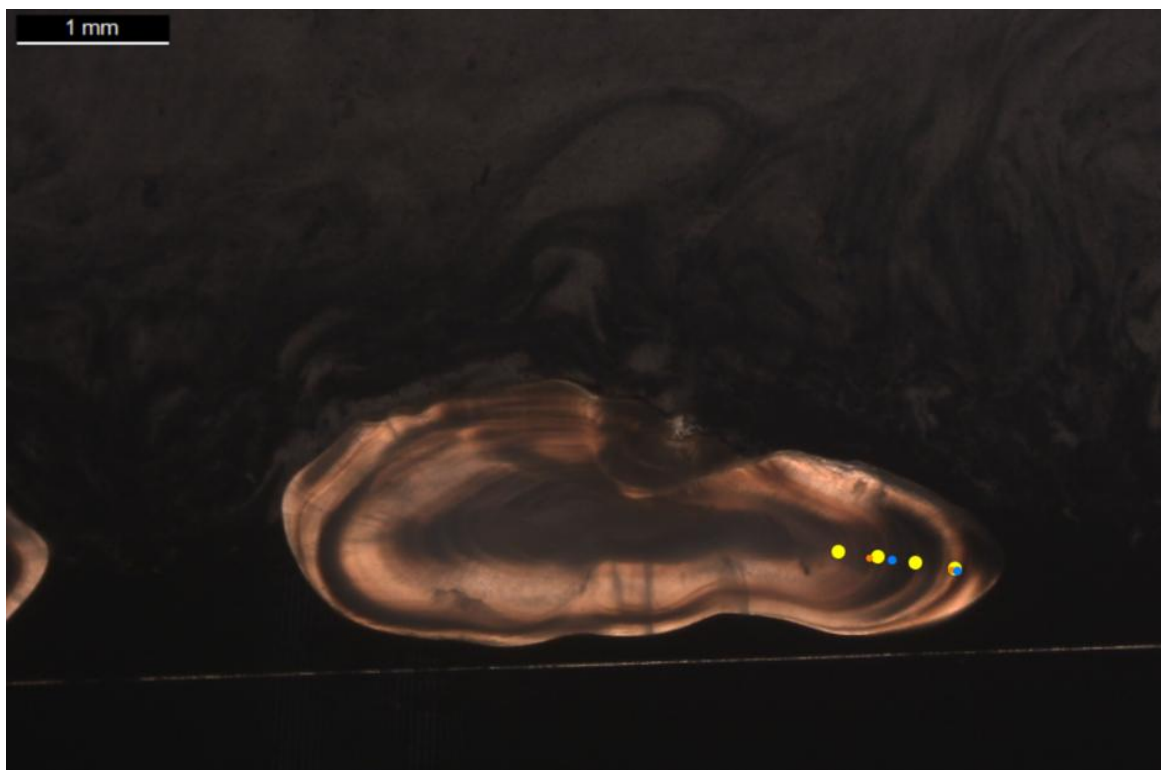


SmartDots Report for the 2025 Whiting (whg.27.47d) age reading exchange (ID 2941)



Coordination and analysis by

Karen Bekaert, ILVO

Romain Elleboode, Ifremer

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1 Executive summary

This otolith exchange focused on whiting (*Merlangius merlangus*) from Subdivisions 7d, 4a, 4b, and 4c, corresponding to stock whg.27.47d, which is assessed using age-based methods by WGNNSK. The objectives were to intercalibrate age readings, identify potential ageing issues, and support the benchmark process. The exercise was initiated to support inter-reader calibration prior to the November 2025 data compilation workshop and in anticipation of a planned benchmark in 2026. In total, 237 fish were aged using SmartDots, supported by 424 otolith images: 97 sectioned otoliths photographed in transmitted and reflected light, 50 sectioned otoliths photographed only in transmitted light, and 90 broken otoliths photographed in both light conditions. Nineteen readers from nine countries participated, with 11 advanced readers and 8 basic readers. Broken otoliths were read by Sweden, Denmark, and Norway, while sectioned otoliths were read by Belgium, the Netherlands, France, Germany, and the UK, and each reader examined only the preparation method they were familiar with. Samples collected between 2020 and 2025 were well balanced across ICES areas and quarters, and a multistage modal age approach was applied to limit bias.

Ages in the exchange ranged from 1 to 7 years. When considering **all** readers and all otolith samples, the weighted average percentage agreement (PA) based on modal ages was 63%, with a weighted average CV of 30% and an APE of 21%. Restricting the analysis to **sectioned** otoliths and the readers who assessed them produced identical summary statistics (PA = 63%, CV = 30%, APE = 21%). Similarly, the results for **broken** otoliths and their corresponding readers were nearly the same (PA = 63%, CV = 30%, APE = 20%).

Across **advanced** readers, the overall agreement metrics were a PA of 65%, a CV of 30%, and an APE of 21%. The minimal difference between advanced readers and all readers is noteworthy and reflects that some advanced readers performed less consistently than expected, diminishing the contrast between reader categories. **Broken** otoliths performed better than **sectioned** otoliths, with higher percentage agreement (70% vs 63%) and lower CV (25% vs 31%) and APE (14% vs 23%). For sectioned otoliths however, agreement improved substantially when readings from DE06 and DE11 — showing noticeable drift—were removed, increasing PA to 82%.

Age-class patterns also differed between the two preparation types for the advanced readers. The agreement for sectioned otoliths remained comparatively stable (at a low level) across all age classes (60–70%). In contrast, broken otoliths showed a progressive decline in agreement with age: PA dropped from 84% at age 1 to 50% at age 7, indicating increasing difficulty or inconsistency in interpreting older fish using the broken preparation method.

Compared to previous workshops, where agreement exceeded 80%, this exchange showed poorer overall consistency. Persistent issues remain, including challenges in interpreting the first annual ring due to split rings and variable growth, difficulties in reading the edge, and misinterpretation of split rings and the Humphries shadow. These findings underscore the continued need for training new readers and conducting regular calibration exercises to improve accuracy and precision of ageing practices. To address the observed variability and support standardization, a dedicated ageing workshop is recommended for 2026.

2 Introduction

Whiting is widely distributed in the Northeast Atlantic and caught in large numbers in the North Sea, Skagerrak, and Kattegat. Spawning takes place from January in the southern North Sea to July in the northern part and between February to May in western channel and the Celtic Sea. Most are mature when they are two years old and some spawn in the second year of life. Whiting tend to stay close to the bottom of the seabed from 10 to 200 m but will move into mid-water in the pursuit of prey. Larger whiting feed mainly on small fish such as herring, cod, haddock, and even their own offspring. Whiting growth is fairly slow in their first year of life and this can vary greatly between individuals. (ICES, 2016)

Whiting is a commercially important species that is caught in a mixed fishery, with large numbers caught throughout the North Sea. Whiting are a by-catch in some *Nephrops* fisheries that use a mesh size of 80 mm, although landings are restricted through bycatch regulations. They are also caught in flatfish fisheries that use a smaller mesh size. Industrial fishing with small-meshed gear is permitted, subject to by-catch limits of protected species. (ICES, 2025)

Age determination of whiting otoliths has been the subject of coordinated intercalibration efforts for more than six decades, reflecting its central role in stock assessment across ICES areas. Since the late 1950s, age determination of whiting otoliths has been the focus of numerous intercalibration exercises aimed at improving consistency among readers (ICES, 2016):

- 1959–1960 workshops reported agreements ranging from 38% to 94%.
- The 1985 workshop achieved 80% agreement in the Irish Sea and 75% in the Celtic Sea.
- In 1998, exchange/workshop sessions using *broken* and *sectioned* methods reported agreements of 58% and 67%, respectively (ICES CM 1999/G:14).
- Between 2004 and 2005, a series of exchanges and a workshop (Easey *et al.*, 2005) using broken, and sectioned otoliths produced agreements between 72.6% and 80.9%, with CV values ranging from 10.3% to 16.3%.
- The 2014–2015 exchange (ICES, 2016) reached 85.9% agreement with *sectioned* otoliths, CV = 13.1%, and relative bias = 0.0%.
- The 2019 exchange compared three preparation methods (sectioned, whole, and broken) and achieved an overall agreement of 82%, confirming strong consistency among readers. However, this was a very small training event and no report is available.

The 2025 exchange represents the latest stage in this long-term effort and was conducted for whiting in Subdivisions 7d, 4a, 4b and 4c (North Sea, eastern English Channel), corresponding to stock whg.27.47d. This stock is in category 1, with an age-based assessment managed by the WGNSSK assessment working group (ICES, 2025). The aim and background of the exchange was to intercalibrate the age readings and be able to identify possible issues as part of a European exchange preceding the whg.27.47d data compilation workshop of November 2025. It is also noted that a benchmark for whiting in the North Sea (2026) is foreseen. The outcomes presented in this report will serve as a contribution to that upcoming benchmark process.

In total, 237 fish individuals were aged using SmartDots, and a total of 424 images were included in the exchange:

- 97 sectioned (SE) otoliths, where each otolith was photographed with transmitted (ST) and reflected light (SR) (2 images per fish)
- 50 sectioned (SE) otoliths, transmitted (ST) light only
- 90 broken otoliths (BR), where each otolith was photographed with transmitted (ST) and reflected light (SR) (so 2 images per fish)

Nineteen age readers from nine countries participated, with 11 readers being advanced readers and thus reading otoliths for stock assessments. Sweden, Denmark, and Norway read **broken** otoliths while Belgium, the Netherlands, France, Germany and UK read **sectioned** whiting otoliths. Readers were asked to read only the preparation method they were familiar with, either broken or sectioned. They were allowed to compare both images when available (transmitted and reflected light) to annotate one image for each otolith.

All samples were collected between 2020 to 2025. A balanced distribution of samples was achieved for the sectioned otoliths across zones 7d, 4b and 4c. The broken otoliths were distributed in the North Sea, in areas 4a, 4b and 4c. Samples represented all four quarters. The multistage modal age approach was applied to reduce bias and ensure robust comparisons.

The results of this exercise are presented separately for all readers and for advanced readers. In each case, the outcomes are shown for all samples combined, as well as for broken and sectioned samples individually.

3 Methods

This report contains statistical analyses and comparisons of age readings in the form of tables and graphical plots.

The first part of the results section include the tables and plots from the Guus Eltink Excel sheet 'Age Reading Comparisons' (Eltink, A.T.G.W. 2000). The order and numbering of tables and plots are the same as in the excel sheet. Tables 6.1 - 6.4 from the 'Age Reading Comparisons' sheet are not outputted since these are merely used to do calculations for the other tables.

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

In this event, the multistage approach to calculate the modal age has been used. 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 by itself, but 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, the standard approach 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 renders multiple cases (fish samples) with multiple modal ages (i.e. different ages got the same highest number of readers). Accordingly, this imply a wrong perception of the age by fish individual and introduction of bias in the calculation of the PA and AEM. As a solution, in this report a multistage approach to select the modal age is used. This multistage approach is based in the different weight given to the age readers according to their experience. Two different weight scores scales were assigned, a weight score decreasing linearly with the experience and another decreasing with a negative exponential shape. The modal age by fish individual is decided following the next approach:

- 1.-If there is a single mode estimated with the standard approach (equal weight for all readers) this value is used as the modal age, if not
- 2.-Adding up, for each age category, the score assigned with the linear weighting for all the readers that decided that age for that fish. Next, the modal age is selected as the age category that obtains the highest score sum. If, despite this approach, there were still multiple ages with the same score (and hence multiple modes), the next step is applied:
- 3.-Adding up, for each age category, the score assigned with the negative exponential weighting for all the readers that decided that age for that fish. Select as the modal age the age with the highest score sum.

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

It is important checking the table that indicates the percentage of multimodal cases (in the results section) and the table with the fishID and sampleID that obtained multiple modes (included in annex 1).

Percentage Agreement (PA)

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 lectures of 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.

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

Coefficient of Variation (CV)

The table presents the Coefficient of Variation (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.

Relative bias

The relative bias is calculated as the difference between the mean and the modal age. This statistic is presented in first place by modal age and reader, but it is also calculated as an average value by modal age for all readers together (or only advanced readers).

Average Percentage Error (APE)

The Average Percentage Error (APE) was calculated based on the method outlined by Beamish & Fournier (1981). This method is dependent of fish age and thus provides a better estimate of precision than percentage agreement. 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:

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

where a_i is the age reading of reader i and $\bar{a}$ 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.

4 Overview of samples and readers

Table 1: Overview of samples used for the exchange event number 2941

Year	ICES area	Strata	Quarter	Number of samples	Modal age range	Length range
2020	27.4.b	Strata_Sectioned	3	34	1-7	200-320 mm
2020	27.4.b	Strata_Sectioned	4	26	1-6	220-475 mm
2020	27.4.c	Strata_Sectioned	2	28	1-5	205-320 mm
2020	27.7.d	Strata_Sectioned	1	48	1-5	220-495 mm
2020	27.7.d	Strata_Sectioned	3	8	1-2	215-275 mm
2021	27.4.b	Strata_Sectioned	4	4	6	320-445 mm
2021	27.4.c	Strata_Sectioned	4	26	1-7	195-360 mm
2021	27.7.d	Strata_Sectioned	2	12	1-3	220-295 mm
2021	27.7.d	Strata_Sectioned	4	8	1-2	280-325 mm
2022	27.4.b	Strata_Sectioned	1	12	1-6	165-370 mm
2022	27.4.c	Strata_Sectioned	1	1	6	305 mm
2022	27.7.d	Strata_Sectioned	2	1	6	340 mm
2022	27.7.d	Strata_Sectioned	3	1	4	320 mm
2023	27.4.b	Strata_Sectioned	2	8	2-6	290-320 mm
2023	27.7.d	Strata_Sectioned	3	3	3-4	330-370 mm
2023	27.7.d	Strata_Sectioned	4	3	3-5	295-325 mm
2024	27.4.a	Strata_Broken	1	8	3-5	260-380 mm
2024	27.4.a	Strata_Broken	2	30	2-7	230-380 mm
2024	27.4.a	Strata_Broken	4	20	2-7	280-380 mm
2024	27.4.b	Strata_Broken	1	8	2-6	180-350 mm
2024	27.4.b	Strata_Broken	2	4	2	210-280 mm
2024	27.4.b	Strata_Broken	3	16	1-4	140-450 mm
2024	27.4.b	Strata_Broken	4	18	1-4	210-330 mm
2024	27.4.c	Strata_Broken	1	12	1-2	180-230 mm
2024	27.4.c	Strata_Sectioned	1	6	1-3	195-370 mm
2024	27.4.c	Strata_Broken	3	32	1-5	240-350 mm
2024	27.4.c	Strata_Sectioned	3	7	1-5	280-330 mm
2024	27.7.d	Strata_Sectioned	2	4	4-5	280-320 mm
2025	27.4.a	Strata_Broken	1	16	1-6	170-390 mm
2025	27.4.b	Strata_Broken	1	16	1-4	150-330 mm
2025	27.4.c	Strata_Sectioned	1	4	4-6	295-330 mm

Table 2: Reader overview.

Reader code	Expertise	Expertise_rank	Strata
R01 GB	Advanced	1	Strata_Sectioned
R02 DK	Advanced	2	Strata_Broken
R03 FR	Advanced	3	Strata_Sectioned
R04 NO	Advanced	4	Strata_Broken
R05 FR	Advanced	5	Strata_Sectioned
R06 DE	Advanced	6	Strata_Sectioned
R07 GB	Basic	7	Strata_Sectioned
R08 BE	Advanced	8	Strata_Sectioned
R09 GB	Basic	9	Strata_Sectioned
R10 GB	Basic	10	Strata_Sectioned
R11 DE	Advanced	11	Strata_Sectioned
R12 DK	Advanced	12	Strata_Broken
R13 SE	Advanced	13	Strata_Broken
R14 SE	Advanced	14	Strata_Broken
R15 SE	Basic	15	Strata_Broken
R16 NO	Basic	16	Strata_Broken
R17 BE	Basic	17	Strata_Sectioned
R18 NL	Basic	18	Strata_Sectioned
R19 NL	Basic	19	Strata_Sectioned

*Overview table***Table 3:** Overview results: Stock, total number of samples (NSample), coefficient of variance (CV), percentage of agreement (PA), average percentage error (APE) for all ages and readers and the number of readers (basic [N_basic] and advanced [N_advanced]) on the event.

Stock2	NSample	CV	PA	APE	N_basic	N_adv
whg.27.47d	424	30 %	63 %	21 %	8	11

5 Results

5.1 All readers

5.1.1 All samples

Multimodal cases

Table 4: Total number of samples (NSample) and percentage of cases (fish samples) with multiple modes depending on the approach to weight the experience of the reader which will be considered when defining the fish age mode. PercMM_traditional shows the percentage of the total samples for which multiple modes are obtained when all the readers are equally weighted. PercMM_linear_weight shows the percentage of the total samples for which multiple modes are obtained when the weight assigned to the different readers decreases linearly with the experience, while in the PercMM_negexp the weight applied decreases with a negative exponential shape with the experience. The PercMM_multistage shows the percentage of multiple mode cases when a combination of the different methodologies is used, as explained in the material and methods section

NSample	PercMM_traditional	PercMM_linear_weight	PercMM_negexp_weight	PercMM_multistage
424	6 %	2 %	0 %	0 %

Summary statistics

Table 5: Summary of statistics; Total number of samples (NSample), coefficient of variance (CV), percentage of agreement (PA) and average percentage error (APE) for all ages and readers

NSample	CV	PA	APE
424	30 %	63 %	21 %

In this exchange event, 237 otolith fish individuals were aged. Of those, 6 % shows multimodal ages when the traditional approach (all readers equally weighted) is used to define the mode. The percentage of multiple mode cases is reduced to 0 %. The complete list of cases with multiple modes is presented in table 64 in the annex 1 section, where the ageing from each of the readers participating in the exchange event is presented. When all the otolith samples are considered (both single and multimodal cases) the weighted average percentage agreement based on modal ages for all readers is 63 %, with the weighted average CV of 30 % and APE of 21 %.

Coefficient of Variation (CV)

Table 6: 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 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R07 GB	R08 BE	R09 GB	R10 GB	R11 DE	R12 DK	R13 SE	R14 SE	R15 SE	R16 NO	R17 BE	R18 NL	R19 NL	all
1	18	57	44	0	52	40	42	18	38	35	29	36	49	36	44	37	40	33	79	53
2	16	40	25	18	23	34	29	18	30	26	21	21	32	24	31	40	31	30	49	36
3	11	20	22	15	25	18	16	7	17	16	19	28	16	20	36	28	17	16	28	24
4	7	18	16	19	16	20	22	9	18	18	13	21	12	16	28	19	16	20	28	22
5	7	8	14	10	16	11	11	9	12	8	11	16	9	19	51	11	15	19	17	16
6	8	0	11	33	11	12	11	9	14	0	14	0	13	17	48	24	12	12	13	15
7	-	24	13	-	47	0	11	11	13	0	-	-	-	24	57	0	24	28	39	22
Weighted Mean	12	27	23	15	26	24	23	12	23	22	18	24	22	21	35	27	23	23	39	30

Percentage of Agreement (PA)

Table 7 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 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R07 GB	R08 BE	R09 GB	R10 GB	R11 DE	R12 DK	R13 SE	R14 SE	R15 SE	R16 NO	R17 BE	R18 NL	R19 NL	all
1	97	62	83	100	76	22	68	97	36	77	15	77	75	54	85	62	86	83	62	69
2	90	60	76	88	79	10	58	83	62	85	17	83	62	75	62	62	66	66	45	63
3	88	61	68	79	71	20	79	96	71	80	32	50	78	70	32	58	76	75	48	65
4	93	66	67	69	67	19	67	85	77	73	19	45	79	64	21	63	52	52	48	59
5	86	83	59	17	68	32	73	82	77	83	55	60	80	67	33	67	52	27	57	61
6	77	100	77	33	77	23	85	69	69	100	46	100	50	33	33	33	54	54	46	61
7	100	50	0	0	0	100	50	50	0	100	100	-	-	50	50	100	50	0	50	48
Weighted Mean	90	65	71	74	72	22	70	86	63	81	29	62	74	65	42	62	66	60	51	63

Average Percentage Error (APE)

Table 8: Average Percentage Error (APE) table represents the APE (%) per modal age and reader, the APE of all advanced readers combined per modal age and a weighted mean of the APE per reader.

Modal age	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R07 GB	R08 BE	R09 GB	R10 GB	R11 DE	R12 DK	R13 SE	R14 SE	R15 SE	R16 NO	R17 BE	R18 NL	R19 NL	all
1	6	43	21	0	28	34	34	6	31	29	18	29	38	34	31	34	21	24	69	40
2	7	32	21	6	18	25	24	13	24	13	11	8	19	15	29	30	26	17	39	25
3	7	17	19	12	20	11	12	3	14	7	15	20	7	15	28	23	12	14	22	16
4	2	14	14	16	14	16	16	5	10	12	8	15	7	12	20	15	15	15	18	14
5	3	5	12	7	14	9	5	4	9	5	10	13	7	12	45	10	13	16	14	11
6	5	0	8	24	8	7	5	7	12	0	10	0	9	11	36	18	9	11	10	9
7	0	17	9	0	33	0	8	8	9	0	0	-	-	17	40	0	17	20	27	18
Weighted Mean	5	21	16	10	18	18	17	6	18	15	12	17	14	16	28	22	17	17	32	21

Relative bias

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 9: The relative bias (as the difference between the mean and modal age) per modal age and reader is presented, as well as the weighted mean relative bias per reader and the relative bias per modal age for all readers combined.

Modal age	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R07 GB	R08 BE	R09 GB	R10 GB	R11 DE	R12 DK	R13 SE	R14 SE	R15 SE	R16 NO	R17 BE	R18 NL	R19 NL	all
1	0.03	0.54	-0.03	0.00	-0.03	1.30	0.24	0.03	0.79	0.23	1.04	0.23	0.33	0.46	-0.15	0.38	-0.07	0.17	-0.31	0.27
2	0.03	0.73	-0.24	0.00	-0.21	1.34	0.31	0.17	0.48	0.10	0.97	0.00	0.12	-0.38	0.44	-0.28	0.00	-0.28	-0.28	0.18
3	0.12	0.50	-0.36	-0.21	-0.38	1.04	0.25	-0.04	0.33	0.00	0.92	0.14	0.00	0.25	-0.47	0.58	-0.16	-0.25	-0.24	0.11
4	0.00	0.48	-0.37	-0.41	-0.37	1.38	0.44	0.07	0.15	-0.20	1.04	0.05	-0.07	0.18	-1.03	0.30	-0.41	-0.15	0.11	0.06
5	0.05	0.17	-0.36	-0.83	-0.45	0.77	0.00	0.00	-0.27	0.17	0.50	0.60	-0.20	0.17	-1.33	-0.33	-0.43	-0.68	-0.33	-0.15
6	0.08	0.00	-0.31	-1.33	-0.31	1.00	-0.08	-0.15	-0.46	0.00	0.77	0.00	-0.50	0.00	-1.67	0.33	-0.15	-0.54	-0.08	-0.18
7	0.00	-1.00	-1.50	-3.00	-2.50	0.00	-0.50	-0.50	-1.50	0.00	0.00	-	-	-1.00	-2.00	0.00	-1.00	-2.00	-1.50	-
Weighted Mean	0.05	0.47	-0.29	-0.32	-0.31	1.15	0.22	0.03	0.23	0.07	0.89	0.13	-0.00	0.19	-0.73	0.35	-0.26	-0.21	-0.21	0.09

Bias plot

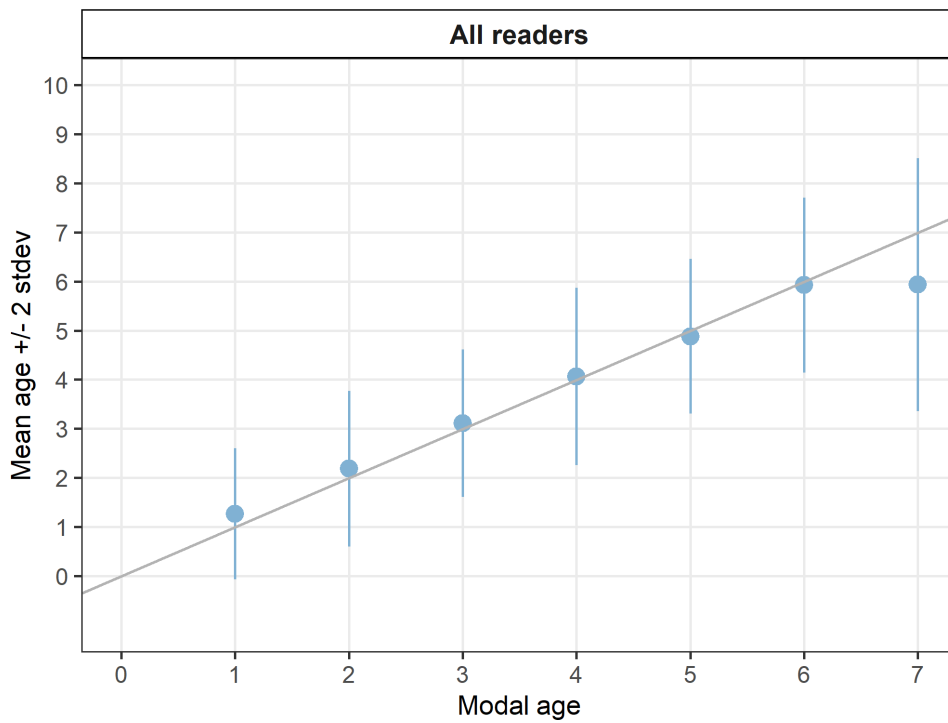


Figure 1: Age bias plot for all readers. Mean age recorded ± 2 stdev of each reader and all readers combined are plotted against modal age. The estimated mean age corresponds to modal age, if the estimated mean age is on the 1:1 equilibrium line (solid line). Relative bias is the age difference between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

5.1.2 Sectioned Otoliths

Multimodal cases

Table 10 Strata Strata_Sectioned .Total number of samples (NSample) and percentage of cases (fish samples) with multiple modes depending on the approach to weight the experience of the reader which will be considered when defining the fish age mode. PercMM_traditional shows the percentage of the total samples for which multiple modes are obtained when all the readers are equally weighted. PercMM_linear_weight shows the percentage of the total samples for which multiple modes are obtained when the weight assigned to the different readers decreases linearly with the experience, while in the PercMM_negexp the weight applied decreases with a negative exponential shape with the experience. The PercMM_multistage shows the percentage of multiple mode cases when a combination of the different methodologies is used, as explained in the material and methods section

NSample	PercMM_traditional	PercMM_linear_weight	PercMM_negexp_weight	PercMM_multistage
244	5 %	0 %	0 %	0 %

Summary statistics

Table 11: Strata Strata_Sectioned. Summary of statistics; Total number of samples (NSample), coefficient of variance (CV), percentage of agreement (PA) and average percentage error (APE) for all ages and readers

NSample	CV	PA	APE
244	30 %	63 %	21 %

In this exchange event 244 otolith fish individuals were aged. Of those, 5 % showed multiple mode cases when the traditional approach (all readers equally weighted) is used to define the mode. The percentage of multiple mode cases is reduced to 0 %. The complete list of cases with multiple modes is presented in table 64 in the annex 1 section, where the ageing from each of the readers participating in the exchange event is presented. When all the otolith samples are considered (both single and multimodal cases) the weighted average percentage agreement based on modal ages for all readers is 63 %, with the weighted average CV of 30 % and APE of 21 %.

Coefficient of Variation (CV)

Table 12: Strata Strata_Sectioned. 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 GB	R03 FR	R05 FR	R06 DE	R07 GB	R08 BE	R09 GB	R10 GB	R11 DE	R17 BE	R18 NL	R19 NL	all
1	18 %	44 %	52 %	40 %	42 %	18 %	38 %	35 %	29 %	40 %	33 %	79 %	54 %
2	16 %	25 %	23 %	34 %	29 %	18 %	30 %	26 %	21 %	31 %	30 %	49 %	37 %
3	11 %	22 %	25 %	18 %	16 %	7 %	17 %	16 %	19 %	17 %	16 %	28 %	23 %
4	7 %	16 %	16 %	20 %	22 %	9 %	18 %	18 %	13 %	16 %	20 %	28 %	22 %
5	7 %	14 %	16 %	11 %	11 %	9 %	12 %	8 %	11 %	15 %	19 %	17 %	15 %
6	8 %	11 %	11 %	12 %	11 %	9 %	14 %	0 %	14 %	12 %	12 %	13 %	14 %
7	-	13 %	47 %	0 %	11 %	11 %	13 %	0 %	-	24 %	28 %	39 %	20 %
Weighted Mean	12 %	23 %	26 %	24 %	23 %	12 %	23 %	22 %	18 %	23 %	23 %	39 %	30 %

Percentage of Agreement (PA)

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 including at the bottom of the table is weighted according to number of age readings.

Table 13: Strata Strata_Sectioned. 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 GB	R03 FR	R05 FR	R06 DE	R07 GB	R08 BE	R09 GB	R10 GB	R11 DE	R17 BE	R18 NL	R19 NL	total
1	97 %	83 %	76 %	22 %	68 %	97 %	36 %	77 %	15 %	86 %	83 %	62 %	67 %
2	90 %	76 %	79 %	10 %	58 %	83 %	62 %	85 %	17 %	66 %	66 %	45 %	61 %
3	88 %	68 %	71 %	20 %	79 %	96 %	71 %	80 %	32 %	76 %	75 %	48 %	66 %
4	93 %	67 %	67 %	19 %	67 %	85 %	77 %	73 %	19 %	52 %	52 %	48 %	59 %
5	86 %	59 %	68 %	32 %	73 %	82 %	77 %	83 %	55 %	52 %	27 %	57 %	62 %
6	77 %	77 %	77 %	23 %	85 %	69 %	69 %	100 %	46 %	54 %	54 %	46 %	62 %
7	100 %	0 %	0 %	100 %	50 %	50 %	0 %	100 %	100 %	50 %	0 %	50 %	45 %
Weighted Mean	90 %	71 %	72 %	22 %	70 %	86 %	63 %	81 %	29 %	66 %	60 %	51 %	63 %

Average Percentage Error (APE)

Table 14: Strata Strata_Sectioned .Average Percentage Error (APE) table represents the APE per modal age and reader, the APE of all advanced readers combined per modal age and a weighted mean of the APE per reader.

Modal age	R01 GB	R03 FR	R05 FR	R06 DE	R07 GB	R08 BE	R09 GB	R10 GB	R11 DE	R17 BE	R18 NL	R19 NL	all
1	6 %	21 %	28 %	34 %	34 %	6 %	31 %	29 %	18 %	21 %	24 %	69 %	41 %
2	7 %	21 %	18 %	25 %	24 %	13 %	24 %	13 %	11 %	26 %	17 %	39 %	26 %
3	7 %	19 %	20 %	11 %	12 %	3 %	14 %	7 %	15 %	12 %	14 %	22 %	15 %
4	2 %	14 %	14 %	16 %	16 %	5 %	10 %	12 %	8 %	15 %	15 %	18 %	15 %
5	3 %	12 %	14 %	9 %	5 %	4 %	9 %	5 %	10 %	13 %	16 %	14 %	10 %
6	5 %	8 %	8 %	7 %	5 %	7 %	12 %	0 %	10 %	9 %	11 %	10 %	8 %
7	0 %	9 %	33 %	0 %	8 %	8 %	9 %	0 %	0 %	17 %	20 %	27 %	15 %
Weighted Mean	5 %	16 %	18 %	18 %	17 %	6 %	18 %	15 %	12 %	17 %	17 %	32 %	21 %

Relative bias

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 15: Strata Strata_Sectioned . The relative bias (as the difference between the mean and modal age) per modal age and reader is presented, as well as the weighted mean relative bias per reader and the relative bias per modal age for all readers combined.

Modal age	R01 GB	R03 FR	R05 FR	R06 DE	R07 GB	R08 BE	R09 GB	R10 GB	R11 DE	R17 BE	R18 NL	R19 NL	all
1	0.03	-0.03	-0.03	1.30	0.24	0.03	0.79	0.23	1.04	-0.07	0.17	-0.31	-
2	0.03	-0.24	-0.21	1.34	0.31	0.17	0.48	0.10	0.97	-0.28	0.00	-0.28	-
3	0.12	-0.36	-0.38	1.04	0.25	-0.04	0.33	0.00	0.92	-0.16	-0.25	-0.24	-
4	0.00	-0.37	-0.37	1.38	0.44	0.07	0.15	-0.20	1.04	-0.41	-0.15	0.11	-
5	0.05	-0.36	-0.45	0.77	0.00	0.00	-0.27	0.17	0.50	-0.43	-0.68	-0.33	-
6	0.08	-0.31	-0.31	1.00	-0.08	-0.15	-0.46	0.00	0.77	-0.15	-0.54	-0.08	-
7	0.00	-1.50	-2.50	0.00	-0.50	-0.50	-1.50	0.00	0.00	-1.00	-2.00	-1.50	-
Weighted Mean	0.05	-0.29	-0.31	1.15	0.22	0.03	0.23	0.07	0.89	-0.26	-0.21	-0.21	-

Bias plot

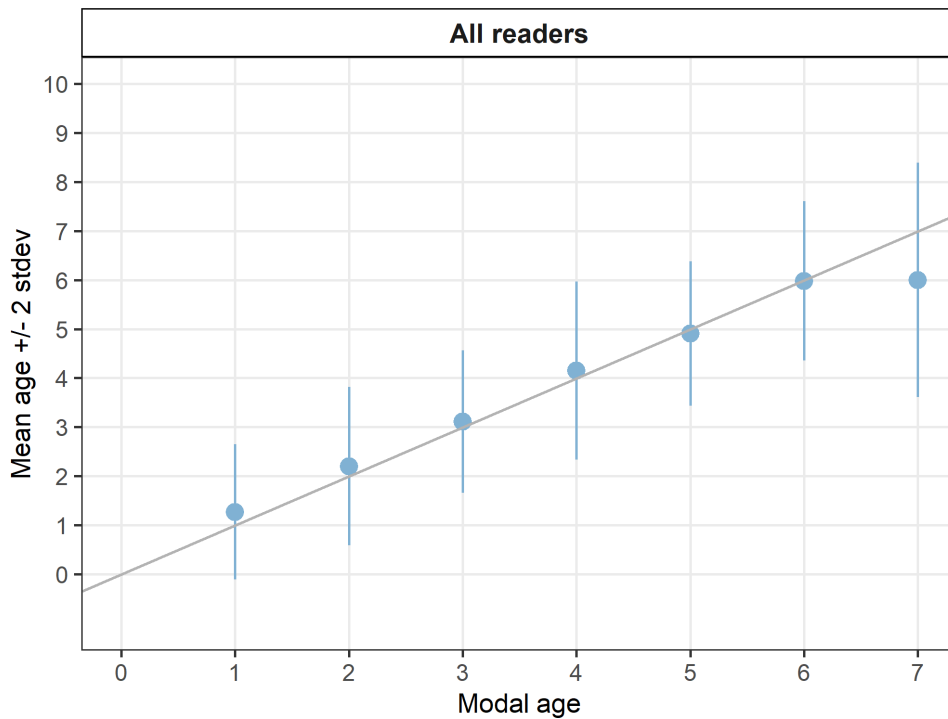


Figure 2: Strata Strata_Sectioned . Age bias plot for all readers. Mean age recorded +/- 2 stdev of each reader and all readers combined are plotted against modal age. The estimated mean age corresponds to modal age, if the estimated mean age is on the 1:1 equilibrium line (solid line). Relative bias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

Inter-reader bias test

Table 16: Strata Strata_Sectioned .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 GB	R03 FR	R05 FR	R06 DE	R07 GB	R08 BE	R09 GB	R10 GB	R11 DE	R17 BE	R18 NL	R19 NL
R01 GB	X	**	**	**	**	**	*	**	**	-	**	-
R03 FR	**	X	**	**	**	*	**	**	**	*	**	**
R05 FR	**	**	X	**	**	*	**	**	**	**	**	**
R06 DE	**	**	**	X	**	**	**	**	-	**	**	**
R07 GB	**	**	**	**	X	-	**	**	**	*	*	-
R08 BE	**	*	*	**	-	X	*	**	**	-	**	*
R09 GB	*	**	**	**	**	*	X	*	**	-	-	-
R10 GB	**	**	**	**	**	**	*	X	**	*	-	X
R11 DE	**	**	**	-	**	**	**	**	X	**	**	**
R17 BE	-	*	**	**	*	-	-	*	**	X	**	*
R18 NL	**	**	**	**	*	**	-	-	**	**	X	**
R19 NL	-	**	**	**	-	*	-	X	**	*	**	X
Modal age	-	**	**	**	-	**	-	-	**	-	**	**

5.1.3 Broken otoliths

Multimodal cases

Table 17: Strata Strata_Broken. Total number of samples (NSample) and percentage of cases (fish samples) with multiple modes depending on the approach to weight the experience of the reader which will be considered when defining the fish age mode. PercMM_traditional shows the percentage of the total samples for which multiple modes are obtained when all the readers are equally weighted. PercMM_linear_weight shows the percentage of the total samples for which multiple modes are obtained when the weight assigned to the different readers decreases linearly with the experience, while in the PercMM_negexp the weight applied decreases with a negative exponential shape with the experience. The PercMM_multistage shows the percentage of multiple mode cases when a combination of the different methodologies is used, as explained in the material and methods section

NSample	PercMM_traditional	PercMM_linear_weight	PercMM_negexp_weight	PercMM_multistage
180	7 %	2 %	0 %	0 %

Summary statistics

Table 18: Strata Strata_Broken .Summary of statistics; Total number of samples (NSample), coefficient of variance (CV), percentage of agreement (PA) and average percentage error (APE) for all ages and readers

NSample	CV	PA	APE
180	29 %	63 %	20 %

Coefficient of Variation (CV)

Table 19: Strata Strata_Broken. 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 DK	R04 NO	R12 DK	R13 SE	R14 SE	R15 SE	R16 NO	all
1	57 %	0 %	36 %	49 %	36 %	44 %	37 %	46 %
2	40 %	18 %	21 %	32 %	24 %	31 %	40 %	35 %
3	20 %	15 %	28 %	16 %	20 %	36 %	28 %	26 %
4	18 %	19 %	21 %	12 %	16 %	28 %	19 %	22 %
5	8 %	10 %	16 %	9 %	19 %	51 %	11 %	22 %
6	0 %	33 %	0 %	13 %	17 %	48 %	24 %	24 %
7	24 %	-	-	-	24 %	57 %	0 %	27 %
Weighted Mean	27 %	15 %	24 %	22 %	21 %	35 %	27 %	29 %

Percentage of Agreement (PA)

Table 20: Strata Strata_Broken .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 DK	R04 NO	R12 DK	R13 SE	R14 SE	R15 SE	R16 NO	total
1	62 %	100 %	77 %	75 %	54 %	85 %	62 %	73 %
2	60 %	88 %	83 %	62 %	75 %	62 %	62 %	70 %
3	61 %	79 %	50 %	78 %	70 %	32 %	58 %	61 %
4	66 %	69 %	45 %	79 %	64 %	21 %	63 %	59 %
5	83 %	17 %	60 %	80 %	67 %	33 %	67 %	57 %
6	100 %	33 %	100 %	50 %	33 %	33 %	33 %	53 %
7	50 %	0 %	-	-	50 %	50 %	100 %	56 %
Weighted Mean	65 %	74 %	62 %	74 %	65 %	42 %	62 %	63 %

Average Percentage Error (APE)

Table 21: Strata Strata_Broken .Average Percentage Error (APE) table represents the APE per modal age and reader, the APE of all advanced readers combined per modal age and a weighted mean of the APE per reader.

Modal age	R02 DK	R04 NO	R12 DK	R13 SE	R14 SE	R15 SE	R16 NO	total
1	43 %	0 %	29 %	38 %	34 %	31 %	34 %	34 %
2	32 %	6 %	8 %	19 %	15 %	29 %	30 %	22 %
3	17 %	12 %	20 %	7 %	15 %	28 %	23 %	17 %
4	14 %	16 %	15 %	7 %	12 %	20 %	15 %	14 %
5	5 %	7 %	13 %	7 %	12 %	45 %	10 %	16 %
6	0 %	24 %	0 %	9 %	11 %	36 %	18 %	17 %
7	17 %	0 %	-	-	17 %	40 %	0 %	24 %
Weighted Mean	21 %	10 %	17 %	14 %	16 %	28 %	22 %	20 %

Relative bias

Table 22: Strata Strata_Broken . The relative bias (as the difference between the mean and modal age) per modal age and reader is presented, as well as the weighted mean relative bias per reader and the relative bias per modal age for all readers combined.

Modal age	R02 DK	R04 NO	R12 DK	R13 SE	R14 SE	R15 SE	R16 NO	all
1	0.54	0.00	0.23	0.33	0.46	-0.15	0.38	-
2	0.73	0.00	0.00	0.00	0.12	-0.38	0.44	-
3	0.50	-0.21	0.14	0.00	0.25	-0.47	0.58	-
4	0.48	-0.41	0.05	-0.07	0.18	-1.03	0.30	-
5	0.17	-0.83	0.60	-0.20	0.17	-1.33	-0.33	-
6	0.00	-1.33	0.00	-0.50	0.00	-1.67	0.33	-
7	-1.00	-3.00	-	-	-1.00	-2.00	0.00	-
Weighted Mean	0.47	-0.32	0.13	-0.00	0.19	-0.73	0.35	-

Bias plot

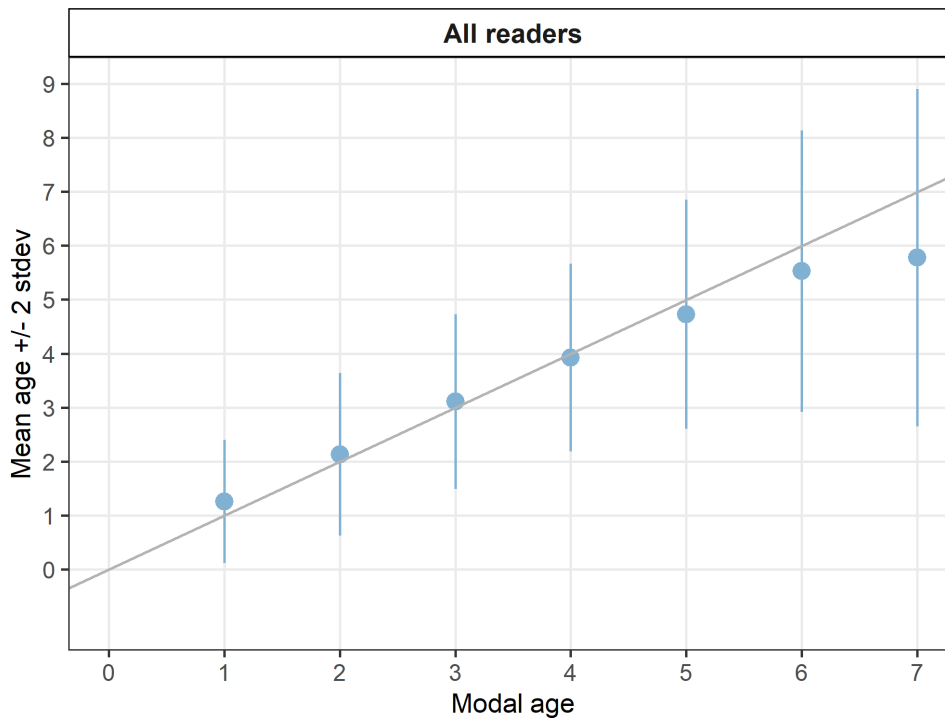


Figure 3: Strata Strata_Broken .Age bias plot for all readers. Mean age recorded +/- 2 stdev of each reader and all readers combined are plotted against modal age. The estimated mean age corresponds to modal age, if the estimated mean age is on the 1:1 equilibrium line (solid line). Relative bias is the age difference between estimated mean age and modal age.

Inter-reader bias test

Table 23: Strata Strata_Broken. 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 DK	R04 NO	R12 DK	R13 SE	R14 SE	R15 SE	R16 NO
R02 DK	X	X	*	*	-	X	**
R04 NO	X	X	X	X	**	-	X
R12 DK	*	X	X	**	**	X	**
R13 SE	*	X	**	X	**	X	**
R14 SE	-	**	**	**	X	-	**
R15 SE	X	-	X	X	-	X	X
R16 NO	**	X	**	**	**	X	X
Modal age	**	**	**	**	-	**	-

5.1.4 Overall comparison of results by strata

Table 24: Number of age readings per strata and modal age for all advanced readers combined.

Modal age	Strata_Broken	Strata_Sectioned	total
1	90	331	421
2	107	336	443
3	127	281	408
4	196	310	506
5	40	252	292
6	19	145	164
7	9	22	31
Total	588	1677	2265

Coefficient of Variation (CV)

Table 25: CV per strata and modal age for all advanced readers combined.

Modal age	Strata_Broken	Strata_Sectioned	all
1	46 %	54 %	53 %
2	35 %	37 %	36 %
3	26 %	23 %	24 %
4	22 %	22 %	22 %
5	22 %	15 %	16 %
6	24 %	14 %	15 %
7	27 %	20 %	22 %
Weighted Mean	29 %	30 %	30 %

Percentage of Agreement (PA)

Table 26: Percentage Agreement per strata and modal age for all advanced readers combined.

Modal age	Strata_Broken	Strata_Sectioned	total
1	73 %	67 %	69 %
2	70 %	61 %	63 %
3	61 %	66 %	65 %
4	59 %	59 %	59 %
5	57 %	62 %	61 %
6	53 %	62 %	61 %
7	56 %	45 %	48 %
Weighted Mean	63 %	63 %	63 %

Average Percentage Error (APE)

Table 27: Average Percentage Error per strata and modal age for all advanced readers combined.

Modal age	Strata_Broken	Strata_Sectioned	all
1	34 %	41 %	40 %
2	22 %	26 %	25 %
3	17 %	15 %	16 %
4	14 %	15 %	14 %
5	16 %	10 %	11 %
6	17 %	8 %	9 %
7	24 %	15 %	18 %
Weighted Mean	20 %	21 %	21 %

Relative bias

Table 28: Relative Bias per strata and modal age for all advanced readers combined.

Modal age	Strata_Broken	Strata_Sectioned	all
1	0.26	0.27	0.26
2	0.13	0.20	0.17
3	0.11	0.11	0.11
4	-0.08	0.15	0.04
5	-0.28	-0.10	-0.19
6	-0.47	-0.02	-0.25
7	-1.22	-1.00	-1.11
Weighted Mean	0.01	0.11	0.05

5.2 Advanced readers

5.2.1 All Samples

Multimodal cases

Table 29: Summary of statistics; Total number of samples (NSample), a percentage of cases (fish samples) with multiple modes depending on the approach to weight the experience of the reader which will be considered when defining the fish age mode. PercMM_traditional shows the percentage of the total samples for which multiple modes are obtained when all the readers are equally weighted. PercMM_linear_weight shows the percentage of the total samples for which multiple modes are obtained when the weight assigned to the different readers decreases linearly with the experience, while in the PercMM_negexp the weight applied decreases with a negative exponential shape with the experience. The PercMM_multistage shows the percentage of multiple mode cases when a combination of the different methodologies is used, as explained in the material and methods section

NSample	PercMM_traditional	PercMM_linear_weight	PercMM_negexp_weight	PercMM_multistage
327	15 %	1 %	0 %	0 %

Summary statistics

Table 30: Summary of statistics; Total number of samples (NSample), coefficient of variance (CV), percentage of agreement (PA) and average percentage error (APE) for all ages and readers

NSample	CV	PA	APE
327	30 %	65 %	21 %

In this exchange event, 327 otolith fish individuals were aged. Of those, 15 %when the traditional approach (all readers equally weighted) is used to define the mode. The percentage of multiple mode cases is reduced to 0 %. The complete list of cases with multiple modes is presented in table 71 in the annex 1 section, where the ageing from each of the readers participating in the exchange event is presented. When all the otolith samples are considered (both single and multimodal cases) the weighted average percentage agreement based on modal ages for all readers is 65 %, with the weighted average CV of 30 % and APE of 21 %.

Coefficient of Variation (CV)

Table 31: 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 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE	all
0	-	-	-	-	-	-	-	-	-	-	-	-
1	32 %	69 %	19 %	0 %	37 %	47 %	46 %	31 %	29 %	36 %	37 %	57 %
2	22 %	41 %	14 %	25 %	14 %	33 %	24 %	23 %	25 %	35 %	21 %	35 %
3	14 %	18 %	19 %	15 %	22 %	26 %	13 %	22 %	25 %	16 %	21 %	27 %
4	5 %	17 %	14 %	17 %	13 %	19 %	8 %	14 %	21 %	12 %	17 %	19 %
5	7 %	6 %	14 %	21 %	17 %	11 %	9 %	12 %	14 %	17 %	22 %	16 %
6	8 %	0 %	10 %	46 %	17 %	12 %	9 %	14 %	10 %	13 %	23 %	17 %
7	-	-	-	-	-	-	-	-	-	-	-	14 %
Weighted Mean	16 %	26 %	16 %	18 %	21 %	27 %	20 %	20 %	22 %	21 %	22 %	30 %

Percentage of Agreement (PA)

Table 32: 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 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE	total
0	0 %	-	100 %	-	100 %	0 %	0 %	0 %	-	-	-	33 %
1	83 %	80 %	97 %	100 %	87 %	21 %	80 %	15 %	90 %	78 %	70 %	69 %
2	79 %	75 %	93 %	76 %	93 %	11 %	75 %	18 %	79 %	59 %	82 %	65 %
3	71 %	63 %	79 %	80 %	81 %	18 %	82 %	29 %	50 %	79 %	71 %	63 %
4	95 %	73 %	82 %	73 %	86 %	24 %	86 %	23 %	53 %	78 %	64 %	68 %
5	87 %	90 %	61 %	10 %	70 %	30 %	78 %	52 %	75 %	50 %	50 %	61 %
6	75 %	100 %	85 %	25 %	77 %	23 %	69 %	50 %	67 %	50 %	25 %	61 %
7	100 %	100 %	0 %	-	0 %	100 %	100 %	100 %	-	-	0 %	62 %
Weighted Mean	81 %	76 %	83 %	69 %	83 %	21 %	78 %	29 %	66 %	71 %	66 %	65 %

Average Percentage Error (APE)

Table 33: Average Percentage Error (APE) table represents the APE per modal age and reader, the APE of all advanced readers combined per modal age and a weighted mean of the APE per reader.

Modal age	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE	all
0	-	-	-	-	-	-	-	-	-	-	-	-
1	24 %	46 %	7 %	0 %	13 %	39 %	34 %	23 %	16 %	28 %	32 %	44 %
2	13 %	30 %	7 %	20 %	7 %	22 %	15 %	14 %	14 %	27 %	11 %	25 %
3	12 %	16 %	14 %	11 %	15 %	21 %	8 %	18 %	18 %	7 %	13 %	19 %
4	2 %	13 %	10 %	14 %	8 %	14 %	6 %	9 %	15 %	7 %	12 %	12 %
5	4 %	4 %	12 %	14 %	15 %	9 %	5 %	11 %	10 %	14 %	15 %	10 %
6	5 %	0 %	7 %	38 %	13 %	7 %	7 %	11 %	8 %	9 %	18 %	9 %
7	0 %	0 %	0 %	-	0 %	0 %	0 %	0 %	-	-	0 %	12 %
Weighted Mean	11 %	19 %	9 %	14 %	12 %	20 %	14 %	15 %	15 %	14 %	15 %	21 %

Relative Bias

Table 34: The relative bias (as the difference between the mean and modal age) per modal age and advanced reader is presented, as well as the weighted mean relative bias per reader and the relative bias per modal age for all advanced readers combined.

Modal age	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE	all
0	1.00	-	0.00	-	0.00	2.50	1.00	2.00	-	-	-	-
1	0.17	0.40	-0.03	0.00	0.00	1.57	0.27	1.15	0.10	0.22	0.30	0.38
2	0.07	0.50	-0.07	-0.24	-0.07	1.21	0.11	1.04	-0.07	-0.18	0.06	0.21
3	0.29	0.42	-0.25	-0.20	-0.26	1.43	0.11	1.14	-0.07	0.00	0.14	0.25
4	-0.05	0.38	-0.23	-0.35	-0.18	1.19	0.14	1.00	-0.11	-0.07	0.16	0.17
5	0.13	0.10	-0.35	-1.20	-0.48	0.83	0.04	0.57	0.38	-0.62	0.10	-0.05
6	0.08	0.00	-0.23	-2.00	-0.46	1.00	-0.15	0.75	-0.33	-0.50	-0.50	-0.21
7	0.00	0.00	-2.00	-	-1.00	0.00	0.00	0.00	-	-	-2.00	-
Weighted Mean	0.14	0.36	-0.19	-0.43	-0.21	1.25	0.12	0.98	-0.01	-0.11	0.09	0.17

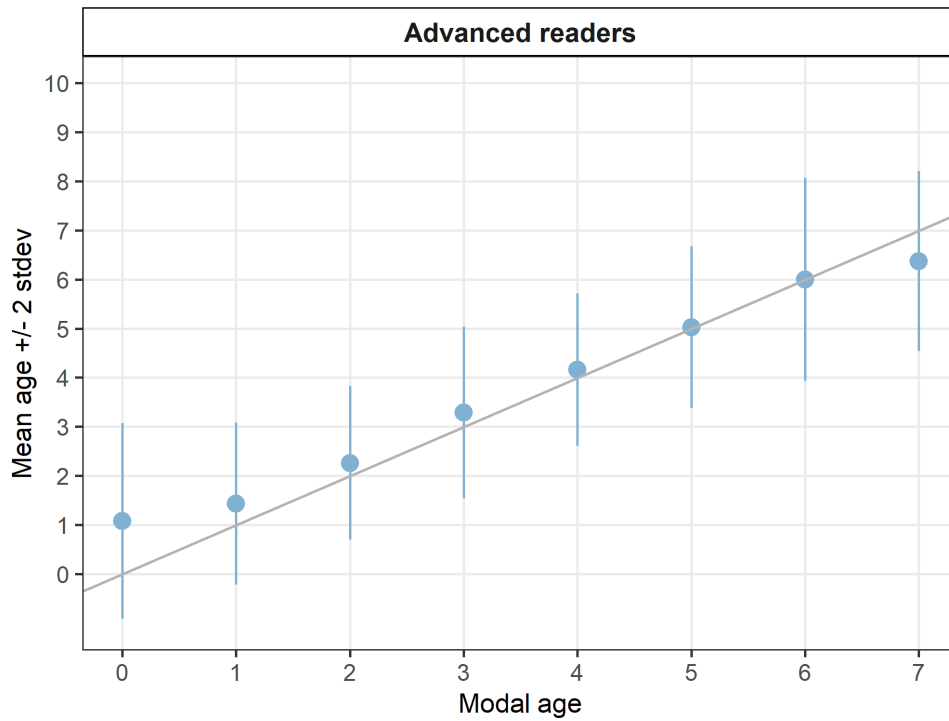


Figure 4: Age bias plot for advanced readers. Mean age recorded ± 2 stdev of each reader and all readers combined are plotted against modal age. The estimated mean age corresponds to modal age, if the estimated mean age is on the 1:1 equilibrium line (solid line). Relative bias is the age difference between estimated mean age and modal age.

General Age Error Matrix (AEM)

Table 35: General Age error matrix (AEM). The modal age is in rows and the age classifications by the advanced readers in columns.

modal_age	0	1	2	3	4	5	6	7	8	9	Total
0	0.33	0.33	0.25	0.08	-	-	-	-	-	-	0.99
1	0.01	0.69	0.18	0.08	0.02	0.01	-	-	-	-	0.99
2	0.00	0.08	0.65	0.20	0.04	0.02	0.00	-	-	-	0.99
3	-	0.01	0.08	0.63	0.18	0.07	0.02	-	0.00	-	0.99
4	-	-	0.02	0.09	0.68	0.15	0.04	0.02	-	-	1.00
5	-	-	0.01	0.04	0.14	0.61	0.17	0.04	-	-	1.01
6	-	-	0.01	0.02	0.03	0.11	0.61	0.17	0.02	0.02	0.99
7	-	-	-	-	-	0.25	0.12	0.62	-	-	0.99

AEM by ICES area

Table 36: Age error matrix (AEM) for ICES area 27.4.a.

ices_area	modal_age	0	1	2	3	4	5	6	7	8	9	Total
27.4.a	1	-	1.00	-	-	-	-	-	-	-	-	1.00
27.4.a	2	-	0.07	0.80	0.13	-	-	-	-	-	-	1.00
27.4.a	3	-	-	0.10	0.73	0.16	0.02	-	-	-	-	1.01
27.4.a	4	-	-	-	0.11	0.70	0.13	0.04	0.02	-	-	1.00
27.4.a	5	-	-	0.03	0.06	0.28	0.47	0.06	0.09	-	-	0.99
27.4.a	6	-	-	-	0.12	-	0.25	0.50	0.12	-	-	0.99
27.4.a	7	-	-	-	-	-	0.50	-	0.50	-	-	1.00

Table 37: Age error matrix (AEM) for ICES area 27.4.b.

ices_area	modal_age	0	1	2	3	4	5	6	7	8	9	Total
27.4.b	0	0.33	0.33	0.25	0.08	-	-	-	-	-	-	0.99
27.4.b	1	0.01	0.67	0.16	0.09	0.04	0.02	-	-	-	-	0.99
27.4.b	2	-	0.04	0.65	0.18	0.09	0.03	0.01	-	-	-	1.00
27.4.b	3	-	0.04	0.08	0.58	0.15	0.10	0.04	-	0.01	-	1.00
27.4.b	4	-	-	0.04	0.15	0.64	0.11	0.04	0.02	-	-	1.00
27.4.b	5	-	-	-	0.03	0.14	0.54	0.23	0.06	-	-	1.00
27.4.b	6	-	-	0.02	-	0.05	0.12	0.61	0.19	-	-	0.99
27.4.b	7	-	-	-	-	-	0.17	0.17	0.67	-	-	1.01

Table 38: Age error matrix (AEM) for ICES area 27.4.c.

ices_area	modal_age	0	1	2	3	4	5	6	7	8	9	Total
27.4.c	1	0.04	0.73	0.22	-	-	-	-	-	-	-	0.99
27.4.c	2	0.01	0.17	0.64	0.14	0.03	-	-	-	-	-	0.99
27.4.c	3	-	-	0.10	0.64	0.22	0.04	0.01	-	-	-	1.01
27.4.c	4	-	-	-	0.07	0.69	0.21	0.03	-	-	-	1.00
27.4.c	5	-	-	-	0.02	0.11	0.70	0.16	0.02	-	-	1.01
27.4.c	6	-	-	-	0.05	-	0.05	0.68	0.14	0.09	-	1.01

Table 39: Age error matrix (AEM) for ICES area 27.7.d.

ices_area	modal_age	0	1	2	3	4	5	6	7	8	9	Total
27.7.d	1	-	0.65	0.20	0.13	0.01	-	-	-	-	-	0.99
27.7.d	2	-	0.02	0.64	0.30	0.02	0.03	-	-	-	-	1.01
27.7.d	3	-	-	0.04	0.62	0.21	0.10	0.02	-	-	-	0.99
27.7.d	4	-	-	-	-	0.71	0.20	0.07	0.02	-	-	1.00
27.7.d	5	-	-	-	0.05	0.08	0.63	0.20	0.03	-	-	0.99
27.7.d	6	-	-	-	-	-	-	0.50	0.17	-	0.33	1.00

AEM by strata

Table 40: Age error matrix (AEM) for Strata_Strata_Broken.

strata	modal_age	0	1	2	3	4	5	6	7	8	9	Total
Strata_Broken	1	-	0.84	0.14	-	0.02	-	-	-	-	-	1.00
Strata_Broken	2	-	0.15	0.74	0.09	-	0.02	-	-	-	-	1.00
Strata_Broken	3	-	-	0.13	0.70	0.15	0.02	-	-	-	-	1.00
Strata_Broken	4	-	-	0.02	0.15	0.69	0.11	0.02	0.01	-	-	1.00
Strata_Broken	5	-	-	0.02	0.04	0.28	0.54	0.04	0.07	-	-	0.99
Strata_Broken	6	-	-	0.06	0.06	0.06	0.24	0.53	0.06	-	-	1.01
Strata_Broken	7	-	-	-	-	-	0.50	-	0.50	-	-	1.00

Table 41: Age error matrix (AEM) for Strata_Strata_Sectioned.

strata	modal_age	0	1	2	3	4	5	6	7	8	9	Total
Strata_Sectioned	0	0.33	0.33	0.25	0.08	-	-	-	-	-	-	0.99
Strata_Sectioned	1	0.02	0.65	0.19	0.10	0.02	0.01	-	-	-	-	0.99
Strata_Sectioned	2	0.01	0.05	0.61	0.25	0.07	0.01	0.01	-	-	-	1.01
Strata_Sectioned	3	-	0.02	0.05	0.60	0.20	0.09	0.03	-	0.01	-	1.00
Strata_Sectioned	4	-	-	0.02	0.05	0.66	0.19	0.06	0.02	-	-	1.00
Strata_Sectioned	5	-	-	-	0.04	0.09	0.63	0.21	0.04	-	-	1.01
Strata_Sectioned	6	-	-	-	0.01	0.03	0.08	0.63	0.20	0.03	0.03	1.01
Strata_Sectioned	7	-	-	-	-	-	0.17	0.17	0.67	-	-	1.01

5.2.2 Sectioned otoliths

Multimodal cases

Table 42: Strata_Sectioned. Total number of samples (NSample) and percentage of cases (fish samples) with multiple modes depending on the approach to weight the experience of the reader which will be considered when defining the fish age mode. PercMM_traditional shows the percentage of the total samples for which multiple modes are obtained when all the readers are equally weighted. PercMM_linear_weight shows the percentage of the total samples for which multiple modes are obtained when the weight assigned to the different readers decreases linearly with the experience, while in the PercMM_negexp the weight applied decreases with a negative exponential shape with the experience. The PercMM_multistage shows the percentage of multiple mode cases when a combination of the different methodologies is used, as explained in the material and methods section

NSample	PercMM_traditional	PercMM_linear_weight	PercMM_negexp_weight	PercMM_multistage
150	17 %	0 %	0 %	0 %

Summary statistics

Table 43: Strata_Sectioned. Summary of statistics; Total number of samples (NSample), coefficient of variance (CV), percentage of agreement (PA) and average percentage error (APE) for all ages and readers

NSample	CV	PA	APE
150	31 %	63 %	23 %

In this exchange event 150 otolith fish individuals were aged. Of those, 17 % when the traditional approach (all readers equally weighted) is used to define the mode. The percentage of multiple mode cases is reduced to 0 %. The complete list of cases with multiple modes is presented in table 71 in annex 1, where the ageing from each of the readers participating in the exchange event is presented. When all the otolith samples are considered (both single and multimodal cases) the weighted average percentage agreement based on modal ages for all readers is 63 %, with the weighted average CV of 31 % and APE of 23 %.

Coefficient of Variation (CV)

Table 44: Strata Strata_Sectioned .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 GB	R03 FR	R05 FR	R06 DE	R08 BE	R11 DE	all
0	-	-	-	-	-	-	-
1	32 %	19 %	37 %	47 %	46 %	31 %	59 %
2	22 %	14 %	14 %	33 %	24 %	23 %	34 %
3	14 %	19 %	22 %	26 %	13 %	22 %	28 %
4	5 %	14 %	13 %	19 %	8 %	14 %	19 %
5	7 %	14 %	17 %	11 %	9 %	12 %	15 %
6	8 %	10 %	17 %	12 %	9 %	14 %	15 %
7	-	-	-	-	-	-	13 %
Weighted Mean	16 %	16 %	21 %	27 %	20 %	20 %	31 %

Percentage of Agreement (PA)

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 including at the bottom of the table is weighted according to number of age readings.

Table 45: Strata Strata_Sectioned .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 GB	R03 FR	R05 FR	R06 DE	R08 BE	R11 DE	total
0	0 %	100 %	100 %	0 %	0 %	0 %	33 %
1	83 %	97 %	87 %	21 %	80 %	15 %	65 %
2	79 %	93 %	93 %	11 %	75 %	18 %	61 %
3	71 %	79 %	81 %	18 %	82 %	29 %	60 %
4	95 %	82 %	86 %	24 %	86 %	23 %	66 %
5	87 %	61 %	70 %	30 %	78 %	52 %	63 %
6	75 %	85 %	77 %	23 %	69 %	50 %	63 %
7	100 %	0 %	0 %	100 %	100 %	100 %	67 %
Weighted Mean	81 %	83 %	83 %	21 %	78 %	29 %	63 %

Average Percentage Error (APE)

Table 46: Strata Strata_Sectioned .Average Percentage Error (APE) table represents the APE per modal age and reader, the APE of all advanced readers combined per modal age and a weighted mean of the APE per reader.

Modal age	R01 GB	R03 FR	R05 FR	R06 DE	R08 BE	R11 DE	all
0	-	-	-	-	-	-	-
1	24 %	7 %	13 %	39 %	34 %	23 %	47 %
2	13 %	7 %	7 %	22 %	15 %	14 %	26 %
3	12 %	14 %	15 %	21 %	8 %	18 %	22 %
4	2 %	10 %	8 %	14 %	6 %	9 %	14 %
5	4 %	12 %	15 %	9 %	5 %	11 %	10 %
6	5 %	7 %	13 %	7 %	7 %	11 %	9 %
7	0 %	0 %	0 %	0 %	0 %	0 %	10 %
Weighted Mean	11 %	9 %	12 %	20 %	14 %	15 %	23 %

Relative bias

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 47: Strata_Sectioned The relative bias (as the difference between the mean and modal age) per modal age and advanced reader is presented, as well as the weighted mean relative bias per reader and the relative bias per modal age for all advanced readers combined.

Modal age	R01 GB	R03 FR	R05 FR	R06 DE	R08 BE	R11 DE	all
0	1.00	0.00	0.00	2.50	1.00	2.00	-
1	0.17	-0.03	0.00	1.57	0.27	1.15	-
2	0.07	-0.07	-0.07	1.21	0.11	1.04	-
3	0.29	-0.25	-0.26	1.43	0.11	1.14	-
4	-0.05	-0.23	-0.18	1.19	0.14	1.00	-
5	0.13	-0.35	-0.48	0.83	0.04	0.57	-
6	0.08	-0.23	-0.46	1.00	-0.15	0.75	-
7	0.00	-2.00	-1.00	0.00	0.00	0.00	-
Weighted Mean	0.14	-0.19	-0.21	1.25	0.12	0.98	-

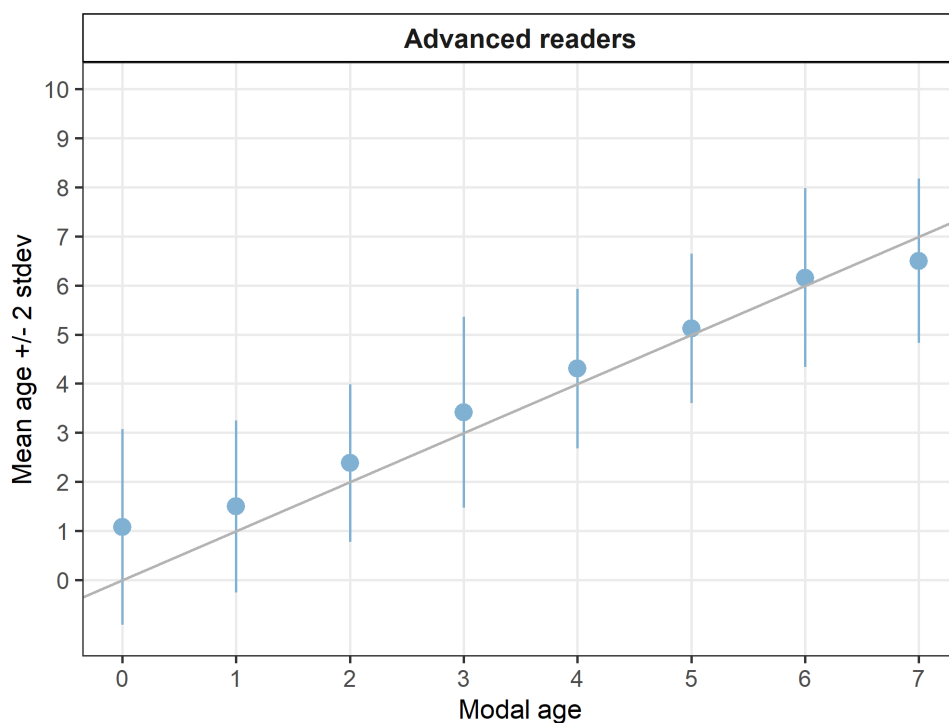


Figure 5: Strata Strata_Sectioned .Age bias plot for advance readers. Mean age recorded +/- 2 stdev of each reader and all readers combined are plotted against modal age. The estimated mean age corresponds to modal age, if the estimated mean age is on the 1:1 equilibrium line (solid line). Relative bias is the age difference between estimated mean age and modal age.

Inter-reader bias test

Table 48: Strata_Sectioned. 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 GB	R03 FR	R05 FR	R06 DE	R08 BE	R11 DE
R01 GB	X	**	**	**	**	**
R03 FR	**	X	**	**	*	**
R05 FR	**	**	X	**	*	**
R06 DE	**	**	**	X	**	-
R08 BE	**	*	*	**	X	**
R11 DE	**	**	**	-	**	X
Modal age	-	**	**	**	-	**

5.2.3 Broken otoliths

The broken otoliths were only read by the advanced readers that usually read broken otoliths.

Multimodal cases

Table 49: Strata Strata_Broken. Total number of samples (NSample) and percentage of cases (fish samples) with multiple modes depending on the approach to weight the experience of the reader which will be considered when defining the fish age mode. PercMM_traditional shows the percentage of the total samples for which multiple modes are obtained when all the readers are equally weighted. PercMM_linear_weight shows the percentage of the total samples for which multiple modes are obtained when the weight assigned to the different readers decreases linearly with the experience, while in the PercMM_negexp the weight applied decreases with a negative exponential shape with the experience. The PercMM_multistage shows the percentage of multiple mode cases when a combination of the different methodologies is used, as explained in the material and methods section

NSample	PercMM_traditional	PercMM_linear_weight	PercMM_negexp_weight	PercMM_multistage
177	12 %	1 %	0 %	0 %

Summary statistics

Table 50: Strata Strata_Broken. Summary of statistics; Total number of samples (NSample), coefficient of variance (CV), percentage of agreement (PA) and average percentage error (APE) for all ages and readers

NSample	CV	PA	APE
177	25 %	70 %	14 %

Coefficient of Variation (CV)

Table 51: Strata Strata_Broken. 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 DK	R04 NO	R12 DK	R13 SE	R14 SE	all
0	-	-	-	-	-	-
1	69 %	0 %	29 %	36 %	37 %	45 %
2	41 %	25 %	25 %	35 %	21 %	34 %
3	18 %	15 %	25 %	16 %	21 %	20 %
4	17 %	17 %	21 %	12 %	17 %	18 %
5	6 %	21 %	14 %	17 %	22 %	20 %
6	0 %	46 %	10 %	13 %	23 %	24 %
7	-	-	-	-	-	24 %
Weighted Mean	26 %	18 %	22 %	21 %	22 %	25 %

Percentage of Agreement (PA)

Table 52: Strata Strata_Broken .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 DK	R04 NO	R12 DK	R13 SE	R14 SE	total
0	-	-	-	-	-	-
1	80 %	100 %	90 %	78 %	70 %	84 %
2	75 %	76 %	79 %	59 %	82 %	74 %
3	63 %	80 %	50 %	79 %	71 %	70 %
4	73 %	73 %	53 %	78 %	64 %	69 %
5	90 %	10 %	75 %	50 %	50 %	54 %
6	100 %	25 %	67 %	50 %	25 %	53 %
7	100 %	-	-	-	0 %	50 %
Weighted Mean	76 %	69 %	66 %	71 %	66 %	70 %

Average Percentage Error (APE)

Table 53: Strata Strata_Broken .Average Percentage Error (APE) table represents the APE per modal age and reader, the APE of all advanced readers combined per modal age and a weighted mean of the APE per reader.

Modal age	R02 DK	R04 NO	R12 DK	R13 SE	R14 SE	all
0	-	-	-	-	-	-
1	46 %	0 %	16 %	28 %	32 %	28 %
2	30 %	20 %	14 %	27 %	11 %	16 %
3	16 %	11 %	18 %	7 %	13 %	12 %
4	13 %	14 %	15 %	7 %	12 %	9 %
5	4 %	14 %	10 %	14 %	15 %	15 %
6	0 %	38 %	8 %	9 %	18 %	18 %
7	0 %	-	-	-	0 %	17 %
Weighted Mean	19 %	14 %	15 %	14 %	15 %	14 %

Relative bias

Table 54: Strata Strata_Broken . The relative bias (as the difference between the mean and modal age) per modal age and advanced reader is presented, as well as the weighted mean relative bias per reader and the relative bias per modal age for all advanced readers combined.

Modal age	R02 DK	R04 NO	R12 DK	R13 SE	R14 SE	all
0	-	-	-	-	-	-
1	0.40	0.00	0.10	0.22	0.30	-
2	0.50	-0.24	-0.07	-0.18	0.06	-
3	0.42	-0.20	-0.07	0.00	0.14	-
4	0.38	-0.35	-0.11	-0.07	0.16	-
5	0.10	-1.20	0.38	-0.62	0.10	-
6	0.00	-2.00	-0.33	-0.50	-0.50	-
7	0.00	-	-	-	-2.00	-
Weighted Mean	0.36	-0.43	-0.01	-0.11	0.09	-

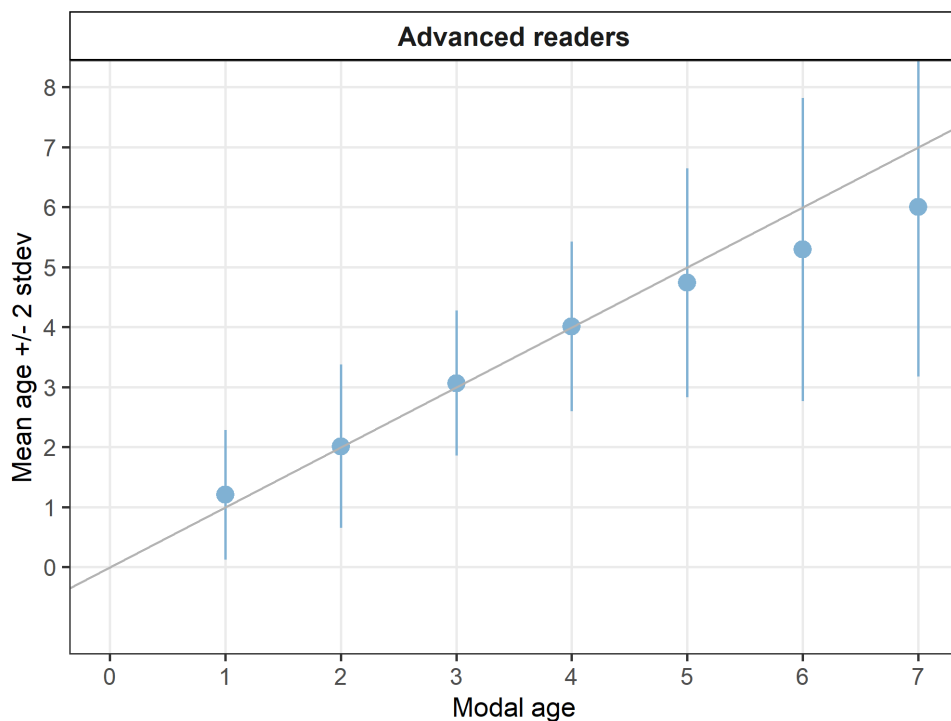


Figure 6: Strata_Broken. Age bias plot for advance readers. Mean age recorded +/- 2 stdev of each reader and all readers combined are plotted against modal age. The estimated mean age corresponds to modal age, if the estimated mean age is on the 1:1 equilibrium line (solid line). Relative bias is the age difference between estimated mean age and modal age.

Inter-reader bias test

Table 56: Strata_Broken. 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 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE
R01 GB	X	X	**	X	**	**	**	**	X	X	X
R02 DK	X	X	X	X	X	X	X	X	*	*	-
R03 FR	**	X	X	X	**	**	*	**	X	X	X
R04 NO	X	X	X	X	X	X	X	X	X	X	**
R05 FR	**	X	**	X	X	**	*	**	X	X	X
R06 DE	**	X	**	X	**	X	**	-	X	X	X
R08 BE	**	X	*	X	*	**	X	**	X	X	X
R11 DE	**	X	**	X	**	-	**	X	X	X	X
R12 DK	X	*	X	X	X	X	X	X	X	**	**
R13 SE	X	*	X	X	X	X	X	X	**	X	**
R14 SE	X	-	X	**	X	X	X	X	**	**	X
Modal age	-	**	**	**	**	**	-	**	**	**	**

5.2.4 Overall comparison of results by strata

Table 57: Number of age readings per strata and modal age for all advanced readers combined.

Modal age	Strata_Broken	Strata_Sectioned	total
0	0	12	12
1	49	175	224
2	81	168	249
3	93	167	260
4	123	131	254
5	46	138	184
6	17	76	93
7	2	6	8
Total	411	873	1284

Coefficient of Variation (CV)

Table 58: CV per strata and modal age for all advanced readers combined.

Modal age	Strata_Broken	Strata_Sectioned	all
0	-	-	-
1	45 %	59 %	57 %
2	34 %	34 %	35 %
3	20 %	28 %	27 %
4	18 %	19 %	19 %
5	20 %	15 %	16 %
6	24 %	15 %	17 %
7	24 %	13 %	14 %
Weighted Mean	25 %	31 %	30 %

Percentage of Agreement (PA)

Table 59: Percentage Agreement per strata and modal age for all advanced readers combined.

Modal age	Strata_Broken	Strata_Sectioned	total
0	-	33 %	33 %
1	84 %	65 %	69 %
2	74 %	61 %	65 %
3	70 %	60 %	63 %
4	69 %	66 %	68 %
5	54 %	63 %	61 %
6	53 %	63 %	61 %
7	50 %	67 %	62 %
Weighted Mean	70 %	63 %	65 %

Average Percentage Error (APE)

Table 60: Average Percentag Error per strata and modal age for all advanced readers combined.

Modal age	Strata_Broken	Strata_Sectioned	all
0	-	-	-
1	28 %	47 %	44 %
2	16 %	26 %	25 %
3	12 %	22 %	19 %
4	9 %	14 %	12 %
5	15 %	10 %	10 %
6	18 %	9 %	9 %
7	17 %	10 %	12 %
Weighted Mean	14 %	23 %	21 %

Relative bias

Table 61: Relative Bias per strata and modal age for all advanced readers combined.

Modal age	Strata_Broken	Strata_Sectioned	all
0	-	1.08	-
1	0.20	0.50	0.35
2	0.01	0.38	0.20
3	0.06	0.41	0.24
4	0.01	0.31	0.16
5	-0.26	0.12	-0.07
6	-0.71	0.16	-0.27
7	-1.00	-0.50	-0.75
Weighted Mean	-0.02	0.34	0.15

6 Discussion

The modal ages ranged from 1 to 7 years when considering **all readers and all samples**. The results yielded an overall percentage agreement (PA) of **63%**, a coefficient of variation (CV) of **30%**, and an average percent error (APE) of **21%**. Restricting the analysis to **sectioned samples** and the readers who assessed them produced identical summary statistics (PA = 63%, CV = 30%, APE = 21%). Similarly, the results for **broken otoliths** and their corresponding readers were nearly the same (PA = 63%, CV = 30%, APE = 20%). Across all ages, a gradual decline in PA can be observed. This pattern is consistent whether considering all samples together or examining the broken and sectioned samples separately.

Modal age for **advanced readers on all samples** varied between 0 and 7 years. Advanced readers demonstrated poor reliability over all compared to previous exchanges, with a weighted mean percentage agreement (PA) of **65%**, coefficient of variation (CV = **30%**), and average percentage error (APE = **21%**). The minimal difference between advanced-only and all-reader results is noteworthy and reflects the fact that some advanced readers produced relatively poor readings. These are not well aligned with modal age and exhibit some systematic bias. Relative bias across advanced readers was +0.17, indicating tendencies toward over-aging. Especially R06 and R11 had a tendency in overestimating age by counting false rings, demonstrating low agreement and high CV and bias of more than 1. Over the age classes, percentage agreement was fairly low, varying between 33% for age-class 0 to 61 to 69% for the other age classes. In the exchange, age-0 was assigned as the modal age only when considering the advanced readers. Notably, no age-0 class appeared when all readers were included. Only the advanced readers R03 and R05 annotated these fish as age-0. This designation became the modal age within the advanced group because these readers were the most experienced and therefore had the greatest influence in cases with multiple modes. A different weighting of experience would change this outcome as the other advanced readers did not classify these fish as age-0. Therefore, it seems uncertain whether these fish should truly be considered age-0. It is recommended to include more age 0 and age 1 fish in the follow-up workshop in 2026 to tackle this issue. The same difficulty seems to arise in the whg.27.7a exchange that also took place in 2025 (Ni Chonchuir, 2025).

For advanced readers, reading results were somehow better for **broken otoliths** than **sectioned otoliths**, with a higher percentage agreement (**70 % vs 63%**) and a lower CV (**25% vs 31%**) and APE (**14% vs 23%**). The results show comparable overall agreement between the two preparation types but suggest that *broken otoliths* provided slightly more consistent readings among advanced readers. However, it should be noted that the results for the sectioned otoliths improved significantly (PA = 82%, results not presented in this report) without the readings from R06 and R11 who showed an overestimation of age as mentioned before. No conclusion can be drawn on the best preparation method as this was not part of the setup of this exchange. A different sample design would be necessary to determine the best preparation method. This might be considered during the 2026 workshop. Age-class patterns also differed between the two preparation types for the advanced readers. The agreement for sectioned otoliths remained comparatively stable (at a low level) across all age classes (60–70%). In contrast, broken otoliths showed a progressive decline in agreement with age: PA dropped from 84% at age 1 to 50% at age 7, indicating increasing difficulty or inconsistency in interpreting older fish using the broken preparation method.

The main inconsistency seems to be related to the interpretation of split rings. Some examples are presented here:

Split rings

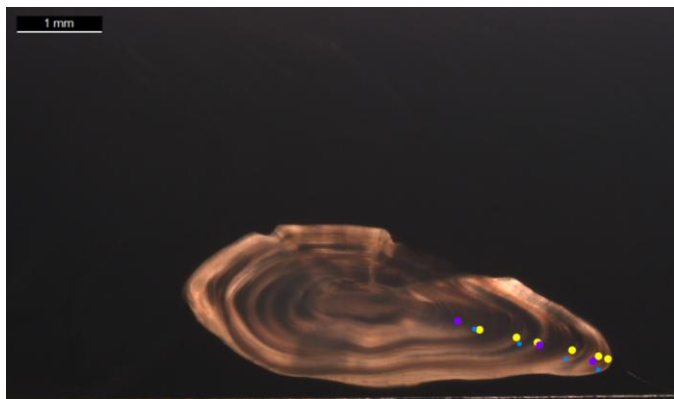


Figure 7: Sample 007_BYDR02_7D_WHG_L_2020031110310 sectioned transmitted light– Catch date 11/03/2020 – All readers: MA 4, PA 50%

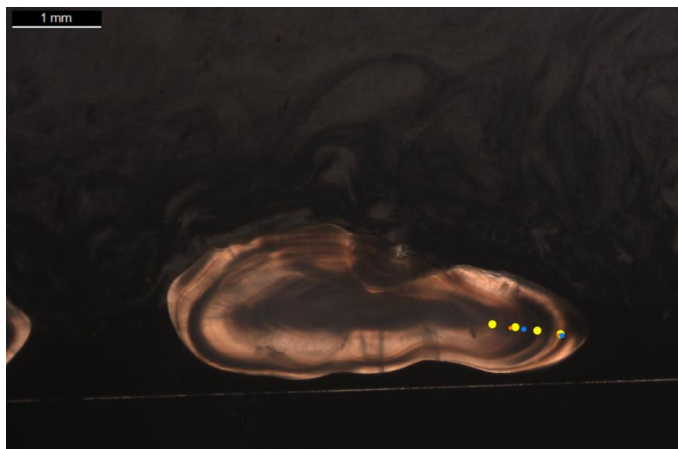


Figure 8: Sample 015_BYDR04_4C_WHG_D_2021111410179 sectioned transmitted light– Catch date 14/11/2021 – All readers: MA 2, PA 80%

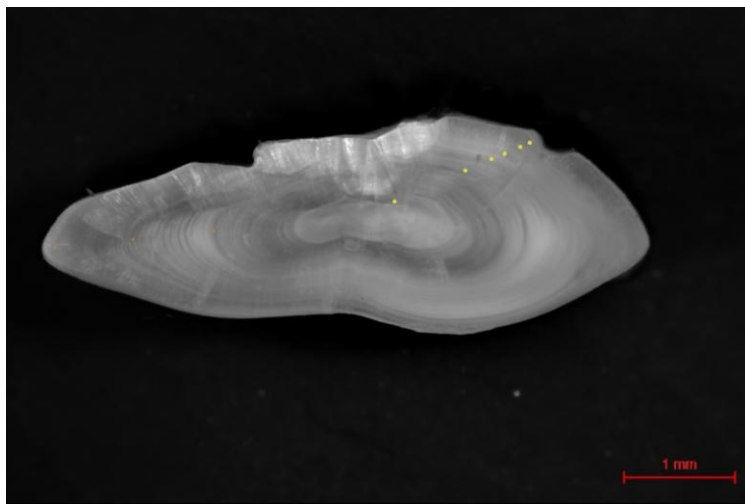


Figure 9: Sample 8888859_BRX_RLX_UB broken transmitted light– Catch date 23/08/2024 – MA 3, PA=40%

Split rings at age 0 (modal age different between advanced readers and all readers)

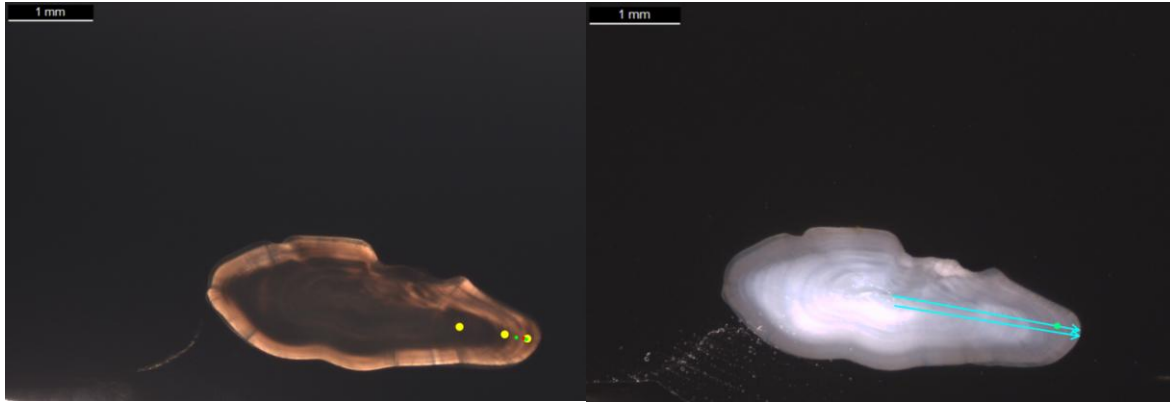


Figure 10: Sample 024_BYDR06_4B_WHG_D_2020092610027 sectioned with transmitted light (left) and reflected light (right) – Catch date: 26/09/2020 - Advanced readers: MA 0, PA 33% - All readers: MA 1, PA 50%

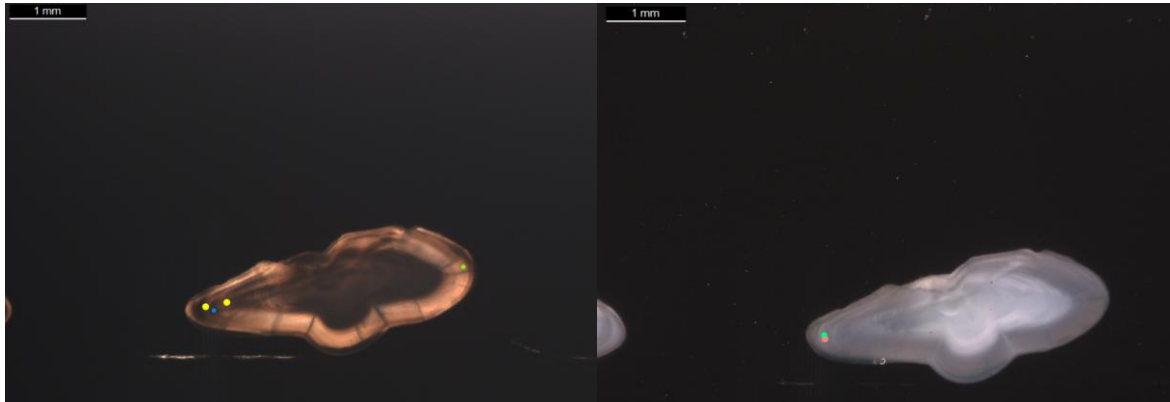


Figure 11: Sample 030_BYDR06_4B_WHG_D_2020092610034 sectioned with transmitted light (left) and reflected light (right) – Catch date: 26/09/2020 - Advanced readers: MA 0, PA 33% - All readers: MA 1, PA 50%

Some examples of good agreement otoliths

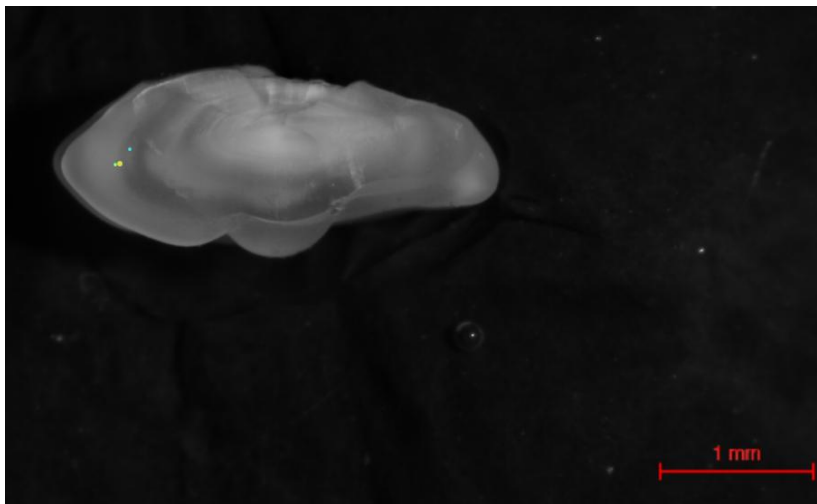


Figure 12: Sample 8892849_BRX_RLX_UB - broken reflected light – Catch date: 24/08/2024 - All readers: MA 1, PA 86%

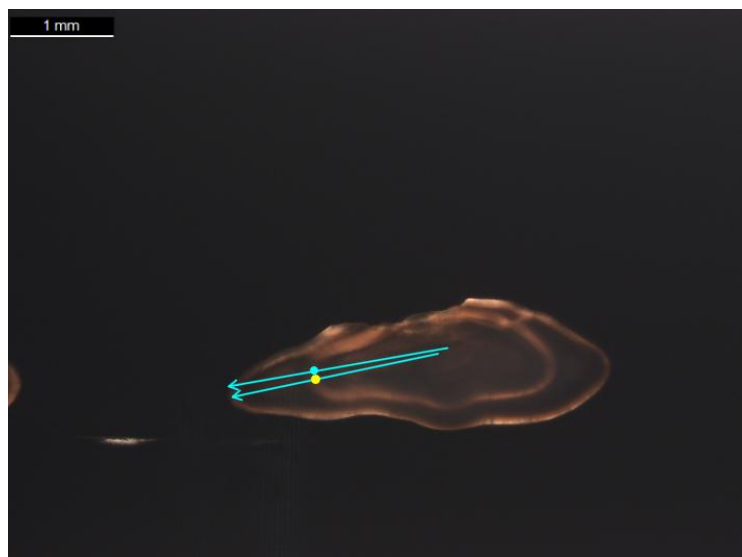


Figure13: Sample 025_BYDR06_4B_WHG_D_2020092610028 sectioned with transmitted light – Catch date: 26/09/2020 - All readers: MA 1, PA 100%

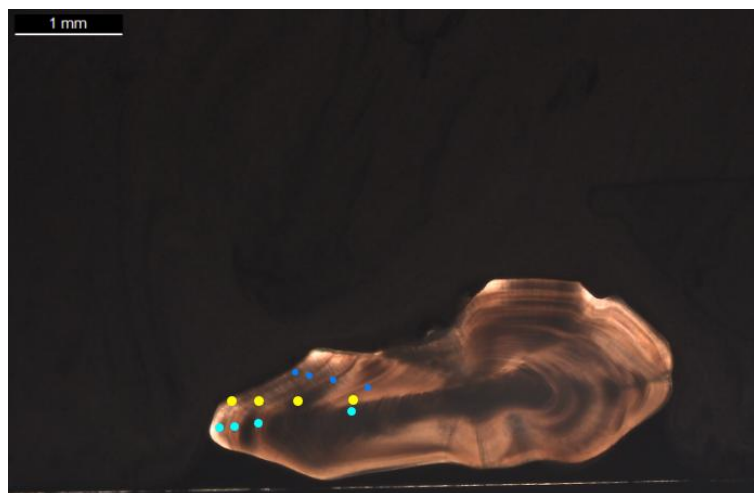


Figure 14: Sample 094_PCT03_4C_WHG_D_ST_2020042710047 sectioned transmitted light – Catch date: 27/04/2020 - All readers: MA 4, PA 90%

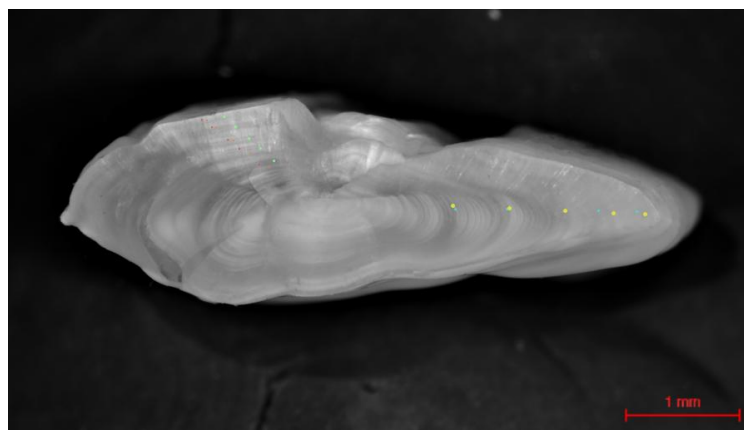


Figure 15: Sample 8904662_BRX_RLX_UB broken reflected light – Catch date: 05/09/2024 - All readers: MA 5, PA 100%

7 Conclusion

This exchange concluded poor overall agreement in comparison to previous workshops where overall agreement reached more than 80%. Also, in the 2025 whg.7a exchange, overall agreement between advanced readers reached 82%. The same issues as in 2016 subsist including: interpretation of first annual ring due to split rings and the wide range of growth that can occur, difficulties interpreting the edge and misinterpretation of split rings and Humphries shadow. This highlights that training of new readers is important as is repeated calibration amongst advanced readers to improve consistency and accuracy. The observed variability highlights the need for a dedicated workshop to further explore reader consistency and support the standardization of ageing protocols within WGNSSK. A workshop addressing these issues is recommended for 2026. It should include additional age-0 samples, materials to evaluate the most suitable preparation method (if needed), efforts to build reference collections, and dedicated training focused on identifying split rings.

8 References

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Fish ID	len gth	Catch date	ICE S are a	R 01 GB	R 02 DK	R 03 FR	R 04 NO	R 05 FR	R 06 DE	R 07 GB	R 08 BE	R 09 GB	R 10 GB	R 11 DE	R 12 DK	R 13 SE	R 14 SE	R 15 SE	R 16 NO	R 17 BE	R 18 NL	R 19 NL	Mo dal age	PA %	CV %	APE %
001_BYDR02_7D_WHG_ D_2020031110301	262	11-03- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	100	0	0
001_BYDR02_7D_WHG_ D_2020031110301	262	11-03- 2020	27. 7.d	2	-	2	-	2	4	3	2	3	2	3	-	-	-	-	-	3	-	-	2	50	27	23
002_BYDR02_7D_WHG_ D_2020031110302	275	11-03- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	2	0	71	50
002_BYDR02_7D_WHG_ D_2020031110302	275	11-03- 2020	27. 7.d	2	-	2	-	2	3	2	2	2	2	3	-	-	-	-	-	2	-	-	2	80	19	15
003_BYDR02_7D_WHG_ D_2020031110303	242	11-03- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	1	50	47	33
003_BYDR02_7D_WHG_ D_2020031110303	242	11-03- 2020	27. 7.d	1	-	1	-	1	2	1	1	1	1	2	-	-	-	-	-	1	-	-	1	80	35	27
004_BYDR02_7D_WHG_ D_2020031110304	237	11-03- 2020	27. 7.d	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1	1	1	100	0	0
004_BYDR02_7D_WHG_ D_2020031110304	237	11-03- 2020	27. 7.d	1	-	1	-	1	4	-	1	-	1	2	-	-	-	-	-	1	-	-	1	75	71	50
005_BYDR02_7D_WHG_ D_2020031110306	270	11-03- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	100	0	0
005_BYDR02_7D_WHG_ D_2020031110306	270	11-03- 2020	27. 7.d	3	-	2	-	2	4	3	3	3	3	3	-	-	-	-	-	3	-	-	3	70	20	12
006_BYDR02_7D_WHG_ D_2020031110307	296	11-03- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	2	50	28	20
006_BYDR02_7D_WHG_ D_2020031110307	296	11-03- 2020	27. 7.d	2	-	2	-	2	3	3	2	2	2	3	-	-	-	-	-	2	-	-	2	70	21	18
007_BYDR02_7D_WHG_ L_2020031110310	354	11-03- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	4	4	50	20	14
007_BYDR02_7D_WHG_ L_2020031110310	354	11-03- 2020	27. 7.d	4	-	3	-	3	6	4	4	3	4	5	-	-	-	-	-	4	-	-	4	50	24	15
008_BYDR02_7D_WHG_ L_2020031110313	496	11-03- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	5	5	50	35	25
008_BYDR02_7D_WHG_ L_2020031110313	496	11-03- 2020	27. 7.d	5	-	4	-	4	6	4	5	5	5	5	-	-	-	-	-	4	-	-	5	50	14	12
009_BYDR02_7D_WHG_ L_2020031110316	372	11-03- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	5	5	50	35	25
009_BYDR02_7D_WHG_ L_2020031110316	372	11-03- 2020	27. 7.d	5	-	4	-	3	5	4	4	5	5	5	-	-	-	-	-	4	-	-	5	50	16	14
010_BYDR02_7D_WHG_ L_2020031110317	378	11-03- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	6	5	0	28	20
010_BYDR02_7D_WHG_ L_2020031110317	378	11-03- 2020	27. 7.d	5	-	5	-	5	6	5	5	5	5	6	-	-	-	-	-	5	-	-	5	80	8	6
011_BYDR04_4C_WHG_ D_2021111410175	196	14-11- 2021	27. 4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	100	0	0
011_BYDR04_4C_WHG_ D_2021111410175	196	14-11- 2021	27. 4.c	1	-	0	-	0	1	1	1	2	1	1	-	-	-	-	-	1	-	-	1	70	63	40
012_BYDR04_4C_WHG_ D_2021111410176	305	14-11- 2021	27. 4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	100	0	0
012_BYDR04_4C_WHG_ D_2021111410176	305	14-11- 2021	27. 4.c	4	-	3	-	3	6	4	3	4	4	4	-	-	-	-	-	3	-	-	3	40	24	17
013_BYDR04_4C_WHG_ D_2021111410177	301	14-11- 2021	27. 4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	100	0	0
013_BYDR04_4C_WHG_ D_2021111410177	301	14-11- 2021	27. 4.c	2	-	2	-	1	4	2	2	3	2	3	-	-	-	-	-	2	-	-	2	60	36	27
014_BYDR04_4C_WHG_ D_2021111410178	204	14-11- 2021	27. 4.c	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	100	0	0
014_BYDR04_4C_WHG_ D_2021111410178	204	14-11- 2021	27. 4.c	-	-	1	-	1	2	1	1	1	2	2	-	-	-	-	-	1	-	-	1	67	38	33
015_BYDR04_4C_WHG_ D_2021111410179	296	14-11- 2021	27. 4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	2	50	28	20
015_BYDR04_4C_WHG_ D_2021111410179	296	14-11- 2021	27. 4.c	2	-	2	-	2	4	2	2	2	2	3	-	-	-	-	-	2	-	-	2	80	29	21
016_BYDR04_4C_WHG_ D_2021111410180	317	14-11- 2021	27. 4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	100	-	0
016_BYDR04_4C_WHG_ D_2021111410180	317	14-11- 2021	27. 4.c	3	-	2	-	-	3	3	3	3	3	3	-	-	-	-	-	3	-	-	3	89	12	7
017_BYDR04_4C_WHG_ D_2021111410182	311	14-11- 2021	27. 4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	2	50	28	20
017_BYDR04_4C_WHG_ D_2021111410182	311	14-11- 2021	27. 4.c	2	-	2	-	2	3	2	2	2	2	3	-	-	-	-	-	2	-	-	2	80	19	15
018_BYDR04_4C_WHG_ D_2021111410184	323	14-11- 2021	27. 4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5	5	50	16	11
018_BYDR04_4C_WHG_ D_2021111410184	323	14-11- 2021	27. 4.c	5	-	5	-	5	6	5	5	5	5	5	-	-	-	-	-	5	-	-	5	90	6	4
019_BYDR04_4C_WHG_ D_2021111410203	289	14-11- 2021	27. 4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	7	0	0	0
019_BYDR04_4C_WHG_ D_2021111410203	289	14-11- 2021	27. 4.c	-	-	6	-	3	7	7	6	5	7	-	-	-	-	-	-	5	-	-	7	38	24	18
020_BYDR04_4C_WHG_ D_2021111410236	311	14-11- 2021	27. 4.c	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	4	4	33	25	17
020_BYDR04_4C_WHG_ D_2021111410236	311	14-11- 2021	27. 4.c	-	-	4	-	3	5	4	5	4	4	5	-	-	-	-	-	3	-	-	4	44	19	14

Fish ID	len gth	Catch date	ICE S are a	R 01 GB	R 02 DK	R 03 FR	R 04 NO	R 05 FR	R 06 DE	R 07 GB	R 08 BE	R 09 GB	R 10 GB	R 11 DE	R 12 DK	R 13 SE	R 14 SE	R 15 SE	R 16 NO	R 17 BE	R 18 NL	R 19 NL	Mo dal age	PA %	CV %	APE %
021_BYDR04_4C_WHG_ L_2021111410153	362	14-11- 2021	27. 4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5	5	50	16	11
021_BYDR04_4C_WHG_ L_2021111410153	362	14-11- 2021	27. 4.c	5	-	5	-	5	7	4	5	4	5	6	-	-	-	-	-	5	-	-	5	60	17	11
022_BYDR04_4C_WHG_ L_2021111410154	334	14-11- 2021	27. 4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5	5	50	16	11
022_BYDR04_4C_WHG_ L_2021111410154	334	14-11- 2021	27. 4.c	5	-	5	-	5	5	5	5	4	6	5	-	-	-	-	-	5	-	-	5	80	9	4
023_BYDR05_4C_WHG_ L_2021111810182	292	18-11- 2021	27. 4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5	5	50	16	11
023_BYDR05_4C_WHG_ L_2021111810182	292	18-11- 2021	27. 4.c	5	-	4	-	5	6	5	5	5	6	6	-	-	-	-	-	5	-	-	5	60	12	9
024_BYDR06_4B_WHG_ D_2020092610027	228	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	50	-	-
024_BYDR06_4B_WHG_ D_2020092610027	228	26-09- 2020	27. 4.b	1	-	0	-	0	3	1	1	2	1	2	-	-	-	-	-	1	-	-	1	50	77	57
025_BYDR06_4B_WHG_ D_2020092610028	200	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	100	0	0
025_BYDR06_4B_WHG_ D_2020092610028	200	26-09- 2020	27. 4.b	1	-	1	-	1	1	1	1	1	1	1	-	-	-	-	-	1	-	-	1	100	0	0
026_BYDR06_4B_WHG_ D_2020092610029	322	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	7	7	50	11	8
026_BYDR06_4B_WHG_ D_2020092610029	322	26-09- 2020	27. 4.b	7	-	5	-	6	7	6	7	6	7	7	-	-	-	-	-	7	-	-	7	60	11	9
027_BYDR06_4B_WHG_ D_2020092610030	271	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	100	0	0
027_BYDR06_4B_WHG_ D_2020092610030	271	26-09- 2020	27. 4.b	2	-	2	-	2	3	2	2	2	2	3	-	-	-	-	-	2	-	-	2	80	19	15
028_BYDR06_4B_WHG_ D_2020092610031	284	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	3	50	28	20
028_BYDR06_4B_WHG_ D_2020092610031	284	26-09- 2020	27. 4.b	3	-	2	-	2	4	3	3	3	3	3	-	-	-	-	-	2	-	-	3	60	23	17
029_BYDR06_4B_WHG_ D_2020092610032	301	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3	100	0	0
029_BYDR06_4B_WHG_ D_2020092610032	301	26-09- 2020	27. 4.b	3	-	2	-	2	4	3	3	3	3	4	-	-	-	-	-	2	-	-	3	50	25	19
030_BYDR06_4B_WHG_ D_2020092610034	230	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	100	0	0
030_BYDR06_4B_WHG_ D_2020092610034	230	26-09- 2020	27. 4.b	1	-	0	-	0	2	1	1	2	1	2	-	-	-	-	-	0	-	-	1	40	82	60
031_BYDR06_4B_WHG_ D_2020092610038	283	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	4	100	0	0
031_BYDR06_4B_WHG_ D_2020092610038	283	26-09- 2020	27. 4.b	4	-	3	-	3	5	4	4	4	4	5	-	-	-	-	-	3	-	-	4	50	19	14
032_BYDR06_4B_WHG_ D_2020092610039	276	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	4	3	50	20	14
032_BYDR06_4B_WHG_ D_2020092610039	276	26-09- 2020	27. 4.b	3	-	2	-	1	5	3	3	3	3	4	-	-	-	-	-	3	-	-	3	60	35	20
033_BYDR06_4B_WHG_ D_2020092610040	271	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	4	100	0	0
033_BYDR06_4B_WHG_ D_2020092610040	271	26-09- 2020	27. 4.b	3	-	3	-	2	4	4	4	4	2	4	-	-	-	-	-	3	-	-	4	50	25	21
034_BYDR06_4B_WHG_ D_2020092610041	299	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	4	0	0	0
034_BYDR06_4B_WHG_ D_2020092610041	299	26-09- 2020	27. 4.b	4	-	3	-	3	4	4	4	4	4	4	-	-	-	-	-	3	-	-	4	70	13	11
035_BYDR06_4B_WHG_ D_2020092610046	291	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1	50	47	33
035_BYDR06_4B_WHG_ D_2020092610046	291	26-09- 2020	27. 4.b	1	-	1	-	1	4	2	1	2	2	3	-	-	-	-	-	1	-	-	1	50	57	44
036_BYDR06_4B_WHG_ D_2020092610053	312	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	4	4	50	20	14
036_BYDR06_4B_WHG_ D_2020092610053	312	26-09- 2020	27. 4.b	4	-	3	-	3	6	4	4	4	3	5	-	-	-	-	-	3	-	-	4	40	25	18
037_BYDR06_4B_WHG_ D_2020092610054	283	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	2	50	47	33
037_BYDR06_4B_WHG_ D_2020092610054	283	26-09- 2020	27. 4.b	2	-	1	-	1	4	2	2	2	1	3	-	-	-	-	-	1	-	-	2	40	52	38
038_BYDR06_4B_WHG_ D_2020092610065	295	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	4	4	50	20	14
038_BYDR06_4B_WHG_ D_2020092610065	295	26-09- 2020	27. 4.b	4	-	2	-	3	5	4	5	4	3	4	-	-	-	-	-	4	-	-	4	50	24	18
039_BYDR06_4B_WHG_ D_2020092610087	316	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	5	4	0	35	25

Fish ID	len gth	Catch date	ICE S are a	R 01 GB	R 02 DK	R 03 FR	R 04 NO	R 05 FR	R 06 DE	R 07 GB	R 08 BE	R 09 GB	R 10 GB	R 11 DE	R 12 DK	R 13 SE	R 14 SE	R 15 SE	R 16 NO	R 17 BE	R 18 NL	R 19 NL	Mo dal age	PA %	CV %	APE %
039_BYDR06_4B_WHG_ D_2020092610087	316	26-09- 2020	27. 4.b	4	-	4	-	4	6	4	4	4	4	5	-	-	-	-	-	4	-	-	4	80	16	11
040_BYDR06_4B_WHG_ L_2020092610100	294	26-09- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	5	0	0	0
040_BYDR06_4B_WHG_ L_2020092610100	294	26-09- 2020	27. 4.b	5	-	4	-	4	6	5	5	5	5	5	-	-	-	-	-	5	-	-	5	70	12	7
041_BYDR07_4B_WHG_ B_2020100810023	303	08-10- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	2	0	71	50
041_BYDR07_4B_WHG_ B_2020100810023	303	08-10- 2020	27. 4.b	1	-	1	-	2	5	2	2	4	4	3	-	-	-	-	-	2	-	-	2	40	52	43
042_BYDR07_4B_WHG_ B_2020100810024	295	08-10- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	100	0	0
042_BYDR07_4B_WHG_ B_2020100810024	295	08-10- 2020	27. 4.b	2	-	1	-	1	5	1	3	2	2	3	-	-	-	-	-	2	-	-	2	40	56	40
043_BYDR07_4B_WHG_ B_2020100810025	287	08-10- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	100	0	0
043_BYDR07_4B_WHG_ B_2020100810025	287	08-10- 2020	27. 4.b	2	-	1	-	1	4	1	3	2	2	3	-	-	-	-	-	1	-	-	2	30	53	40
044_BYDR07_4B_WHG_ B_2020100810026	219	08-10- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	100	0	0
044_BYDR07_4B_WHG_ B_2020100810026	219	08-10- 2020	27. 4.b	1	-	1	-	1	2	1	1	2	2	2	-	-	-	-	-	1	-	-	1	60	37	34
045_BYDR07_4B_WHG_ B_2020100810027	244	08-10- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	50	-	-
045_BYDR07_4B_WHG_ B_2020100810027	244	08-10- 2020	27. 4.b	1	-	1	-	1	2	1	1	1	1	1	-	-	-	-	-	1	-	-	1	90	29	16
046_BYDR07_4B_WHG_ B_2020100810031	255	08-10- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	50	-	-
046_BYDR07_4B_WHG_ B_2020100810031	255	08-10- 2020	27. 4.b	1	-	1	-	0	3	1	1	3	1	2	-	-	-	-	-	1	-	-	1	60	69	54
047_BYDR07_4B_WHG_ B_2020100810037	312	08-10- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	3	50	28	20
047_BYDR07_4B_WHG_ B_2020100810037	312	08-10- 2020	27. 4.b	3	-	2	-	2	4	3	3	3	2	4	-	-	-	-	-	2	-	-	3	40	28	23
048_BYDR07_4B_WHG_ B_2020100810051	279	08-10- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	0	0	0
048_BYDR07_4B_WHG_ B_2020100810051	279	08-10- 2020	27. 4.b	3	-	1	-	1	4	-	3	4	-	3	-	-	-	-	-	2	-	-	3	38	45	37
049_BYDR07_4B_WHG_ L_2020100810063	356	08-10- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	5	0	0	0
049_BYDR07_4B_WHG_ L_2020100810063	356	08-10- 2020	27. 4.b	5	-	4	-	3	6	5	5	5	-	5	-	-	-	-	-	4	-	-	5	56	19	14
050_BYDR07_4B_WHG_ L_2020100810065	475	08-10- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5	4	50	16	11
050_BYDR07_4B_WHG_ L_2020100810065	475	08-10- 2020	27. 4.b	4	-	3	-	3	8	4	4	4	4	5	-	-	-	-	-	3	-	-	4	50	35	22
051_BYDR09_4B_WHG_ D_2020121010104	297	10-12- 2020	27. 4.b	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	5	6	67	10	8
051_BYDR09_4B_WHG_ D_2020121010104	297	10-12- 2020	27. 4.b	-	-	4	-	4	7	6	6	4	-	6	-	-	-	-	-	5	-	-	6	38	22	19
052_BYDR09_4B_WHG_ L_2020121010135	424	10-12- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	6	6	50	13	9
052_BYDR09_4B_WHG_ L_2020121010135	424	10-12- 2020	27. 4.b	6	-	6	-	6	7	6	5	6	-	6	-	-	-	-	-	6	-	-	6	78	8	4
053_BYDR09_4B_WHG_ L_2020121010136	357	10-12- 2020	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	6	6	100	0	0
053_BYDR09_4B_WHG_ L_2020121010136	357	10-12- 2020	27. 4.b	6	-	5	-	5	7	6	6	6	-	7	-	-	-	-	-	5	-	-	6	44	13	10
054_CDDR01_7D_WHG_ _D_2020022410003	278	24-02- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	2	50	28	20
054_CDDR01_7D_WHG_ _D_2020022410003	278	24-02- 2020	27. 7.d	2	-	2	-	2	3	-	2	2	-	3	-	-	-	-	-	1	-	-	2	62	30	21
055_CDDR01_7D_WHG_ _D_2020022410005	264	24-02- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	2	50	47	33
055_CDDR01_7D_WHG_ _D_2020022410005	264	24-02- 2020	27. 7.d	2	-	2	-	2	3	-	2	2	-	3	-	-	-	-	-	1	-	-	2	62	30	21
056_CDDR01_7D_WHG_ _D_2020022410031	230	24-02- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	100	0	0
056_CDDR01_7D_WHG_ _D_2020022410031	230	24-02- 2020	27. 7.d	1	-	1	-	1	2	2	1	1	1	2	-	-	-	-	-	0	-	-	1	60	53	40
057_CDDR01_7D_WHG_ _D_2020022410036	235	24-02- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	100	0	0
057_CDDR01_7D_WHG_ _D_2020022410036	235	24-02- 2020	27. 7.d	1	-	1	-	1	2	2	1	2	-	2	-	-	-	-	-	0	-	-	1	44	53	44

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Fish ID	len gth	Catch date	ICE S are a	R 01 GB	R 02 DK	R 03 FR	R 04 NO	R 05 FR	R 06 DE	R 07 GB	R 08 BE	R 09 GB	R 10 GB	R 11 DE	R 12 DK	R 13 SE	R 14 SE	R 15 SE	R 16 NO	R 17 BE	R 18 NL	R 19 NL	Mo dal age	PA %	CV %	APE %
058_CDDR01_7D_WHG _L_2020022410043	304	24-02- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	4	5	50	16	11
058_CDDR01_7D_WHG _L_2020022410043	304	24-02- 2020	27. 7.d	5	-	5	-	5	6	6	5	5	-	6	-	-	-	-	-	5	-	-	5	67	9	8
059_CDDR01_7D_WHG _L_2020022410048	377	24-02- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	5	4	0	13	9
059_CDDR01_7D_WHG _L_2020022410048	377	24-02- 2020	27. 7.d	4	-	4	-	4	7	6	4	4	-	6	-	-	-	-	-	3	-	-	4	56	28	24
060_CDDR01_7D_WHG _L_2020022410049	353	24-02- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	4	4	50	16	11
060_CDDR01_7D_WHG _L_2020022410049	353	24-02- 2020	27. 7.d	4	-	4	-	4	5	5	4	4	4	5	-	-	-	-	-	3	-	-	4	60	15	11
061_CDDR01_7D_WHG _L_2020022410069	359	24-02- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5	5	100	0	0
061_CDDR01_7D_WHG _L_2020022410069	359	24-02- 2020	27. 7.d	5	-	5	-	5	6	6	5	5	-	5	-	-	-	-	-	4	-	-	5	67	12	8
062_CDDR02_7D_WHG _D_2020030110003	221	31-03- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	2	50	47	33
062_CDDR02_7D_WHG _D_2020030110003	221	31-03- 2020	27. 7.d	2	-	2	-	2	3	2	2	2	-	3	-	-	-	-	-	1	-	-	2	67	28	19
063_CDDR02_7D_WHG _D_2020030110006	232	31-03- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	100	0	0
063_CDDR02_7D_WHG _D_2020030110006	232	31-03- 2020	27. 7.d	2	-	2	-	2	3	3	2	3	2	3	-	-	-	-	-	1	-	-	2	50	29	24
064_CDDR02_7D_WHG _D_2020030110012	255	31-03- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	0	0	0
064_CDDR02_7D_WHG _D_2020030110012	255	31-03- 2020	27. 7.d	4	-	3	-	3	5	5	3	4	-	5	-	-	-	-	-	2	-	-	3	33	29	24
065_CDDR02_7D_WHG _L_2020030110046	285	31-03- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5	4	50	16	11
065_CDDR02_7D_WHG _L_2020030110046	285	31-03- 2020	27. 7.d	4	-	4	-	4	5	4	4	4	4	5	-	-	-	-	-	3	-	-	4	70	14	9
066_CDDR02_7D_WHG _L_2020030110055	466	31-03- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	6	5	50	13	9
066_CDDR02_7D_WHG _L_2020030110055	466	31-03- 2020	27. 7.d	5	-	5	-	5	6	5	5	5	5	5	-	-	-	-	-	4	-	-	5	80	9	4
067_CDDR05_4B_WHG _L_2021110510177	320	05-11- 2021	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	5	6	0	16	11
067_CDDR05_4B_WHG _L_2021110510177	320	05-11- 2021	27. 4.b	6	-	5	-	5	6	4	6	6	6	6	-	-	-	-	-	5	-	-	6	60	13	11
068_CDDR06_4B_WHG _L_2021111210168	445	05-11- 2021	27. 4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	6	6	50	13	9
068_CDDR06_4B_WHG _L_2021111210168	445	05-11- 2021	27. 4.b	6	-	6	-	6	7	6	6	5	6	6	-	-	-	-	-	6	-	-	6	80	8	3
069_CDDR06_7D_WHG _D_2020081010001	256	10-08- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	50	-	-
069_CDDR06_7D_WHG _D_2020081010001	256	10-08- 2020	27. 7.d	1	-	1	-	1	3	1	1	2	1	-	-	-	-	-	-	1	-	-	1	78	53	39
070_CDDR06_7D_WHG _D_2020081010002	216	10-08- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	50	-	-
070_CDDR06_7D_WHG _D_2020081010002	216	10-08- 2020	27. 7.d	1	-	1	-	1	1	1	1	1	1	2	-	-	-	-	-	1	-	-	1	90	29	16
071_CDDR06_7D_WHG _D_2020081010017	274	10-08- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	0	0	0
071_CDDR06_7D_WHG _D_2020081010017	274	10-08- 2020	27. 7.d	2	-	1	-	2	3	2	2	2	2	3	-	-	-	-	-	2	-	-	2	70	27	17
072_CDDR06_7D_WHG _D_2020081010018	266	10-08- 2020	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	1	100	0	0
072_CDDR06_7D_WHG _D_2020081010018	266	10-08- 2020	27. 7.d	2	-	1	-	1	3	-	1	2	2	3	-	-	-	-	-	1	-	-	1	44	47	39
073_CNVE03_7D_WHG _D_2021120910163	281	09-12- 2021	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	100	0	0
073_CNVE03_7D_WHG _D_2021120910163	281	09-12- 2021	27. 7.d	2	-	1	-	1	3	2	2	2	2	3	-	-	-	-	-	2	-	-	2	60	33	20
074_CNVE03_7D_WHG _D_2021120910164	327	09-12- 2021	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	100	-	0
074_CNVE03_7D_WHG _D_2021120910164	327	09-12- 2021	27. 7.d	1	-	1	-	1	3	-	1	2	1	3	-	-	-	-	-	1	2	-	1	60	53	45
075_CNVE03_7D_WHG _D_2021120910165	324	09-12- 2021	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	1	50	47	33
075_CNVE03_7D_WHG _D_2021120910165	324	09-12- 2021	27. 7.d	1	-	1	-	1	-	2	1	2	1	-	-	-	-	-	-	1	-	-	1	75	37	30
076_CNVE03_7D_WHG _D_2021120910166	310	09-12- 2021	27. 7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	4	2	0	20	14

Fish ID	len gth	Catch date	ICE S are a	R 01 GB	R 02 DK	R 03 FR	R 04 NO	R 05 FR	R 06 DE	R 07 GB	R 08 BE	R 09 GB	R 10 GB	R 11 DE	R 12 DK	R 13 SE	R 14 SE	R 15 SE	R 16 NO	R 17 BE	R 18 NL	R 19 NL	Mo dal age	PA %	CV %	APE %
076_CNVE03_7D_WHG_D_2021120910166	310	09-12-2021	27.7.d	2	-	2	-	2	5	-	3	5	2	5	-	-	-	-	-	1	-	-	2	44	53	44
077_PRVN02_7D_WHG_L_2020021710214	320	17-02-2020	27.7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	5	0	20	14
077_PRVN02_7D_WHG_L_2020021710214	320	17-02-2020	27.7.d	5	-	3	-	3	5	6	4	5	5	5	-	-	-	-	-	3	-	-	5	50	24	21
078_PTCT01_7D_WHG_D_2021062110013	243	21-06-2021	27.7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	0	0	0
078_PTCT01_7D_WHG_D_2021062110013	243	21-06-2021	27.7.d	2	-	2	-	2	3	3	2	3	2	2	-	-	-	-	-	1	-	-	2	60	29	22
079_PTCT01_7D_WHG_D_2021062110014	222	21-06-2021	27.7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	50	-	-
079_PTCT01_7D_WHG_D_2021062110014	222	21-06-2021	27.7.d	1	-	1	-	2	3	0	1	2	1	2	-	-	-	-	-	1	-	-	1	50	60	49
080_PTCT01_7D_WHG_D_2021062110015	254	21-06-2021	27.7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	50	-	-
080_PTCT01_7D_WHG_D_2021062110015	254	21-06-2021	27.7.d	1	-	1	-	1	3	1	1	2	1	2	-	-	-	-	-	1	-	-	1	70	50	40
081_PTCT01_7D_WHG_D_2021062110018	234	21-06-2021	27.7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	50	-	-
081_PTCT01_7D_WHG_D_2021062110018	234	21-06-2021	27.7.d	1	-	1	-	1	3	2	1	3	1	2	-	-	-	-	-	1	-	-	1	60	53	45
082_PTCT01_7D_WHG_D_2021062110020	297	21-06-2021	27.7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	2	50	47	33
082_PTCT01_7D_WHG_D_2021062110020	297	21-06-2021	27.7.d	2	-	2	-	2	3	3	3	3	2	3	-	-	-	-	-	2	-	-	2	50	21	20
083_PTCT01_7D_WHG_L_2021062110048	284	21-06-2021	27.7.d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	3	0	0	0
083_PTCT01_7D_WHG_L_2021062110048	284	21-06-2021	27.7.d	3	-	3	-	3	4	3	3	3	3	4	-	-	-	-	-	3	-	-	3	80	13	10
084_PTCT03_4C_WHG_D_2020042710013	212	27-04-2020	27.4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	2	0	-	-
084_PTCT03_4C_WHG_D_2020042710013	212	27-04-2020	27.4.c	2	-	1	-	1	2	2	2	2	2	2	-	-	-	-	-	1	-	-	2	70	28	25
085_PTCT03_4C_WHG_D_2020042710014	203	27-04-2020	27.4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	50	-	-
085_PTCT03_4C_WHG_D_2020042710014	203	27-04-2020	27.4.c	1	-	1	-	1	2	2	1	2	2	2	-	-	-	-	-	1	-	-	1	50	35	33
086_PTCT03_4C_WHG_D_2020042710015	244	27-04-2020	27.4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	2	50	47	33
086_PTCT03_4C_WHG_D_2020042710015	244	27-04-2020	27.4.c	2	-	2	-	2	3	3	2	2	3	3	-	-	-	-	-	2	-	-	2	60	22	20
087_PTCT03_4C_WHG_D_2020042710017	217	27-04-2020	27.4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	1	50	-	-
087_PTCT03_4C_WHG_D_2020042710017	217	27-04-2020	27.4.c	1	-	1	-	1	2	2	2	2	1	2	-	-	-	-	-	1	-	-	1	50	35	33
088_PTCT03_4C_WHG_D_2020042710019	276	27-04-2020	27.4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	0	-	0
088_PTCT03_4C_WHG_D_2020042710019	276	27-04-2020	27.4.c	3	-	3	-	3	4	3	3	3	3	4	-	-	-	-	-	3	3	-	3	82	13	9
089_PTCT03_4C_WHG_D_2020042710021	289	27-04-2020	27.4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	3	5	50	35	25
089_PTCT03_4C_WHG_D_2020042710021	289	27-04-2020	27.4.c	5	-	5	-	5	6	5	6	5	5	6	-	-	-	-	-	5	-	-	5	70	9	8
090_PTCT03_4C_WHG_D_2020042710023	269	27-04-2020	27.4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	4	50	20	14
090_PTCT03_4C_WHG_D_2020042710023	269	27-04-2020	27.4.c	4	-	3	-	4	5	5	4	4	4	5	-	-	-	-	-	5	-	-	4	50	16	13
091_PTCT03_4C_WHG_D_2020042710026	229	27-04-2020	27.4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	0	0	0
091_PTCT03_4C_WHG_D_2020042710026	229	27-04-2020	27.4.c	2	-	2	-	2	2	4	3	3	2	2	-	-	-	-	-	2	-	-	2	70	29	23
092_PTCT03_4C_WHG_D_2020042710027	275	27-04-2020	27.4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	3	50	28	20
092_PTCT03_4C_WHG_D_2020042710027	275	27-04-2020	27.4.c	3	-	3	-	3	4	4	3	3	3	4	-	-	-	-	-	3	-	-	3	70	15	13
093_PTCT03_4C_WHG_D_2020042710045	258	27-04-2020	27.4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-	5	0	-	0
093_PTCT03_4C_WHG_D_2020042710045	258	27-04-2020	27.4.c	4	-	4	-	4	5	5	5	3	5	5	-	-	-	-	-	4	-	-	5	50	16	14
094_PTCT03_4C_WHG_D_2020042710047	242	27-04-2020	27.4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	2	4	0	28	20
094_PTCT03_4C_WHG_D_2020042710047	242	27-04-2020	27.4.c	4	-	4	-	4	4	4	4	3	4	4	-	-	-	-	-	4	-	-	4	90	8	5

Fish ID	len	Catch	ICE	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Mo	PA	CV	APE
	gth	date	S are a	01 GB	02 DK	03 FR	04 NO	05 FR	06 DE	07 GB	08 BE	09 GB	10 GB	11 DE	12 DK	13 SE	14 SE	15 SE	16 NO	17 BE	18 NL	19 NL	dal age	%	%	%	
095_PTCT03_4C_WHG_D_2020042710054	247	27-04-2020	27.4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	4	50	20	14	
095_PTCT03_4C_WHG_D_2020042710054	247	27-04-2020	27.4.c	4	-	4	-	4	5	6	5	4	-	5	-	-	-	-	-	4	-	-	4	56	16	14	
096_PTCT03_4C_WHG_L_2020042710079	319	27-04-2020	27.4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	3	4	50	20	14	
096_PTCT03_4C_WHG_L_2020042710079	319	27-04-2020	27.4.c	4	-	4	-	4	5	5	4	4	4	5	-	-	-	-	-	4	-	-	4	70	11	10	
097_PTCT03_4C_WHG_L_2020042710091	322	27-04-2020	27.4.c	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	5	4	0	0	0	
097_PTCT03_4C_WHG_L_2020042710091	322	27-04-2020	27.4.c	4	-	4	-	4	6	8	4	-	5	6	-	-	-	-	-	3	-	-	4	44	31	25	
22MERLMNG002-0076-ST	340	18-05-2022	27.7.d	6	-	6	-	6	9	6	7	4	-	9	-	-	-	-	-	7	5	7	6	36	23	17	
22MERLMNG002-0231-ST	320	19-08-2022	27.7.d	4	-	4	-	4	-	4	4	5	-	5	-	-	-	-	-	4	3	4	4	70	14	9	
22MERLMNG004-0205-ST	173	23-01-2022	27.4.b	1	-	1	-	1	1	1	1	-	-	2	-	-	-	-	-	2	1	1	1	80	35	27	
22MERLMNG004-0206-ST	167	23-01-2022	27.4.b	1	-	1	-	1	1	1	1	1	-	1	-	-	-	-	-	1	1	1	1	100	0	0	
22MERLMNG004-0214-ST	261	23-01-2022	27.4.b	3	-	3	-	3	3	3	3	3	-	3	-	-	-	-	-	3	3	3	3	100	0	0	
22MERLMNG004-0215-ST	228	23-01-2022	27.4.b	2	-	2	-	2	2	2	2	2	-	2	-	-	-	-	-	2	2	1	2	91	16	9	
22MERLMNG004-0238-ST	265	23-01-2022	27.4.b	2	-	2	-	2	3	2	2	2	-	3	-	-	-	-	-	2	2	2	2	82	19	14	
22MERLMNG004-0339-ST	313	26-01-2022	27.4.b	4	-	4	-	4	4	4	4	4	-	4	-	-	-	-	-	4	4	4	4	100	0	0	
22MERLMNG004-0340-ST	301	26-01-2022	27.4.b	3	-	3	-	3	3	3	3	3	-	3	-	-	-	-	-	3	3	2	3	91	10	6	
22MERLMNG004-0463-ST	307	28-01-2022	27.4.c	6	-	6	-	6	8	6	6	6	-	8	-	-	-	-	-	6	6	6	6	82	13	9	
22MERLMNG004-0657-ST	312	03-02-2022	27.4.b	6	-	5	-	5	6	5	5	5	-	6	-	-	-	-	-	6	5	5	5	64	9	9	
22MERLMNG004-0675-ST	311	04-02-2022	27.4.b	7	-	6	-	6	7	6	6	6	-	7	-	-	-	-	-	6	6	6	6	73	7	6	
22MERLMNG004-0677-ST	354	04-02-2022	27.4.b	6	-	6	-	6	7	6	6	6	-	7	-	-	-	-	-	6	6	7	6	73	7	6	
22MERLMNG004-0679-ST	372	04-02-2022	27.4.b	4	-	4	-	4	7	4	4	5	-	6	-	-	-	-	-	4	4	8	4	64	29	24	
22MERLMNG004-0732-ST	286	05-02-2022	27.4.b	7	-	6	-	6	7	7	6	6	-	6	-	-	-	-	-	7	5	7	6	45	11	9	
23MERLMNG001-0042-ST	310	02-06-2023	27.4.b	4	-	4	-	4	5	3	4	4	-	5	-	-	-	-	-	4	3	3	4	55	18	13	
23MERLMNG001-0043-ST	320	02-06-2023	27.4.b	4	-	3	-	3	6	4	3	5	-	6	-	-	-	-	-	4	5	4	4	36	26	21	
23MERLMNG001-0044-ST	310	02-06-2023	27.4.b	3	-	3	-	3	5	3	3	3	-	5	-	-	-	-	-	3	3	3	3	82	24	18	
23MERLMNG001-0050-ST	290	02-06-2023	27.4.b	3	-	2	-	2	4	2	2	3	-	4	-	-	-	-	-	2	3	2	2	55	31	26	
23MERLMNG001-0053-ST	320	02-06-2023	27.4.b	4	-	4	-	4	7	5	4	4	-	6	-	-	-	-	-	4	4	6	4	64	23	20	
23MERLMNG001-0064-ST	320	02-06-2023	27.4.b	5	-	6	-	6	7	6	5	6	-	6	-	-	-	-	-	5	6	5	6	55	11	9	
23MERLMNG001-0065-ST	290	02-06-2023	27.4.b	5	-	5	-	5	6	5	5	5	-	5	-	-	-	-	-	5	6	5	5	82	8	6	
23MERLMNG001-0079-ST	300	02-06-2023	27.4.b	2	-	2	-	2	6	3	2	3	-	4	-	-	-	-	-	2	2	2	2	64	47	34	
23MERLMNG001-0125-ST	330	08-09-2023	27.7.d	3	-	3	-	3	4	3	3	3	-	3	-	-	-	-	-	3	3	3	3	91	10	5	
23MERLMNG001-0132-ST	360	08-09-2023	27.7.d	3	-	3	-	3	3	3	3	3	-	5	-	-	-	-	-	3	3	4	3	82	20	14	
23MERLMNG001-0136-ST	370	08-09-2023	27.7.d	4	-	4	-	4	5	4	4	4	-	5	-	-	-	-	-	3	4	4	4	73	13	8	
23MERLMNG052-0257-ST	295	02-10-2023	27.7.d	3	-	3	-	3	4	3	3	-	-	4	-	-	-	-	-	3	3	3	3	80	13	10	
23MERLMNG052-0302-ST	303	03-10-2023	27.7.d	5	-	5	-	5	5	5	5	5	-	6	-	-	-	-	-	4	4	4	5	64	13	9	
23MERLMNG052-0363-ST	325	14-10-2023	27.7.d	3	-	3	-	3	4	3	3	4	-	5	-	-	-	-	-	3	3	3	3	73	20	16	
24MERLMNG001-0086-ST	320	22-05-2024	27.7.d	4	-	4	-	4	6	5	4	7	-	6	-	-	-	-	-	4	4	4	4	64	23	20	
24MERLMNG001-0089-ST	280	22-05-2024	27.7.d	4	-	4	-	4	4	4	4	4	-	5	-	-	-	-	-	3	4	3	4	73	14	8	

45

Fish ID	len gth	Catch date	ICE S are a	R 01 GB	R 02 DK	R 03 FR	R 04 NO	R 05 FR	R 06 DE	R 07 GB	R 08 BE	R 09 GB	R 10 GB	R 11 DE	R 12 DK	R 13 SE	R 14 SE	R 15 SE	R 16 NO	R 17 BE	R 18 NL	R 19 NL	Mo dal age	PA %	CV %	APE %
24MERLMNG001-0094-ST	310	22-05-2024	27.7.d	5	-	5	-	5	6	5	5	5	-	6	-	-	-	-	-	4	4	5	5	64	13	7
24MERLMNG001-0138-ST	300	22-05-2024	27.7.d	5	-	6	-	5	7	5	6	4	-	7	-	-	-	-	-	5	6	5	5	45	17	14
24MERLMNG001-0148-ST	300	04-09-2024	27.4.c	1	-	2	-	2	3	1	1	3	-	3	-	-	-	-	-	1	2	1	1	45	48	41
24MERLMNG001-0149-ST	300	04-09-2024	27.4.c	1	-	2	-	2	3	1	1	3	-	3	-	-	-	-	-	1	2	1	1	45	48	41
24MERLMNG001-0151-ST	320	04-09-2024	27.4.c	4	-	3	-	3	5	3	2	4	-	5	-	-	-	-	-	3	3	2	3	45	31	25
24MERLMNG001-0159-ST	280	04-09-2024	27.4.c	3	-	2	-	2	4	3	2	3	-	3	-	-	-	-	-	2	2	1	2	45	33	28
24MERLMNG001-0168-ST	290	04-09-2024	27.4.c	3	-	3	-	3	4	4	3	4	-	4	-	-	-	-	-	4	3	2	3	45	20	17
24MERLMNG001-0191-ST	330	04-09-2024	27.4.c	6	-	5	-	5	5	5	5	5	-	6	-	-	-	-	-	-	5	5	5	80	8	6
24MERLMNG001-0205-ST	310	04-09-2024	27.4.c	3	-	3	-	3	4	3	3	3	-	4	-	-	-	-	-	3	3	2	3	73	17	11
24MERLMNG051-0062-ST	196	23-01-2024	27.4.c	1	-	1	-	1	1	1	1	1	-	2	-	-	-	-	-	1	1	1	1	91	28	15
24MERLMNG051-0068-ST	207	23-01-2024	27.4.c	1	-	1	-	1	-	-	1	1	-	-	-	-	-	-	-	1	1	1	1	100	0	0
24MERLMNG051-0073-ST	369	23-01-2024	27.4.c	3	-	3	-	3	4	3	3	3	-	4	-	-	-	-	-	3	3	3	3	82	13	9
24MERLMNG051-0077-ST	235	24-01-2024	27.4.c	2	-	2	-	2	0	2	2	2	-	2	-	-	-	-	-	2	2	2	2	91	33	18
24MERLMNG051-0096-ST	260	24-01-2024	27.4.c	3	-	2	-	3	3	3	3	3	-	3	-	-	-	-	-	3	3	2	3	82	14	11
24MERLMNG051-0395-ST	360	07-02-2024	27.4.c	3	-	3	-	2	4	4	3	5	-	5	-	-	-	-	-	3	2	5	3	36	32	27
25MERLMNG051-0073-ST	332	21-01-2025	27.4.c	6	-	6	-	6	6	6	6	6	-	7	-	-	-	-	-	6	5	6	6	82	7	3
25MERLMNG051-0226-ST	315	29-01-2025	27.4.c	4	-	4	-	4	5	4	4	4	-	5	-	-	-	-	-	4	4	4	4	82	10	7
25MERLMNG051-0367-ST	296	03-02-2025	27.4.c	6	-	6	-	6	6	6	5	5	-	7	-	-	-	-	-	6	6	5	6	64	10	8
25MERLMNG051-0425-ST	298	05-02-2025	27.4.c	5	-	4	-	4	5	5	5	4	-	5	-	-	-	-	-	5	4	4	5	55	11	11
8805292_BRX_UB.jpg	340	17-01-2024	27.4.a	-	5	-	-	-	-	-	-	-	-	-	-	5	7	-	5	-	-	-	5	75	18	14
8805292_BRX_UB.jpg	340	17-01-2024	27.4.a	-	-	-	4	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	5	0	28	20
8805293_BRX_UB.jpg	380	17-01-2024	27.4.a	-	-	-	-	-	-	-	-	-	-	-	-	4	3	-	3	-	-	-	3	67	17	13
8805293_BRX_UB.jpg	380	17-01-2024	27.4.a	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	3	100	0	0
8805294_BRX_UB.jpg	270	17-01-2024	27.4.a	-	4	-	-	-	-	-	-	-	-	-	2	3	3	-	3	-	-	-	3	60	24	13
8805294_BRX_UB.jpg	270	17-01-2024	27.4.a	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	3	100	0	0
8805295_BRX_UB.jpg	260	17-01-2024	27.4.a	-	3	-	-	-	-	-	-	-	-	-	-	3	3	-	3	-	-	-	3	100	0	0
8805295_BRX_UB.jpg	260	17-01-2024	27.4.a	-	-	-	3	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	3	50	35	25
8805832_BRX_UB.jpg	180	16-01-2024	27.4.b	-	2	-	-	-	-	-	-	-	-	-	2	2	2	-	2	-	-	-	2	100	0	0
8805832_BRX_UB.jpg	180	16-01-2024	27.4.b	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	100	0	0
8805833_BRX_UB.jpg	310	16-01-2024	27.4.b	-	5	-	-	-	-	-	-	-	-	-	5	5	4	-	4	-	-	-	5	60	12	10
8805833_BRX_UB.jpg	310	16-01-2024	27.4.b	-	-	-	4	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	5	50	16	11
8805834_BRX_UB.jpg	350	16-01-2024	27.4.b	-	6	-	-	-	-	-	-	-	-	-	6	6	6	-	5	-	-	-	6	80	8	6
8805834_BRX_UB.jpg	350	16-01-2024	27.4.b	-	-	-	5	-	-	-	-	-	-	-	-	-	-	6	-	-	-	-	6	50	13	9
8805835_BRX_UB.jpg	340	16-01-2024	27.4.b	-	-	-	-	-	-	-	-	-	-	-	3	4	3	-	5	-	-	-	4	25	26	20
8805835_BRX_UB.jpg	340	16-01-2024	27.4.b	-	-	-	4	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	4	100	0	0
8826851_BRX_UB.jpg	180	11-02-2024	27.4.c	-	2	-	-	-	-	-	-	-	-	-	2	1	1	-	1	-	-	-	1	60	39	34
8826851_BRX_UB.jpg	180	11-02-2024	27.4.c	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	100	0	0

Fish ID	len gth	Catch date	ICE S are a	R 01 GB	R 02 DK	R 03 FR	R 04 NO	R 05 FR	R 06 DE	R 07 GB	R 08 BE	R 09 GB	R 10 GB	R 11 DE	R 12 DK	R 13 SE	R 14 SE	R 15 SE	R 16 NO	R 17 BE	R 18 NL	R 19 NL	Mo dal age	PA %	CV %	APE %
8826855_BRX_UB.jpg	220	11-02-2024	27.4.c	-	2	-	-	-	-	-	-	-	-	-	2	1	2	-	2	-	-	-	2	80	25	18
8826855_BRX_UB.jpg	220	11-02-2024	27.4.c	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2	0	0	0
8826856_BRX_UB.jpg	190	11-02-2024	27.4.c	-	2	-	-	-	-	-	-	-	-	-	2	1	2	-	1	-	-	-	2	60	34	30
8826856_BRX_UB.jpg	190	11-02-2024	27.4.c	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2	50	47	33
8826857_BRX_UB.jpg	190	11-02-2024	27.4.c	-	1	-	-	-	-	-	-	-	-	-	1	1	2	-	1	-	-	-	1	80	37	27
8826857_BRX_UB.jpg	190	11-02-2024	27.4.c	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	100	0	0
8826858_BRX_UB.jpg	230	11-02-2024	27.4.c	-	2	-	-	-	-	-	-	-	-	-	2	2	2	-	2	-	-	-	2	100	0	0
8826858_BRX_UB.jpg	230	11-02-2024	27.4.c	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2	50	47	33
8826859_BRX_UB.jpg	200	11-02-2024	27.4.c	-	1	-	-	-	-	-	-	-	-	-	1	1	1	-	1	-	-	-	1	100	0	0
8826859_BRX_UB.jpg	200	11-02-2024	27.4.c	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	100	0	0
8863158_BRX_UB.jpg	210	17-05-2024	27.4.b	-	2	-	-	-	-	-	-	-	-	-	2	1	2	-	2	-	-	-	2	80	25	18
8863158_BRX_UB.jpg	210	17-05-2024	27.4.b	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2	50	47	33
8863159_BRX_UB.jpg	280	17-05-2024	27.4.b	-	-	-	-	-	-	-	-	-	-	-	-	3	2	-	3	-	-	-	2	33	22	17
8863159_BRX_UB.jpg	280	17-05-2024	27.4.b	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	100	0	0
8863413_BRX_UB.jpg	230	17-05-2024	27.4.a	-	2	-	-	-	-	-	-	-	-	-	2	2	1	-	3	-	-	-	2	60	35	20
8863413_BRX_UB.jpg	230	17-05-2024	27.4.a	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2	50	47	33
8863414_BRX_UB.jpg	300	17-05-2024	27.4.a	-	4	-	-	-	-	-	-	-	-	-	4	4	4	-	5	-	-	-	4	80	11	8
8863414_BRX_UB.jpg	300	17-05-2024	27.4.a	-	-	-	3	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	4	0	35	25
8863415_BRX_UB.jpg	310	17-05-2024	27.4.a	-	4	-	-	-	-	-	-	-	-	-	4	3	3	-	5	-	-	-	3	40	22	17
8863415_BRX_UB.jpg	310	17-05-2024	27.4.a	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	3	50	28	20
8863416_BRX_UB.jpg	340	17-05-2024	27.4.a	-	4	-	-	-	-	-	-	-	-	-	4	3	3	-	5	-	-	-	3	40	22	17
8863416_BRX_UB.jpg	340	17-05-2024	27.4.a	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	3	50	28	20
8863417_BRX_UB.jpg	350	17-05-2024	27.4.a	-	5	-	-	-	-	-	-	-	-	-	5	4	5	-	4	-	-	-	4	40	12	10
8863417_BRX_UB.jpg	350	17-05-2024	27.4.a	-	-	-	4	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	4	100	0	0
8870400_BRX_UB.jpg	320	29-05-2024	27.4.a	-	6	-	-	-	-	-	-	-	-	-	6	5	5	-	6	-	-	-	6	60	10	9
8870400_BRX_UB.jpg	320	29-05-2024	27.4.a	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	6	0	28	20
8870401_BRX_UB.jpg	320	29-05-2024	27.4.a	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	6	-	-	-	3	0	13	9
8870401_BRX_UB.jpg	320	29-05-2024	27.4.a	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	3	100	0	0
8870402_BRX_UB.jpg	380	29-05-2024	27.4.a	-	5	-	-	-	-	-	-	-	-	-	5	4	4	-	6	-	-	-	4	40	17	13
8870402_BRX_UB.jpg	380	29-05-2024	27.4.a	-	-	-	4	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	4	100	0	0
8870403_BRX_UB.jpg	310	29-05-2024	27.4.a	-	3	-	-	-	-	-	-	-	-	-	3	2	3	-	3	-	-	-	3	80	16	11
8870403_BRX_UB.jpg	310	29-05-2024	27.4.a	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	3	100	0	0
8870404_BRX_UB.jpg	290	29-05-2024	27.4.a	-	3	-	-	-	-	-	-	-	-	-	2	-	3	-	3	-	-	-	3	75	18	14
8870404_BRX_UB.jpg	290	29-05-2024	27.4.a	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	3	50	28	20
8870405_BRX_UB.jpg	330	29-05-2024	27.4.a	-	4	-	-	-	-	-	-	-	-	-	3	3	-	-	4	-	-	-	4	50	16	14
8870405_BRX_UB.jpg	330	29-05-2024	27.4.a	-	-	-	4	-	-	-	-	-	-	-	-	-	4	3	-	-	-	-	4	67	16	12
8870479_BRX_UB.jpg	340	30-05-2024	27.4.a	-	5	-	-	-	-	-	-	-	-	-	4	4	5	-	6	-	-	-	4	40	17	13

Fish ID	len gth	Catch date	ICE S are a	R 01 GB	R 02 DK	R 03 FR	R 04 NO	R 05 FR	R 06 DE	R 07 GB	R 08 BE	R 09 GB	R 10 GB	R 11 DE	R 12 DK	R 13 SE	R 14 SE	R 15 SE	R 16 NO	R 17 BE	R 18 NL	R 19 NL	Mo dal age	PA %	CV %	APE %
8870479_BRX_UB.jpg	340	30-05-2024	27.4.a	-	-	-	4	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	4	50	20	14
8870480_BRX_UB.jpg	330	30-05-2024	27.4.a	-	7	-	-	-	-	-	-	-	-	-	-	-	5	-	7	-	-	-	7	67	18	14
8870480_BRX_UB.jpg	330	30-05-2024	27.4.a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-	7	100	-	0
8870481_BRX_UB.jpg	330	30-05-2024	27.4.a	-	5	-	-	-	-	-	-	-	-	-	-	4	4	-	6	-	-	-	4	50	20	16
8870481_BRX_UB.jpg	330	30-05-2024	27.4.a	-	-	-	4	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	4	50	47	33
8870575_BRX_UB.jpg	340	30-05-2024	27.4.a	-	4	-	-	-	-	-	-	-	-	-	-	4	3	-	4	-	-	-	4	75	13	10
8870575_BRX_UB.jpg	340	30-05-2024	27.4.a	-	-	-	4	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	4	50	47	33
8888858_BRX_UB.jpg	450	23-08-2024	27.4.b	-	6	-	-	-	-	-	-	-	-	-	-	4	4	-	4	-	-	-	4	75	22	17
8888858_BRX_UB.jpg	450	23-08-2024	27.4.b	-	-	-	4	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	4	100	0	0
8888859_BRX_UB.jpg	330	23-08-2024	27.4.b	-	5	-	-	-	-	-	-	-	-	-	-	3	3	-	4	-	-	-	3	50	26	20
8888859_BRX_UB.jpg	330	23-08-2024	27.4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	3	0	-	0
8888860_BRX_UB.jpg	360	23-08-2024	27.4.b	-	4	-	-	-	-	-	-	-	-	-	-	4	4	-	4	-	-	-	4	100	0	0
8888860_BRX_UB.jpg	360	23-08-2024	27.4.b	-	-	-	4	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	4	50	47	33
8888861_BRX_UB.jpg	440	23-08-2024	27.4.b	-	4	-	-	-	-	-	-	-	-	-	3	4	-	-	3	-	-	-	4	50	16	14
8888861_BRX_UB.jpg	440	23-08-2024	27.4.b	-	-	-	4	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	4	50	20	14
8888862_BRX_UB.jpg	400	23-08-2024	27.4.b	-	4	-	-	-	-	-	-	-	-	-	3	5	-	-	4	-	-	-	4	50	20	12
8888862_BRX_UB.jpg	400	23-08-2024	27.4.b	-	-	-	4	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	4	50	20	14
8888863_BRX_UB.jpg	310	23-08-2024	27.4.b	-	4	-	-	-	-	-	-	-	-	-	3	4	3	-	4	-	-	-	4	60	15	13
8888863_BRX_UB.jpg	310	23-08-2024	27.4.b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	4	0	-	0
8892849_BRX_UB.jpg	140	24-08-2024	27.4.b	-	1	-	-	-	-	-	-	-	-	-	1	1	1	-	1	-	-	-	1	100	0	0
8892849_BRX_UB.jpg	140	24-08-2024	27.4.b	-	-	-	1	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	1	50	-	-
8892850_BRX_UB.jpg	180	24-08-2024	27.4.b	-	1	-	-	-	-	-	-	-	-	-	1	1	1	-	1	-	-	-	1	100	0	0
8892850_BRX_UB.jpg	180	24-08-2024	27.4.b	-	-	-	1	-	-	-	-	-	-	-	-	-	-	0	-	-	-	-	1	50	-	-
8904658_BRX_UB.jpg	300	05-09-2024	27.4.c	-	4	-	-	-	-	-	-	-	-	-	-	3	3	-	2	-	-	-	2	25	27	17
8904658_BRX_UB.jpg	300	05-09-2024	27.4.c	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	100	0	0
8904659_BRX_UB.jpg	300	05-09-2024	27.4.c	-	4	-	-	-	-	-	-	-	-	-	3	4	4	-	3	-	-	-	4	60	15	13
8904659_BRX_UB.jpg	300	05-09-2024	27.4.c	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	4	0	28	20
8904660_BRX_UB.jpg	280	05-09-2024	27.4.c	-	2	-	-	-	-	-	-	-	-	-	2	1	2	-	1	-	-	-	1	40	34	30
8904660_BRX_UB.jpg	280	05-09-2024	27.4.c	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	100	0	0
8904661_BRX_UB.jpg	340	05-09-2024	27.4.c	-	5	-	-	-	-	-	-	-	-	-	5	5	5	-	5	-	-	-	5	100	0	0
8904661_BRX_UB.jpg	340	05-09-2024	27.4.c	-	-	-	4	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	5	0	47	33
8904662_BRX_UB.jpg	320	05-09-2024	27.4.c	-	5	-	-	-	-	-	-	-	-	-	5	-	5	-	5	-	-	-	5	100	0	0
8904662_BRX_UB.jpg	320	05-09-2024	27.4.c	-	-	-	4	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	5	0	47	33
8904663_BRX_UB.jpg	350	05-09-2024	27.4.c	-	4	-	-	-	-	-	-	-	-	-	-	3	4	-	4	-	-	-	4	75	13	10
8904663_BRX_UB.jpg	350	05-09-2024	27.4.c	-	-	-	4	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	4	50	47	33
8904664_BRX_UB.jpg	340	05-09-2024	27.4.c	-	4	-	-	-	-	-	-	-	-	-	4	4	4	-	5	-	-	-	4	80	11	8
8904664_BRX_UB.jpg	340	05-09-2024	27.4.c	-	-	-	4	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	4	100	0	0

Fish ID	len gth	Catch date	ICE S are a	R 01 GB	R 02 DK	R 03 FR	R 04 NO	R 05 FR	R 06 DE	R 07 GB	R 08 BE	R 09 GB	R 10 GB	R 11 DE	R 12 DK	R 13 SE	R 14 SE	R 15 SE	R 16 NO	R 17 BE	R 18 NL	R 19 NL	Mo dal age	PA %	CV %	APE %
8904665_BRX_UB.jpg	350	05-09-2024	27.4.c	-	4	-	-	-	-	-	-	-	-	-	4	4	4	-	4	-	-	-	4	100	0	0
8904665_BRX_UB.jpg	350	05-09-2024	27.4.c	-	-	-	4	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	4	50	20	14
8904666_BRX_UB.jpg	310	05-09-2024	27.4.c	-	4	-	-	-	-	-	-	-	-	-	4	4	5	-	4	-	-	-	4	80	11	8
8904666_BRX_UB.jpg	310	05-09-2024	27.4.c	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	0	-	0
8904667_BRX_UB.jpg	290	05-09-2024	27.4.c	-	3	-	-	-	-	-	-	-	-	-	3	4	4	-	3	-	-	-	3	60	16	14
8904667_BRX_UB.jpg	290	05-09-2024	27.4.c	-	-	-	3	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	3	50	71	50
8904668_BRX_UB.jpg	320	05-09-2024	27.4.c	-	3	-	-	-	-	-	-	-	-	-	3	3	3	-	3	-	-	-	3	100	0	0
8904668_BRX_UB.jpg	320	05-09-2024	27.4.c	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	3	50	28	20
8904669_BRX_UB.jpg	260	05-09-2024	27.4.c	-	2	-	-	-	-	-	-	-	-	-	1	2	2	-	2	-	-	-	2	80	25	18
8904669_BRX_UB.jpg	260	05-09-2024	27.4.c	-	-	-	2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2	50	47	33
8904670_BRX_UB.jpg	240	05-09-2024	27.4.c	-	2	-	-	-	-	-	-	-	-	-	2	1	2	-	1	-	-	-	1	40	34	30
8904670_BRX_UB.jpg	240	05-09-2024	27.4.c	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	100	0	0
8904671_BRX_UB.jpg	330	05-09-2024	27.4.c	-	3	-	-	-	-	-	-	-	-	-	2	3	4	-	4	-	-	-	3	40	26	20
8904671_BRX_UB.jpg	330	05-09-2024	27.4.c	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	3	50	28	20
8904672_BRX_UB.jpg	310	05-09-2024	27.4.c	-	5	-	-	-	-	-	-	-	-	-	4	4	-	-	4	-	-	-	4	75	12	9
8904672_BRX_UB.jpg	310	05-09-2024	27.4.c	-	-	-	4	-	-	-	-	-	-	-	-	-	5	3	-	-	-	-	4	33	25	17
8904673_BRX_UB.jpg	330	05-09-2024	27.4.c	-	3	-	-	-	-	-	-	-	-	-	2	3	2	-	2	-	-	-	2	60	23	20
8904673_BRX_UB.jpg	330	05-09-2024	27.4.c	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	50	28	20
8929120_BRX_UB.jpg	360	06-10-2024	27.4.a	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-	4	-	-	-	3	67	17	13
8929120_BRX_UB.jpg	360	06-10-2024	27.4.a	-	-	-	3	-	-	-	-	-	-	-	-	-	4	2	-	-	-	-	3	33	33	22
8929121_BRX_UB.jpg	370	06-10-2024	27.4.a	-	7	-	-	-	-	-	-	-	-	-	6	4	5	-	6	-	-	-	4	20	20	16
8929121_BRX_UB.jpg	370	06-10-2024	27.4.a	-	-	-	4	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	4	50	47	33
8929122_BRX_UB.jpg	300	06-10-2024	27.4.a	-	4	-	-	-	-	-	-	-	-	-	3	3	3	-	5	-	-	-	3	60	25	20
8929122_BRX_UB.jpg	300	06-10-2024	27.4.a	-	-	-	3	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	3	50	28	20
8929123_BRX_UB.jpg	380	06-10-2024	27.4.a	-	5	-	-	-	-	-	-	-	-	-	-	-	7	-	7	-	-	-	7	67	18	14
8929123_BRX_UB.jpg	380	06-10-2024	27.4.a	-	-	-	4	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	7	0	20	14
8929124_BRX_UB.jpg	380	06-10-2024	27.4.a	-	5	-	-	-	-	-	-	-	-	-	7	4	-	-	5	-	-	-	5	50	24	17
8929124_BRX_UB.jpg	380	06-10-2024	27.4.a	-	-	-	4	-	-	-	-	-	-	-	-	-	5	2	-	-	-	-	5	33	42	30
8929125_BRX_UB.jpg	320	06-10-2024	27.4.a	-	4	-	-	-	-	-	-	-	-	-	4	4	4	-	4	-	-	-	4	100	0	0
8929125_BRX_UB.jpg	320	06-10-2024	27.4.a	-	-	-	4	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	4	100	0	0
8929126_BRX_UB.jpg	350	06-10-2024	27.4.a	-	4	-	-	-	-	-	-	-	-	-	-	4	-	-	4	-	-	-	4	100	0	0
8929126_BRX_UB.jpg	350	06-10-2024	27.4.a	-	-	-	4	-	-	-	-	-	-	-	-	-	6	3	-	-	-	-	4	33	35	26
8933414_BRX_UB.jpg	270	08-10-2024	27.4.b	-	4	-	-	-	-	-	-	-	-	-	1	2	2	-	2	-	-	-	1	20	50	33
8933414_BRX_UB.jpg	270	08-10-2024	27.4.b	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	100	0	0
8933415_BRX_UB.jpg	210	08-10-2024	27.4.b	-	2	-	-	-	-	-	-	-	-	-	1	3	-	-	2	-	-	-	1	25	41	25
8933415_BRX_UB.jpg	210	08-10-2024	27.4.b	-	-	-	1	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	1	67	43	33
8969390_BRX_UB.jpg	300	27-11-2024	27.4.b	-	4	-	-	-	-	-	-	-	-	-	-	3	-	-	4	-	-	-	4	67	16	12

Fish ID	len gth	Catch date	ICE S are a	R 01 GB	R 02 DK	R 03 FR	R 04 NO	R 05 FR	R 06 DE	R 07 GB	R 08 BE	R 09 GB	R 10 GB	R 11 DE	R 12 DK	R 13 SE	R 14 SE	R 15 SE	R 16 NO	R 17 BE	R 18 NL	R 19 NL	Mo dal age	PA %	CV %	APE %
8969390_BRX_UB.jpg	300	27-11-2024	27.4.b	-	-	-	3	-	-	-	-	-	-	-	-	-	4	3	-	-	-	-	4	33	17	13
8969391_BRX_UB.jpg	300	27-11-2024	27.4.b	-	2	-	-	-	-	-	-	-	-	-	2	2	-	-	2	-	-	-	2	100	0	0
8969391_BRX_UB.jpg	300	27-11-2024	27.4.b	-	-	-	2	-	-	-	-	-	-	-	-	-	3	2	-	-	-	-	2	67	25	19
8969392_BRX_UB.jpg	300	27-11-2024	27.4.b	-	4	-	-	-	-	-	-	-	-	-	4	5	-	-	4	-	-	-	4	75	12	9
8969392_BRX_UB.jpg	300	27-11-2024	27.4.b	-	-	-	4	-	-	-	-	-	-	-	-	-	5	3	-	-	-	-	4	33	25	17
8969393_BRX_UB.jpg	310	27-11-2024	27.4.b	-	5	-	-	-	-	-	-	-	-	-	-	2	2	-	4	-	-	-	2	50	46	38
8969393_BRX_UB.jpg	310	27-11-2024	27.4.b	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	100	0	0
8969394_BRX_UB.jpg	310	27-11-2024	27.4.b	-	5	-	-	-	-	-	-	-	-	-	-	2	3	-	5	-	-	-	2	25	40	33
8969394_BRX_UB.jpg	310	27-11-2024	27.4.b	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	100	0	0
8969395_BRX_UB.jpg	310	27-11-2024	27.4.b	-	5	-	-	-	-	-	-	-	-	-	-	4	-	-	5	-	-	-	4	33	12	10
8969395_BRX_UB.jpg	310	27-11-2024	27.4.b	-	-	-	4	-	-	-	-	-	-	-	-	-	4	2	-	-	-	-	4	67	35	27
8969396_BRX_UB.jpg	330	27-11-2024	27.4.b	-	4	-	-	-	-	-	-	-	-	-	4	3	4	-	4	-	-	-	4	80	12	8
8969396_BRX_UB.jpg	330	27-11-2024	27.4.b	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	4	0	0	0
8974922_BRX_UB.jpg	310	01-12-2024	27.4.a	-	3	-	-	-	-	-	-	-	-	-	3	2	-	-	3	-	-	-	2	25	18	14
8974922_BRX_UB.jpg	310	01-12-2024	27.4.a	-	-	-	2	-	-	-	-	-	-	-	-	-	2	2	-	-	-	-	2	100	0	0
8974923_BRX_UB.jpg	280	01-12-2024	27.4.a	-	2	-	-	-	-	-	-	-	-	-	2	2	2	-	2	-	-	-	2	100	0	0
8974923_BRX_UB.jpg	280	01-12-2024	27.4.a	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	100	0	0
8974924_BRX_UB.jpg	380	01-12-2024	27.4.a	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	3	100	0	0
8974924_BRX_UB.jpg	380	01-12-2024	27.4.a	-	-	-	3	-	-	-	-	-	-	-	-	-	3	4	-	-	-	-	3	67	17	13
8995751_BRX_UB.jpg	330	11-01-2025	27.4.b	-	4	-	-	-	-	-	-	-	-	-	4	3	-	-	3	-	-	-	3	50	16	14
8995751_BRX_UB.jpg	330	11-01-2025	27.4.b	-	-	-	3	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	3	100	0	0
8995752_BRX_UB.jpg	290	11-01-2025	27.4.b	-	4	-	-	-	-	-	-	-	-	-	5	4	4	-	4	-	-	-	4	80	11	8
8995752_BRX_UB.jpg	290	11-01-2025	27.4.b	-	-	-	2	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	4	0	28	20
8995753_BRX_UB.jpg	240	11-01-2025	27.4.b	-	3	-	-	-	-	-	-	-	-	-	3	3	-	-	2	-	-	-	3	75	18	14
8995753_BRX_UB.jpg	240	11-01-2025	27.4.b	-	-	-	2	-	-	-	-	-	-	-	-	-	3	2	-	-	-	-	3	33	25	19
8995754_BRX_UB.jpg	250	11-01-2025	27.4.b	-	3	-	-	-	-	-	-	-	-	-	3	3	-	-	3	-	-	-	3	100	0	0
8995754_BRX_UB.jpg	250	11-01-2025	27.4.b	-	-	-	2	-	-	-	-	-	-	-	-	-	2	3	-	-	-	-	3	33	25	19
8995755_BRX_UB.jpg	200	11-01-2025	27.4.b	-	1	-	-	-	-	-	-	-	-	-	1	1	2	-	1	-	-	-	1	80	37	27
8995755_BRX_UB.jpg	200	11-01-2025	27.4.b	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	100	0	0
8995756_BRX_UB.jpg	280	11-01-2025	27.4.b	-	6	-	-	-	-	-	-	-	-	-	5	-	4	-	4	-	-	-	4	50	20	16
8995756_BRX_UB.jpg	280	11-01-2025	27.4.b	-	-	-	2	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	4	0	28	20
8995757_BRX_UB.jpg	180	11-01-2025	27.4.b	-	3	-	-	-	-	-	-	-	-	-	2	2	2	-	2	-	-	-	2	80	20	15
8995757_BRX_UB.jpg	180	11-01-2025	27.4.b	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	100	0	0
8995758_BRX_UB.jpg	150	11-01-2025	27.4.b	-	1	-	-	-	-	-	-	-	-	-	1	2	1	-	2	-	-	-	1	60	39	34
8995758_BRX_UB.jpg	150	11-01-2025	27.4.b	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	100	0	0
8997957_BRX_UB.jpg	270	15-01-2025	27.4.a	-	5	-	-	-	-	-	-	-	-	-	5	3	4	-	3	-	-	-	3	40	25	20
8997957_BRX_UB.jpg	270	15-01-2025	27.4.a	-	-	-	2	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	3	50	28	20

Fish ID	len gth	Catch date	ICE S are a	R 01 GB	R 02 DK	R 03 FR	R 04 NO	R 05 FR	R 06 DE	R 07 GB	R 08 BE	R 09 GB	R 10 GB	R 11 DE	R 12 DK	R 13 SE	R 14 SE	R 15 SE	R 16 NO	R 17 BE	R 18 NL	R 19 NL	Mo dal age	PA %	CV %	APE %
8997958_BRX_UB.jpg	250	15-01-2025	27.4.a	-	4	-	-	-	-	-	-	-	-	-	4	4	-	-	3	-	-	-	4	75	13	10
8997958_BRX_UB.jpg	250	15-01-2025	27.4.a	-	-	-	3	-	-	-	-	-	-	-	-	-	4	3	-	-	-	-	4	33	17	13
8997959_BRX_UB.jpg	280	15-01-2025	27.4.a	-	5	-	-	-	-	-	-	-	-	-	5	4	4	-	4	-	-	-	4	60	12	11
8997959_BRX_UB.jpg	280	15-01-2025	27.4.a	-	-	-	3	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	4	0	0	0
8997960_BRX_UB.jpg	240	15-01-2025	27.4.a	-	3	-	-	-	-	-	-	-	-	-	3	2	3	-	3	-	-	-	3	80	16	11
8997960_BRX_UB.jpg	240	15-01-2025	27.4.a	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	3	0	0	0
8997961_BRX_UB.jpg	170	15-01-2025	27.4.a	-	1	-	-	-	-	-	-	-	-	-	1	1	1	-	2	-	-	-	1	80	37	27
8997961_BRX_UB.jpg	170	15-01-2025	27.4.a	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	100	0	0
8997962_BRX_UB.jpg	190	15-01-2025	27.4.a	-	1	-	-	-	-	-	-	-	-	-	1	-	1	-	2	-	-	-	1	75	40	30
8997962_BRX_UB.jpg	190	15-01-2025	27.4.a	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	100	0	0
8998442_BRX_UB.jpg	320	16-01-2025	27.4.a	-	6	-	-	-	-	-	-	-	-	-	6	5	5	-	4	-	-	-	5	40	16	12
8998442_BRX_UB.jpg	320	16-01-2025	27.4.a	-	-	-	5	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	5	100	0	0
8998443_BRX_UB.jpg	390	16-01-2025	27.4.a	-	6	-	-	-	-	-	-	-	-	-	-	-	7	-	8	-	-	-	6	33	14	10
8998443_BRX_UB.jpg	390	16-01-2025	27.4.a	-	-	-	6	-	-	-	-	-	-	-	-	-	-	5	-	-	-	-	6	50	13	9

9 Annex 1: additional results

9.1 Results all readers

Summary statistics

Table 62: Summary of statistics; PA (%), CV (%) and APE (%).

NSample	CV	PA	APE
180	29 %	63 %	20 %

Data Overview

Table 63: Data overview including modal age and statistics per sample.

List of multimodal cases

Table 64: List of cases for which multiple modes where obtained when all readers are considered. The column NModes_trad shows the number of multiple modes for each FishID or sampleID when all readers are given the same expertise weight.

NModes_trad	SampleID
2	036_BYDR06_4B_WHG_D_SR_2020092610053
2	036_BYDR06_4B_WHG_D_ST_2020092610053
2	037_BYDR06_4B_WHG_D_SR_2020092610054
2	037_BYDR06_4B_WHG_D_ST_2020092610054
2	047_BYDR07_4B_WHG_B_SR_2020100810037
2	047_BYDR07_4B_WHG_B_ST_2020100810037
2	048_BYDR07_4B_WHG_B_SR_2020100810051
2	048_BYDR07_4B_WHG_B_ST_2020100810051
3	064_CDDR02_7D_WHG_D_SR_2020030110012
3	064_CDDR02_7D_WHG_D_ST_2020030110012
2	22MERLMNG004-0732-ST
2	24MERLMNG001-0168-ST
2	8888861_BRX_RLX_UB.jpg
2	8888861_BRX_TLX_UB.jpg
2	8904659_BRX_RLX_UB.jpg
2	8904659_BRX_TLX_UB.jpg
2	8929121_BRX_RLX_UB.jpg
2	8929121_BRX_TLX_UB.jpg
2	8933414_BRX_RLX_UB.jpg
2	8933414_BRX_TLX_UB.jpg
2	8933415_BRX_RLX_UB.jpg
2	8933415_BRX_TLX_UB.jpg
2	8969390_BRX_RLX_UB.jpg
2	8969390_BRX_TLX_UB.jpg

Number of age readings by modal age

Table 65: Number of age readings table gives an overview of number of readings per reader and modal age. The total numbers of readings by modal age and by reader are also presented.

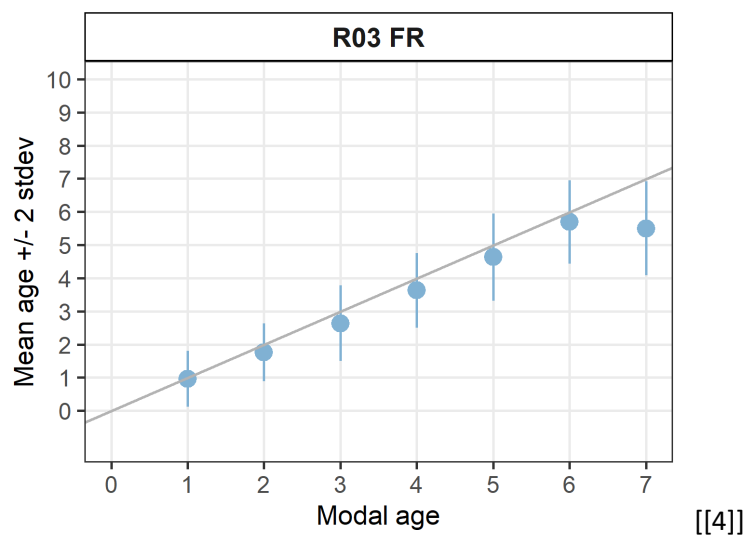
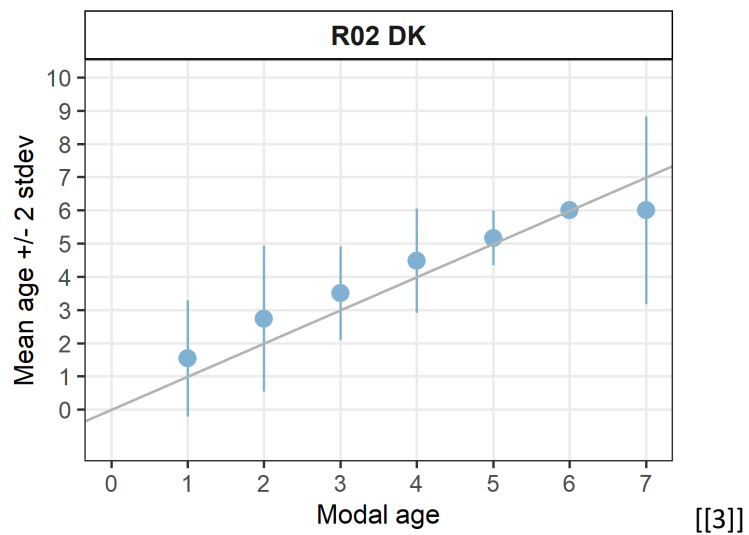
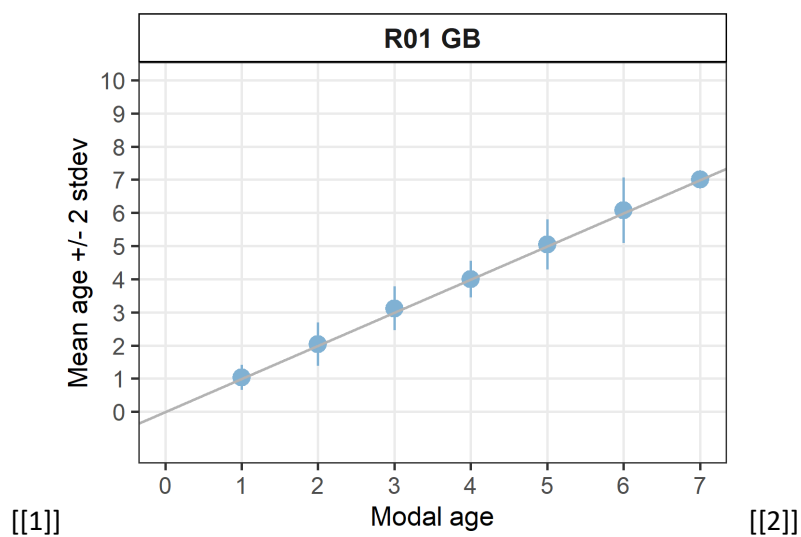
Modal age	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R07 GB	R08 BE	R09 GB	R10 GB	R11 DE	R12 DK	R13 SE	R14 SE	R15 SE	R16 NO	R17 BE	R18 NL	R19 NL	total
1	29	13	29	13	29	27	25	29	28	22	26	13	12	13	13	13	29	29	29	421
2	29	15	29	16	29	29	26	29	29	20	29	12	16	16	16	16	29	29	29	443
3	25	18	25	19	24	25	24	25	24	10	25	14	18	20	19	19	25	24	25	408
4	27	29	27	29	27	26	27	27	26	15	27	22	29	28	29	30	27	27	27	506
5	22	6	22	6	22	22	22	22	22	12	22	5	5	6	6	6	21	22	21	292
6	13	3	13	3	13	13	13	13	13	2	13	2	2	3	3	3	13	13	13	164
7	1	2	2	1	2	2	2	2	2	2	1	0	0	2	2	2	2	2	2	31
Total	146	86	147	87	146	144	139	147	144	83	143	68	82	88	88	89	146	146	146	2265

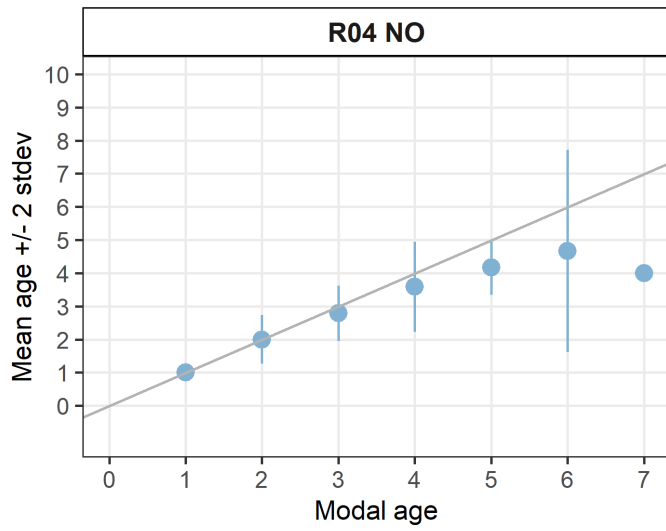
Number of age readings by age

Table 66: Age composition by reader gives a summary of number of readings per reader and age. The total numbers of readings by age and by reader are also presented.

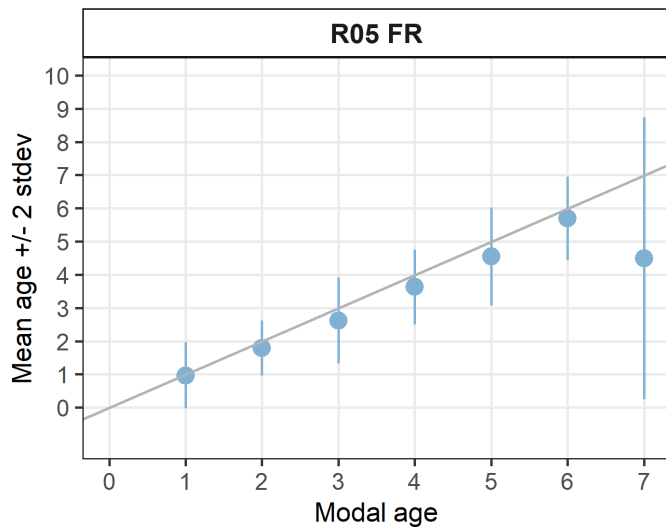
Age	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R07 GB	R08 BE	R09 GB	R10 GB	R11 DE	R12 DK	R13 SE	R14 SE	R15 SE	R16 NO	R17 BE	R18 NL	R19 NL	total
0	0	0	3	0	4	1	1	0	0	0	0	0	0	0	2	0	3	0	11	25
1	29	8	32	14	30	6	19	28	10	18	4	11	12	8	18	9	34	29	29	348
2	27	13	32	21	32	12	22	26	32	24	22	16	14	19	33	16	25	30	25	441
3	25	14	26	23	29	29	28	30	33	11	34	14	22	20	20	17	33	35	23	466
4	29	26	26	26	23	29	27	25	33	13	18	13	26	23	7	25	23	27	22	441
5	21	17	16	2	17	25	22	24	25	11	35	9	7	13	5	13	17	14	22	315
6	12	6	12	1	11	24	17	12	10	4	21	4	1	2	2	6	8	11	9	173
7	3	2	0	0	0	15	2	2	1	2	7	1	0	3	1	2	3	0	4	48
8	0	0	0	0	0	2	1	0	0	0	1	0	0	0	0	1	0	0	1	6
9	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	2
Total	146	86	147	87	146	144	139	147	144	83	143	68	82	88	88	89	146	146	146	2265

Separate age bias plots by reader

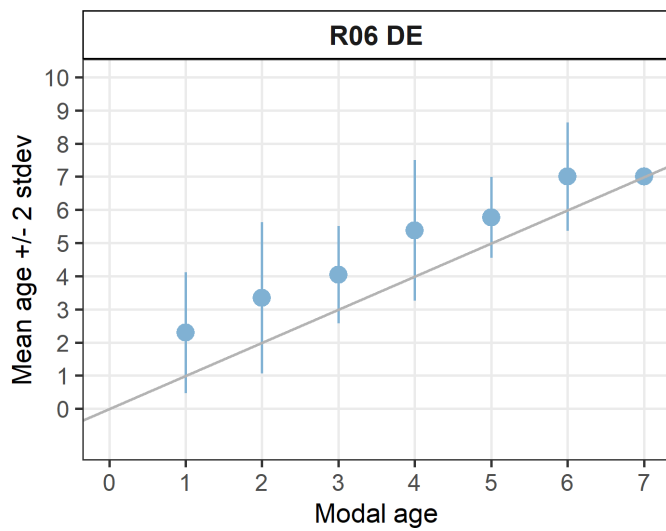




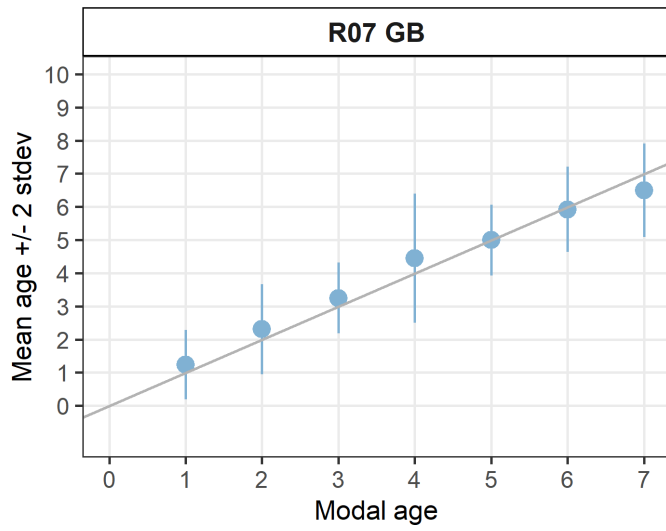
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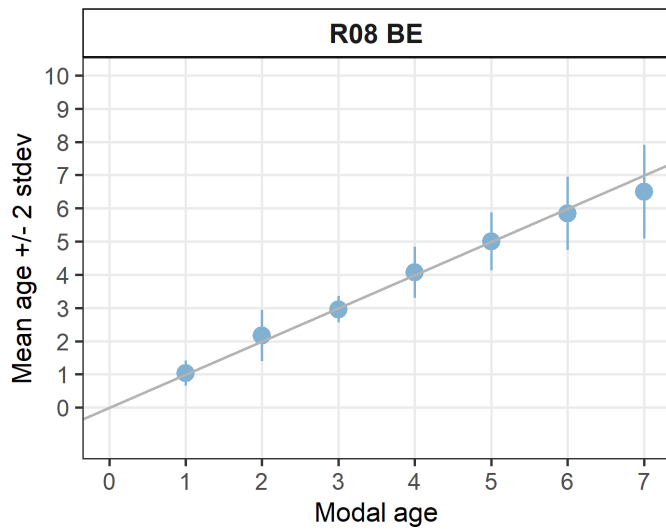
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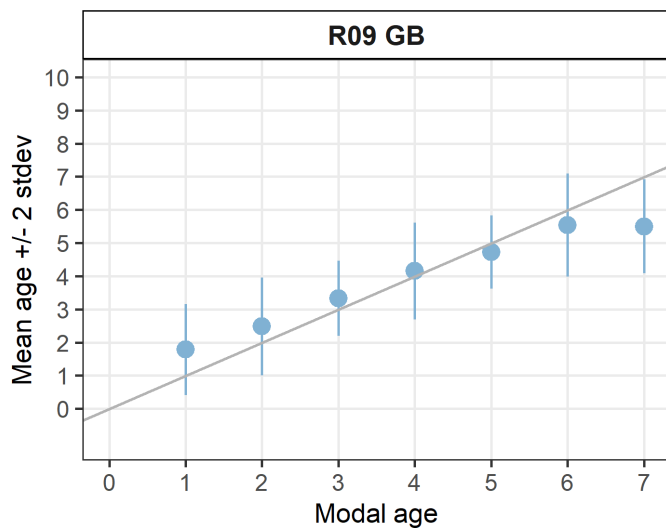
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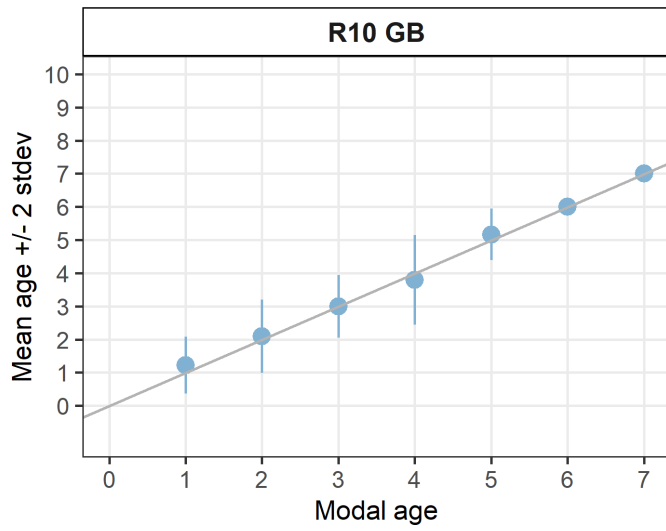
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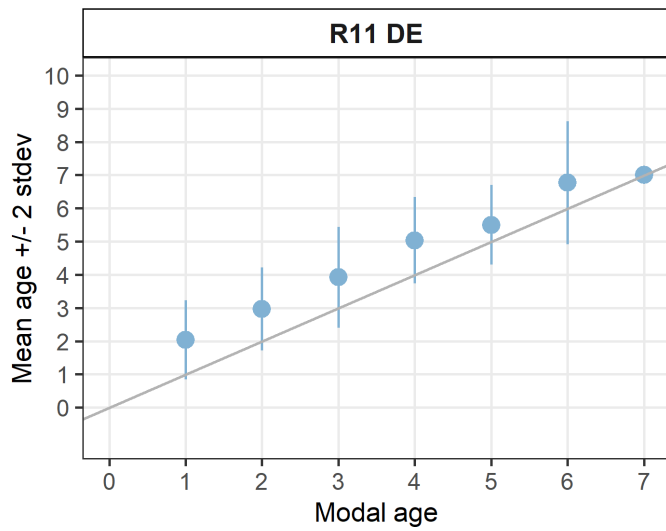
[[9]]



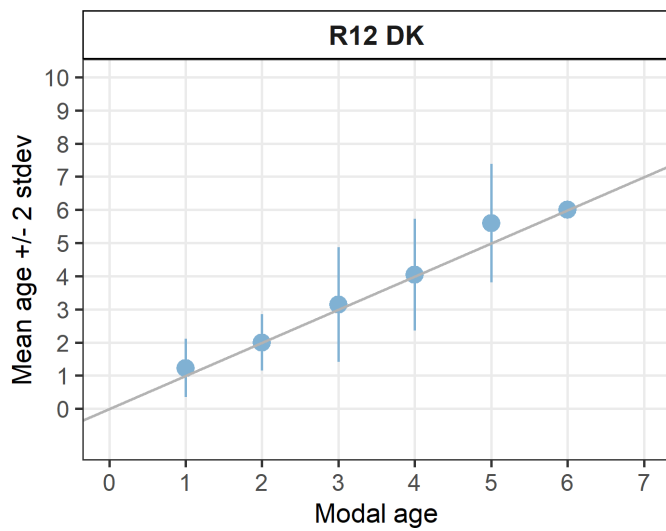
[[10]]



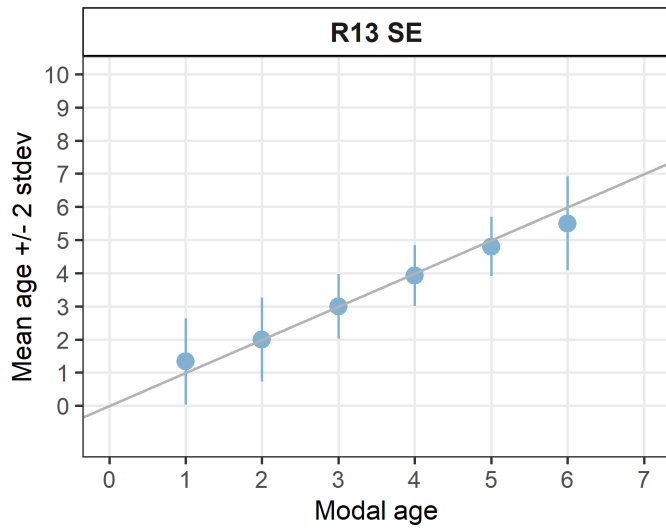
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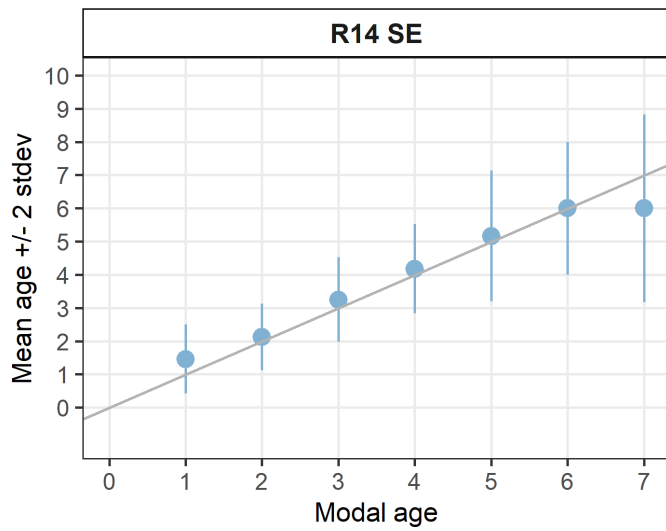
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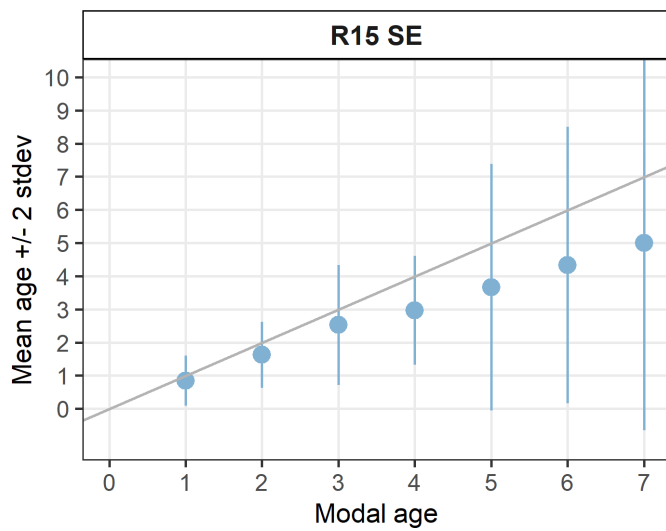
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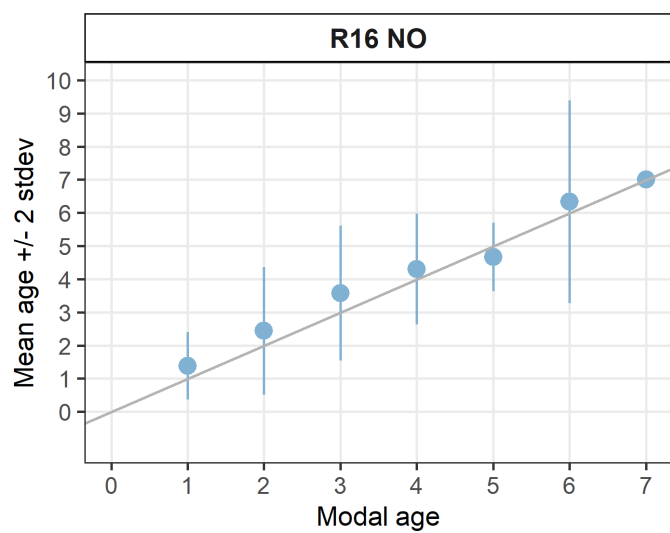
[[14]]



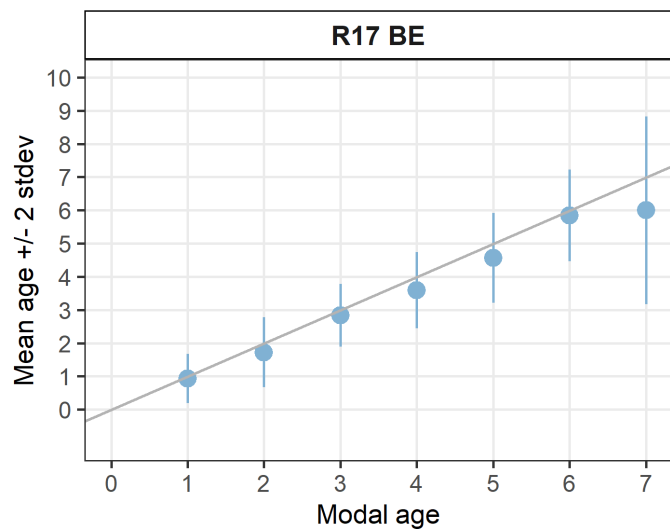
[[15]]



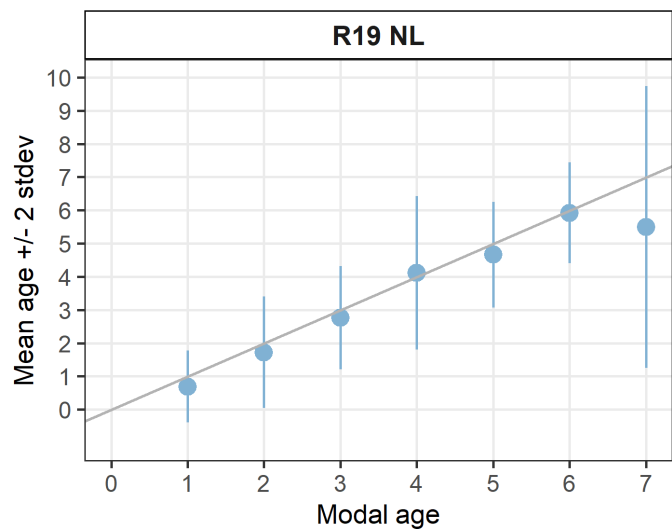
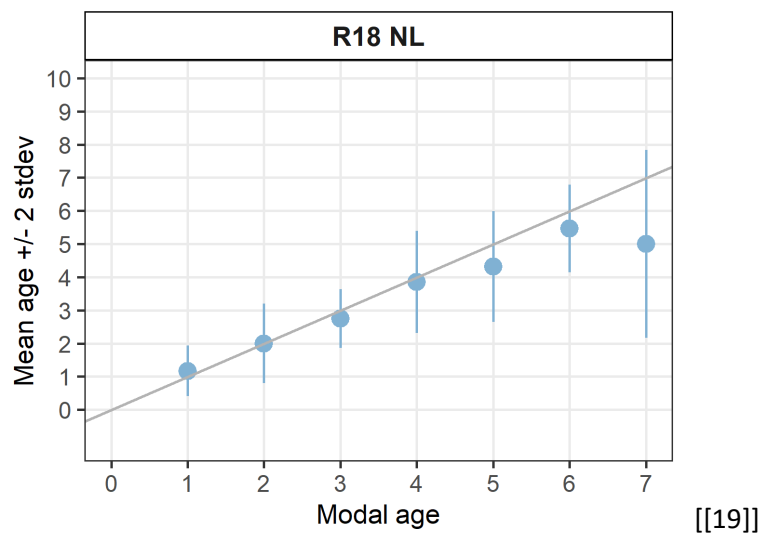
[[16]]



[[17]]



[[18]]



Statistics by modal age plot (STDEV, CV and PA)

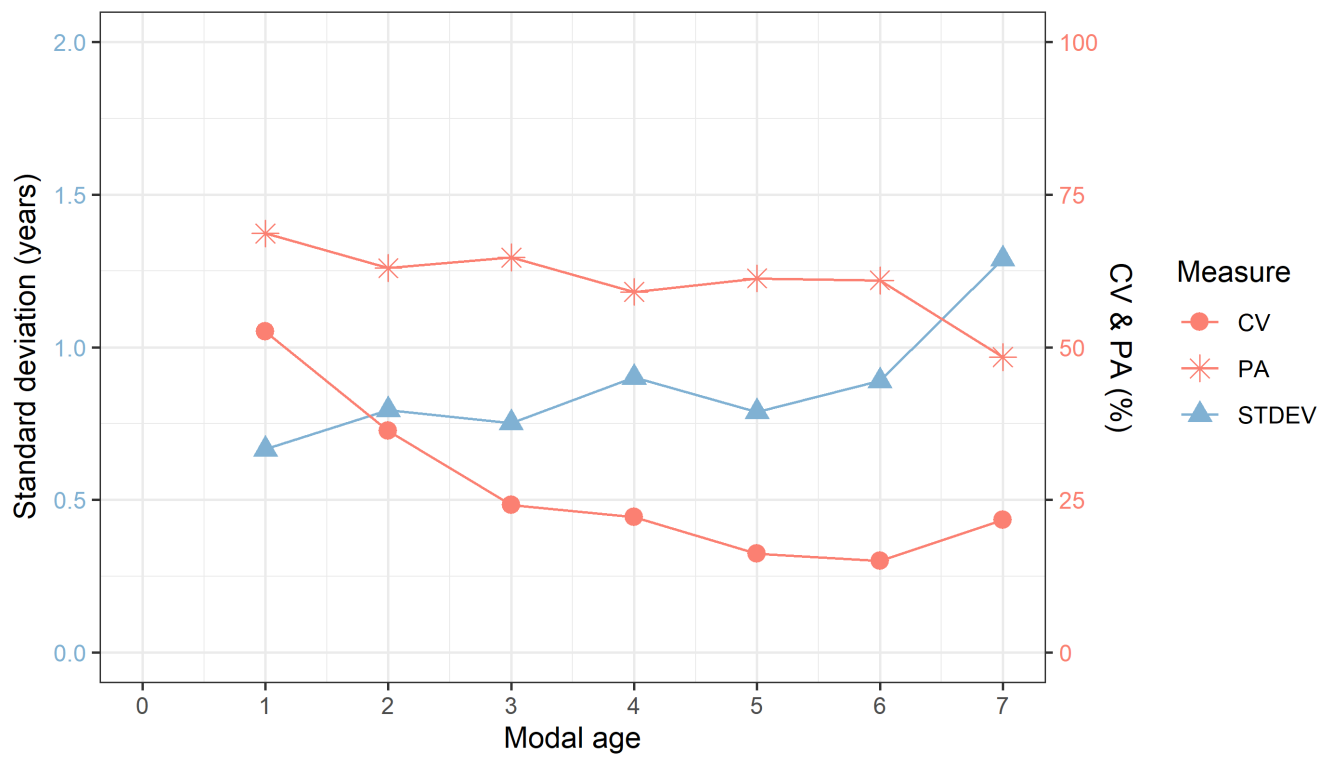


Figure 16: CV, PA and (STDEV (standard deviation) are plotted against modal age

Distribution of age reading errors

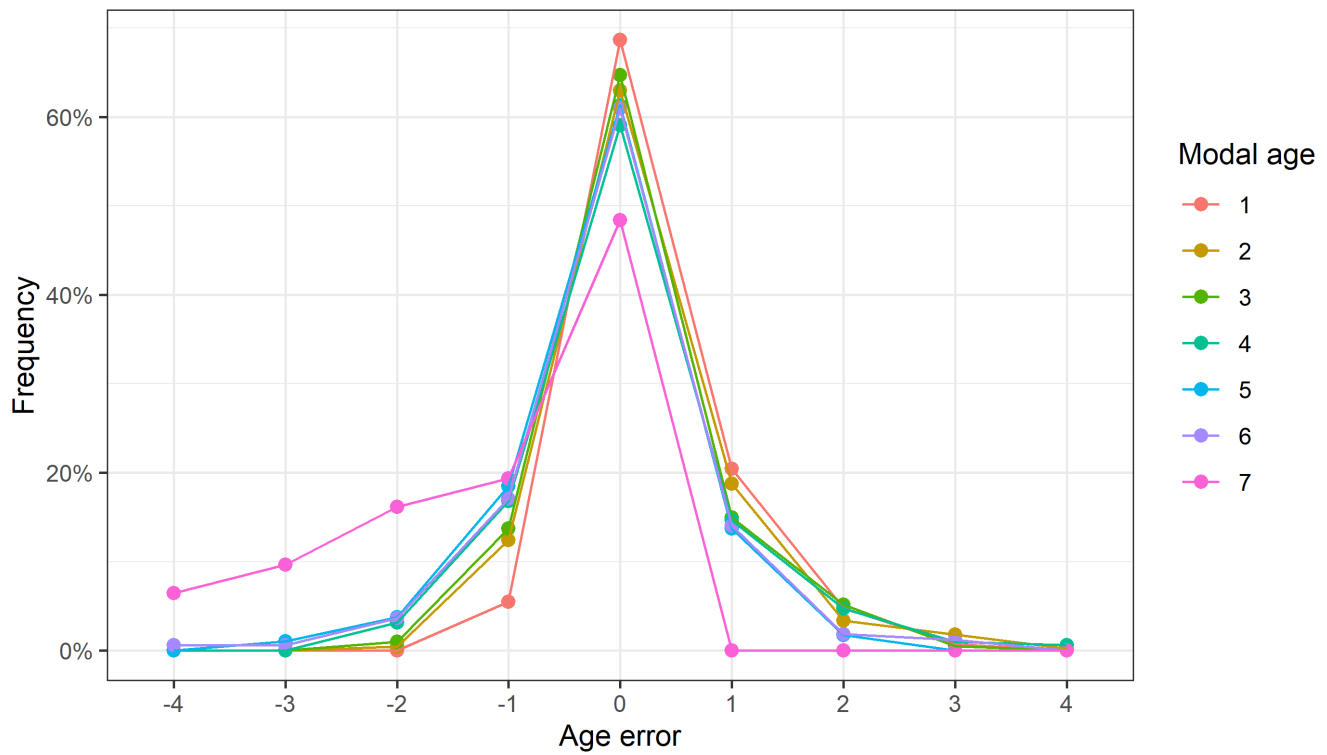


Figure 17: The distribution of the age reading errors in percentage by modal age as observed from the whole group of age readers in an age reading comparison to modal age. The achieved precision in age reading by MODAL age group is shown by the spread of the age readings errors. There appears to be no relative bias, if the age reading errors are normally distributed. The distributions are skewed, if relative bias occurs.

Relative bias for all readers

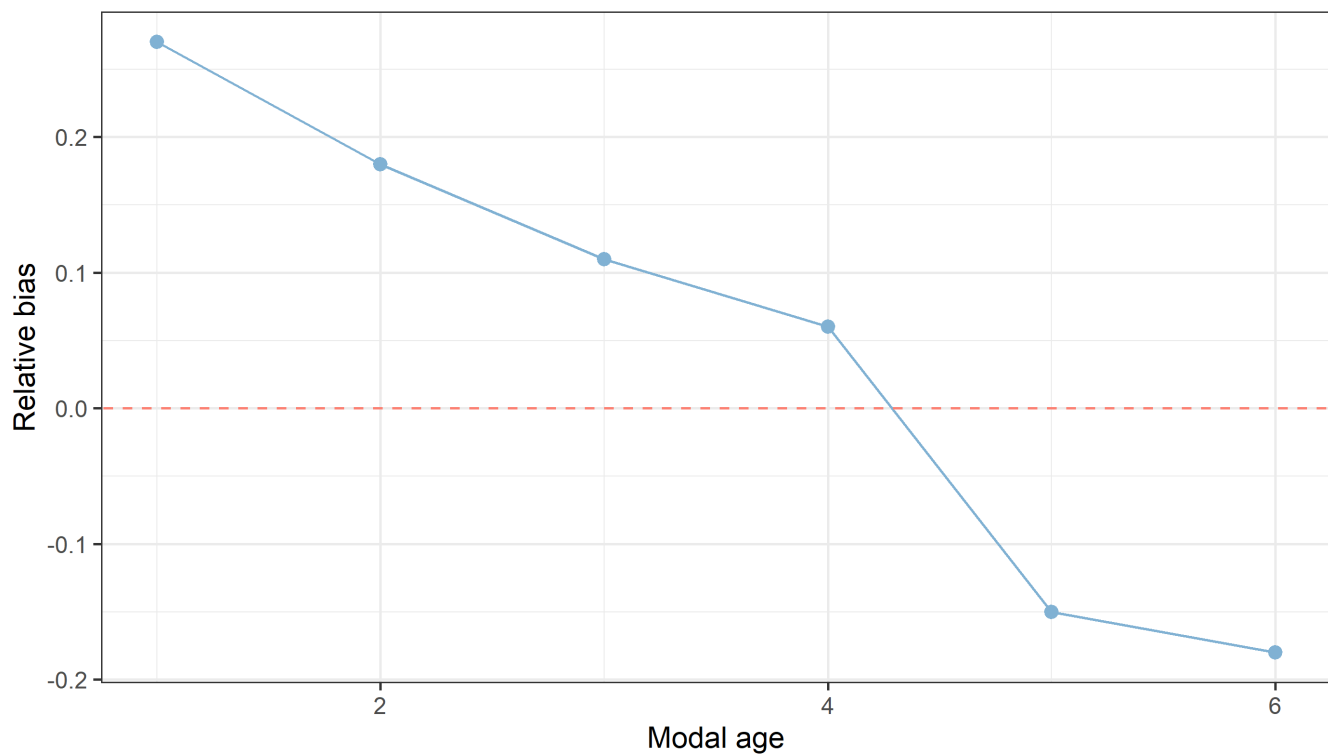


Figure 18: The relative bias by modal age as estimated by all age readers combined.

Mean length at age by reader

Table 68: Mean fish length (mm) at age per reader is calculated per reader and age (not modal age) and for all readers combined per age. A weighted mean is also given.

Age	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R07 GB	R08 BE	R09 GB	R10 GB	R11 DE	R12 DK	R13 SE	R14 SE	R15 SE	R16 NO	R17 BE	R18 NL	R19 NL
0	-	-	218	-	227	235	222	-	-	-	-	-	-	-	160	-	232	-	231
1	238	178	245	201	245	191	235	238	214	244	202	196	200	180	217	200	245	229	245
2	269	232	276	260	276	224	263	269	259	268	225	246	254	243	309	232	275	281	279
3	299	292	313	312	314	272	294	298	287	285	282	313	305	310	320	295	313	308	301
4	315	323	321	351	317	293	324	324	313	316	295	318	337	322	366	331	329	319	315
5	337	329	335	335	331	306	317	332	340	353	329	313	333	332	316	329	313	349	339
6	343	352	334	390	340	332	336	324	333	348	333	340	350	350	345	343	348	321	371
7	306	350	-	-	-	342	288	331	320	306	325	380	-	370	330	355	316	-	326
8	-	-	-	-	-	391	322	-	-	-	307	-	-	-	-	390	-	-	372
9	-	-	-	-	-	340	-	-	-	-	340	-	-	-	-	-	-	-	-
Weighted Mean	294	294	294	295	294	294	295	294	294	289	294	282	294	293	295	295	293	294	294

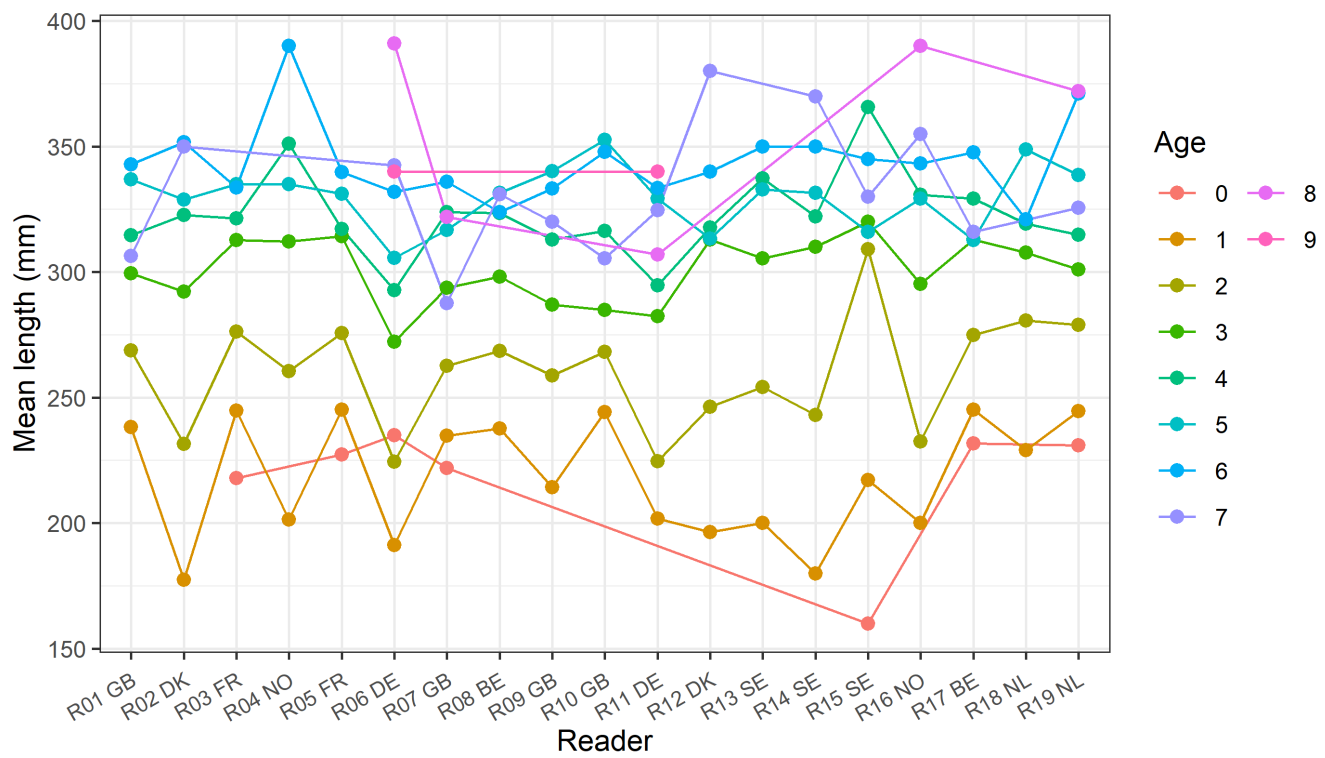


Figure 19: The mean fish length at age as estimated by each age reader.

9.2 Results Advanced readers

All samples included

Suary statistics

Table 69: Suary of statistics; PA (%), CV (%) and APE (%).

NSample	CV	PA	APE
177	25 %	70 %	14 %

Data overview

Table 70: Data overview including modal age and statistics per sample.

Fish ID	length	Catch date	ICES are a	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE	Modal age	PA %	CV %	APE %
001_BYDR02_7D_WHG_D_2020031110301	262	11-03-2020	27.7 .d	2	-	2	-	2	4	2	3	-	-	-	2	67	33	27
002_BYDR02_7D_WHG_D_2020031110302	275	11-03-2020	27.7 .d	2	-	2	-	2	3	2	3	-	-	-	2	67	22	19
003_BYDR02_7D_WHG_D_2020031110303	242	11-03-2020	27.7 .d	1	-	1	-	1	2	1	2	-	-	-	1	67	39	33
004_BYDR02_7D_WHG_D_2020031110304	237	11-03-2020	27.7 .d	1	-	1	-	1	4	1	2	-	-	-	1	67	73	53
005_BYDR02_7D_WHG_D_2020031110306	270	11-03-2020	27.7 .d	3	-	2	-	2	4	3	3	-	-	-	3	50	27	20
006_BYDR02_7D_WHG_D_2020031110307	296	11-03-2020	27.7 .d	2	-	2	-	2	3	2	3	-	-	-	2	67	22	19
007_BYDR02_7D_WHG_L_2020031110310	354	11-03-2020	27.7 .d	4	-	3	-	3	6	4	5	-	-	-	3	33	28	21
008_BYDR02_7D_WHG_L_2020031110313	496	11-03-2020	27.7 .d	5	-	4	-	4	6	5	5	-	-	-	5	50	16	11
009_BYDR02_7D_WHG_L_2020031110316	372	11-03-2020	27.7 .d	5	-	4	-	3	5	4	5	-	-	-	5	50	19	15
010_BYDR02_7D_WHG_L_2020031110317	378	11-03-2020	27.7 .d	5	-	5	-	5	6	5	6	-	-	-	5	67	10	8
011_BYDR04_4C_WHG_D_2021111410175	196	14-11-2021	27.4 .c	1	-	0	-	0	1	1	1	-	-	-	1	67	77	67
012_BYDR04_4C_WHG_D_2021111410176	305	14-11-2021	27.4 .c	4	-	3	-	3	6	3	4	-	-	-	3	50	30	22
013_BYDR04_4C_WHG_D_2021111410177	301	14-11-2021	27.4 .c	2	-	2	-	1	4	2	3	-	-	-	2	50	44	33
014_BYDR04_4C_WHG_D_2021111410178	204	14-11-2021	27.4 .c	1	-	-	-	-	-	-	-	-	-	-	1	100	-	0
014_BYDR04_4C_WHG_D_2021111410178	204	14-11-2021	27.4 .c	-	-	1	-	1	2	1	2	-	-	-	1	60	39	34
015_BYDR04_4C_WHG_D_2021111410179	296	14-11-2021	27.4 .c	2	-	2	-	2	4	2	3	-	-	-	2	67	33	27
016_BYDR04_4C_WHG_D_2021111410180	317	14-11-2021	27.4 .c	3	-	2	-	-	3	3	3	-	-	-	3	80	16	11
017_BYDR04_4C_WHG_D_2021111410182	311	14-11-2021	27.4 .c	2	-	2	-	2	3	2	3	-	-	-	2	67	22	19
018_BYDR04_4C_WHG_D_2021111410184	323	14-11-2021	27.4 .c	5	-	5	-	5	6	5	5	-	-	-	5	83	8	5
019_BYDR04_4C_WHG_D_2021111410203	289	14-11-2021	27.4 .c	-	-	6	-	3	7	6	-	-	-	-	6	50	31	23
020_BYDR04_4C_WHG_D_2021111410236	311	14-11-2021	27.4 .c	5	-	-	-	-	-	-	-	-	-	-	5	100	-	0
020_BYDR04_4C_WHG_D_2021111410236	311	14-11-2021	27.4 .c	-	-	4	-	3	5	5	5	-	-	-	5	60	20	16
021_BYDR04_4C_WHG_L_2021111410153	362	14-11-2021	27.4 .c	5	-	5	-	5	7	5	6	-	-	-	5	67	15	12
022_BYDR04_4C_WHG_L_2021111410154	334	14-11-2021	27.4 .c	5	-	5	-	5	5	5	5	-	-	-	5	100	0	0

Fish ID	length	Catch date	ICES are a	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE	Modal age	PA %	CV %	APE %
023_BYDR05_4C_WHG_L_2021111810182	292	18-11-2021	27.4 .c	5	-	4	-	5	6	5	6	-	-	-	5	50	15	11
024_BYDR06_4B_WHG_D_2020092610027	228	26-09-2020	27.4 .b	1	-	0	-	0	3	1	2	-	-	-	0	33	-	-
025_BYDR06_4B_WHG_D_2020092610028	200	26-09-2020	27.4 .b	1	-	1	-	1	1	1	1	-	-	-	1	100	0	0
026_BYDR06_4B_WHG_D_2020092610029	322	26-09-2020	27.4 .b	7	-	5	-	6	7	7	7	-	-	-	7	67	13	10
027_BYDR06_4B_WHG_D_2020092610030	271	26-09-2020	27.4 .b	2	-	2	-	2	3	2	3	-	-	-	2	67	22	19
028_BYDR06_4B_WHG_D_2020092610031	284	26-09-2020	27.4 .b	3	-	2	-	2	4	3	3	-	-	-	3	50	27	20
029_BYDR06_4B_WHG_D_2020092610032	301	26-09-2020	27.4 .b	3	-	2	-	2	4	3	4	-	-	-	2	33	30	22
030_BYDR06_4B_WHG_D_2020092610034	230	26-09-2020	27.4 .b	1	-	0	-	0	2	1	2	-	-	-	0	33	-	-
031_BYDR06_4B_WHG_D_2020092610038	283	26-09-2020	27.4 .b	4	-	3	-	3	5	4	5	-	-	-	3	33	22	17
032_BYDR06_4B_WHG_D_2020092610039	276	26-09-2020	27.4 .b	3	-	2	-	1	5	3	4	-	-	-	3	33	47	33
033_BYDR06_4B_WHG_D_2020092610040	271	26-09-2020	27.4 .b	3	-	3	-	2	4	4	4	-	-	-	4	50	24	20
034_BYDR06_4B_WHG_D_2020092610041	299	26-09-2020	27.4 .b	4	-	3	-	3	4	4	4	-	-	-	4	67	14	12
035_BYDR06_4B_WHG_D_2020092610046	291	26-09-2020	27.4 .b	1	-	1	-	1	4	1	3	-	-	-	1	67	72	61
036_BYDR06_4B_WHG_D_2020092610053	312	26-09-2020	27.4 .b	4	-	3	-	3	6	4	5	-	-	-	3	33	28	21
037_BYDR06_4B_WHG_D_2020092610054	283	26-09-2020	27.4 .b	2	-	1	-	1	4	2	3	-	-	-	1	33	54	41
038_BYDR06_4B_WHG_D_2020092610065	295	26-09-2020	27.4 .b	4	-	2	-	3	5	5	4	-	-	-	4	33	30	23
039_BYDR06_4B_WHG_D_2020092610087	316	26-09-2020	27.4 .b	4	-	4	-	4	6	4	5	-	-	-	4	67	19	15
040_BYDR06_4B_WHG_L_2020092610100	294	26-09-2020	27.4 .b	5	-	4	-	4	6	5	5	-	-	-	5	50	16	11
041_BYDR07_4B_WHG_B_2020100810023	303	08-10-2020	27.4 .b	1	-	1	-	2	5	2	3	-	-	-	1	33	65	48
042_BYDR07_4B_WHG_B_2020100810024	295	08-10-2020	27.4 .b	2	-	1	-	1	5	3	3	-	-	-	1	33	61	47
043_BYDR07_4B_WHG_B_2020100810025	287	08-10-2020	27.4 .b	2	-	1	-	1	4	3	3	-	-	-	1	33	52	43
044_BYDR07_4B_WHG_B_2020100810026	219	08-10-2020	27.4 .b	1	-	1	-	1	2	1	2	-	-	-	1	67	39	33
045_BYDR07_4B_WHG_B_2020100810027	244	08-10-2020	27.4 .b	1	-	1	-	1	2	1	1	-	-	-	1	83	35	24
046_BYDR07_4B_WHG_B_2020100810031	255	08-10-2020	27.4 .b	1	-	1	-	0	3	1	2	-	-	-	1	50	77	58
047_BYDR07_4B_WHG_B_2020100810037	312	08-10-2020	27.4 .b	3	-	2	-	2	4	3	4	-	-	-	2	33	30	22
048_BYDR07_4B_WHG_B_2020100810051	279	08-10-2020	27.4 .b	3	-	1	-	1	4	3	3	-	-	-	3	50	49	40
049_BYDR07_4B_WHG_L_2020100810063	356	08-10-2020	27.4 .b	5	-	4	-	3	6	5	5	-	-	-	5	50	22	17
050_BYDR07_4B_WHG_L_2020100810065	475	08-10-2020	27.4 .b	4	-	3	-	3	8	4	5	-	-	-	3	33	42	30
051_BYDR09_4B_WHG_D_2020121010104	297	10-12-2020	27.4 .b	6	-	-	-	-	-	-	-	-	-	-	6	100	-	0
051_BYDR09_4B_WHG_D_2020121010104	297	10-12-2020	27.4 .b	-	-	4	-	4	7	6	6	-	-	-	6	40	25	21
052_BYDR09_4B_WHG_L_2020121010135	424	10-12-2020	27.4 .b	6	-	6	-	6	7	5	6	-	-	-	6	67	11	6
053_BYDR09_4B_WHG_L_2020121010136	357	10-12-2020	27.4 .b	6	-	5	-	5	7	6	7	-	-	-	5	33	15	11
054_CDDR01_7D_WHG_D_2020022410003	278	24-02-2020	27.7 .d	2	-	2	-	2	3	2	3	-	-	-	2	67	22	19
055_CDDR01_7D_WHG_D_2020022410005	264	24-02-2020	27.7 .d	2	-	2	-	2	3	2	3	-	-	-	2	67	22	19
056_CDDR01_7D_WHG_D_2020022410031	230	24-02-2020	27.7 .d	1	-	1	-	1	2	1	2	-	-	-	1	67	39	33
057_CDDR01_7D_WHG_D_2020022410036	235	24-02-2020	27.7 .d	1	-	1	-	1	2	1	2	-	-	-	1	67	39	33
058_CDDR01_7D_WHG_L_2020022410043	304	24-02-2020	27.7 .d	5	-	5	-	5	6	5	6	-	-	-	5	67	10	8
059_CDDR01_7D_WHG_L_2020022410048	377	24-02-2020	27.7 .d	4	-	4	-	4	7	4	6	-	-	-	4	67	27	23

Fish ID	length	Catch date	ICES are a	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE	Modal age	PA %	CV %	APE %
060_CDDR01_7D_WHG_L_2020022410049	353	24-02-2020	27.7 .d	4	-	4	-	4	5	4	5	-	-	-	4	67	12	10
061_CDDR01_7D_WHG_L_2020022410069	359	24-02-2020	27.7 .d	5	-	5	-	5	6	5	5	-	-	-	5	83	8	5
062_CDDR02_7D_WHG_D_2020030110003	221	31-03-2020	27.7 .d	2	-	2	-	2	3	2	3	-	-	-	2	67	22	19
063_CDDR02_7D_WHG_D_2020030110006	232	31-03-2020	27.7 .d	2	-	2	-	2	3	2	3	-	-	-	2	67	22	19
064_CDDR02_7D_WHG_D_2020030110012	255	31-03-2020	27.7 .d	4	-	3	-	3	5	3	5	-	-	-	3	50	26	22
065_CDDR02_7D_WHG_L_2020030110046	285	31-03-2020	27.7 .d	4	-	4	-	4	5	4	5	-	-	-	4	67	12	10
066_CDDR02_7D_WHG_L_2020030110055	466	31-03-2020	27.7 .d	5	-	5	-	5	6	5	5	-	-	-	5	83	8	5
067_CDDR05_4B_WHG_L_2021110510177	320	05-11-2021	27.4 .b	6	-	5	-	5	6	6	6	-	-	-	6	67	9	8
068_CDDR06_4B_WHG_L_2021111210168	445	05-11-2021	27.4 .b	6	-	6	-	6	7	6	6	-	-	-	6	83	7	5
069_CDDR06_7D_WHG_D_2020081010001	256	10-08-2020	27.7 .d	1	-	1	-	1	3	1	-	-	-	-	1	80	64	46
070_CDDR06_7D_WHG_D_2020081010002	216	10-08-2020	27.7 .d	1	-	1	-	1	1	1	2	-	-	-	1	83	35	24
071_CDDR06_7D_WHG_D_2020081010017	274	10-08-2020	27.7 .d	2	-	1	-	2	3	2	3	-	-	-	2	50	35	26
072_CDDR06_7D_WHG_D_2020081010018	266	10-08-2020	27.7 .d	2	-	1	-	1	3	1	3	-	-	-	1	50	54	45
073_CNVE03_7D_WHG_D_2021120910163	281	09-12-2021	27.7 .d	2	-	1	-	1	3	2	3	-	-	-	1	33	45	33
074_CNVE03_7D_WHG_D_2021120910164	327	09-12-2021	27.7 .d	1	-	1	-	1	3	1	3	-	-	-	1	67	62	53
075_CNVE03_7D_WHG_D_2021120910165	324	09-12-2021	27.7 .d	1	-	1	-	1	-	1	-	-	-	-	1	100	0	0
076_CNVE03_7D_WHG_D_2021120910166	310	09-12-2021	27.7 .d	2	-	2	-	2	5	3	5	-	-	-	2	50	46	39
077_PRVN02_7D_WHG_L_2020021710214	320	17-02-2020	27.7 .d	5	-	3	-	3	5	4	5	-	-	-	5	50	24	20
078_PTCT01_7D_WHG_D_2021062110013	243	21-06-2021	27.7 .d	2	-	2	-	2	3	2	2	-	-	-	2	83	19	13
079_PTCT01_7D_WHG_D_2021062110014	222	21-06-2021	27.7 .d	1	-	1	-	2	3	1	2	-	-	-	1	50	49	40
080_PTCT01_7D_WHG_D_2021062110015	254	21-06-2021	27.7 .d	1	-	1	-	1	3	1	2	-	-	-	1	67	56	44
081_PTCT01_7D_WHG_D_2021062110018	234	21-06-2021	27.7 .d	1	-	1	-	1	3	1	2	-	-	-	1	67	56	44
082_PTCT01_7D_WHG_D_2021062110020	297	21-06-2021	27.7 .d	2	-	2	-	2	3	3	3	-	-	-	2	50	22	20
083_PTCT01_7D_WHG_L_2021062110048	284	21-06-2021	27.7 .d	3	-	3	-	3	4	3	4	-	-	-	3	67	15	13
084_PTCT03_4C_WHG_D_2020042710013	212	27-04-2020	27.4 .c	2	-	1	-	1	2	2	2	-	-	-	2	67	31	27
085_PTCT03_4C_WHG_D_2020042710014	203	27-04-2020	27.4 .c	1	-	1	-	1	2	1	2	-	-	-	1	67	39	33
086_PTCT03_4C_WHG_D_2020042710015	244	27-04-2020	27.4 .c	2	-	2	-	2	3	2	3	-	-	-	2	67	22	19
087_PTCT03_4C_WHG_D_2020042710017	217	27-04-2020	27.4 .c	1	-	1	-	1	2	2	2	-	-	-	1	50	37	33
088_PTCT03_4C_WHG_D_2020042710019	276	27-04-2020	27.4 .c	3	-	3	-	3	4	3	4	-	-	-	3	67	15	13
089_PTCT03_4C_WHG_D_2020042710021	289	27-04-2020	27.4 .c	5	-	5	-	5	6	6	6	-	-	-	5	50	10	9
090_PTCT03_4C_WHG_D_2020042710023	269	27-04-2020	27.4 .c	4	-	3	-	4	5	4	5	-	-	-	4	50	18	13
091_PTCT03_4C_WHG_D_2020042710026	229	27-04-2020	27.4 .c	2	-	2	-	2	2	3	2	-	-	-	2	83	19	13
092_PTCT03_4C_WHG_D_2020042710027	275	27-04-2020	27.4 .c	3	-	3	-	3	4	3	4	-	-	-	3	67	15	13
093_PTCT03_4C_WHG_D_2020042710045	258	27-04-2020	27.4 .c	4	-	4	-	4	5	5	5	-	-	-	4	50	12	11
094_PTCT03_4C_WHG_D_2020042710047	242	27-04-2020	27.4 .c	4	-	4	-	4	4	4	4	-	-	-	4	100	0	0
095_PTCT03_4C_WHG_D_2020042710054	247	27-04-2020	27.4 .c	4	-	4	-	4	5	5	5	-	-	-	4	50	12	11
096_PTCT03_4C_WHG_L_2020042710079	319	27-04-2020	27.4 .c	4	-	4	-	4	5	4	5	-	-	-	4	67	12	10
097_PTCT03_4C_WHG_L_2020042710091	322	27-04-2020	27.4 .c	4	-	4	-	4	6	4	6	-	-	-	4	67	22	19

Fish ID	length	Catch date	ICES are a	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE	Modal age	PA %	CV %	APE %
22MERLMNG002-0076-ST	340	18-05-2022	27.7 .d	6	-	6	-	6	9	7	9	-	-	-	6	50	21	17
22MERLMNG002-0231-ST	320	19-08-2022	27.7 .d	4	-	4	-	4	-	4	5	-	-	-	4	80	11	8
22MERLMNG004-0205-ST	173	23-01-2022	27.4 .b	1	-	1	-	1	1	1	2	-	-	-	1	83	35	24
22MERLMNG004-0206-ST	167	23-01-2022	27.4 .b	1	-	1	-	1	1	1	1	-	-	-	1	100	0	0
22MERLMNG004-0214-ST	261	23-01-2022	27.4 .b	3	-	3	-	3	3	3	3	-	-	-	3	100	0	0
22MERLMNG004-0215-ST	228	23-01-2022	27.4 .b	2	-	2	-	2	2	2	2	-	-	-	2	100	0	0
22MERLMNG004-0238-ST	265	23-01-2022	27.4 .b	2	-	2	-	2	3	2	3	-	-	-	2	67	22	19
22MERLMNG004-0339-ST	313	26-01-2022	27.4 .b	4	-	4	-	4	4	4	4	-	-	-	4	100	0	0
22MERLMNG004-0340-ST	301	26-01-2022	27.4 .b	3	-	3	-	3	3	3	3	-	-	-	3	100	0	0
22MERLMNG004-0463-ST	307	28-01-2022	27.4 .c	6	-	6	-	6	8	6	8	-	-	-	6	67	15	13
22MERLMNG004-0657-ST	312	03-02-2022	27.4 .b	6	-	5	-	5	6	5	6	-	-	-	5	50	10	9
22MERLMNG004-0675-ST	311	04-02-2022	27.4 .b	7	-	6	-	6	7	6	7	-	-	-	6	50	8	8
22MERLMNG004-0677-ST	354	04-02-2022	27.4 .b	6	-	6	-	6	7	6	7	-	-	-	6	67	8	7
22MERLMNG004-0679-ST	372	04-02-2022	27.4 .b	4	-	4	-	4	7	4	6	-	-	-	4	67	27	23
22MERLMNG004-0732-ST	286	05-02-2022	27.4 .b	7	-	6	-	6	7	6	6	-	-	-	6	67	8	7
23MERLMNG001-0042-ST	310	02-06-2023	27.4 .b	4	-	4	-	4	5	4	5	-	-	-	4	67	12	10
23MERLMNG001-0043-ST	320	02-06-2023	27.4 .b	4	-	3	-	3	6	3	6	-	-	-	3	50	35	29
23MERLMNG001-0044-ST	310	02-06-2023	27.4 .b	3	-	3	-	3	5	3	5	-	-	-	3	67	28	24
23MERLMNG001-0050-ST	290	02-06-2023	27.4 .b	3	-	2	-	2	4	2	4	-	-	-	2	50	35	29
23MERLMNG001-0053-ST	320	02-06-2023	27.4 .b	4	-	4	-	4	7	4	6	-	-	-	4	67	27	23
23MERLMNG001-0064-ST	320	02-06-2023	27.4 .b	5	-	6	-	6	7	5	6	-	-	-	6	50	13	10
23MERLMNG001-0065-ST	290	02-06-2023	27.4 .b	5	-	5	-	5	6	5	5	-	-	-	5	83	8	5
23MERLMNG001-0079-ST	300	02-06-2023	27.4 .b	2	-	2	-	2	6	2	4	-	-	-	2	67	56	44
23MERLMNG001-0125-ST	330	08-09-2023	27.7 .d	3	-	3	-	3	4	3	3	-	-	-	3	83	13	9
23MERLMNG001-0132-ST	360	08-09-2023	27.7 .d	3	-	3	-	3	3	3	5	-	-	-	3	83	24	17
23MERLMNG001-0136-ST	370	08-09-2023	27.7 .d	4	-	4	-	4	5	4	5	-	-	-	4	67	12	10
23MERLMNG052-0257-ST	295	02-10-2023	27.7 .d	3	-	3	-	3	4	3	4	-	-	-	3	67	15	13
23MERLMNG052-0302-ST	303	03-10-2023	27.7 .d	5	-	5	-	5	5	5	6	-	-	-	5	83	8	5
23MERLMNG052-0363-ST	325	14-10-2023	27.7 .d	3	-	3	-	3	4	3	5	-	-	-	3	67	24	19
24MERLMNG001-0086-ST	320	22-05-2024	27.7 .d	4	-	4	-	4	6	4	6	-	-	-	4	67	22	19
24MERLMNG001-0089-ST	280	22-05-2024	27.7 .d	4	-	4	-	4	4	4	5	-	-	-	4	83	10	7
24MERLMNG001-0094-ST	310	22-05-2024	27.7 .d	5	-	5	-	5	6	5	6	-	-	-	5	67	10	8
24MERLMNG001-0138-ST	300	22-05-2024	27.7 .d	5	-	6	-	5	7	6	7	-	-	-	5	33	15	11
24MERLMNG001-0148-ST	300	04-09-2024	27.4 .c	1	-	2	-	2	3	1	3	-	-	-	2	33	45	33
24MERLMNG001-0149-ST	300	04-09-2024	27.4 .c	1	-	2	-	2	3	1	3	-	-	-	2	33	45	33
24MERLMNG001-0151-ST	320	04-09-2024	27.4 .c	4	-	3	-	3	5	2	5	-	-	-	3	33	33	27
24MERLMNG001-0159-ST	280	04-09-2024	27.4 .c	3	-	2	-	2	4	2	3	-	-	-	2	50	31	25
24MERLMNG001-0168-ST	290	04-09-2024	27.4 .c	3	-	3	-	3	4	3	4	-	-	-	3	67	15	13

Fish ID	length	Catch date	ICES are a	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE	Modal age	PA %	CV %	APE %
24MERLMNG001-0191-ST	330	04-09-2024	27.4 .c	6	-	5	-	5	5	5	6	-	-	-	5	67	10	8
24MERLMNG001-0205-ST	310	04-09-2024	27.4 .c	3	-	3	-	3	4	3	4	-	-	-	3	67	15	13
24MERLMNG051-0062-ST	196	23-01-2024	27.4 .c	1	-	1	-	1	1	1	2	-	-	-	1	83	35	24
24MERLMNG051-0068-ST	207	23-01-2024	27.4 .c	1	-	1	-	1	-	1	-	-	-	-	1	100	0	0
24MERLMNG051-0073-ST	369	23-01-2024	27.4 .c	3	-	3	-	3	4	3	4	-	-	-	3	67	15	13
24MERLMNG051-0077-ST	235	24-01-2024	27.4 .c	2	-	2	-	2	0	2	2	-	-	-	2	83	49	33
24MERLMNG051-0096-ST	260	24-01-2024	27.4 .c	3	-	2	-	3	3	3	3	-	-	-	3	83	14	10
24MERLMNG051-0395-ST	360	07-02-2024	27.4 .c	3	-	3	-	2	4	3	5	-	-	-	3	50	31	23
25MERLMNG051-0073-ST	332	21-01-2025	27.4 .c	6	-	6	-	6	6	6	7	-	-	-	6	83	7	5
25MERLMNG051-0226-ST	315	29-01-2025	27.4 .c	4	-	4	-	4	5	4	5	-	-	-	4	67	12	10
25MERLMNG051-0367-ST	296	03-02-2025	27.4 .c	6	-	6	-	6	6	5	7	-	-	-	6	67	11	6
25MERLMNG051-0425-ST	298	05-02-2025	27.4 .c	5	-	4	-	4	5	5	5	-	-	-	5	67	11	10
8805292_BRX_UB.jpg	340	17-01-2024	27.4 .a	-	5	-	-	-	-	-	-	-	5	7	5	67	20	16
8805292_BRX_UB.jpg	340	17-01-2024	27.4 .a	-	-	-	4	-	-	-	-	-	-	-	5	0	-	0
8805293_BRX_UB.jpg	380	17-01-2024	27.4 .a	-	-	-	-	-	-	-	-	-	4	3	3	50	20	14
8805293_BRX_UB.jpg	380	17-01-2024	27.4 .a	-	-	-	3	-	-	-	-	-	-	-	3	100	-	0
8805294_BRX_UB.jpg	270	17-01-2024	27.4 .a	-	4	-	-	-	-	-	-	2	3	3	3	50	27	17
8805294_BRX_UB.jpg	270	17-01-2024	27.4 .a	-	-	-	3	-	-	-	-	-	-	-	3	100	-	0
8805295_BRX_UB.jpg	260	17-01-2024	27.4 .a	-	3	-	-	-	-	-	-	-	3	3	3	100	0	0
8805295_BRX_UB.jpg	260	17-01-2024	27.4 .a	-	-	-	3	-	-	-	-	-	-	-	3	100	-	0
8805832_BRX_UB.jpg	180	16-01-2024	27.4 .b	-	2	-	-	-	-	-	-	2	2	2	2	100	0	0
8805832_BRX_UB.jpg	180	16-01-2024	27.4 .b	-	-	-	2	-	-	-	-	-	-	-	2	100	-	0
8805833_BRX_UB.jpg	310	16-01-2024	27.4 .b	-	5	-	-	-	-	-	-	5	5	4	5	75	11	8
8805833_BRX_UB.jpg	310	16-01-2024	27.4 .b	-	-	-	4	-	-	-	-	-	-	-	5	0	-	0
8805834_BRX_UB.jpg	350	16-01-2024	27.4 .b	-	6	-	-	-	-	-	-	6	6	6	6	100	0	0
8805834_BRX_UB.jpg	350	16-01-2024	27.4 .b	-	-	-	5	-	-	-	-	-	-	-	6	0	-	0
8805835_BRX_UB.jpg	340	16-01-2024	27.4 .b	-	-	-	-	-	-	-	-	3	4	3	4	33	17	13
8805835_BRX_UB.jpg	340	16-01-2024	27.4 .b	-	-	-	4	-	-	-	-	-	-	-	4	100	-	0
8826851_BRX_UB.jpg	180	11-02-2024	27.4 .c	-	2	-	-	-	-	-	-	2	1	1	1	50	38	33
8826851_BRX_UB.jpg	180	11-02-2024	27.4 .c	-	-	-	1	-	-	-	-	-	-	-	1	100	-	0
8826855_BRX_UB.jpg	220	11-02-2024	27.4 .c	-	2	-	-	-	-	-	-	2	1	2	2	75	29	21
8826855_BRX_UB.jpg	220	11-02-2024	27.4 .c	-	-	-	1	-	-	-	-	-	-	-	2	0	-	0
8826856_BRX_UB.jpg	190	11-02-2024	27.4 .c	-	2	-	-	-	-	-	-	2	1	2	2	75	29	21
8826856_BRX_UB.jpg	190	11-02-2024	27.4 .c	-	-	-	2	-	-	-	-	-	-	-	2	100	-	0
8826857_BRX_UB.jpg	190	11-02-2024	27.4 .c	-	1	-	-	-	-	-	-	1	1	2	1	75	40	30
8826857_BRX_UB.jpg	190	11-02-2024	27.4 .c	-	-	-	1	-	-	-	-	-	-	-	1	100	-	0
8826858_BRX_UB.jpg	230	11-02-2024	27.4 .c	-	2	-	-	-	-	-	-	2	2	2	2	100	0	0
8826858_BRX_UB.jpg	230	11-02-2024	27.4 .c	-	-	-	2	-	-	-	-	-	-	-	2	100	-	0

Fish ID	length	Catch date	ICES are a	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE	Modal age	PA %	CV %	APE %
8826859_BRX_UB.jpg	200	11-02-2024	27.4 .c	-	1	-	-	-	-	-	-	1	1	1	1	100	0	0
8826859_BRX_UB.jpg	200	11-02-2024	27.4 .c	-	-	-	1	-	-	-	-	-	-	-	1	100	-	0
8863158_BRX_UB.jpg	210	17-05-2024	27.4 .b	-	2	-	-	-	-	-	-	2	1	2	2	75	29	21
8863158_BRX_UB.jpg	210	17-05-2024	27.4 .b	-	-	-	2	-	-	-	-	-	-	-	2	100	-	0
8863159_BRX_UB.jpg	280	17-05-2024	27.4 .b	-	-	-	-	-	-	-	-	-	3	2	2	50	28	20
8863159_BRX_UB.jpg	280	17-05-2024	27.4 .b	-	-	-	2	-	-	-	-	-	-	-	2	100	-	0
8863413_BRX_UB.jpg	230	17-05-2024	27.4 .a	-	2	-	-	-	-	-	-	2	2	1	2	75	29	21
8863413_BRX_UB.jpg	230	17-05-2024	27.4 .a	-	-	-	2	-	-	-	-	-	-	-	2	100	-	0
8863414_BRX_UB.jpg	300	17-05-2024	27.4 .a	-	4	-	-	-	-	-	-	4	4	4	4	100	0	0
8863414_BRX_UB.jpg	300	17-05-2024	27.4 .a	-	-	-	3	-	-	-	-	-	-	-	4	0	-	0
8863415_BRX_UB.jpg	310	17-05-2024	27.4 .a	-	4	-	-	-	-	-	-	4	3	3	3	50	16	14
8863415_BRX_UB.jpg	310	17-05-2024	27.4 .a	-	-	-	3	-	-	-	-	-	-	-	3	100	-	0
8863416_BRX_UB.jpg	340	17-05-2024	27.4 .a	-	4	-	-	-	-	-	-	4	3	3	3	50	16	14
8863416_BRX_UB.jpg	340	17-05-2024	27.4 .a	-	-	-	3	-	-	-	-	-	-	-	3	100	-	0
8863417_BRX_UB.jpg	350	17-05-2024	27.4 .a	-	5	-	-	-	-	-	-	5	4	5	5	75	11	8
8863417_BRX_UB.jpg	350	17-05-2024	27.4 .a	-	-	-	4	-	-	-	-	-	-	-	5	0	-	0
8870400_BRX_UB.jpg	320	29-05-2024	27.4 .a	-	6	-	-	-	-	-	-	6	5	5	6	50	10	9
8870400_BRX_UB.jpg	320	29-05-2024	27.4 .a	-	-	-	3	-	-	-	-	-	-	-	6	0	-	0
8870401_BRX_UB.jpg	320	29-05-2024	27.4 .a	-	-	-	-	-	-	-	-	-	-	5	3	0	-	0
8870401_BRX_UB.jpg	320	29-05-2024	27.4 .a	-	-	-	3	-	-	-	-	-	-	-	3	100	-	0
8870402_BRX_UB.jpg	380	29-05-2024	27.4 .a	-	5	-	-	-	-	-	-	5	4	4	4	50	13	11
8870402_BRX_UB.jpg	380	29-05-2024	27.4 .a	-	-	-	4	-	-	-	-	-	-	-	4	100	-	0
8870403_BRX_UB.jpg	310	29-05-2024	27.4 .a	-	3	-	-	-	-	-	-	3	2	3	3	75	18	14
8870403_BRX_UB.jpg	310	29-05-2024	27.4 .a	-	-	-	3	-	-	-	-	-	-	-	3	100	-	0
8870404_BRX_UB.jpg	290	29-05-2024	27.4 .a	-	3	-	-	-	-	-	-	2	-	3	3	67	22	17
8870404_BRX_UB.jpg	290	29-05-2024	27.4 .a	-	-	-	3	-	-	-	-	-	-	-	3	100	-	0
8870405_BRX_UB.jpg	330	29-05-2024	27.4 .a	-	4	-	-	-	-	-	-	3	3	-	4	33	17	13
8870405_BRX_UB.jpg	330	29-05-2024	27.4 .a	-	-	-	4	-	-	-	-	-	-	4	4	100	0	0
8870479_BRX_UB.jpg	340	30-05-2024	27.4 .a	-	5	-	-	-	-	-	-	4	4	5	4	50	13	11
8870479_BRX_UB.jpg	340	30-05-2024	27.4 .a	-	-	-	4	-	-	-	-	-	-	-	4	100	-	0
8870480_BRX_UB.jpg	330	30-05-2024	27.4 .a	-	7	-	-	-	-	-	-	-	-	5	7	50	24	17
8870481_BRX_UB.jpg	330	30-05-2024	27.4 .a	-	5	-	-	-	-	-	-	-	4	4	4	67	13	10
8870481_BRX_UB.jpg	330	30-05-2024	27.4 .a	-	-	-	4	-	-	-	-	-	-	-	4	100	-	0
8870575_BRX_UB.jpg	340	30-05-2024	27.4 .a	-	4	-	-	-	-	-	-	-	4	3	4	67	16	12
8870575_BRX_UB.jpg	340	30-05-2024	27.4 .a	-	-	-	4	-	-	-	-	-	-	-	4	100	-	0
8888858_BRX_UB.jpg	450	23-08-2024	27.4 .b	-	6	-	-	-	-	-	-	-	4	4	4	67	25	19
8888858_BRX_UB.jpg	450	23-08-2024	27.4 .b	-	-	-	4	-	-	-	-	-	-	-	4	100	-	0
8888859_BRX_UB.jpg	330	23-08-2024	27.4 .b	-	5	-	-	-	-	-	-	-	3	3	3	67	31	24

Fish ID	length	Catch date	ICES are a	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE	Modal age	PA %	CV %	APE %
8888860_BRX_UB.jpg	360	23-08-2024	27.4 .b	-	4	-	-	-	-	-	-	-	4	4	4	100	0	0
8888860_BRX_UB.jpg	360	23-08-2024	27.4 .b	-	-	-	4	-	-	-	-	-	-	-	4	100	-	0
8888861_BRX_UB.jpg	440	23-08-2024	27.4 .b	-	4	-	-	-	-	-	-	3	4	-	4	67	16	12
8888861_BRX_UB.jpg	440	23-08-2024	27.4 .b	-	-	-	4	-	-	-	-	-	-	-	4	100	-	0
8888862_BRX_UB.jpg	400	23-08-2024	27.4 .b	-	4	-	-	-	-	-	-	3	5	-	4	33	25	17
8888862_BRX_UB.jpg	400	23-08-2024	27.4 .b	-	-	-	4	-	-	-	-	-	-	-	4	100	-	0
8888863_BRX_UB.jpg	310	23-08-2024	27.4 .b	-	4	-	-	-	-	-	-	3	4	3	4	50	16	14
8892849_BRX_UB.jpg	140	24-08-2024	27.4 .b	-	1	-	-	-	-	-	-	1	1	1	1	100	0	0
8892849_BRX_UB.jpg	140	24-08-2024	27.4 .b	-	-	-	1	-	-	-	-	-	-	-	1	100	-	0
8892850_BRX_UB.jpg	180	24-08-2024	27.4 .b	-	1	-	-	-	-	-	-	1	1	1	1	100	0	0
8892850_BRX_UB.jpg	180	24-08-2024	27.4 .b	-	-	-	1	-	-	-	-	-	-	-	1	100	-	0
8904658_BRX_UB.jpg	300	05-09-2024	27.4 .c	-	4	-	-	-	-	-	-	-	3	3	3	67	17	13
8904658_BRX_UB.jpg	300	05-09-2024	27.4 .c	-	-	-	2	-	-	-	-	-	-	-	3	0	-	0
8904659_BRX_UB.jpg	300	05-09-2024	27.4 .c	-	4	-	-	-	-	-	-	3	4	4	4	75	13	10
8904659_BRX_UB.jpg	300	05-09-2024	27.4 .c	-	-	-	3	-	-	-	-	-	-	-	4	0	-	0
8904660_BRX_UB.jpg	280	05-09-2024	27.4 .c	-	2	-	-	-	-	-	-	2	1	2	2	75	29	21
8904660_BRX_UB.jpg	280	05-09-2024	27.4 .c	-	-	-	1	-	-	-	-	-	-	-	2	0	-	0
8904661_BRX_UB.jpg	340	05-09-2024	27.4 .c	-	5	-	-	-	-	-	-	5	5	5	5	100	0	0
8904661_BRX_UB.jpg	340	05-09-2024	27.4 .c	-	-	-	4	-	-	-	-	-	-	-	5	0	-	0
8904662_BRX_UB.jpg	320	05-09-2024	27.4 .c	-	5	-	-	-	-	-	-	5	-	5	5	100	0	0
8904662_BRX_UB.jpg	320	05-09-2024	27.4 .c	-	-	-	4	-	-	-	-	-	-	-	5	0	-	0
8904663_BRX_UB.jpg	350	05-09-2024	27.4 .c	-	4	-	-	-	-	-	-	-	3	4	4	67	16	12
8904663_BRX_UB.jpg	350	05-09-2024	27.4 .c	-	-	-	4	-	-	-	-	-	-	-	4	100	-	0
8904664_BRX_UB.jpg	340	05-09-2024	27.4 .c	-	4	-	-	-	-	-	-	4	4	4	4	100	0	0
8904664_BRX_UB.jpg	340	05-09-2024	27.4 .c	-	-	-	4	-	-	-	-	-	-	-	4	100	-	0
8904665_BRX_UB.jpg	350	05-09-2024	27.4 .c	-	4	-	-	-	-	-	-	4	4	4	4	100	0	0
8904665_BRX_UB.jpg	350	05-09-2024	27.4 .c	-	-	-	4	-	-	-	-	-	-	-	4	100	-	0
8904666_BRX_UB.jpg	310	05-09-2024	27.4 .c	-	4	-	-	-	-	-	-	4	4	5	4	75	12	9
8904666_BRX_UB.jpg	310	05-09-2024	27.4 .c	-	-	-	3	-	-	-	-	-	-	-	4	0	-	0
8904667_BRX_UB.jpg	290	05-09-2024	27.4 .c	-	3	-	-	-	-	-	-	3	4	4	3	50	16	14
8904667_BRX_UB.jpg	290	05-09-2024	27.4 .c	-	-	-	3	-	-	-	-	-	-	-	3	100	-	0
8904668_BRX_UB.jpg	320	05-09-2024	27.4 .c	-	3	-	-	-	-	-	-	3	3	3	3	100	0	0
8904668_BRX_UB.jpg	320	05-09-2024	27.4 .c	-	-	-	3	-	-	-	-	-	-	-	3	100	-	0
8904669_BRX_UB.jpg	260	05-09-2024	27.4 .c	-	2	-	-	-	-	-	-	1	2	2	2	75	29	21
8904669_BRX_UB.jpg	260	05-09-2024	27.4 .c	-	-	-	2	-	-	-	-	-	-	-	2	100	-	0
8904670_BRX_UB.jpg	240	05-09-2024	27.4 .c	-	2	-	-	-	-	-	-	2	1	2	2	75	29	21
8904670_BRX_UB.jpg	240	05-09-2024	27.4 .c	-	-	-	1	-	-	-	-	-	-	-	2	0	-	0
8904671_BRX_UB.jpg	330	05-09-2024	27.4 .c	-	3	-	-	-	-	-	-	2	3	4	3	50	27	17

Fish ID	length	Catch date	ICES are a	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE	Modal age	PA %	CV %	APE %
8904671_BRX_UB.jpg	330	05-09-2024	27.4 .c	-	-	-	3	-	-	-	-	-	-	-	3	100	-	0
8904672_BRX_UB.jpg	310	05-09-2024	27.4 .c	-	5	-	-	-	-	-	-	4	4	-	4	67	13	10
8904672_BRX_UB.jpg	310	05-09-2024	27.4 .c	-	-	-	4	-	-	-	-	-	-	5	4	50	16	11
8904673_BRX_UB.jpg	330	05-09-2024	27.4 .c	-	3	-	-	-	-	-	-	2	3	2	3	50	23	20
8904673_BRX_UB.jpg	330	05-09-2024	27.4 .c	-	-	-	3	-	-	-	-	-	-	-	3	100	-	0
8929120_BRX_UB.jpg	360	06-10-2024	27.4 .a	-	3	-	-	-	-	-	-	-	3	-	3	100	0	0
8929120_BRX_UB.jpg	360	06-10-2024	27.4 .a	-	-	-	3	-	-	-	-	-	-	4	3	50	20	14
8929121_BRX_UB.jpg	370	06-10-2024	27.4 .a	-	7	-	-	-	-	-	-	6	4	5	4	25	23	18
8929121_BRX_UB.jpg	370	06-10-2024	27.4 .a	-	-	-	4	-	-	-	-	-	-	-	4	100	-	0
8929122_BRX_UB.jpg	300	06-10-2024	27.4 .a	-	4	-	-	-	-	-	-	3	3	3	3	75	15	12
8929122_BRX_UB.jpg	300	06-10-2024	27.4 .a	-	-	-	3	-	-	-	-	-	-	-	3	100	-	0
8929123_BRX_UB.jpg	380	06-10-2024	27.4 .a	-	5	-	-	-	-	-	-	-	-	7	5	50	24	17
8929123_BRX_UB.jpg	380	06-10-2024	27.4 .a	-	-	-	4	-	-	-	-	-	-	-	5	0	-	0
8929124_BRX_UB.jpg	380	06-10-2024	27.4 .a	-	5	-	-	-	-	-	-	7	4	-	5	33	29	21
8929124_BRX_UB.jpg	380	06-10-2024	27.4 .a	-	-	-	4	-	-	-	-	-	-	5	5	50	16	11
8929125_BRX_UB.jpg	320	06-10-2024	27.4 .a	-	4	-	-	-	-	-	-	4	4	4	4	100	0	0
8929125_BRX_UB.jpg	320	06-10-2024	27.4 .a	-	-	-	4	-	-	-	-	-	-	-	4	100	-	0
8929126_BRX_UB.jpg	350	06-10-2024	27.4 .a	-	4	-	-	-	-	-	-	-	4	-	4	100	0	0
8929126_BRX_UB.jpg	350	06-10-2024	27.4 .a	-	-	-	4	-	-	-	-	-	-	6	4	50	28	20
8933414_BRX_UB.jpg	270	08-10-2024	27.4 .b	-	4	-	-	-	-	-	-	1	2	2	1	25	56	39
8933414_BRX_UB.jpg	270	08-10-2024	27.4 .b	-	-	-	1	-	-	-	-	-	-	-	1	100	-	0
8933415_BRX_UB.jpg	210	08-10-2024	27.4 .b	-	2	-	-	-	-	-	-	1	3	-	2	33	50	33
8933415_BRX_UB.jpg	210	08-10-2024	27.4 .b	-	-	-	1	-	-	-	-	-	-	2	2	50	47	33
8969390_BRX_UB.jpg	300	27-11-2024	27.4 .b	-	4	-	-	-	-	-	-	-	3	-	4	50	20	14
8969390_BRX_UB.jpg	300	27-11-2024	27.4 .b	-	-	-	3	-	-	-	-	-	-	4	4	50	20	14
8969391_BRX_UB.jpg	300	27-11-2024	27.4 .b	-	2	-	-	-	-	-	-	2	2	-	2	100	0	0
8969391_BRX_UB.jpg	300	27-11-2024	27.4 .b	-	-	-	2	-	-	-	-	-	-	3	2	50	28	20
8969392_BRX_UB.jpg	300	27-11-2024	27.4 .b	-	4	-	-	-	-	-	-	4	5	-	4	67	13	10
8969392_BRX_UB.jpg	300	27-11-2024	27.4 .b	-	-	-	4	-	-	-	-	-	-	5	4	50	16	11
8969393_BRX_UB.jpg	310	27-11-2024	27.4 .b	-	5	-	-	-	-	-	-	-	2	2	2	67	58	44
8969393_BRX_UB.jpg	310	27-11-2024	27.4 .b	-	-	-	2	-	-	-	-	-	-	-	2	100	-	0
8969394_BRX_UB.jpg	310	27-11-2024	27.4 .b	-	5	-	-	-	-	-	-	-	2	3	2	33	46	33
8969394_BRX_UB.jpg	310	27-11-2024	27.4 .b	-	-	-	2	-	-	-	-	-	-	-	2	100	-	0
8969395_BRX_UB.jpg	310	27-11-2024	27.4 .b	-	5	-	-	-	-	-	-	-	4	-	4	50	16	11
8969395_BRX_UB.jpg	310	27-11-2024	27.4 .b	-	-	-	4	-	-	-	-	-	-	4	4	100	0	0
8969396_BRX_UB.jpg	330	27-11-2024	27.4 .b	-	4	-	-	-	-	-	-	4	3	4	4	75	13	10
8969396_BRX_UB.jpg	330	27-11-2024	27.4 .b	-	-	-	2	-	-	-	-	-	-	-	4	0	-	0
8974922_BRX_UB.jpg	310	01-12-2024	27.4 .a	-	3	-	-	-	-	-	-	3	2	-	2	33	22	17

Fish ID	length	Catch date	ICES are a	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE	Modal age	PA %	CV %	APE %
8974922_BRX_UB.jpg	310	01-12-2024	27.4.a	-	-	-	2	-	-	-	-	-	-	2	2	100	0	0
8974923_BRX_UB.jpg	280	01-12-2024	27.4.a	-	2	-	-	-	-	-	-	2	2	2	2	100	0	0
8974923_BRX_UB.jpg	280	01-12-2024	27.4.a	-	-	-	2	-	-	-	-	-	-	-	2	100	-	0
8974924_BRX_UB.jpg	380	01-12-2024	27.4.a	-	3	-	-	-	-	-	-	-	3	-	3	100	0	0
8974924_BRX_UB.jpg	380	01-12-2024	27.4.a	-	-	-	3	-	-	-	-	-	-	3	3	100	0	0
8995751_BRX_UB.jpg	330	11-01-2025	27.4.b	-	4	-	-	-	-	-	-	4	3	-	3	33	16	12
8995751_BRX_UB.jpg	330	11-01-2025	27.4.b	-	-	-	3	-	-	-	-	-	-	3	3	100	0	0
8995752_BRX_UB.jpg	290	11-01-2025	27.4.b	-	4	-	-	-	-	-	-	5	4	4	4	75	12	9
8995752_BRX_UB.jpg	290	11-01-2025	27.4.b	-	-	-	2	-	-	-	-	-	-	-	4	0	-	0
8995753_BRX_UB.jpg	240	11-01-2025	27.4.b	-	3	-	-	-	-	-	-	3	3	-	3	100	0	0
8995753_BRX_UB.jpg	240	11-01-2025	27.4.b	-	-	-	2	-	-	-	-	-	-	3	3	50	28	20
8995754_BRX_UB.jpg	250	11-01-2025	27.4.b	-	3	-	-	-	-	-	-	3	3	-	3	100	0	0
8995754_BRX_UB.jpg	250	11-01-2025	27.4.b	-	-	-	2	-	-	-	-	-	-	2	3	0	0	0
8995755_BRX_UB.jpg	200	11-01-2025	27.4.b	-	1	-	-	-	-	-	-	1	1	2	1	75	40	30
8995755_BRX_UB.jpg	200	11-01-2025	27.4.b	-	-	-	1	-	-	-	-	-	-	-	1	100	-	0
8995756_BRX_UB.jpg	280	11-01-2025	27.4.b	-	6	-	-	-	-	-	-	5	-	4	6	33	20	13
8995756_BRX_UB.jpg	280	11-01-2025	27.4.b	-	-	-	2	-	-	-	-	-	-	-	6	0	-	0
8995757_BRX_UB.jpg	180	11-01-2025	27.4.b	-	3	-	-	-	-	-	-	2	2	2	2	75	22	17
8995757_BRX_UB.jpg	180	11-01-2025	27.4.b	-	-	-	2	-	-	-	-	-	-	-	2	100	-	0
8995758_BRX_UB.jpg	150	11-01-2025	27.4.b	-	1	-	-	-	-	-	-	1	2	1	1	75	40	30
8995758_BRX_UB.jpg	150	11-01-2025	27.4.b	-	-	-	1	-	-	-	-	-	-	-	1	100	-	0
8997957_BRX_UB.jpg	270	15-01-2025	27.4.a	-	5	-	-	-	-	-	-	5	3	4	5	50	23	18
8997957_BRX_UB.jpg	270	15-01-2025	27.4.a	-	-	-	2	-	-	-	-	-	-	-	5	0	-	0
8997958_BRX_UB.jpg	250	15-01-2025	27.4.a	-	4	-	-	-	-	-	-	4	4	-	4	100	0	0
8997958_BRX_UB.jpg	250	15-01-2025	27.4.a	-	-	-	3	-	-	-	-	-	-	4	4	50	20	14
8997959_BRX_UB.jpg	280	15-01-2025	27.4.a	-	5	-	-	-	-	-	-	5	4	4	5	50	13	11
8997959_BRX_UB.jpg	280	15-01-2025	27.4.a	-	-	-	3	-	-	-	-	-	-	-	5	0	-	0
8997960_BRX_UB.jpg	240	15-01-2025	27.4.a	-	3	-	-	-	-	-	-	3	2	3	3	75	18	14
8997960_BRX_UB.jpg	240	15-01-2025	27.4.a	-	-	-	2	-	-	-	-	-	-	-	3	0	-	0
8997961_BRX_UB.jpg	170	15-01-2025	27.4.a	-	1	-	-	-	-	-	-	1	1	1	1	100	0	0
8997961_BRX_UB.jpg	170	15-01-2025	27.4.a	-	-	-	1	-	-	-	-	-	-	-	1	100	-	0
8997962_BRX_UB.jpg	190	15-01-2025	27.4.a	-	1	-	-	-	-	-	-	1	-	1	1	100	0	0
8997962_BRX_UB.jpg	190	15-01-2025	27.4.a	-	-	-	1	-	-	-	-	-	-	-	1	100	-	0
8998442_BRX_UB.jpg	320	16-01-2025	27.4.a	-	6	-	-	-	-	-	-	6	5	5	5	50	10	9
8998442_BRX_UB.jpg	320	16-01-2025	27.4.a	-	-	-	5	-	-	-	-	-	-	-	5	100	-	0
8998443_BRX_UB.jpg	390	16-01-2025	27.4.a	-	6	-	-	-	-	-	-	-	-	7	6	50	11	8
8998443_BRX_UB.jpg	390	16-01-2025	27.4.a	-	-	-	6	-	-	-	-	-	-	-	6	100	-	0

List of multimodal cases

Table 71: List of cases for which multiple modes were obtained when all readers are considered. The column NModes_trad shows the number of multiple modes for each FishID or sampleID when all readers are given the same expertise weight.

NModes_trad	SampleID
2	007_BYDR02_7D_WHG_L_ST_2020031110310
2	024_BYDR06_4B_WHG_D_ST_2020092610027
3	029_BYDR06_4B_WHG_D_ST_2020092610032
3	030_BYDR06_4B_WHG_D_ST_2020092610034
3	031_BYDR06_4B_WHG_D_ST_2020092610038
2	036_BYDR06_4B_WHG_D_ST_2020092610053
2	037_BYDR06_4B_WHG_D_ST_2020092610054
2	038_BYDR06_4B_WHG_D_ST_2020092610065
2	041_BYDR07_4B_WHG_B_ST_2020100810023
2	042_BYDR07_4B_WHG_B_ST_2020100810024
2	043_BYDR07_4B_WHG_B_ST_2020100810025
3	047_BYDR07_4B_WHG_B_ST_2020100810037
2	050_BYDR07_4B_WHG_L_ST_2020100810065
3	053_BYDR09_4B_WHG_L_ST_2020121010136
3	073_CNVE03_7D_WHG_D_ST_2021120910163
2	082_PTCT01_7D_WHG_D_ST_2021062110020
2	087_PTCT03_4C_WHG_D_ST_2020042710017
2	089_PTCT03_4C_WHG_D_ST_2020042710021
2	093_PTCT03_4C_WHG_D_ST_2020042710045
2	095_PTCT03_4C_WHG_D_ST_2020042710054
2	22MERLMNG004-0657-ST
2	22MERLMNG004-0675-ST
3	24MERLMNG001-0138-ST
3	24MERLMNG001-0148-ST
3	24MERLMNG001-0149-ST
2	24MERLMNG001-0151-ST
2	8805835_BRX_RLX_UB.jpg
2	8805835_BRX_TLX_UB.jpg
2	8870400_BRX_RLX_UB.jpg
2	8870400_BRX_TLX_UB.jpg
2	8870401_BRX_RLX_UB.jpg
2	8870401_BRX_TLX_UB.jpg
2	8870480_BRX_RLX_UB.jpg
2	8888863_BRX_RLX_UB.jpg
3	8929123_BRX_RLX_UB.jpg
3	8929123_BRX_TLX_UB.jpg
2	8929124_BRX_RLX_UB.jpg
2	8929124_BRX_TLX_UB.jpg
2	8933414_BRX_RLX_UB.jpg
2	8933414_BRX_TLX_UB.jpg
2	8933415_BRX_RLX_UB.jpg
2	8933415_BRX_TLX_UB.jpg
2	8969390_BRX_RLX_UB.jpg
2	8969390_BRX_TLX_UB.jpg
4	8995756_BRX_RLX_UB.jpg
4	8995756_BRX_TLX_UB.jpg
2	8997959_BRX_RLX_UB.jpg
2	8997959_BRX_TLX_UB.jpg

Number of age readings by modal age

Table 72: Number of age readings table gives an overview of number of readings per reader and modal age. The total numbers of readings by modal age and by reader are also presented.

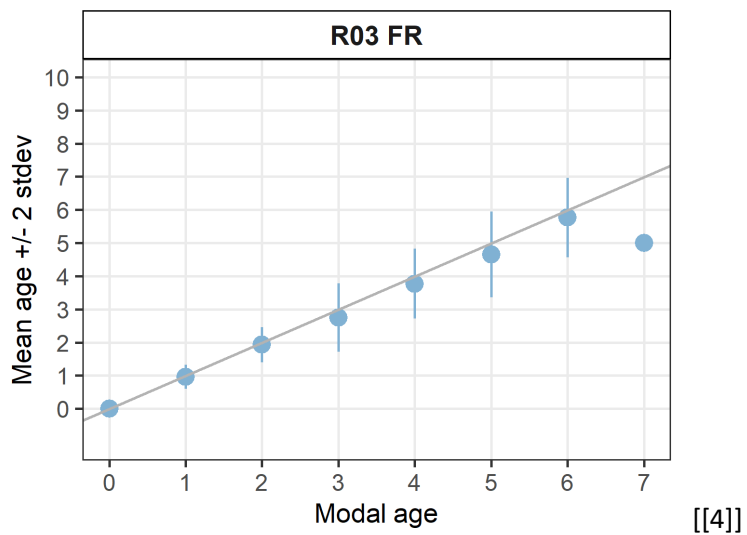
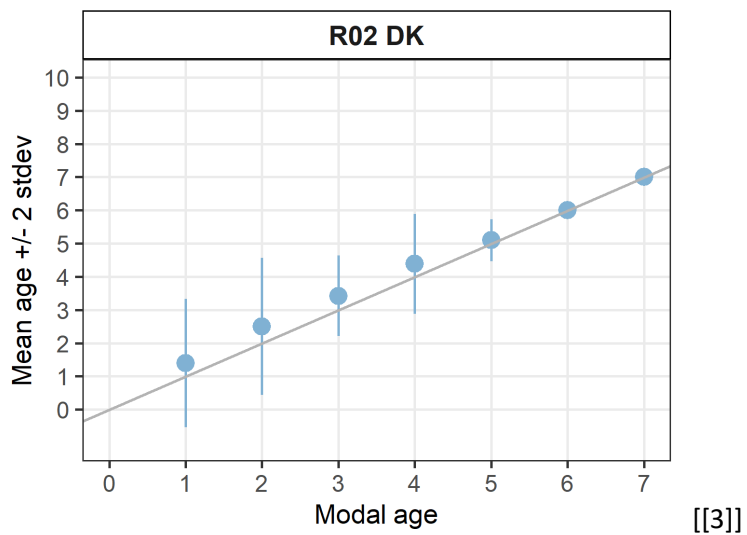
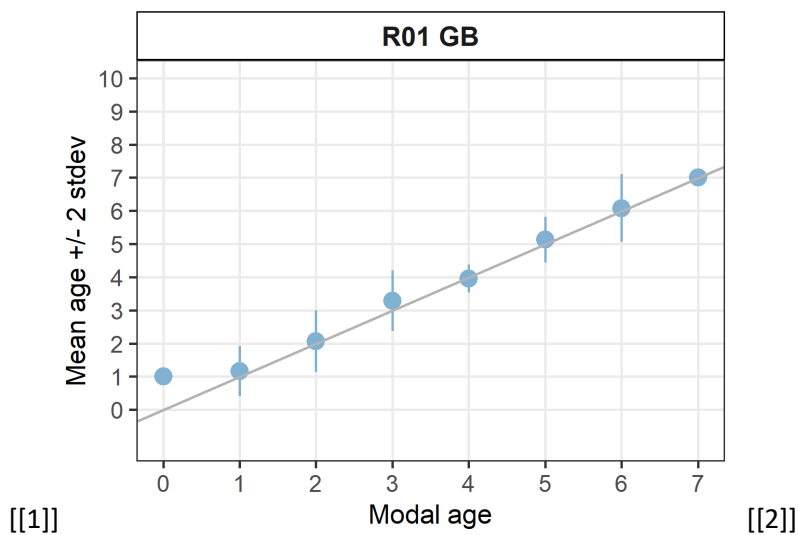
Modal age	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE	total
0	2	0	2	0	2	2	2	2	0	0	0	12
1	30	10	30	10	30	28	30	27	10	9	10	224
2	28	16	28	17	28	28	28	28	14	17	17	249
3	28	19	28	20	27	28	28	28	14	19	21	260
4	22	26	22	26	22	21	22	22	19	27	25	254
5	23	10	23	10	23	23	23	23	8	8	10	184
6	12	4	13	4	13	13	13	12	3	2	4	93
7	1	1	1	0	1	1	1	1	0	0	1	8
Total	146	86	147	87	146	144	147	143	68	82	88	1284

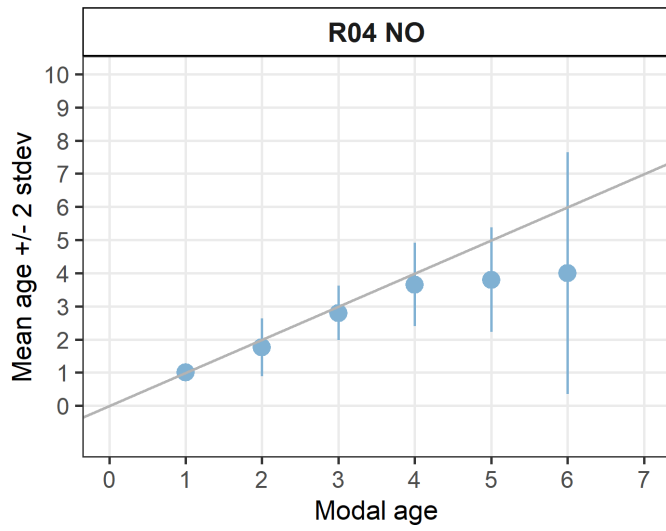
Number of age readings by age

Table 73: Age composition by reader gives a summary of number of readings per reader and age. The total numbers of readings by age and by reader are also presented.

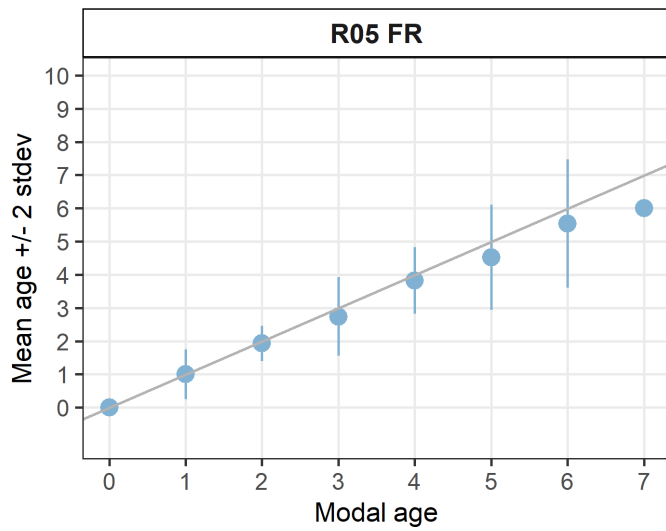
Age	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE	total
0	0	0	3	0	4	1	0	0	0	0	0	8
1	29	8	32	14	30	6	28	4	11	12	8	182
2	27	13	32	21	32	12	26	22	16	14	19	234
3	25	14	26	23	29	29	30	34	14	22	20	266
4	29	26	26	26	23	29	25	18	13	26	23	264
5	21	17	16	2	17	25	24	35	9	7	13	186
6	12	6	12	1	11	24	12	21	4	1	2	106
7	3	2	0	0	0	15	2	7	1	0	3	33
8	0	0	0	0	0	2	0	1	0	0	0	3
9	0	0	0	0	0	1	0	1	0	0	0	2
Total	146	86	147	87	146	144	147	143	68	82	88	1284

Separate age bias plots by reader

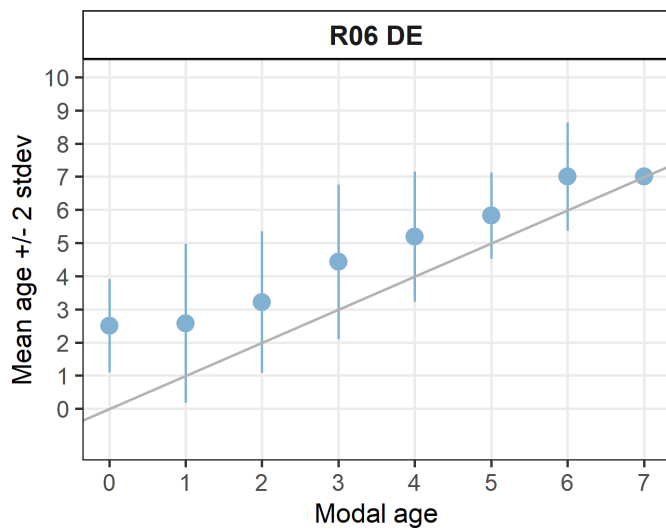




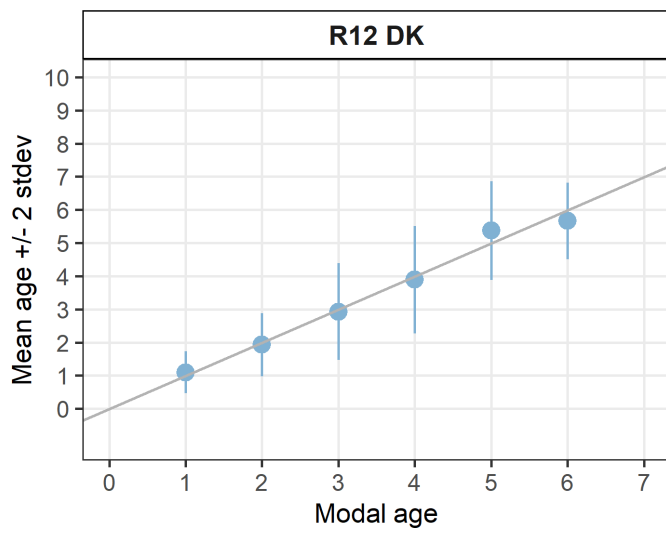
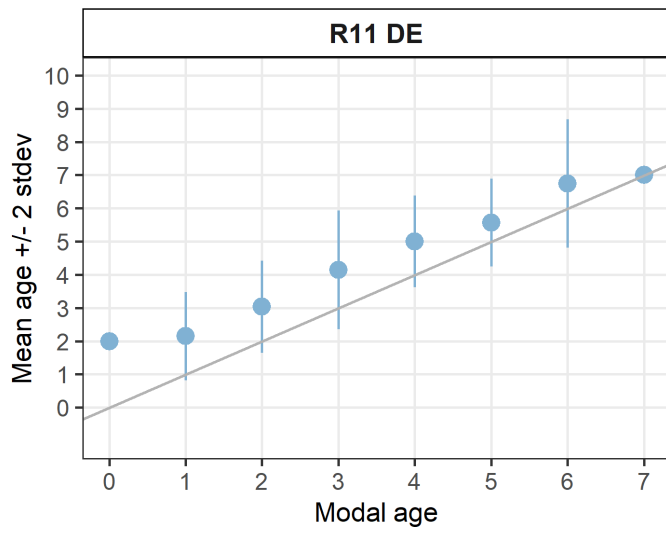
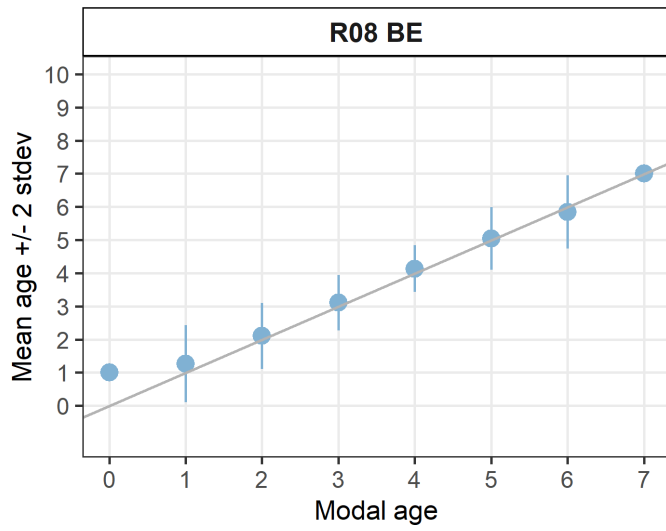
[[5]]

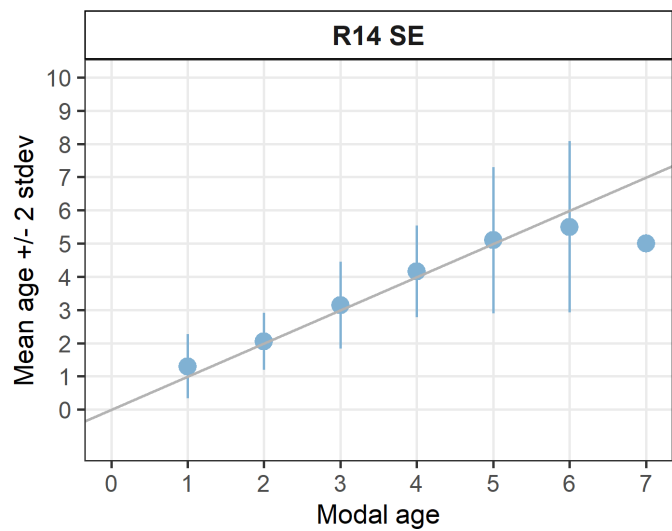
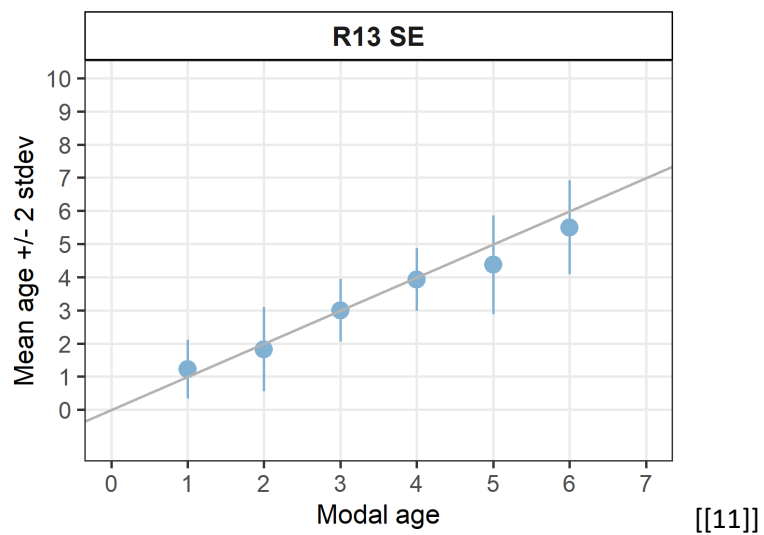


[[6]]



[[7]]





Statistics by modal age plot (STDEV, CV and PA)

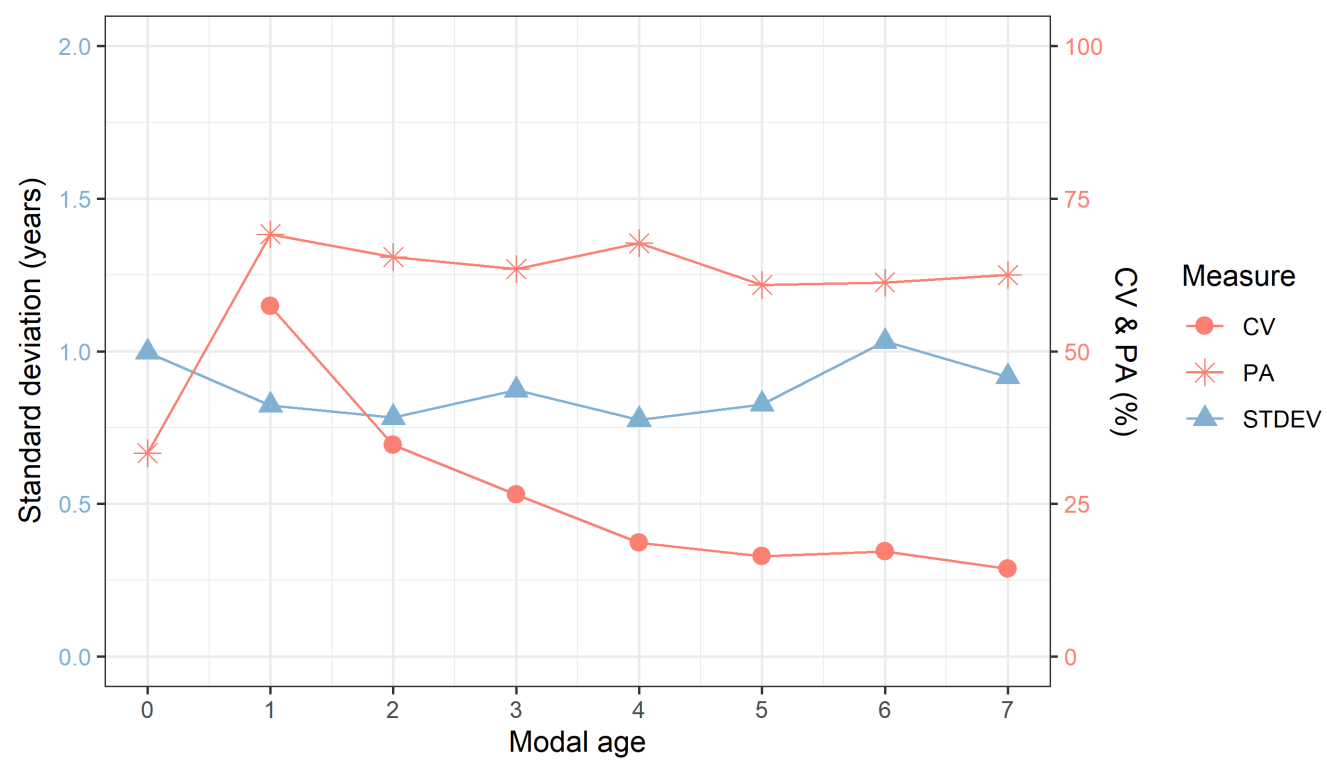


Figure 20: CV, PA and (STDEV (standard deviation) are plotted against modal age

Distribution of age reading errors

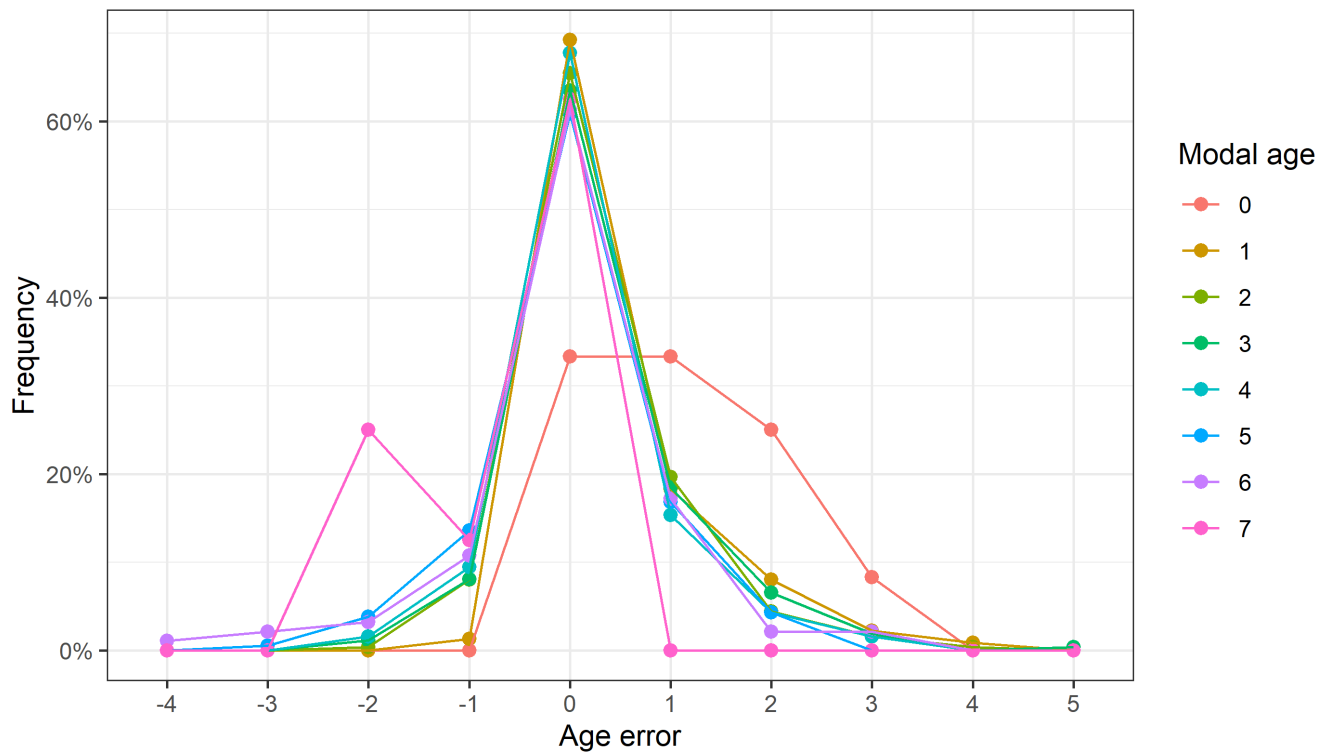


Figure 21: The distribution of the age reading errors in percentage by modal age as observed from the whole group of age readers in an age reading comparison to modal age. The achieved precision in age reading by MODAL age group is shown by the spread of the age readings errors. There appears to be no relative bias, if the age reading errors are normally distributed. The distributions are skewed, if relative bias occurs.

Relative bias for all readers

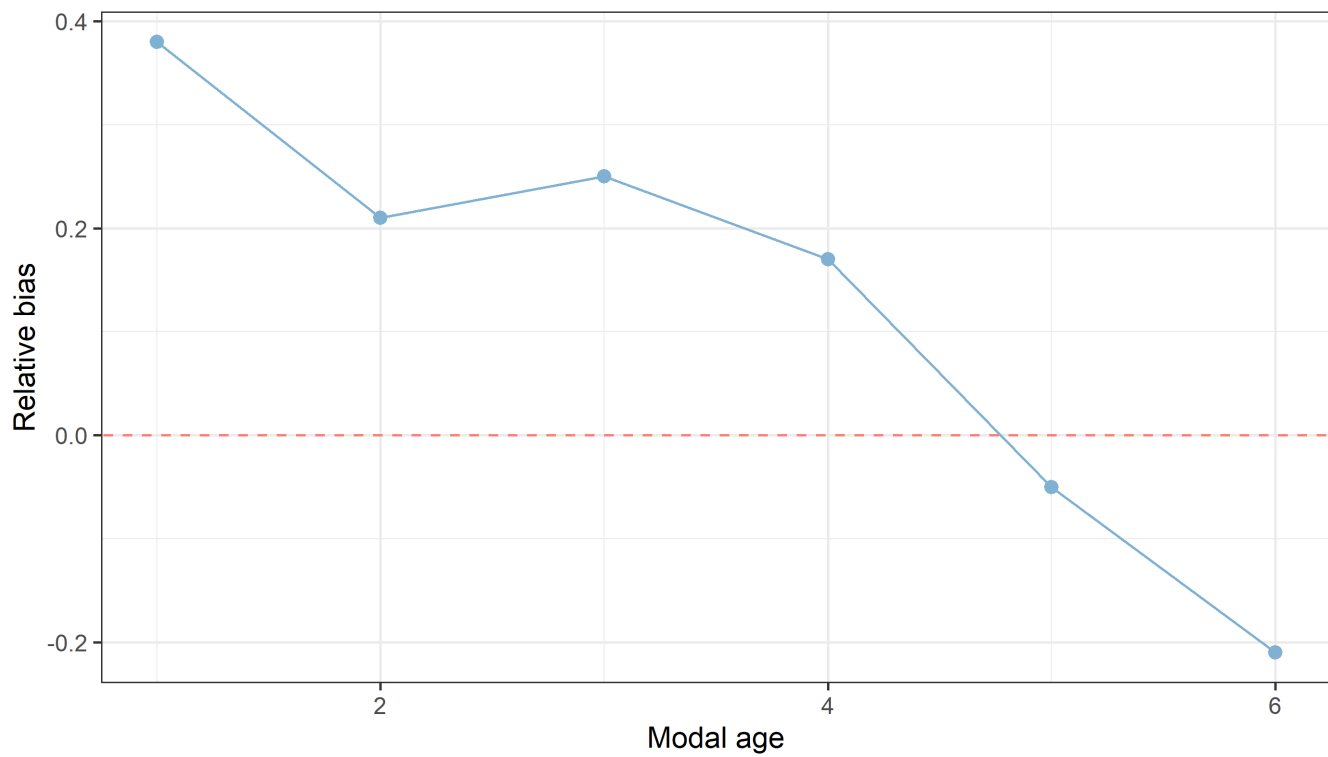


Figure 22: The relative bias by modal age as estimated by all age readers combined.

Mean length at age by reader

Table 74: Mean fish length at age per reader is calculated per reader and age (not modal age) and for all readers combined per age. A weighted mean is also given.

Age	R01 GB	R02 DK	R03 FR	R04 NO	R05 FR	R06 DE	R08 BE	R11 DE	R12 DK	R13 SE	R14 SE
0	-	-	218	-	227	235	-	-	-	-	-
1	238	178	245	201	245	191	238	202	196	200	180
2	269	232	276	260	276	224	269	225	246	254	243
3	299	292	313	312	314	272	298	282	313	305	310
4	315	323	321	351	317	293	324	295	318	337	322
5	337	329	335	335	331	306	332	329	313	333	332
6	343	352	334	390	340	332	324	333	340	350	350
7	306	350	-	-	-	342	331	325	380	-	370
8	-	-	-	-	-	391	-	307	-	-	-
9	-	-	-	-	-	340	-	340	-	-	-
Weighted Mean	294	294	294	295	294	294	294	294	282	294	293

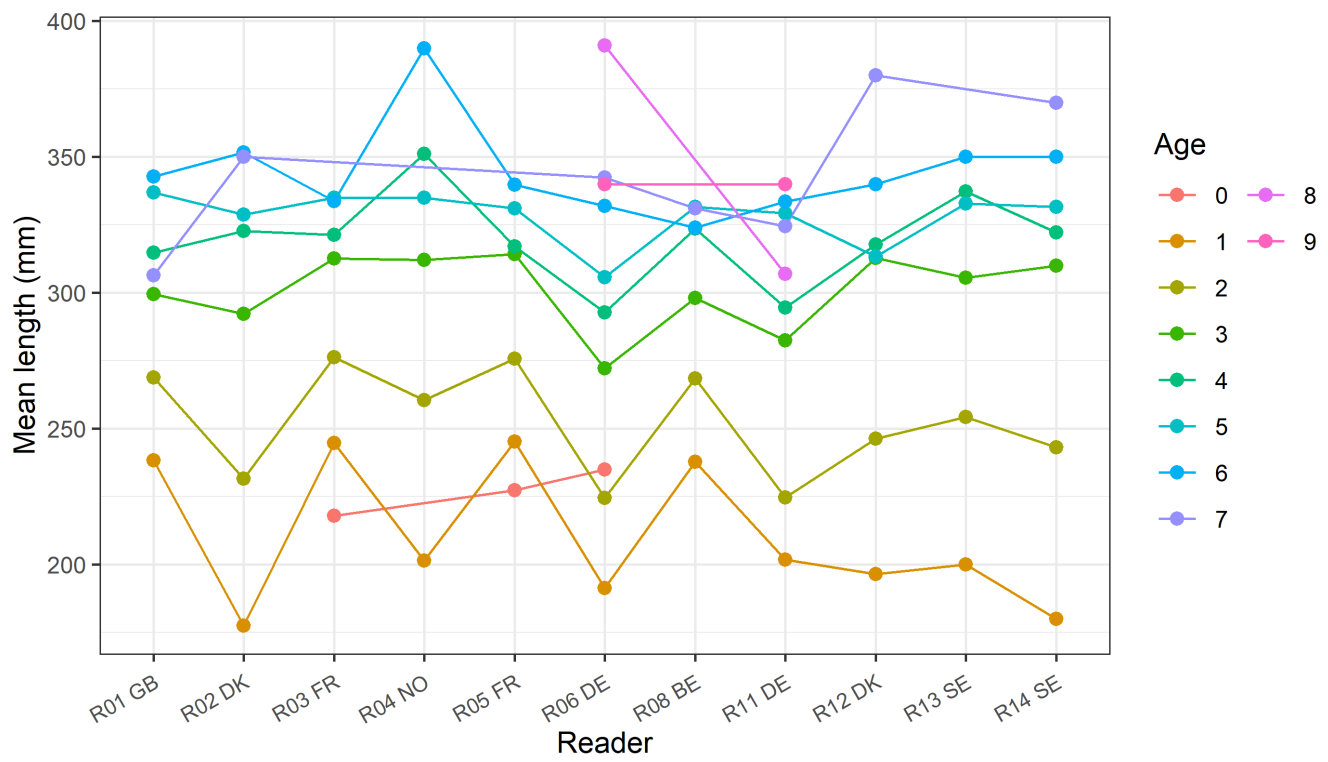


Figure 23: The mean fish length at age as estimated by each age reader.