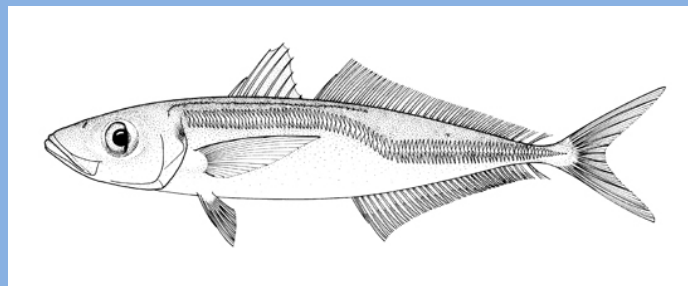




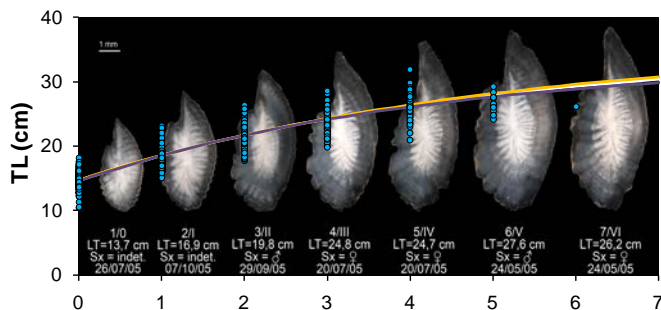
Growth studies based on otoliths of *Trachurus picturatus* - Indirect validation and challenges-



Alba Jurado-Ruzafa and Teresa G. Santamaría



Area	Reference	Method	Sex	N	Length	Growth parameters			
						L_{inf} (cm)	k (years ⁻¹)	t_0 (years)	R^2
Azores	Isidro (1990)	ML	Total	516	FL	52.9	0.2	-0.23	n.a.
	Westhaus-Ekau and Ekau (1982)	DR	Total	n.a.	TL	51.1	0.144	-1.584	n.a.
	Garcia <i>et al.</i> (2015)	DR	Total	1420	FL	58.3	0.09	-2.67	n.a.
	♂		628	FL	64.4	0.07	-3.34	n.a.	
	♀		489	FL	62.1	0.08	-3.11	n.a.	
	BC	Total	796	FL	52.9	0.11	-2.45	n.a.	
		♂	391	FL	60.2	0.08	-2.78	n.a.	
	♀	320	FL	51.4	0.12	-2.18	n.a.		
Madeira		Jesus (1992)	ML	Total	489	TL	44.3	0.316	n.d.
Pereira (1993)	ML	Total	877	TL	43.8	0.23	-0.57	0.97	
	Vasconcelos <i>et al.</i> (2006)	DR	Total	578	TL	42.3	0.161	-2.563	0.74
♂	248		TL	39.6	0.194	-2.282	0.72		
♀	295		TL	49.8	0.114	-3.052	0.75		
BC	Total	229	TL	48.3	0.135	-2.898	0.99		
	♂	89	TL	44.8	0.143	-3.207	0.99		
♀	131	TL	44.6	0.163	-2.43	0.99			
Vasconcelos <i>et al.</i> (2008)	ML	Total	889	TL	36.0	0.254	-1.445	0.99	
	♂	391	TL	38.4	0.197	-1.994	0.99		
	♀	454	TL	32.1	0.384	-0.764	0.99		
Canary Islands	Jurado-Ruzafa and Santamaria (<i>in press</i>)	DR	Total	913	TL	34.9	0.214	-2.545	0.87
		♂	695	TL	42.1	0.141	-3.038	0.87	
		♀	625	TL	38.4	0.169	-2.835	0.87	
Mediterranean Sea	Casaponsa (1993)	n.a.	Total	n.a.	TL	32.2	0.228	-1.469	n.d.
	Cefali <i>et al.</i> (2004)	n.a.	Total	875	FL	38.8	0.22	-1.79	n.d.





Deposition periodicity
of one *annulus*



Indirect method



Marginal increment ratio
(MIR)
Mean monthly evolution
of the marginal
increment:

$$\text{MIR} = (R_o - r_n) / R_o$$

Notes:

- No validation of the coherency of the ageing criteria.
- Maximum assigned age: 18 years (FL=50.7cm)!
- Partial radii measurements are not provided in the paper.

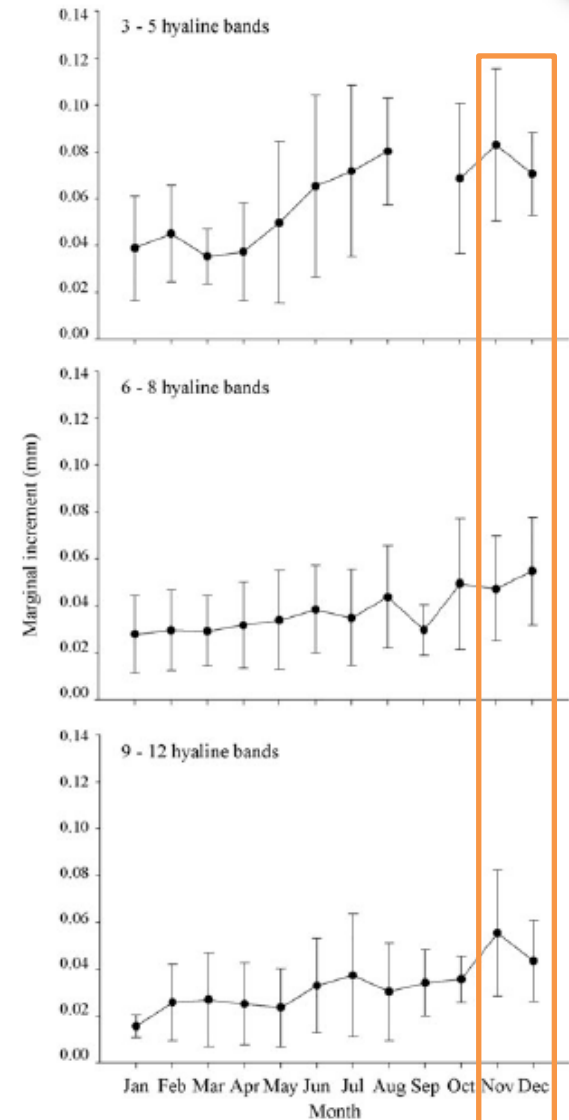
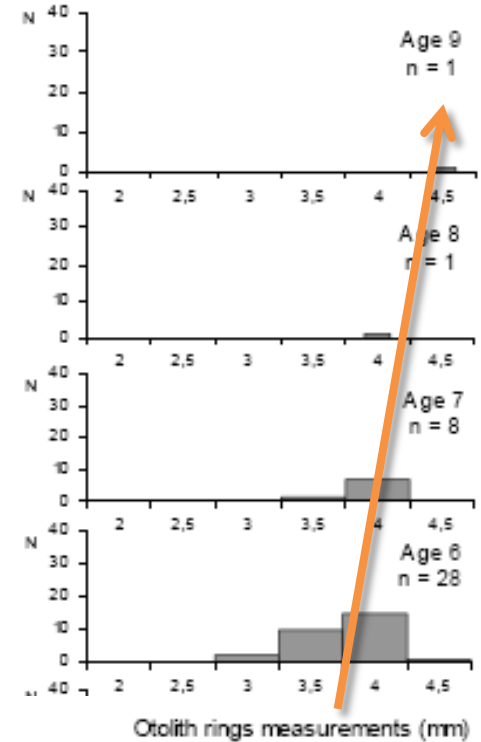
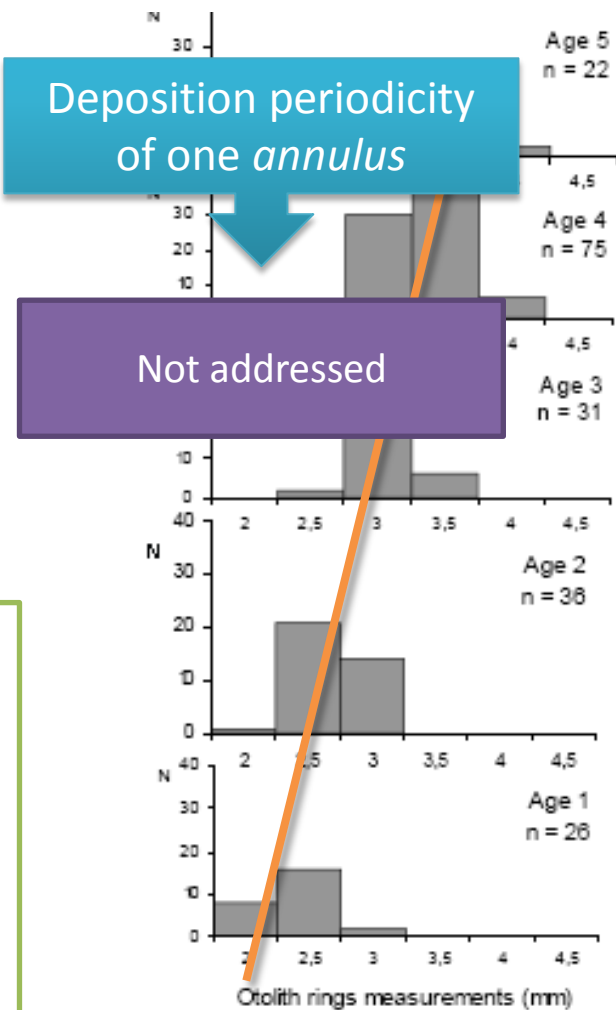


Fig. 3. Mean monthly evolution of the marginal increment in the otoliths of *Trachurus picturatus* from the north-east Atlantic waters (ICES area Xa2). Vertical bars represent \pm standard deviation.



Notes:

- Validation of the coherency in the ageing criteria: partial radii measurement.
- Partial radii measurements are not provided in the paper.

Fig. 6. Frequency distribution of otolith rings measurements of *T. picturatus* caught off the Madeira archipelago



T. picturatus Otolith deposition - Indirect validation

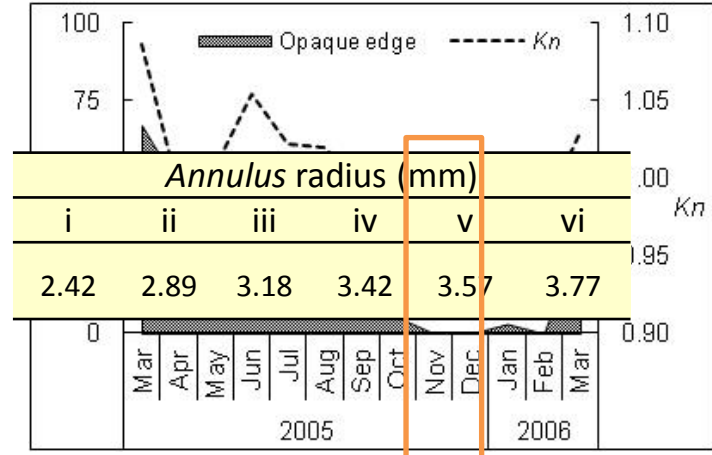
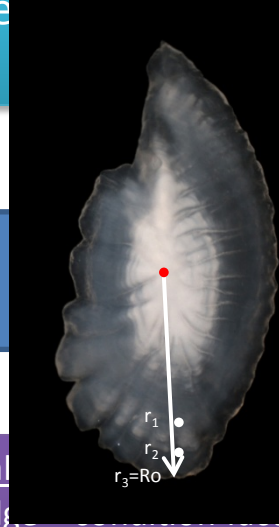
Canary Islands – Jurado-Ruzafa & Santamaría (*in press*)



Deposition periodicity

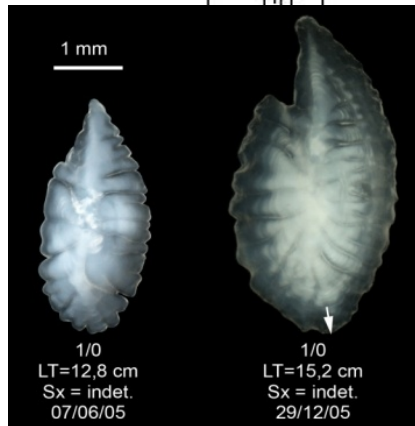
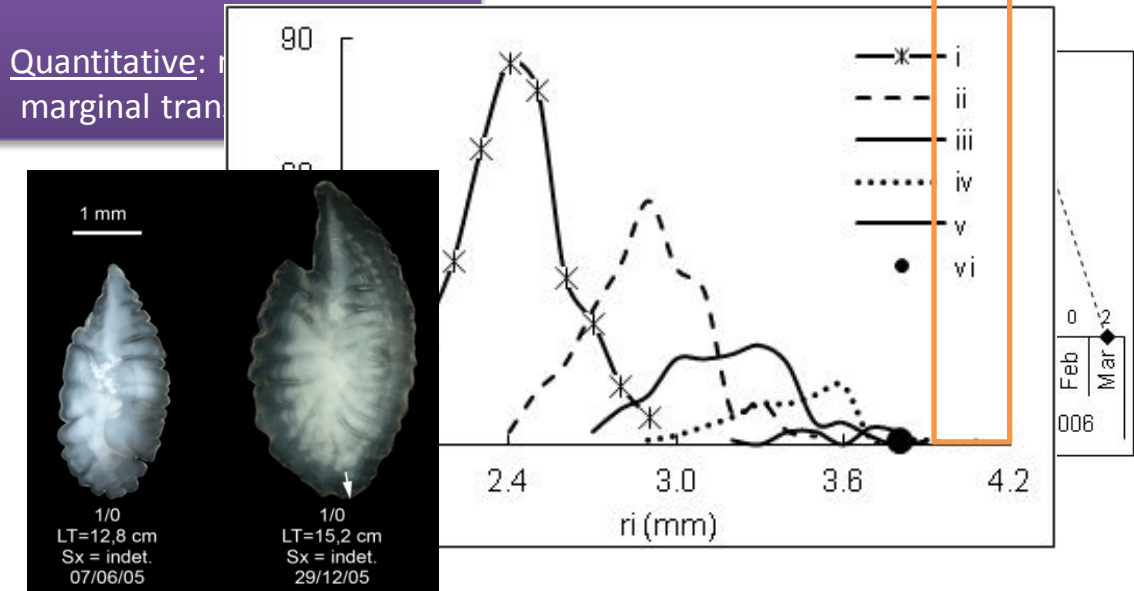
Quality of the opaque edge

Quantitative: marginal transmittance (Kn)



Notes:

- Validation of the age determination: partial radii measurement.
- **Partial radii** provided in the paper.





- ✓ Annual deposition of one ring has been indirectly proved : 1 year – 1 *annulus*.
- ✓ The adopted ageing criteria for the species are coherent based on the results of the obtained *annuli* partial radii.



Challenges:

- Direct age validation: studies of daily deposition.
- Structure of the population in the Eastern Atlantic Ocean.

THANK YOU FOR
YOUR
ATTENTION

