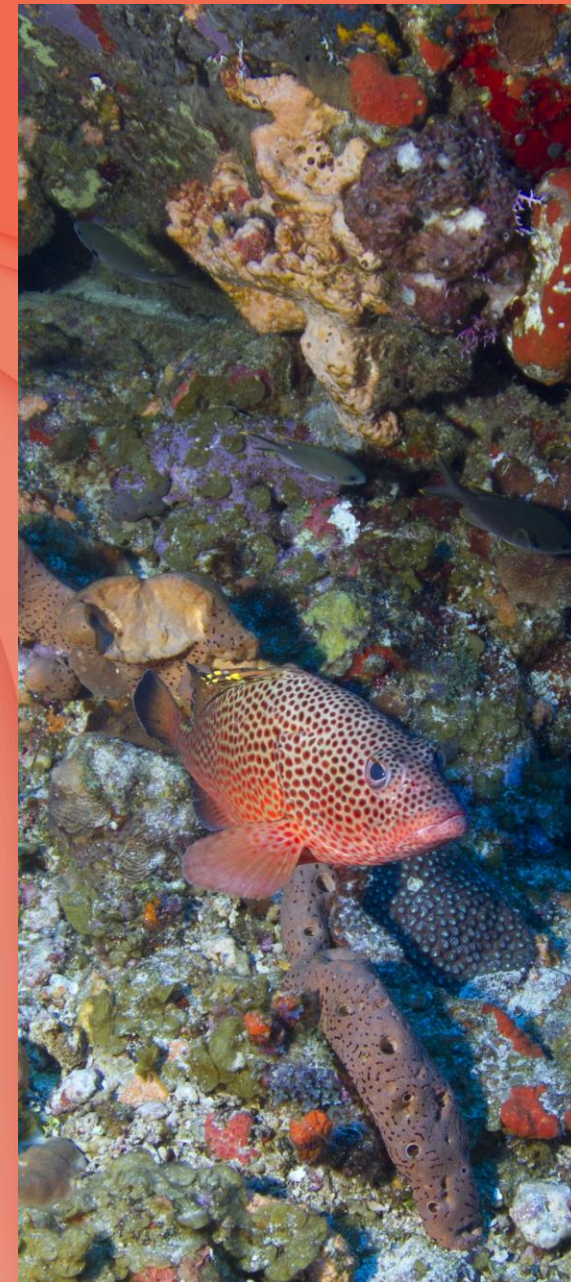


Fish Spawning Aggregation Variability

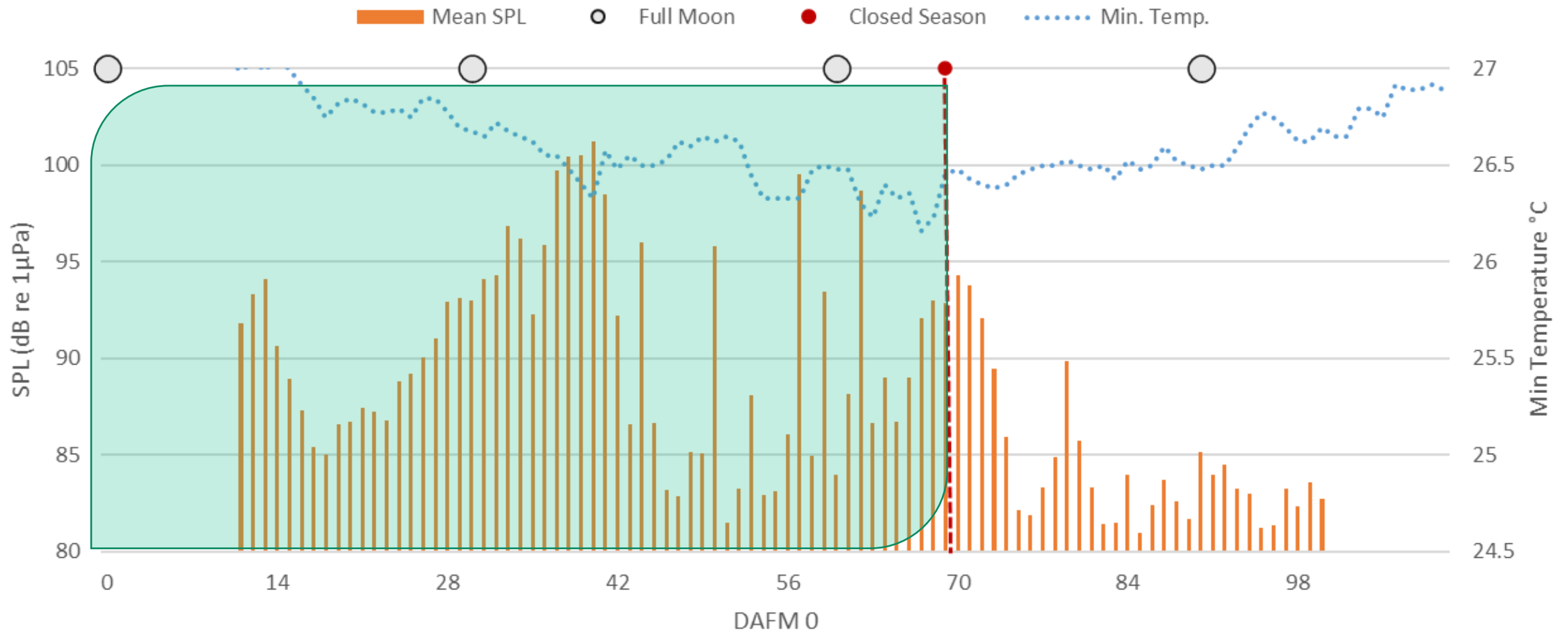
Passive Acoustic Monitoring of Red hind

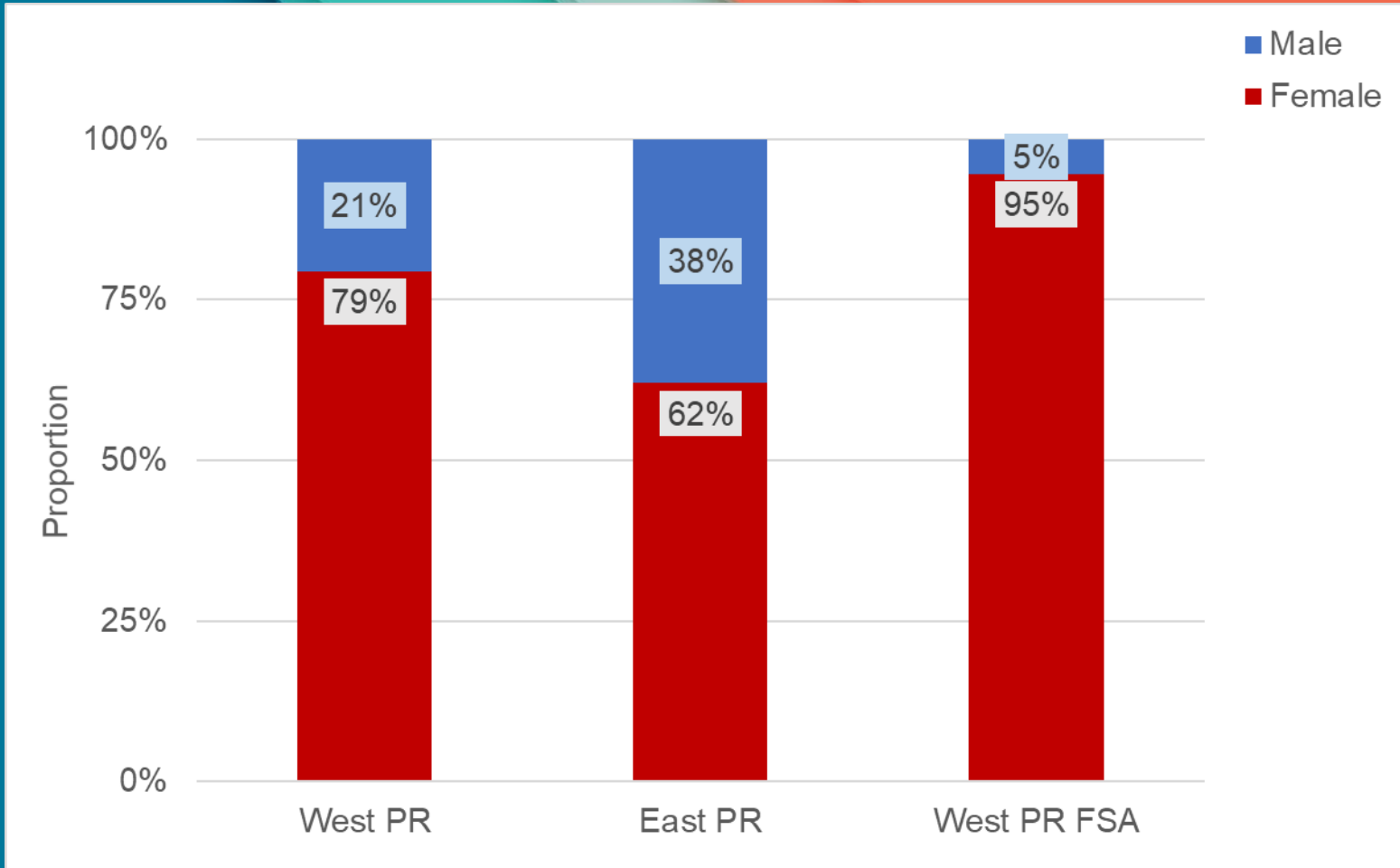
Michelle T. Schärer

- Red Hind off west Puerto Rico aggregate to spawn during 1-3 lunar cycles after the full moon post-winter solstice (Dec. 21)
- Males & larger females (next year's males) remain until the end of each aggregation
- Water temperature drops, below 26.5 °C (79.7 F) have been documented as a cue to spawning
- During reproductive behaviors Red Hind produce sounds that are detected remotely by passive acoustic monitoring (PAM)
- If the aggregation extends past February 28 in the EEZ off western Puerto Rico reproduction is disrupted, larger males and females are more vulnerable to fishing
- The lunar cycles of Red Hind aggregations extended past Feb. 28 at ALS in 2013, 2015 & 2019 (30% of past decade)



Passive Acoustic Monitoring (red hind) ALS 2019





Preliminary results MARFIN (Nemeth, R. Scharer, M & Shervette V.)

- The variability in lunar cycle & aggregations past Feb. 28, could happen up to 8 times in the next decade (80 %), but climate change may affect this in ways we cannot fully predict
- Prepare an amendment to the dates of the Red Hind closed season off west PR based on the most recent scientific information available from the region
- The future aggregations could be better predicted by a more in-depth analysis of PAM, continued passive acoustic monitoring and year-round sea water temperature recordings at aggregation sites.
- This variability in the spawning aggregation timing has been noted for other species that aggregate to spawn in the US Caribbean for which data is available from the region
- Emergency rule justified due to the disruption of the Red Hind aggregation when the closed season ends on Feb. 28, 2021

