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PICES-ICES WG53/WGSPF meeting (May 2026)

Activity 1: Spatiotemporal Processes Affecting Life History

Activity leaders: Rebecca Ash (USA), Brad Erisman (USA) & Daniela Silva (Portugal)



Activity progress: Results



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Sub-activity 1: Trends in the Reproductive Phenology & Thermal Sensitivity of Small Pelagic Fishes

- Led by Rebecca Asch

Aims:

1. Quantify **interannual variability and long-term trends** in spawning phenology, with the goal of assessing the observed signal-to-noise ratio
2. Determine if regions with more **rapid temperature changes** are associated with **faster shifts** in spawning phenology
3. Compare results across **regions, species, and latitudinal gradients**

Datasets:

North American trial analysis: Data on 13 stocks from seven multi-decadal time series of larval fish abundance and historical ecology observations (newspaper recordings of spawning runs)

Planned global analysis: 39 datasets on 62 stocks, which include ichthyoplankton surveys, surveys of spawning adults, observations of maturity stages and GSI, otolith-based birth dates, and historical ecology observations

Deliverables:

- Recent presentations of this work at the Annual Larval Fish Conference (June 2025) and Tidewater Chapter Annual Meeting of the American Fisheries Society (March 2025)
- Submission of a paper to the MEPS special issue associated with the SPF Symposium (August 2026)
- Global comparison target completion date is December 2027





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Activity progress: Results

Sub-activity 2: Environmental sensitivity in spatial distribution

- Led by Marta Moyano and Martin Lindegren

Aim:

1. Identify the **key environmental drivers** determining the past and current distribution of SPF in the North Atlantic and whether their relative importance **differ between species**
2. Investigate whether the responses to the environment **differ between species AND between ecoregions** (suggesting different responses to climate change).

Deliverables:

- Oral presentation in Session 5
- Compilation of trawl and acoustic dataset for 4-5 SPF species across North Atlantic
- Next steps: finish the manuscript and submit to journal (end of year)

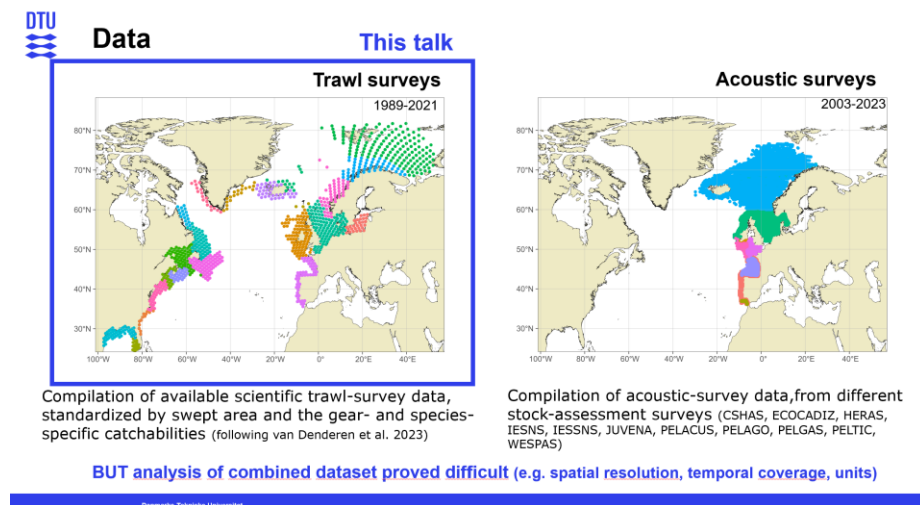
DTU
SPFF Symposium 2026

Region-specific niches and responses of SPF to climate variability and change

Martin Lindegren, Marta Moyano, Florian Berg, Maria Manuel Angelico, Guillermo Boyra, Pablo Carrera, Mathieu Doray, Fernando Ramos, Jeroen van der Kooij

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Activity progress: Results



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Sub-activity 3: Stock characterization in relation to life history traits and population structure

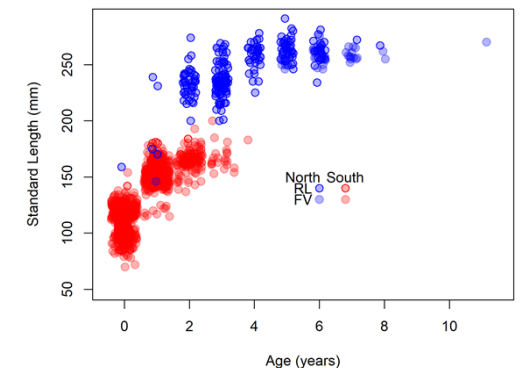
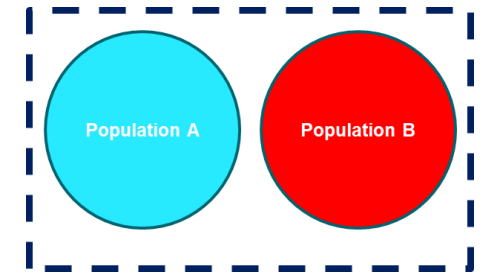
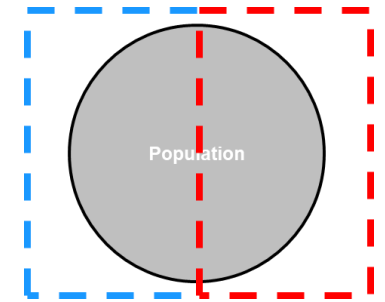
- Led by Brad Erisman

Aims:

1. Characterize the **spatiotemporal dimensions of key life history traits** (e.g., growth, spawning, migration) at population scales and compare them to existing stock (management) units.
2. **Repeat this process for several species/stocks** that cover a gradient of scales and structures.
3. **Develop best practices** for applying LHTs at **correct scales** to **SPF stock** characterizations (w/ inclusion of practical/political considerations)

Deliverables:

- Presentation on stock structure of Pacific Sardine in relation to LHTs at SPF Symposium (May 2026); paper in prep. for *CJFAS* (summer 2026)
- Presentation on spatiotemporal patterns of growth in Pacific Sardine in relation to stock structure at SPF Symposium (May 2026); paper published in *Fishes*.
- Next steps: (1) Review paper with examples from several sardine and anchovy stocks with varying life history traits (timeline TBD)





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Activity progress: Results

Sub-activity 4: Joint modelling using fisheries-dependent and independent datasets

- Led by Daniela Silva

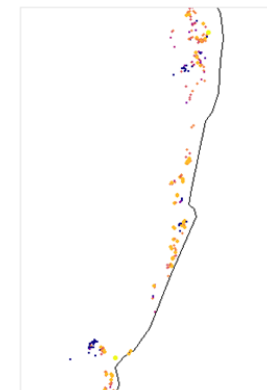
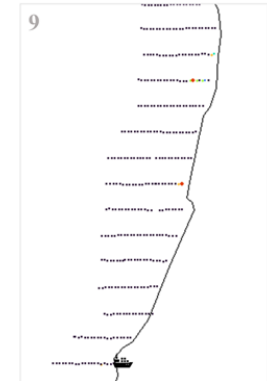
Aims:

1. Understanding of the **spatiotemporal distribution of SPF** by integrating multiple data sources, including **FID** and **FDD**.
2. **Identify environmental drivers** that influence the spatial distribution and abundance of SPF.
3. **Analyze fishing behavior** and assess the factors that may affect fishing effort, spatial patterns, and catch dynamics.
4. Evaluate the **relationship between vessel characteristics and fishing efficiency**.
5. Investigate the **influence of weather and sea state in fishing behavior**.

Datasets: Sardine biomass indices derived from scientific surveys and commercial catch records (with lat and lon). **Environmental variables** (SST, chlorophyll-a, bathymetry, ocean currents, wind, significant wave height). **Vessel attributes** (tonnage, power of the main engine, length, start year of fishing activity).

Deliverables:

- **Presentation at the S5 of the SPF Symposium.**
- First scientific paper presenting the developed methodology and its application to one case-study region under major revision at MEPS.
- Second paper focused on juvenile distribution and environmental drivers (submitted by the first semester of 2027)
- Review paper on species distribution data challenges and the methodological strategies with the emphasis on case studies in SPF systems (W6 result).



Activity progress: Results



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Sub-activity 5: Using maturity status and GSI data to look at phenology

- Led by Susana Garrido

Aims:

1. **Analyze the spatial and temporal patterns** of spawning phenology in the European sardine (*Sardina pilchardus*).
2. Detect potential **changes in seasonality** and timing of sardine spawning across different regions.
3. **Identify environmental drivers** influencing reproductive phenology.

Datasets: Biological sampling databases with information on age, sex, total length, total weight, gutted weight and spatial area.

Deliverables:

- **Poster P12 at Session 3 of the SPF Symposium 2026.**
- Draft manuscript focusing on one study region is currently under development.



Activity progress: discussion

- Points for discussion of the activity
- Planned joint analyses
- Breakout group topics?

- Data needs:
 - Sub1 – Phenology datasets (Rebecca)
 - Sub4 – Survey and AIS data for spatiotemporal analyses (Daniela)
 - Sub5 - Biological sampling databases on European Sardine w/ info. on age, sex, TL, total wt., gutted weight and spatial area (Susana)



General points for WG meeting

General discussion and opportunities for cross-activity collaboration

- collaboration with the modeling and management groups to get SDM products and phenology products incorporated into models that are useful for EBFM (e.g. European Sardine)

Ideas for how your activity can contribute to the Small Pelagics in 2050
Synthesis

- Above collaborations should help!



General points for WG meeting

1. Related activities at the 2026 SPF Symposium:
 - W6: Advancing Spatio-Temporal Species Distribution Models for Fish: Challenges, Methodologies, and Collaborative Solutions
 - S5: Spatiotemporal Dynamics of Small Pelagic Fishes in a Changing Ocean
 - S3: Life-History Variation Across Space, Time, and Ontogeny: Implications for Populations, Ecosystems, and Fisheries
2. Sub-activity 4 actively seeking new datasets from different regions
3. Other sub-activities also open to expanding datasets and regional representation
4. [What cross-linkages can we make with other WGSPF/WG53 activities, as well as other expert groups in PICES and ICES? \(More Workshops/Network Sessions\)](#)