**Groundfish and Climate Change Project – lead is Jameal Samhouri, NWFSC.**

**11:40 - 11:55 Fishing footsteps: nearly a half-century of shifting footprints of the US West Coast groundfish trawl fishery- Jameal**

Footprints of the non-whiting trawl fishery over the last four decades

Sustainability of resource use depends on where it is happening as well as how intensively that use is.

See Papaioannou, Selden et al. 2021 FMS -- “Not all who wander are lost”. https://www.frontiersin.org/articles/10.3389/fmars.2021.669094/full

West coast context:

* Climate change is shifting resources around
* But ALSO, there have been significant management and regulatory changes affecting the groundfish fishery

See Selden et al. paper on shifting stock availability. <https://doi.org/10.1093/icesjms/fsz211>

BUT note that this assumed fixed fishing area per port.

How are fishing grounds changing over time?

How do community-specific footprints...

Examples: 2003-2010 vs 2011-2020 fishing areas for Fort Bragg, Crescent City, Astoria.

Fort Bragg footprint: stable.

Crescent City: contracting.

Astoria: expansion, (I think) especially to the south.

Analysis is now looking at the Vizek et al. “business models” or fishing strategies for the groundfish fleet, and see how footprints vary across these.

Business models include “groundfish reliant boats”, multi vessel operators, and small gear switchers.

Groundfish reliant boats: large spatial shifts.

Multi vessel operators: southern fishing grounds disappear in recent years.

Small gear switchers: drop out of southern footprints

Emergent patterns: dynamism. But what is it driven by? Regulations, markets, or climate?

* Regulations can be described by the periods defined within the Warlick et al. 2018 paper.
* Markets: Marie Guldin analysis suggests reduction in # of buyers, but no latitudinal shift.
* Climate:  Pozo Buil, Jacox et al. ROMS suggests that realized oceanography differs markedly across ports (bottom conditions for present, past, and future).