

Activity 10: Social-ecological analysis

Leaders (tentative): Mary Gasalla (Brazil), Nadine Heck (USA), Isaac Kaplan (USA), Peng Sun (P.R. China)

Background

This is a cross-cutting group considering social-ecological analyses of small pelagic species (SPF) and fisheries. Activity 10 is expected to integrate with Activity 8 (*Short-term forecasts and long-term projections*) and Activity 9 (*Improving management with actionable science*). Topics of interest include quantitative bioeconomic modeling in various forms, comprising end-to-end modeling and vulnerability and risk assessments utilizing stakeholder generated data. Specifically, one new area of interest focuses on incorporation of Traditional Ecological Knowledge and Objectives from indigenous communities or stakeholders. Another possible area of interest would be to investigate options for modeling fleet behavior for transboundary stocks and, in particular, how to evaluate options for international management and cooperation. Game theory models may be one avenue for this, coupled to new understanding of fish spatial distributions, and projections of how these may change in the coming decades. Activity members are also interested in studies of human community vulnerability, adaptation of small-scale pelagic fisheries to multiple stressors, and further integration with groups such as the ICES Human Dimensions Steering Group.

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

- Advance research connecting SPF to human dimensions, communities, and wellbeing (*ToR 4 & 5*);
- Conduct a review paper on modeling methods that can be used to “stress test” international management of shifting transboundary SPF stocks (*ToR 4 & 5*);
- *Additional objectives will be added.*

Description of tasks

- Advance research connecting SPF to human dimensions, communities, and wellbeing
 - Foci:
 - Food security/availability
 - Adaptation of small-scale pelagic fisheries to multiple stressors
 - Indigenous/traditional knowledge and objectives
 - Literature and starting points:
 - Paterson, B., Isaacs, M., Hara, M., Jarre, A., & Moloney, C. L. (2010). Transdisciplinary co-operation for an ecosystem approach to fisheries: a case study from the South African sardine fishery. *Marine Policy*, 34(4), 782-794.
 - Kim, S. (2010). Fisheries development in northeastern Asia in conjunction with changes in climate and social systems. *Marine Policy*, 34(4), 803-809.
 - [SPF-2022 Symposium](#)
[Session 7](#): Advancing social-ecological analyses and sustainable policies for human communities dependent on SPF
 - [ECCWO 2023 Symposium](#)
[Session 9](#): Transitioning from vulnerable to resilient and viable fisheries social-ecological systems
[Session 16](#): Emerging challenges in socio-ecological systems brought about by climate-related ecosystem changes and how to equitably manage them

- Conduct a review paper of modeling methods that can be used to “stress test” international management of shifting transboundary SPF stocks. Build from existing publications, including:
 - Cisneros-Montemayor, A. M., Ishimura, G., Munro, G. R., & Sumaila, U. R. (2020). Ecosystem-based management can contribute to cooperation in transboundary fisheries: the case of Pacific sardine. *Fisheries Research*, 221, 105401.
 - Sumaila, U. R., Palacios-Abrantes, J., & Cheung, W. W. (2020). Climate change, shifting threat points, and the management of transboundary fish stocks. *Ecology & Society*, 25(4).
 - Bjørndal, T., & Munro, G. R. (2021). A game theoretic perspective on the management of shared North Sea fishery resources: pre and post Brexit. *Marine Policy*, 132, 104669.

Deliverables and anticipated timeline

Deliverable/objective	Timeline
Convene topic session or workshop at the 2026 Symposium (SPF-2026)	May 2026
Review paper on one of themes listed above	October 2027

Membership

Name	Institution	Email
Isaac Kaplan	NOAA-NWFSC, USA	Isaac.kaplan@noaa.gov
Mary Gasalla	University of São Paulo, Brazil	mgasalla@usp.br
Nadine Heck	East Carolina University, USA	heckn19@ecu.edu
Peng Sun	Ocean University of China, P.R. China	sunpeng@ouc.edu.cn

This Activity welcomes new members with additional expertise and areas of interest