Activity 11: Small Pelagic Fish in 2050

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Background

This activity will be an overarching synthesis project that will use the results of Activities 1-10 to build a conceptual projection, including societal perspective, for small pelagic communities in future years (*e.g*. the outlook for small pelagics in 2050). Each Activity Group identified by the WGSPF can contribute to this "integrated" activity.

A number of large-scale projects (see table below) have already developed scenarios based on IPCC SSPs (Shared Socioeconomic Pathways) and RCP (Representative Concentration Pathways) or OSPs (Ocean Sustainable Pathways) using different approaches. Two example approaches show a way that we might frame our perspectives based on outputs from the Activity Groups: 1) the PESTLE approach (Political, Economic, Societal, Technological, Legal and Environmental) where future environmental changes can be linked to socio-economic changes, societal norms and technological advances to assess potential status and risks to small pelagic communities in future years or 2) more standard risk assessments on fish and fisheries. These types of analyses (broader than just small pelagic communities) have also been performed (and will continue) using either desk-top analyses (Payne *et al*. 2021) and/or expert-based approaches (Bueno-Pardo *et al*. 2024). They can be used in projection modeling across regional seas or sub-areas (*e.g*. FUTURE MARES).

Under this activity the existing projections on shifts in distribution might also be reviewed (although some do not link with societal narratives – *e.g*. changes in fishing pressure / management / equity. There is an opportunity under this activity to also incorporate the three IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) scenarios (Pichs-Madruga *et al*. 2016). Some future scenarios have been developed for aquaculture which include changes in fishmeal production from small pelagic fish (Kreis *et al*. 2021). Scenarios that have been created for fisheries (*e.g.,* Tittensor et al. 2018, Pinnegar *et al*. 2021, Hamon *et al*. 2021, Chevallier *et al*. 2025) can be briefly reviewed and compared. Most of these projects make similar contrasts in terms of global *vs* local perspectives and climate severity from low to high (based on the amount of potential for climate mitigation and adaptation).

Objectives of the activity for 2024–2028 [with links to WG's ToR]

- Integrate some of the outputs from each WG activity into a picture of what small pelagic forage communities might look like in 2050, including biology, distribution, fisheries and management perspectives (*ToR 1–5*).

Description of tasks

Activities can contribute information (members can map their work onto this topic). For example:

- securing quality food with omega-3 fatty acids;
- management of small pelagic fish and other species suffering cascading effects from pelagic forage species (integration of fishery-dependent information, co-management);
- monitoring (eDNA/RNA, other new techniques such as smaller satellite tags, close-Kin method, *etc*.);
- consequences to food webs in different futures.

Projects that have formulated social-ecological scenarios [add to this]

No.	Project Acronym	Scale / notes	Contact
1	CERES (EU)	Europe-wide, PESTLE, IPCC RCPs SSPs – broad narratives for fisheries and aquaculture	Myron Peck (myron.peck@nioz.nl)
2	FutureMARES (EU)	Europe-wide, PESTLE, IPCC, RCPs, SSPs – sustainable harvesting and nature-based solutions, 3 scenarios	Marta Coll / Chris Lynam (marta.coll.work@gmail.com) (chris.lynam@cefas.gov.uk)
3	ACTNOW (EU)	Europe-wide, PESTLE, IPCC RCPs, SSPs – climate change and multiple pressures / stressors, 4 scenarios	Myron Peck (myron.peck@nioz.nl)
4	FishMIP	Global scenarios, including fishing pressure	Tyler Eddie (Tyler.Eddy@mi.mun.ca)
5	SOMBEE (Biodiversa)	Global, regionalized to 7 ecosystems, fisheries and climate, PESTLE	Yunne Shin (yunne-jai.shin@ird.fr)
6	Humboldt Tipping (German BMBF)	*Needs to be filled in*	Stefan Königstein (stefan.koenigstein@leibniz-zmt.de)
7	FUTURE SEAS	*Needs to be filled in*	Mike Jacox (michael.jacox@noaa.gov)

Potential contributions from each activity to this approach

Activity Group	Potential information available (conceptual 2050)
1	
2	
3	
4	
5	
6	
7	New concepts/methods in fisheries surveys and data integration
8	
9	
10	

Deliverables and anticipated timeline

Deliverable/objective	Timeline

Membership

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