

6 August 2020

SUMARIS Management options for skate and ray stocks

Background

- The generalised TAC for skates and rays was introduced in 1999 as a precautionary management measure due to the lack of reliable stock data.
- As outlined by the Scientific, technical and economic committee for fisheries (STECF) (long term management of skates and rays (STECF-17-21)), the current management is unsatisfactory for two reasons:
 - 1 “The current general skate and ray TACs may not offer adequate protection for stocks the require reductions in Fishing mortality...
...and conversely, may limit catch opportunities for stocks in good condition.”
 - 2 “Currently significant amount/proportion of skate and ray catch are thrown back to the sea dead, this reduces both future stock and future industry earnings”
- For over 10 years numerous reviews and management options suggested by the North Sea and the North Western Waters Advisory Councils to have been proposed, but unfortunately little has fundamentally changed. Increased scientific knowledge of the distribution and range of various species, now allows for the provision of ICES advice at a more detailed species level.
- The Landing Obligation now legally requires vessels to land all their catch, however an exemption was awarded to skates and rays on a temporary basis until 31 December 2021, conditional on specific progress being made.

SUMARIS – Developing new recommendations

- A SUMARIS management conference brought together over 40 people from 7 countries, representing a range of different stakeholder groups (fishermen, scientists, fisheries managers, NGOs etc) to review all the potential skate and ray management options.
- Skate and ray fisheries are predominately non-target fisheries of relatively small economic value compared to a targeted fishery like Dover Sole. This makes management more challenging as the cost of change can be disproportionate to the income and management measures also need to consider the impact on the main target species.

- The conference delegates prioritised several management options that could combine to give adequate protection to the stocks whilst optimising fishing opportunities (Fig. 1).
- The SUMARIS project then developed management options for the top two ranked options standard minimum sizes and allocation of quota.

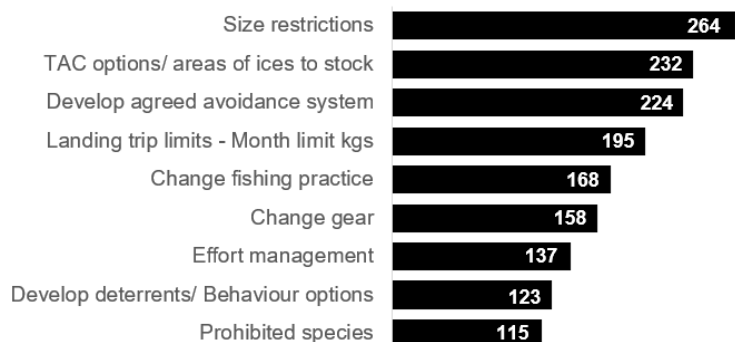


Fig. 1 The combined ranked options from the SUMARIS Canterbury management meeting. Each participant at the meeting scored each option from 9 (best) to 1 (worst) and the scores were aggregated to provide an overall rank.

Why is developing a minimum size a good option?

- Fishers generally understand and support minimum landing sizes. It creates a level playing field across the fishing industry from big boats to small boats and it is a practical option which builds on the fishing industries participation and ideas.
- It is cheap, easy and quick to implement and straightforward to enforce.
- Minimum landing sizes can control fishing mortality on juveniles and it could incentivise better size selection by gear selectivity or avoiding areas with high densities of juveniles.
- Biologically meaningful sizes and can be tailored to specific species or specific needs.

Developing minimum sizes agreeing a process

- It is recognised that minimum sizes currently used by the industry or in regional byelaws are generally below (and in some cases significantly well below) that the 'Length at 50% mature' size that is commonly used to inform the setting of an appropriate minimum size.'

Common name	Scientific name	Length at first maturity (cm)		Largest immature (cm)		Length at 50% mature (cm)	
		Male	Female	Male	Female	Male	Female
Thornback ray*	<i>Raja clavata</i>	47	47	88	90	66.6	76.6
	(range)	(47-56)	(47-56)	(76-88)	(82-90)	-	(73-78)
Spotted ray	<i>Raja montagui</i>	40	49	66	70	50.8	62.5
Blonde ray	<i>Raja brachyura</i>	55	60	91	93	78	76.6
Cuckoo ray	<i>Leucoraja narvus</i>	48	45	64	65	56.4	59.4
	(range)	(48-49)	(45-51)	57-64	(58-65)	(51-57)	(54-60)
Small-eyed ray	<i>Raja microocellata</i>	66	73	74	83	68.9	77.9

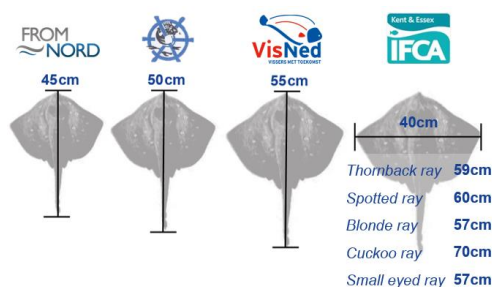


Table 1. Analysis by Lancaster and Lart (2015) of the length of maturity for key skate and ray species compared to the minimum sizes used by different fishing organisations. The table uses published (MacCully et al, 2012) and unpublished information (Lancaster, 2009). The 'Length at first maturity' is the length at which mature fish are observed and the 'Largest immature' is the length of the largest immature fish observed in the data. Generally, the L50 is considered an index of length at maturity.

- Increasing sizes in one go from those currently used to the scientifically preferred minimum size would be a monumental increase for the fishing industry and would have a significant economic impact. Such a step would likely be strongly opposed across the board by the fishing industry.
- Instead it is proposed to increase the minimum sizes in stages, with a 3-year review process which could be complemented by other management measures suggested in the road map. The first 3-year phase would allow the different countries to synchronise their minimum sizes and embed this management measure before any review.
- The review process should look to engage all key stakeholders in skate and ray management and ask for scientific, economic and management evidence from regulators and stakeholders when reaching a decision. Creating a more flexible minimum size that responds like TAC to changing stock data gives fisheries managers and stakeholders another tool to help best manage these stocks.

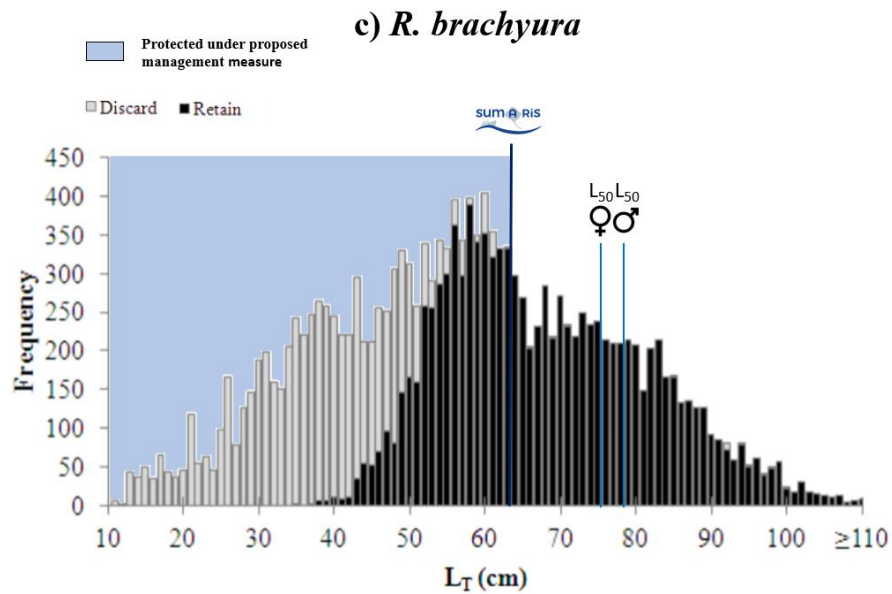
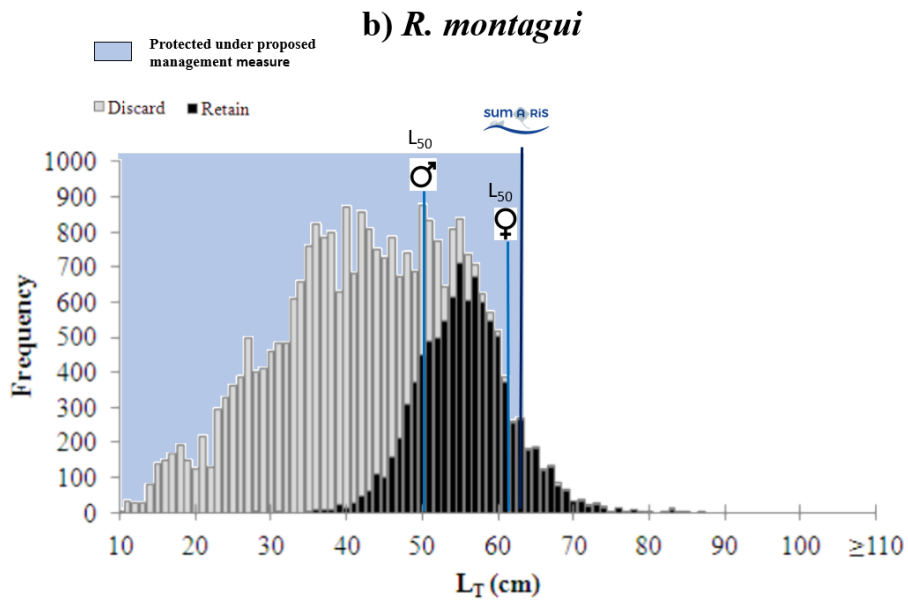
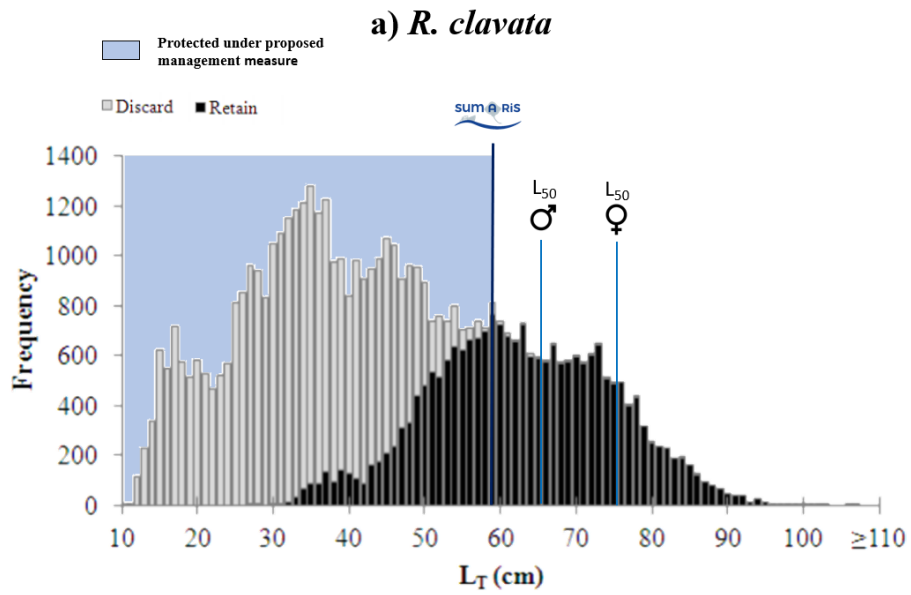
Agreeing minimum sizes

● In an effort to simplify management, rather than have different sizes for each species, it is suggested that two size class groups could be created. The first group would contain stocks that are considered healthy and growing, and the second group stocks that are considered more vulnerable or data limited having a larger minimum size (Table 2).

Healthy stocks category		Vulnerable/Recovering stocks category	
Thornback Ray	59cm	Spotted Ray Blonde Ray Cuckoo Ray Small-eyed Ray	63cm

Table 2 Proposed minimum lengths for the 5 species in the global TAC group.

- The proposed new 'first step' minimum sizes are a balance considering socio-economic impacts on the fishing industry as well as scientific advice. Fig. 3 illustrates by species, the impact the proposed management measures would have on the fish that would be returned to the sea rather than landed a part of the catch. The graphs highlight the relatively small percentage of fish that are currently caught at or over breeding sizes for thornback, blonde and small-eyed rays. Significantly increasing minimum sizes in one go to these sizes might not only have a big economic impact but could create a problem with targeted fisheries suddenly focusing their effort on the same relatively small percentage of breeding individuals. Increasing the minimum size gradually over several steps could help smooth out these issues.
- The introduction of minimum sizes and makes an immediate real-world difference to skate and ray stocks (Fig.3) and combined with an annual TAC this package would offer significant increase in protection compared with the current management measures.
- The lengths suggested in Table 2, would be the first time there would be a minimum size for skates and rays for some fishermen and represent a very significant increase on the current PO sizes of 45cm (French PO - FROM NORD) and 50cm (Belgium PO – Rederscentrale). Agreeing the same minimum sizes would standardise sizes at international level and mean that all fishermen would work to the same sizes in the North Sea and Eastern Channel.
- The proposed new lengths would have the biggest impact on the spotted and cuckoo ray stocks, with the lengths the same or higher than the 'Length at 50% mature'. The package would also offer increased protection to the thornback ray and blond ray where the lengths are well above the length of first maturity.
- As part of the SUMARIS project species identification and minimum size stickers have been developed to help quickly and cheaply pass on minimum size information to the fishing industry.



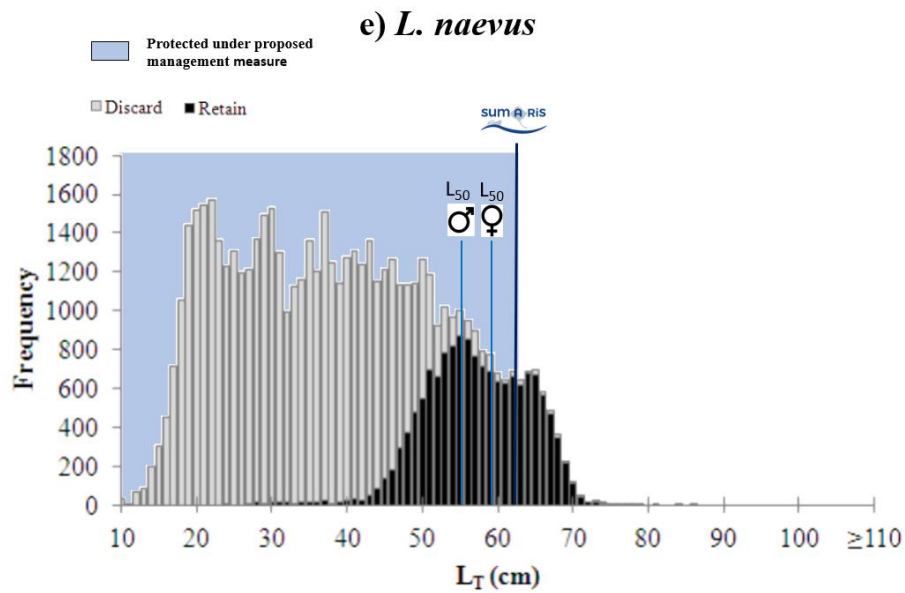
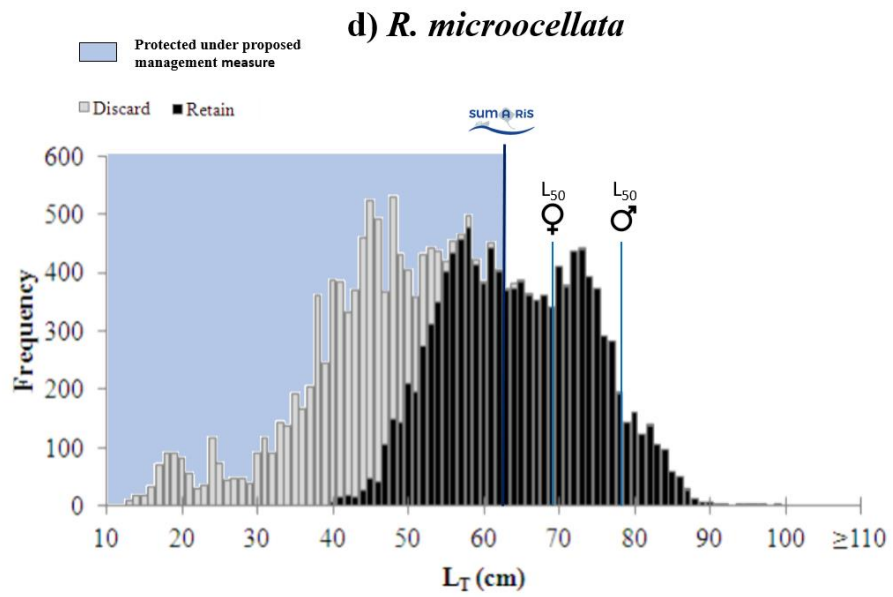


Figure 3: Length-frequency of discarded (grey columns) and retained (black columns) (a) *R. clavata*, (b) *R. montagui*, (c) *R. brachyura*, (d) *R. microocellata* and (e) *L. naevus* (all gear types, 2002–2010), as recorded in the Cefas observer programme. From - Ellis, J.R., McCully, S.R., Silva, J.F., Catchpole, T.L., Goldsmith, D., Bendall, V. and Burt G. (2012). Assessing discard mortality of commercially caught skates (Rajidae) – validation of experimental results. Defra Report (MB5202), 31 pp.

Developing TAC management options

The current ICES Advice for Thornback ray (*Raja clavata*) in Subarea 4 and in divisions 3.a and 7.d states that

“Since legal obligations to declare most skates to species level were introduced, a greater proportion of the data have been reported to this level, but data remain incomplete. Thornback ray account for 73–77% of the landings reported to species level in the last three years in this area.”

- A comparison of percentage landings per species for the Southern North Sea and Eastern Channel (from ICES advice) over the last 7 years shows that Thornback rays consistently and reliably dominate landings within the southern North Sea and Eastern channel area to the extent that the current global TAC should really be thought of as Thornback ray and 4 other species.

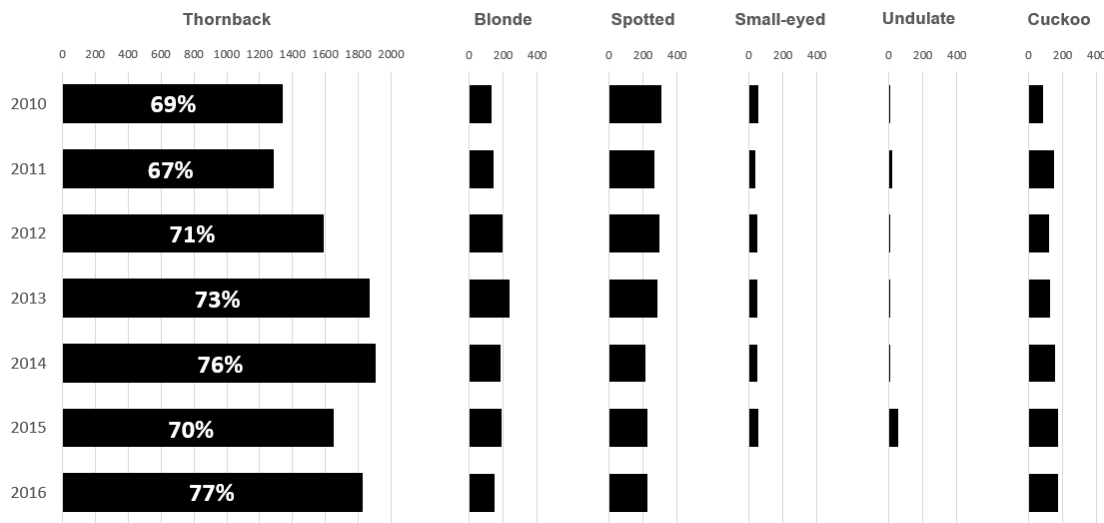


Fig.4 A comparison of the total ICES landing estimates 2010-2016 per species in the SUMARIS project area. (*= No available data) Estimates are from current ICES advice sheets () and a for thornback ray and spotted ray subarea 4 and divisions 3a and 7d; blonde ray divisions 4c and 7d; cuckoo ray subarea 4 and division 3a; small-eyed ray and undulate ray divisions 7d and 7e).

- Work undertaken by Silva et al. (2012) helps assess the reliability and validity of landings data by comparing it to observer data. Overall, the research supports the same general trend that is seen in the landings data, with landings being dominated by Thornback ray species.

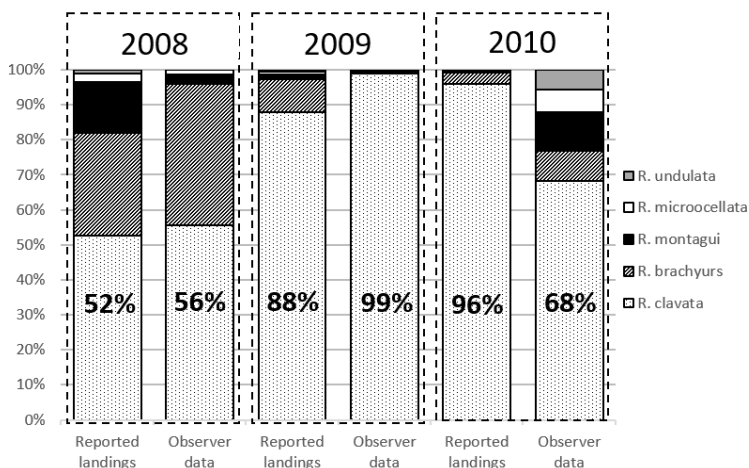


Fig.5 Species composition of skates in UK fisheries in the southern North Sea and eastern Channel, based on reported landings and CEFAS observer programme (retained species only) Silva et al. (2012)

Possible TAC solutions

- In 2016, the Commission proposed a change to skate and ray TAC management for 2017, with several new sub-TACs for different species. The proposal used the existing "SRX" quota allocation key, applying the relative stability shares to each sub-TAC.
- Due to feedback from stakeholders and Member States raised concerns that such an allocation did not reflect current fishing activity and the distribution of species within the management area, causing significant socio-economic impact on fishermen, the proposal was not implemented.

In 2017 the Scientific, technical and economic committee for fisheries (STECF) reviewed the different TAC management options – (Long term management of skates and rays (STECF-17-21))

Management measures	Control mortality		Control and Enforcement		Potential issues related to compliance	Sources of uncertainty	Potential performance indicator
	Pro	Con	Pro	Con			
<i>Generalised TAC</i>	Limited	Limited control at stock level	Easy as species is not required for monitoring quota uptake		Low incentive for misreporting except for prohibited species	Quantification of survival per species and métier species identification	Ideally F and SSB or proxies for all species. Reference points defined.
<i>Generalised TAC with sub-TAC for particular stocks</i>	For the sub-TAC stocks and partially for the others	Restrictive sub-TAC may result in an increase in F on the other generalised stocks Limited control of F for the species not in the sub-TAC	Potentially easy to control subject to species identification	Increase in resources for monitoring species specific data for Sub-TAC	Species identification and misreporting Non-transparent criteria for selecting Sub-TAC stocks	Quantification of survival per species and métier. Transparent selection of stocks under sub-TAC. Species identification	Ideally F and SSB or proxies for all species. Reference points defined
<i>TACs by Genus</i>	Partly	Control F at genus level, not at stock level	Potentially easy to control subject to genus identification	Increase in resources for monitoring species specific data for the genera	Species identification and (low potential) for misreporting	Quantification of survival per species and métier Species identifications	Ideally F and SSB or proxies for all species. Reference points defined
<i>TAC by stock (ICES advice)</i>	Potential to control F at the stock level		Potentially easy to control subject to species identification	Increase in resources for monitoring species specific data	Species identification and misreporting	Quantification of survival per species and métier Species identifications	Ideally F and SSB or proxies for all species. Reference points defined

SUMARIS TAC based management recommendation

- As Thornback ray account for 73–77% of the landings reported to species level in the last three years in areas, it is proposed by the SUMARIS partners that large proportion (potentially 75%) of the global TAC for areas IVc and VIId could be allocated to thornback ray stocks in these areas, with a much smaller proportion (25%) allocated to the other 4 species in the global TAC (spotted, blonde, cuckoo and small-eyed ray) .
- This could be introduced in a number of ways with the allocation being added as a footnote to the TAC table or it could be done at a PO / regional member state group level to make it less rigid than linking it to the TAC & quota (so it could be trailed over a couple of years to see what percentages would work)
- This management measure could also work in conjunction with the introduction of minimum sizes (above) with the larger minimum sizes could helping to increase protection for the stocks that are considered more vulnerable and require reductions in fishing mortality.
- The percentages could also be used to help inform a daily or monthly trip limits with the ‘other species’ (spotted, blonde, cuckoo and small-eyed ray) not making up more than 25% of the landings.