Executive summary:

# Age reading exchange of Deepwater species in 2020/2021

Based on the work realized during WKAMDEEP1 (2013), the Working Group on Biological Parameters (WGBIOP 2017) identified the need for a follow-upworkshop on age estimation methods of deep-water species. WKAMDEEP2 took place in 2018 during which the ageing of seven deep-water species was reviewed: blackspot seabream (*Pagellus bogaraveo*), tusk (*Brosme brosme*), greater silver smelt (*Argentina silus*), blue ling (*Molva dypterygia*), ling (*Molva molva*), greater forkbeard (*Phycis blennoides*) and black scabbardfish (*Aphanopus carbo*). The aims of the workshop in 2018 (WKAMDEEP2) were to assemble a group of experts to further develop the ageing protocols and assess the precision of age readings of these species. For each species, an easy-to-use ageing manual was agreed upon by all participants. These manuals are considered necessary and sufficient for a generic age reader of deep-water fish to provide reasonably accurate and precise age estimates. During WKAMDEEP2, an exchange of 50 otolith images per species was conducted. To continue to improve both the quality and the capacity of age readings of deep-water species, WKAMDEEP2 recommended that small exchanges of the same material were to be carried out after two and four years, before arranging a third workshop, WKAMDEEP3, in 2023.

The small-scale exchange in 2020/2021 was carried out according to the recommendations of WKAMDEEP2, but unfortunately the results from the exchange got delayed due to COVID-19. The images used in 2020/2021 were the same as in 2018, enabling analyses of internal consistency for each reader participating in both 2018 and 2020/2021. Overall, the results from the deep-water species otolith exchange were considered good. For six out of seven species in this exchange, the Coefficient of Variation (CV) was improved or unchanged from the previous exchange. The weighted average CV for all seven species is 20%, which is not a good CV compared to other species. However, for these long-lived deep-water species, where the otoliths are not easy to age, apart from greater silver smelt otoliths, a CV around 20% must be considered good.

Continued age reading workshops and otolith exchanges of these deep-water species are important for many reasons. Many of the species have only one or a few readers, hence ICES workshops and exchanges provide a platform for discussion, continuity, and maintenance of expertise. Many of these species are considered to be data-poor or data-limited, thus any age data available is of great value and is currently used indirectly to monitor trends in stock assessments. If a species is re-categorized or new assessment models require age data, reliable age data over a time period would be beneficial. For some stocks of ling, greater silver smelt and tusk, age data are used directly in assessment models.

To maintain and ensure reliable age date regarding this group of deep-water species, we highly recommend that a new workshop, WKAMDEEP3, should be arranged within 2 years (2024-2025).