Workshop on pathways to climate-aware advice (WKCLIMAD)

2020/WK/IEASG05 The Workshop on pathways to climate-aware advice (WKCLIMAD), chaired by Kirstin Holsman, USA, Michael Rust, USA and Mark Dickey-Collas, ACOM, will be established on 15 June 2021 to start intersessional work and will meet online, 29–30 September 2021 and 18-20 October 2021 to develop a proposal for an advisory framework that accounts for the influences of climate change on aquaculture, fisheries, and ecosystems. The framework should address the short, medium and long term influence of climate. The workshop will do this by:

a) Work intersessionally (via correspondence prior to and between meetings) to review the evidence base of recent and emergent analyses of key climate hazards to aquaculture, fisheries, and ecosystems. The review should include the probability of risk and the severity of the key climate hazards, the assessment of variability and uncertainty, identifying best practice for the consequences of both temporal and spatial scales (Science Plan codes: 1.3, 2.5).

b) Outline actionable strategies and approaches (including socio-ecological adaption and mitigation) to promote resiliency in aquaculture, fisheries, and ecosystems; frame and identify the key steps to "on-ramp" climate information and tools to management advice. (Science Plan codes: 6.6).

c) Scope the next steps for an operational approach, expanding the relevant aspects of climate change that impact management decisions in aquaculture, fisheries, and ecosystems (Science Plan codes: 6.6).

WKCLIMAD will report by 15 November 2021 for the attention of IEASG.

Supporting information

Priority	The overall aim of this workshop is to develop a broad framework for climate-related advice taking into account that different types of ICES Advice will have both common and distinct scope and priorities. Managers, decision makers, and other stakeholders are increasingly aware that they need to consider climate impacts, but they often are not clear on how this can be effectively achieved. As climate impacts become more pervasive, there is a need for ICES to evaluate its own plans for providing climate-related advice. Climate-enabled tools and predictive tools are increasingly available and deployed to improve management, and various frameworks have been proposed to integrate climate information into advice, yet an overarching synthesis is needed to categorize and summarize this wealth of information. This workshop will launch from the position that much information and many tools are already available, and the challenge to ICES is how to incorporate this evidence and provide credible and relevant advice to managers.

Scientific justification	Three components form the workshop: 1. Common understanding of best available evidence and expert opinion on climate change and influence of fisheries and aquaculture. 2. Actionable strategies and approaches that are appropriate for advice to managers of fisheries and aquaculture. 3. Bringing together the evidence and strategies together in a proposed advice framework. Identification of climate change hazards and impacts should include consideration of the temporal scales (near, medium and long term) and spatial scales relevant to ICES ecoregions (including regional aspects such as environmental and ecological hotspots that are particularly vulnerable to climate impacts). Climate change forcing includes sudden climate events (marine heatwaves, low oxygen events, declining pH, changes in circulation, altered oceanographic conditions) resulting in long-term hazards (e.g., shifting distributions or declines in productivity, changes in marine HABs and pathogen distributions/impacts, etc.). Climate change hazards also result in social and economic impacts (e.g. job loss in fisheries, altered access to food and nutritional resources, cascading impacts on human health and wellbeing). The review of the evidence-base related to identified hazards ideally includes identification of key risks from hazards to ecological and social systems and associated estimations of confidence (qualitative or quantitative) in terms of attribution and probability of occurrence. Identifying best practices for testing, selecting, and implementing climate advice tools that can help estimate risk, including tools to facilitate the assessment of variability and to identify and evaluate uncertainty. The review could also consider: • Approaches for bias correction, skill testing, and quantification of uncertainty for climate-enhanced tools and products, and gaps in knowledge or technology • Approaches and examples of cumulative impact assessments including cascading impacts and interactions with other natural or anthropogenic pressures. • Methods of scenario analyses and management strategy evaluation for testing the performance of climate advice under future climate change scenarios. • The potential for a harmonized approach to reporting impacts, responses, and tools between aquaculture and fisheries and identify shared tools and needs (e.g. Risk Communication) and discuss unique challenges and solutions. Actionable strategies and approaches to promote resiliency or mitigation and to provide advice should consider: • Nested scales of management approaches: dynamic management (short-term), adaptive (medium spatial and annual/biannual scale), to fixed management measures (long-term, basin-scale). • Climate products and strategies associated with various scales of management (e.g., now-casts for dynamic management, forecasts for adaptive management, and long-term projections for fixed management measures like protected areas and ecosystem-based limits on harvest).

	When building the draft framework, the following issues should be considered: • Climate-informed advice given actual and counterfactual management responses to sudden climate events. • Operational now-casts in dynamic management, forecasts in adaptive management/ stock assessment, and long-term projections used in fixed measures and strategic advice. • "on-ramps" for climate information and tools for management advice and the required level of integrative climate advice The workshop will also partially use a modified Delphi approach to develop a degree of prioritized consensus around climate forced hazards, the risk (probability) those hazards pose, and mitigation approaches for fisheries and aquaculture at different temporal scales and management intensities. A series of remotely administered exercises will be used prior to the actual workshop to frontload the discussion at the workshop. First, a scoping exercise to gather a diversity of input from a broad population of experts in environmental, social and economic sciences will be conducted. This information will then be synthesized into a second remotely administered exercise (intersessionally) to further prioritize hazards, refine estimation of risk, and increase the pool of opportunities for mitigation. Economic, social and environmental experts from both industries that are most prolific and engaged from the two exercises will be invited to the workshop. The workshop time will be used to finalize the information from the exercises, and, in accordance with the ICES guiding principles, to develop a proposed format to consistently include climate information into ICES advice. *Two outcomes/products:* A **workshop report** to ACOM and SCICOM An **ICES guideline** for incorporating climate in ICES advice (possibly 10 key principles on how to and not to address the climate context).
Resource requirements	No major resourcing.
Participants	Scientists, stock assessment authors, climate and ocean modellers, ecosystem and food web modellers, social scientists, economists.
Secretariat facilities	Assistance with surveys and online meeting support.
Financial	No financial implications.
Linkages to advisory committees	ACOM, SCICOM
Linkages to other committees or groups	
Linkages to other organizations	