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Expert Group on Monitoring of Radioactive Substances
in the Baltic Sea

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Background

This document contains a report by the Thünen-Institute of Fisheries Ecology (Bremerhaven, Germany) on results of the Baltic Sea Biota Monitoring reported in 2020.

Action

The Meeting is invited to take note of the information.

Draft Results for Radionuclides in Biota Samples reported to the HELCOM-MORS database in 2020

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Sampling cruises

This report summarizes the data of radioactive substances in biota samples analysed by Thünen-Institute of Fisheries Ecology (Bremerhaven, Germany) in the period 09/2019 to 09/2020. The number of results submitted to HELCOM MORS EG are listed in Table 1. Due to the movement to Bremerhaven in June 2018, the previous preparation for this event and the fact that the ovens did not work properly before May 2019, it remains a larger sample lag, which will be reduced as soon as possible.

Table 1: Number of biota datasets submitted in the period 2019/2020 by Germany

		2014	2015	2016	2017	2018	2019
Herring & Sprat	Gamma					3	3
	Sr-90						
Cod	Gamma	1	3*	1		1	
	Sr-90						
Plaice, Dab & Flounder	Gamma						1
	Sr-90						
Other	Gamma					4	
	Sr-90						

* Three different tissue types submitted

In general, samples from two cruises with FRV "Walther Herwig III", one in late summer and one in early winter, contribute to the annual sampling. The main objective of these two cruises per year is to collect samples for the integrated monitoring and assessment of biological contaminant effects. This contains the analysis of biota samples for radioactive substances, organic and inorganic pollutants, the determination of the health status and other possible biological effects of pollutants on fish.

Results

Analytical results of the specific Cs-137 activity in different fish species are shown in Figures 1 to 4. The maximum specific activity determined was 5,5 Bq kg⁻¹ w. w. in Cod of the year 2014 (**Error! Reference source not found.** and Figure 4).

With respect to the long-term trend, the specific activity in cod shows seems to decrease as expected, while that of Herring and Sprat seems to remain constant and that of flatfish in Kiel Bay seems to increase. Therefore, the specific activity in Herring and Sprat and in flatfish need further attention to provide proper scientific explanations. Besides the trends, the specific activity in Herring with a maximum of 1,55 Bq kg⁻¹ and in Plaice with 1,75 Bq kg⁻¹ are below the recent threshold value of 2,5 Bq kg⁻¹ w. w. and 2,9 Bq kg⁻¹ w. w..

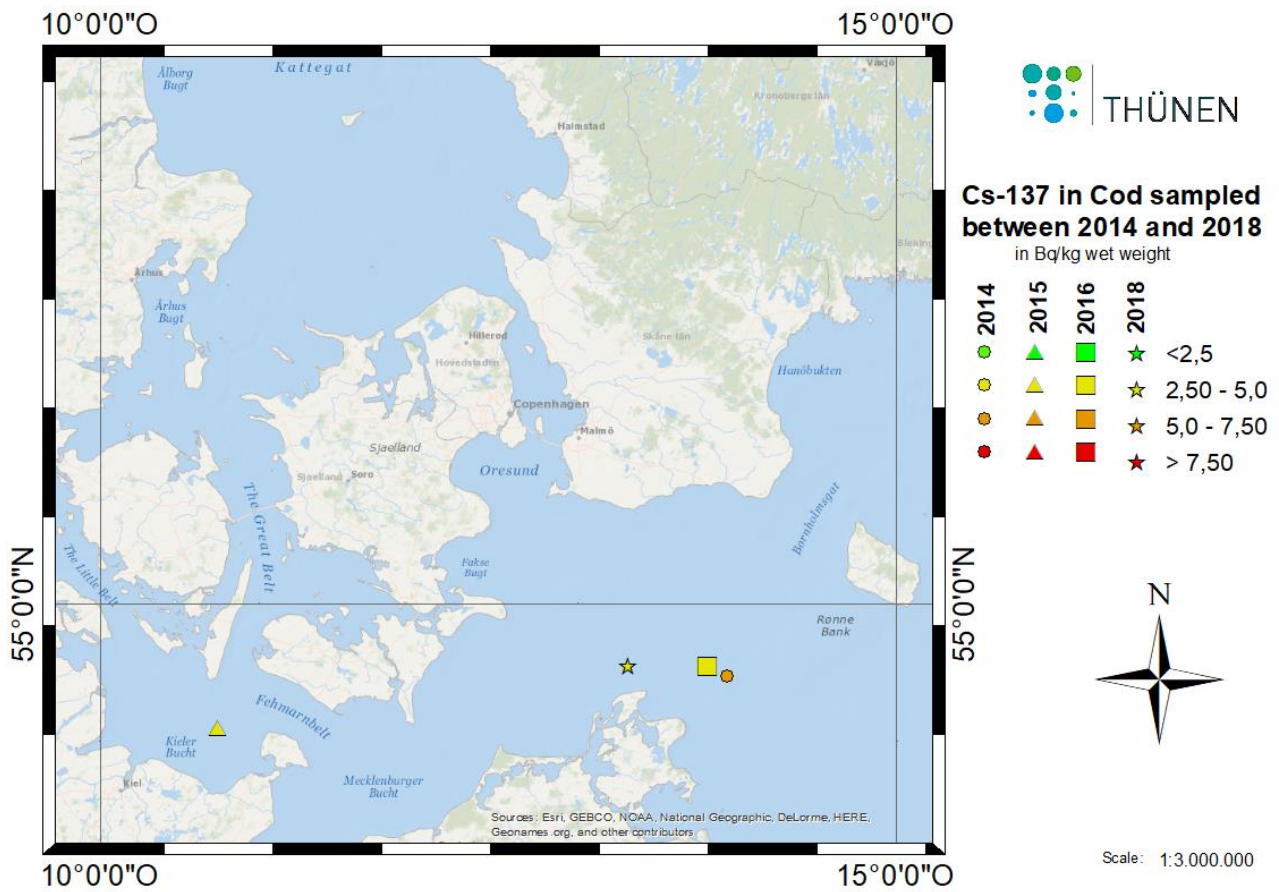


Figure 1: Submitted results for Cs-137 in Cod sampled between 2014 to 2018

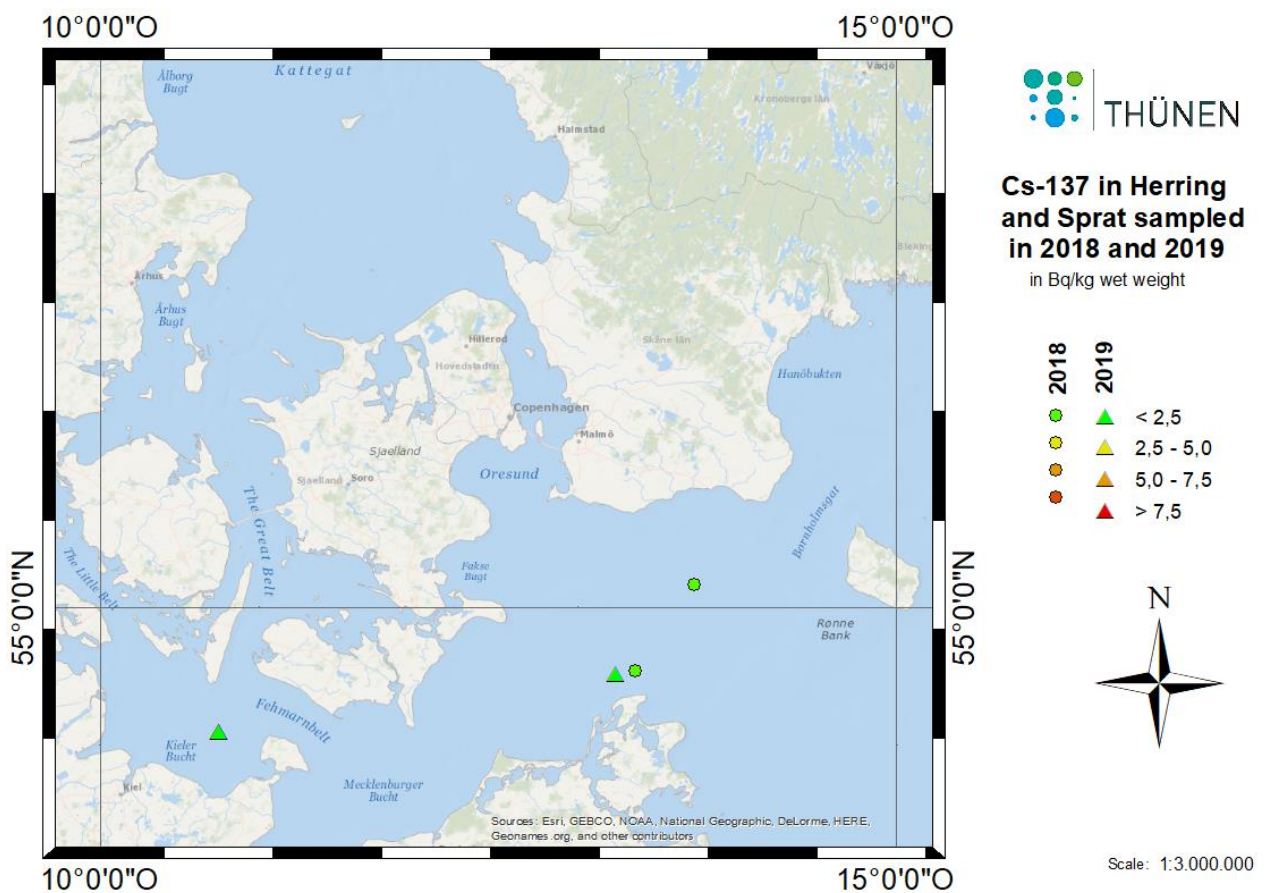


Figure 2: Submitted results for Cs-137 in Herring and Sprat sampled in 2018 and 2019

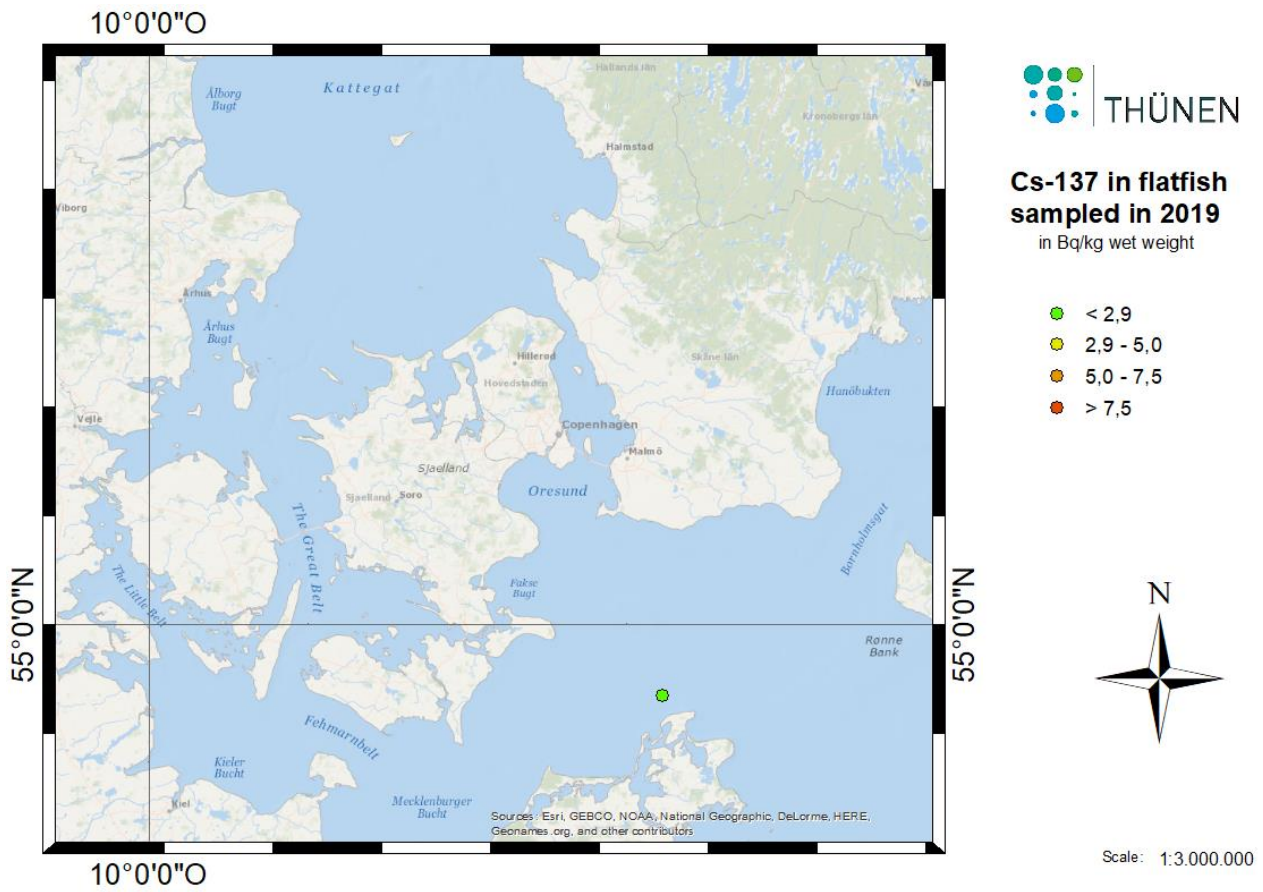


Figure 3: Submitted results for Cs-137 in flatfish (Flounder and Plaice) sampled 2019

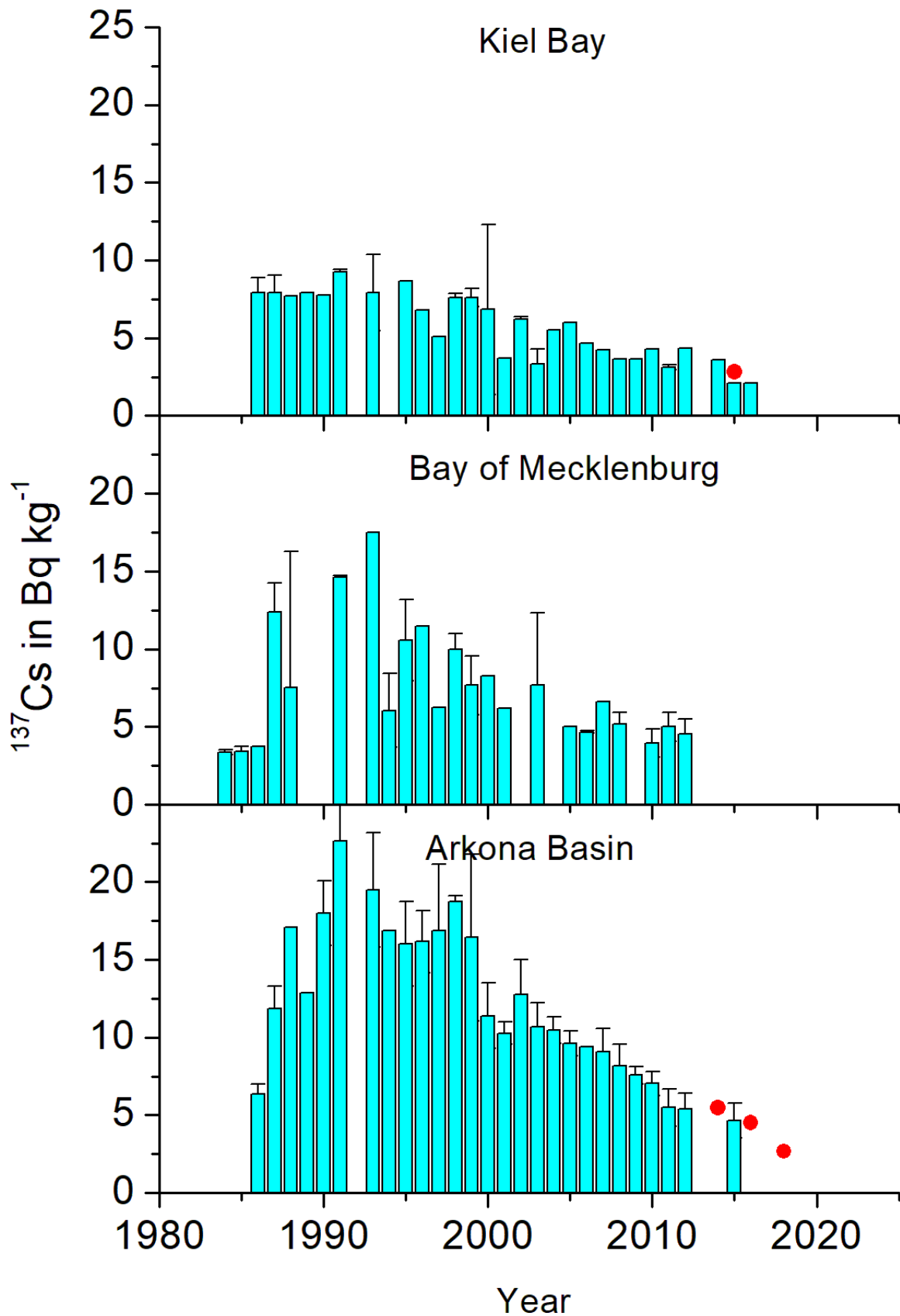


Figure 4: Submitted values for Cod (red circles) in comparison to the long-term trend in the HELCOM-Basins (MORS environmental database 2020)

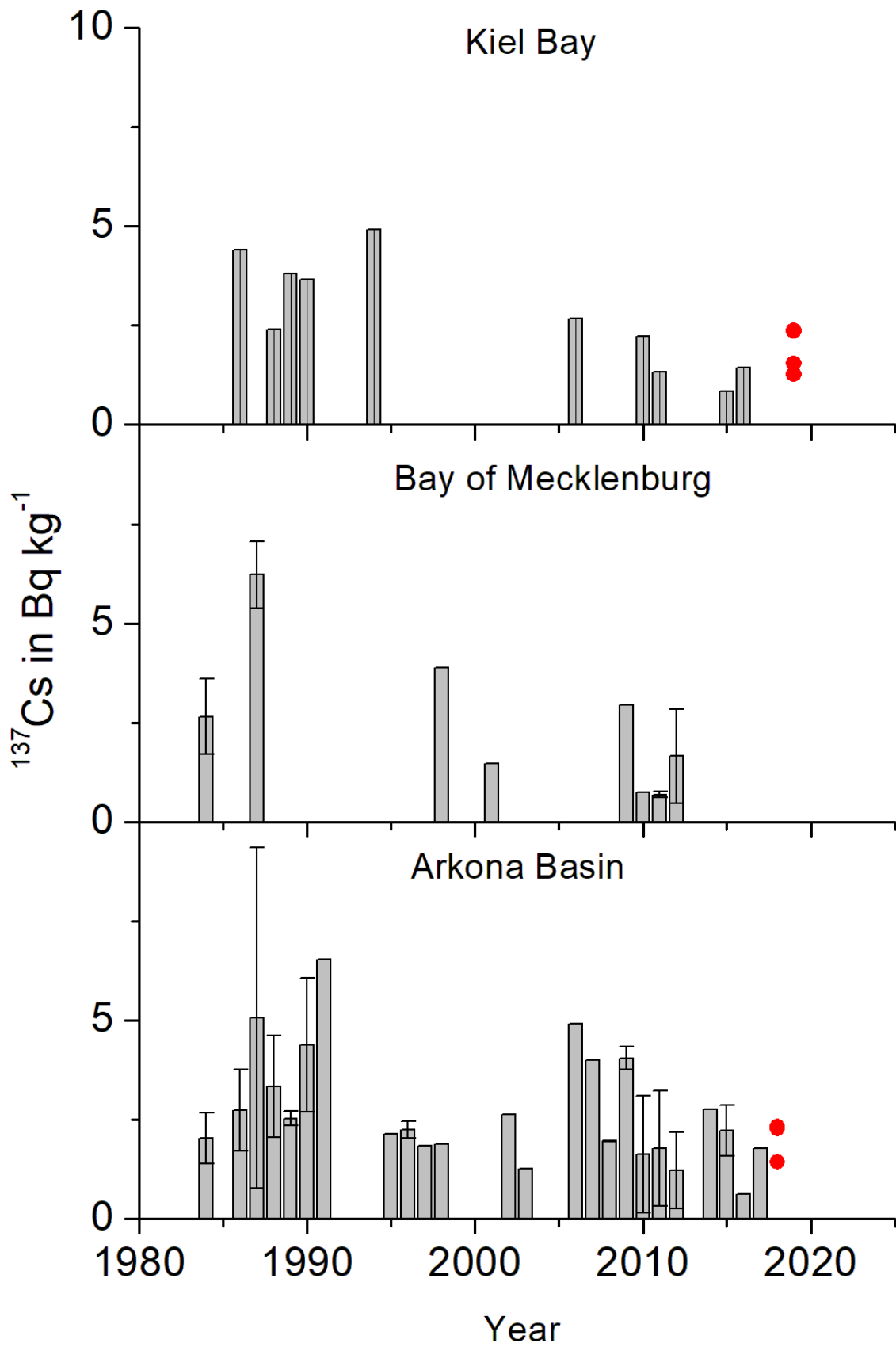


Figure 5: Submitted values for Herring and Sprat (red circles) in comparison to the long-term trend in the HELCOM-Basins (MORS environmental database 2020)

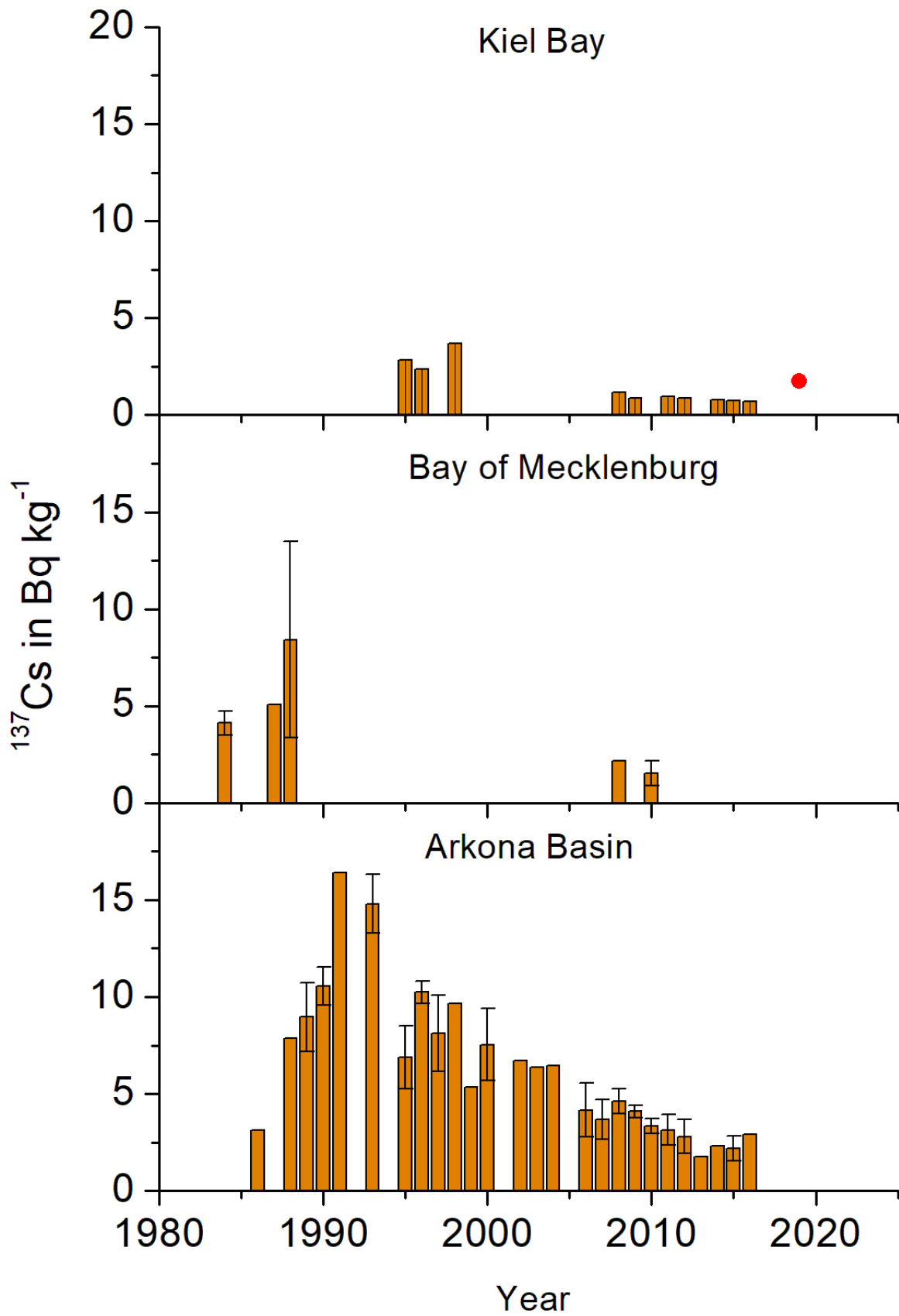


Figure 6: Submitted values for flatfish (red circles) in comparison to the long-term trend in the HELCOM-Basins (MORS environmental database 2020)