Working Group on Zooplankton Ecology (WGZE)

2014/MA2/SSGEPD01 The **Working Group on Zooplankton Ecology** (WGZE), chaired by Piotr Margonski, Poland, will work on ToRs and generate deliverables as listed in the Table below.

	Meeting dates	Venue	Reporting details	Comments (change in Chair, etc.)
Year 2015	16–19 March	Plymouth, UK	Interim report by 1 May to SSGEPD	
Year 2016	14–17 March	Lisbon, Portugal	Interim report by 1 May to SSGEPD	
Year 2017	27–30 March	Boulogne sur Mer, France	Final report by 1 May to SCICOM	

ToR descriptors

ToR	Description	Background	Science Plan topics addressed	Duration	Expected Deliverables
A	Review progress and planning of the 6th Zooplankton Production Symposium	a) Scope of the 6th Zooplankton Production Symposium is directly relevant to the work of WGZE. Our group was significantly contributing to the programme of the previous Symposia		Year 1	List of recommended sessions and keynote speakers
B	Identify and develop information and data useful for modeling needs in collaboration with WGIPEM especially regarding to exploitation resources at the lower trophic level	c) close cooperation between WGIPEM and WGZE will be of mutual benefit for both of the groups as WGZE also desperatelly needs the modelling experise regarding the *Calanus* request. Face-to-face meeting is planned for 2015	Identify monitoring requirements for science and advisory needs in collaboration with data product users, including a description of variables and data products, spatial and temporal resolution needs, and the desired quality of data and estimates.& Identify knowledge and methodological monitoring gaps, and develop strategies to fill these gaps.	Year 1	Direct contribution to the WGIPEM work
C	Review the ICES response to the Norwegian request regarding the *Calanus finmarchicus* exploratory assessment	b) WGZE considered response to the Norwegian request as a very important step towards lower trophic level assessment	Develop methods to quantify multiple direct and indirect impacts from fisheries as well as from mineral extraction, energy generation,	Years 1 & 2	Advice

			aquaculture practices, and other anthropogenic activities, and estimate the vulnerability of marine ecosystems to these impacts & Evaluate ecological, economic, and social tradeoffs between ecosystem protection and sustainable use to advise on the management of human activity in marine ecosystems.		
D	Compile the information on micro-plastics pollution and its effects on zoo-plankton communities	a, b) Monitoring of microplastics and their potential impact on individual organisms and zooplankton communities will be further discussed leading to recommendation on the best practise. It is an important contribution to the implementation of the MSFD	Identify monitoring requirements for science and advisory needs in collaboration with data product users, including a description of variables and data products, spatial and temporal resolution needs, and the desired quality of data and estimates.& Identify knowledge and methodological monitoring gaps, and develop strategies to fill these gaps.	Years 1 & 2	Recommendation regarding the best practice via the WGZE webpage
E	Review the new methods of automatic and semi-automatic plankton identification	a) Sample analyses including taxonomic identification, counting and measuring procedures are costly and time consuming. Development of the new methods of automatic and semi-automatic plankton identification needs to be further reviewed	Ensure the development of best practices through establishment of guidelines and quality standards & Promote new technologies and opportunities for observation and monitoring, and assess their capabilities in the ICES context.	Years 1 & 2	Peer-reviewed publication to update the methodology chapter in the ICES Zooplankton Methodology Manual
F	Expand and update the WGZE zooplankton monitoring and time-series compilation.	a, b, c) It gives a rare opportunity to examine regional and transatlantic distribution and temporal patterns within the zooplankton time-series,	Assess the physical, chemical, and biological state of regional seas and investigate the predominant climatic,	Years 1, 2, 3	Next edition of the Zooplankton Status Report (ZSR) Webpage content update

		including new methods identified by WKSERIES, to discern significant changes over time and to identify potential environmental or climate drivers.	hydrological, and biological features and processes that characterize regional ecosystems & Quantify the differential effects of climate change on regional ecosystems and develop species and habitat vulnerability assessments for key species & Develop historical baselines of population and community structure and production to be used as the basis for population and system level reference points & Develop indicators of pressure on populations and ecosystems from human activities such as eutrophication, contaminant and litter release, introduction of alien species, and generation of underwater noise.		Additional peer-reviewed publication
G	Revise lists of currently suggested (e.g. by OSPAR, HELCOM, and EU Member States) zooplankton indicators relevant for biodiversity and foodweb status assessment. Based on gap analysis, identify and test new, candidate indicators considering their response to various pressures	a, b) Contribution to the implementation of high level marine policies including MSFD.	Develop historical baselines of population and community structure and production to be used as the basis for population and system level reference points & Develop indicators of pressure on populations and ecosystems from human activities such as eutrophication, contaminant and litter release, introduction of alien species, and generation of underwater noise.	Years 1, 2, 3	Report available through the WGZE website Publication if findings appear to be encouraging
H	Design and carry out coordinated and collaborative activities with	c) Synergy is expectected based on development of the common activities	Identify issue-based ecosystem questions relevant to science	Years 1, 2, 3	Plan of activities

	WGIMT and WGPME	strategy	and management needs that can be addressed by developing IEAs & Ensure the development of best practices through establishment of guidelines and quality standards.		
I	Refine and expand the compilation of information on zooplankton species, taxonomic categories, and life stages that are currently monitored in the ICES area.	a, b, c) Use this compilation in combination with SAHFOS lab studies to define thermal ranges in the seasonal, latitudinal, and transatlantic distribution of key zooplankton species in the ICES area. Such a list is fundamental information needed in order to recommend indices and how to apply them	Identify monitoring requirements for science and advisory needs in collaboration with data product users, including a description of variables and data products, spatial and temporal resolution needs, and the desired quality of data and estimates & Allocate and coordinate observation and monitoring requests to appropriate expert groups on fishery-independent and fishery-dependent surveys and sampling, and monitor the quality and delivery of data products.	Years 1, 2, 3	via WGZE website as an interactive web-based map system Peer-reviewed publication Contribution to the next ZSR
J	Calculate zooplankton productivity and metabolic rates in the ICES area based on allometric approaches. Build a database of zooplankton individual species biomass, productivity and metabolic rate equations	a, b, c) Allometric relationships are commonly used to quickly convert routinely collected monitoring data into estimates of zooplankton standing stock that are requested for the assessment and management of the marine ecosystem. At present a wide variety of allometric relationships are available for many zooplankton taxa in the literature; however, there are many taxa for which, useful allometric equations are lacking.	Identify knowledge and methodological monitoring gaps, and develop strategies to fill these gaps.	Years 1, 2, 3	Contribution to the next ZSR (as a new chapter) Peer-reviewed publication
K	Develop, revise and update of zooplankton species	a) Extremely inporatant tool in terms of capacity	Ensure the development of best	Years 1, 2, 3	Taxonomic Leaflets uploaded to the web

	identification keys initially focusing on the most abundant taxa at the ICES time-series sites and ensuring their availability via the web, including especially ICES Zooplankton Identification Leaflets.	building of the scientific community	practices through establishment of guidelines and quality standards.		page
L	Produce four short paragraphs for the ICES Ecosystem Overviews on the zooplankton community (spatial variability, hot spots and seasonality), one paragraph for each of the following ICES ecoregions: Greater North Sea, Celtic Seas, Bay of Biscay & the Iberian coast and Baltic Sea.	Each paragraph should be maximum 150 words in length and can be support by one figure. Paragraphs for each ecoregion should be similar in style and address the overall state and comment on the pressures accounting for changes in state. These will go in section four of the ecosystem overviews and not supposed to be long descriptions, but a short synopsis of important points for managers and policy developers. (Template and Guidelines for Ecosystem Overviews)	Assess the physical, chemical, and biological state of regional seas and investigate the predominant climatic, hydrological, and biological features and processes that characterize regional ecosystems& contribution to the Integrated Ecosystem Assessments.	Year 1	ICES Ecosystem Overview
M	Contribute regional text (~ 150 words and 1-2 graphs in each case) on the state and trends of zooplankton to new ecosystem overviews for (i) Iceland, (ii) Norwegian Seas, (iii) Azorean ecoregion and (iv) the Oceanic north-east Atlantic ecoregion, if information is available.	Advisory request		Years 2 and 3	WGZE will work intersessionally to deliver the first two ecosystem overviews (i and ii) by the end of 2016 and during 2017 for the ecosystem overviews (iii and iv) for the attention of ACOM

Summary of the Work Plan

Year 1	We will be dealing with all of the ToRs during the Year 1 (certainly with various intensity). Some of ToRs will be finalized as e.g. tasks regarding the Zooplankton Production Symposium (a) or discussion on information and data needs of WGIPEM (b)
Year 2	We will continue with remaining ToRs and we expect that three of those will be completed during the Year 2: *Calanus* assessment (c), micro-plastics (d), and automatic/semi-automatic identification (e). Continue with ToR (a).

Year 3	Continue on ToRs c, d and e (not completed in year 2) ToR c will be completed by reviewing the final version of the Norwegian management plan as well as the report from the "Workshop 3: Zooplankton as a potential harvestable resource" organized at the 6th Zooplankton Production Symposium in Bergen. ToR d had to be shifted to Year 3 due to the absence of the ToR leads. ToR e will be finalized in 2017 when the manuscript of the peer-review publication is ready for submission. ToR a (Review progress and planning of the 6th Zoo-plankton Production Symposium) will be completed in Year 3 by providing and discussing the summary report prepared by the Symposium conveners. During Year 3 we will focus on completion of all of the long-lasting ToRs.

Supporting information

Priority	The activities of this group are a basic element of the SSGEPD, fundamental to understanding the relation between the physical, chemical environment and living marine resources in an ecosystem context. Reflecting the central role of zooplankton in marine ecology, the group members bring a wide range of experienced expertise and enthusiasm to bear on questions central to ICES concerns. Thus the work of this group must be considered of very high priority and central to ecosystem approaches.
Resource requirements	Resource required to undertake the "normal" activities of this group is negligible. However, due to the limited availability of the external funding we stuck with the idea of organizing the WKCALANUS workshop.
Participants	The Group is normally attended by some 25–30 members and guests.
Secretariat facilities	None.
Financial	No financial implications.
Linkages to ACOM and group under ACOM	The Group reports to the SSGEPD, SCICOM and ACOM. Mainly WGZE provides scientific information on plankton and ecosystems but irregularly contributing to the advisory part of ICES activities as well. Currently, WGZE is working with the *Calanus finmarchicus* exploratory assessment in response to the Norwegian government request.
Linkages to other committees groups	Any and all expert groups interested in marine ecosystem monitoring and assessments, modelling and/or plankton studies, including fish and shellfish life histories and recruitment studies. Close cooperation with the WGPME and WGIMT is planned and expected. Contacts with WGIPEM were initiated to contribute togeteher to the *Calanus* assessment.
Linkages to other organization	The Plankton Status Report is of interest and practical use to a range of interested groups within ICES, PICES, CIESM, and GOOS with other national and international research groups and agencies. Exchange of information and cooperation is expected with other organisations as IOC, IGBP, SCOR, COML/CMarZ, and others which have research activities meetings etc., of interest and relevant to the activities of the WGZE. Contacts are maintained through networking and collaborative activities.