

# Workshop on Age Estimation of Atlantic Mackerel (*Scomber scombrus*) (WKARMAC2)

22-26 October 2018, San Sebastian (Spain)

Chaired by: Jens Ulloweit (TI-SF, Germany) and Rosario Navarro (IEO, Spain)

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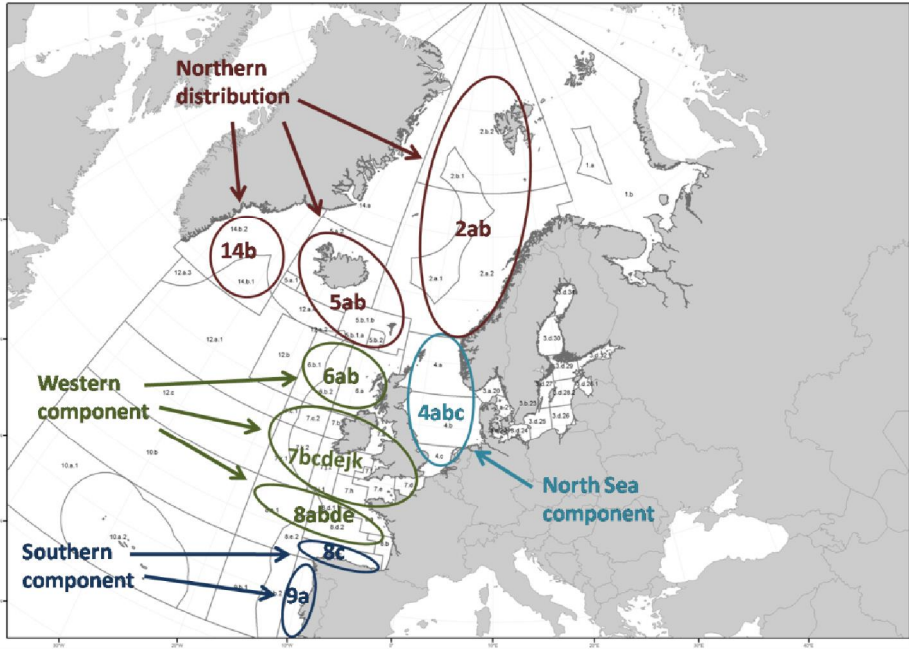
## WKARMAC2, San Sebastian, 22-26 October 2018

- ✓ Recommended by WGBIOP 2015 to be carried out in 2016-2017.
- ✓ Due to the difficulty of finding a chair it was recommended again by WGBIOP 2017 to be carried out in 2018.
- ✓ **20 participants from 9 countries** (11 laboratories): Spain, Germany, Portugal, Ireland, Norway, UK (England and Scotland), Iceland, Denmark and the Netherlands. Only nine of these readers also participated in last otolith exchange (2014). A large number of new readers has appeared since the last workshop (WKARMAC 2010) was carried out.
- ✓ **ToRs:**
  - a) Review the information on the biology, age estimation, workshops, otolith exchanges and validation works done so far.
  - b) Analyze the results of the otolith exchange carried out in 2014 and the potential source of discrepancies, particularly in fish over the age of 6 years.
  - c) Analyze growth increment patterns in mackerel otoliths and continues to improve the guidelines for their interpretation.
  - d) Create a reference collection of agreed age otoliths.
  - e) Address the generic ToRs adopted for workshops on age calibration.
- ✓ It will include:
  - ✓ A study of **the otolith edge development** (recommended by WKARMAC 2010).
  - ✓ A **revision of the current knowledge of Atlantic mackerel biology** (recommended by WKARMAC 2010).
  - ✓ A **discussion of the main problems** readers find when estimating the age of Atlantic mackerel in their area.
  - ✓ An otolith exchange, **WKARMAC2 exercise**, with otolith images, via **SmartDots**.

### WKARMAC2 exercise

✓ The WKARMAC2 exercise will include a total of 135 otolith images from the main areas of mackerel distribution: **Southern component** (9a, 8c), **Western component** (8abde, 7bcdej, 6ab), **North Sea component** (4abc) and **Northern distribution** (2ab, 5ab, 14b).

✓ Following the recommendations of WKMACQI 2018 (Workshop on Mackerel biological parameter Quality Indicators), it has been tried that the **spatial and temporal coverage** of the samples used in the exercise corresponds with the coverage in the assessment, as well as the **length and age range**.



Component	ICES Area	subarea	Nº images requested		Nº images provided		Length range (cm)	Institute providing data
			Sem 1	Sem 2	Sem 1	Sem 2		
Southern component	8c	8cE	5		5		35-38	AZTI (Spain)
		8cW	10	10	2	6	17-41	IEO (Spain)
	9a	9aN	3	2	3	2	21-38	
		9aCN			5	5	25-42	
		9aC	5	5				
		9aS						
Western component	6	6a	5	5				ML (Scotland)
		6b	5	5				MI (Ireland)
	7	7c	5	5				
		7b	5	5	10		31-42	
		7k	5	5				
		7j	5	5	10		33-40	
	7e	7e	5	5				WMR (Netherlands)
		7d	5	5	5	5	25-44	
8abde	8b		5		5		34-38	AZTI (Spain)
				5		5	14-21	IEO (Spain)
North Sea component	4	4a	5	5				ML (Scotland)
		4b	5	5	5	5	16-36	DTU-Aqua (Denmark)
		4c	5	5		10	23-35	Thünen-Institute (Germany)
Northern distribution	2	2a	5	5	5		14-42	DTU-Aqua (Denmark)
						5	34-39	MFR (Iceland)
	5	5a	5	5				IMR (Norway)
			5	5	5	5	32-38	MFR (Iceland)
			5	5	5	5	32-39	
14	14b	5	5		5	35-40		
<b>Total images</b>					71	64		
					135			