

Working Group on Spatial Fisheries Data (WGSFD)

2018/MA2/HAPISG03 The Working Group on Spatial Fisheries Data (WGSFD), chaired by Roi Martinez, UK, and Neil Campbell, UK, will work on ToRs and generate deliverables as listed in the Table below.

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2019	24–28 June	Lysekil, Sweden		
Year 2020	8–12 June	by corresp/ webex		physical meeting cancelled - remote work
Year 2021	7–11 June	Online meeting	Final report by 1 August to SCICOM	

ToRs descriptors

TOR	DESCRIPTION	BACKGROUND	SCIENCE PLAN CODES	DURATION	EXPECTED DELIVERABLES
a	Analyse current AIS datasets available to the WG, their fitness for purpose in provision of advice, and investigate possibility of inclusion of AIS data in the annual request from ICES to its member countries to provide spatial fisheries effort data to the data centre ("the ICES VMS datacall").	For advice processes for among others DG-ENV, it is required to analyse AIS data. To ensure a smooth transition to including AIS data in advice products, best practices and logistics need to be evaluated	3.2; 3.3; 3.5	Year 1-3	Section in WG report which can be forwarded to WKBEDPRES2 describing current best practice, data gaps and approaches to data handling
b	Evaluating need and possibility to move towards higher spatial resolution in the ICES VMS datacalls	Using interpolation methods, make a voluntary test datacall for a couple of countries within WGSFD on submitting data on c-squares on a 0.01 degree resolution instead of the current 0.05 degree resolution. The possibility of higher resolution fishing pressure data for merging with habitat data has been discussed during the ICES workshops WKFB1, WKBENTH, WKTRADE, and can provide input for the upcoming ICES WGFBIT and WKBEDPRES2.	3.2; 3.5	Year 1	Section of WG report detailing analysis of the change in fishing footprint when increasing to higher spatial resolution. A consideration of risks and other issues (e.g. confidentiality, credibility) in interpolating at finer scales than present should also be provided.
c	Develop spatial effort indicators for static gears	In order to estimate the effort of the passive fishing gear, other parameters (soaking time, gear length, number of hooks etc.) are needed. During the next term, WGSFD will further evaluate	3.5; 5.4; 6.1	Year 1-3	Sections in working group reports to ICES containing: i) spatial maps of fishing activity, and ii) fishing effort maps through parameterization of soak times / gear lengths / hook

		whether these parameters can be estimated from VMS, fleet characteristics and observer data to produce speed filters and describe typology of various fishing events for different gear categories.			number.
d	Identifying potential drivers and describing spatial conflicts of fisheries in the past and future on displacement of fishing activities over various time-scales	Fisheries territories are defined by operating conditions and fish availability. Fish resources displacement due to the climate change, management measures and other human uses (MPA, marine traffic, gravel extraction, wind farms, oil rigs, seismic survey) may result in displacements when competition occurs for a given space. Through the ICES data calls on VMS and logbook data we now have the information available to estimate the spatial variability of fisheries over time. By this we will explore drivers of fisheries displacement and develop predictive models to infer potential fisheries reallocation in a conflicting event.	5.4; 6.1; 6.2	3 years	Peer-reviewed paper
e	Support to WKBEDPRES	To ensure compatibility with WKBEDPRES1 and WKBEDPRES2, WGSFD will provide guidance on using other data sets to assess the distribution and extent of physical disturbance to the seabed.	NA		WG Report section providing strategic guidance and criteria for the collection, management, quality assurance and reporting of non-fisheries spatial data.
f	WGSFD is requested to analyse and produce maps of bottom contacting fishing activity in and in the vicinity of VMEs (defined by WGDEC) and separate this into mobile bottom contacting gear and static gear in NEAFC areas, including the Josephine Seamount, using the VMS and logbook information collected by NEAFC. These maps should be made available to WGDEC to ensure they can be combined by WGDEC with new information on distribution of vulnerable	In analysing and producing maps of fishing activity in NEAFC areas using the VMS and logbook information collected by NEAFC, WGSFD will ensure that WGDEC have the required fishing activity layers to produce a first draft advice sheet that address the annual advice request, "NEAFC requests ICES to continue to provide all available new information on distribution of vulnerable habitats in the NEAFC Convention Area and fisheries activities in and in the vicinity of such habitats, and provide advice relevant to the Regulatory Area and the above mentioned objectives" and the special request "Advice on vulnerable marine	NA	year 1 year 3	Maps provided to WGDEC by 30 May 2019. Maps provided to WGDEC by 30 May 2021.

	<p>habitats. WGSFD is requested to also provide a short narrative on how NEAFC could improve data available to ICES that could facilitate the subsequent analysis of fishing gears used in the NEAFC areas, to provide a more detailed analysis of bottom gears accounting for a diversity of types of gear designs, sizes, rigging and operational methods (passive and active). With the understanding that their impact on the seabed differ.</p>	<p>ecosystems in the NEAFC Regulatory Areas, not acted on". The draft NEAFC VME advice produced by WGDEC (with input from WGSFD) will be submitted for further consideration by a review group (RGVME) and advisory committee advice drafting group (ADGVME).</p>			
g	<p>In preparation for future advice requests for electronic advice outputs at higher resolution (c-square at 0.05° x 0.05°), WGSFD will:</p> <ol style="list-style-type: none"> 1) Analyse the extent of aggregated international VMS data subject to anonymity issues (≤ 3 number of vessels) 2) Discuss different procedures to preserve anonymity (gear groupings, area grouping, international grouping, ...) 3) Approve on a method/s that optimizes the data product while preserving the anonymity. 	<p>To ensure vessel anonymity in electronic advice outputs at a higher resolution, aggregated international effort values of any c-squares containing three vessels or less will not be shown (see ICES VMS data call 2019). ICES Secretariat/Data centre will filter the sensitive data in the aggregated international fishing effort (3 vessels or less) and present the group with different scenarios. The agreed upon method will contain as much information as possible (spatial or as fishing effort value) while preserving the vessel anonymity.</p>	3.3, 3.5	year 1	Section in the WG report which can be referred to in future advice processes.
h	<p>Present best-practices on how to analyse and use VMS data from a world-wide perspective.</p>	<p>A decadal view on fisheries distribution and variability over time is lacking from the literature. This information has however now become available through the ICES data calls on VMS and logbook data and therefore makes a valuable data source to investigate, describe and explain the spatio-temporal use of the European seas by the different fisheries. Analyses performed using VMS and Logbook data have been published for almost two decades. Within ICES different</p>		year 3	A peer-reviewed publication describing best practices for sharing and use of VMS data in an international context.

standardized methodology has been developed, but worldwide many scientists have undertaken similar activities. To improve the activities within ICES we review literature and describe best practices in analysing VMS and logbook data.

Summary of the Work Plan

Year 1	Continuing WGSFD work from 2016–2018 on improving methods and ensuring high quality of VMS/logbook data processing from data request formats, quality checks and processing data to be implemented by the ICES data centre. Address the ToRs-Identification of best practices for the standardization of AIS VMS data/Logbook. Quality Assessment and Harmonization of the available AIS data Evaluation of the comparative advantage of integrating AIS and VMS in the calculation of indicators.
Year 2	Address ToRs with aim to provide methodological guidance in analysing VMS/Logbook/AIS data and showcase results of interest to a wider audience. Invite ICES states to provide AIS + VMS+ Logbook aggregated data. Further evaluation of the comparative advantage of integrating AIS and VMS in the calculation of indicators.
Year 3	Address ToRs with aim to provide methodological guidance in analysing VMS/Logbook/AIS data and showcase results of interest to a wider audience. Extension of the AIS data submission to all countries. Quality Assessment of the AIS data provided.

Supporting information

Priority	<p>WGSFD work in 2013-2018 has proven that there is a demand for fine scaled spatial fisheries information. Outputs on fishing intensity from WGSFD have been requested by OSPAR and HELCOM for work on MSFD descriptor 6. Outputs can also be used for ecoregion advice as well as in descriptions of fisheries activity. WGSFD will in 2019-2021 focus on showcasing the value of the information in terms of understanding fisheries behaviour, applicability for fisheries management and advance methodology development to best analyse the spatial datasets at hand.</p> <p>ToRa: as physical disturbance from bottom-contacting fishing gear is likely to be a substantial contribution to the total extent of physical disturbance, particular attention is needed to define an appropriate method or methods for this type of disturbance. Two main sources of data are currently used to map the distribution and intensity of bottom-fishing activity: Vessel Monitoring System (VMS) data, which is coupled with fishing logbook data, and Automatic Identification System (AIS) data. VMS data have been used by ICES, FP7 Benthis project and others; AIS data have been used by JRC (JRC Blue Hub) and EMODnet. Building upon the evaluation of these data types (ICES WGSFD 2016), and considering the differences in data availability, resolution and outcomes of their processing, a comparative analysis in selected study areas is needed to assess their relative merits for MSFD purposes. TORa should thus compare the use of VMS and AIS data, and associated data required to determine fishing effort and type, such as fishers' logbooks, in the context of use for MSFD D6 assessments. This should include a side-by-side comparison against a number of parameters, including source of the data (who holds the raw data), availability (e.g. legal requirements, including vessels to be covered), accessibility (including any costs, restrictions such as due to data sensitivity, ease of access), use (e.g. restrictions on its release), spatial coverage in European waters, temporal coverage (historic, and within year), resolution (spatial granularity), accuracy, technical requirements for processing (to</p>
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	define when vessels are physically disturbing the seabed), resources needed (e.g. technical expertise, time per unit area). The comparison should include maps showing the distribution of bottom-fishing activity from the two data sources for the same time period, indicating where the distribution overlaps and where not, with an associated quantification of this (e.g. number/proportion of grid cells per subdivision for AIS only, VMS only and both) and explanations for any differences. It should be noted that other electronic monitoring systems (e.g. GPS and cell-phone based systems) are being developed in some regions, for use by smaller vessels. The work should be carried out in close collaboration with EMODnet and JRC.
Resource requirements	VMS/Logbook/AIS data requested in ICES data calls
Participants	The Group is normally attended by some 20–25 members and guests.
Secretariat facilities	Assistance from ICES Data Centre in hosting VMS/logbook/AIS data as well as quality checking and implementation of methods developed by WGSFD. Possibly meeting facilities.
Financial	Resources for ICES Data Centre to host and process VMS/logbook/AIS data.
Linkages to ACOM and groups under ACOM	ACOM
Linkages to other committees or groups	WGDEC, DIG, WGBYC, WGECO, WGMHM, BEWG, WGHIST, WKBEDPRES
Linkages to other organizations	OSPAR, HELCOM