

Sargassum as a Vector for Toxic Contaminants

Preliminary data from a 3 year study

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Background

- In addition to being essential fish habitat, Sargassum mats are also potentially important as vectors for toxic substances.
- These chemicals can accumulate in the biomass via water exposure in the open ocean or near shore water, and/or via atmospheric deposition.
- Previous studies, including NCCOS work, have demonstrated that a variety of contaminants (heavy metals, DDT, PAHs, PCBs) are found in Sargassum in US waters.
- This has potential implications for not only human and ecological health, but also for management/disposal techniques.



Project Summary

- In order to assess the potential contaminant load for Sargassum in US water, NCCOS is executing a three year study (FY23-FY25)
- Year One – Puerto Rico (nine sites)
- Year Two – USVI (nine sites)
- Year Three – Florida (fifteen sites)
- Samples are analyzed for a suite of contaminants: heavy metals, PAHs, PCBs, pesticides, PFAS, PBB, PBDEs



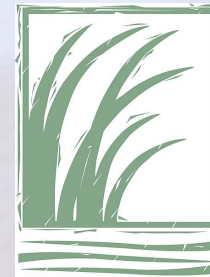
Project Partners

All Years: NCCOS, University of Puerto Rico
Dr. Dave Whitall
Dr. William Hernandez
Felipe Arzayus

Year One: Jobos Bay NERR
Year Two: Bioimpact (USVI)
Year Three: Florida DEP, Nova Southeastern Univ.



NSU
Florida



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RESERVE
SYSTEM

Year One Sampling Sites

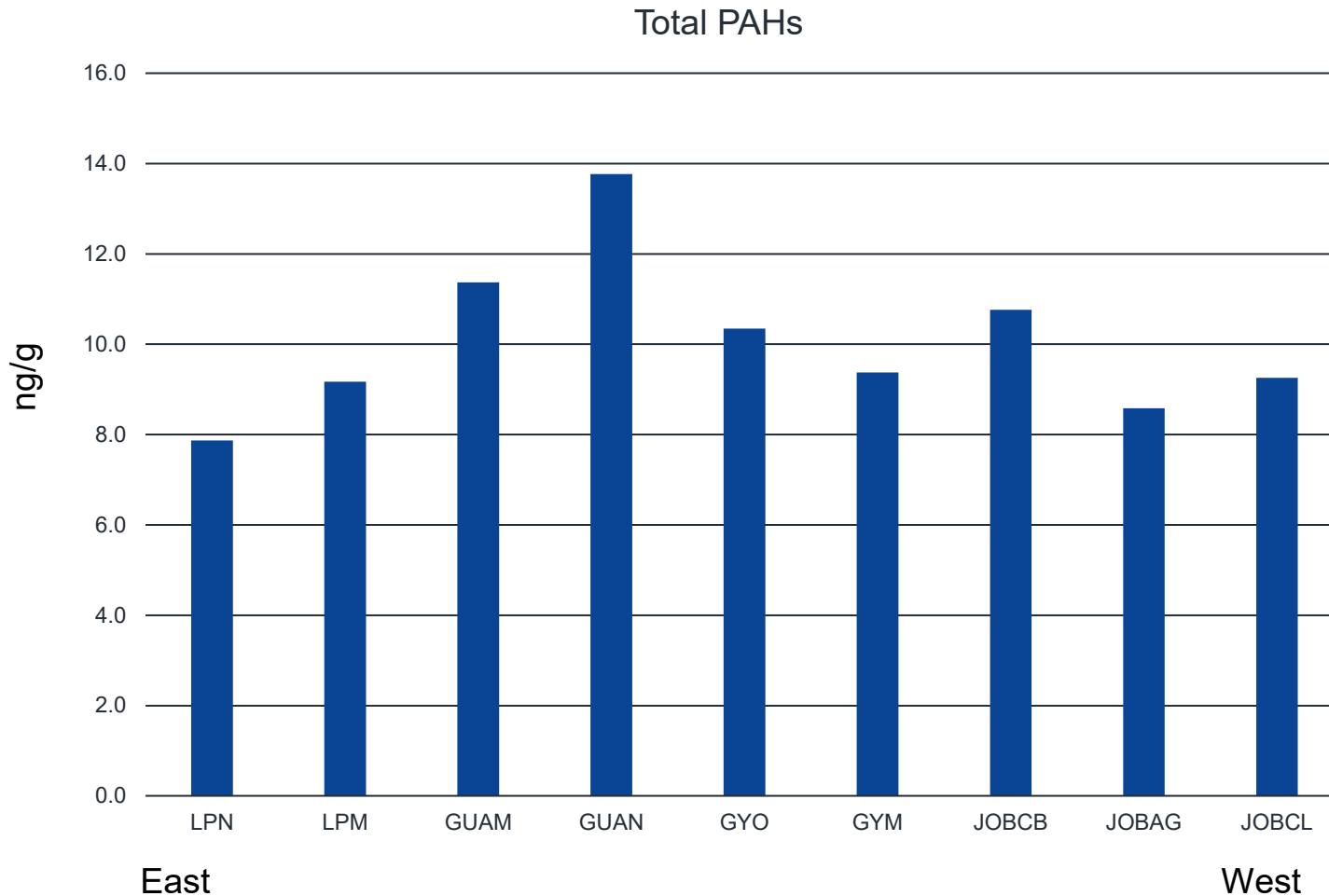


Year One Sampling Sites



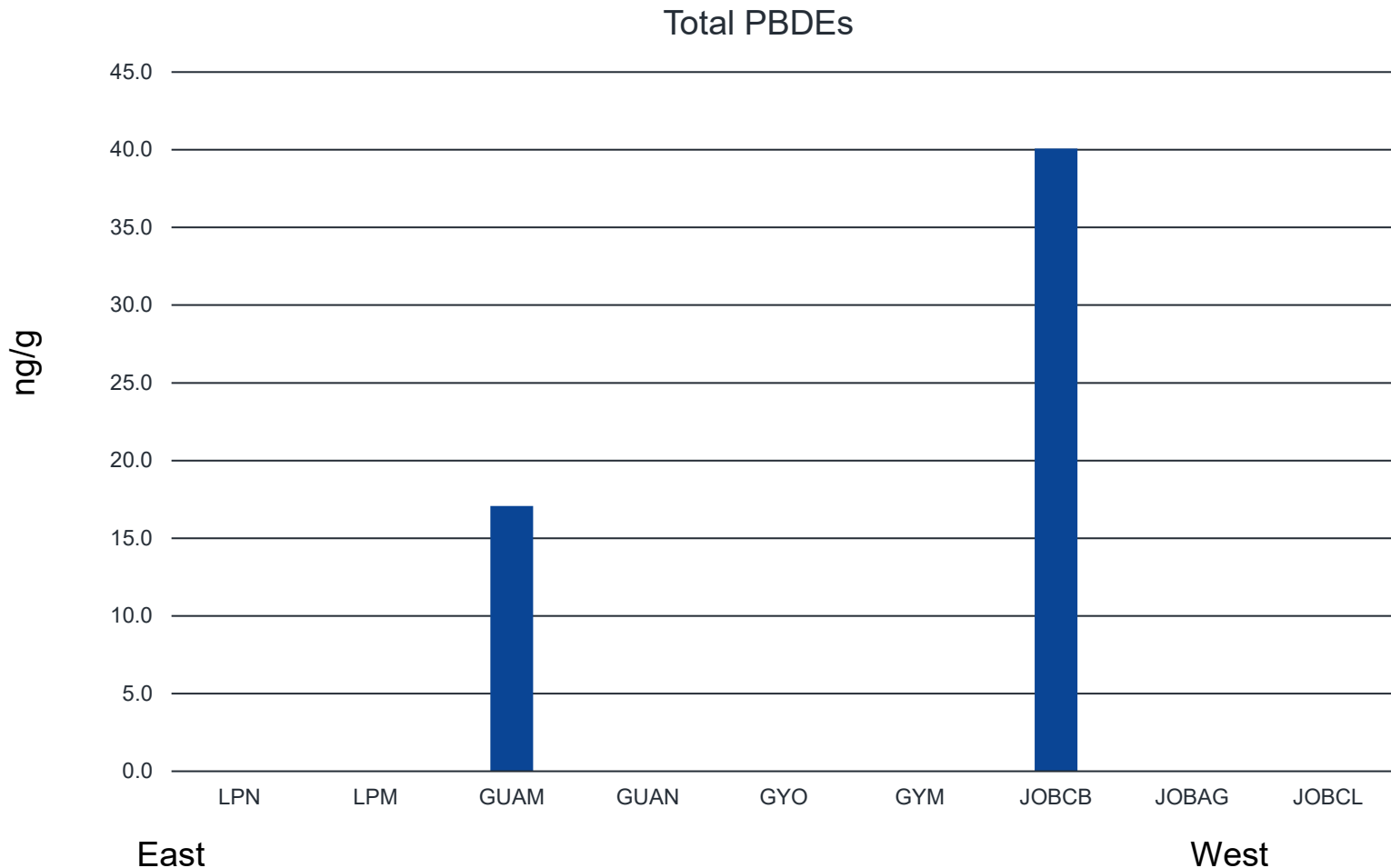
Year One Results (Puerto Rico)

The only organic contaminants that were quantified (above detection limits) were PAHs and PBDEs



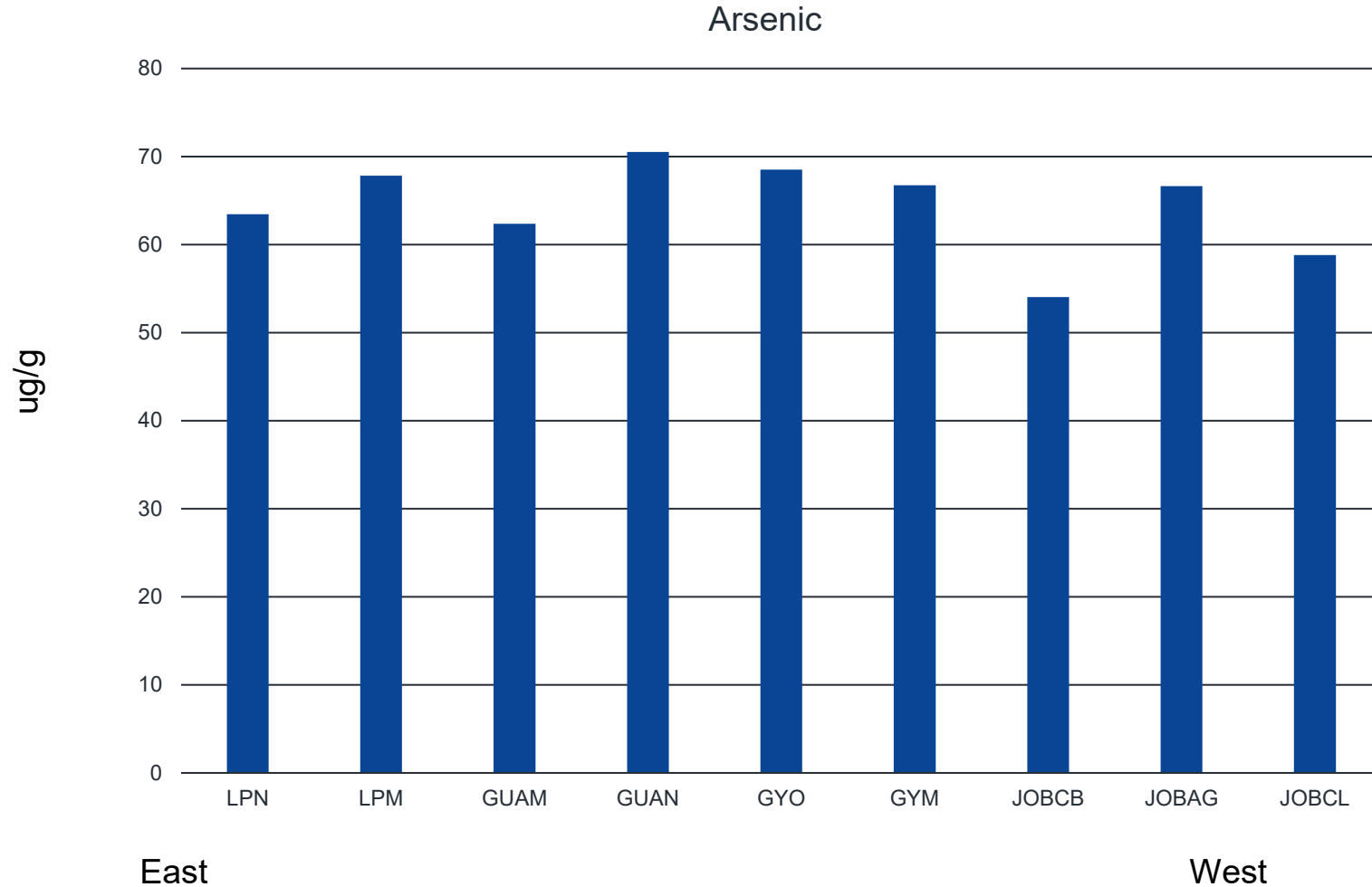
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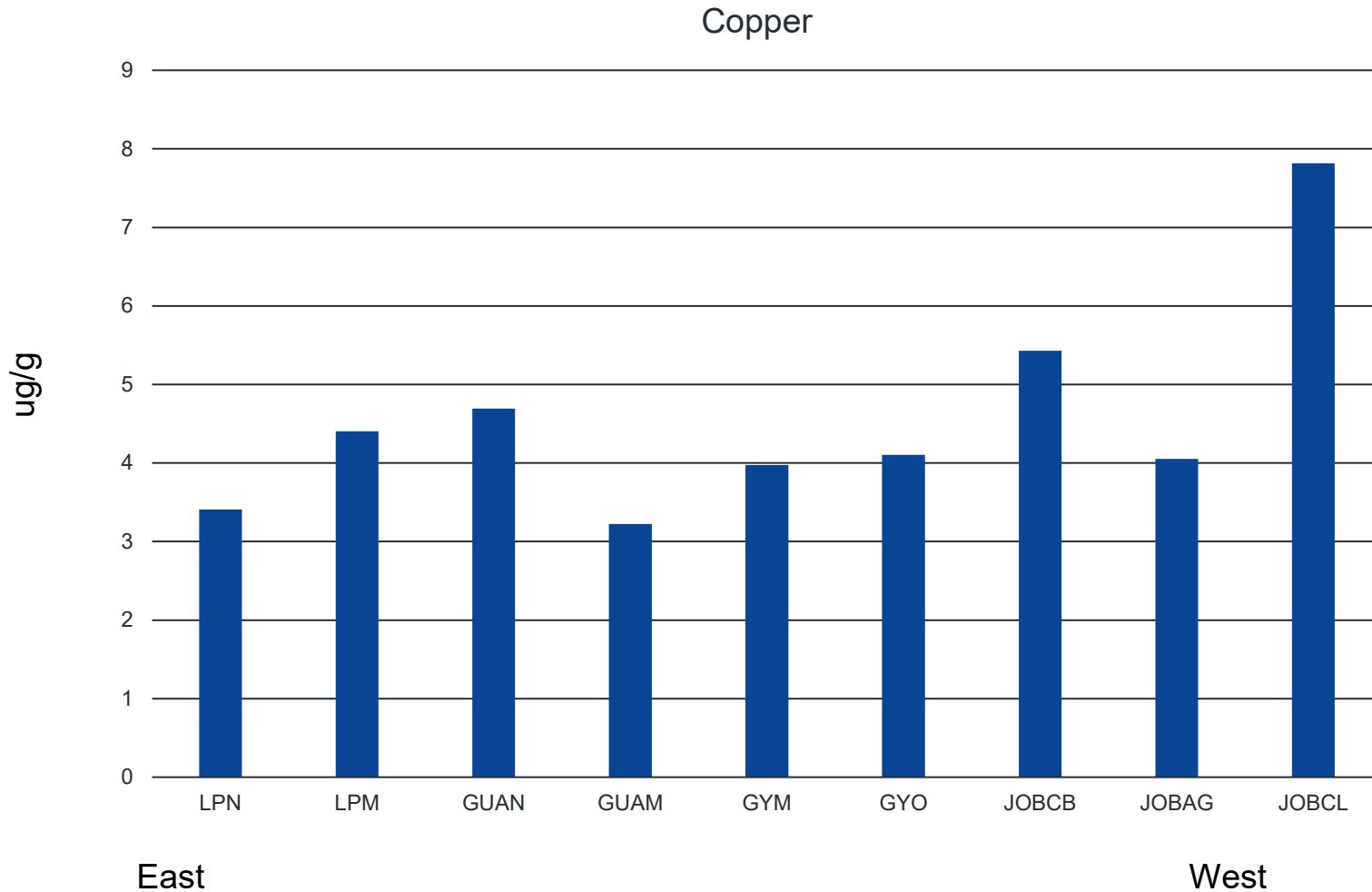
For metals, Ag, Be, Sb and Tl were not detected at any sites. Sn was only detected at one Guanica site



For reference, sediment ERL is 8 ug/g and ERM is 70 ug/g

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For reference, sediment ERL is 34 ug/g and ERM is 270 ug/g

Interpretation of Results

- There are relatively few datapoints to compare this to, but we will scour literature to have a comparative dataset.
- The total flux of contaminants may be more important than tissue concentrations.
 - We will look into estimating total biomass (e.g. via satellite) to calculate loads
- Concentrations in tissues may be important for disposal strategies.



Next Steps

- Year 2 data (USVI) will be analyzed in the coming months.
- Year 3 samples will be collected in summer FY25 (Florida) with data available in 2026.
- Year 1 data will be further analyzed and written up into both technical and outreach formats.

