



## North Pacific Fisheries Commission

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### **VME bycatch by Korean trawl fisheries on the Emperor Seamounts in 2019**

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#### **Introduction**

Two Korean trawlers have operated in the convention area carrying a total of three observers in 2013-2014. A single trawler has operated in the convention area with an observer onboard to achieve 100% observer coverage during its fishing days since 2015. The Korean total annual catches of North Pacific armorhead (NPA) and splendid alfonsino, since 2013, varies from 20.1 to 4,487.5 tons and from 12.9 to 512.7 tons respectively. Information on bycatch of VME indicator taxa collected by Korean trawl fisheries has been reported based on the scientific observer program, since 2013.

#### **1. Summary of VME bycatch data by scientific observer**

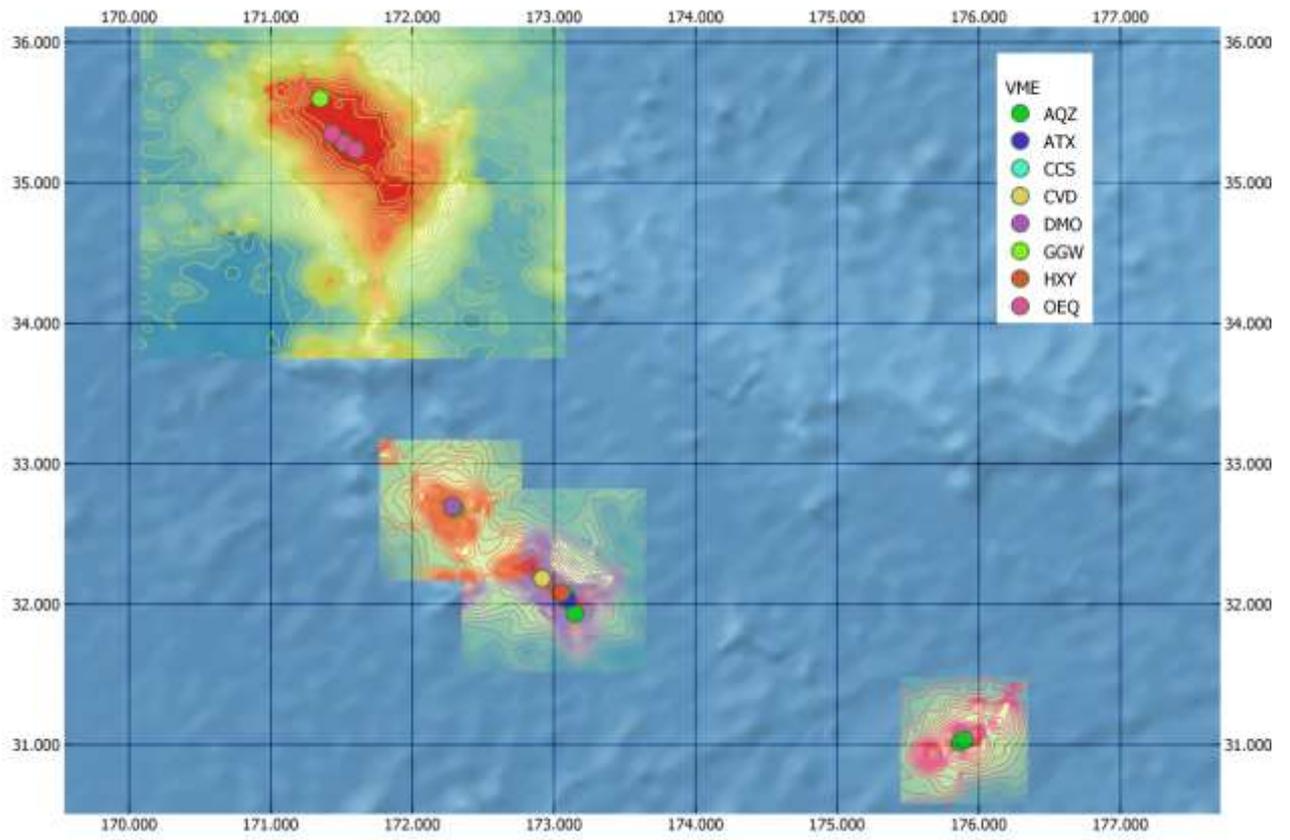
All Korean commercial bottom trawlers operating in the high seas including the Emperor Seamounts are required to carry a scientific observer, which corresponds with Observer section of the NPFC CMM 2019-05. Deployed observers collect data and samples of target species and bycatch of VME indicator species during fishing activities. The activity includes collecting VME specimens and measuring the weight of the following four orders of cold-water coral indicator taxa specified in the NPFC CMM 2019-05: Alcyonacea (AJZ, soft coral), Antipatharia (AQZ, black corals), Gorgonacea (GGW, sea fans and sea whips), and Scleractinia (CSS, stony corals), as well as deep-sea sponges and other benthos. The summary of observers' activities is described in Table 1. The proportions of hauls where VME taxa were observed were 17-57% from 2013 to 2019.

#### **2. Mapping by-caught VMEs' spatial distribution and weight composition in 2019**

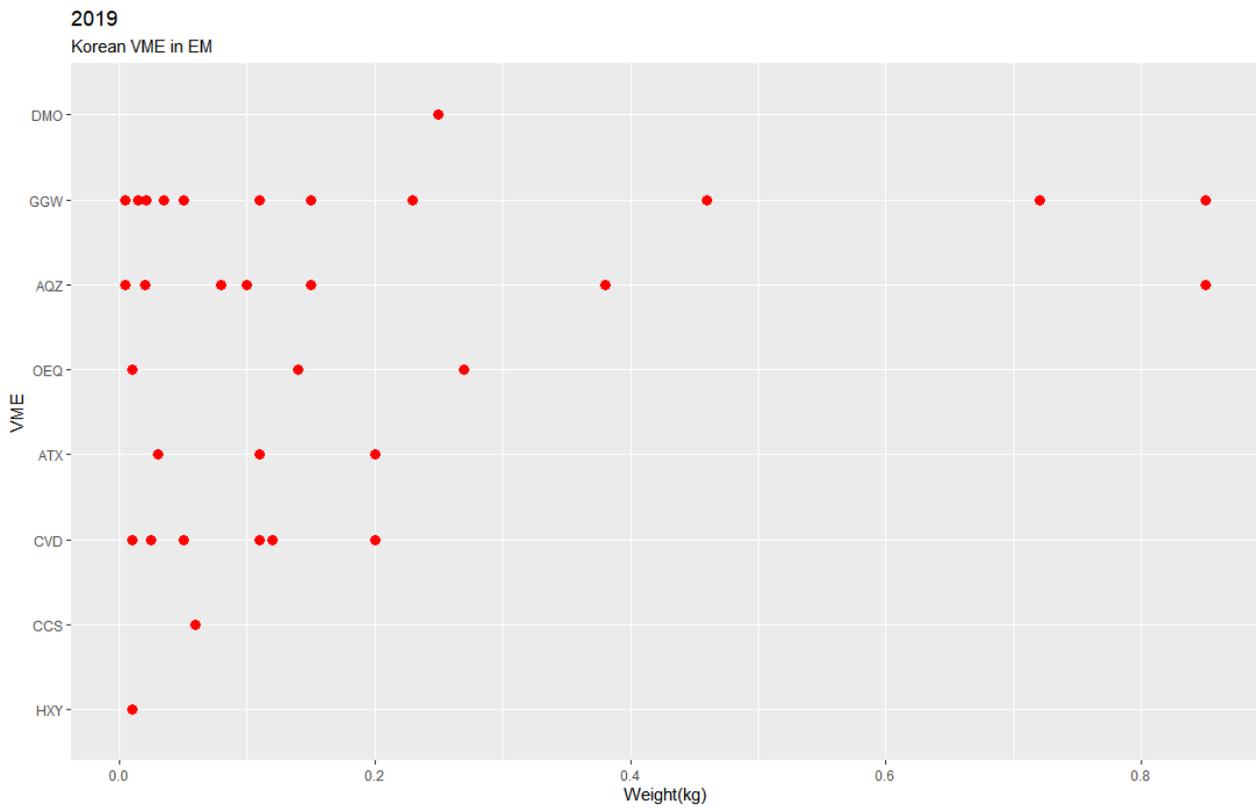
According to the fisheries logbook, Koko (F), Milwaukee (aggregated with Kammu and Yuryaku, D), Colahan (C) were identified as fished seamounts by a Korean trawler in 2019. The fine-scale bycatch distribution of VMEs was illustrated in figure 1, using an open bathymetry data from EarthRef.org (NPFC-2018-WS DATA01-IP04), and the amount encountered are shown in figure 2. The figures show that Gorgonacea (GGW) was found to be most frequently observed in all seamounts especially in Yuryaku, and order Antipatharia (AQZ) was second most frequent. Every single hauls' bycatch of VME had not exceeded 1kg by a Korean trawler. The order Gorgonacea accounted for the largest composition (47%) by weight, followed by the order Antipatharia (26%) in 2019 (Figure 3).

**Table 1. Summary of scientific observers' activity in Korean trawl fisheries in 2013-2019. One of the datasets from a foreign observer in 2013 is missing**

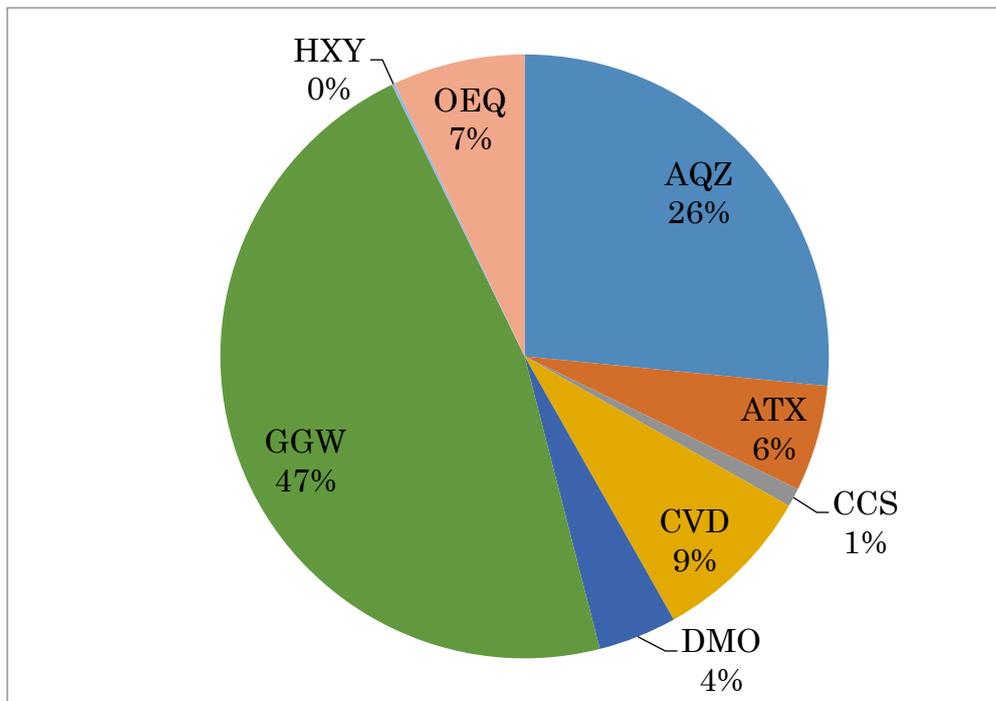
Year	No. of Vessels	No. of Vessels with Observers	No. of total hauls	No. of Observed hauls (activity rates in %)	No. of VME Observed hauls
2013	2	2 (1 foreign observer)	107	107 (100%)	18 (17%)
2014	2	2	437	324 (74%)	240 (55%)
2015	1	1	213	149 (70%)	110 (52%)
2016	1	1	99	87 (89%)	23 (23%)
2017	1	1	136	98 (72%)	78 (57%)
2018	1	1	154	99 (64%)	38 (25%)
2019	1	1	49	36 (73%)	14(29%)
Overall	9	9	1,195	900 (77%)	521 (47%)



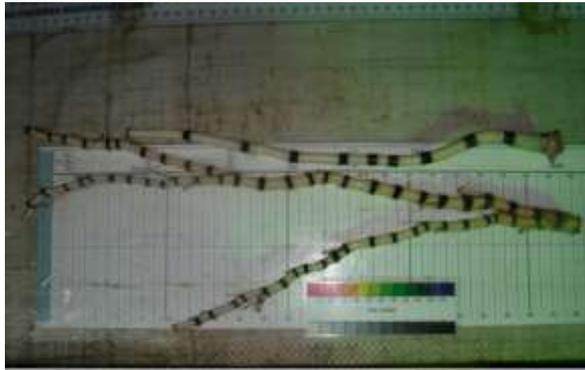
**Figure 1. Bycatch locations of the four VME indicator taxa and other benthos by seamounts, occurred by Korean trawl fishing in 2019.**



**Figure 2. Occurrence frequency of VME indicator taxa and other benthos by by-caught weight in 2019.**



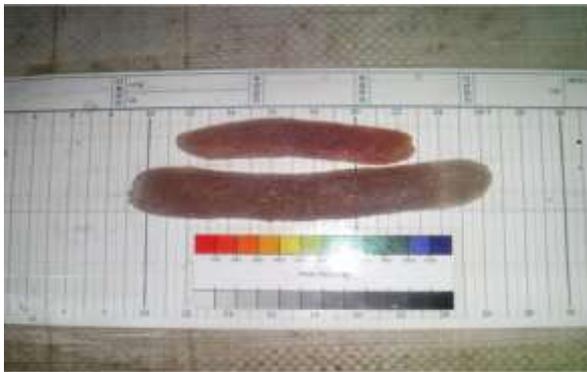
**Figure 3. Weight compositions of the VME indicator taxa and other benthos by-caught by a Korean trawl in 2019.**



GGW



ATX



DMO



OEQ

**Figure 4. Pictures of coral specimens collected from Korean trawlers in 2019.**