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PICES-ICES WG53/WGSPF meeting (November 2025)

Activity 5: Non-climatic and non-fisheries anthropogenic impacts

Activity leaders: Rebecca Asch, Francis Juanes, Marta Moyano, Patrick Polte, (Henn Ojaveer)

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Activity 5 progress: development

- Initial discussion of this topic at Oct 2025 Honolulu meeting
- Proposed at Lisbon meeting Feb 2025
- More discussion at PICES 2025
- Motivation: Providing a better baseline for (*ad hoc*) management advice

FAO, 2016

Activity 5 progress: motivation

- Activity motivated by increasing demand by managers.
- More specific expertise needed on offshore renewal energy, dredging, pollution (noise, eutrophication, plastic, etc.) and their consequences
- Additional expertise in trait-based vulnerability analysis is highly welcome
- There is a community of non-fisheries biologists studying these issues. ***How do we connect across disciplines?***

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Activity 5 progress: goals

This activity within the cross-basin scope of WGSPF aims to collect information across species and oceans on cases of **seascape modification effects** and provide a comprehensive review on the cause-and-effect chains to provide informed answers. This activity will also point out research gaps. A **trait-based approach** will be used to characterize existing impacts documented in the scientific literature so as to better understand what **impacts may be generalizable across organisms** with similar life history, ecological, and physiological traits.

FAO, 2016

Activity 5 progress: SPF 2026

- W1: Conceptualizing a Vulnerability Analysis for Anthropogenic Stressors on Small Pelagic Fish Communities
- S2: New Approaches for Assessment of Human Impacts Beyond Fisheries

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Workshop 1

W1: **Conceptualizing a Vulnerability Analysis for Anthropogenic Stressors on Small Pelagic Fish Communities**

Workshop 1 Objectives

1) Introduce key concepts of vulnerability, exposure, sensitivity, and adaptive capacity in the context of SPF communities
2) Identify and prioritize anthropogenic stressors relevant to regional SPF populations
3) Develop a conceptual framework for conducting vulnerability assessments
4) Identify sets of relevant pressures and traits across keystone SPF species

Workshop 1 Problems identified (~20 participants)

1) Introduce key concepts of vulnerability, exposure, sensitivity, and adaptive capacity in the context of SPF communities
2) Identify and prioritize anthropogenic stressors relevant to regional SPF populations

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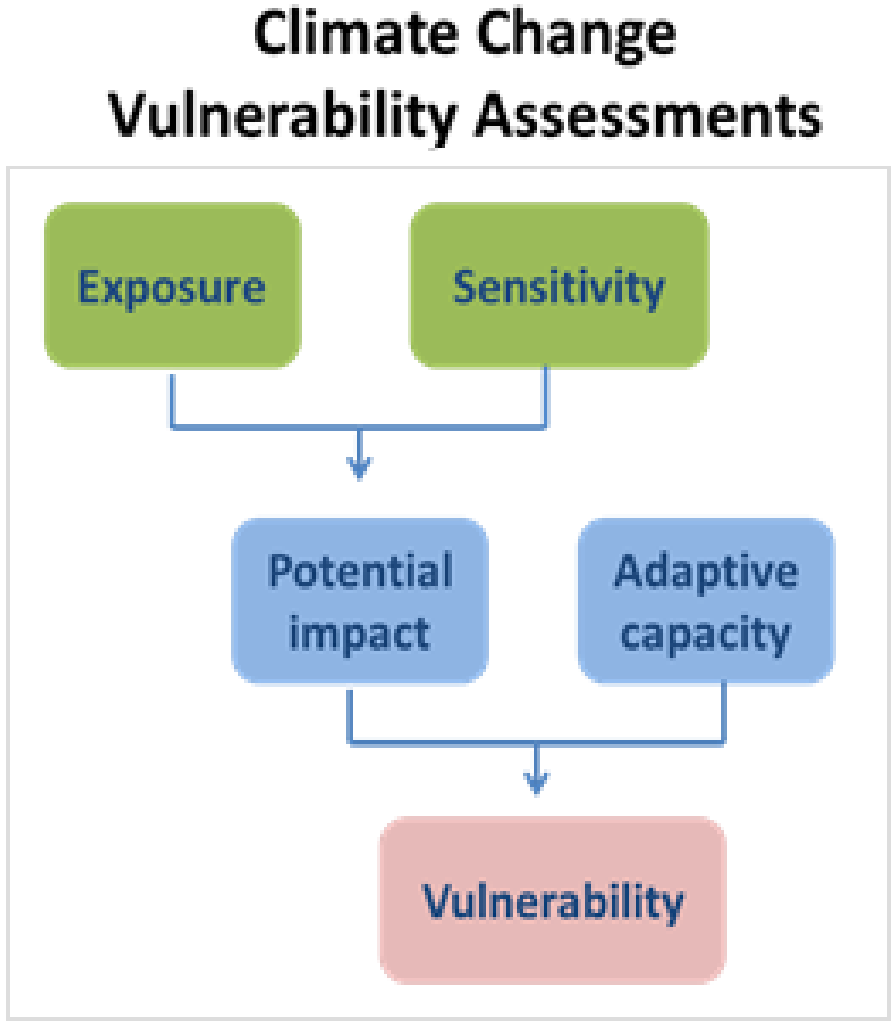
W1 key messages

→ Climate vulnerability assessments can be adapted to rapidly assess other types of anthropogenic impacts and prioritize the most vulnerable species

→ This can help with mitigating climate change impacts since we can regulate other anthropogenic impacts locally but climate require global action

→ Different anthropogenic activities affect SPF in different regions

→ It is important, but difficult, to consider distinct life history stages, stages of infrastructure development, uncertainty, cumulative impacts, and interacting effects



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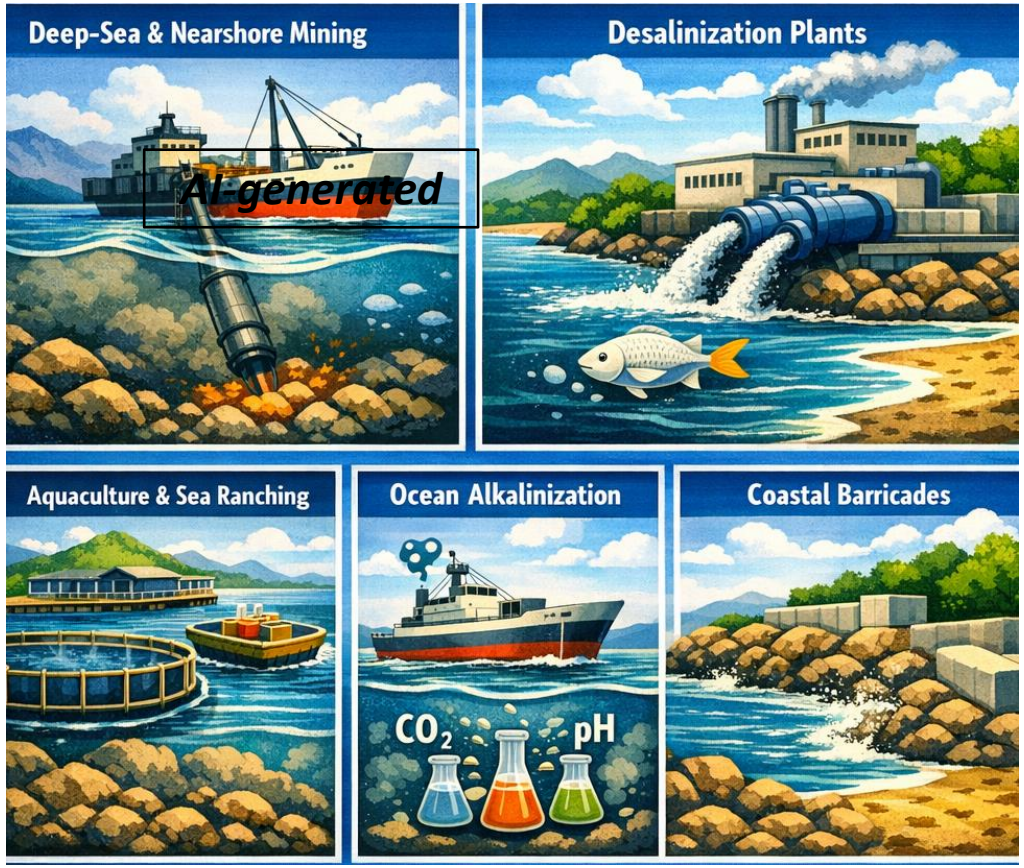
W1 key messages

- Future Actions?
  - Revise vulnerability framework
  - Publication will focus on matrix development for rapid risk assessment
  - SPF Case studies on land-based, coastal, and offshore threats
  - ***Actively recruiting co-authors!***
- What will 2050 look like?
  - Understanding of how traits affect vulnerability
  - Better uncertainty quantification and understanding of cumulative and interacting effects of anthropogenic impacts



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Session 2

S2: New Approaches for Assessment of Human Impacts Beyond Fisheries

Talks, speakers, countries

- 1 plenary, 1 invited, 8 contributed (1 pre-recorded; 4 ECOPs) talks
- First author affiliation: 1 Japan, 1 Germany, 4 Canada, 2 US, 1 Norway, 1 Brazil

General topics

- Impacts/stressors: Microplastics (2), dredging (2), alkalinity enhancement (1), offshore wind (1), noise (1)
- Tools/methods: Otolith microchemistry (2), passive and active acoustics (2), plankton imaging (1)

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S2 key messages

→ Anthropogenic impacts on SPF species are ubiquitous but poorly studied. Most SPF science focuses on fisheries ecology, environmental change, and management.

→ Novel technologies can help studying these anthropogenic impacts, e.g. acoustic telemetry, otolith microchemistry, imaging

→ Baseline data over relevant temporal and spatial scales are often missing. We need to develop creative approaches to address this issue.

→ Communication with the public and policy makers about impacts is important but often challenging due to the urgency of finding climate solutions, which can potentially include anthropogenic impacts, such as offshore wind and ocean alkalinization.

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S2 Future Actions

→ Cross-disciplinary collaboration is needed. There is a community that studies many of these impacts in fish and plankton, but not necessarily SPF.

→ Applied science needs to be valued in our community so that ECOPs (and others) are encouraged to develop actionable science on a wider variety of topics.

→ Communication training is needed among scientists so that we can speak to different audiences (including policy makers) in a way that is effective and so that statements are not misconstrued.