2020 Western Baltic Cod age reading exchange report (SmartDots ID 292 & 294)

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1 Introduction

The 2020 exchange for Western Baltic cod (cod.27.22-24) took place between September and December 2020 via the ICES SmartDots platform https://www.ices.dk/data/tools/Pages/smartdots.aspx . Nine readers with varying levels of experience from Denmark, Germany and Sweden took part. Otoliths from 186 fish, age range 1 – 6 years from ICES SD's 22 and 23 were selected from the 2017, 2018 and 2019 Danish BITS (KASU) Q1 and Q4 surveys after a detailed analyses of the BITS age data during WGBFAS 2020 (by the stock assessor) revealed inconsistencies. Questionable otoliths were selected for this exchange after mismatches in age-length compositions had been identified by the stock coordinator and the age reading coordinator of DTU Aqua. They were prepared and photographed before being uploaded to the SmartDots platform for age reading. From each fish, a photograph of a broken and sectioned otolith was provided for reader annotation because not all labs follow the same routine procedures for Western Baltic cod otolith preparation.

For this specific stock, participants have varying levels of experience from less than one year to twenty-two years. Readers level of experience based on number of years reading, number of otoliths read and method have been used to rank the readers level of experience and subsequently applied in the statistical analysis. Five readers are considered advanced readers (they provide age data for stock assessment purposes) while 4 are considered basic readers (they do not provide age data for stock assessment purposes).

Prior to this exchange, two exchanges for cod.27.22-24 had already taken place in 2019. The first, in preparation for the Baltic cod benchmark in Spring 2019 (https://smartdots.ices.dk/ViewEvent?key=201) which included Q3 and Q4 sectioned otoliths (n=49) with an overall weighted average percentage agreement of 85% and an weighted average CV of 15%, based on all three readers that participated in the exchange (Table 1.1). The second, in Autumn 2019 (https://smartdots.ices.dk/ViewEvent?key=251) which included Q4 and Q1 sectioned otoliths (n=355) with an overall weighted average percentage agreement of 84% and a weighted average CV of 15%, based on all six readers. When only including the four advanced readers, an overall weighted average percentage agreement of 81% and a weighted average CV of 17% was reached (Table 1.1). Following the Autumn exchange an age reading guide for Western Baltic cod (cod2224) was compiled and circulated to all readers.

Given that readers from Sweden and Denmark routinely read broken otoliths, it was agreed that broken and sectioned otoliths from the same fish should be included in any follow-up exchanges between the countries. From 2020 onwards, Denmark will routinely read sectioned Western Baltic cod otoliths.

This current exchange provides results based on broken (SmartDots ID 294) and sectioned (SmartDots ID 292) otoliths separately. For broken otoliths the overall weighted average percentage agreement of 84% was reached with a weighted average CV of 22% based on all seven readers, and an overall weighted average percentage agreement of 88% with a weighted average CV of 18% based on three advanced readers. For the sectioned otoliths, the overall weighted average percentage agreement of 83% was reached with a weighted average CV of 22% based on all seven readers, and an overall weighted average percentage agreement of 91% with a weighted average CV of 17% based on four advanced readers (Table 1.1). In addition, a comparison of the modal ages for each fish and each method (broken vs. sectioned) was included and this resulted in agreement on 87% of the samples with a CV of 8.5%.

The conclusion section gives a summary of the underlying age reading issues that are apparent when analysing the annotated images.

Table 1.1. Overview of results of recent otolith exchanges of Western Baltic cod. PA: overall weighed average percentage agreement. CV: weighted average coefficient of variation. See definition of PA and CV below. Advanced readers provide ages for the stock assessment.

Exchange	SmartDots ID	Otolith source	N otoliths	Method	Total number of readers	PA	CV	Number of advanced readers	PA	CV
Spring 2019	201	2017 Q4, 2018 Q3, 2018 Q4	49	sectioned	-	-	-	3	85	15
Autumn 2019	251	2018 Q4, 2019 Q1	355	sectioned	6	84	15	4	81	17
Autumn 2020	294	2017 Q1, 2018 Q1, 2018 Q4, 2019 Q1, 2019 Q4	186	broken	7	84	22	3	88	18
	292			sectioned	7	83	22	4	91	17

2 Methods

The analysis follows traditional methods where the level of accuracy compared to modal age is indicated by percentage agreement (PA), bias tests and plots, and the level of precision, i.e. the reproducibility of age estimates is indicated by the coefficient of variation (CV). The tables and plots presented are from the Guus Eltink Excel sheet 'Age Reading Comparisons' (Eltink, A.T.G.W. 2000). Additional analyses of age data were included; average percentage error (APE) and age error matrices (AEM's).

Age estimates were made on both broken and sectioned otoliths from the same fish and a comparison of modal age from each method is included.

As SmartDots provides a measure of distance between the annotations made by the readers, this data is used as a measure of growth increment width and allows for a comparison of otolith growth curves for each fish and for each reader.

Modal age: a multistage approach to define the modal age by sampled fish

When summarizing the output and reporting the results of the exchange events developed within the SmartDots framework, the modal age (the most common age decided by the age readers for every fish sample) is the most relevant measurement. It is a key statistic, which by itself indicates the most likely age of each sampled fish. It is also fundamental for the estimation of some other relevant statistics to assess the performance of the techniques assessed in the exchange event, like the Percentage Agreement (PA), or input for stock assessments like the Age Error Matrix (AEM) (see below).

However, in the traditional way of calculating the mode (each reader has the same weight=1) the mode is taken as the lowest age of the multiple modal ages. This way can result in multiple cases (fish samples) with multiple modal ages (i.e. different ages got the same highest number of readers). Accordingly, this implies an incorrect perception of the age by individual fish and introduction of bias in the calculation of the PA and AEM.

As a solution, in this report a multi-stage approach is used to select the modal age. This multi-stage approach was based on the different weight given to the age readers, based on their experience. Two different weight score scales were assigned, a weight score decreasing linearly with the experience and another decreasing with a negative exponential shape. The modal age by individual fish is decided following the next approach: 1) If there is a single mode estimated with the "traditional" approach (equal weight for all readers), this value is used as the mode. If not 2) Adding up, by age, the linear weighting score for all the readers that decided each age for that fish. Select as the modal age the age with the highest added score. If there are still multiple ages with the same score: 3) Adding up, by age, the negative exponential weighting score for all the readers that decided each age for that fish. Select as the modal age the age with the highest added score.

During the WGBIOP 2019 meeting (ICES, 2019) it was found that the combination of the modes decided using these three methods (so called "multi-stage approach"), allows assigning a single modal age to each fish individual.

Percentage Agreement

The percentage agreement per reader per modal age tells how large is the part of readings that are equal to the modal age. The percentage agreement is estimated by modal age and reader as the proportion (as percentage) of times that the age estimated by that reader agreed with the resulting modal age. This percentage is estimated as the number of times that a reader agreed with the modal age divided by the total number of otoliths read by a reader for each modal age.

$$PA = \frac{number\ of\ readings\ that\ agree\ with\ modal\ age}{total\ number\ of\ readings\ by\ modal\ age} \cdot 100\%$$

Co-efficient of Variation (CV)

The table presents the CV per modal age and reader. The CV's are calculated as the ratio between the standard deviation (σ) and mean value (μ) per reader and modal age:

$$CV = \frac{\sigma}{\mu} \cdot 100\%$$

To the table is also added the CV of all readers combined per modal age and a weighted mean of the CV per reader.

Average Percentage Error (APE)

APE was calculated based on the method outlined by Beamish & Fournier (1981). This method is not independent of fish age and thus provides a better estimate of precision. As the calculations of both CV and APE pose problems if the mean age is close to 0, all observations for which modal age was 0 were omitted from the CV and APE calculations.

The average percentage error is calculated per image as:

$$APE = \frac{100\%}{n} \sum_{i=1}^{n} \left| \frac{a_i - \overline{a}}{\overline{a}} \right|$$

where a_i is the age reading of reader i and $\overline{a}$ is the mean of all readings from 1 to n.

Age error matrix (AEM)

Age error matrices (AEM) were produced following procedures outlined by WKSABCAL (2014) where the matrix shows the proportion of each modal age mis-aged as other ages. The sum of each row is 1, which equals 100%. The age data was analysed twice, the first time all readers were included and the second time only the “advanced” readers were included. If a reader is “advanced”, then they are considered well trained and they provide ages for stock assessment or similar purposes. When the AEM is compiled for assessment purposes, it uses only those readers who provide age data for the stock assessment in that specific area.

Otolith growth analysis

SmartDots provides a measure of distance between the annotations made by the readers and thus provides a measure of growth increment width. This data is used to establish growth curves for each fish and for each reader.

3 Analysis of age calibration exercise

3.1 Overview of samples and readers

Table 3.1: Overview of samples (n=186) used for the 2020 Western Baltic cod exchange.

Year	ICES area	Strata	Quarter	Number of otoliths	Modal age range	Length range
2017	27.3.b.23	27.3.b.23	1	17	1-2	210-300 mm
2017	27.3.c.22	27.3.c.22	1	14	1-2	220-290 mm
2018	27.3.b.23	27.3.b.23	1	42	2-4	360-530 mm
2018	27.3.b.23	27.3.b.23	4	17	2-5	470-670 mm
2018	27.3.c.22	27.3.c.22	1	10	2-3	310-440 mm
2019	27.3.b.23	27.3.b.23	1	33	2-4	260-660 mm
2019	27.3.b.23	27.3.b.23	4	38	1-6	250-820 mm
2019	27.3.c.22	27.3.c.22	1	6	1-4	210-700 mm
2019	27.3.c.22	27.3.c.22	4	9	1-2	260-350 mm

Table 3.2: Overview of age readers participating in 2020 Western Baltic Cod exchange.

Reader code	Expertise
R01 SE	Advanced
R02 DE	Advanced
R03 DE	Advanced
R04 DK	Advanced
R05 DK	Advanced
R06 DK	Basic
R07 SE	Basic
R08 SE	Basic
R09 DK	Basic

3.2 Results

3.2.1 All readers on sectioned otoliths (ID 292)

The weighted average percentage agreement based on modal ages for all readers is 83 %, with the weighted average CV of 25 % and APE of 25 %.

Table 3.3: Coefficient of Variation (CV) table presents the CV per modal age and reader, the CV of all readers combined per modal age and a weighted mean of the CV per reader.

Modal age	R02 DE	R03 DE	R04 DK	R05 DK	R06 DK	R08 SE	R09 DK	all
1	15 %	0 %	31 %	33 %	49 %	0 %	41 %	**39 %**
2	19 %	17 %	19 %	22 %	28 %	15 %	32 %	**26 %**
3	7 %	0 %	5 %	19 %	18 %	13 %	24 %	**19 %**
4	0 %	0 %	7 %	9 %	0 %	11 %	13 %	**9 %**
5	13 %	6 %	9 %	0 %	11 %	-	16 %	**12 %**
6	-	-	-	-	-	-	-	**0 %**
Weighted Mean	**12 %**	**5 %**	**17 %**	**21 %**	**37 %**	**9 %**	**29 %**	**25 %**

The percentage agreement per reader per modal age tells how large part of the readings that are equal to the modal age. The weighted mean included at the bottom of the table is weighted according to number of age readings.

Table 3.4: Percentage agreement (PA) table represents the PA per modal age and reader, the PA of all readers combined per modal age and a weighted mean of the PA per reader.

Modal age	R02 DE	R03 DE	R04 DK	R05 DK	R06 DK	R08 SE	R09 DK	All
1	98 %	100 %	86 %	82 %	80 %	100 %	43 %	**83 %**
2	85 %	89 %	91 %	83 %	70 %	92 %	53 %	**81 %**
3	95 %	100 %	98 %	83 %	0 %	86 %	50 %	**82 %**
4	100 %	100 %	92 %	88 %	100 %	83 %	54 %	**87 %**
5	83 %	92 %	75 %	100 %	67 %	-	67 %	**82 %**
6	-	100 %	100 %	100 %	-	-	100 %	**100 %**
Weighted Mean	**93 %**	**96 %**	**90 %**	**85 %**	**68 %**	**94 %**	**51 %**	**83 %**

The relative bias is the difference between the mean age (per modal age per reader) and modal age. As for the previous tables, a combined bias for all readers and weighted means are calculated.

Table 3.5: Relative bias table represents the relative bias per modal age per reader, the relative bias of all readers combined per modal age and a weighted mean of the relative bias per reader. Red and blue values indicate positive and negative bias, respectively.

Modal age	R02 DE	R03 DE	R04 DK	R05 DK	R06 DK	R08 SE	R09 DK	all
1	-0.02	0.00	0.14	0.18	-0.07	0.00	0.61	**0.12**
2	0.02	0.00	0.04	0.11	-0.30	-0.03	0.67	**0.07**
3	0.05	0.00	0.02	-0.02	-1.11	-0.14	0.60	**-0.09**
4	0.00	0.00	-0.08	-0.04	0.00	-0.17	0.38	**0.01**
5	-0.25	-0.08	0.25	0.00	-0.33	-	0.50	-
6	-	0.00	0.00	0.00	-	-	0.00	-
Weighted Mean	**-0.01**	**-0.01**	**0.06**	**0.07**	**-0.25**	**-0.04**	**0.58**	**0.04**

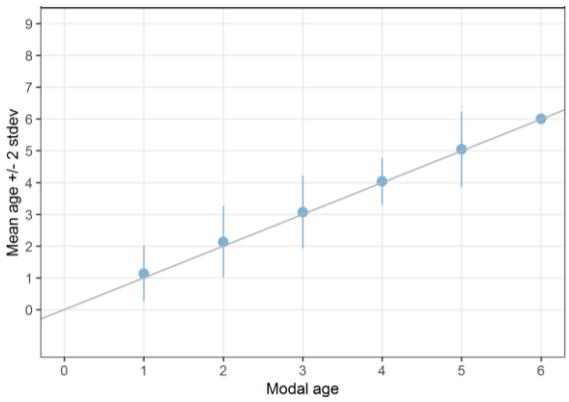

Figure 3.1: Age bias plot for all readers on sectioned otoliths. Mean age recorded +/- 2 stdev of each reader and all readers combined are plotted against modal age. The estimated mean age corresponds to modal age, if the estimated mean age is on the 1:1 equilibrium line (solid line). Relative bias is the age difference between estimated mean age and modal age.

Table 3.6: Inter reader bias test. The Inter-reader bias test gives probability of bias between readers and with modal age. - = no sign of bias (p>0.05), * = possibility of bias (0.01<p<0.05), * * = certainty of bias (p<0.01)

Comparison	R02 DE	R03 DE	R04 DK	R05 DK	R06 DK	R08 SE	R09 DK
R02 DE	-	-	*	-	**	-	**
R03 DE	-	-	*	-	**	-	**
R04 DK	*	*	-	-	**	-	**
R05 DK	-	-	-	-	**	**	**
R06 DK	**	**	**	**	-	-	**
R08 SE	-	-	-	**	-	-	**
R09 DK	**	**	**	**	**	**	-
Modal age	-	-	*	-	**	-	**

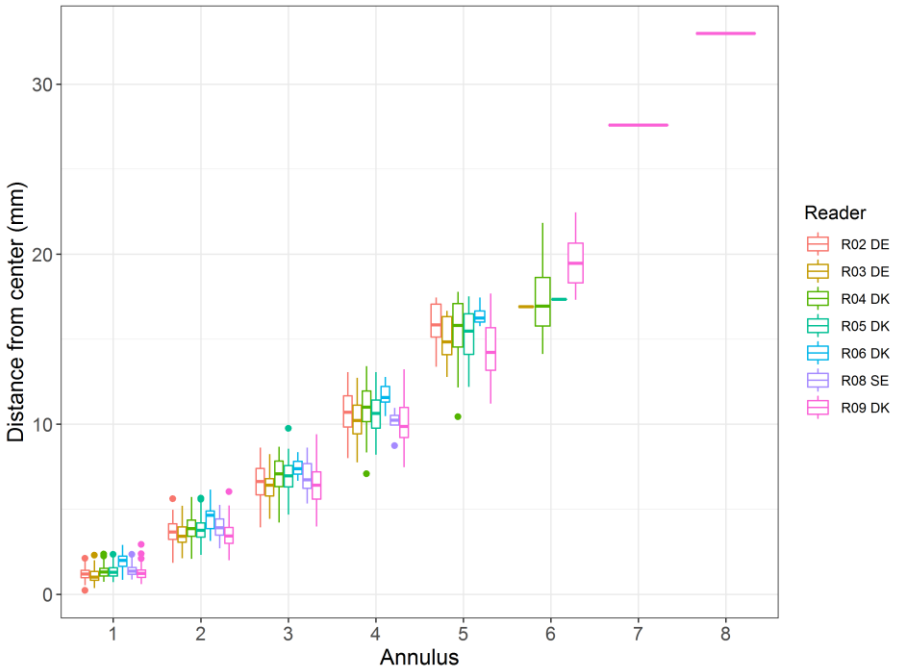

Figure 3.2: Plot of average distance from the centre to the translucent zones for all readers of sectioned otoliths. The boxes represent the median, upper and lower box boundaries of the interquartile range, whiskers represent the minimum and maximum values and the dots represent the outliers.

3.2.2 Advanced readers on sectioned otoliths (ID 292)

The weighted average percentage agreement based on modal ages for advanced readers is 91 %, with the weighted average CV of 17 %.

Table 3.7: Coefficient of Variation (CV) table presents the CV per modal age and advanced reader, the CV of all advanced readers combined per modal age and a weighted mean of the CV per reader.

Modal age	R02 DE	R03 DE	R04 DK	R05 DK	all
1	15 %	0 %	33 %	34 %	**29 %**
2	10 %	7 %	19 %	21 %	**16 %**
3	8 %	5 %	7 %	22 %	**12 %**
4	0 %	0 %	5 %	8 %	**5 %**
5	13 %	6 %	9 %	0 %	**9 %**
6	-	-	-	-	**0 %**
Weighted Mean	**10 %**	**3 %**	**18 %**	**22 %**	**17 %**

Table 3.8: Percentage agreement (PA) table represents the PA per modal age and reader, the PA of all advanced readers combined per modal age and a weighted mean of the PA per reader.

Modal age	R02 DE	R03 DE	R04 DK	R05 DK	all
1	98 %	100 %	81 %	78 %	**89 %**
2	95 %	98 %	92 %	84 %	**92 %**
3	93 %	98 %	96 %	80 %	**92 %**
4	100 %	100 %	96 %	91 %	**97 %**
5	83 %	92 %	75 %	100 %	**88 %**
6	-	100 %	100 %	100 %	**100 %**
Weighted Mean	**95 %**	**98 %**	**89 %**	**83 %**	**91 %**

Table 3.9: Relative bias table represents the relative bias per modal age and advanced reader, the relative bias of all advanced readers combined per modal age and a weighted mean of the relative bias per reader. Red and blue values indicate positive and negative bias, respectively.

Modal age	R02 DE	R03 DE	R04 DK	R05 DK	all
1	-0.02	0.00	0.19	0.22	**0.10**
2	0.05	0.02	0.02	0.14	**0.06**
3	0.07	0.02	0.00	-0.09	**0.00**
4	0.00	0.00	-0.04	0.00	**-0.01**
5	-0.25	-0.08	0.25	0.00	**-0.02**
6	-	0.00	0.00	0.00	-
Weighted Mean	**0.01**	**0.01**	**0.07**	**0.08**	**0.04**

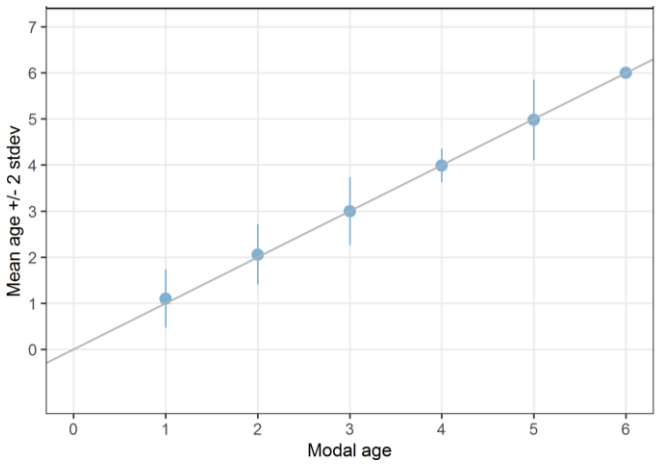

Figure 3.3: Age bias plot for advanced readers on sectioned otoliths.

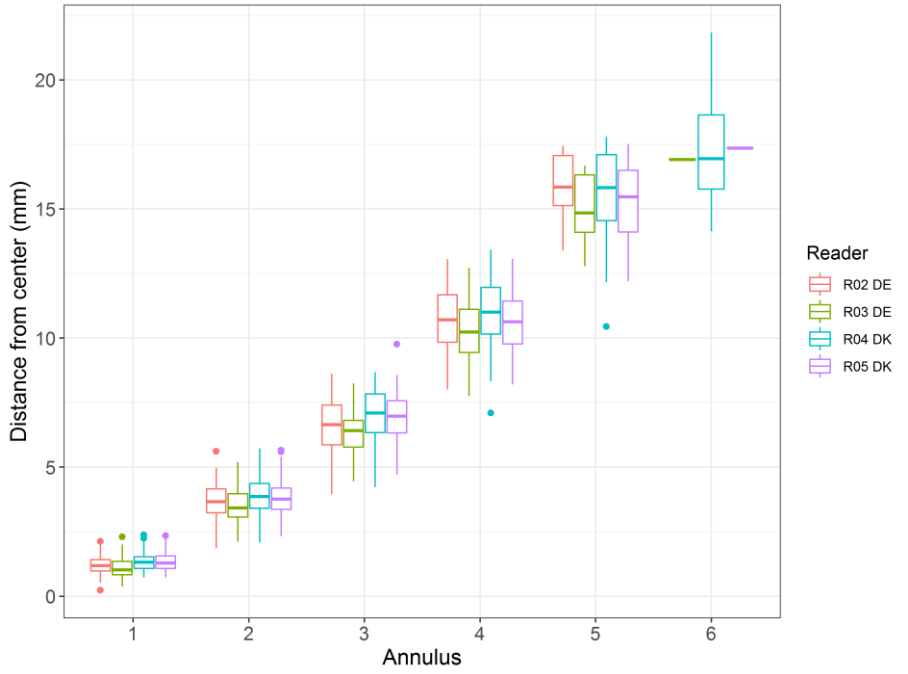

Figure 3.4: Plot of average distance from the centre to the translucent zones for advanced readers of sectioned otoliths. The boxes represent the median, upper and lower box boundaries of the interquartile range, whiskers represent the minimum and maximum values and the dots represent the outliers.

Results by subdivision

Table 3.10: CV per subdivision

Modal age	27.3.b.23	27.3.c.22	all
1	30 %	26 %	**29 %**
2	15 %	16 %	**16 %**
3	13 %	8 %	**12 %**
4	5 %	0 %	**5 %**
5	9 %	-	**9 %**
6	0 %	-	**0 %**
Weighted Mean	**16 %**	**20 %**	**17 %**

Table 3.11: Percentage Agreement per subdivision.

Modal age	27.3.b.23	27.3.c.22	all
1	87 %	92 %	**89 %**
2	91 %	97 %	**92 %**
3	91 %	95 %	**92 %**
4	97 %	100 %	**97 %**
5	88 %	-	**88 %**
6	100 %	-	**100 %**
Weighted Mean	**91 %**	**94 %**	**91 %**

Table 3.12: Relative Bias per subdivision. Red and blue values indicate positive and negative bias, respectively.

Modal age	27.3.b.23	27.3.c.22	all
1	0.13	0.05	**0.09**
2	0.08	-0.05	**0.02**
3	-0.01	0.05	**0.02**

4	-0.01	0.00	**-0.01**
5	-0.02	-	-
6	0.00	-	-
Weighted Mean	**0.05**	**0.02**	**0.04**

Table 3.13: Age error matrix (AEM) for 27.3.b.23. The AEM shows the proportional distribution of age readings for each modal age. Age column should sum to one but due to rounding there might be small deviations in some cases. Only advanced readers are used for calculating the AEM.

Modal age	1	2	3	4	5	6
Age 1	**0.8712**	0.006494	0.012658	-	-	-
Age 2	0.1288	**0.909091**	0.031646	-	-	-
Age 3	-	0.077922	**0.911392**	0.02299	0.02083	-
Age 4	-	0.006494	0.037975	**0.96552**	0.04167	-
Age 5	-	-	0.006329	0.01149	**0.87500**	-
Age 6	-	-	-	-	0.06250	**1**

Table 3.14: Age error matrix (AEM) for 27.3.c.22. The AEM shows the proportional distribution of age readings for each modal age. Age column should sum to one but due to rounding there might be small deviations in some cases. Only advanced readers are used for calculating the AEM.

Modal age	1	2	3	4
Age 0	0.01282	0.02564	-	-
Age 1	**0.92308**	-	-	-
Age 2	0.06410	**0.97436**	-	-
Age 3	-	-	**0.94737**	-
Age 4	-	-	0.05263	**1**

3.2.3 All readers on broken otoliths (ID 294)

The weighted average percentage agreement based on modal ages for all readers is 84 %, with the weighted average CV of 22 % and APE of 13 %.

Table 3.15: Coefficient of Variation (CV) table presents the CV per modal age and reader, the CV of all readers combined per modal age and a weighted mean of the CV per reader.

Modal age	R01 SE	R04 DK	R05 DK	R06 DK	R07 SE	R08 SE	R09 DK	all
1	0 %	35 %	27 %	36 %	0 %	0 %	47 %	**39 %**
2	9 %	22 %	18 %	16 %	13 %	9 %	23 %	**18 %**
3	15 %	11 %	8 %	0 %	8 %	6 %	17 %	**12 %**
4	8 %	9 %	9 %	15 %	9 %	13 %	13 %	**12 %**
5	13 %	0 %	6 %	-	14 %	15 %	7 %	**12 %**
6	-	-	-	-	-	-	-	**11 %**
Weighted Mean	**8 %**	**20 %**	**16 %**	**21 %**	**8 %**	**7 %**	**26 %**	**22 %**

The percentage agreement per reader per modal age tells how large was the part of the readings that are equal to the modal age. The weighted mean included at the bottom of the table is weighted according to number of age readings.

Table 3.16: Percentage agreement (PA) table represents the PA per modal age and reader, the PA of all readers combined per modal age and a weighted mean of the PA per reader.

Modal age	R01 SE	R04 DK	R05 DK	R06 DK	R07 SE	R08 SE	R09 DK	all
1	100 %	73 %	92 %	68 %	100 %	100 %	53 %	**84 %**

2	97 %	68 %	87 %	90 %	93 %	97 %	80 %	**87 %**
3	78 %	86 %	95 %	100 %	95 %	97 %	65 %	**86 %**
4	88 %	85 %	88 %	35 %	88 %	73 %	69 %	**76 %**
5	64 %	100 %	91 %	0 %	82 %	73 %	18 %	**70 %**
6	0 %	100 %	100 %	-	100 %	100 %	0 %	**67 %**
Weighted Mean	**90 %**	**77 %**	**90 %**	**73 %**	**94 %**	**93 %**	**64 %**	**84 %**

The relative bias is the difference between the mean age (per modal age per reader) and modal age. As for the previous tables, a combined bias for all readers and weighted means are calculated.

Table 3.17: Relative bias table represents the relative bias per modal age per reader, the relative bias of all readers combined per modal age and a weighted mean of the relative bias per reader. Red and blue values indicate positive and negative bias, respectively.

Modal age	R01 SE	R04 DK	R05 DK	R06 DK	R07 SE	R08 SE	R09 DK	all
1	0.00	0.27	0.04	0.32	0.00	0.00	0.67	**0.19**
2	-0.03	0.33	0.07	-0.02	-0.03	-0.03	0.20	**0.07**
3	-0.22	0.14	0.00	0.00	-0.05	0.03	0.24	**0.02**
4	-0.12	0.15	0.04	-0.65	0.04	-0.12	0.15	**-0.07**
5	-0.18	0.00	0.09	1.00	-0.27	-0.36	0.82	**0.16**
6	-1.00	0.00	0.00	-	0.00	0.00	1.00	-
Weighted Mean	**-0.09**	**0.23**	**0.04**	**-0.02**	**-0.03**	**-0.04**	**0.37**	**0.08**

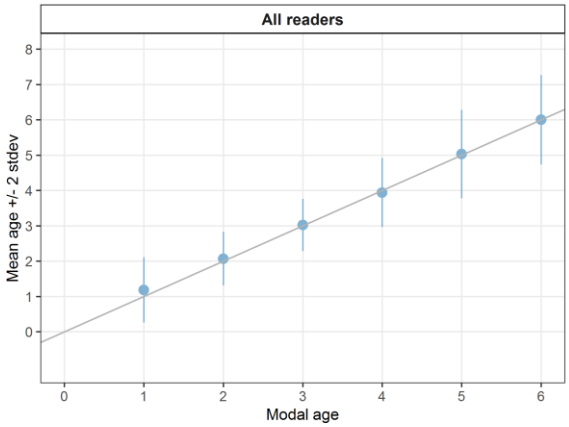

Figure 3.5: Age bias plot for all readers on broken otoliths. Mean age recorded +/- 2 stdev of each reader and all readers combined are plotted against modal age. The estimated mean age corresponds to modal age, if the estimated mean age is on the 1:1 equilibrium line (solid line). Relative bias is the age difference between estimated mean age and modal age.

Table 3.18: Inter reader bias test. The Inter-reader bias test gives probability of bias between readers and with modal age. - = no sign of bias (p>0.05), * = possibility of bias (0.01<p<0.05), * * = certainty of bias (p<0.01)

Comparison	R01 SE	R04 DK	R05 DK	R06 DK	R07 SE	R08 SE	R09 DK
R01 SE	-	**	**	-	-	-	**
R04 DK	**	-	**	**	**	**	*
R05 DK	**	**	-	-	*	*	**
R06 DK	-	**	-	-	-	-	**
R07 SE	-	**	*	-	-	-	**
R08 SE	-	**	*	-	-	-	**
R09 DK	**	*	**	**	**	**	-
Modal age	**	**	-	-	-	-	**

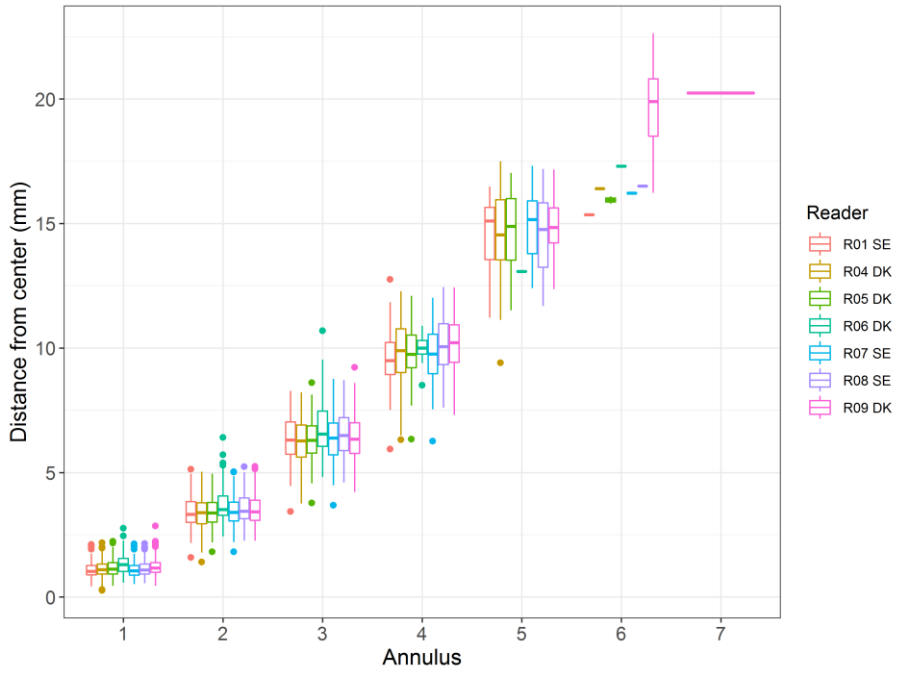

Figure 3.6: Plot of average distance from the centre to the translucent zones for all readers on broken otoliths. The boxes represent the median, upper and lower box boundaries of the interquartile range, whiskers represent the minimum and maximum values and the dots represent the outliers.

3.2.4 Advanced readers on broken otoliths (ID 294)

The weighted average percentage agreement based on modal ages for all readers is 88 %, with the weighted average CV of 18 %.

Table 3.19: Coefficient of Variation (CV) table presents the CV per modal age and advanced reader, the CV of all advanced readers combined per modal age and a weighted mean of the CV per reader.

Modal age	R01 SE	R04 DK	R05 DK	all
1	14 %	39 %	14 %	**31 %**
2	13 %	21 %	7 %	**17 %**
3	19 %	14 %	7 %	**15 %**
4	9 %	7 %	5 %	**7 %**
5	11 %	0 %	0 %	**7 %**
6	13 %	13 %	0 %	**9 %**
Weighted Mean	**14 %**	**21 %**	**8 %**	**18 %**

Table 3.20: Percentage agreement (PA) table represents the PA per modal age and reader, advanced the PA of all advanced readers combined per modal age and a weighted mean of the PA per reader.

Modal age	R01 SE	R04 DK	R05 DK	all
1	98 %	74 %	98 %	**90 %**
2	93 %	77 %	98 %	**89 %**
3	67 %	86 %	95 %	**83 %**
4	88 %	92 %	96 %	**92 %**
5	64 %	100 %	100 %	**88 %**
6	50 %	50 %	100 %	**67 %**
Weighted Mean	**85 %**	**81 %**	**97 %**	**88 %**

Table 3.21: Relative bias table represents the relative bias per modal age and advanced reader, the relative bias of all advanced readers combined per modal age and a weighted mean of the relative bias per reader. Red and blue values indicate positive and negative bias, respectively.

Modal age	R01 SE	R04 DK	R05 DK	all
1	0.02	0.28	-0.02	**0.09**
2	-0.07	0.25	0.02	**0.07**
3	-0.28	0.16	0.00	**-0.04**
4	-0.12	0.08	0.04	**0.00**
5	-0.36	0.00	0.00	**-0.12**
6	-0.50	-0.50	0.00	**-0.33**
Weighted Mean	**-0.12**	**0.19**	**0.01**	**0.03**

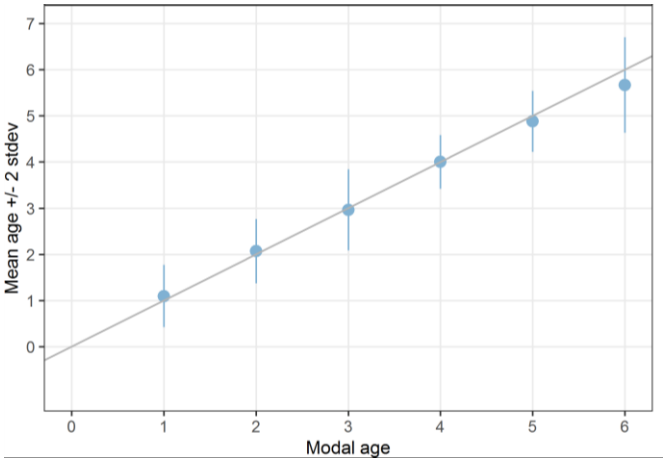

Figure 3.7: Age bias plot for advanced readers on broken otoliths.

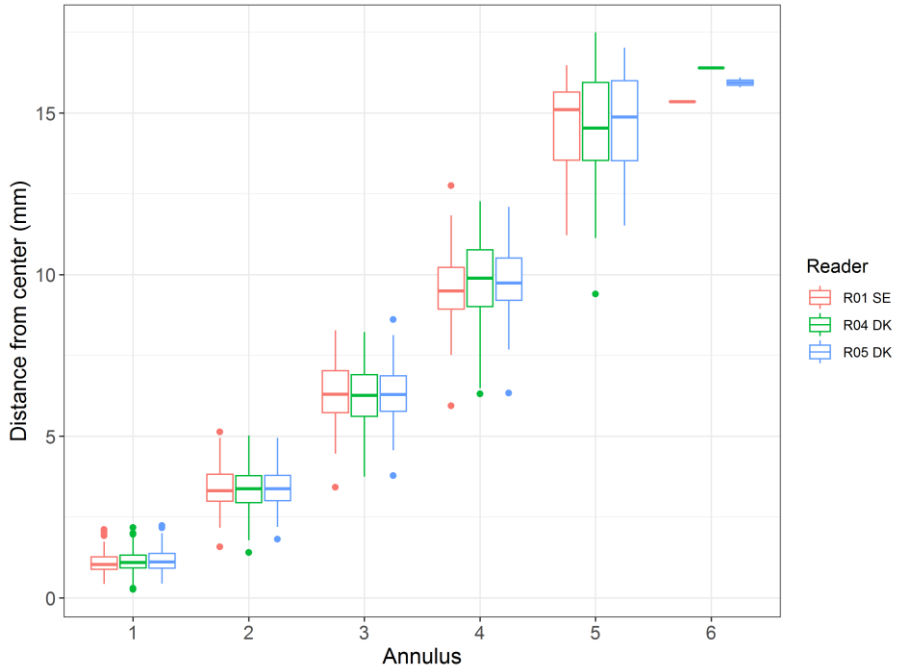

Figure 3.8: Plot of average distance from the centre to the translucent zones for advanced readers on broken otoliths. The boxes represent the median, upper and lower box boundaries of the interquartile range, whiskers represent the minimum and maximum values and the dots represent the outliers.

Results by subdivision

Table 3.22: CV per subdivision.

Modal age	27.3.b.23	27.3.c.22	all
1	33 %	27 %	**31 %**
2	17 %	15 %	**17 %**
3	15 %	9 %	**15 %**
4	7 %	0 %	**7 %**
5	7 %	-	**7 %**
6	9 %	-	**9 %**
Weighted Mean	**18 %**	**19 %**	**18 %**

Table 3.23: Percentage Agreement per subdivision.

Modal age	27.3.b.23	27.3.c.22	all
1	90 %	91 %	**90 %**
2	89 %	91 %	**89 %**
3	82 %	93 %	**83 %**
4	91 %	100 %	**92 %**
5	88 %	-	**88 %**
6	67 %	-	**67 %**
Weighted Mean	**87 %**	**91 %**	**88 %**

Table 3.24: Relative Bias per subdivision. Red and blue values indicate positive and negative bias, respectively.

Modal age	27.3.b.23	27.3.c.22	all
1	0.09	0.09	**0.09**
2	0.11	-0.04	**0.03**
3	-0.04	-0.07	**-0.05**
4	0.00	0.00	**0.00**
5	-0.12	-	**-**
6	-0.33	-	**-**
Weighted Mean	**0.03**	**0.02**	**0.02**

Table 3.25: Age error matrix (AEM) for 27.3.b.23. The AEM shows the proportional distribution of age readings for each modal age. Age column should sum to one but due to rounding there might be small deviations in some cases. Only advanced readers are used for calculating the AEM.

Modal age	1	2	3	4	5	6
Age 0	0.01042	-	-	-	-	-
Age 1	0.89583	0.00813	-	-	-	-
Age 2	0.08333	0.88618	0.114035	-	-	-
Age 3	0.01042	0.09756	0.815789	0.04348	-	-
Age 4	-	0.00813	0.061404	0.91304	0.1212	-
Age 5	-	-	0.008772	0.04348	0.8788	0.3333
Age 6	-	-	-	-	-	0.6667

Table 3.26: Age error matrix (AEM) for 27.3.c.22. The AEM shows the proportional distribution of age readings for each modal age. Age column should sum to one but due to rounding there might be small deviations in some cases. Only advanced readers are used for calculating the AEM.

Modal age	1	2	3	4
Age 1	0.90566	0.06667	-	-
Age 2	0.09434	0.91111	0.06667	-
Age 3	-	0.02222	0.93333	-
Age 4	-	-	-	1

3.2.5 Modal age comparison of broken and sectioned otoliths

For all 186 fish an image of a broken and sectioned otolith was provided for the readers to annotate and give an estimation of age. To compare the age readings from the broken and sectioned otoliths the modal age was calculated (based only on expert readers for each method) for each broken otolith and each sectioned otolith. A two-way comparison of modal ages showed that of the 186 fish there were 163 where there was agreement, and 23 where there was disagreement between the two methods. The percentage agreed was 87%, with a CV of 8.5% and a positive bias of 0.027.

Table 3.27: Overview results when comparing broken and sectioned otoliths from the same fish

No. Aged	186
No. Agreed	163
No. Disagreed	23
Bias	0.027
CV	0.085
APE	6.08
% Agreed	87%

Table 3.28: Modal age broken versus modal age sectioned comparison matrix. Green shaded area is agreement between methods, blue represents under-ageing by the broken method and grey represents over-ageing by the broken method.

Sectioned Age	Broken Age							
	0	1	2	3	4	5	6	Total
0								
1		49	5					54
2		1	46	4				51
3			5	37	3			45
4				2	20	1		23
5					1	10	1	12
6							1	1
Total		50	56	43	24	11	2	186

For the comparison matrix (Table 3.28) the modal age was first calculated for each otolith and method, then sectioned modal age compared against broken modal age. The numbers shown are the actual number (not proportions) of otoliths where the modal age was the same for the two methods (green), the modal age broken was higher compared to the modal age sectioned (grey) and the modal age broken was lower compared to the modal age sectioned (blue). The numbers in grey (n=14) mean that of all (n=186) otoliths there are 14 (8%) where a higher modal age is reached from the broken method, compared to the numbers in blue (n=9, or 5%) where a lower modal age is reached from the broken method. On closer examination of the otoliths it is clear that on the sectioned otoliths the transition from translucent to opaque zones is much sharper and with higher contrast, making it much easier to identify which are the correct translucent zones to be counted when estimating the age of the fish. The outer edge of the otoliths and the edge type (opaque or translucent), which is crucial to be able to age the fish correctly, is clear on the sectioned otoliths whereas on the broken otolith the edge is blurry and shadows are visible. In Figure 3.9.a annotations from 3 different readers are shown on a broken otolith (red dots, age = 3, blue dots, age = 2 and orange

dots, age = 1), the modal age is 1 based on advanced readers. In Figure 3.9.b, the sectioned otolith, all but one reader estimated age 2 and annotated the same translucent zones.

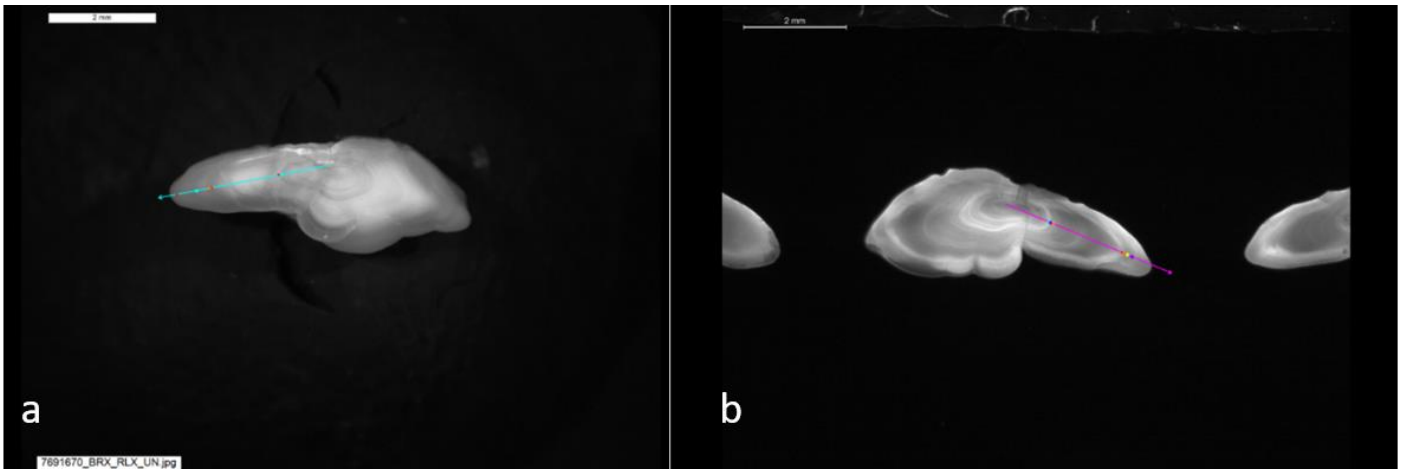

Figure 3.9. Comparison of a broken (a) and sectioned otolith (b) from cod 7691670, catch date 10/03/2018, length 390 mm, modal age 2. Note the better contrast and the sharper transitions between zones in the image of the sectioned otolith.

Conclusion

For both the broken otolith event (ID 294) and the sectioned otolith event (ID 292) there was an improvement in the overall level of agreement when only the advanced readers age estimations are included in the analysis.

For sectioned otoliths (ID 292), the PA increased from 83% (all readers) to 91% (advanced readers), with individual reader PA for the experienced readers ranging from 83% to 98%. When all readers are included, it is the inexperienced readers from Denmark (R06 DK and R09 DK) who are mostly contributing to the lower PA. Both showed a large bias in comparison to the modal age (Table 3.5). This is the first time that these readers have taken part in an exchange for Western Baltic cod and for one reader it is the first year age reading in general. The overall CV decreases from 25% (all readers) to 17% (advanced readers) and it is the higher variability in the Danish age readers estimations that are contributing to the higher overall CV when all readers are included in the analysis. Based on only the advanced readers the overall relative bias is positive (Table 3.9 and Figure 3.3), the same trend is apparent when all readers are included. In comparison to the 2019 exchanges, the same trends are apparent with the Swedish and Danish readers showing positive relative bias and the German reader negative relative bias.

For broken otoliths (ID 294), the PA increases from 84% (all readers) to 88% (advanced readers), with individual reader PA for the experienced readers ranging from 81% to 97%. Only Danish and Swedish readers completed this event and all basic readers have only 1 or 2 years of age reading experience with this stock. The overall CV decreases from 22% (all readers) to 18% (advanced readers) with the Danish age readers showing the highest average CVs. The overall relative bias is positive when only advanced readers are included in the analysis (Table 3.21 and Figure 3.7), with R01 SE underestimating at all ages except modal age 1 and R04 DK showing an opposite pattern. When all readers are included, a general pattern is apparent with Swedish readers showing a negative relative bias and Danish readers a positive relative bias.

The otolith growth plots show that for the broken otoliths there is a wider range of maximum and minimum values and a greater number of outliers in comparison to that for the sectioned otoliths. This shows that the readers find it more difficult to clearly identify the transition from translucent to opaque zones on the broken otoliths.

The results from the modal age comparison used only the expert readers to calculate modal age for each method. Modal ages were compared by a two-way comparison. In general, there was a high level of agreement between methods with a higher number of otoliths being over-aged (n= 14) compared to under-aged (n=9) when broken modal age was compared to sectioned modal age. At modal age 1, this is most noticeable with 5 fish being estimated to be 2 years old by the broken method. It is important to note that when looking closer at the individual reader results for each method (Annex 2, Tables 6.1 and 6.3), it is clear that for some expert readers and even more so for the inexperienced readers, the broken otoliths cause confusion and incorrect age estimates which is in part due to the poor quality of the preparations but also reader errors. When the otoliths are not broken correctly through the nucleus, the first TZ is not clear and in some examples, it is not visible. In addition, the edge type is much more difficult to determine on the broken otoliths compared to sectioned otoliths.

The age reading issues apparent from an examination of the otoliths are consistent with previous exchanges carried out for this stock, namely the inclusion of a translucent zone at the edge in the later part of the year, leading to overestimation of age. No age 0 fish were included in this exchange but the problem is apparent with age 1 fish (see Figure 5.3). The problems with correct identification of the first TZ is problematic for some readers and this is mostly

apparent with the broken otoliths and for the inexperienced readers. It is recommended that the measuring tool in SmartDots is used if in doubt and the guideline diameter of 2.0mm +/- 0.5mm for the first TZ is followed (see age reading guide in https://smartdots.ices.dk/ViewEvent?key=251 and McQueen et al. 2019). The diameter of the first TZ is more difficult to measure on broken otoliths because they are routinely viewed under a binocular. If following the guideline measurements, a common magnification and graticule are required.

For Western Baltic cod (age 0 to 3), recent age validation studies using tetracycline marked recaptures showed that the translucent zones are formed during the summer, contrary to the assumption that TZ's are formed during winter (McQueen et al., 2019, Krumme et al., 2020, Plonus et al. 2021). This means that readers need to adjust their interpretations of the TZ's for this stock. However, when reading otoliths from other cod stocks (as 3 of the Danish participants do), they should follow the traditional age reading approach. An age reader guide for Western Baltic cod (age 0 to 3) with image examples was compiled after the 2019 exchanges and readers are strongly advised to follow this when reading Western Baltic cod otoliths, especially for training purposes.

When comparing the weighed modal age from the sectioned otoliths (determined by the advanced readers) to the original age estimations in the national database (and in DATRAS) (Annex 2 Table 6.2), the discrepancies reflect the reader bias observed in this exchange, where there is a general tendency for Danish readers to overestimate the age of the fish by 1 year. This is partly due to the fact that these readers also read cod from other stocks where the traditional growth patterns are observed in the otoliths. Correct identification of the innermost translucent zone has lead to underestimation of age by 1 year in some fish and is possibly due to the reading method used prior to 2020. By correcting the ages in DATRAS the results from this exchange directly improve the quality of the data used in the stock assessment of the Western Baltic cod stock. From 2020 onwards, Danish readers will only read sectioned otoliths from Western Baltic cod. The close cooperation between Danish, German and Swedish age reading labs, Western Baltic cod stock assessor and stock coordinator in recent years has resulted in an overall improvement in the quality of the age data used in the stock assessment. The series of exchanges have focussed on solving the age reading errors which have become apparent during the process while also realising the need to standardise the age reading methods. Numerous meetings have been held with the readers to discuss exchange results and images.

4 References

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Krumme, U., Stötera S., McQueen, K. and Pahlke E. (2020) Age validation of age 0−3 wild cod *Gadus morhua* in the western Baltic Sea through mark−recapture and tetracycline marking of otoliths. Marine Ecology Progress Series, https://doi.org/10.3354/meps13380

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Plonus, R., McQueen, K., Günther, C., Funk, S., Temming, A., Krumme, U. (2021) Is analysis of otolith microstructure a valid method for investigating early life history of Western Baltic cod? Marine Biology 168:30, DOI:10.1007/s00227-021-03834-x

Report of the autumn 2019 Western Baltic cod (*Gadus morhua*) age reading exchange – SD 22. Coordination and analysis: Stefanie Haase and Uwe Krumme (Thünen Institute of Baltic Sea Fisheries, Germany) https://smartdots.ices.dk/ViewEvent?key=251 **An age reading guide for Western Baltic cod (cod2224) is attached to this document.**

Report of the spring 2019 Western Baltic cod (*Gadus morhua*) age reading exchange – SD 22. Coordination and analysis: Stefanie Haase and Uwe Krumme (Thünen Institute of Baltic Sea Fisheries, Rostock, Germany) https://smartdots.ices.dk/ViewEvent?key=201

5 Annex 1. Image examples

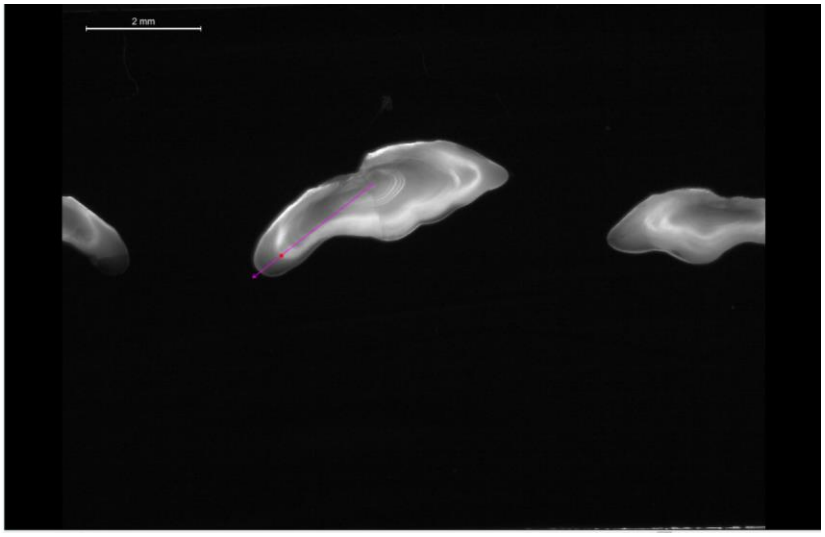


Figure 5.1 Cod 7479751, catch date 02/02/2017, length 300 mm, modal age 1 (advanced readers), 57% PA (all readers). Some readers are counting the innermost translucent ring (diameter 1.32 mm) as the first TZ and some readers are counting only the outermost TZ.

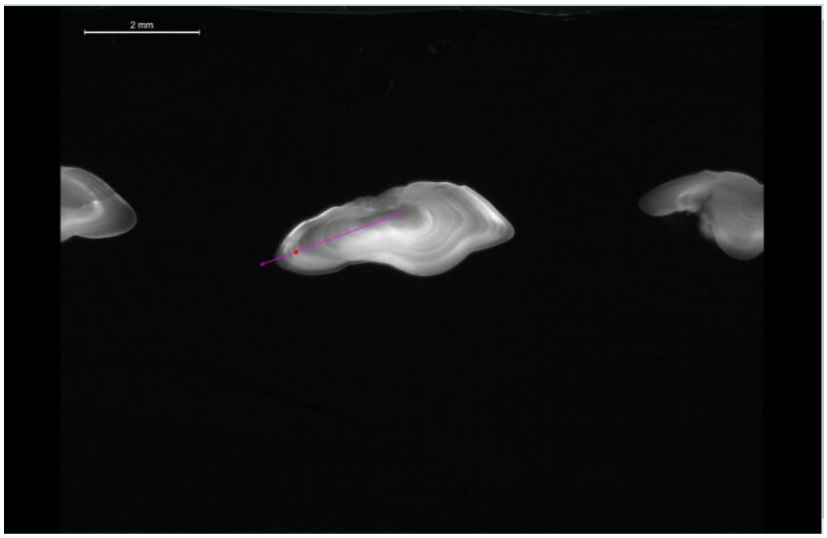


Figure 5.2 Cod 7476954, catch date 03/03/2017, length 240mm, modal age 1 (advanced readers), 57% PA (all readers). Readers do no agree on which structures are the TZ's, 2 advanced readers giving age 1 and 2 advanced readers giving age 2. Measureing the settling ring is difficult as it is so diffuse.

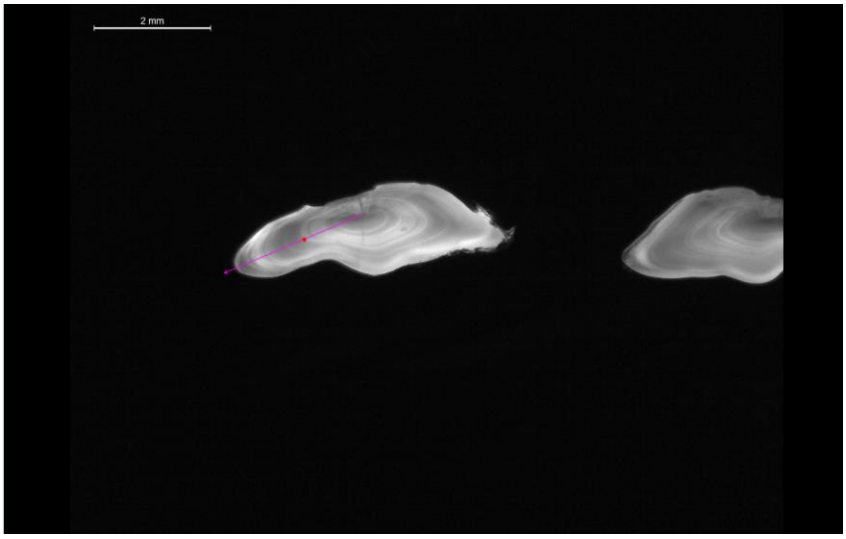


Figure 5.3 Cod 8028009, catch date 27/10/2019, length 310mm, modal age 1 (advanced readers), 50% PA (all readers). Many readers count the second TZ and estimate age 2. A TZ at the edge should not be counted in Q4. Other examples include cod 8028011, 8028013, 8033478 and 8035849.

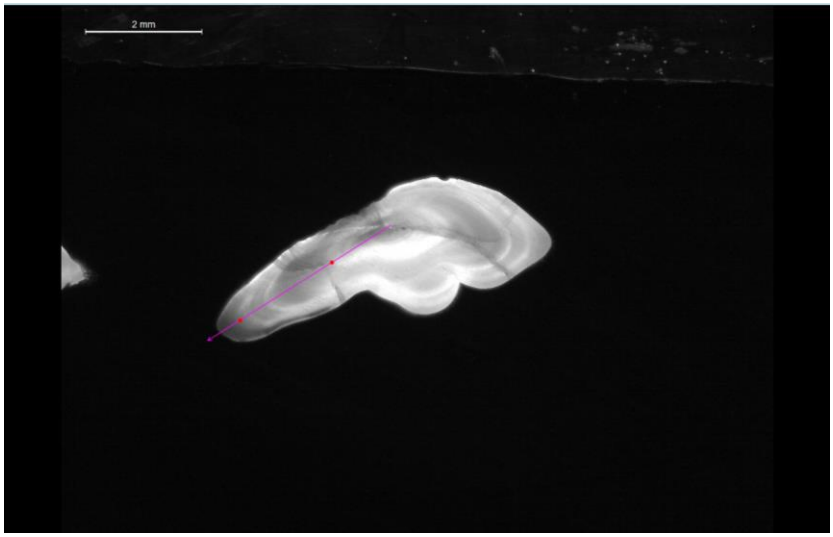


Figure 5.4 Cod 7692095, catch date 09/03/2018, length 410 mm, modal age 2 (advanced readers), 50% PA (all readers), with some readers counting a double ring structure as a third TZ. The double ring can be identified relatively easy: the distance between the two rings is unrealistically small to reflect growth that has occurred during one full year of life.

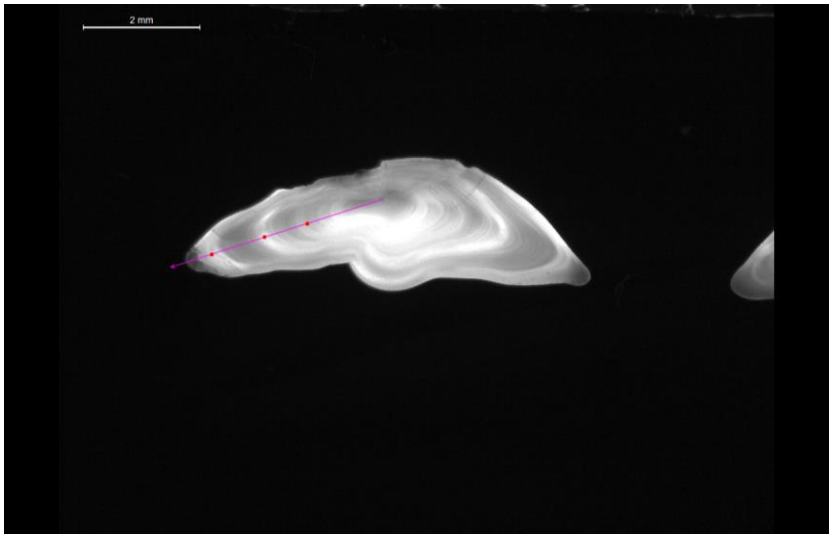


Figure 5.5 Cod 7691252, catch date 10/03/2018, length 440 mm, modal age 3 (advanced readers), 86% PA (all readers), with some readers counting the edge and some not being able to correctly identify the innermost TZ

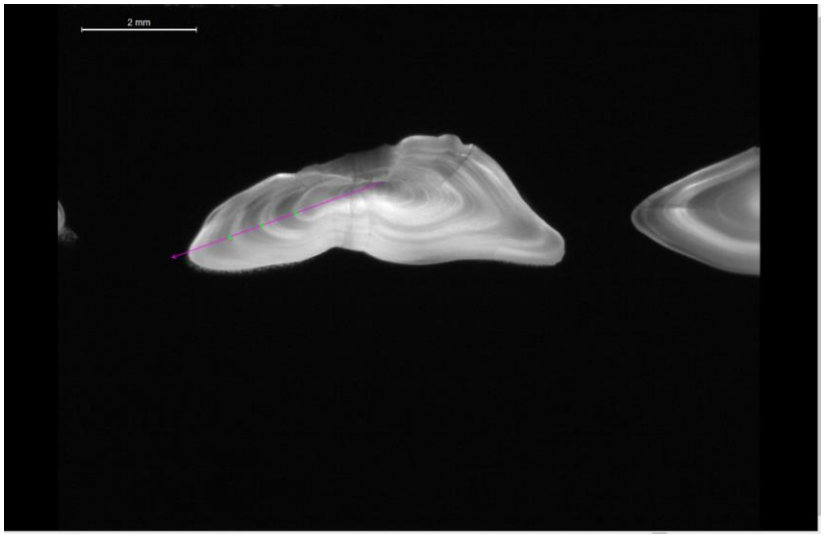


Figure 5.6 Cod 7802575, catch date 23/10/2018, length 470 mm, modal age 3 (advanced readers), 50% PA (all readers), with some readers counting the TZ at the edge. Similar examples are cod 7802578 and cod 7802579.

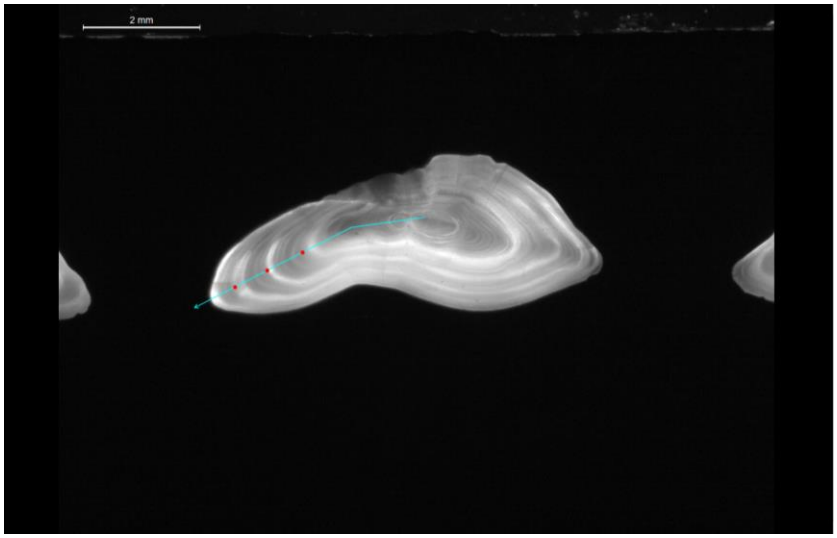


Figure 5.7 Cod 7803221, catch date 24/10/2018, length 560 mm, modal 3 (advanced readers), 60 % PA (all readers), with some readers counting the innermost ring as the first TZ (diameter 0.92 mm)

6 Annex 2. Additional results

6.1 Results all readers on sectioned otoliths (ID 292)

Table 6.1: Data overview including modal age and statistics per sample.

Fish ID	Event ID	Image ID	length	sex	Catch date	ICES area	R02 DE	R03 DE	R04 DK	R05 DK	R06 DK	R08 SE	R09 DK	Modal age	PA %	CV %	APE %
7469362_SEX_TLX_UN	292	-	250	M	19/02/2017 06:52:03	27.3.c.22	2	2	2	-	-	2	-	2	100	0	0
7469704_SEX_TLX_UN	292	-	230	F	19/02/2017 13:34:03	27.3.c.22	1	1	1	1	1	1	2	1	86	33	21
7470549_SEX_TLX_UN	292	-	230	M	21/02/2017 06:47:03	27.3.c.22	-	1	1	1	1	1	1	1	100	0	0
7470560_SEX_TLX_UN	292	-	230	M	21/02/2017 06:47:03	27.3.c.22	-	1	1	1	1	1	1	1	100	0	0
7470563_SEX_TLX_UN	292	-	250	M	21/02/2017 06:47:03	27.3.c.22	-	1	1	1	1	1	1	1	100	0	0
7471844_SEX_TLX_UN	292	-	290	F	24/02/2017 06:45:03	27.3.c.22	-	2	2	2	2	1	2	2	83	22	15
7471845_SEX_TLX_UN	292	-	220	F	24/02/2017 06:45:03	27.3.c.22	-	1	1	1	1	1	1	1	100	0	0
7471846_SEX_TLX_UN	292	-	230	M	24/02/2017 06:45:03	27.3.c.22	-	1	1	1	1	1	2	1	83	35	24
7471850_SEX_TLX_UN	292	-	230	M	24/02/2017 06:45:03	27.3.c.22	1	1	1	1	1	1	1	1	100	0	0
7471855_SEX_TLX_UN	292	-	220	F	24/02/2017 06:45:03	27.3.c.22	1	1	1	1	1	1	2	1	86	33	21
7471858_SEX_TLX_UN	292	-	220	F	24/02/2017 06:45:03	27.3.c.22	1	1	1	1	1	1	1	1	100	0	0
7471861_SEX_TLX_UN	292	-	270	F	24/02/2017 06:45:03	27.3.c.22	-	2	2	2	1	2	2	2	83	22	15
7471862_SEX_TLX_UN	292	-	250	M	24/02/2017 06:45:03	27.3.c.22	-	1	1	1	1	1	2	1	83	35	24
7472304_SEX_TLX_UN	292	-	240	M	25/02/2017 08:49:03	27.3.c.22	1	1	1	1	1	1	1	1	100	0	0
7472658_SEX_TLX_UN	292	-	230	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7472659_SEX_TLX_UN	292	-	240	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7472660_SEX_TLX_UN	292	-	270	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7472661_SEX_TLX_UN	292	-	250	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7472662_SEX_TLX_UN	292	-	260	M	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0

7472663_SEX_TLX_UN	292	-	280	M	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	2	1	2	1	71	38	32
7472885_SEX_TLX_UN	292	-	230	F	26/02/2017 09:13:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7472886_SEX_TLX_UN	292	-	250	M	26/02/2017 09:13:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7476954_SEX_TLX_UN	292	-	240	M	03/03/2017 06:18:03	27.3.b.23	1	1	2	2	1	2	2	2	57	34	31
7479736_SEX_TLX_UN	292	-	280	M	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	2	1	1	1	86	33	21
7479738_SEX_TLX_UN	292	-	260	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7479739_SEX_TLX_UN	292	-	220	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7479746_SEX_TLX_UN	292	-	240	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7479747_SEX_TLX_UN	292	-	250	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7479751_SEX_TLX_UN	292	-	300	M	02/03/2017 15:07:03	27.3.b.23	1	1	2	1	2	1	2	1	57	37	34
7479752_SEX_TLX_UN	292	-	230	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7479774_SEX_TLX_UN	292	-	210	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7683832_SEX_TLX_UN	292	-	380	M	02/03/2018 11:56:00	27.3.c.22	-	2	2	2	-	2	2	2	100	0	0
7683837_SEX_TLX_UN	292	-	320	F	02/03/2018 11:56:00	27.3.c.22	-	2	2	2	-	2	3	2	80	20	15
7684244_SEX_TLX_UN	292	-	350	F	02/03/2018 06:19:00	27.3.c.22	-	2	0	2	-	2	2	2	80	56	40
7684506_SEX_TLX_UN	292	-	350	M	28/02/2018 07:31:00	27.3.c.22	-	3	3	3	-	3	4	3	80	14	10
7684507_SEX_TLX_UN	292	-	330	M	28/02/2018 07:31:00	27.3.c.22	-	2	2	2	-	2	2	2	100	0	0
7685580_SEX_TLX_UN	292	-	440	F	27/02/2018 08:32:00	27.3.c.22	2	2	2	2	-	2	2	2	100	0	0
7691251_SEX_TLX_UN	292	-	410	M	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7691252_SEX_TLX_UN	292	-	440	F	10/03/2018 12:07:00	27.3.b.23	3	3	3	3	2	3	3	3	86	13	9
7691255_SEX_TLX_UN	292	-	450	F	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	2	2	3	2	86	18	11
7691259_SEX_TLX_UN	292	-	470	F	10/03/2018 12:07:00	27.3.b.23	2	2	2	3	-	2	3	2	67	22	19

7691265_SEX_TLX_UN	292	-	420	F	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	-	2	3	2	83	19	13
7691266_SEX_TLX_UN	292	-	510	F	10/03/2018 12:07:00	27.3.b.23	4	3	3	3	-	3	3	3	83	13	9
7691267_SEX_TLX_UN	292	-	430	M	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	-	2	2	2	100	0	0
7691269_SEX_TLX_UN	292	-	400	F	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	-	2	4	2	83	35	24
7691274_SEX_TLX_UN	292	-	460	M	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	-	2	2	2	100	0	0
7691275_SEX_TLX_UN	292	-	370	M	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	-	2	2	2	100	0	0
7691284_SEX_TLX_UN	292	-	480	F	10/03/2018 12:07:00	27.3.b.23	2	2	3	3	-	2	4	2	50	31	25
7691286_SEX_TLX_UN	292	-	530	F	10/03/2018 12:07:00	27.3.b.23	4	4	4	4	-	3	4	4	83	11	7
7691295_SEX_TLX_UN	292	-	520	M	10/03/2018 12:07:00	27.3.b.23	4	4	4	4	-	4	3	4	83	11	7
7691625_SEX_TLX_UN	292	-	400	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	-	2	2	2	100	0	0
7691630_SEX_TLX_UN	292	-	410	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	-	2	2	2	100	0	0
7691631_SEX_TLX_UN	292	-	450	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	-	2	3	2	83	19	13
7691632_SEX_TLX_UN	292	-	420	F	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	-	2	2	2	100	0	0
7691633_SEX_TLX_UN	292	-	500	M	10/03/2018 06:23:00	27.3.b.23	4	4	4	4	-	4	4	4	100	0	0
7691640_SEX_TLX_UN	292	-	430	F	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	-	2	2	2	100	0	0
7691642_SEX_TLX_UN	292	-	470	F	10/03/2018 06:23:00	27.3.b.23	4	4	4	4	-	4	4	4	100	0	0
7691644_SEX_TLX_UN	292	-	480	M	10/03/2018 06:23:00	27.3.b.23	4	4	4	4	-	4	4	4	100	0	0
7691658_SEX_TLX_UN	292	-	460	F	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	-	2	2	2	100	0	0
7691670_SEX_TLX_UN	292	-	390	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	-	2	4	2	83	35	24
7691680_SEX_TLX_UN	292	-	440	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	-	2	4	2	83	35	24
7692095_SEX_TLX_UN	292	-	410	F	09/03/2018 07:24:00	27.3.b.23	2	2	2	3	-	3	3	2	50	22	20
7692096_SEX_TLX_UN	292	-	450	F	09/03/2018 07:24:00	27.3.b.23	2	2	2	-	-	2	3	2	80	20	15

7692139_SEX_TLX_UN	292	-	430	F	08/03/2018 14:22:00	27.3.b.23	2	2	2	3	-	2	3	2	67	22	19
7692141_SEX_TLX_UN	292	-	460	F	08/03/2018 14:22:00	27.3.b.23	2	2	2	2	-	2	3	2	83	19	13
7692147_SEX_TLX_UN	292	-	390	F	08/03/2018 14:22:00	27.3.b.23	2	3	2	3	-	2	3	2	50	22	20
7692149_SEX_TLX_UN	292	-	410	M	08/03/2018 14:22:00	27.3.b.23	2	2	2	2	-	2	3	2	83	19	13
7692150_SEX_TLX_UN	292	-	490	M	08/03/2018 14:22:00	27.3.b.23	4	4	4	4	-	-	4	4	100	0	0
7692155_SEX_TLX_UN	292	-	410	F	08/03/2018 14:22:00	27.3.b.23	2	2	2	2	-	-	2	2	100	0	0
7692167_SEX_TLX_UN	292	-	430	M	08/03/2018 14:22:00	27.3.b.23	2	2	2	2	-	-	3	2	80	20	15
7692422_SEX_TLX_UN	292	-	460	M	08/03/2018 11:10:00	27.3.b.23	4	4	4	4	-	-	4	4	100	0	0
7692425_SEX_TLX_UN	292	-	430	M	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	-	-	2	2	100	0	0
7692426_SEX_TLX_UN	292	-	440	M	08/03/2018 11:10:00	27.3.b.23	2	2	2	4	-	-	3	2	60	34	28
7692427_SEX_TLX_UN	292	-	500	M	08/03/2018 11:10:00	27.3.b.23	4	4	4	4	-	-	5	4	80	11	8
7692432_SEX_TLX_UN	292	-	370	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	3	-	-	2	2	80	20	15
7692433_SEX_TLX_UN	292	-	360	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	-	-	2	2	100	0	0
7692438_SEX_TLX_UN	292	-	400	M	08/03/2018 11:10:00	27.3.b.23	4	4	4	4	-	-	4	4	100	0	0
7692439_SEX_TLX_UN	292	-	380	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	-	-	3	2	80	20	15
7692442_SEX_TLX_UN	292	-	460	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	-	-	4	2	80	37	27
7692716_SEX_TLX_UN	292	-	320	M	04/03/2018 08:59:00	27.3.c.22	-	2	2	2	-	2	2	2	100	0	0
7692717_SEX_TLX_UN	292	-	410	M	04/03/2018 08:59:00	27.3.c.22	-	2	2	2	-	2	2	2	100	0	0
7692720_SEX_TLX_UN	292	-	360	M	04/03/2018 08:59:00	27.3.c.22	2	2	2	2	-	2	2	2	100	0	0
7694575_SEX_TLX_UN	292	-	310	M	06/03/2018 07:22:00	27.3.c.22	2	2	2	2	2	2	2	2	100	0	0
7802567_SEX_TLX_UN	292	-	500	M	23/10/2018 06:13:00	27.3.b.23	4	4	4	4	-	-	4	4	100	0	0
7802575_SEX_TLX_UN	292	-	470	M	23/10/2018 06:13:00	27.3.b.23	-	3	4	3	-	-	4	3	50	16	14

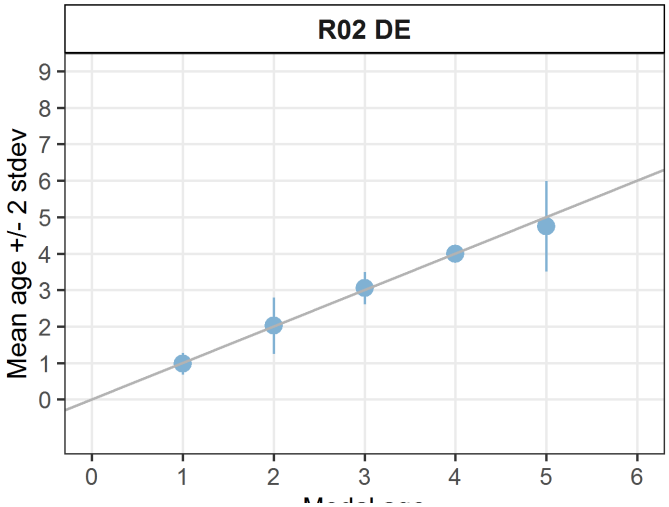
7802578_SEX_TLX_UN	292	-	570	F	23/10/2018 06:13:00	27.3.b.23	2	2	3	2	-	-	3	2	60	23	20
7802579_SEX_TLX_UN	292	-	540	F	23/10/2018 06:13:00	27.3.b.23	2	2	3	2	-	-	3	2	60	23	20
7802580_SEX_TLX_UN	292	-	510	F	23/10/2018 06:13:00	27.3.b.23	3	3	3	3	-	-	3	3	100	0	0
7802892_SEX_TLX_UN	292	-	530	F	24/10/2018 06:41:00	27.3.b.23	2	2	2	2	-	-	3	2	80	20	15
7803204_SEX_TLX_UN	292	-	590	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	-	-	5	4	80	11	8
7803205_SEX_TLX_UN	292	-	570	M	24/10/2018 14:55:00	27.3.b.23	4	5	6	5	-	-	6	5	40	16	12
7803210_SEX_TLX_UN	292	-	530	M	24/10/2018 14:55:00	27.3.b.23	3	3	3	3	-	-	4	3	80	14	10
7803214_SEX_TLX_UN	292	-	510	M	24/10/2018 14:55:00	27.3.b.23	-	4	4	4	-	-	5	4	75	12	9
7803215_SEX_TLX_UN	292	-	670	F	24/10/2018 14:55:00	27.3.b.23	4	4	4	3	-	-	5	4	60	18	10
7803218_SEX_TLX_UN	292	-	490	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	-	-	5	4	80	11	8
7803221_SEX_TLX_UN	292	-	560	M	24/10/2018 14:55:00	27.3.b.23	4	4	3	3	-	-	4	4	60	15	13
7803224_SEX_TLX_UN	292	-	620	F	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	-	-	5	4	80	11	8
7803225_SEX_TLX_UN	292	-	600	F	24/10/2018 14:55:00	27.3.b.23	4	4	4	5	-	-	5	4	60	12	11
7803226_SEX_TLX_UN	292	-	630	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	-	-	5	4	80	11	8
7805199_SEX_TLX_UN	292	-	640	F	28/10/2018 09:12:00	27.3.b.23	2	2	2	2	-	-	6	2	80	64	46
7895908_SEX_TLX_UN	292	-	510	M	28/02/2019 14:27:21	27.3.b.23	4	4	4	4	-	-	4	4	100	0	0
7895914_SEX_TLX_UN	292	-	550	F	28/02/2019 14:27:21	27.3.b.23	4	4	4	4	-	-	4	4	100	0	0
7895917_SEX_TLX_UN	292	-	540	M	28/02/2019 14:27:21	27.3.b.23	4	4	3	4	-	-	4	4	80	12	8
7895925_SEX_TLX_UN	292	-	520	M	28/02/2019 14:27:21	27.3.b.23	4	3	3	3	-	-	5	3	60	25	20
7895927_SEX_TLX_UN	292	-	570	M	28/02/2019 14:27:21	27.3.b.23	3	-	2	2	-	-	4	2	50	35	27
7895941_SEX_TLX_UN	292	-	280	M	28/02/2019 14:27:21	27.3.b.23	3	3	2	1	2	-	2	2	50	35	26
7896061_SEX_TLX_UN	292	-	550	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	-	-	3	3	100	0	0

7896062_SEX_TLX_UN	292	-	580	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	-	-	4	3	80	14	10
7896063_SEX_TLX_UN	292	-	560	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	-	-	3	3	100	0	0
7896064_SEX_TLX_UN	292	-	570	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	-	-	5	3	80	26	19
7896065_SEX_TLX_UN	292	-	500	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	-	-	3	3	100	0	0
7896067_SEX_TLX_UN	292	-	540	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	-	-	3	3	100	0	0
7896072_SEX_TLX_UN	292	-	530	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	-	-	3	3	100	0	0
7896074_SEX_TLX_UN	292	-	510	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	5	-	-	5	3	60	29	25
7896075_SEX_TLX_UN	292	-	520	F	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	-	-	4	3	80	14	10
7896562_SEX_TLX_UN	292	-	520	F	01/03/2019 09:53:07	27.3.b.23	3	3	3	3	-	-	5	3	80	26	19
7896563_SEX_TLX_UN	292	-	510	M	01/03/2019 09:53:07	27.3.b.23	3	3	3	3	-	-	4	3	80	14	10
7896578_SEX_TLX_UN	292	-	260	F	01/03/2019 09:53:07	27.3.b.23	3	2	2	1	1	-	2	2	50	41	30
7896579_SEX_TLX_UN	292	-	310	F	01/03/2019 09:53:07	27.3.b.23	3	3	3	2	2	-	2	2	50	22	20
7896580_SEX_TLX_UN	292	-	300	M	01/03/2019 09:53:07	27.3.b.23	3	3	3	3	2	-	2	3	67	19	17
7896581_SEX_TLX_UN	292	-	320	M	01/03/2019 09:53:07	27.3.b.23	3	3	3	3	-	-	3	3	100	0	0
7896582_SEX_TLX_UN	292	-	290	M	01/03/2019 09:53:07	27.3.b.23	3	3	3	3	2	-	3	3	83	14	10
7896583_SEX_TLX_UN	292	-	280	M	01/03/2019 09:53:07	27.3.b.23	3	3	3	2	2	-	3	3	67	19	17
7896584_SEX_TLX_UN	292	-	270	F	01/03/2019 09:53:07	27.3.b.23	3	3	3	1	1	-	2	3	50	45	38
7896818_SEX_TLX_UN	292	-	600	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	3	-	-	3	3	100	0	0
7896820_SEX_TLX_UN	292	-	620	F	02/03/2019 06:57:32	27.3.b.23	-	3	3	3	-	-	3	3	100	0	0
7896828_SEX_TLX_UN	292	-	560	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	3	-	-	3	3	100	0	0
7896839_SEX_TLX_UN	292	-	300	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	2	2	-	3	3	67	19	17
7896840_SEX_TLX_UN	292	-	280	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	3	2	-	3	3	83	14	10

7896841_SEX_TLX_UN	292	-	280	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	3	2	-	3	3	83	14	10
7897089_SEX_TLX_UN	292	-	660	F	02/03/2019 10:16:07	27.3.b.23	4	4	4	4	-	-	4	4	100	0	0
7897105_SEX_TLX_UN	292	-	320	M	02/03/2019 10:16:07	27.3.b.23	3	3	3	3	-	-	3	3	100	0	0
7897108_SEX_TLX_UN	292	-	310	M	02/03/2019 10:16:07	27.3.b.23	3	3	3	2	2	-	3	3	67	19	17
7897817_SEX_TLX_UN	292	-	210	F	04/03/2019 08:27:43	27.3.c.22	1	1	1	1	1	1	1	1	100	0	0
7898645_SEX_TLX_UN	292	-	400	M	06/03/2019 10:04:56	27.3.c.22	3	3	3	4	-	3	3	3	83	13	9
7898833_SEX_TLX_UN	292	-	670	M	07/03/2019 09:03:00	27.3.c.22	3	3	3	3	-	3	4	3	83	13	9
7898834_SEX_TLX_UN	292	-	700	F	07/03/2019 09:03:00	27.3.c.22	4	4	4	4	4	4	5	4	86	9	6
7898835_SEX_TLX_UN	292	-	600	M	07/03/2019 09:03:00	27.3.c.22	3	3	3	3	-	2	4	3	67	21	11
7899238_SEX_TLX_UN	292	-	600	F	07/03/2019 13:13:19	27.3.c.22	3	3	3	3	-	3	4	3	83	13	9
8027453_SEX_TLX_UN	292	-	670	F	26/10/2019 06:16:52	27.3.b.23	3	3	3	3	-	-	5	3	80	26	19
8027466_SEX_TLX_UN	292	-	630	M	26/10/2019 06:16:52	27.3.b.23	-	6	6	6	-	-	6	6	100	0	0
8027468_SEX_TLX_UN	292	-	330	M	26/10/2019 06:16:52	27.3.b.23	1	1	2	1	-	-	2	1	60	39	34
8027469_SEX_TLX_UN	292	-	370	M	26/10/2019 06:16:52	27.3.b.23	3	3	3	3	-	-	3	3	100	0	0
8027470_SEX_TLX_UN	292	-	360	F	26/10/2019 06:16:52	27.3.b.23	1	1	1	1	-	-	0	1	80	56	40
8027471_SEX_TLX_UN	292	-	250	F	26/10/2019 06:16:52	27.3.b.23	1	1	2	2	1	-	2	1	50	37	33
8027472_SEX_TLX_UN	292	-	280	M	26/10/2019 06:16:52	27.3.b.23	1	1	1	1	0	-	2	1	67	63	33
8027473_SEX_TLX_UN	292	-	310	M	26/10/2019 06:16:52	27.3.b.23	1	1	2	2	1	-	2	1	50	37	33
8027474_SEX_TLX_UN	292	-	620	F	26/10/2019 06:16:52	27.3.b.23	3	3	3	3	-	-	5	3	80	26	19
8027476_SEX_TLX_UN	292	-	550	F	26/10/2019 06:16:52	27.3.b.23	3	3	3	4	-	-	5	3	60	25	20
8027479_SEX_TLX_UN	292	-	610	M	26/10/2019 06:16:52	27.3.b.23	3	3	3	3	-	-	5	3	80	26	19
8027486_SEX_TLX_UN	292	-	330	M	26/10/2019 06:16:52	27.3.b.23	2	2	2	2	-	-	4	2	80	37	27

8027487_SEX_TLX_UN	292	-	280	F	26/10/2019 06:16:52	27.3.b.23	1	1	1	1	0	-	2	1	67	63	33
8027489_SEX_TLX_UN	292	-	300	F	26/10/2019 06:16:52	27.3.b.23	1	1	1	1	1	-	2	1	83	35	24
8027633_SEX_TLX_UN	292	-	600	M	26/10/2019 09:50:59	27.3.b.23	5	5	5	5	-	-	5	5	100	0	0
8027634_SEX_TLX_UN	292	-	590	M	26/10/2019 09:50:59	27.3.b.23	3	4	5	5	-	-	5	5	60	20	16
8027635_SEX_TLX_UN	292	-	570	F	26/10/2019 09:50:59	27.3.b.23	3	3	3	3	-	-	4	3	80	14	10
8027966_SEX_TLX_UN	292	-	820	F	27/10/2019 06:29:35	27.3.b.23	4	4	4	4	4	-	5	4	83	10	7
8027968_SEX_TLX_UN	292	-	740	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	4	-	5	5	83	8	6
8027969_SEX_TLX_UN	292	-	710	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	5	-	5	5	100	0	0
8027970_SEX_TLX_UN	292	-	730	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	5	-	5	5	100	0	0
8027971_SEX_TLX_UN	292	-	720	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	5	-	6	5	83	8	5
8027974_SEX_TLX_UN	292	-	680	M	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	4	-	5	5	83	8	6
8027979_SEX_TLX_UN	292	-	670	M	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	-	-	8	5	80	24	17
8027984_SEX_TLX_UN	292	-	700	M	27/10/2019 06:29:35	27.3.b.23	5	5	6	5	5	-	5	5	83	8	5
8027985_SEX_TLX_UN	292	-	650	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	-	-	6	5	80	9	6
8027986_SEX_TLX_UN	292	-	590	M	27/10/2019 06:29:35	27.3.b.23	5	5	6	5	-	-	5	5	80	9	6
8027998_SEX_TLX_UN	292	-	440	M	27/10/2019 06:29:35	27.3.b.23	3	3	3	3	-	-	4	3	80	14	10
8028003_SEX_TLX_UN	292	-	380	M	27/10/2019 06:29:35	27.3.b.23	2	2	2	2	-	-	4	2	80	37	27
8028005_SEX_TLX_UN	292	-	360	M	27/10/2019 06:29:35	27.3.b.23	1	1	1	2	-	-	2	1	60	39	34
8028006_SEX_TLX_UN	292	-	350	F	27/10/2019 06:29:35	27.3.b.23	1	1	1	2	-	-	3	1	60	56	45
8028007_SEX_TLX_UN	292	-	340	F	27/10/2019 06:29:35	27.3.b.23	1	1	1	1	-	-	2	1	80	37	27
8028008_SEX_TLX_UN	292	-	320	M	27/10/2019 06:29:35	27.3.b.23	1	1	1	1	-	-	3	1	80	64	46
8028009_SEX_TLX_UN	292	-	310	M	27/10/2019 06:29:35	27.3.b.23	1	1	2	2	1	-	2	1	50	37	33

8028010_SEX_TLX_UN	292	-	300	F	27/10/2019 06:29:35	27.3.b.23	1	1	1	2	1	-	2	1	67	39	33
8028011_SEX_TLX_UN	292	-	290	F	27/10/2019 06:29:35	27.3.b.23	1	1	2	2	1	-	3	1	50	49	40
8028012_SEX_TLX_UN	292	-	270	F	27/10/2019 06:29:35	27.3.b.23	1	1	2	1	-	-	2	1	60	39	34
8028013_SEX_TLX_UN	292	-	260	M	27/10/2019 06:29:35	27.3.b.23	1	1	1	2	0	-	2	1	50	65	48
8033478_SEX_TLX_UN	292	-	310	F	02/11/2019 12:42:38	27.3.c.22	1	1	2	2	2	1	2	2	57	34	31
8033643_SEX_TLX_UN	292	-	280	M	03/11/2019 06:30:19	27.3.c.22	1	1	1	1	0	1	2	1	71	58	29
8034770_SEX_TLX_UN	292	-	310	F	05/11/2019 06:44:10	27.3.c.22	1	1	1	1	1	-	2	1	83	35	24
8035849_SEX_TLX_UN	292	-	350	F	06/11/2019 10:32:48	27.3.c.22	1	1	2	2	-	-	2	2	60	34	30
8035850_SEX_TLX_UN	292	-	310	F	06/11/2019 10:32:48	27.3.c.22	1	1	1	2	1	-	2	1	67	39	33
8036605_SEX_TLX_UN	292	-	310	M	07/11/2019 10:53:34	27.3.c.22	1	1	1	1	1	-	3	1	83	61	42
8036606_SEX_TLX_UN	292	-	290	M	07/11/2019 10:53:34	27.3.c.22	1	1	1	1	1	-	2	1	83	35	24
8036607_SEX_TLX_UN	292	-	270	M	07/11/2019 10:53:34	27.3.c.22	1	1	1	1	0	-	2	1	67	63	33
8036608_SEX_TLX_UN	292	-	260	M	07/11/2019 10:53:34	27.3.c.22	0	1	1	1	0	-	2	1	50	90	67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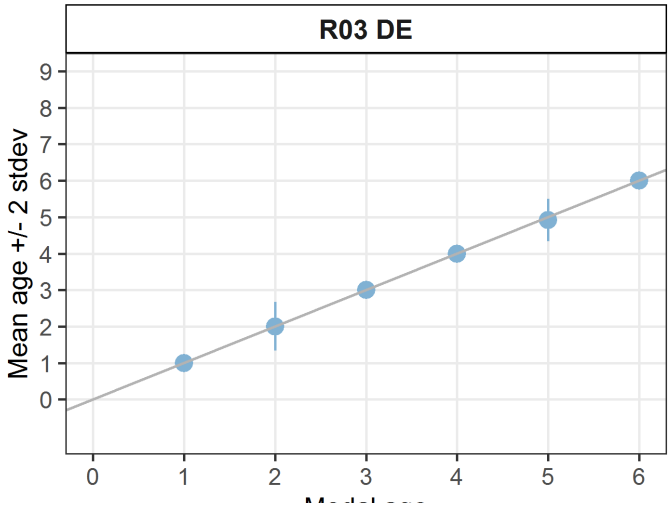
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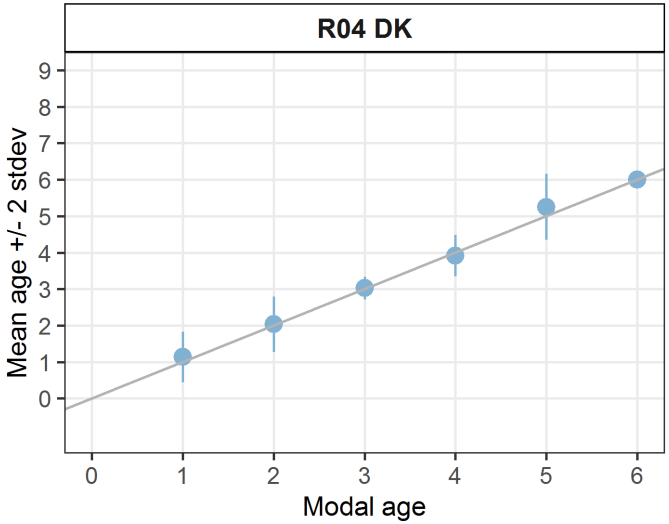
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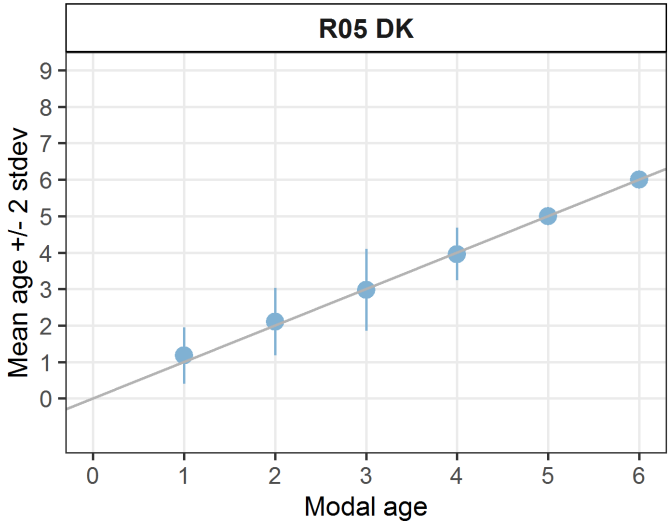
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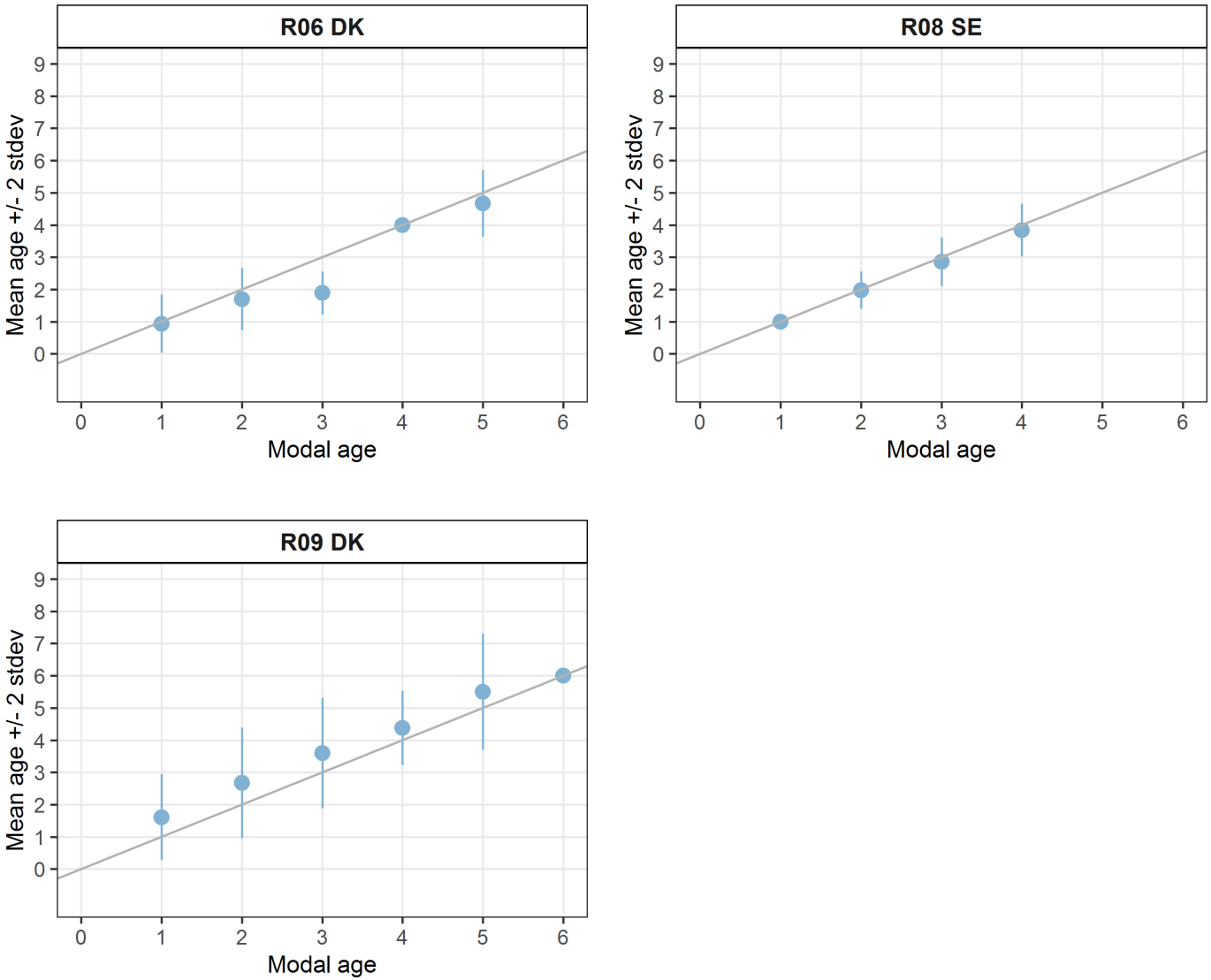


Figure 6.1: Individual age bias plot for all readers on sectioned otoliths.

6.2 Results advanced readers on sectioned otoliths (ID 292)

Table 6.2: Data overview including modal age and statistics per sample. The final two columns have been added to show DATRAS age, which is the original age estimation by the former Danish age reader and DATRAS age compared to Modal age, which shows the difference between the original age estimation and the modal age.

Fish ID	Event ID	Image ID	length	sex	Catch date	ICES area	R02 DE	R03 DE	R04 DK	R05 DK	Modal age	PA %	CV %	APE %	*DATRAS age*	*DATRAS age compared to Modal age*
7469362_SEX_TLX_UN	292	-	250	M	19/02/2017 06:52:03	27.3.c.22	2	2	2	-	2	100	0	0	*2*	-
7469704_SEX_TLX_UN	292	-	230	F	19/02/2017 13:34:03	27.3.c.22	1	1	1	1	1	100	0	0	*2*	*+1*
7470549_SEX_TLX_UN	292	-	230	M	21/02/2017 06:47:03	27.3.c.22	-	1	1	1	1	100	0	0	*2*	*+1*
7470560_SEX_TLX_UN	292	-	230	M	21/02/2017 06:47:03	27.3.c.22	-	1	1	1	1	100	0	0	*2*	*+1*
7470563_SEX_TLX_UN	292	-	250	M	21/02/2017 06:47:03	27.3.c.22	-	1	1	1	1	100	0	0	*2*	*+1*
7471844_SEX_TLX_UN	292	-	290	F	24/02/2017 06:45:03	27.3.c.22	-	2	2	2	2	100	0	0	*2*	-
7471845_SEX_TLX_UN	292	-	220	F	24/02/2017 06:45:03	27.3.c.22	-	1	1	1	1	100	0	0	*2*	*+1*
7471846_SEX_TLX_UN	292	-	230	M	24/02/2017 06:45:03	27.3.c.22	-	1	1	1	1	100	0	0	*2*	*+1*
7471850_SEX_TLX_UN	292	-	230	M	24/02/2017 06:45:03	27.3.c.22	1	1	1	1	1	100	0	0	*2*	*+1*
7471855_SEX_TLX_UN	292	-	220	F	24/02/2017 06:45:03	27.3.c.22	1	1	1	1	1	100	0	0	*2*	*+1*
7471858_SEX_TLX_UN	292	-	220	F	24/02/2017 06:45:03	27.3.c.22	1	1	1	1	1	100	0	0	*2*	*+1*
7471861_SEX_TLX_UN	292	-	270	F	24/02/2017 06:45:03	27.3.c.22	-	2	2	2	2	100	0	0	*2*	-
7471862_SEX_TLX_UN	292	-	250	M	24/02/2017 06:45:03	27.3.c.22	-	1	1	1	1	100	0	0	*2*	*+1*
7472304_SEX_TLX_UN	292	-	240	M	25/02/2017 08:49:03	27.3.c.22	1	1	1	1	1	100	0	0	*2*	*+1*
7472658_SEX_TLX_UN	292	-	230	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
7472659_SEX_TLX_UN	292	-	240	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
7472660_SEX_TLX_UN	292	-	270	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*

7472661_SEX_TLX_UN	292	-	250	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
7472662_SEX_TLX_UN	292	-	260	M	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
7472663_SEX_TLX_UN	292	-	280	M	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
7472885_SEX_TLX_UN	292	-	230	F	26/02/2017 09:13:03	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
7472886_SEX_TLX_UN	292	-	250	M	26/02/2017 09:13:03	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
7476954_SEX_TLX_UN	292	-	240	M	03/03/2017 06:18:03	27.3.b.23	1	1	2	2	1	50	38	33	*2*	*+1*
7479736_SEX_TLX_UN	292	-	280	M	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
7479738_SEX_TLX_UN	292	-	260	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
7479739_SEX_TLX_UN	292	-	220	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
7479746_SEX_TLX_UN	292	-	240	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
7479747_SEX_TLX_UN	292	-	250	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
7479751_SEX_TLX_UN	292	-	300	M	02/03/2017 15:07:03	27.3.b.23	1	1	2	1	1	75	40	30	*2*	*+1*
7479752_SEX_TLX_UN	292	-	230	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
7479774_SEX_TLX_UN	292	-	210	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
7683832_SEX_TLX_UN	292	-	380	M	02/03/2018 11:56:00	27.3.c.22	-	2	2	2	2	100	0	0	*3*	*+1*
7683837_SEX_TLX_UN	292	-	320	F	02/03/2018 11:56:00	27.3.c.22	-	2	2	2	2	100	0	0	*3*	*+1*
7684244_SEX_TLX_UN	292	-	350	F	02/03/2018 06:19:00	27.3.c.22	-	2	0	2	2	67	87	67	*3*	*+1*
7684506_SEX_TLX_UN	292	-	350	M	28/02/2018 07:31:00	27.3.c.22	-	3	3	3	3	100	0	0	*3*	-
7684507_SEX_TLX_UN	292	-	330	M	28/02/2018 07:31:00	27.3.c.22	-	2	2	2	2	100	0	0	*3*	*+1*
7685580_SEX_TLX_UN	292	-	440	F	27/02/2018 08:32:00	27.3.c.22	2	2	2	2	2	100	0	0	*3*	*+1*
7691251_SEX_TLX_UN	292	-	410	M	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7691252_SEX_TLX_UN	292	-	440	F	10/03/2018 12:07:00	27.3.b.23	3	3	3	3	3	100	0	0	*3*	-

7691255_SEX_TLX_UN	292	-	450	F	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7691259_SEX_TLX_UN	292	-	470	F	10/03/2018 12:07:00	27.3.b.23	2	2	2	3	2	75	22	17	*3*	*+1*
7691265_SEX_TLX_UN	292	-	420	F	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7691266_SEX_TLX_UN	292	-	510	F	10/03/2018 12:07:00	27.3.b.23	4	3	3	3	3	75	15	12	*3*	-
7691267_SEX_TLX_UN	292	-	430	M	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7691269_SEX_TLX_UN	292	-	400	F	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7691274_SEX_TLX_UN	292	-	460	M	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7691275_SEX_TLX_UN	292	-	370	M	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7691284_SEX_TLX_UN	292	-	480	F	10/03/2018 12:07:00	27.3.b.23	2	2	3	3	2	50	23	20	*3*	*+1*
7691286_SEX_TLX_UN	292	-	530	F	10/03/2018 12:07:00	27.3.b.23	4	4	4	4	4	100	0	0	*3*	*-1*
7691295_SEX_TLX_UN	292	-	520	M	10/03/2018 12:07:00	27.3.b.23	4	4	4	4	4	100	0	0	*3*	*-1*
7691625_SEX_TLX_UN	292	-	400	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7691630_SEX_TLX_UN	292	-	410	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7691631_SEX_TLX_UN	292	-	450	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7691632_SEX_TLX_UN	292	-	420	F	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7691633_SEX_TLX_UN	292	-	500	M	10/03/2018 06:23:00	27.3.b.23	4	4	4	4	4	100	0	0	*3*	*-1*
7691640_SEX_TLX_UN	292	-	430	F	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7691642_SEX_TLX_UN	292	-	470	F	10/03/2018 06:23:00	27.3.b.23	4	4	4	4	4	100	0	0	*3*	*-1*
7691644_SEX_TLX_UN	292	-	480	M	10/03/2018 06:23:00	27.3.b.23	4	4	4	4	4	100	0	0	*3*	*-1*
7691658_SEX_TLX_UN	292	-	460	F	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7691670_SEX_TLX_UN	292	-	390	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7691680_SEX_TLX_UN	292	-	440	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*

7692095_SEX_TLX_UN	292	-	410	F	09/03/2018 07:24:00	27.3.b.23	2	2	2	3	2	75	22	17	*3*	*+1*
7692096_SEX_TLX_UN	292	-	450	F	09/03/2018 07:24:00	27.3.b.23	2	2	2	-	2	100	0	0	*3*	*+1*
7692139_SEX_TLX_UN	292	-	430	F	08/03/2018 14:22:00	27.3.b.23	2	2	2	3	2	75	22	17	*3*	*+1*
7692141_SEX_TLX_UN	292	-	460	F	08/03/2018 14:22:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7692147_SEX_TLX_UN	292	-	390	F	08/03/2018 14:22:00	27.3.b.23	2	3	2	3	2	50	23	20	*3*	*+1*
7692149_SEX_TLX_UN	292	-	410	M	08/03/2018 14:22:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7692150_SEX_TLX_UN	292	-	490	M	08/03/2018 14:22:00	27.3.b.23	4	4	4	4	4	100	0	0	*3*	*-1*
7692155_SEX_TLX_UN	292	-	410	F	08/03/2018 14:22:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7692167_SEX_TLX_UN	292	-	430	M	08/03/2018 14:22:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7692422_SEX_TLX_UN	292	-	460	M	08/03/2018 11:10:00	27.3.b.23	4	4	4	4	4	100	0	0	*3*	*-1*
7692425_SEX_TLX_UN	292	-	430	M	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7692426_SEX_TLX_UN	292	-	440	M	08/03/2018 11:10:00	27.3.b.23	2	2	2	4	2	75	40	30	*3*	*+1*
7692427_SEX_TLX_UN	292	-	500	M	08/03/2018 11:10:00	27.3.b.23	4	4	4	4	4	100	0	0	*3*	*-1*
7692432_SEX_TLX_UN	292	-	370	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	3	2	75	22	17	*3*	*+1*
7692433_SEX_TLX_UN	292	-	360	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7692438_SEX_TLX_UN	292	-	400	M	08/03/2018 11:10:00	27.3.b.23	4	4	4	4	4	100	0	0	*3*	*-1*
7692439_SEX_TLX_UN	292	-	380	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7692442_SEX_TLX_UN	292	-	460	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7692716_SEX_TLX_UN	292	-	320	M	04/03/2018 08:59:00	27.3.c.22	-	2	2	2	2	100	0	0	*3*	*+1*
7692717_SEX_TLX_UN	292	-	410	M	04/03/2018 08:59:00	27.3.c.22	-	2	2	2	2	100	0	0	*3*	*+1*
7692720_SEX_TLX_UN	292	-	360	M	04/03/2018 08:59:00	27.3.c.22	2	2	2	2	2	100	0	0	*3*	*+1*
7694575_SEX_TLX_UN	292	-	310	M	06/03/2018 07:22:00	27.3.c.22	2	2	2	2	2	100	0	0	*3*	*+1*

7802567_SEX_TLX_UN	292	-	500	M	23/10/2018 06:13:00	27.3.b.23	4	4	4	4	4	100	0	0	*3*	*-1*
7802575_SEX_TLX_UN	292	-	470	M	23/10/2018 06:13:00	27.3.b.23	-	3	4	3	3	67	17	13	*3*	-
7802578_SEX_TLX_UN	292	-	570	F	23/10/2018 06:13:00	27.3.b.23	2	2	3	2	2	75	22	17	*3*	*+1*
7802579_SEX_TLX_UN	292	-	540	F	23/10/2018 06:13:00	27.3.b.23	2	2	3	2	2	75	22	17	*3*	*+1*
7802580_SEX_TLX_UN	292	-	510	F	23/10/2018 06:13:00	27.3.b.23	3	3	3	3	3	100	0	0	*3*	-
7802892_SEX_TLX_UN	292	-	530	F	24/10/2018 06:41:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7803204_SEX_TLX_UN	292	-	590	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	4	100	0	0	*3*	*-1*
7803205_SEX_TLX_UN	292	-	570	M	24/10/2018 14:55:00	27.3.b.23	4	5	6	5	5	50	16	10	*3*	*-2*
7803210_SEX_TLX_UN	292	-	530	M	24/10/2018 14:55:00	27.3.b.23	3	3	3	3	3	100	0	0	*3*	-
7803214_SEX_TLX_UN	292	-	510	M	24/10/2018 14:55:00	27.3.b.23	-	4	4	4	4	100	0	0	*3*	*-1*
7803215_SEX_TLX_UN	292	-	670	F	24/10/2018 14:55:00	27.3.b.23	4	4	4	3	4	75	13	10	*3*	*-1*
7803218_SEX_TLX_UN	292	-	490	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	4	100	0	0	*3*	*-1*
7803221_SEX_TLX_UN	292	-	560	M	24/10/2018 14:55:00	27.3.b.23	4	4	3	3	3	50	16	14	*3*	-
7803224_SEX_TLX_UN	292	-	620	F	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	4	100	0	0	*3*	*-1*
7803225_SEX_TLX_UN	292	-	600	F	24/10/2018 14:55:00	27.3.b.23	4	4	4	5	4	75	12	9	*3*	*-1*
7803226_SEX_TLX_UN	292	-	630	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	4	100	0	0	*3*	*-1*
7805199_SEX_TLX_UN	292	-	640	F	28/10/2018 09:12:00	27.3.b.23	2	2	2	2	2	100	0	0	*3*	*+1*
7895908_SEX_TLX_UN	292	-	510	M	28/02/2019 14:27:21	27.3.b.23	4	4	4	4	4	100	0	0	*4*	-
7895914_SEX_TLX_UN	292	-	550	F	28/02/2019 14:27:21	27.3.b.23	4	4	4	4	4	100	0	0	*4*	-
7895917_SEX_TLX_UN	292	-	540	M	28/02/2019 14:27:21	27.3.b.23	4	4	3	4	4	75	13	10	*4*	-
7895925_SEX_TLX_UN	292	-	520	M	28/02/2019 14:27:21	27.3.b.23	4	3	3	3	3	75	15	12	*4*	*+1*
7895927_SEX_TLX_UN	292	-	570	M	28/02/2019 14:27:21	27.3.b.23	3	-	2	2	2	67	25	19	*4*	*+2*

7895941_SEX_TLX_UN	292	-	280	M	28/02/2019 14:27:21	27.3.b.23	3	3	2	1	3	50	43	33	*2*	*-1*
7896061_SEX_TLX_UN	292	-	550	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
7896062_SEX_TLX_UN	292	-	580	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
7896063_SEX_TLX_UN	292	-	560	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
7896064_SEX_TLX_UN	292	-	570	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
7896065_SEX_TLX_UN	292	-	500	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
7896067_SEX_TLX_UN	292	-	540	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
7896072_SEX_TLX_UN	292	-	530	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
7896074_SEX_TLX_UN	292	-	510	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	5	3	75	29	21	*4*	*+1*
7896075_SEX_TLX_UN	292	-	520	F	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
7896562_SEX_TLX_UN	292	-	520	F	01/03/2019 09:53:07	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
7896563_SEX_TLX_UN	292	-	510	M	01/03/2019 09:53:07	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
7896578_SEX_TLX_UN	292	-	260	F	01/03/2019 09:53:07	27.3.b.23	3	2	2	1	2	50	41	25	*2*	-
7896579_SEX_TLX_UN	292	-	310	F	01/03/2019 09:53:07	27.3.b.23	3	3	3	2	3	75	18	14	*2*	*-1*
7896580_SEX_TLX_UN	292	-	300	M	01/03/2019 09:53:07	27.3.b.23	3	3	3	3	3	100	0	0	*2*	*-1*
7896581_SEX_TLX_UN	292	-	320	M	01/03/2019 09:53:07	27.3.b.23	3	3	3	3	3	100	0	0	*2*	*-1*
7896582_SEX_TLX_UN	292	-	290	M	01/03/2019 09:53:07	27.3.b.23	3	3	3	3	3	100	0	0	*2*	*-1*
7896583_SEX_TLX_UN	292	-	280	M	01/03/2019 09:53:07	27.3.b.23	3	3	3	2	3	75	18	14	*2*	*-1*
7896584_SEX_TLX_UN	292	-	270	F	01/03/2019 09:53:07	27.3.b.23	3	3	3	1	3	75	40	30	*2*	*-1*
7896818_SEX_TLX_UN	292	-	600	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
7896820_SEX_TLX_UN	292	-	620	F	02/03/2019 06:57:32	27.3.b.23	-	3	3	3	3	100	0	0	*4*	*+1*
7896828_SEX_TLX_UN	292	-	560	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*

7896839_SEX_TLX_UN	292	-	300	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	2	3	75	18	14	*2*	*-1*
7896840_SEX_TLX_UN	292	-	280	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	3	3	100	0	0	*2*	*-1*
7896841_SEX_TLX_UN	292	-	280	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	3	3	100	0	0	*2*	*-1*
7897089_SEX_TLX_UN	292	-	660	F	02/03/2019 10:16:07	27.3.b.23	4	4	4	4	4	100	0	0	*4*	-
7897105_SEX_TLX_UN	292	-	320	M	02/03/2019 10:16:07	27.3.b.23	3	3	3	3	3	100	0	0	*2*	*-1*
7897108_SEX_TLX_UN	292	-	310	M	02/03/2019 10:16:07	27.3.b.23	3	3	3	2	3	75	18	14	*2*	*-1*
7897817_SEX_TLX_UN	292	-	210	F	04/03/2019 08:27:43	27.3.c.22	1	1	1	1	1	100	0	0	*2*	*+1*
7898645_SEX_TLX_UN	292	-	400	M	06/03/2019 10:04:56	27.3.c.22	3	3	3	4	3	75	15	12	*4*	*+1*
7898833_SEX_TLX_UN	292	-	670	M	07/03/2019 09:03:00	27.3.c.22	3	3	3	3	3	100	0	0	*4*	*+1*
7898834_SEX_TLX_UN	292	-	700	F	07/03/2019 09:03:00	27.3.c.22	4	4	4	4	4	100	0	0	*4*	-
7898835_SEX_TLX_UN	292	-	600	M	07/03/2019 09:03:00	27.3.c.22	3	3	3	3	3	100	0	0	*4*	*+1*
7899238_SEX_TLX_UN	292	-	600	F	07/03/2019 13:13:19	27.3.c.22	3	3	3	3	3	100	0	0	*4*	*+1*
8027453_SEX_TLX_UN	292	-	670	F	26/10/2019 06:16:52	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
8027466_SEX_TLX_UN	292	-	630	M	26/10/2019 06:16:52	27.3.b.23	-	6	6	6	6	100	0	0	*4*	*-2*
8027468_SEX_TLX_UN	292	-	330	M	26/10/2019 06:16:52	27.3.b.23	1	1	2	1	1	75	40	30	*2*	*+1*
8027469_SEX_TLX_UN	292	-	370	M	26/10/2019 06:16:52	27.3.b.23	3	3	3	3	3	100	0	0	*2*	*-1*
8027470_SEX_TLX_UN	292	-	360	F	26/10/2019 06:16:52	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
8027471_SEX_TLX_UN	292	-	250	F	26/10/2019 06:16:52	27.3.b.23	1	1	2	2	1	50	38	33	*1*	-
8027472_SEX_TLX_UN	292	-	280	M	26/10/2019 06:16:52	27.3.b.23	1	1	1	1	1	100	0	0	*1*	-
8027473_SEX_TLX_UN	292	-	310	M	26/10/2019 06:16:52	27.3.b.23	1	1	2	2	1	50	38	33	*2*	*+1*
8027474_SEX_TLX_UN	292	-	620	F	26/10/2019 06:16:52	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
8027476_SEX_TLX_UN	292	-	550	F	26/10/2019 06:16:52	27.3.b.23	3	3	3	4	3	75	15	12	*4*	*+1*

8027479_SEX_TLX_UN	292	-	610	M	26/10/2019 06:16:52	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
8027486_SEX_TLX_UN	292	-	330	M	26/10/2019 06:16:52	27.3.b.23	2	2	2	2	2	100	0	0	*2*	-
8027487_SEX_TLX_UN	292	-	280	F	26/10/2019 06:16:52	27.3.b.23	1	1	1	1	1	100	0	0	*1*	-
8027489_SEX_TLX_UN	292	-	300	F	26/10/2019 06:16:52	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
8027633_SEX_TLX_UN	292	-	600	M	26/10/2019 09:50:59	27.3.b.23	5	5	5	5	5	100	0	0	*4*	*-1*
8027634_SEX_TLX_UN	292	-	590	M	26/10/2019 09:50:59	27.3.b.23	3	4	5	5	5	50	23	18	*4*	*-1*
8027635_SEX_TLX_UN	292	-	570	F	26/10/2019 09:50:59	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
8027966_SEX_TLX_UN	292	-	820	F	27/10/2019 06:29:35	27.3.b.23	4	4	4	4	4	100	0	0	*4*	-
8027968_SEX_TLX_UN	292	-	740	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	5	100	0	0	*4*	*-1*
8027969_SEX_TLX_UN	292	-	710	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	5	100	0	0	*4*	*-1*
8027970_SEX_TLX_UN	292	-	730	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	5	100	0	0	*4*	*-1*
8027971_SEX_TLX_UN	292	-	720	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	5	100	0	0	*4*	*-1*
8027974_SEX_TLX_UN	292	-	680	M	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	5	100	0	0	*4*	*-1*
8027979_SEX_TLX_UN	292	-	670	M	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	5	100	0	0	*4*	*-1*
8027984_SEX_TLX_UN	292	-	700	M	27/10/2019 06:29:35	27.3.b.23	5	5	6	5	5	75	10	7	*4*	*-1*
8027985_SEX_TLX_UN	292	-	650	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	5	100	0	0	*4*	*-1*
8027986_SEX_TLX_UN	292	-	590	M	27/10/2019 06:29:35	27.3.b.23	5	5	6	5	5	75	10	7	*4*	*-1*
8027998_SEX_TLX_UN	292	-	440	M	27/10/2019 06:29:35	27.3.b.23	3	3	3	3	3	100	0	0	*4*	*+1*
8028003_SEX_TLX_UN	292	-	380	M	27/10/2019 06:29:35	27.3.b.23	2	2	2	2	2	100	0	0	*2*	-
8028005_SEX_TLX_UN	292	-	360	M	27/10/2019 06:29:35	27.3.b.23	1	1	1	2	1	75	40	30	*2*	*+1*
8028006_SEX_TLX_UN	292	-	350	F	27/10/2019 06:29:35	27.3.b.23	1	1	1	2	1	75	40	30	*2*	*+1*
8028007_SEX_TLX_UN	292	-	340	F	27/10/2019 06:29:35	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*

8028008_SEX_TLX_UN	292	-	320	M	27/10/2019 06:29:35	27.3.b.23	1	1	1	1	1	100	0	0	*2*	*+1*
8028009_SEX_TLX_UN	292	-	310	M	27/10/2019 06:29:35	27.3.b.23	1	1	2	2	1	50	38	33	*2*	*+1*
8028010_SEX_TLX_UN	292	-	300	F	27/10/2019 06:29:35	27.3.b.23	1	1	1	2	1	75	40	30	*2*	*+1*
8028011_SEX_TLX_UN	292	-	290	F	27/10/2019 06:29:35	27.3.b.23	1	1	2	2	1	50	38	33	*2*	*+1*
8028012_SEX_TLX_UN	292	-	270	F	27/10/2019 06:29:35	27.3.b.23	1	1	2	1	1	75	40	30	*1*	-
8028013_SEX_TLX_UN	292	-	260	M	27/10/2019 06:29:35	27.3.b.23	1	1	1	2	1	75	40	30	*1*	-
8033478_SEX_TLX_UN	292	-	310	F	02/11/2019 12:42:38	27.3.c.22	1	1	2	2	1	50	38	33	*2*	*+1*
8033643_SEX_TLX_UN	292	-	280	M	03/11/2019 06:30:19	27.3.c.22	1	1	1	1	1	100	0	0	*1*	-
8034770_SEX_TLX_UN	292	-	310	F	05/11/2019 06:44:10	27.3.c.22	1	1	1	1	1	100	0	0	*1*	-
8035849_SEX_TLX_UN	292	-	350	F	06/11/2019 10:32:48	27.3.c.22	1	1	2	2	1	50	38	33	*2*	*+1*
8035850_SEX_TLX_UN	292	-	310	F	06/11/2019 10:32:48	27.3.c.22	1	1	1	2	1	75	40	30	*1*	-
8036605_SEX_TLX_UN	292	-	310	M	07/11/2019 10:53:34	27.3.c.22	1	1	1	1	1	100	0	0	*2*	*+1*
8036606_SEX_TLX_UN	292	-	290	M	07/11/2019 10:53:34	27.3.c.22	1	1	1	1	1	100	0	0	*1*	-
8036607_SEX_TLX_UN	292	-	270	M	07/11/2019 10:53:34	27.3.c.22	1	1	1	1	1	100	0	0	*1*	-
8036608_SEX_TLX_UN	292	-	260	M	07/11/2019 10:53:34	27.3.c.22	0	1	1	1	1	75	67	50	*1*	-

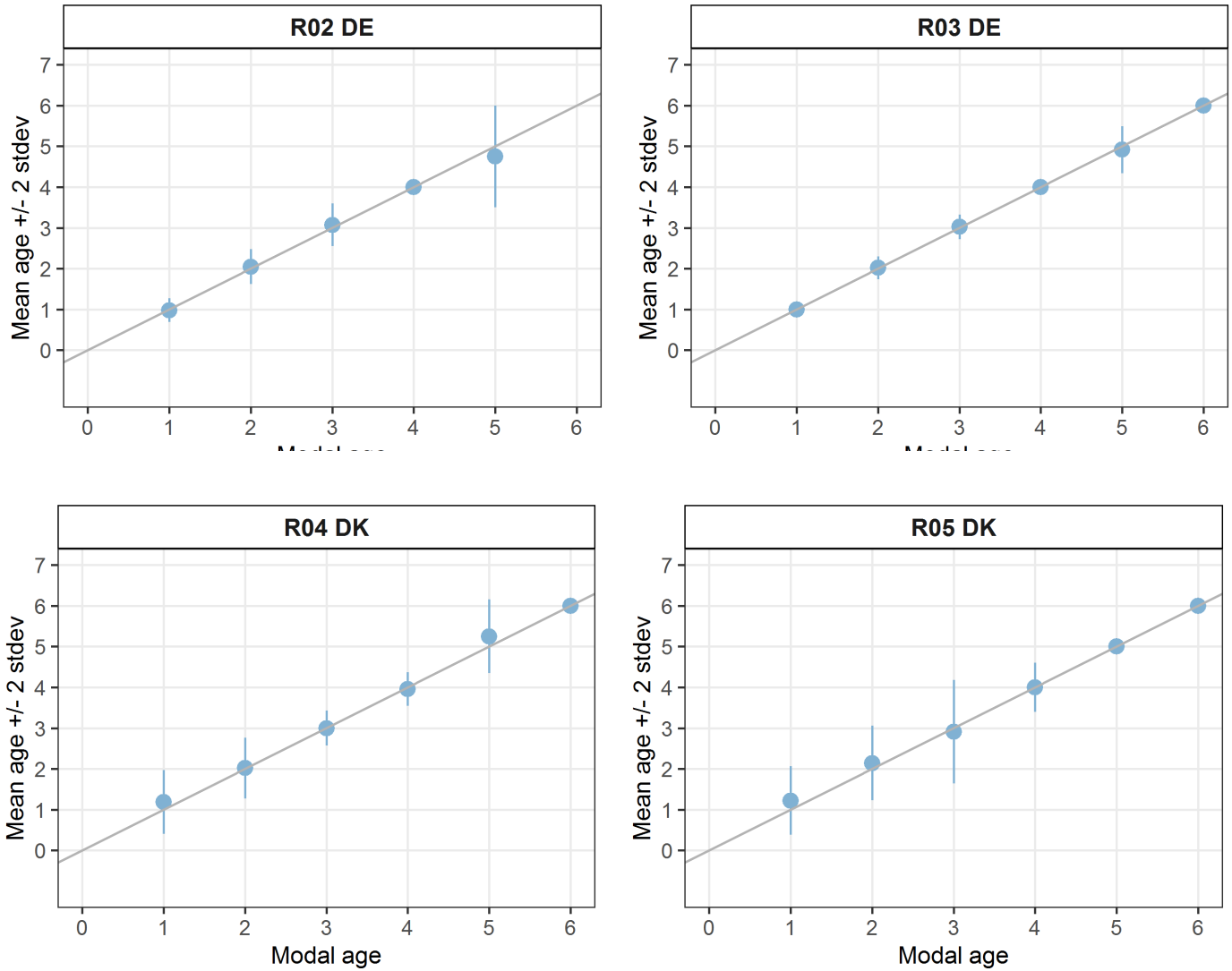


Figure 6.2: Individual age bias plot for advanced readers on sectioned otoliths.

6.3 Results all readers on broken otoliths (ID294)

Table 6.3: Data overview including modal age and statistics per sample.

Fish ID	Event ID	Image ID	length	sex	Catch date	ICES area	R01 SE	R04 DK	R05 DK	R06 DK	R07 SE	R08 SE	R09 DK	Modal age	PA %	CV %	APE %
7469362_BRX_RLX_UN	294	-	250	M	19/02/2017 06:52:03	27.3.c.22	2	2	2	2	2	2	2	2	100	0	0
7469704_BRX_RLX_UN	294	-	230	F	19/02/2017 13:34:03	27.3.c.22	1	1	1	1	1	1	1	1	100	0	0
7470549_BRX_RLX_UN	294	-	230	M	21/02/2017 06:47:03	27.3.c.22	1	1	1	1	1	1	1	1	100	0	0
7470560_BRX_RLX_UN	294	-	230	M	21/02/2017 06:47:03	27.3.c.22	1	1	1	1	1	1	1	1	100	0	0
7470563_BRX_RLX_UN	294	-	250	M	21/02/2017 06:47:03	27.3.c.22	1	1	1	1	1	1	1	1	100	0	0
7471844_BRX_RLX_UN	294	-	290	F	24/02/2017 06:45:03	27.3.c.22	2	3	2	2	2	2	2	2	86	18	11
7471845_BRX_RLX_UN	294	-	220	F	24/02/2017 06:45:03	27.3.c.22	1	2	1	1	1	1	1	1	86	33	21
7471846_BRX_RLX_UN	294	-	230	M	24/02/2017 06:45:03	27.3.c.22	1	2	1	2	1	1	2	1	57	37	34
7471850_BRX_RLX_UN	294	-	230	M	24/02/2017 06:45:03	27.3.c.22	1	1	1	1	1	1	1	1	100	0	0
7471855_BRX_RLX_UN	294	-	220	F	24/02/2017 06:45:03	27.3.c.22	1	1	1	1	1	1	1	1	100	0	0
7471858_BRX_RLX_UN	294	-	220	F	24/02/2017 06:45:03	27.3.c.22	1	1	1	1	1	1	1	1	100	0	0
7471861_BRX_RLX_UN	294	-	270	F	24/02/2017 06:45:03	27.3.c.22	2	2	2	2	2	2	2	2	100	0	0
7471862_BRX_RLX_UN	294	-	250	M	24/02/2017 06:45:03	27.3.c.22	1	1	1	1	1	1	1	1	100	0	0
7472304_BRX_RLX_UN	294	-	240	M	25/02/2017 08:49:03	27.3.c.22	-	1	1	1	1	1	1	1	100	0	0
7472658_BRX_RLX_UN	294	-	230	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7472659_BRX_RLX_UN	294	-	240	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7472660_BRX_RLX_UN	294	-	270	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7472661_BRX_RLX_UN	294	-	250	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0

7472662_BRX_RLX_UN	294	-	260	M	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7472663_BRX_RLX_UN	294	-	280	M	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7472885_BRX_RLX_UN	294	-	230	F	26/02/2017 09:13:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7472886_BRX_RLX_UN	294	-	250	M	26/02/2017 09:13:03	27.3.b.23	1	1	1	-	1	1	1	1	100	0	0
7476954_BRX_RLX_UN	294	-	240	M	03/03/2017 06:18:03	27.3.b.23	1	2	1	1	2	2	2	2	57	34	31
7479736_BRX_RLX_UN	294	-	280	M	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7479738_BRX_RLX_UN	294	-	260	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7479739_BRX_RLX_UN	294	-	220	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7479746_BRX_RLX_UN	294	-	240	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7479747_BRX_RLX_UN	294	-	250	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7479751_BRX_RLX_UN	294	-	300	M	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7479752_BRX_RLX_UN	294	-	230	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7479774_BRX_RLX_UN	294	-	210	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	1	1	1	1	100	0	0
7683832_BRX_RLX_UN	294	-	380	M	02/03/2018 11:56:00	27.3.c.22	2	2	2	2	2	2	2	2	100	0	0
7683837_BRX_RLX_UN	294	-	320	F	02/03/2018 11:56:00	27.3.c.22	2	2	2	2	2	2	2	2	100	0	0
7684244_BRX_RLX_UN	294	-	350	F	02/03/2018 06:19:00	27.3.c.22	2	2	2	2	2	2	2	2	100	0	0
7684506_BRX_RLX_UN	294	-	350	M	28/02/2018 07:31:00	27.3.c.22	2	3	3	3	3	4	3	3	71	19	10
7684507_BRX_RLX_UN	294	-	330	M	28/02/2018 07:31:00	27.3.c.22	2	2	2	2	2	2	2	2	100	0	0
7685580_BRX_RLX_UN	294	-	440	F	27/02/2018 08:32:00	27.3.c.22	2	2	2	2	2	2	2	2	100	0	0
7691251_BRX_RLX_UN	294	-	410	M	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	2	-	2	2	100	0	0
7691252_BRX_RLX_UN	294	-	440	F	10/03/2018 12:07:00	27.3.b.23	2	3	3	2	2	2	2	2	71	21	18
7691255_BRX_RLX_UN	294	-	450	F	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0

7691259_BRX_RLX_UN	294	-	470	F	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7691265_BRX_RLX_UN	294	-	420	F	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7691266_BRX_RLX_UN	294	-	510	F	10/03/2018 12:07:00	27.3.b.23	2	2	3	3	2	2	2	2	71	21	18
7691267_BRX_RLX_UN	294	-	430	M	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7691269_BRX_RLX_UN	294	-	400	F	10/03/2018 12:07:00	27.3.b.23	2	3	2	-	2	2	2	2	83	19	13
7691274_BRX_RLX_UN	294	-	460	M	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7691275_BRX_RLX_UN	294	-	370	M	10/03/2018 12:07:00	27.3.b.23	2	3	2	2	2	2	2	2	86	18	11
7691284_BRX_RLX_UN	294	-	480	F	10/03/2018 12:07:00	27.3.b.23	2	3	2	2	2	2	2	2	86	18	11
7691286_BRX_RLX_UN	294	-	530	F	10/03/2018 12:07:00	27.3.b.23	3	4	4	3	4	4	4	4	71	13	11
7691295_BRX_RLX_UN	294	-	520	M	10/03/2018 12:07:00	27.3.b.23	4	4	4	3	3	4	3	4	57	15	14
7691625_BRX_RLX_UN	294	-	400	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7691630_BRX_RLX_UN	294	-	410	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7691631_BRX_RLX_UN	294	-	450	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	2	2	3	2	86	18	11
7691632_BRX_RLX_UN	294	-	420	F	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7691633_BRX_RLX_UN	294	-	500	M	10/03/2018 06:23:00	27.3.b.23	4	4	4	3	4	4	4	4	86	10	6
7691640_BRX_RLX_UN	294	-	430	F	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7691642_BRX_RLX_UN	294	-	470	F	10/03/2018 06:23:00	27.3.b.23	4	4	4	3	4	4	4	4	86	10	6
7691644_BRX_RLX_UN	294	-	480	M	10/03/2018 06:23:00	27.3.b.23	4	4	4	3	4	4	4	4	86	10	6
7691658_BRX_RLX_UN	294	-	460	F	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7691670_BRX_RLX_UN	294	-	390	M	10/03/2018 06:23:00	27.3.b.23	2	3	1	2	2	2	2	2	71	29	14
7691680_BRX_RLX_UN	294	-	440	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	2	2	1	2	86	20	13
7692095_BRX_RLX_UN	294	-	410	F	09/03/2018 07:24:00	27.3.b.23	2	4	2	2	2	2	2	2	86	33	21

7692096_BRX_RLX_UN	294	-	450	F	09/03/2018 07:24:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7692139_BRX_RLX_UN	294	-	430	F	08/03/2018 14:22:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7692141_BRX_RLX_UN	294	-	460	F	08/03/2018 14:22:00	27.3.b.23	2	2	2	1	1	2	2	2	71	28	24
7692147_BRX_RLX_UN	294	-	390	F	08/03/2018 14:22:00	27.3.b.23	2	3	2	2	2	2	2	2	86	18	11
7692149_BRX_RLX_UN	294	-	410	M	08/03/2018 14:22:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7692150_BRX_RLX_UN	294	-	490	M	08/03/2018 14:22:00	27.3.b.23	4	4	4	3	4	4	4	4	86	10	6
7692155_BRX_RLX_UN	294	-	410	F	08/03/2018 14:22:00	27.3.b.23	2	3	3	2	2	2	2	2	71	21	18
7692167_BRX_RLX_UN	294	-	430	M	08/03/2018 14:22:00	27.3.b.23	2	2	2	1	2	2	2	2	86	20	13
7692422_BRX_RLX_UN	294	-	460	M	08/03/2018 11:10:00	27.3.b.23	4	5	3	3	4	5	4	4	43	20	14
7692425_BRX_RLX_UN	294	-	430	M	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7692426_BRX_RLX_UN	294	-	440	M	08/03/2018 11:10:00	27.3.b.23	2	3	3	2	2	2	2	2	71	21	18
7692427_BRX_RLX_UN	294	-	500	M	08/03/2018 11:10:00	27.3.b.23	4	4	4	4	4	4	4	4	100	0	0
7692432_BRX_RLX_UN	294	-	370	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7692433_BRX_RLX_UN	294	-	360	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7692438_BRX_RLX_UN	294	-	400	M	08/03/2018 11:10:00	27.3.b.23	4	4	4	3	4	4	3	4	71	13	11
7692439_BRX_RLX_UN	294	-	380	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	2	2	2	2	100	0	0
7692442_BRX_RLX_UN	294	-	460	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	2	2	3	2	86	18	11
7692716_BRX_RLX_UN	294	-	320	M	04/03/2018 08:59:00	27.3.c.22	2	2	2	2	2	2	2	2	100	0	0
7692717_BRX_RLX_UN	294	-	410	M	04/03/2018 08:59:00	27.3.c.22	2	2	2	2	2	2	2	2	100	0	0
7692720_BRX_RLX_UN	294	-	360	M	04/03/2018 08:59:00	27.3.c.22	2	2	2	2	2	2	2	2	100	0	0
7694575_BRX_RLX_UN	294	-	310	M	06/03/2018 07:22:00	27.3.c.22	2	2	2	2	2	2	2	2	100	0	0
7802567_BRX_RLX_UN	294	-	500	M	23/10/2018 06:13:00	27.3.b.23	4	4	4	3	4	3	4	4	71	13	11

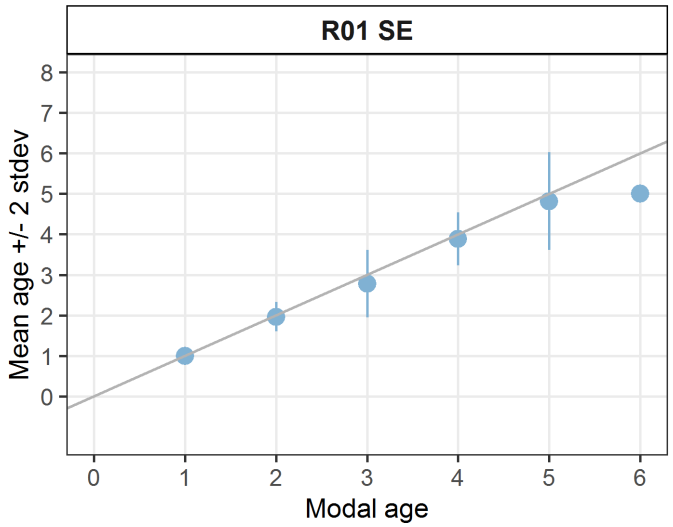
7802575_BRX_RLX_UN	294	-	470	M	23/10/2018 06:13:00	27.3.b.23	3	4	4	4	4	4	4	4	86	10	6
7802578_BRX_RLX_UN	294	-	570	F	23/10/2018 06:13:00	27.3.b.23	2	2	2	-	2	2	4	2	83	35	24
7802579_BRX_RLX_UN	294	-	540	F	23/10/2018 06:13:00	27.3.b.23	2	2	2	2	2	2	3	2	86	18	11
7802580_BRX_RLX_UN	294	-	510	F	23/10/2018 06:13:00	27.3.b.23	3	4	3	3	3	3	3	3	86	12	8
7802892_BRX_RLX_UN	294	-	530	F	24/10/2018 06:41:00	27.3.b.23	2	3	3	3	2	2	4	2	43	28	23
7803204_BRX_RLX_UN	294	-	590	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	3	4	3	4	4	71	13	11
7803205_BRX_RLX_UN	294	-	570	M	24/10/2018 14:55:00	27.3.b.23	6	5	6	6	5	3	5	5	43	21	14
7803210_BRX_RLX_UN	294	-	530	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	3	4	3	4	4	71	13	11
7803214_BRX_RLX_UN	294	-	510	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	3	4	3	4	4	71	13	11
7803215_BRX_RLX_UN	294	-	670	F	24/10/2018 14:55:00	27.3.b.23	4	5	4	4	4	4	4	4	86	9	6
7803218_BRX_RLX_UN	294	-	490	M	24/10/2018 14:55:00	27.3.b.23	3	4	3	3	3	3	4	3	71	15	12
7803221_BRX_RLX_UN	294	-	560	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	3	4	4	5	4	71	14	7
7803224_BRX_RLX_UN	294	-	620	F	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	4	4	5	4	86	9	6
7803225_BRX_RLX_UN	294	-	600	F	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	4	4	5	4	86	9	6
7803226_BRX_RLX_UN	294	-	630	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	3	4	3	5	4	57	18	13
7805199_BRX_RLX_UN	294	-	640	F	28/10/2018 09:12:00	27.3.b.23	2	3	2	2	2	2	2	2	86	18	11
7895908_BRX_RLX_UN	294	-	510	M	28/02/2019 14:27:21	27.3.b.23	4	5	4	4	5	5	4	4	57	12	11
7895914_BRX_RLX_UN	294	-	550	F	28/02/2019 14:27:21	27.3.b.23	3	4	4	4	4	4	4	4	86	10	6
7895917_BRX_RLX_UN	294	-	540	M	28/02/2019 14:27:21	27.3.b.23	4	5	5	3	4	4	4	4	57	17	12
7895925_BRX_RLX_UN	294	-	520	M	28/02/2019 14:27:21	27.3.b.23	3	4	3	-	3	3	4	3	67	15	13
7895927_BRX_RLX_UN	294	-	570	M	28/02/2019 14:27:21	27.3.b.23	3	4	3	-	3	3	4	3	67	15	13
7895941_BRX_RLX_UN	294	-	280	M	28/02/2019 14:27:21	27.3.b.23	2	3	2	2	2	2	2	2	86	18	11

7896061_BRX_RLX_UN	294	-	550	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	-	3	3	3	3	100	0	0
7896062_BRX_RLX_UN	294	-	580	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	-	3	3	3	3	100	0	0
7896063_BRX_RLX_UN	294	-	560	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	-	3	3	3	3	100	0	0
7896064_BRX_RLX_UN	294	-	570	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	-	3	3	3	3	100	0	0
7896065_BRX_RLX_UN	294	-	500	M	01/03/2019 06:27:20	27.3.b.23	3	3	2	-	3	3	3	3	83	14	10
7896067_BRX_RLX_UN	294	-	540	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	-	3	3	3	3	100	0	0
7896072_BRX_RLX_UN	294	-	530	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	-	3	3	3	3	100	0	0
7896074_BRX_RLX_UN	294	-	510	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	-	3	3	4	3	83	13	9
7896075_BRX_RLX_UN	294	-	520	F	01/03/2019 06:27:20	27.3.b.23	3	4	3	-	3	3	3	3	83	13	9
7896562_BRX_RLX_UN	294	-	520	F	01/03/2019 09:53:07	27.3.b.23	3	3	3	-	3	3	3	3	100	0	0
7896563_BRX_RLX_UN	294	-	510	M	01/03/2019 09:53:07	27.3.b.23	3	3	3	-	3	3	3	3	100	0	0
7896578_BRX_RLX_UN	294	-	260	F	01/03/2019 09:53:07	27.3.b.23	2	3	2	2	2	2	3	2	71	21	18
7896579_BRX_RLX_UN	294	-	310	F	01/03/2019 09:53:07	27.3.b.23	2	3	2	-	2	2	3	2	67	22	19
7896580_BRX_RLX_UN	294	-	300	M	01/03/2019 09:53:07	27.3.b.23	2	3	3	-	2	3	3	3	67	19	17
7896581_BRX_RLX_UN	294	-	320	M	01/03/2019 09:53:07	27.3.b.23	2	3	3	-	2	-	3	3	60	21	18
7896582_BRX_RLX_UN	294	-	290	M	01/03/2019 09:53:07	27.3.b.23	2	3	2	-	3	2	2	2	67	22	19
7896583_BRX_RLX_UN	294	-	280	M	01/03/2019 09:53:07	27.3.b.23	2	3	3	-	3	3	3	3	83	14	10
7896584_BRX_RLX_UN	294	-	270	F	01/03/2019 09:53:07	27.3.b.23	2	3	3	2	2	2	2	2	71	21	18
7896818_BRX_RLX_UN	294	-	600	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	-	3	3	4	3	83	13	9
7896820_BRX_RLX_UN	294	-	620	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	-	3	3	3	3	100	0	0
7896828_BRX_RLX_UN	294	-	560	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	-	3	3	3	3	100	0	0
7896839_BRX_RLX_UN	294	-	300	F	02/03/2019 06:57:32	27.3.b.23	2	3	3	-	3	3	2	3	67	19	17

7896840_BRX_RLX_UN	294	-	280	F	02/03/2019 06:57:32	27.3.b.23	2	3	3	-	3	3	3	3	83	14	10
7896841_BRX_RLX_UN	294	-	280	F	02/03/2019 06:57:32	27.3.b.23	2	3	3	-	3	3	2	3	67	19	17
7897089_BRX_RLX_UN	294	-	660	F	02/03/2019 10:16:07	27.3.b.23	4	4	4	-	4	4	4	4	100	0	0
7897105_BRX_RLX_UN	294	-	320	M	02/03/2019 10:16:07	27.3.b.23	2	3	3	-	3	3	3	3	83	14	10
7897108_BRX_RLX_UN	294	-	310	M	02/03/2019 10:16:07	27.3.b.23	2	3	2	-	2	2	3	2	67	22	19
7897817_BRX_RLX_UN	294	-	210	F	04/03/2019 08:27:43	27.3.c.22	1	2	2	1	1	1	1	1	71	38	32
7898645_BRX_RLX_UN	294	-	400	M	06/03/2019 10:04:56	27.3.c.22	3	3	3	3	3	3	3	3	100	0	0
7898833_BRX_RLX_UN	294	-	670	M	07/03/2019 09:03:00	27.3.c.22	3	3	3	3	3	3	3	3	100	0	0
7898834_BRX_RLX_UN	294	-	700	F	07/03/2019 09:03:00	27.3.c.22	4	4	4	4	4	4	4	4	100	0	0
7898835_BRX_RLX_UN	294	-	600	M	07/03/2019 09:03:00	27.3.c.22	3	3	3	3	3	3	3	3	100	0	0
7899238_BRX_RLX_UN	294	-	600	F	07/03/2019 13:13:19	27.3.c.22	3	3	3	3	3	3	3	3	100	0	0
8027453_BRX_RLX_UN	294	-	670	F	26/10/2019 06:16:52	27.3.b.23	3	3	3	-	3	3	4	3	83	13	9
8027466_BRX_RLX_UN	294	-	630	M	26/10/2019 06:16:52	27.3.b.23	5	6	6	-	6	6	7	6	67	11	6
8027468_BRX_RLX_UN	294	-	330	M	26/10/2019 06:16:52	27.3.b.23	2	2	2	-	1	1	3	2	50	41	30
8027469_BRX_RLX_UN	294	-	370	M	26/10/2019 06:16:52	27.3.b.23	3	3	3	-	3	3	4	3	83	13	9
8027470_BRX_RLX_UN	294	-	360	F	26/10/2019 06:16:52	27.3.b.23	1	1	1	-	1	1	2	1	83	35	24
8027471_BRX_RLX_UN	294	-	250	F	26/10/2019 06:16:52	27.3.b.23	1	2	1	2	1	1	2	1	57	37	34
8027472_BRX_RLX_UN	294	-	280	M	26/10/2019 06:16:52	27.3.b.23	1	2	1	-	1	1	3	1	67	56	44
8027473_BRX_RLX_UN	294	-	310	M	26/10/2019 06:16:52	27.3.b.23	1	2	1	-	1	1	2	1	67	39	33
8027474_BRX_RLX_UN	294	-	620	F	26/10/2019 06:16:52	27.3.b.23	3	3	3	-	3	3	4	3	83	13	9
8027476_BRX_RLX_UN	294	-	550	F	26/10/2019 06:16:52	27.3.b.23	3	3	4	-	3	3	4	3	67	15	13
8027479_BRX_RLX_UN	294	-	610	M	26/10/2019 06:16:52	27.3.b.23	3	3	3	-	3	3	3	3	100	0	0

8027486_BRX_RLX_UN	294	-	330	M	26/10/2019 06:16:52	27.3.b.23	2	2	2	-	2	2	3	2	83	19	13
8027487_BRX_RLX_UN	294	-	280	F	26/10/2019 06:16:52	27.3.b.23	1	1	1	-	1	1	2	1	83	35	24
8027489_BRX_RLX_UN	294	-	300	F	26/10/2019 06:16:52	27.3.b.23	1	1	1	-	1	1	2	1	83	35	24
8027633_BRX_RLX_UN	294	-	600	M	26/10/2019 09:50:59	27.3.b.23	4	4	5	-	5	4	5	4	50	12	11
8027634_BRX_RLX_UN	294	-	590	M	26/10/2019 09:50:59	27.3.b.23	4	5	5	-	3	4	5	5	50	19	15
8027635_BRX_RLX_UN	294	-	570	F	26/10/2019 09:50:59	27.3.b.23	3	3	3	-	3	3	4	3	83	13	9
8027966_BRX_RLX_UN	294	-	820	F	27/10/2019 06:29:35	27.3.b.23	4	4	4	-	4	4	5	4	83	10	7
8027968_BRX_RLX_UN	294	-	740	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	-	5	5	6	5	83	8	5
8027969_BRX_RLX_UN	294	-	710	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	-	5	5	6	5	83	8	5
8027970_BRX_RLX_UN	294	-	730	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	-	5	5	6	5	83	8	5
8027971_BRX_RLX_UN	294	-	720	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	-	5	5	6	5	83	8	5
8027974_BRX_RLX_UN	294	-	680	M	27/10/2019 06:29:35	27.3.b.23	5	5	5	-	5	4	6	5	67	13	7
8027979_BRX_RLX_UN	294	-	670	M	27/10/2019 06:29:35	27.3.b.23	5	5	5	-	5	5	6	5	83	8	5
8027984_BRX_RLX_UN	294	-	700	M	27/10/2019 06:29:35	27.3.b.23	5	5	5	-	5	5	6	5	83	8	5
8027985_BRX_RLX_UN	294	-	650	F	27/10/2019 06:29:35	27.3.b.23	4	5	5	-	5	5	6	5	67	13	7
8027986_BRX_RLX_UN	294	-	590	M	27/10/2019 06:29:35	27.3.b.23	4	5	5	-	4	5	6	5	50	16	11
8027998_BRX_RLX_UN	294	-	440	M	27/10/2019 06:29:35	27.3.b.23	3	3	3	-	3	3	4	3	83	13	9
8028003_BRX_RLX_UN	294	-	380	M	27/10/2019 06:29:35	27.3.b.23	2	3	2	-	2	2	3	2	67	22	19
8028005_BRX_RLX_UN	294	-	360	M	27/10/2019 06:29:35	27.3.b.23	1	1	1	-	1	1	3	1	83	61	42
8028006_BRX_RLX_UN	294	-	350	F	27/10/2019 06:29:35	27.3.b.23	1	1	1	-	1	1	3	1	83	61	42
8028007_BRX_RLX_UN	294	-	340	F	27/10/2019 06:29:35	27.3.b.23	1	1	1	-	1	1	2	1	83	35	24
8028008_BRX_RLX_UN	294	-	320	M	27/10/2019 06:29:35	27.3.b.23	1	2	1	-	1	1	2	1	67	39	33

8028009_BRX_RLX_UN	294	-	310	M	27/10/2019 06:29:35	27.3.b.23	1	2	2	-	1	1	3	1	50	49	40
8028010_BRX_RLX_UN	294	-	300	F	27/10/2019 06:29:35	27.3.b.23	1	1	1	-	1	1	2	1	83	35	24
8028011_BRX_RLX_UN	294	-	290	F	27/10/2019 06:29:35	27.3.b.23	1	2	1	-	1	1	3	1	67	56	44
8028012_BRX_RLX_UN	294	-	270	F	27/10/2019 06:29:35	27.3.b.23	1	1	0	2	1	1	2	1	57	60	43
8028013_BRX_RLX_UN	294	-	260	M	27/10/2019 06:29:35	27.3.b.23	1	2	1	2	1	1	3	1	57	50	42
8033478_BRX_RLX_UN	294	-	310	F	02/11/2019 12:42:38	27.3.c.22	1	2	1	2	1	1	3	1	57	50	42
8033643_BRX_RLX_UN	294	-	280	M	03/11/2019 06:30:19	27.3.c.22	1	1	1	2	1	1	2	1	71	38	32
8034770_BRX_RLX_UN	294	-	310	F	05/11/2019 06:44:10	27.3.c.22	1	1	1	2	1	1	2	1	71	38	32
8035849_BRX_RLX_UN	294	-	350	F	06/11/2019 10:32:48	27.3.c.22	1	2	1	2	1	1	3	1	57	50	42
8035850_BRX_RLX_UN	294	-	310	F	06/11/2019 10:32:48	27.3.c.22	1	2	2	2	1	1	3	1	43	44	36
8036605_BRX_RLX_UN	294	-	310	M	07/11/2019 10:53:34	27.3.c.22	1	2	2	2	1	1	2	2	57	34	31
8036606_BRX_RLX_UN	294	-	290	M	07/11/2019 10:53:34	27.3.c.22	1	2	1	2	1	1	2	1	57	37	34
8036607_BRX_RLX_UN	294	-	270	M	07/11/2019 10:53:34	27.3.c.22	1	1	1	2	1	-	2	1	67	39	33
8036608_BRX_RLX_UN	294	-	260	M	07/11/2019 10:53:34	27.3.c.22	1	1	1	2	1	1	3	1	71	55	43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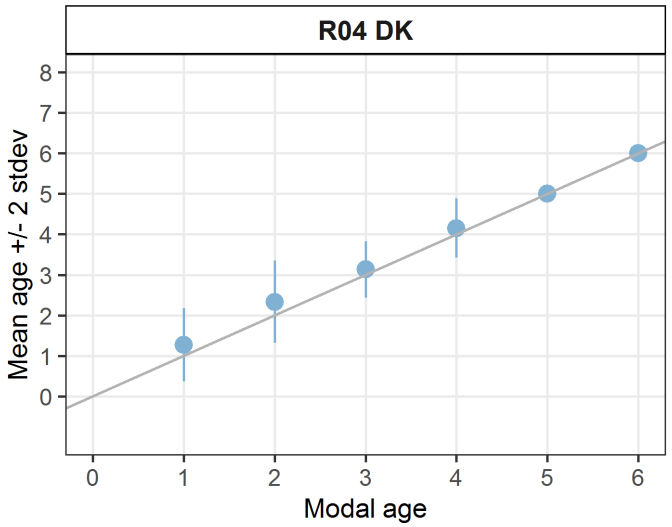
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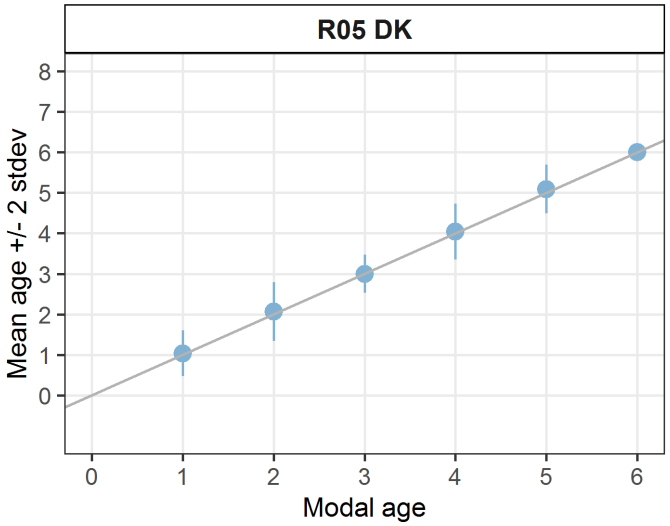
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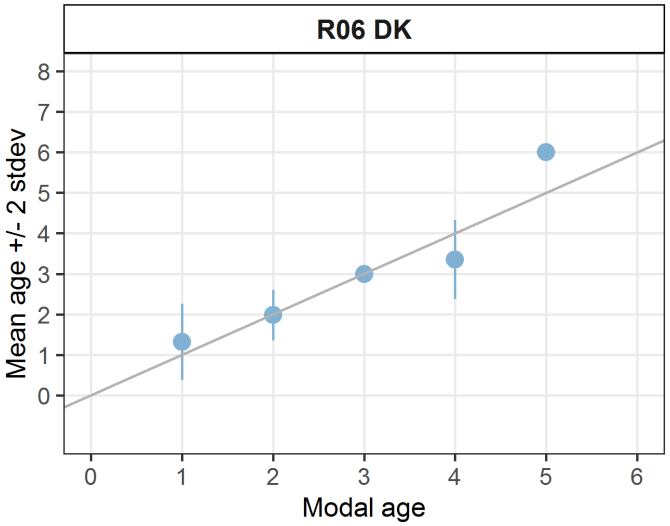
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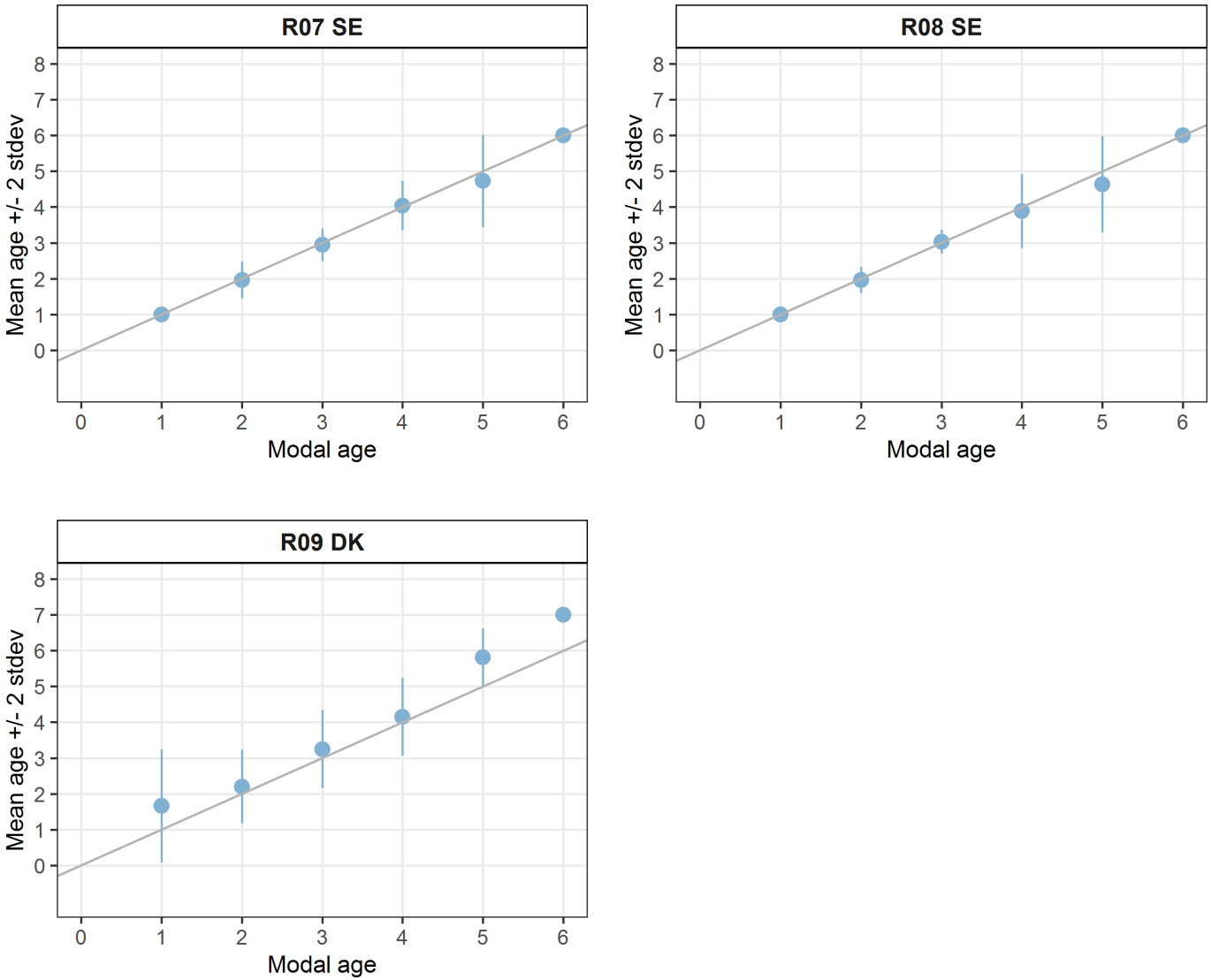

Figure 6.3: Individual age bias plot for all readers on broken otoliths.

6.4 Results advanced readers on broken otoliths (ID 294)

Table 6.4: Data overview including modal age and statistics per sample.

Fish ID	Event ID	Image ID	length	sex	Catch date	ICES area	R01 SE	R04 DK	R05 DK	Modal age	PA %	CV %	APE %
7469362_BRX_RLX_UN	294	-	250	M	19/02/2017 06:52:03	27.3.c.22	2	2	2	2	100	0	0
7469704_BRX_RLX_UN	294	-	230	F	19/02/2017 13:34:03	27.3.c.22	1	1	1	1	100	0	0
7470549_BRX_RLX_UN	294	-	230	M	21/02/2017 06:47:03	27.3.c.22	1	1	1	1	100	0	0
7470560_BRX_RLX_UN	294	-	230	M	21/02/2017 06:47:03	27.3.c.22	1	1	1	1	100	0	0
7470563_BRX_RLX_UN	294	-	250	M	21/02/2017 06:47:03	27.3.c.22	1	1	1	1	100	0	0
7471844_BRX_RLX_UN	294	-	290	F	24/02/2017 06:45:03	27.3.c.22	2	3	2	2	67	25	19
7471845_BRX_RLX_UN	294	-	220	F	24/02/2017 06:45:03	27.3.c.22	1	2	1	1	67	43	33
7471846_BRX_RLX_UN	294	-	230	M	24/02/2017 06:45:03	27.3.c.22	1	2	1	1	67	43	33
7471850_BRX_RLX_UN	294	-	230	M	24/02/2017 06:45:03	27.3.c.22	1	1	1	1	100	0	0
7471855_BRX_RLX_UN	294	-	220	F	24/02/2017 06:45:03	27.3.c.22	1	1	1	1	100	0	0
7471858_BRX_RLX_UN	294	-	220	F	24/02/2017 06:45:03	27.3.c.22	1	1	1	1	100	0	0
7471861_BRX_RLX_UN	294	-	270	F	24/02/2017 06:45:03	27.3.c.22	2	2	2	2	100	0	0
7471862_BRX_RLX_UN	294	-	250	M	24/02/2017 06:45:03	27.3.c.22	1	1	1	1	100	0	0
7472304_BRX_RLX_UN	294	-	240	M	25/02/2017 08:49:03	27.3.c.22	-	1	1	1	100	0	0
7472658_BRX_RLX_UN	294	-	230	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	100	0	0
7472659_BRX_RLX_UN	294	-	240	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	100	0	0
7472660_BRX_RLX_UN	294	-	270	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	100	0	0
7472661_BRX_RLX_UN	294	-	250	F	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	100	0	0
7472662_BRX_RLX_UN	294	-	260	M	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	100	0	0
7472663_BRX_RLX_UN	294	-	280	M	26/02/2017 06:39:03	27.3.b.23	1	1	1	1	100	0	0
7472885_BRX_RLX_UN	294	-	230	F	26/02/2017 09:13:03	27.3.b.23	1	1	1	1	100	0	0
7472886_BRX_RLX_UN	294	-	250	M	26/02/2017 09:13:03	27.3.b.23	1	1	1	1	100	0	0
7476954_BRX_RLX_UN	294	-	240	M	03/03/2017 06:18:03	27.3.b.23	1	2	1	1	67	43	33
7479736_BRX_RLX_UN	294	-	280	M	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	100	0	0
7479738_BRX_RLX_UN	294	-	260	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	100	0	0
7479739_BRX_RLX_UN	294	-	220	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	100	0	0
7479746_BRX_RLX_UN	294	-	240	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	100	0	0
7479747_BRX_RLX_UN	294	-	250	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	100	0	0
7479751_BRX_RLX_UN	294	-	300	M	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	100	0	0
7479752_BRX_RLX_UN	294	-	230	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	100	0	0
7479774_BRX_RLX_UN	294	-	210	F	02/03/2017 15:07:03	27.3.b.23	1	1	1	1	100	0	0
7683832_BRX_RLX_UN	294	-	380	M	02/03/2018 11:56:00	27.3.c.22	2	2	2	2	100	0	0
7683837_BRX_RLX_UN	294	-	320	F	02/03/2018 11:56:00	27.3.c.22	2	2	2	2	100	0	0
7684244_BRX_RLX_UN	294	-	350	F	02/03/2018 06:19:00	27.3.c.22	2	2	2	2	100	0	0
7684506_BRX_RLX_UN	294	-	350	M	28/02/2018 07:31:00	27.3.c.22	2	3	3	3	67	22	17
7684507_BRX_RLX_UN	294	-	330	M	28/02/2018 07:31:00	27.3.c.22	2	2	2	2	100	0	0
7685580_BRX_RLX_UN	294	-	440	F	27/02/2018 08:32:00	27.3.c.22	2	2	2	2	100	0	0
7691251_BRX_RLX_UN	294	-	410	M	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	100	0	0

7691252_BRX_RLX_UN	294	-	440	F	10/03/2018 12:07:00	27.3.b.23	2	3	3	3	67	22	17
7691255_BRX_RLX_UN	294	-	450	F	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	100	0	0
7691259_BRX_RLX_UN	294	-	470	F	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	100	0	0
7691265_BRX_RLX_UN	294	-	420	F	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	100	0	0
7691266_BRX_RLX_UN	294	-	510	F	10/03/2018 12:07:00	27.3.b.23	2	2	3	2	67	25	19
7691267_BRX_RLX_UN	294	-	430	M	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	100	0	0
7691269_BRX_RLX_UN	294	-	400	F	10/03/2018 12:07:00	27.3.b.23	2	3	2	2	67	25	19
7691274_BRX_RLX_UN	294	-	460	M	10/03/2018 12:07:00	27.3.b.23	2	2	2	2	100	0	0
7691275_BRX_RLX_UN	294	-	370	M	10/03/2018 12:07:00	27.3.b.23	2	3	2	2	67	25	19
7691284_BRX_RLX_UN	294	-	480	F	10/03/2018 12:07:00	27.3.b.23	2	3	2	2	67	25	19
7691286_BRX_RLX_UN	294	-	530	F	10/03/2018 12:07:00	27.3.b.23	3	4	4	4	67	16	12
7691295_BRX_RLX_UN	294	-	520	M	10/03/2018 12:07:00	27.3.b.23	4	4	4	4	100	0	0
7691625_BRX_RLX_UN	294	-	400	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	100	0	0
7691630_BRX_RLX_UN	294	-	410	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	100	0	0
7691631_BRX_RLX_UN	294	-	450	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	100	0	0
7691632_BRX_RLX_UN	294	-	420	F	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	100	0	0
7691633_BRX_RLX_UN	294	-	500	M	10/03/2018 06:23:00	27.3.b.23	4	4	4	4	100	0	0
7691640_BRX_RLX_UN	294	-	430	F	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	100	0	0
7691642_BRX_RLX_UN	294	-	470	F	10/03/2018 06:23:00	27.3.b.23	4	4	4	4	100	0	0
7691644_BRX_RLX_UN	294	-	480	M	10/03/2018 06:23:00	27.3.b.23	4	4	4	4	100	0	0
7691658_BRX_RLX_UN	294	-	460	F	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	100	0	0
7691670_BRX_RLX_UN	294	-	390	M	10/03/2018 06:23:00	27.3.b.23	2	3	1	1	33	50	33
7691680_BRX_RLX_UN	294	-	440	M	10/03/2018 06:23:00	27.3.b.23	2	2	2	2	100	0	0
7692095_BRX_RLX_UN	294	-	410	F	09/03/2018 07:24:00	27.3.b.23	2	4	2	2	67	43	33
7692096_BRX_RLX_UN	294	-	450	F	09/03/2018 07:24:00	27.3.b.23	2	2	2	2	100	0	0
7692139_BRX_RLX_UN	294	-	430	F	08/03/2018 14:22:00	27.3.b.23	2	2	2	2	100	0	0
7692141_BRX_RLX_UN	294	-	460	F	08/03/2018 14:22:00	27.3.b.23	2	2	2	2	100	0	0
7692147_BRX_RLX_UN	294	-	390	F	08/03/2018 14:22:00	27.3.b.23	2	3	2	2	67	25	19
7692149_BRX_RLX_UN	294	-	410	M	08/03/2018 14:22:00	27.3.b.23	2	2	2	2	100	0	0
7692150_BRX_RLX_UN	294	-	490	M	08/03/2018 14:22:00	27.3.b.23	4	4	4	4	100	0	0
7692155_BRX_RLX_UN	294	-	410	F	08/03/2018 14:22:00	27.3.b.23	2	3	3	3	67	22	17
7692167_BRX_RLX_UN	294	-	430	M	08/03/2018 14:22:00	27.3.b.23	2	2	2	2	100	0	0
7692422_BRX_RLX_UN	294	-	460	M	08/03/2018 11:10:00	27.3.b.23	4	5	3	3	33	25	17
7692425_BRX_RLX_UN	294	-	430	M	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	100	0	0
7692426_BRX_RLX_UN	294	-	440	M	08/03/2018 11:10:00	27.3.b.23	2	3	3	3	67	22	17
7692427_BRX_RLX_UN	294	-	500	M	08/03/2018 11:10:00	27.3.b.23	4	4	4	4	100	0	0
7692432_BRX_RLX_UN	294	-	370	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	100	0	0
7692433_BRX_RLX_UN	294	-	360	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	100	0	0
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7692439_BRX_RLX_UN	294	-	380	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	100	0	0
7692442_BRX_RLX_UN	294	-	460	F	08/03/2018 11:10:00	27.3.b.23	2	2	2	2	100	0	0
7692716_BRX_RLX_UN	294	-	320	M	04/03/2018 08:59:00	27.3.c.22	2	2	2	2	100	0	0
7692717_BRX_RLX_UN	294	-	410	M	04/03/2018 08:59:00	27.3.c.22	2	2	2	2	100	0	0
7692720_BRX_RLX_UN	294	-	360	M	04/03/2018 08:59:00	27.3.c.22	2	2	2	2	100	0	0
7694575_BRX_RLX_UN	294	-	310	M	06/03/2018 07:22:00	27.3.c.22	2	2	2	2	100	0	0

7802567_BRX_RLX_UN	294	-	500	M	23/10/2018 06:13:00	27.3.b.23	4	4	4	4	100	0	0
7802575_BRX_RLX_UN	294	-	470	M	23/10/2018 06:13:00	27.3.b.23	3	4	4	4	67	16	12
7802578_BRX_RLX_UN	294	-	570	F	23/10/2018 06:13:00	27.3.b.23	2	2	2	2	100	0	0
7802579_BRX_RLX_UN	294	-	540	F	23/10/2018 06:13:00	27.3.b.23	2	2	2	2	100	0	0
7802580_BRX_RLX_UN	294	-	510	F	23/10/2018 06:13:00	27.3.b.23	3	4	3	3	67	17	13
7802892_BRX_RLX_UN	294	-	530	F	24/10/2018 06:41:00	27.3.b.23	2	3	3	3	67	22	17
7803204_BRX_RLX_UN	294	-	590	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	100	0	0
7803205_BRX_RLX_UN	294	-	570	M	24/10/2018 14:55:00	27.3.b.23	6	5	6	6	67	10	8
7803210_BRX_RLX_UN	294	-	530	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	100	0	0
7803214_BRX_RLX_UN	294	-	510	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	100	0	0
7803215_BRX_RLX_UN	294	-	670	F	24/10/2018 14:55:00	27.3.b.23	4	5	4	4	67	13	10
7803218_BRX_RLX_UN	294	-	490	M	24/10/2018 14:55:00	27.3.b.23	3	4	3	3	67	17	13
7803221_BRX_RLX_UN	294	-	560	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	100	0	0
7803224_BRX_RLX_UN	294	-	620	F	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	100	0	0
7803225_BRX_RLX_UN	294	-	600	F	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	100	0	0
7803226_BRX_RLX_UN	294	-	630	M	24/10/2018 14:55:00	27.3.b.23	4	4	4	4	100	0	0
7805199_BRX_RLX_UN	294	-	640	F	28/10/2018 09:12:00	27.3.b.23	2	3	2	2	67	25	19
7895908_BRX_RLX_UN	294	-	510	M	28/02/2019 14:27:21	27.3.b.23	4	5	4	4	67	13	10
7895914_BRX_RLX_UN	294	-	550	F	28/02/2019 14:27:21	27.3.b.23	3	4	4	4	67	16	12
7895917_BRX_RLX_UN	294	-	540	M	28/02/2019 14:27:21	27.3.b.23	4	5	5	5	67	12	10
7895925_BRX_RLX_UN	294	-	520	M	28/02/2019 14:27:21	27.3.b.23	3	4	3	3	67	17	13
7895927_BRX_RLX_UN	294	-	570	M	28/02/2019 14:27:21	27.3.b.23	3	4	3	3	67	17	13
7895941_BRX_RLX_UN	294	-	280	M	28/02/2019 14:27:21	27.3.b.23	2	3	2	2	67	25	19
7896061_BRX_RLX_UN	294	-	550	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	100	0	0
7896062_BRX_RLX_UN	294	-	580	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	100	0	0
7896063_BRX_RLX_UN	294	-	560	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	100	0	0
7896064_BRX_RLX_UN	294	-	570	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	100	0	0
7896065_BRX_RLX_UN	294	-	500	M	01/03/2019 06:27:20	27.3.b.23	3	3	2	3	67	22	17
7896067_BRX_RLX_UN	294	-	540	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	100	0	0
7896072_BRX_RLX_UN	294	-	530	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	100	0	0
7896074_BRX_RLX_UN	294	-	510	M	01/03/2019 06:27:20	27.3.b.23	3	3	3	3	100	0	0
7896075_BRX_RLX_UN	294	-	520	F	01/03/2019 06:27:20	27.3.b.23	3	4	3	3	67	17	13
7896562_BRX_RLX_UN	294	-	520	F	01/03/2019 09:53:07	27.3.b.23	3	3	3	3	100	0	0
7896563_BRX_RLX_UN	294	-	510	M	01/03/2019 09:53:07	27.3.b.23	3	3	3	3	100	0	0
7896578_BRX_RLX_UN	294	-	260	F	01/03/2019 09:53:07	27.3.b.23	2	3	2	2	67	25	19
7896579_BRX_RLX_UN	294	-	310	F	01/03/2019 09:53:07	27.3.b.23	2	3	2	2	67	25	19
7896580_BRX_RLX_UN	294	-	300	M	01/03/2019 09:53:07	27.3.b.23	2	3	3	3	67	22	17
7896581_BRX_RLX_UN	294	-	320	M	01/03/2019 09:53:07	27.3.b.23	2	3	3	3	67	22	17
7896582_BRX_RLX_UN	294	-	290	M	01/03/2019 09:53:07	27.3.b.23	2	3	2	2	67	25	19
7896583_BRX_RLX_UN	294	-	280	M	01/03/2019 09:53:07	27.3.b.23	2	3	3	3	67	22	17
7896584_BRX_RLX_UN	294	-	270	F	01/03/2019 09:53:07	27.3.b.23	2	3	3	3	67	22	17
7896818_BRX_RLX_UN	294	-	600	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	3	100	0	0
7896820_BRX_RLX_UN	294	-	620	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	3	100	0	0
7896828_BRX_RLX_UN	294	-	560	F	02/03/2019 06:57:32	27.3.b.23	3	3	3	3	100	0	0
7896839_BRX_RLX_UN	294	-	300	F	02/03/2019 06:57:32	27.3.b.23	2	3	3	3	67	22	17

7896840_BRX_RLX_UN	294	-	280	F	02/03/2019 06:57:32	27.3.b.23	2	3	3	3	67	22	17
7896841_BRX_RLX_UN	294	-	280	F	02/03/2019 06:57:32	27.3.b.23	2	3	3	3	67	22	17
7897089_BRX_RLX_UN	294	-	660	F	02/03/2019 10:16:07	27.3.b.23	4	4	4	4	100	0	0
7897105_BRX_RLX_UN	294	-	320	M	02/03/2019 10:16:07	27.3.b.23	2	3	3	3	67	22	17
7897108_BRX_RLX_UN	294	-	310	M	02/03/2019 10:16:07	27.3.b.23	2	3	2	2	67	25	19
7897817_BRX_RLX_UN	294	-	210	F	04/03/2019 08:27:43	27.3.c.22	1	2	2	2	67	35	27
7898645_BRX_RLX_UN	294	-	400	M	06/03/2019 10:04:56	27.3.c.22	3	3	3	3	100	0	0
7898833_BRX_RLX_UN	294	-	670	M	07/03/2019 09:03:00	27.3.c.22	3	3	3	3	100	0	0
7898834_BRX_RLX_UN	294	-	700	F	07/03/2019 09:03:00	27.3.c.22	4	4	4	4	100	0	0
7898835_BRX_RLX_UN	294	-	600	M	07/03/2019 09:03:00	27.3.c.22	3	3	3	3	100	0	0
7899238_BRX_RLX_UN	294	-	600	F	07/03/2019 13:13:19	27.3.c.22	3	3	3	3	100	0	0
8027453_BRX_RLX_UN	294	-	670	F	26/10/2019 06:16:52	27.3.b.23	3	3	3	3	100	0	0
8027466_BRX_RLX_UN	294	-	630	M	26/10/2019 06:16:52	27.3.b.23	5	6	6	6	67	10	8
8027468_BRX_RLX_UN	294	-	330	M	26/10/2019 06:16:52	27.3.b.23	2	2	2	2	100	0	0
8027469_BRX_RLX_UN	294	-	370	M	26/10/2019 06:16:52	27.3.b.23	3	3	3	3	100	0	0
8027470_BRX_RLX_UN	294	-	360	F	26/10/2019 06:16:52	27.3.b.23	1	1	1	1	100	0	0
8027471_BRX_RLX_UN	294	-	250	F	26/10/2019 06:16:52	27.3.b.23	1	2	1	1	67	43	33
8027472_BRX_RLX_UN	294	-	280	M	26/10/2019 06:16:52	27.3.b.23	1	2	1	1	67	43	33
8027473_BRX_RLX_UN	294	-	310	M	26/10/2019 06:16:52	27.3.b.23	1	2	1	1	67	43	33
8027474_BRX_RLX_UN	294	-	620	F	26/10/2019 06:16:52	27.3.b.23	3	3	3	3	100	0	0
8027476_BRX_RLX_UN	294	-	550	F	26/10/2019 06:16:52	27.3.b.23	3	3	4	3	67	17	13
8027479_BRX_RLX_UN	294	-	610	M	26/10/2019 06:16:52	27.3.b.23	3	3	3	3	100	0	0
8027486_BRX_RLX_UN	294	-	330	M	26/10/2019 06:16:52	27.3.b.23	2	2	2	2	100	0	0
8027487_BRX_RLX_UN	294	-	280	F	26/10/2019 06:16:52	27.3.b.23	1	1	1	1	100	0	0
8027489_BRX_RLX_UN	294	-	300	F	26/10/2019 06:16:52	27.3.b.23	1	1	1	1	100	0	0
8027633_BRX_RLX_UN	294	-	600	M	26/10/2019 09:50:59	27.3.b.23	4	4	5	4	67	13	10
8027634_BRX_RLX_UN	294	-	590	M	26/10/2019 09:50:59	27.3.b.23	4	5	5	5	67	12	10
8027635_BRX_RLX_UN	294	-	570	F	26/10/2019 09:50:59	27.3.b.23	3	3	3	3	100	0	0
8027966_BRX_RLX_UN	294	-	820	F	27/10/2019 06:29:35	27.3.b.23	4	4	4	4	100	0	0
8027968_BRX_RLX_UN	294	-	740	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	100	0	0
8027969_BRX_RLX_UN	294	-	710	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	100	0	0
8027970_BRX_RLX_UN	294	-	730	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	100	0	0
8027971_BRX_RLX_UN	294	-	720	F	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	100	0	0
8027974_BRX_RLX_UN	294	-	680	M	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	100	0	0
8027979_BRX_RLX_UN	294	-	670	M	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	100	0	0
8027984_BRX_RLX_UN	294	-	700	M	27/10/2019 06:29:35	27.3.b.23	5	5	5	5	100	0	0
8027985_BRX_RLX_UN	294	-	650	F	27/10/2019 06:29:35	27.3.b.23	4	5	5	5	67	12	10
8027986_BRX_RLX_UN	294	-	590	M	27/10/2019 06:29:35	27.3.b.23	4	5	5	5	67	12	10
8027998_BRX_RLX_UN	294	-	440	M	27/10/2019 06:29:35	27.3.b.23	3	3	3	3	100	0	0
8028003_BRX_RLX_UN	294	-	380	M	27/10/2019 06:29:35	27.3.b.23	2	3	2	2	67	25	19
8028005_BRX_RLX_UN	294	-	360	M	27/10/2019 06:29:35	27.3.b.23	1	1	1	1	100	0	0
8028006_BRX_RLX_UN	294	-	350	F	27/10/2019 06:29:35	27.3.b.23	1	1	1	1	100	0	0
8028007_BRX_RLX_UN	294	-	340	F	27/10/2019 06:29:35	27.3.b.23	1	1	1	1	100	0	0
8028008_BRX_RLX_UN	294	-	320	M	27/10/2019 06:29:35	27.3.b.23	1	2	1	1	67	43	33
8028009_BRX_RLX_UN	294	-	310	M	27/10/2019 06:29:35	27.3.b.23	1	2	2	2	67	35	27

8028010_BRX_RLX_UN	294	-	300	F	27/10/2019 06:29:35	27.3.b.23	1	1	1	1	100	0	0
8028011_BRX_RLX_UN	294	-	290	F	27/10/2019 06:29:35	27.3.b.23	1	2	1	1	67	43	33
8028012_BRX_RLX_UN	294	-	270	F	27/10/2019 06:29:35	27.3.b.23	1	1	0	1	67	87	67
8028013_BRX_RLX_UN	294	-	260	M	27/10/2019 06:29:35	27.3.b.23	1	2	1	1	67	43	33
8033478_BRX_RLX_UN	294	-	310	F	02/11/2019 12:42:38	27.3.c.22	1	2	1	1	67	43	33
8033643_BRX_RLX_UN	294	-	280	M	03/11/2019 06:30:19	27.3.c.22	1	1	1	1	100	0	0
8034770_BRX_RLX_UN	294	-	310	F	05/11/2019 06:44:10	27.3.c.22	1	1	1	1	100	0	0
8035849_BRX_RLX_UN	294	-	350	F	06/11/2019 10:32:48	27.3.c.22	1	2	1	1	67	43	33
8035850_BRX_RLX_UN	294	-	310	F	06/11/2019 10:32:48	27.3.c.22	1	2	2	2	67	35	27
8036605_BRX_RLX_UN	294	-	310	M	07/11/2019 10:53:34	27.3.c.22	1	2	2	2	67	35	27
8036606_BRX_RLX_UN	294	-	290	M	07/11/2019 10:53:34	27.3.c.22	1	2	1	1	67	43	33
8036607_BRX_RLX_UN	294	-	270	M	07/11/2019 10:53:34	27.3.c.22	1	1	1	1	100	0	0
8036608_BRX_RLX_UN	294	-	260	M	07/11/2019 10:53:34	27.3.c.22	1	1	1	1	100	0	0

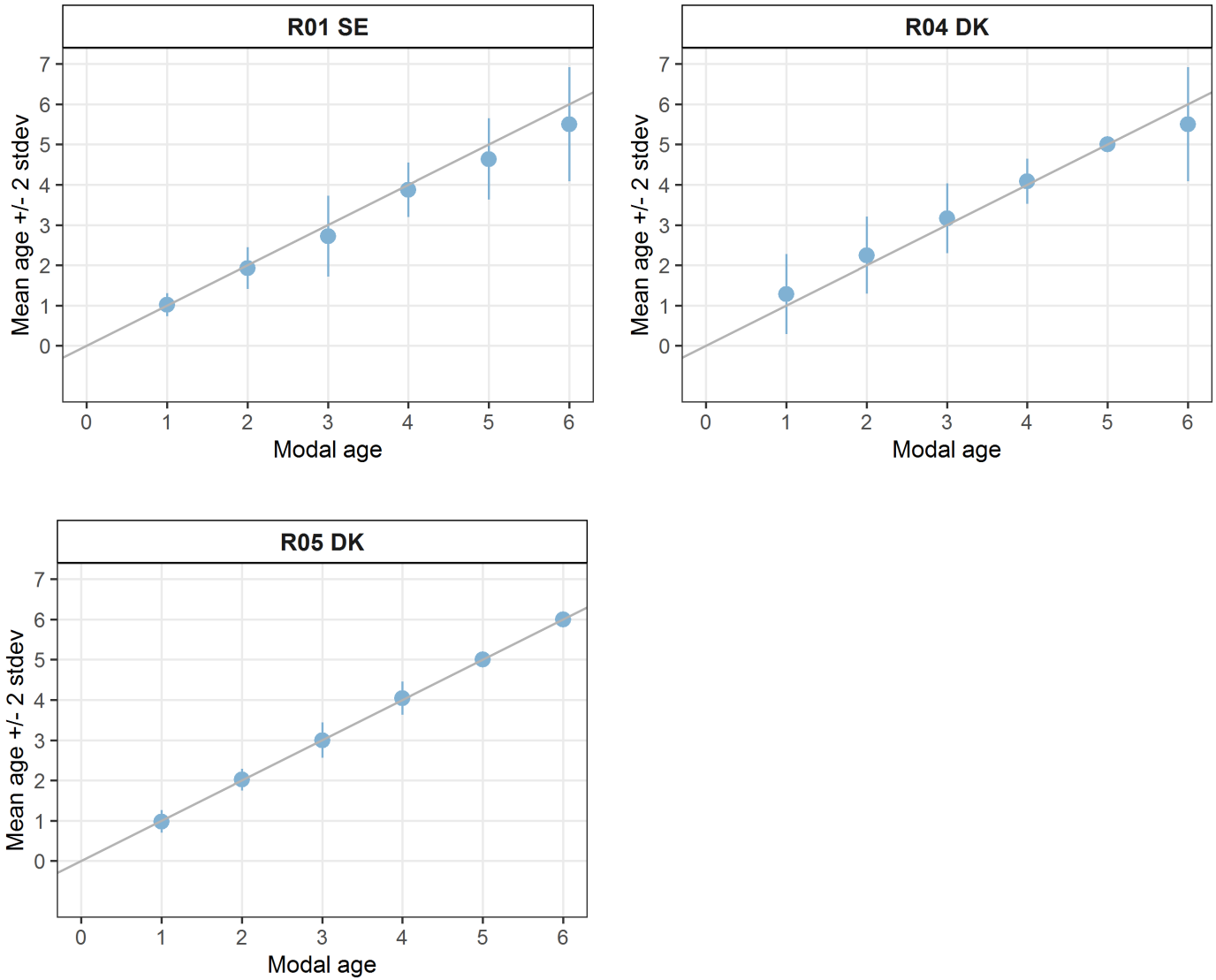

Figure 6.4: Individual age bias plot for advanced readers on broken otoliths.