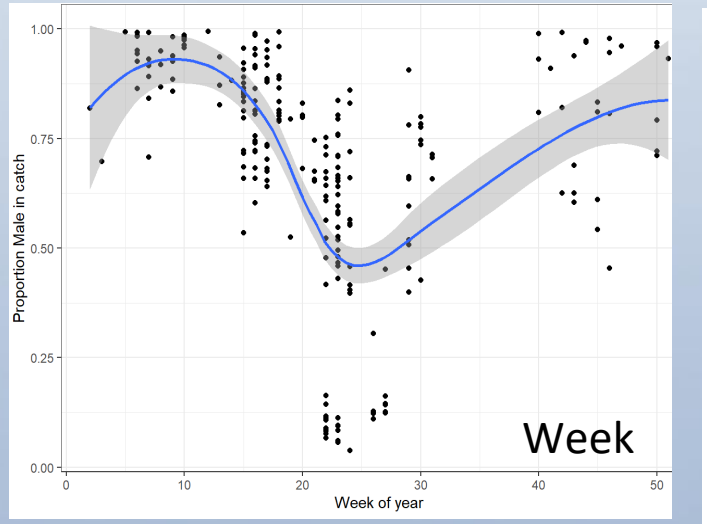
May - June – July

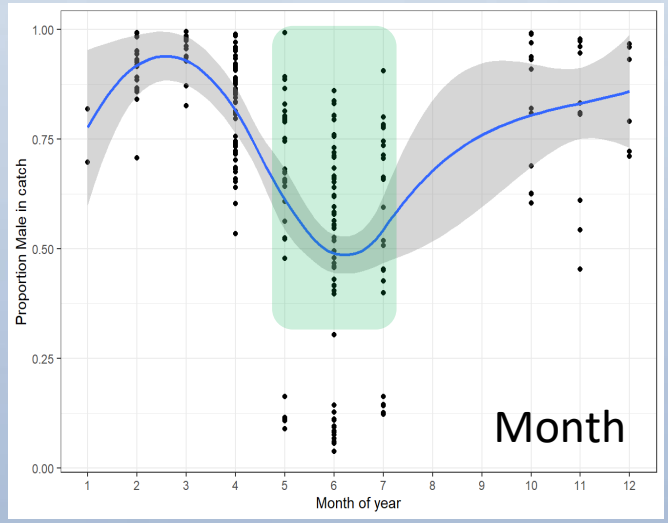
Otter trawl LPUE 1995-2009



Sex ratios 2004-2022







FU16 - Porcupine

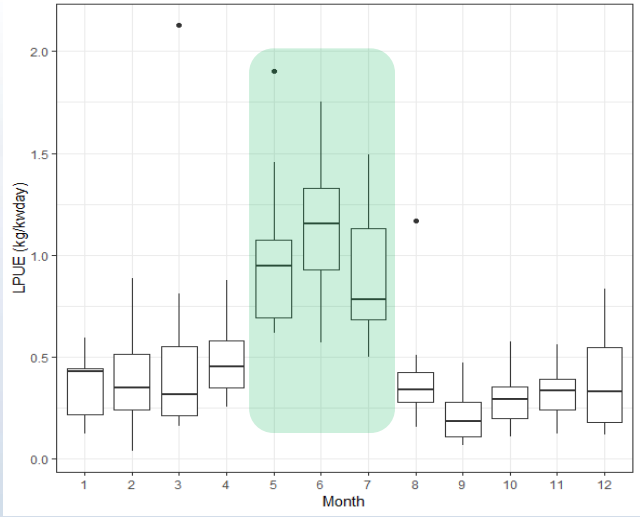
Situation changing

Protect the reproducing population in a year

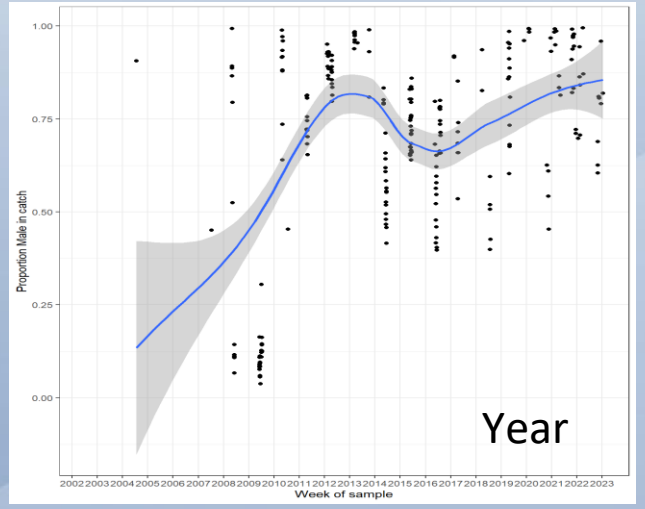
1. Female proportion
2. Fishing pressure

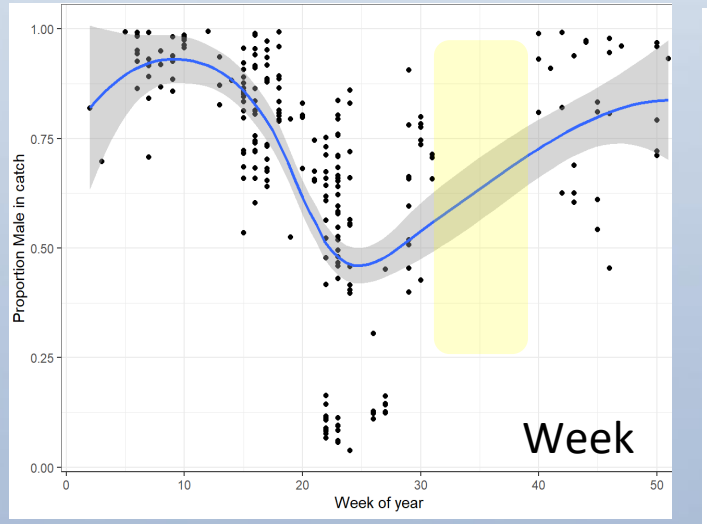
Historically May - June – July

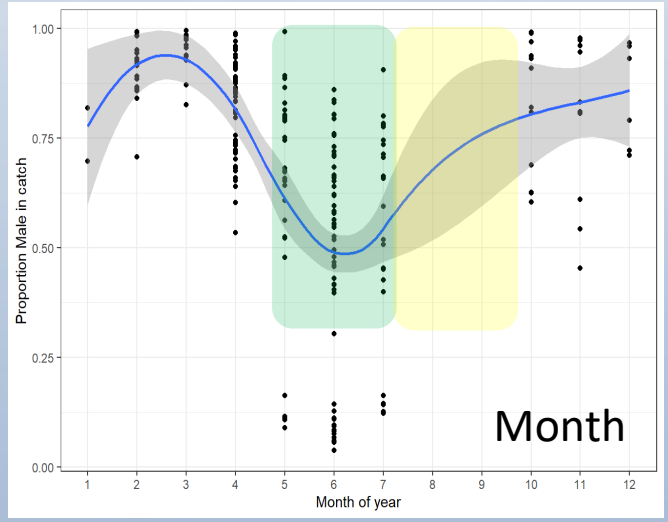
Otter trawl LPUE **1995-2009**



Sex ratios 2004-2022







FU16 - Porcupine

Situation changing

Protect the reproducing population in a year

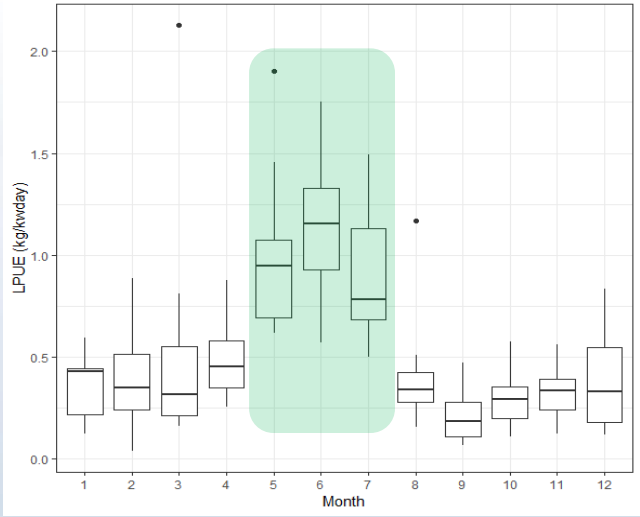
1. Female proportion
2. Fishing pressure

Historically May - June – July

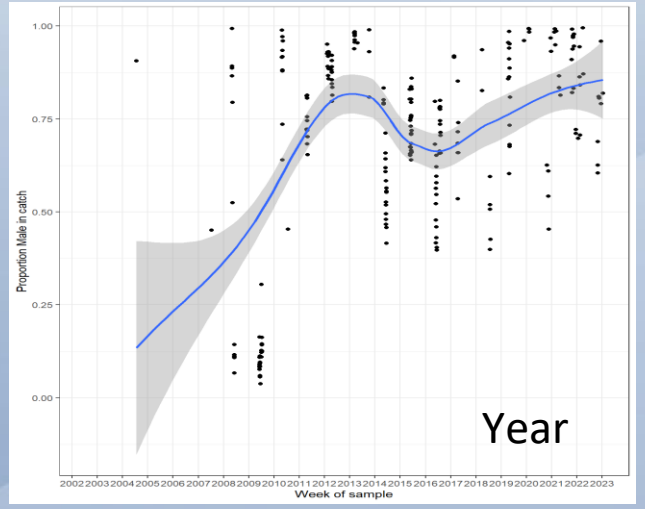
Now? Is it later in the year?

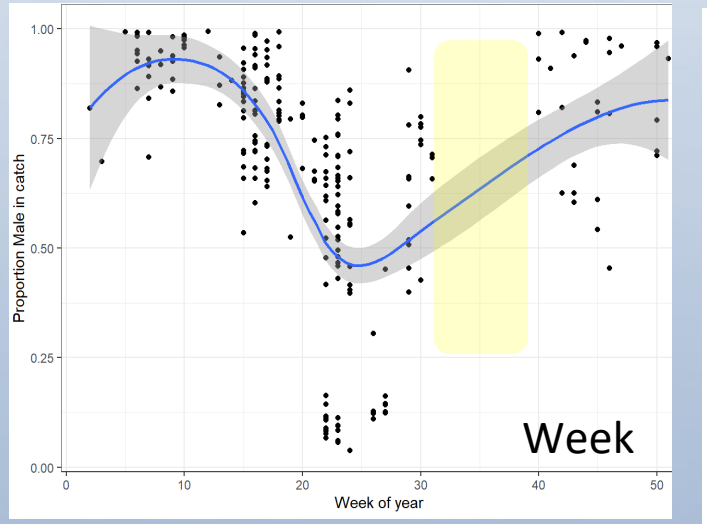
But: (Irish) Seasonal closer = no sampling, no information

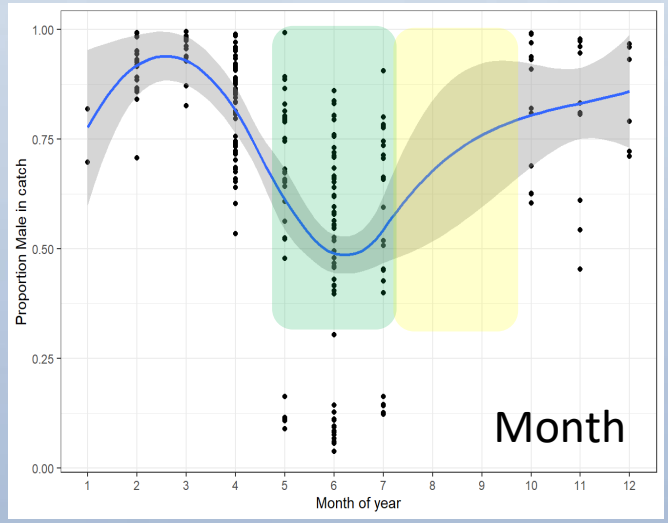
Otter trawl LPUE 1995-2009



Sex ratios 2005-2022







FU16 - Porcupine

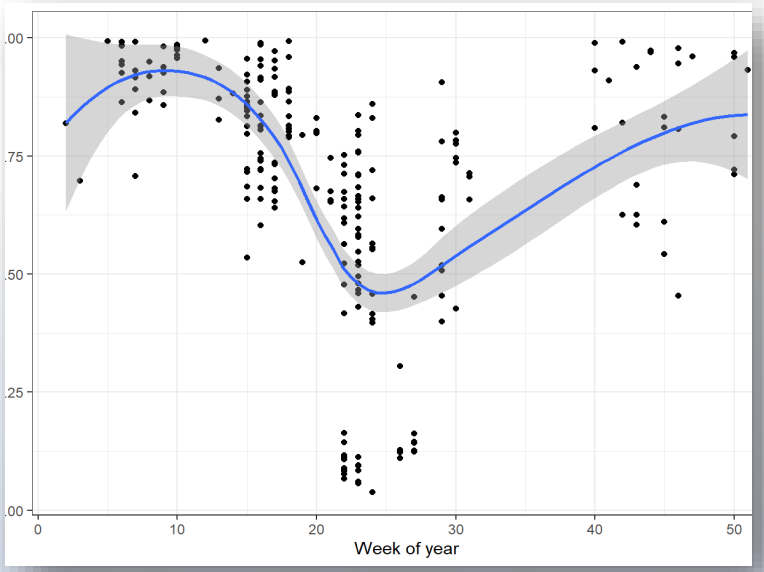
FU16 Enhanced Irish fleet “Summer” sampling 2023

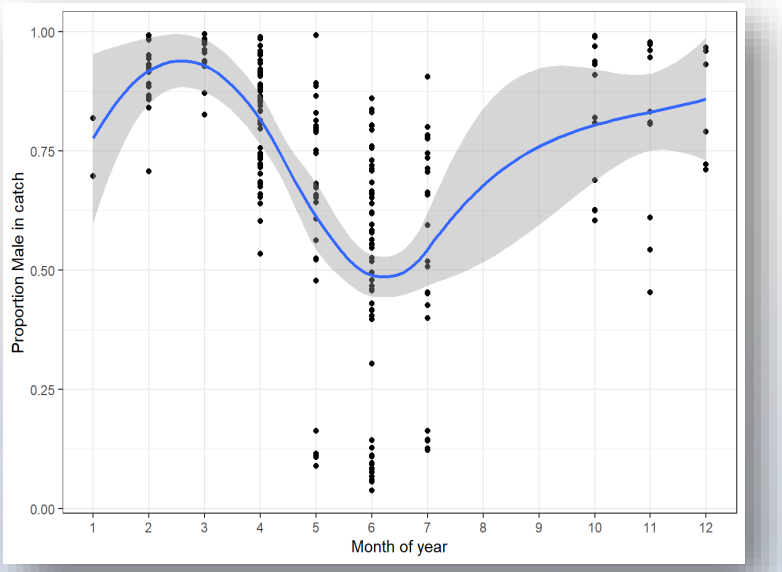
2023
4 fishing events per month
Over 3 months
June, July, August

	2020		2021		2022		2023	
	Trips	Samples	Trips	Samples	Trips	Samples	**Trips**	**Samples**
Q1	1	4	3	5	4	7	**3**	**7**
Q2	0	0	3	3	0	0	**8**	**32**
Q3	-	-	-	-	-	-	**13**	**52**
Q4	4	10	6	20	4	8	**9**	**34**
Total	**5**	**14**	**12**	**28**	**8**	**15**	**33**	**125**

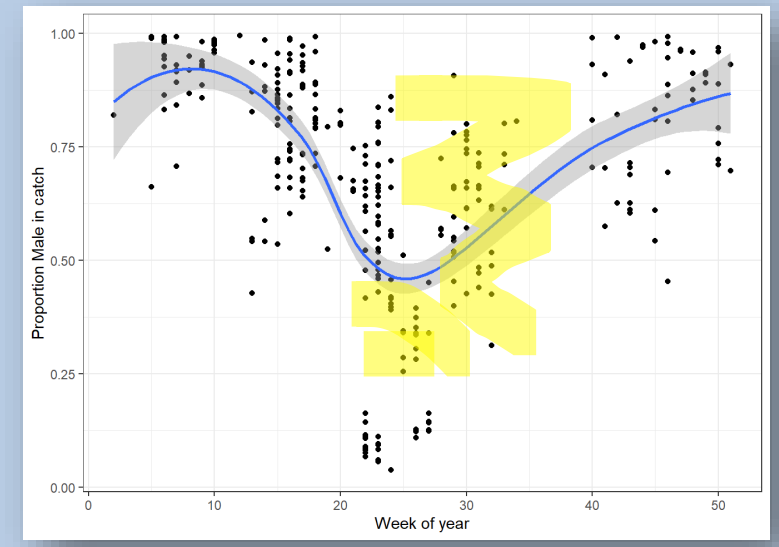
FU16 - Porcupine

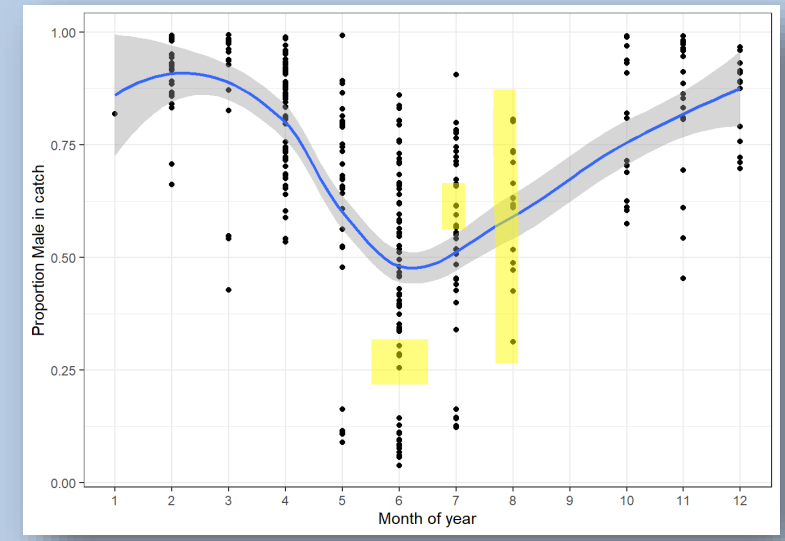
Data as of
Feb 2023





Data as of
Jan 2024





Male proportion by **Week** - All years combined

Male proportion by **Month** - All years combined

FU16 - Porcupine

Data as of
Jan 2024

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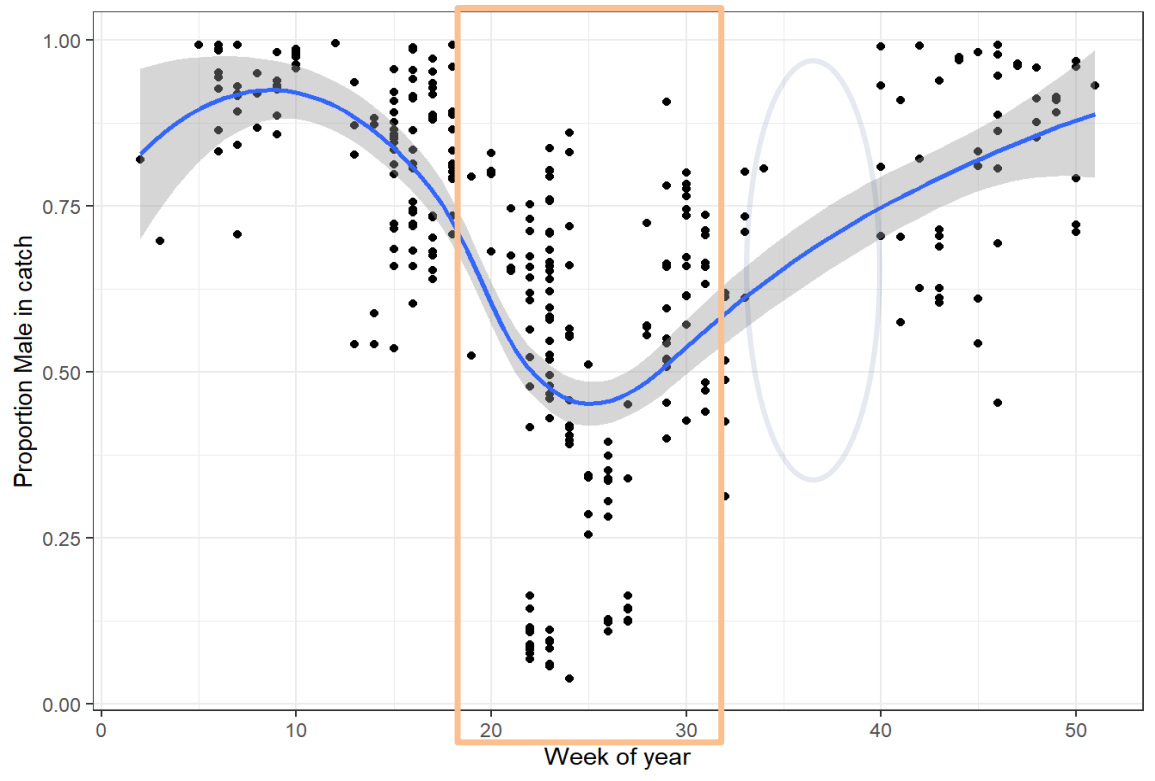
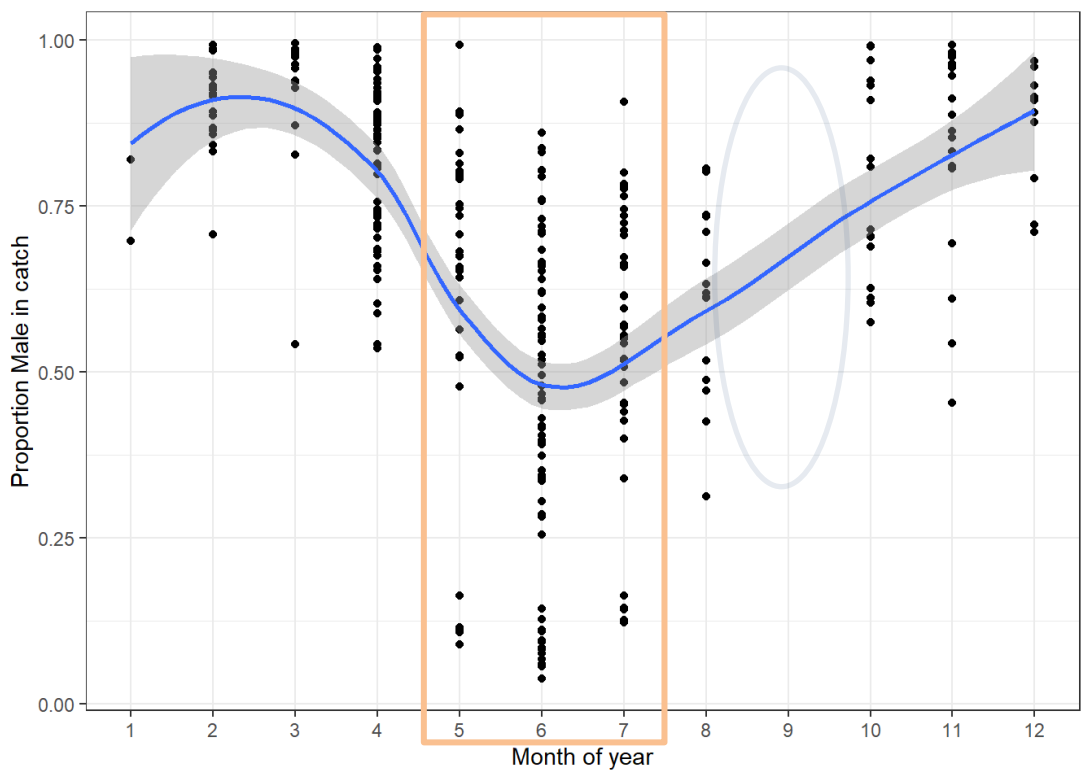
Wk18-19 : Wk31
(May) : (July)



May : July



May – July closure most appropriate defined on male:female ratio

still have a data gap
likely not drastically different

FU16 - Porcupine

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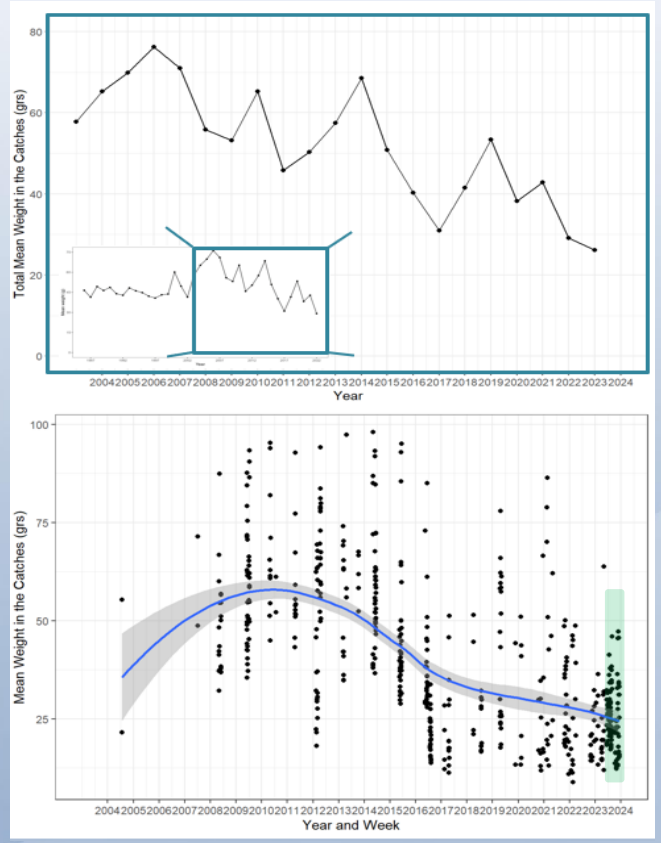
Situations do not remain the same

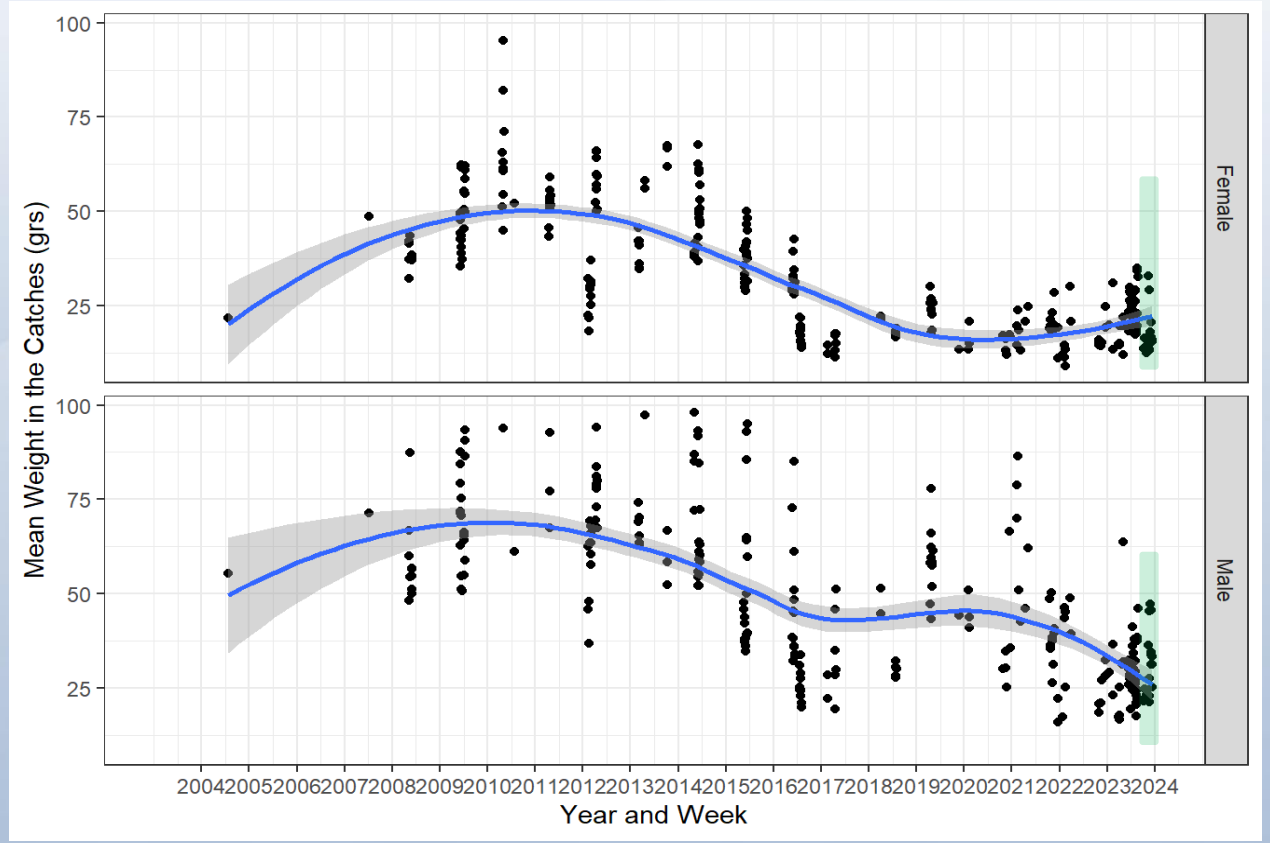
Dynamic system - independently and in relation to anthropogenic pressures

Mean weights by year



Decline in weight apparent since 2006

Mean weights by year, Male & Female

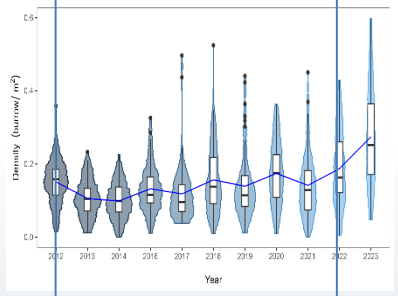


Recent divergence in female : male weight change

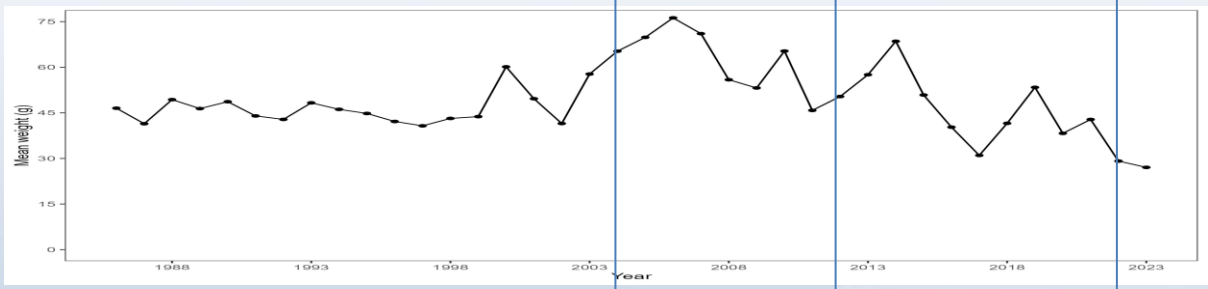
FU16 – Porcupine
Sampling Observations – Variability

View – now, 2024

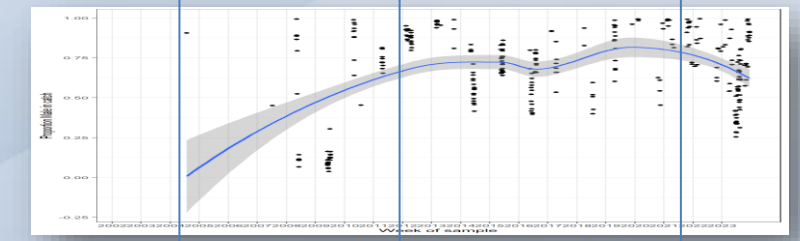
2005 2012 2022



Abundance

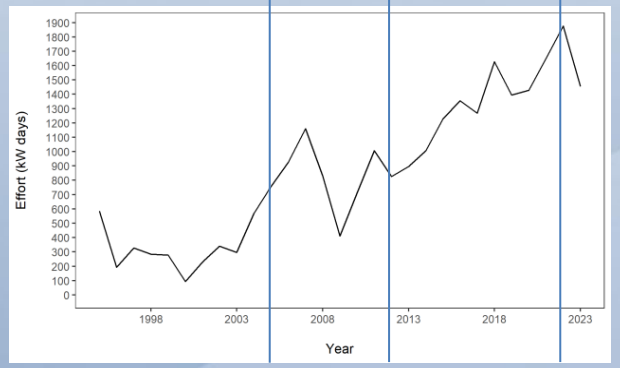


Weight

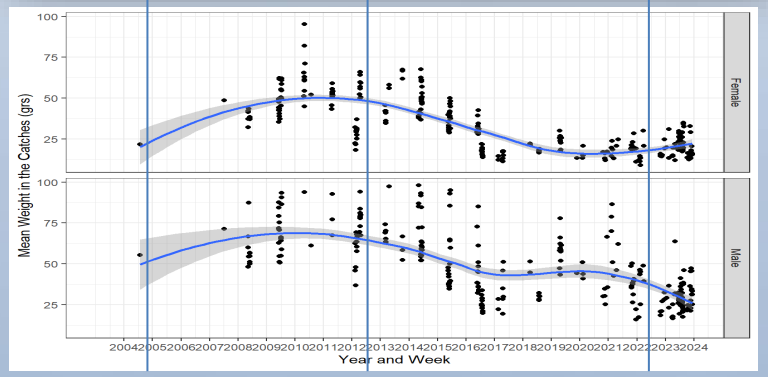


Male : Female

2005 2012 2022



Effort



Weight Female

Weight Male

FU16 - Porcupine

FU16 Enhanced “Summer” sampling 2024

2024
3 fishing events per month
Over 4 months
June, July, August, September

2023
4 fishing events per month
Over 3 months
June, July, August

FU16 – Porcupine : Landings by year by country

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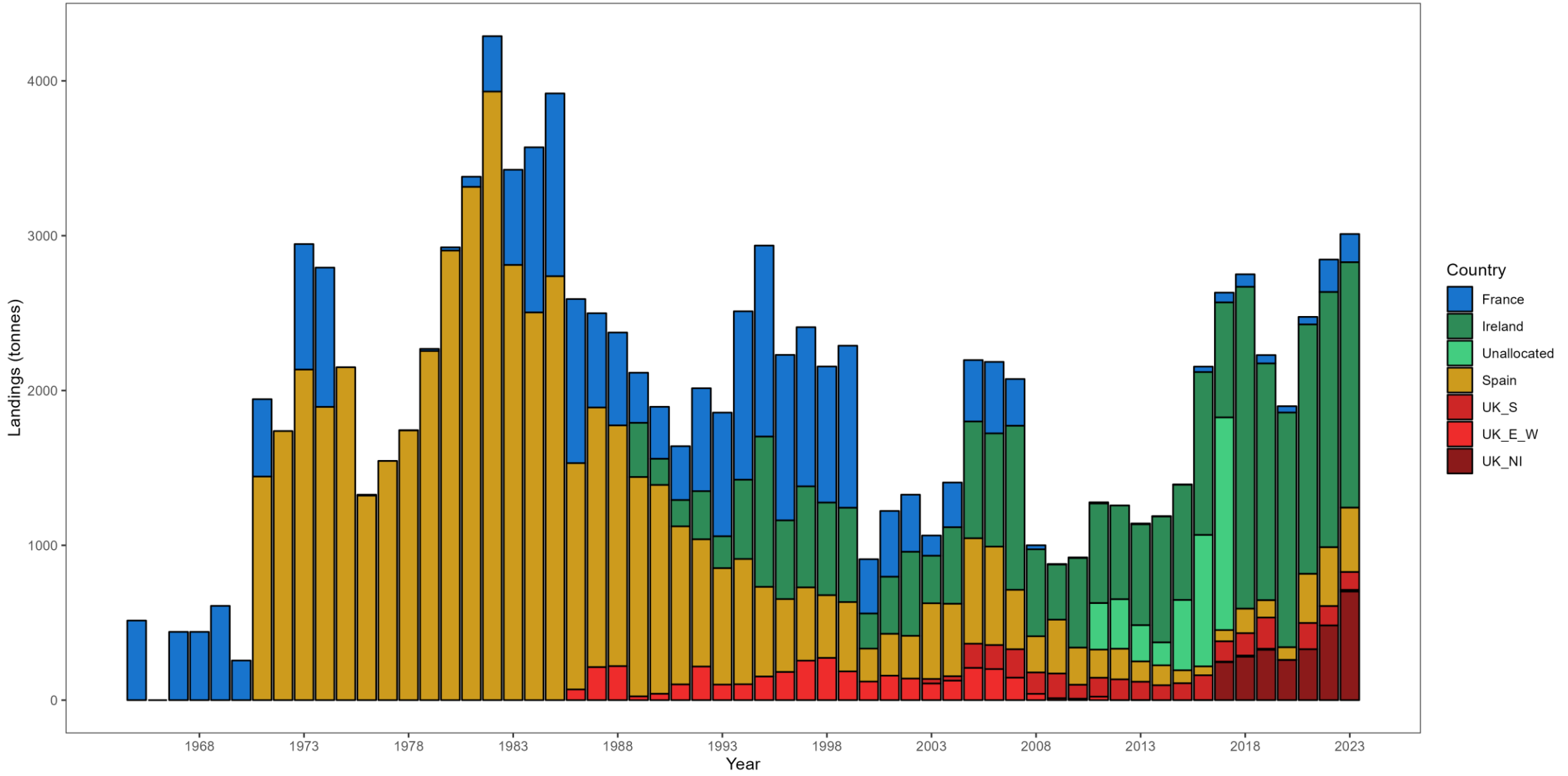

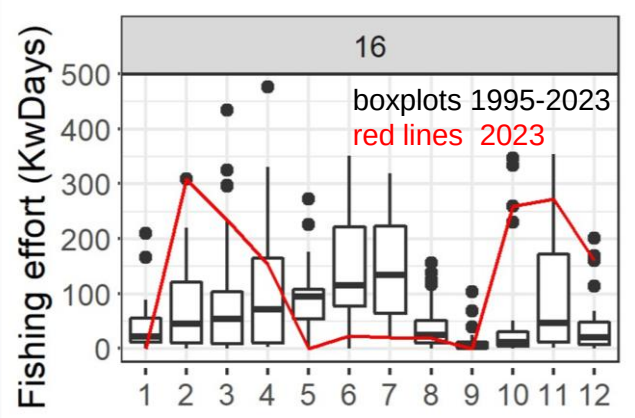

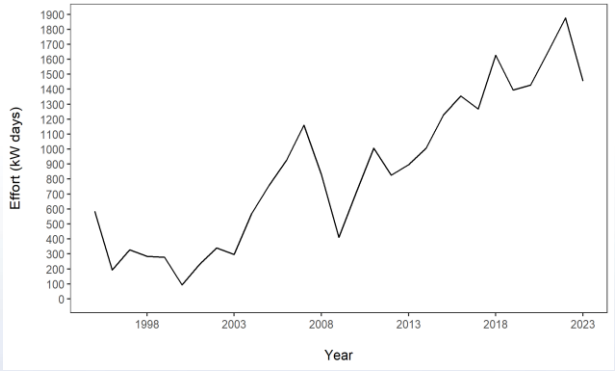

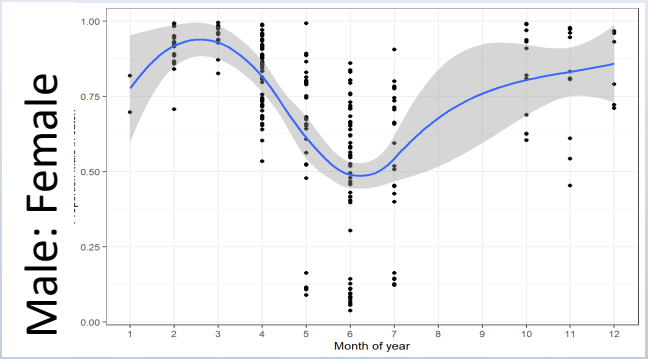

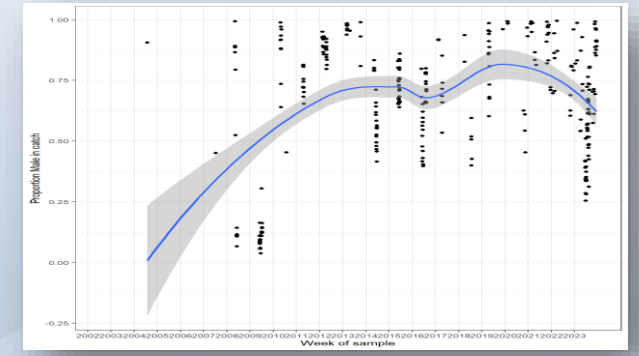

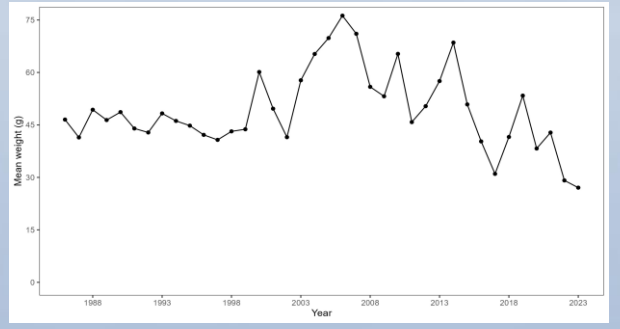

Foras na Mara
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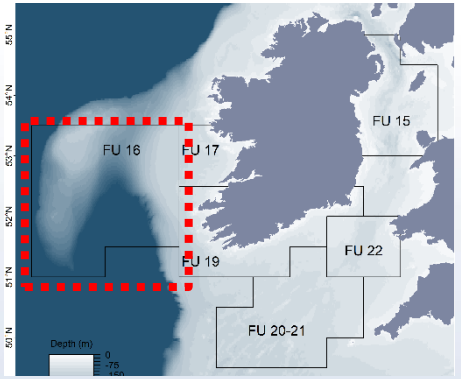


Management: Month

Year

Situations do not remain the same

Dynamic system - independently and in relation to anthropogenic pressures

Observations are necessary to see change

Irish Industry driven initiative, supported by science,

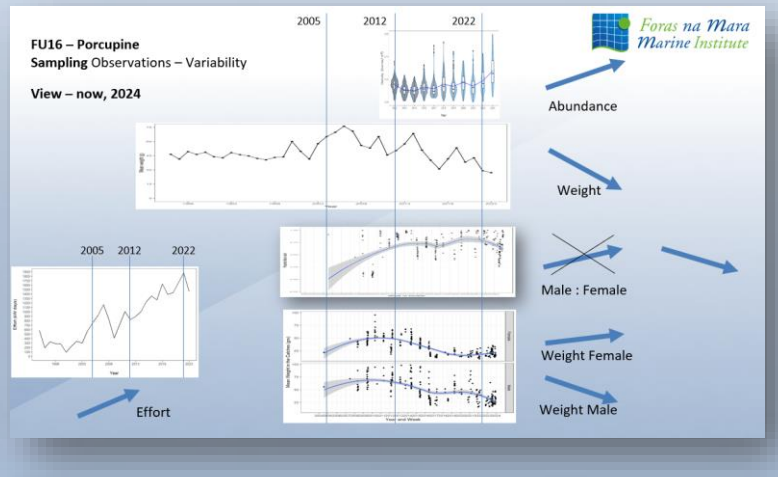
providing insight into the changing dynamics

Protect the reproducing population in a year:

1. Female proportion
2. Fishing pressure

Historically: May - June – July

Management actions: by **Month** and by **Year**



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Porcupine (FU16):

A long, complex history of fishing:

1981 – 1985 Highest Landings

(3717 t 1981-85 5yr $\bar{x}$)

Contrasts:

- late 1970s (1807 t 1975-79 $\bar{x}$)
- early 1990s (1904 t 1989-93 $\bar{x}$)
- early 2000s (1186 t 2000-04 $\bar{x}$)
- late 2000s (1068 t 2004-08 $\bar{x}$)

A series of seasonal closures ensued

2022 landings: 2846t

Stock development over time

Fishing pressure on the stock is above F_{MSY}, and no reference points for stock size have been defined for this stock.

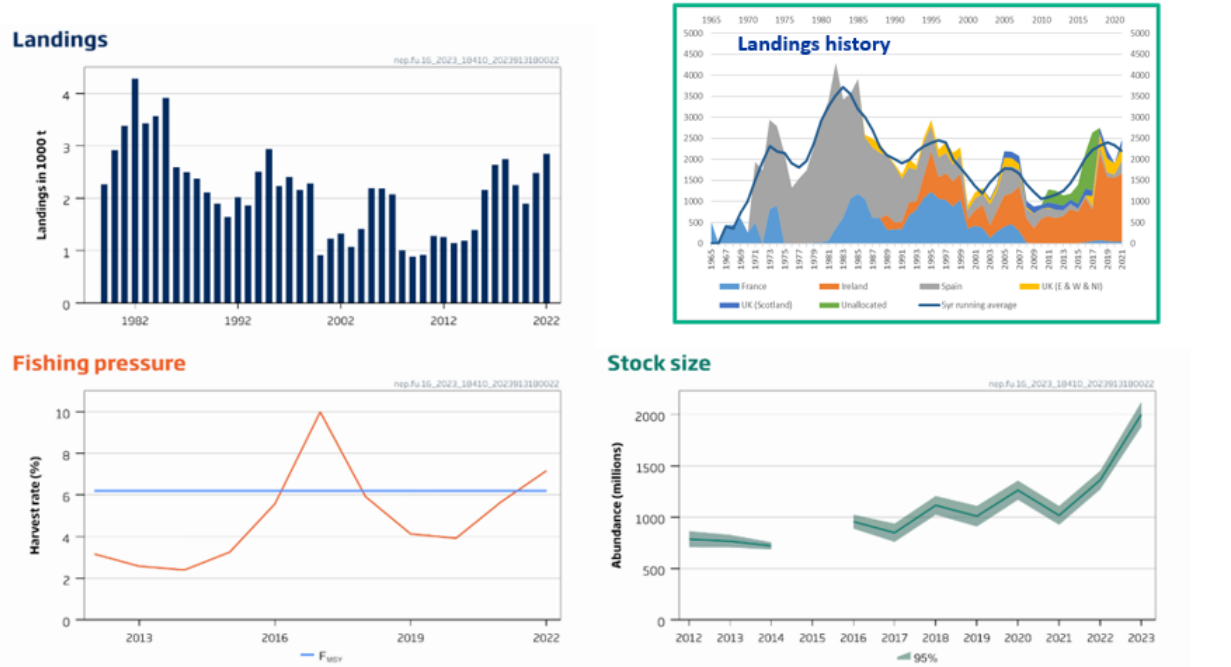

Figure 1 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. Summary of the stock assessment. Landings (between 1979–2015 discarding is considered negligible; from 2016 onwards, discards are not quantified), harvest rate (sum of landings in numbers, divided by stock abundance), and stock abundance (underwater TV survey). The harvest rate in 2015 was calculated using an interpolated value for abundance, as no survey data are available. Harvest rates since 2016 may be underestimated because of the unknown discard levels.

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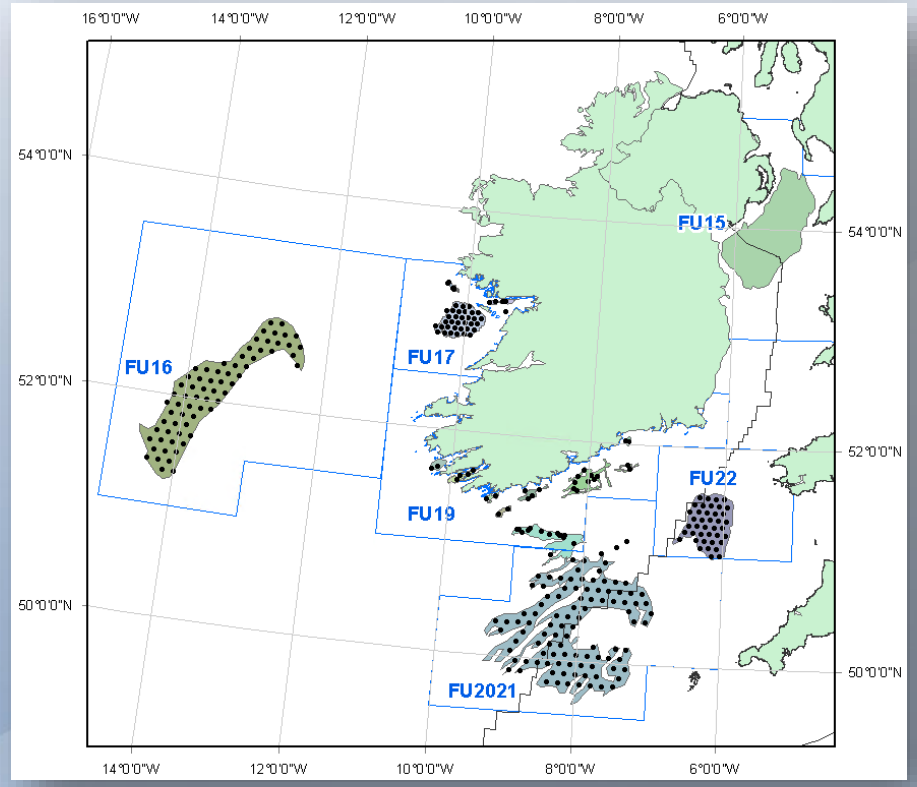
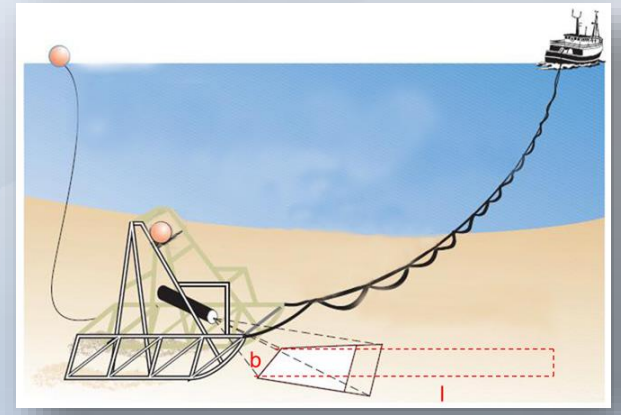
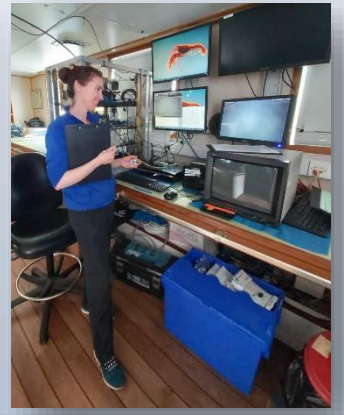
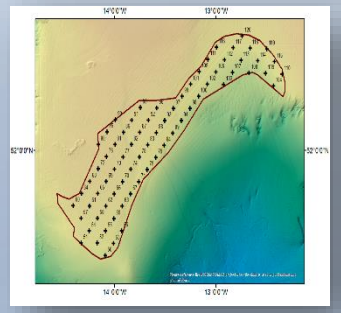
UWTV Surveys 2024

Aran & Porcupine:	30/05/2024 – 9/06/2024	RV *Tom Crean*	Galway - Galway
Celtic Sea Leg 1:	10/06/2024 – 20/06/2024	RV *Tom Crean*	Cork - Cork
Celtic Sea Leg 2:	10/08/2024 – 18/08/2024	RV *Tom Crean*	Cork - Cork









Questions?

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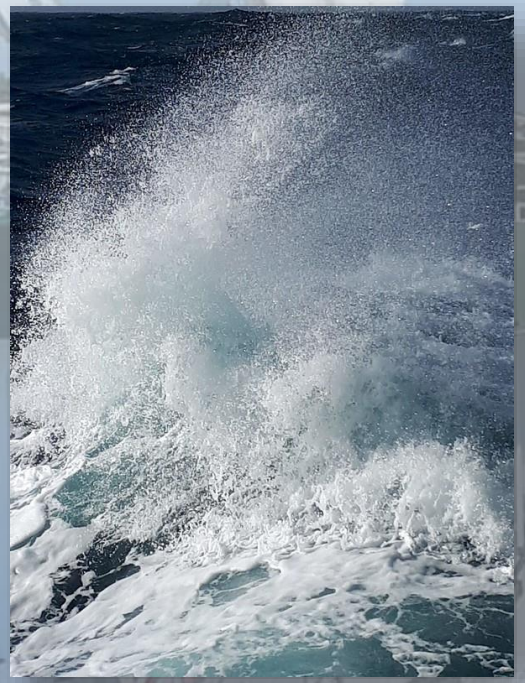
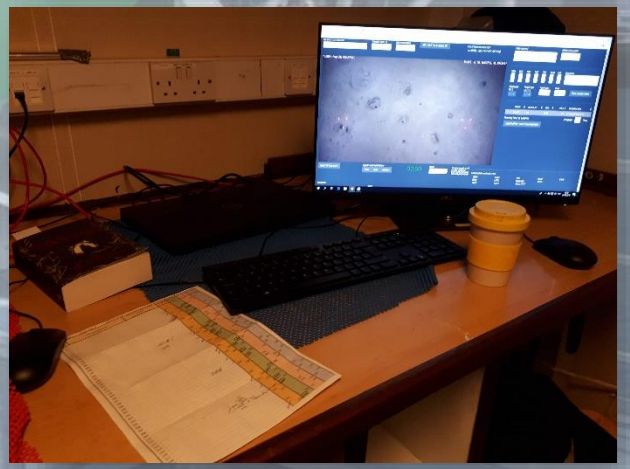
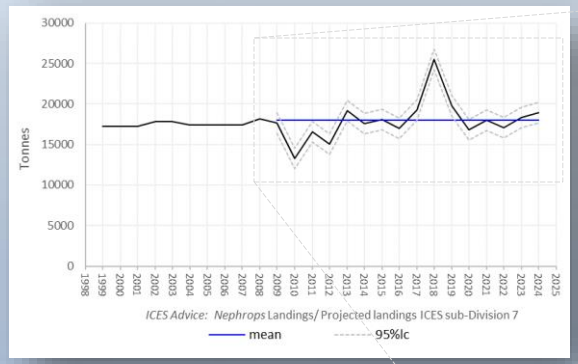


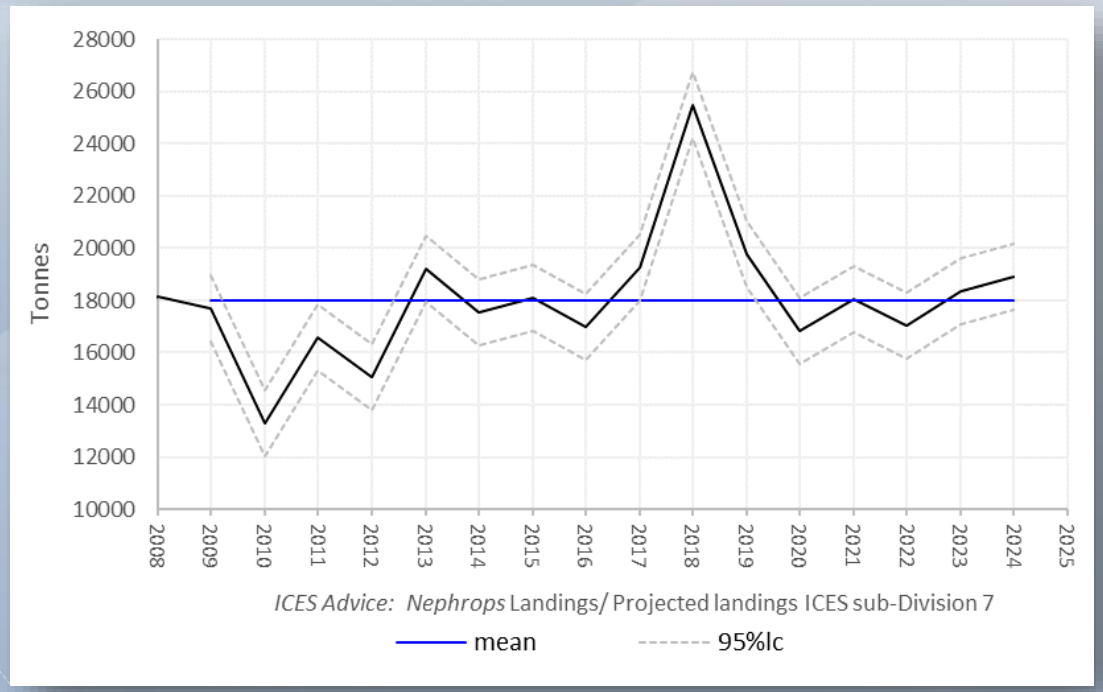


Nephrops Subarea 7 Advice

	Stock Status		Advice for 2024					Advice for 2023		% Change in advice	
Functional Unit	F< Fmsy	SSB>Btrig	Total catches	Projected landings	Harvest rate %	Discard Rate in Weight	% Div 7 composition	Total catches	Landings	Total catches	Landings
FU14	✓	✗	222	210	6.0%	5.4%	1.1%	789	735	-71.9%	-71.4%
FU15	✓	✓	12,008	10,045	18.2%	16.3%	53.1%	11,069	9,271	8.5%	8.3%
FU16	✗	?	4,560	4,560	6.2%	0.0%	24.1%	3,787	3,787	20.4%	20.4%
FU17	✗	✗	454	375	5.9%	17.4%	2.0%	363	312	25.1%	20.2%
FU19	✓	✗	248	170	4.8%	31.5%	0.9%	338	230	-26.6%	-26.1%
FU20_21	✓	✓	1,865	1,728	6.0%	7.3%	9.1%	1,803	1,620	3.4%	6.7%
FU22	✓	✗	1,912	1,695	10.0%	11.3%	9.0%	2,548	2,248	-25.0%	-24.6%
Other Rectangles	?	?	na	120	na	0.0%	0.6%	na	150	na	-20.0%
Total advice			21389*	18,903	–	11.6%		20847*	18,353	2.60%	3.00%

*Including landings advice for other rectangles





FU14 - Irish Sea, East

Stock development over time

Fishing pressure on the stock is below F_{MSY}, and stock size is below MSY $B_{trigger}$.

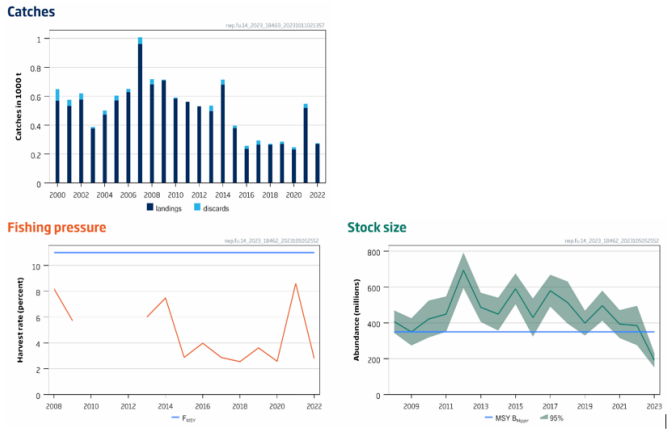


Figure 1 Norway lobster in Division 7.a, Functional Unit 14. Summary of the stock assessment. Catches, harvest rate (sum of landings and dead discards in numbers, divided by stock abundance), and stock abundance (underwater TV survey). No reliable harvest rate estimates exist for the period 2010–2012 because of insufficient catch sampling.

FU15 - Irish Sea, West

Stock development over time

Fishing pressure on the stock is below F_{MSY}, and stock size is above MSY $B_{trigger}$.

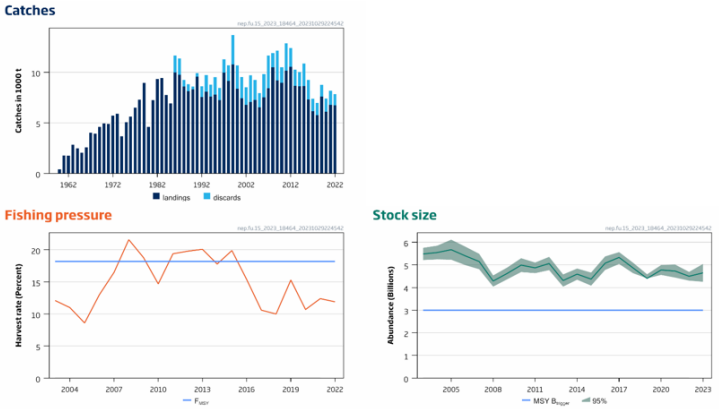


Figure 1 Norway lobster in Division 7.a, Functional Unit 15. Summary of the stock assessment. Catches (discard data are only available since 1986), harvest rate (sum of landings and dead discards in numbers, divided by stock abundance), and stock abundance (underwater TV survey). Harvest rates between 2003 and 2006 may be underestimated because of under-reporting of landings.

FU22 - Smalls

Stock development over time

Fishing pressure on the stock is below F_{MSY}, and stock size is below MSY $B_{trigger}$.

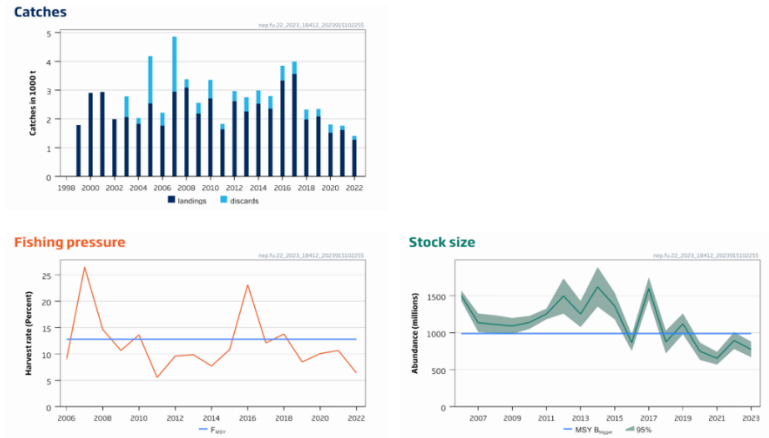
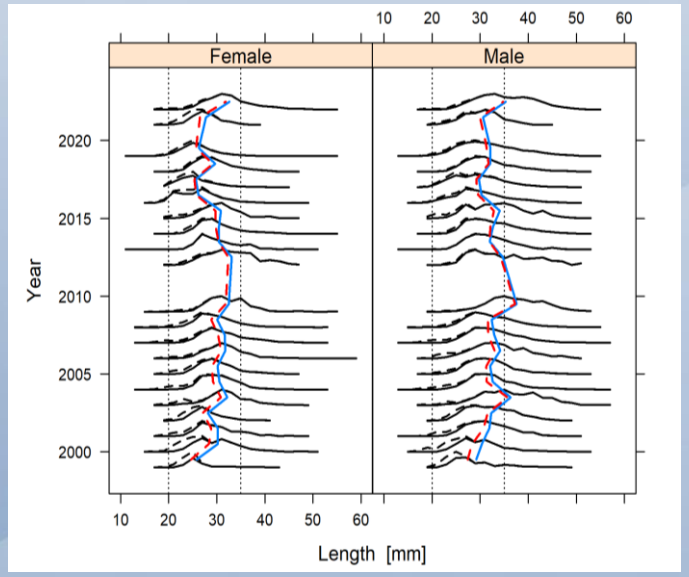
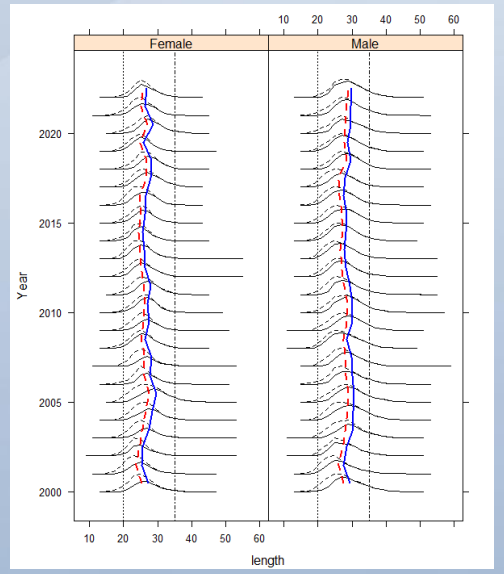
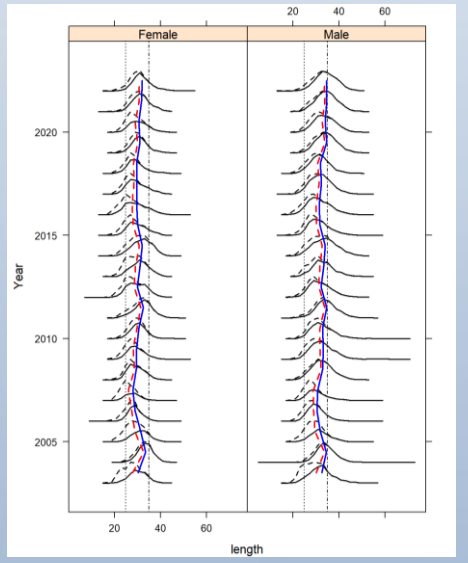


Figure 1 Norway lobster in divisions 7.g and 7.f, Functional Unit 22. Summary of the stock assessment. Catches (discard data only available from 2003), harvest rate (sum of landings and dead discards in numbers, divided by stock abundance), and stock abundance (underwater TV survey).







Length–frequency distributions - mean length of catches (red, dashed) and landings (blue, solid)

FU17 - Aran, Galway Bay, Slyn head

Stock development over time

Fishing pressure on the stock is above F_{MSY}, and stock size is below MSY $B_{trigger}$.

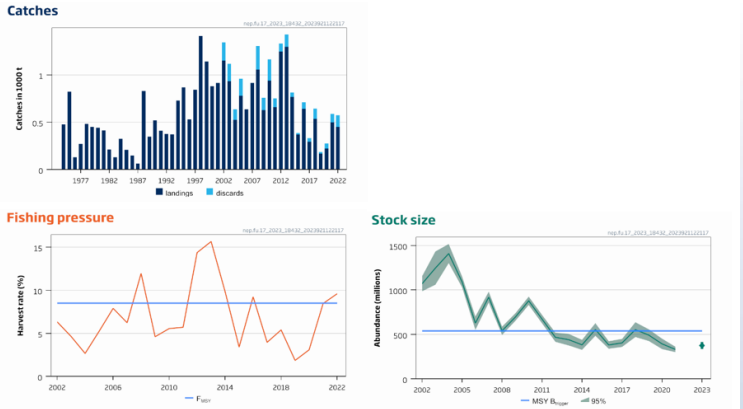
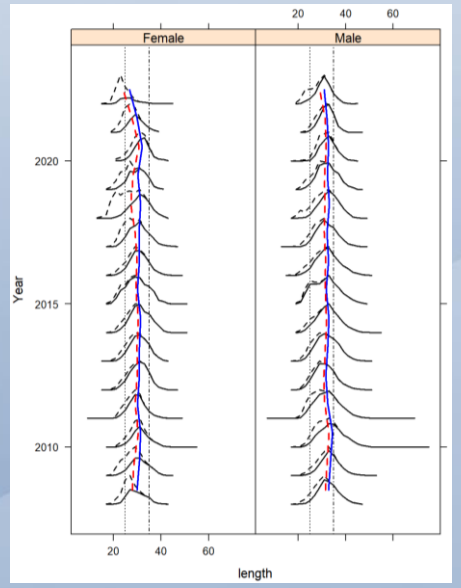


Figure 1 Norway lobster in Division 7.b, Functional Unit 17. Summary of the stock assessment. Catches (discard data are only available since 2002), harvest rate (sum of landings and dead discards in numbers, divided by stock abundance), and stock abundance (underwater TV survey). The harvest rate in 2022 was calculated using an interpolated value for abundance, as no survey data are available.



FU 19 - SW and SE Coast

Stock development over time

Fishing pressure on the stock is below F_{MSY}, and stock size is below MSY $B_{trigger}$.

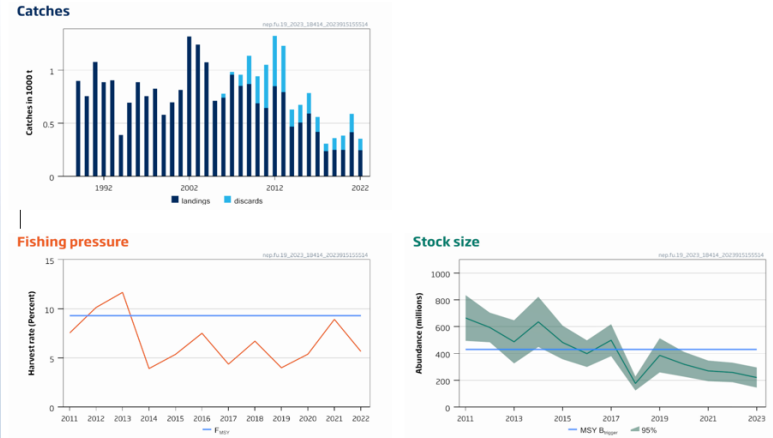
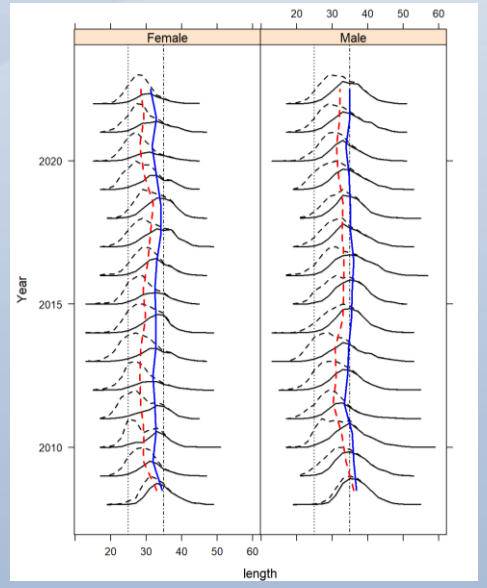


Figure 1 Norway lobster in divisions 7.a, 7.g, and 7.j, Functional Unit 19. Summary of the stock assessment. Catches (discards are only available from 2006 onwards), harvest rate (sum of landings and dead discards in numbers divided by stock abundance), and stock abundance (underwater TV survey).

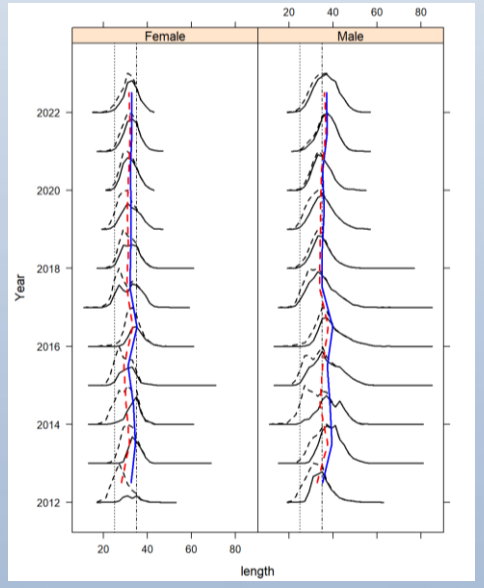


FU 20-21 - Labadie, Jones, Cockburn

Stock development over time

Fishing pressure on the stock is below F_{MSY}, and stock size is above MSY $B_{trigger}$.

Figure 1 Norway lobster in divisions 7.g and 7.h, functional units 20–21. Summary of the stock assessment. Catches (discard data only available from 2012), harvest rate (sum of landings and dead discards in numbers divided by stock abundance), and stock abundance (underwater TV survey).



Length–frequency distributions - mean length of catches (red, dashed) and landings (blue, solid)

FU16 - Porcupine

Stock development over time

Fishing pressure on the stock is above F_{MSY}, and no reference points for stock size have been defined for this stock.

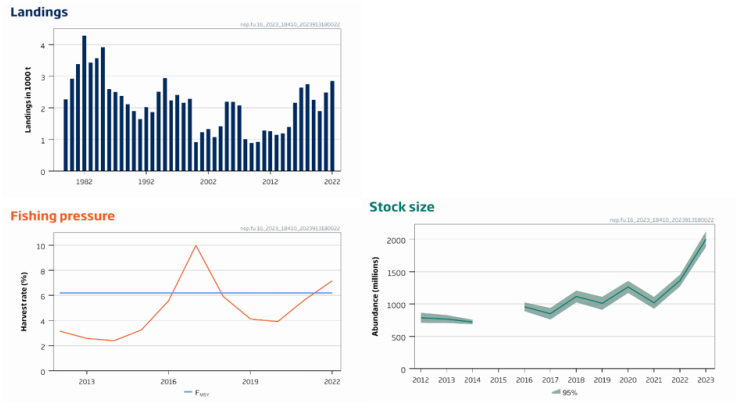
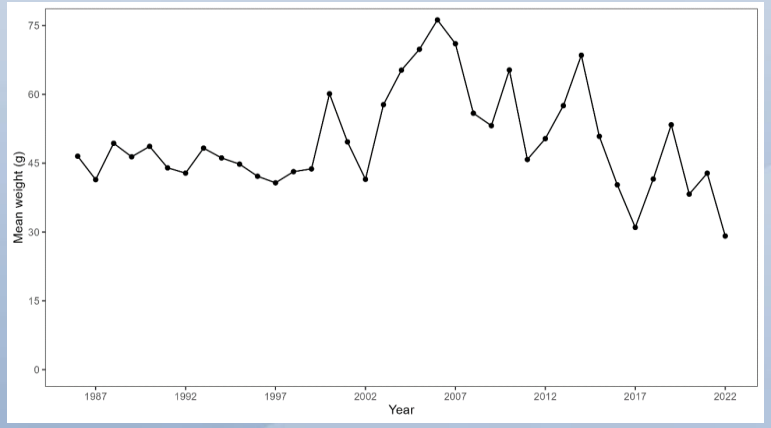


Figure 1 Norway lobster in divisions 7.b–c and 7.j–k, Functional Unit 16. Summary of the stock assessment. Landings (between 1979–2015 discarding is considered negligible; from 2016 onwards, discards are not quantified), harvest rate (sum of landings in numbers, divided by stock abundance), and stock abundance (underwater TV survey). The harvest rate in 2015 was calculated using an interpolated value for abundance, as no survey data are available. Harvest rates since 2016 may be underestimated because of the unknown discard levels.



Mean weight (g) estimations

FU16 Enhanced “Summer” sampling

Number of **Vessel** providing samples:

Year	2019	2020	2021	2022	2023
Q1	0	1	3	4	2
Q2	3	0	3	0	5
Q3	**0**	**0**	**0**	**0**	**12**
Q4	1	4	5	3	3

Sum **samples** in **2023** by Q:

Q	Catch	Discards	Landings
1	4	3	NA
2	20	11	1
3	**32**	**15**	**5**
4	19	10	2