

NWWAC - Focus group rays

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Data issues

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16 November 2016

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Stock assessments and advices in NWWAC area

ICES 2016 : sixteen skates and rays stocks assessed

- Quantitative estimates of the stock biomass or fishing mortality: **none**
- Advice based on survey trends: **7** stocks
- Advice based on landings only: **6** stocks
- Advice for stock with negligible landings: **3** stocks

Data requirements

availability for skates and rays

Catch
(landings+discards)

**Length / age
composition**

**Indices
abundance/biomass**

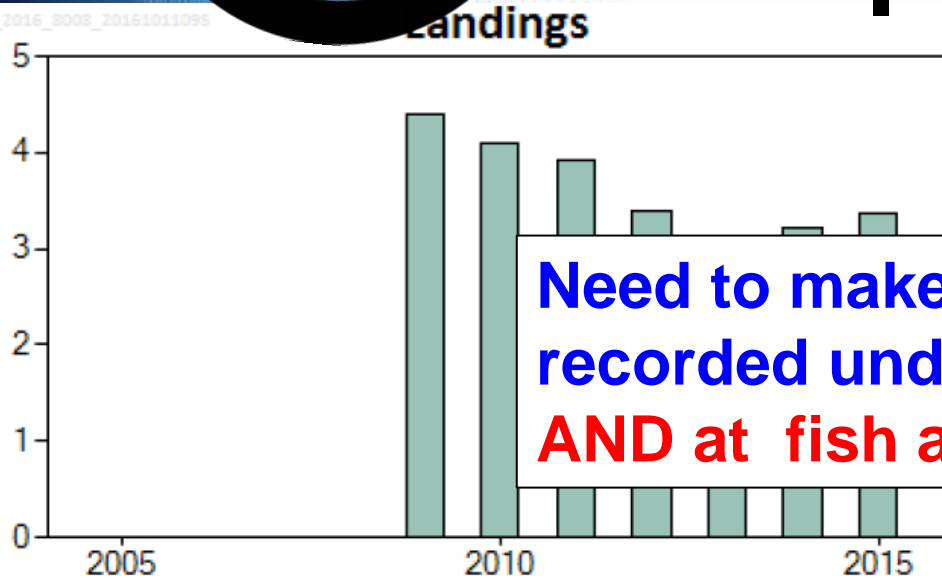
Data requirements availability for skates and rays



Catch
Landings (Logbooks cards)

Currently : landings only

- revised in 2016
- not species-specific before 2009
- quality of landings data improving



**Need to make sure that species are
recorded under the right code in logbooks
AND at fish auction market**

Data requirements availability for skates and rays



Discards : not used

Issues

raising observed discards to total discards for bycatch species

- discards do not imply dead catch, rate of survival unknown

- **plan for discards in 2017 : WKSHARKS3 workshop**
- **methods for raising discards data**
- **thornback, blonde and cuckoo rays**
- **discard rate by gear (beam and otter trawls, fixed net and longlines)**

Data requirements availability for skates and rays

**Length / ~~age~~
composition**

Length distribution of the catch

- **historically not sampled**
- **data collected in the last 5-6 years**
- **not currently used for assessment**

Age distribution

- **age estimation have been done to estimate the growth**
- **yearly age composition of the catch unrealistic**

Data requirements availability for skates and rays

**Indices
abundance/biomass**

Wide survey coverage

**20-30 years abundance indices available for some
stock in all NWWAC area**

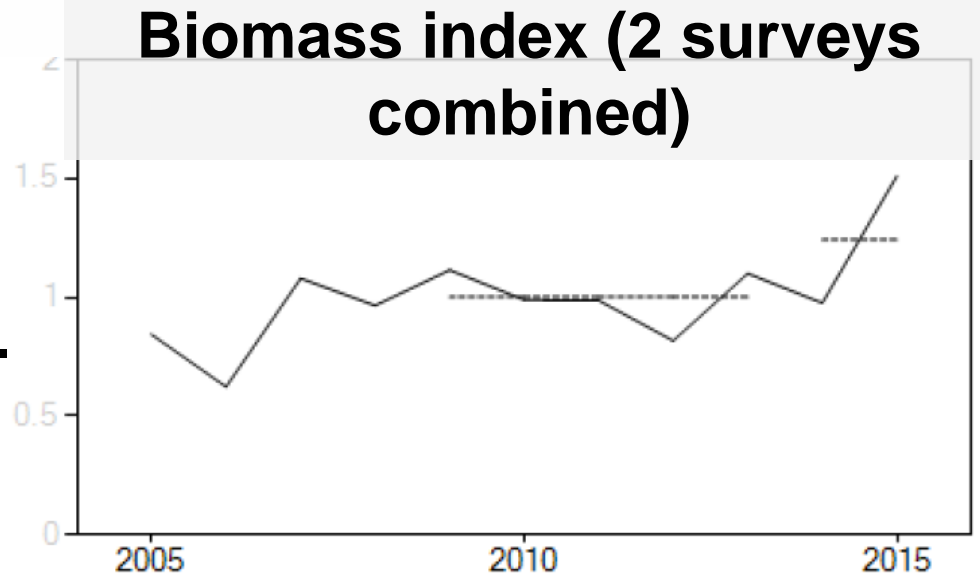
**Surveys do not provide good indices for less abundant
species**

Data requirements availability for skates and rays

**Indices
abundance/biomass**

Good example

- cuckoo ray in ICES 6, 7 and 8abd
- data from surveys (Surveys (EVHOE-WIBTS-Q4, and IGFS-WIBTS-Q4))



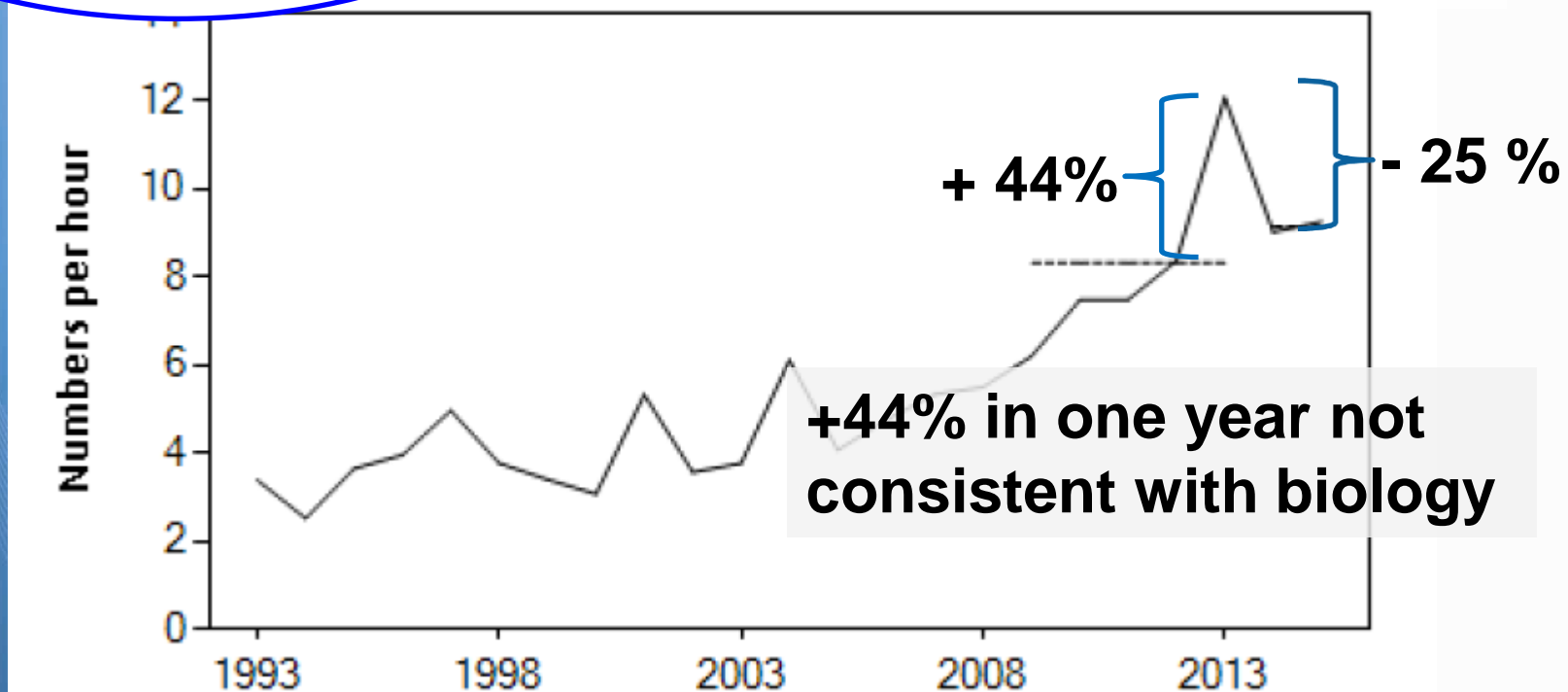
Data requirements availability for skates and rays

**Indices
abundance/biomass**

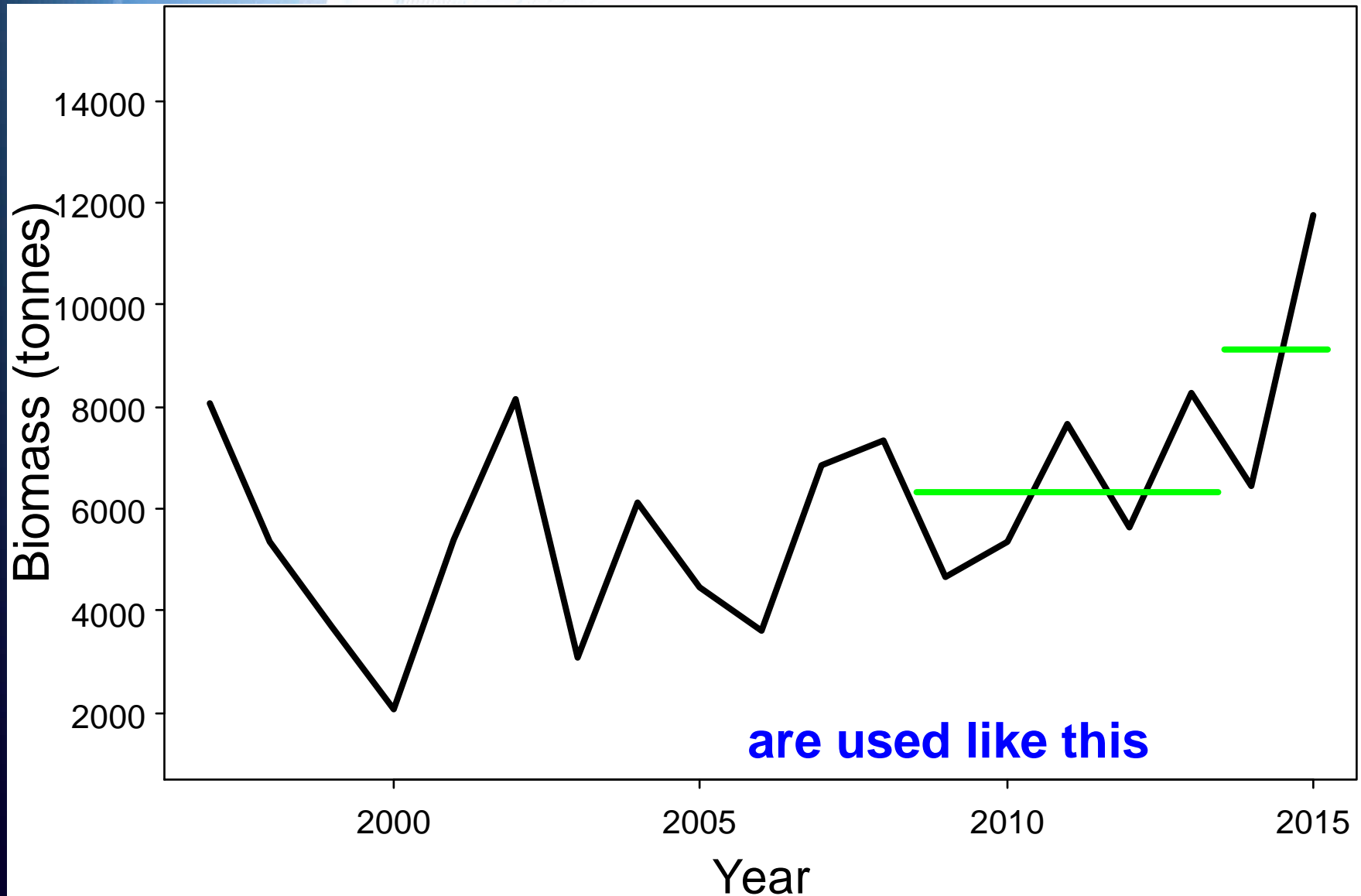
Less good example

Thornback ray in ICES 7a,fg

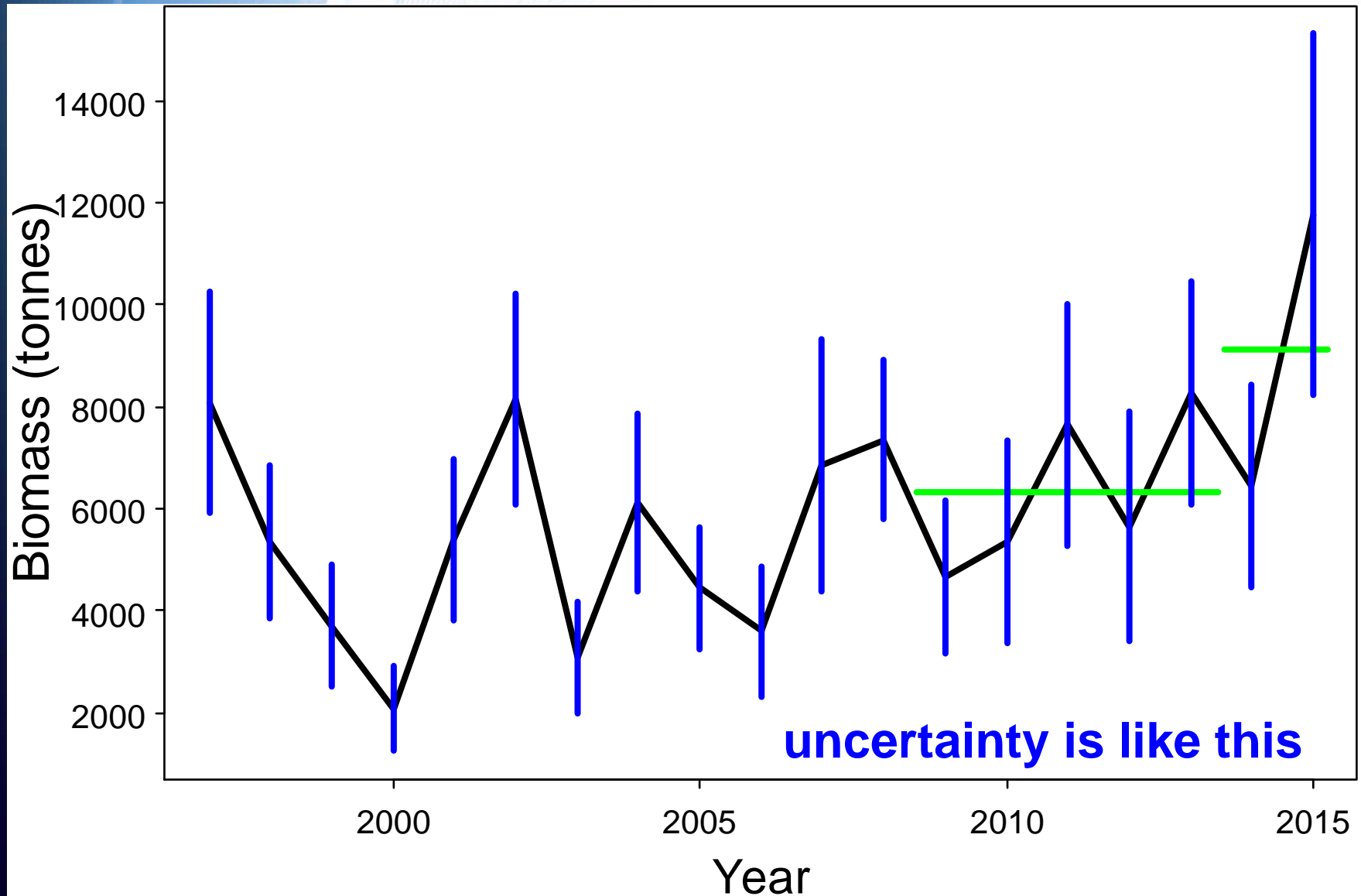
Data from one survey



Using survey indices



Using survey indices



Eastern Channel (7.d) stocks

Two stocks with survey indices:

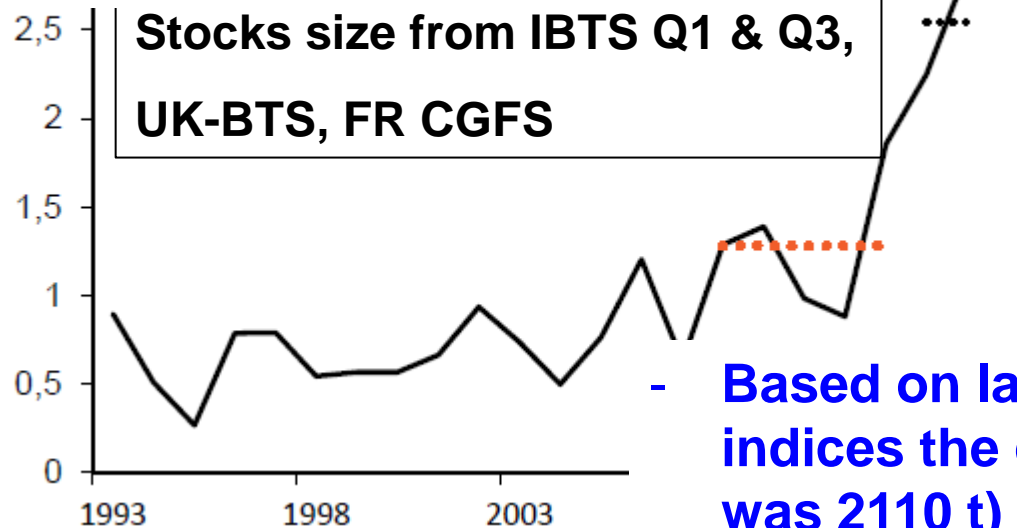
- rjc-347d (thornback ray NS, Skag., Kat. and 7.d)
- rjm-347d (spotted ray NS, Skag., Kat. and 7.d)

One stocks small catch:

- Blonde ray (rjh-4c7d) treated as southern NS and E. channel combined

eastern Channel: rjc-347d

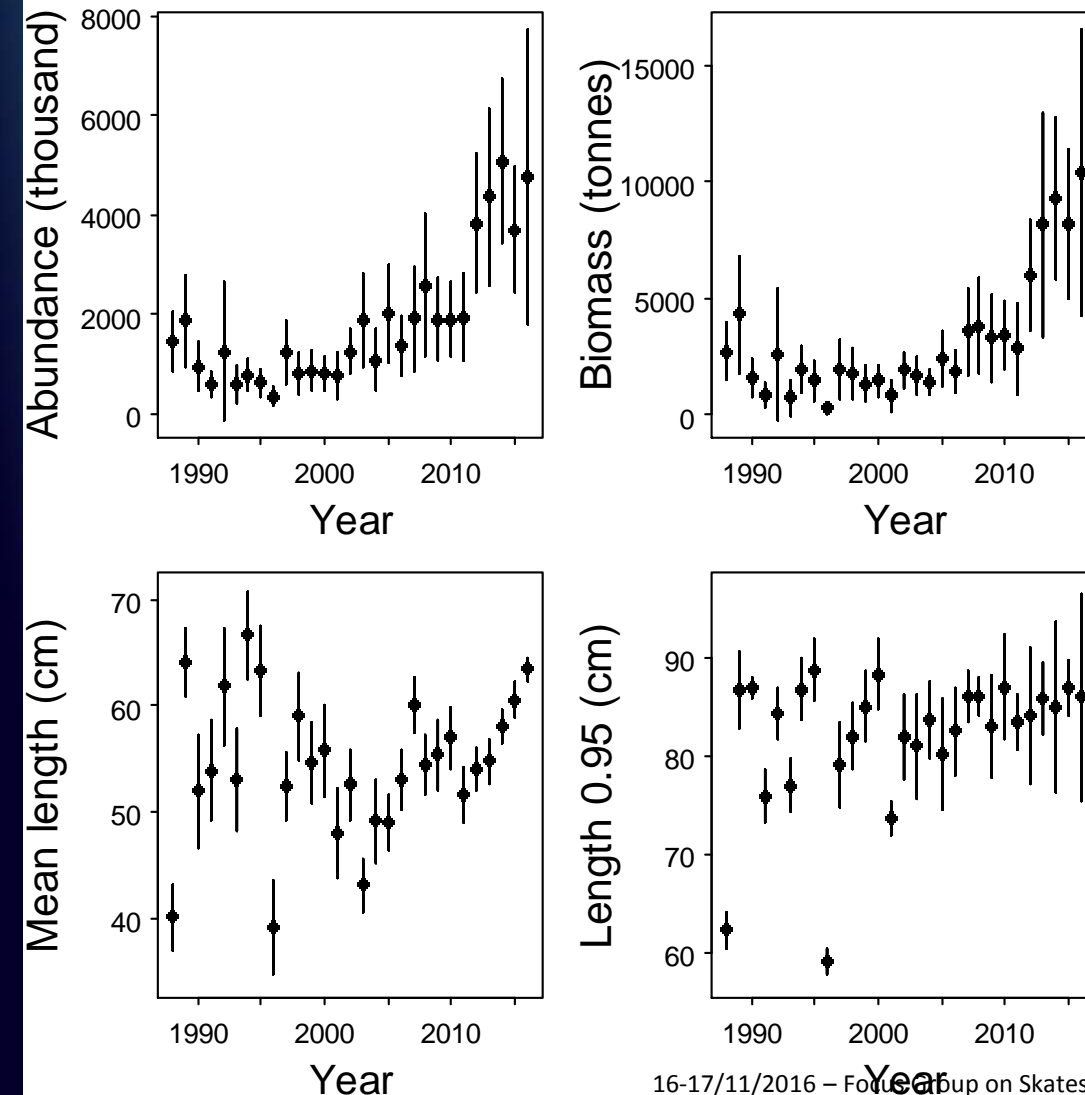
Catch advice 2016-2017



- Based on landings in 2012-14 and survey indices the catch advice from 2016-17 was 2110 t)
- revised catch (WGEF 2016) for 2016-17 are slightly increased
- the 2016 TAC (rajidae) in 7.d is 878 t

eastern Channel: rjc-347d

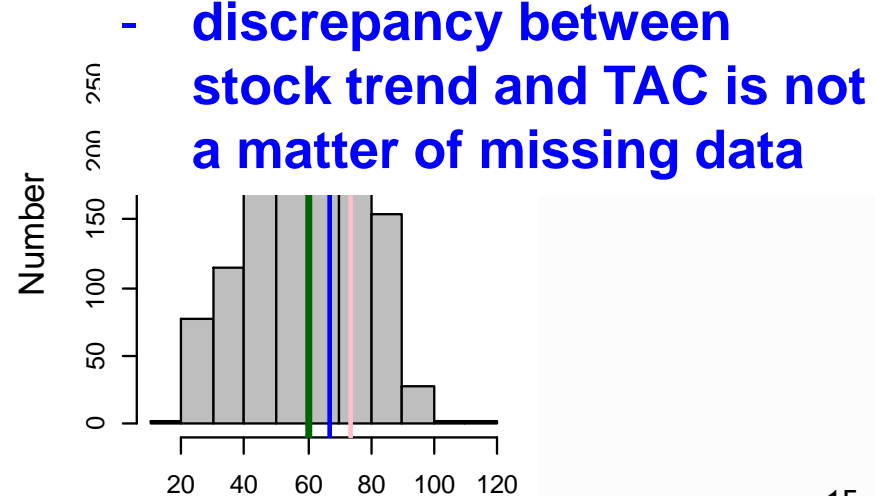
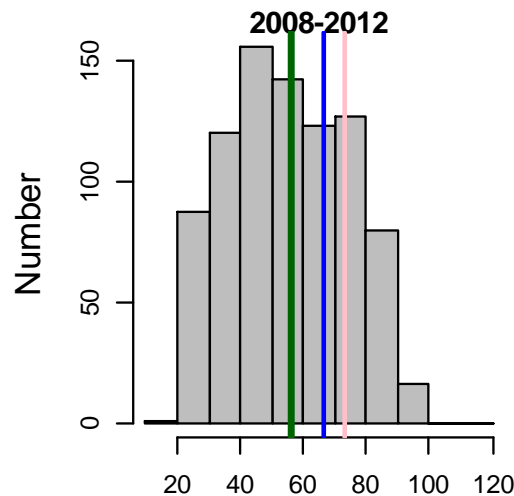
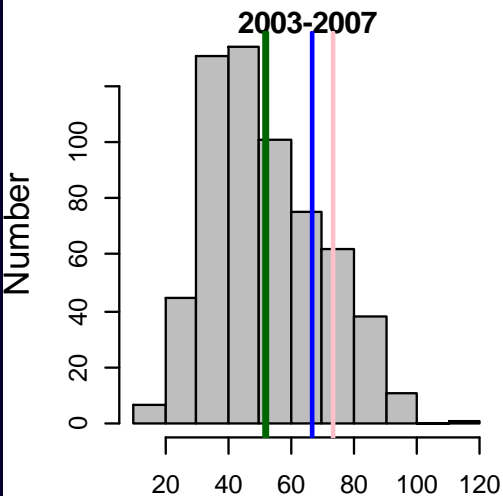
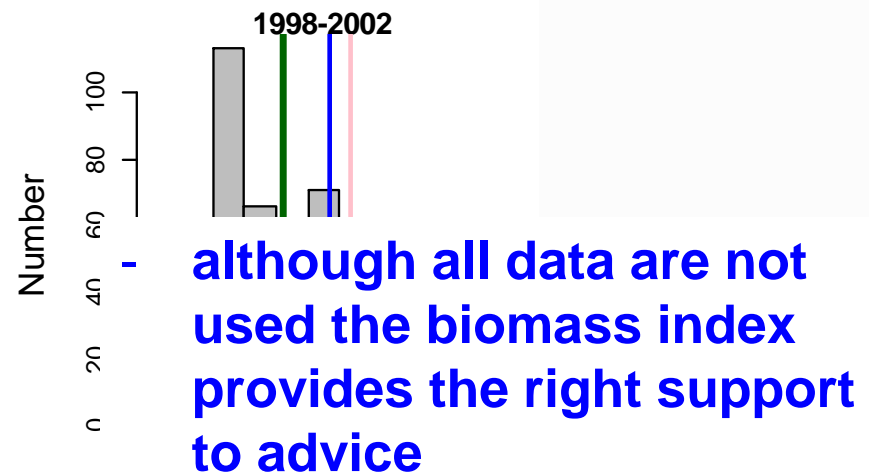
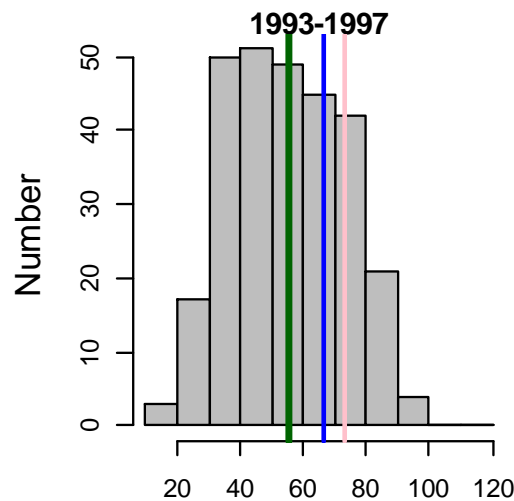
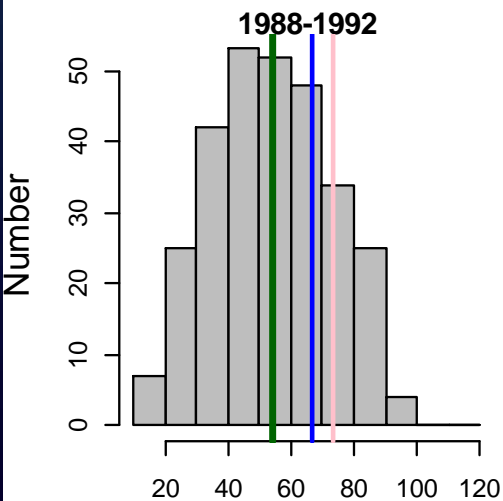
unused data 1. Other indices



- all convey the same message : healthy stock

Eastern Channel: rjc-347d

Unused data 2. length distribution in survey



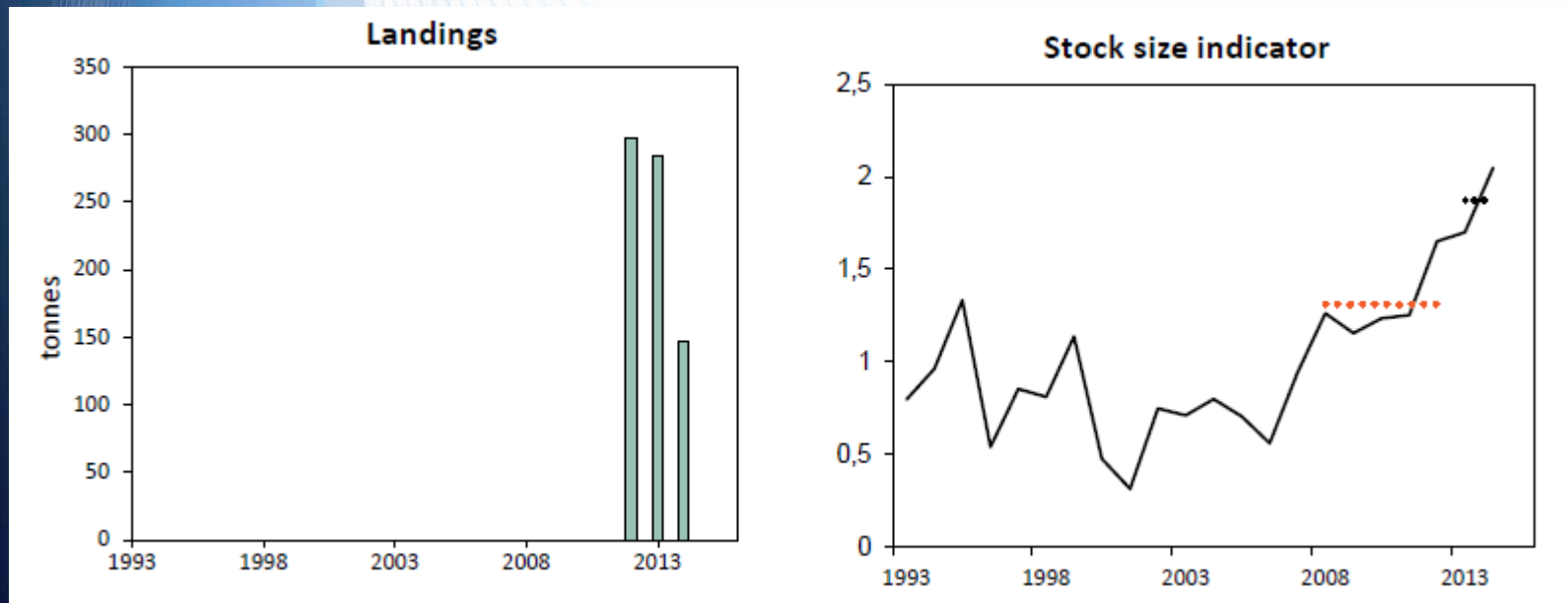
Eastern Channel - smaller stocks

1. Spotted ray in NS and Channel - rjm- 347d

Time-series of landings short

Survey 3 indices from the North Sea (IBTS and BTS)

Numbers in survey in the eastern Channel : low and stable (2-15/year). Survey indicators not reliable.

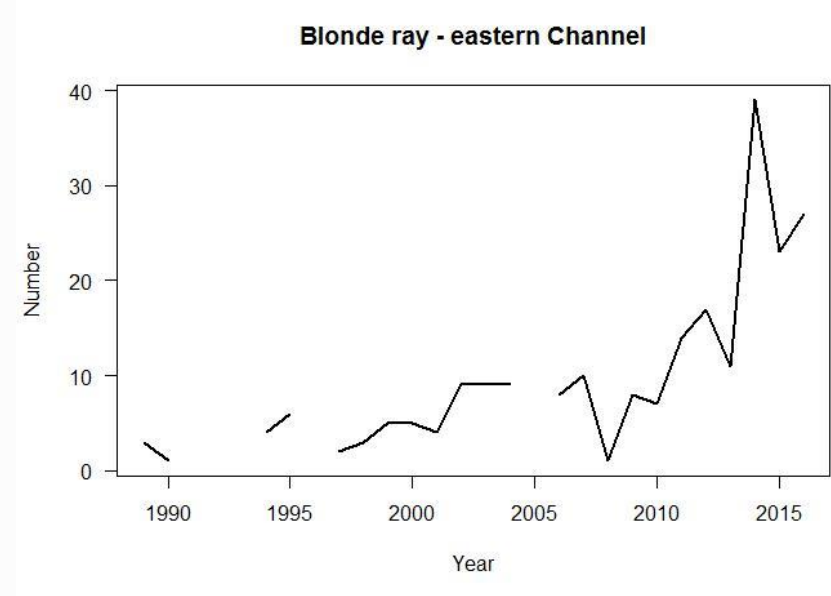
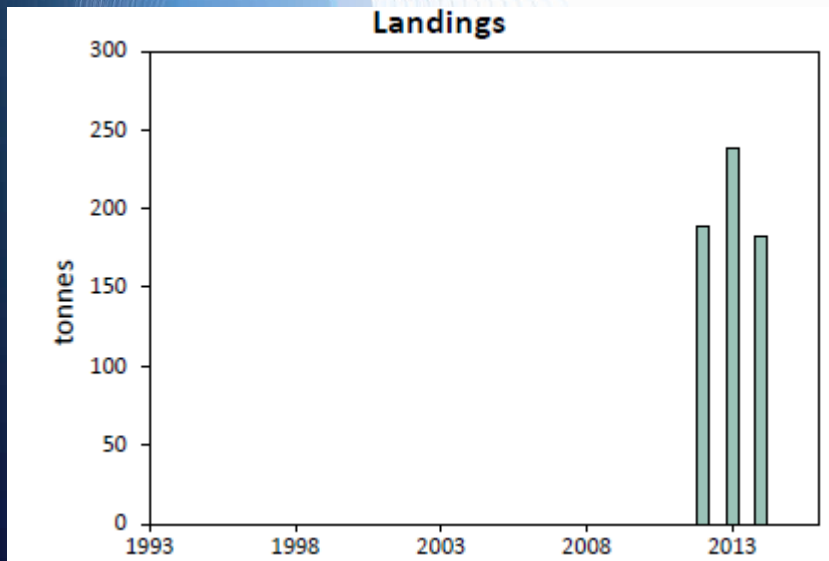


Eastern Channel - smaller stocks

1. Blonde ray in southern NS and Channel - rjh-4c7d

Currently: landings only advice

Option for improvement: number in survey low but increasing



Western Channel (7.d) stocks

Five stocks:

- rjc-echw (thornback 7.e)
- rje-ech (small-eyed 7.e.d)
- rjh-7e (blonde 7.e)
- rjm-7aeh (spotted 7.a.e.f.g.h)
- rju-ech (undulate 7.d.e)

1/5: survey; 3/5: landings only; 1/5 negligible landings

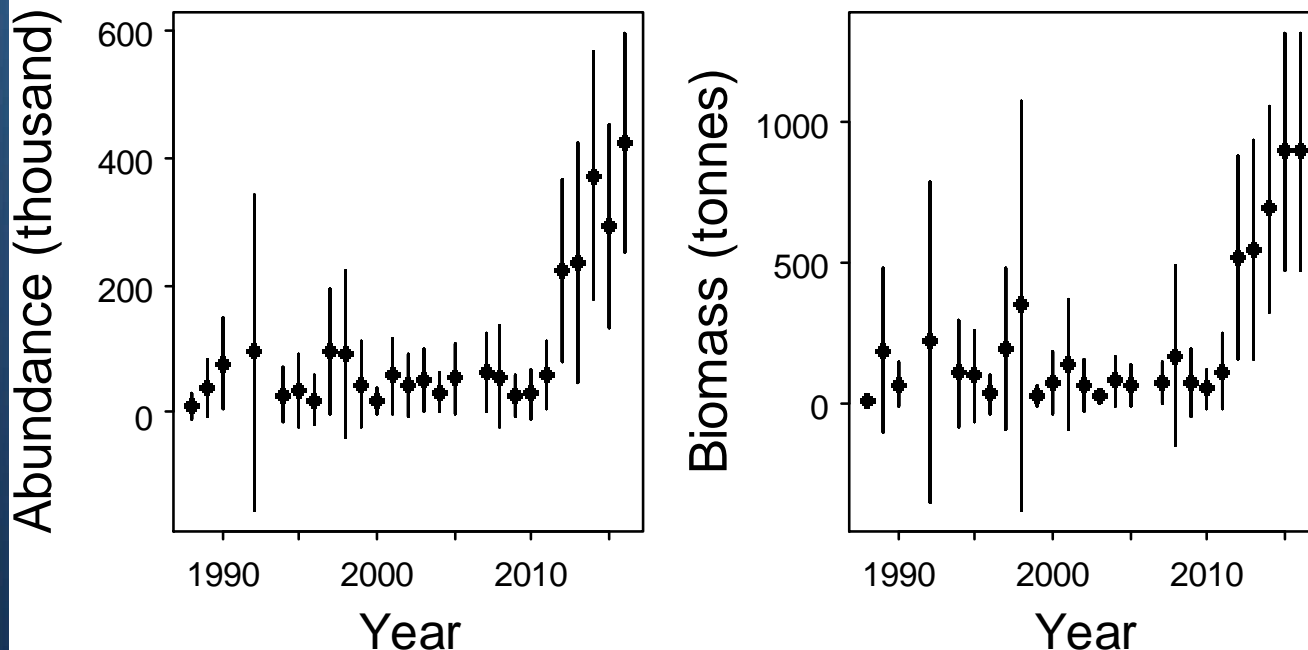
Three species considered for Celtic seas (rjb, rjf, rji)

Other species occurring in 7.e treated as raj-celt

Western Channel (7.d) stocks

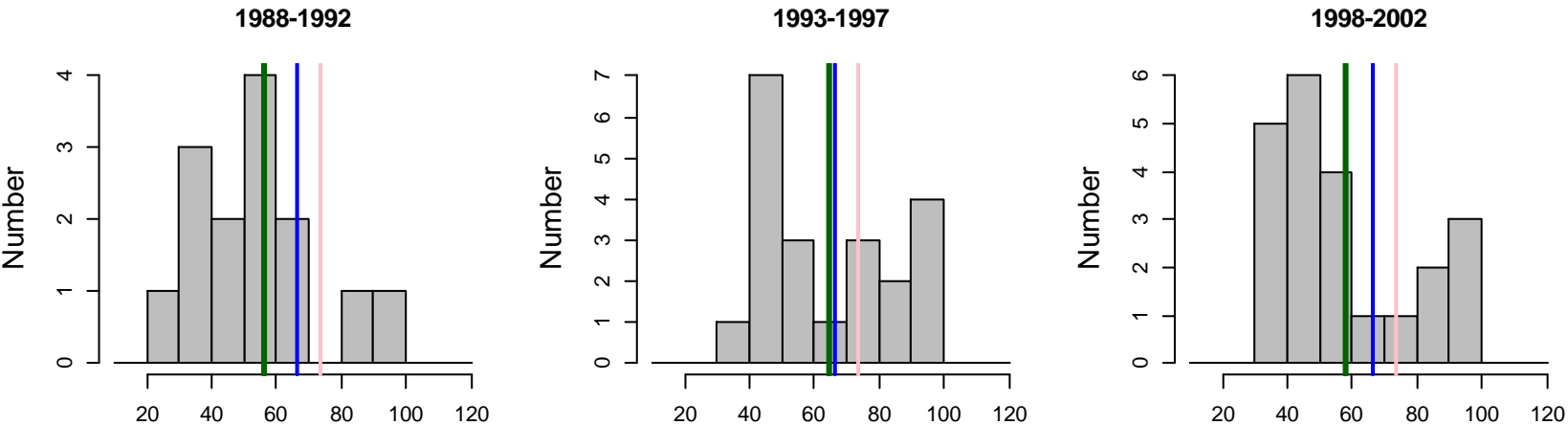
Stock with survey index: rju-ech

Covers 7.d and 7.e, survey in 7.d

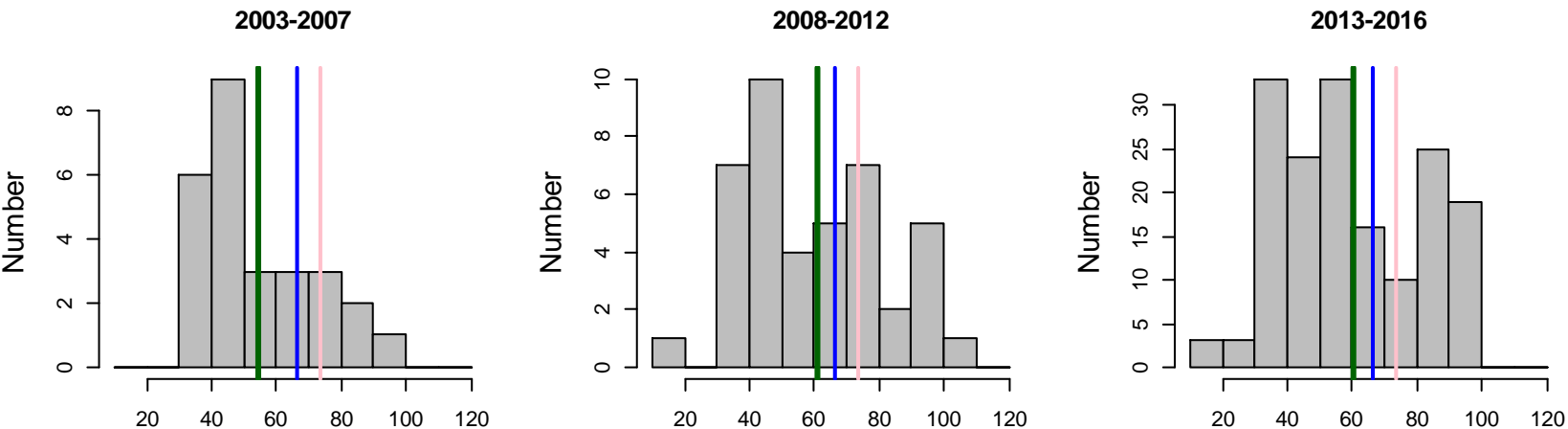


Western Channel (7.d) stocks

Stock with survey index: rju-ech



Length distribution in survey not informative



Knowledge of life history

- Essential parameters for population dynamics: M and L_{mat50} or A_{mat50}

	Assessed bony fish stock	Common ray species (RJC, RJN)	Less studied species
Natural mortality	0.2 (mostly assumed)	Probably possible to set assumption not worse than 0.2 for gadoids	?
Size at maturity	Available	Available RJC, RJU, RJN	Missing RJF, RJI

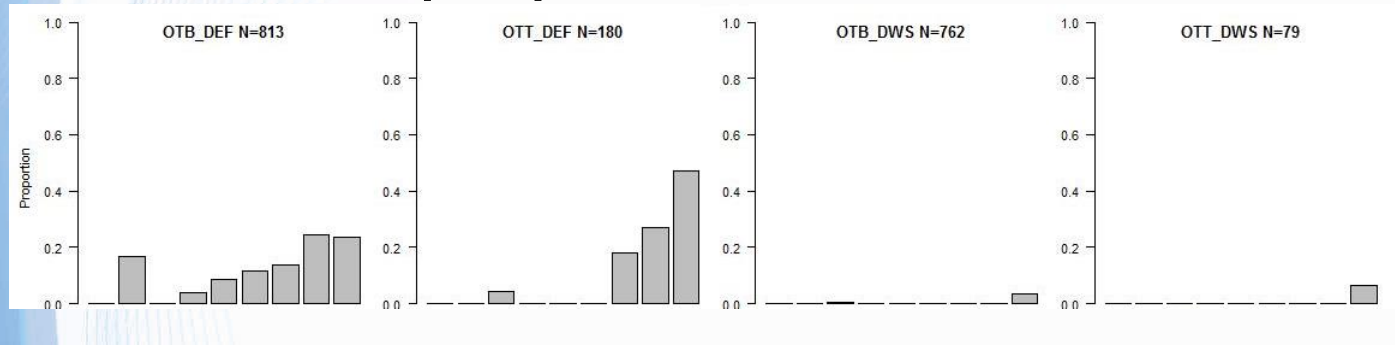
Natural mortality: good support for size-dependent M

actual data of M per size/age not available

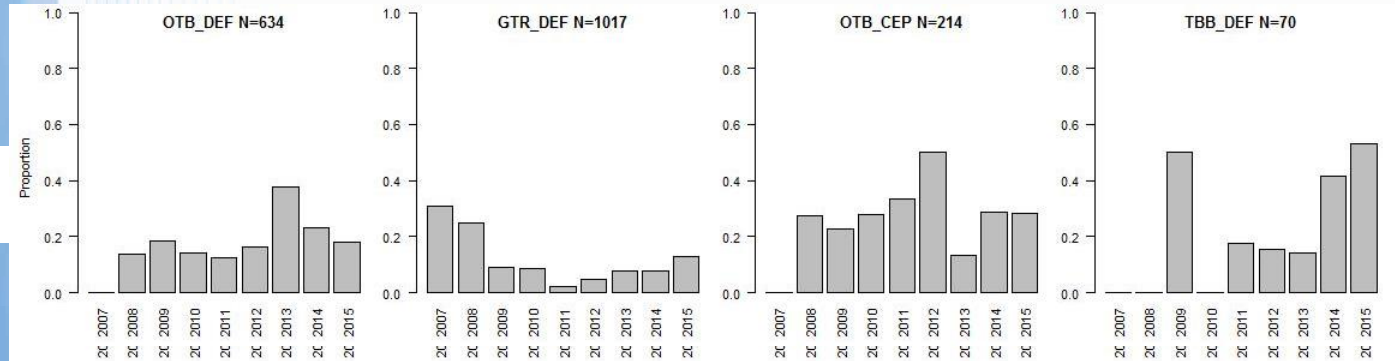
On-board observations

WGEF 2016: Indices of proportion of hauls with catch

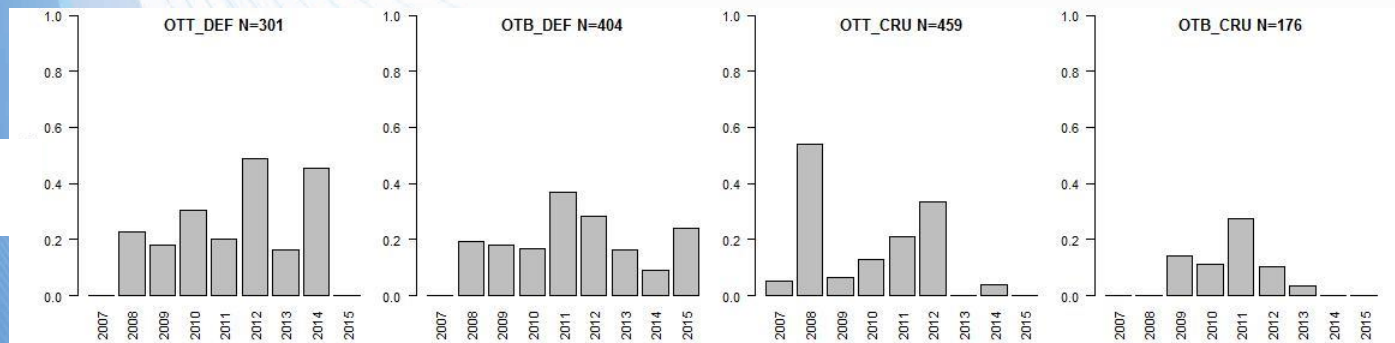
rjc-6



rjc-echw



rjc-7afg



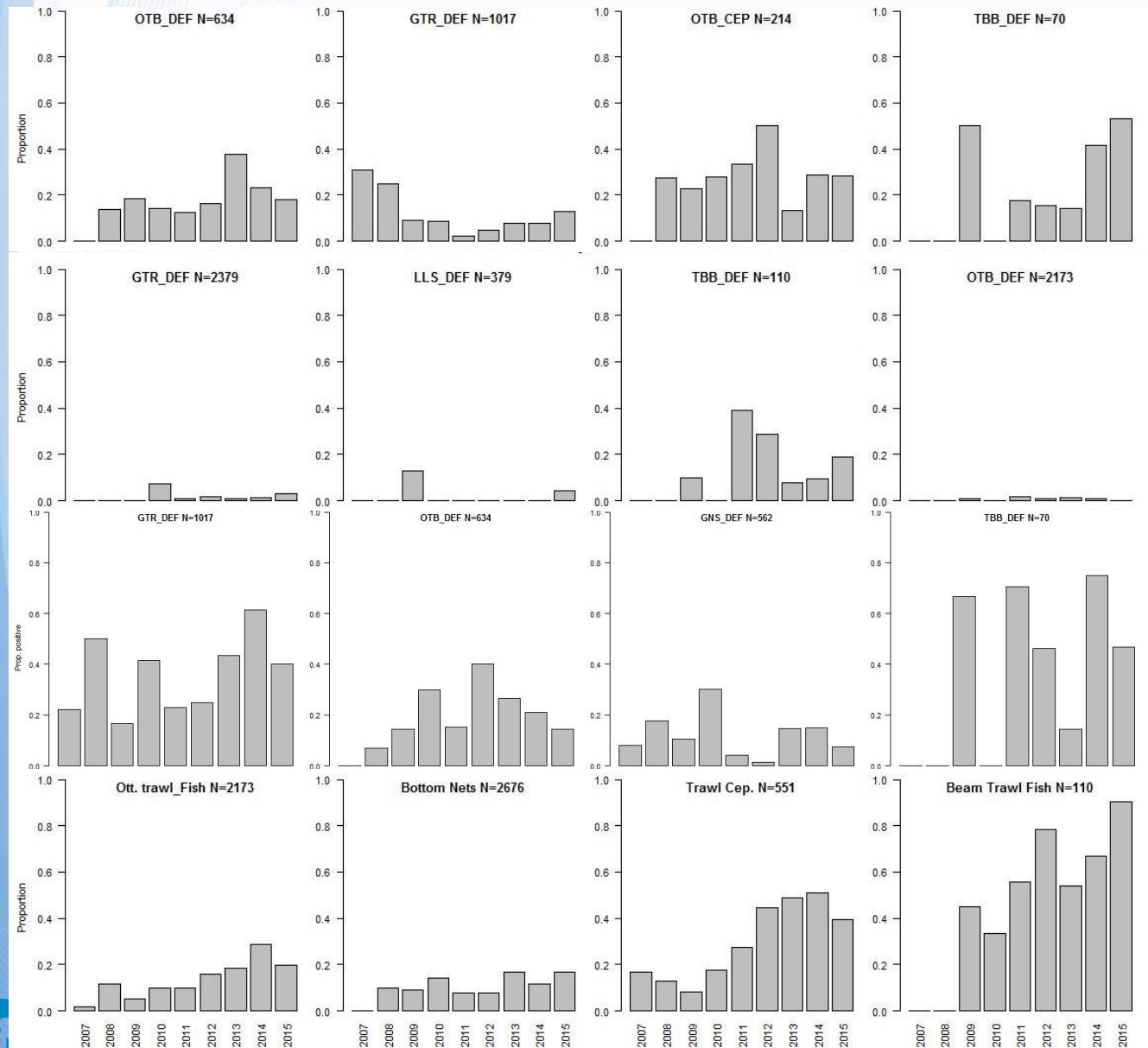
On-board observations

rjc-echw

rje-ech

rjh-7e

rju-ech



western (7.e) Channel only

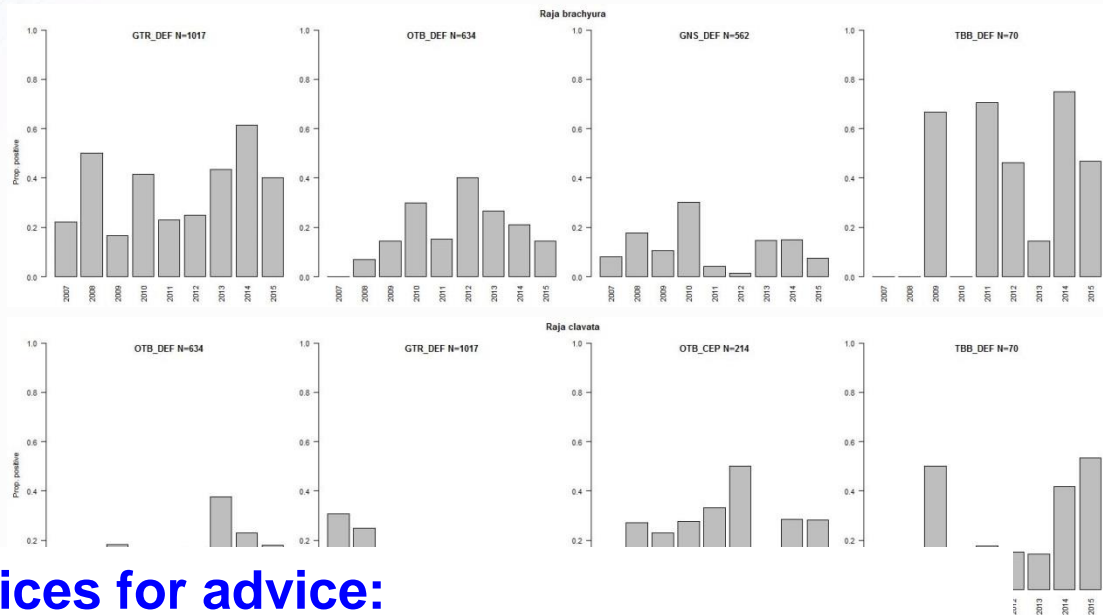
Blonde

Thornback

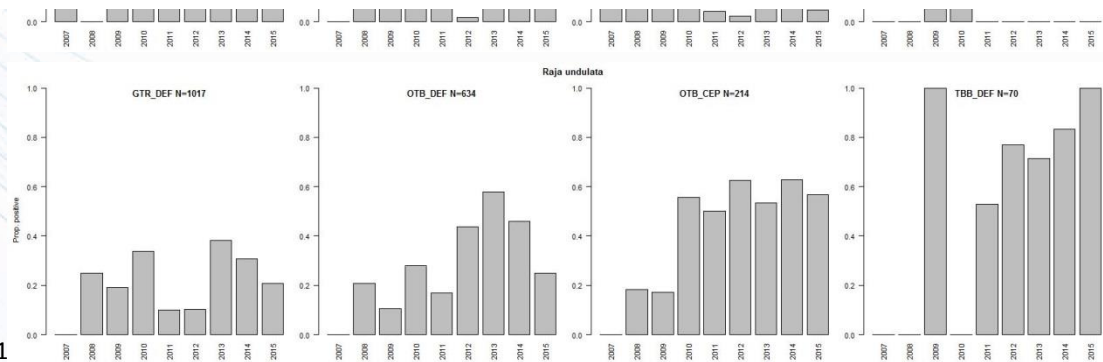
Difficult to use as indices for advice:

- not derived from a standardised sampling
- landing obligation alters fishing practices, so changes in current years ?

Undulate

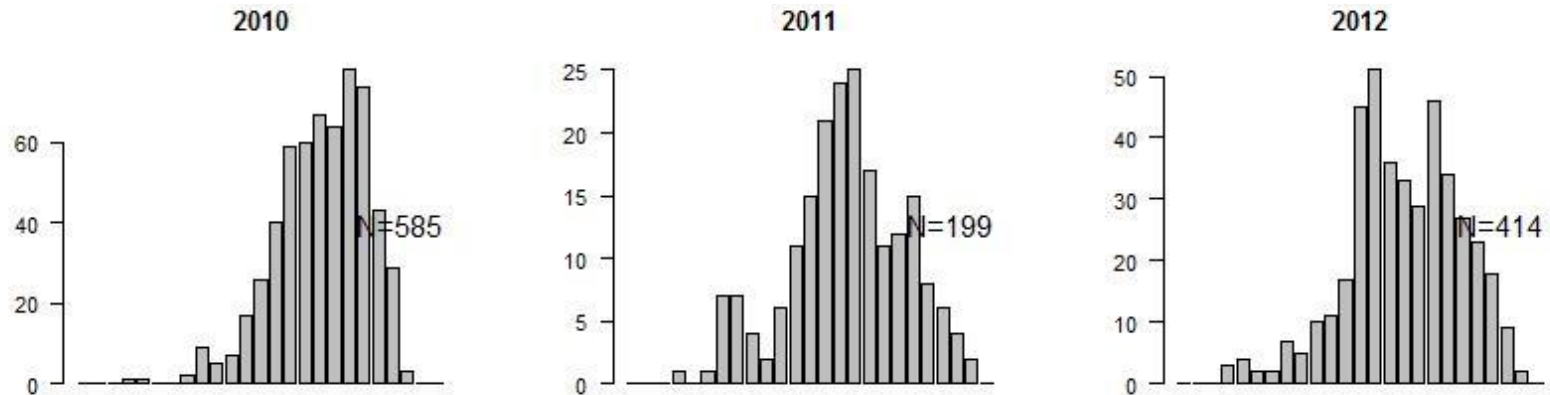


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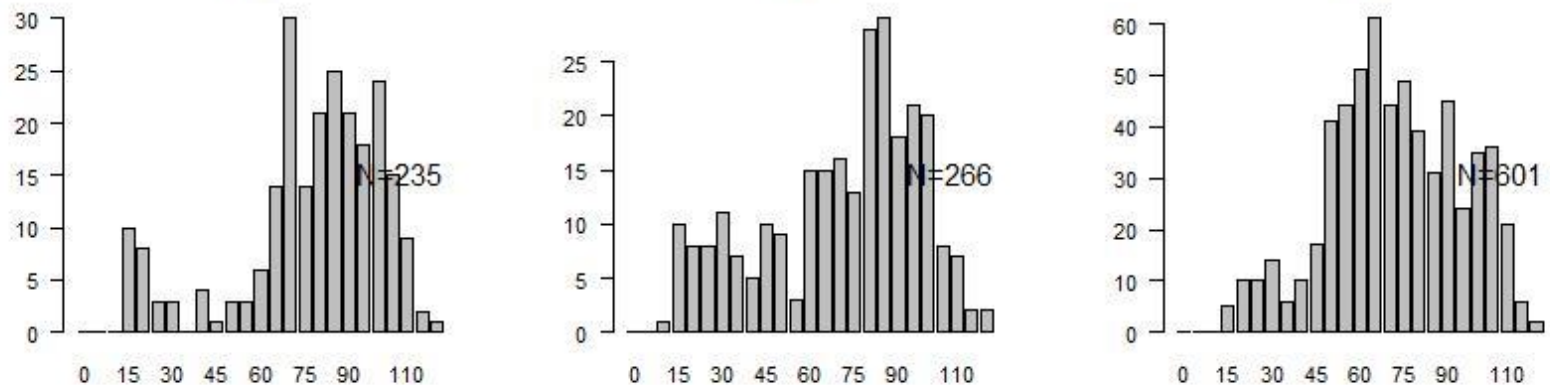


Length distribution

Raja brachyura 7.e



No raising, raw number measured in on-board observations per year



Length distribution

Number measured French on-board observations 2015

	6.a	7.d	7.e	7.g	7.h
<i>Raja brachyura</i>	1	62	601	122	68
<i>Raja clavata</i>	134	1652	410	71	2
<i>Raja microocellata</i>	0	0	44	0	0
<i>Raja montagui</i>	4	35	454	231	81
<i>Raja undulata</i>	0	275	880	0	2

Knows and unknowns :Nurseries

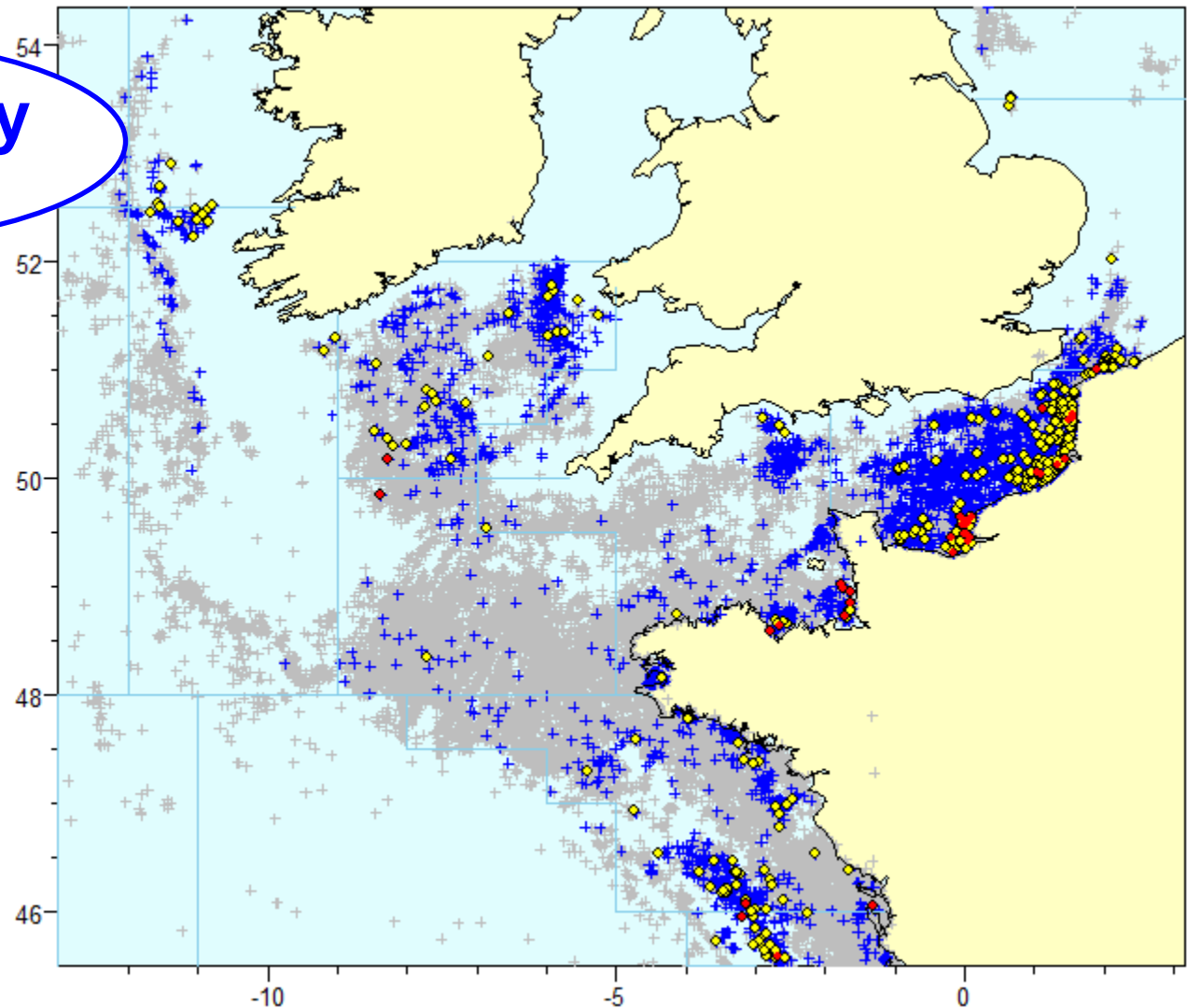
Thornback ray

Grey: all hauls

Blue: catch

yellow: <35 cm

red: < 18 cm



Knows and unknowns :Nurseries

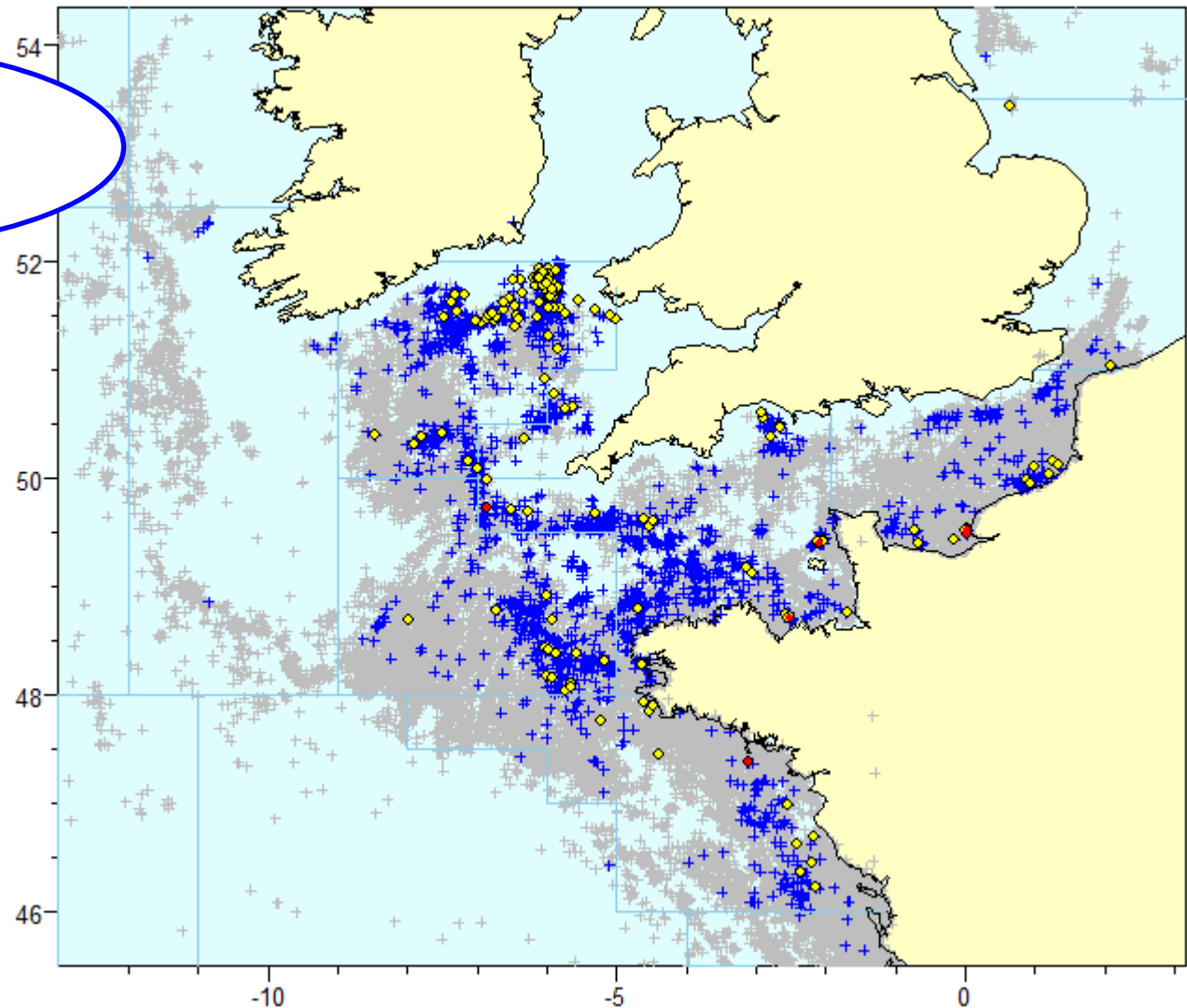
Spotted ray

Grey: all hauls

Blue: catch

yellow: <35 cm

red: < 18 cm



Knows and unknowns :Nurseries

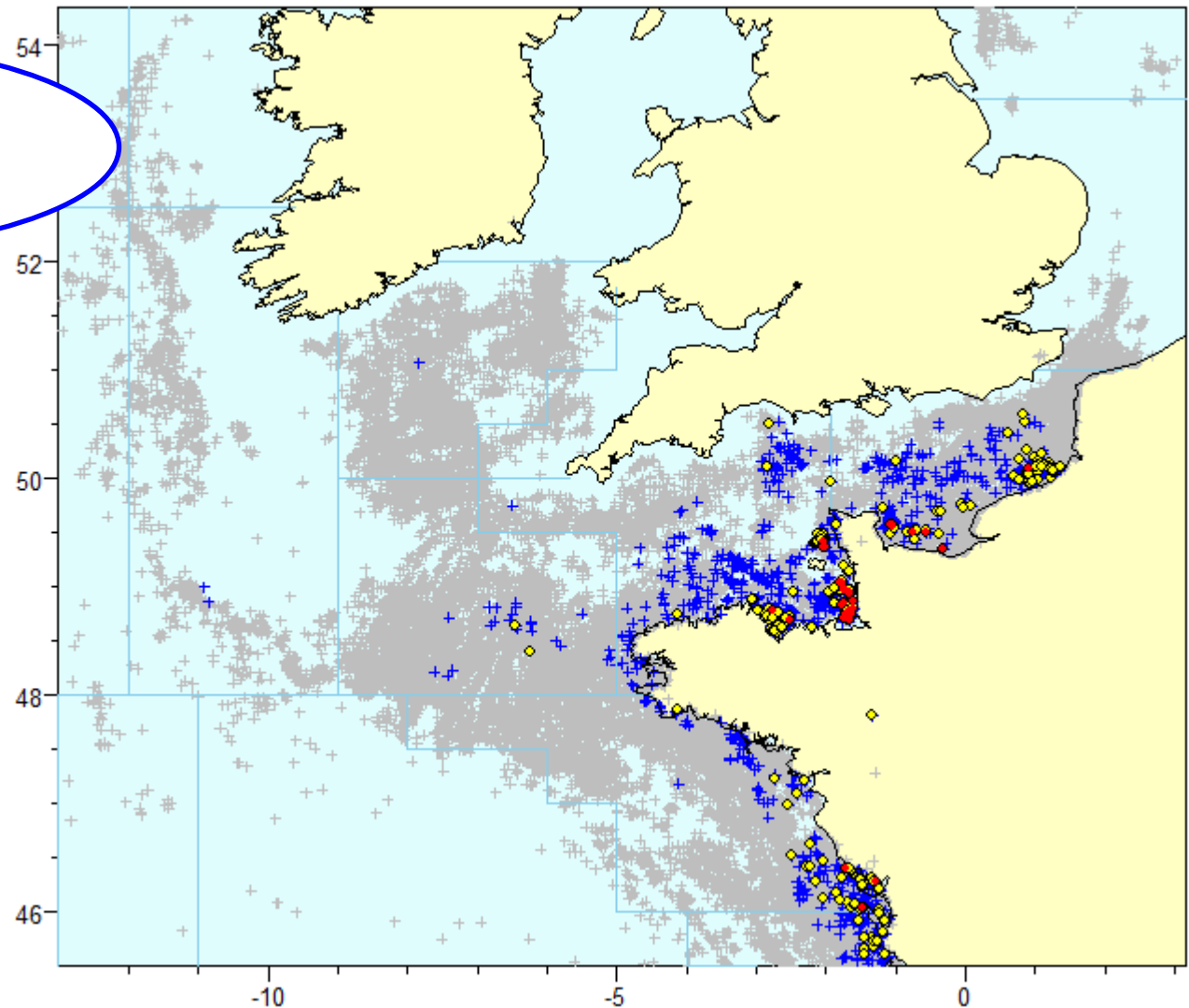
Undulate ray

Grey: all hauls

Blue: catch

yellow: <35 cm

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Knows and unknowns :Nurseries

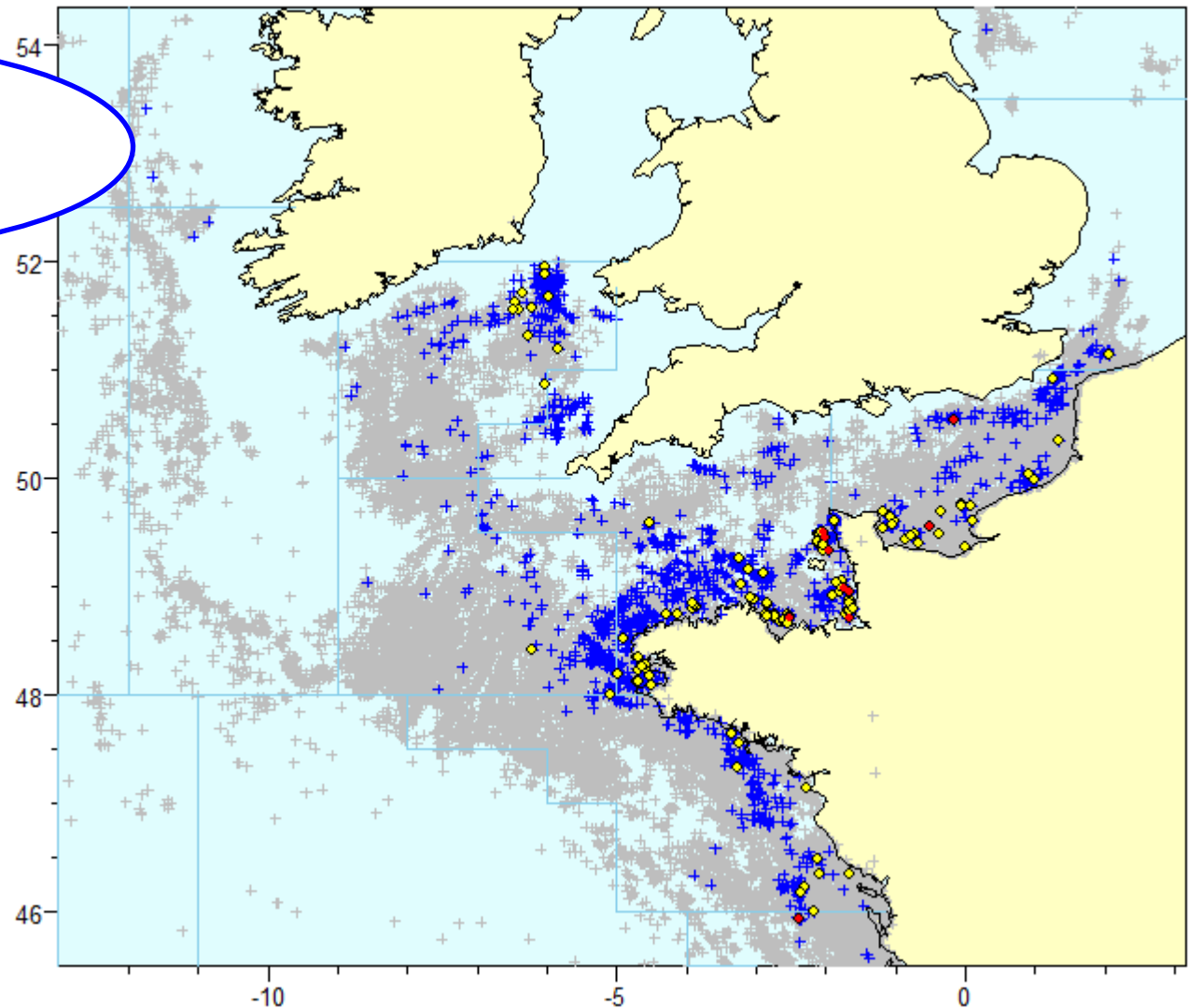
Blonde ray

Grey: all hauls

Blue: catch

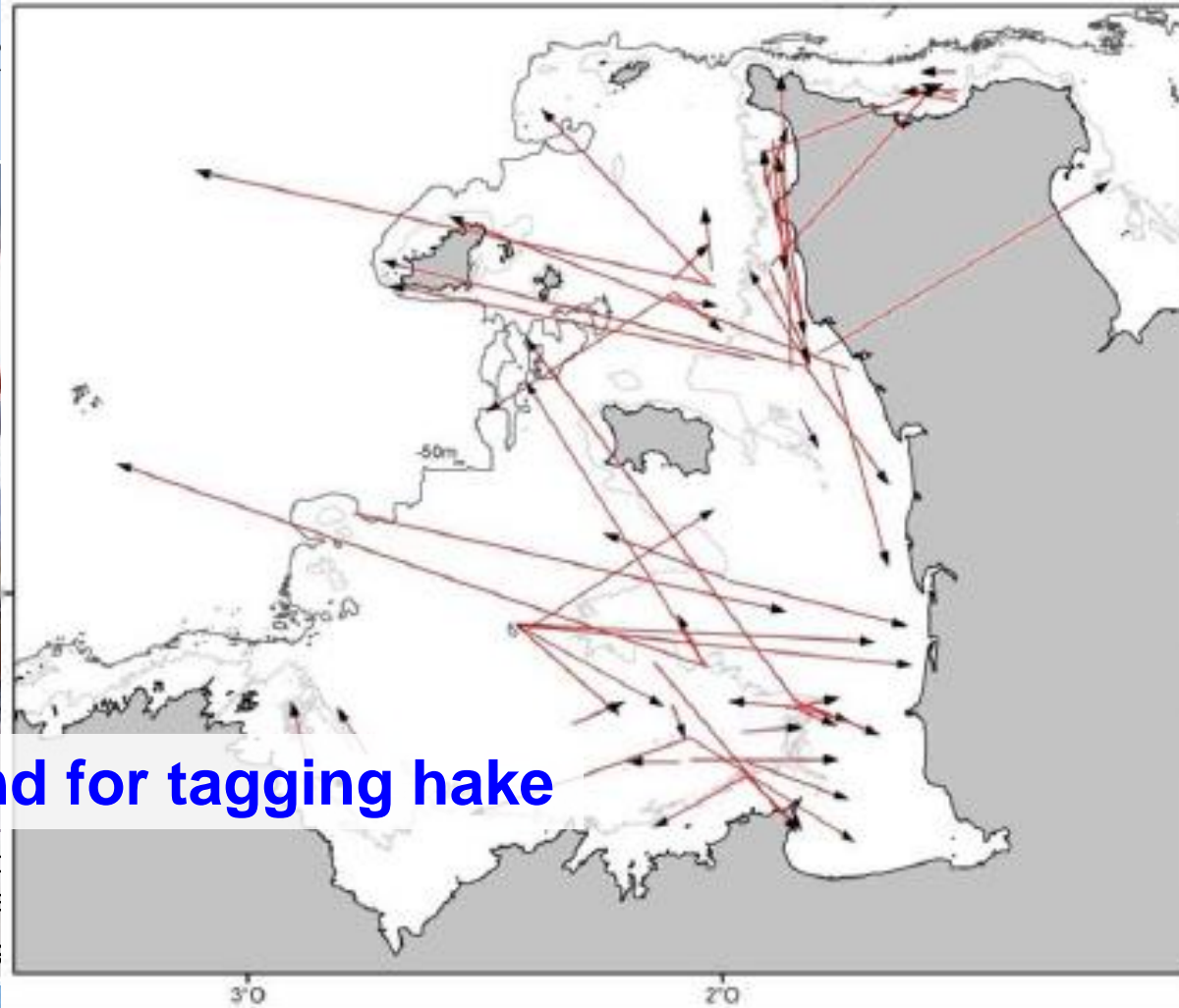
yellow: <35 cm

red: < 18 cm



Knows and unknowns : survival

- no French studies dedicated to skates and rays survival
- on going



ishing

preliminary



Special codend for tagging hake

de Pontual, H., et al. 2003. A p
results. ICES Journal of Marine

Stephan et al. (2015). Projet F

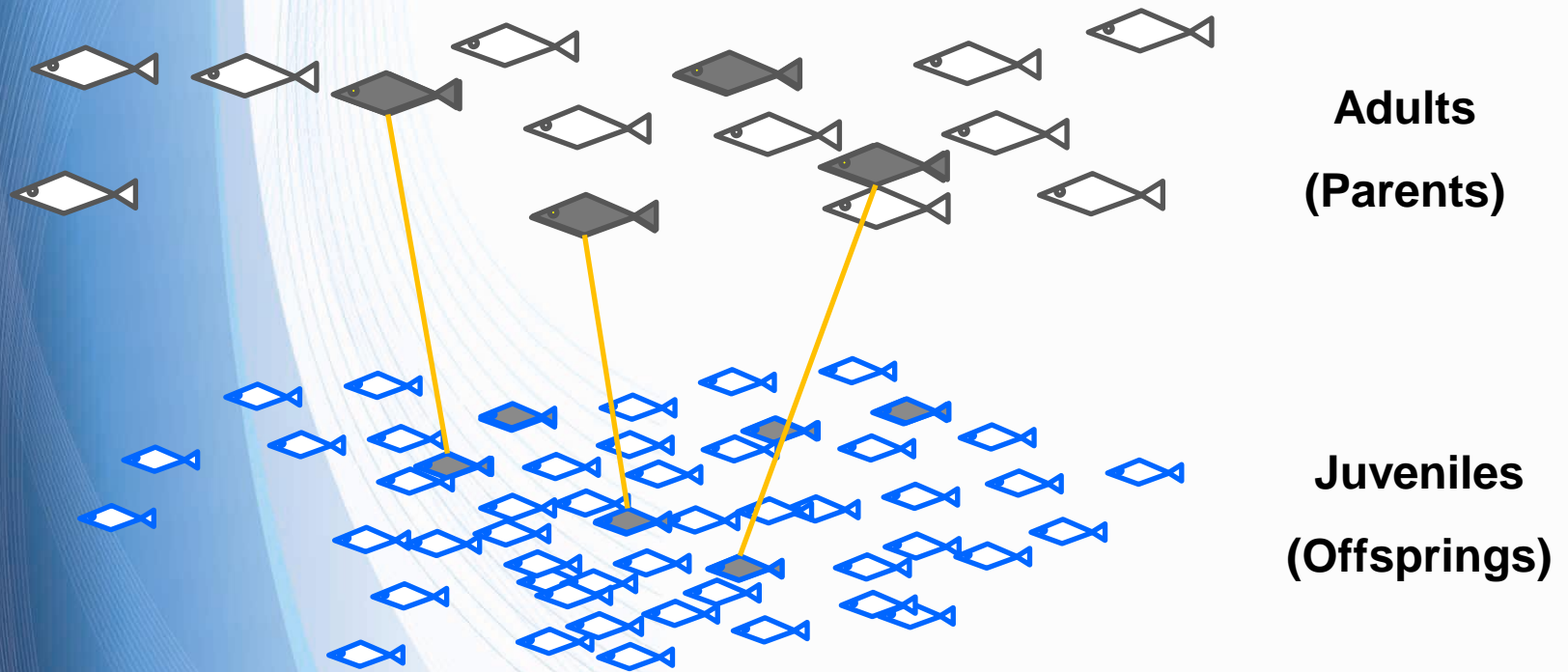
Novel approach to stock assessment



ANR-GenoPopTaille

Objective

Estimate the number of adults in a fish population by **genetic** identification of parent-offspring pairs



Close-Kin Mark-Recapture

e.g. Bravington, M. V., H. J. Skaug, and E. C. Anderson. 2016. Close-Kin Mark-Recapture. *Statistical Science* 31:259-274.

Application: thornback ray in the Bay of Biscay (8abd)

- **Criteria for stock selection**
 - large bodies species
 - Number od adults reasonable
 - No current assessment (management need)
- **Issues**
 - No "classical" assessment available as reference
 - Sampling difficult
- **Expected result**
 - Number of mature adults
- **Perspectives**
 - Method is being developped worldwide
 - Potentially applicable to all species which total number is smallere than a few millions



Issues

Issues	Requirements
Quality of landings	Strongly improving Needs further improvements
Use of discards data	Raising (under study, WK next year) Estimate of survival (see next presentation)
Stocks without survey indices	Use of on-board observation indices problematic Getting survey suitable for more stock implies more ship time

Perspectives

Options	Requirements/issues
All	Maintain/improve quality/quantity -Landings - On-board observations
Biomass production models	More years of reliable landings Survival of discards Survey indices
Genetic based estimation	Currently research question Applies to smaller stocks Sampling problematic