Credentials

Dr. Robert Griffin is a research assistant professor at the School for Marine Science and Technology at UMass Dartmouth and a research associate at the Woods Institute for the Environment at Stanford University. Dr. Griffin received a PhD in Environmental and Natural Resource Economics from the University of Rhode Island in 2012, and has an extensive history of applied and basic research on offshore wind energy, fisheries, and their intersection. Dr Griffin's work includes 30 scientific publications, $500 thousand in grant funded research, and over 3000 citations to his research. A CV is attached.

Summary of reports

This report contains my evaluation of two reports authored by Di Jin, Hauke Kite-Powell, and Michael Weir: "Baseline Fishery Landings in Rhode Island State Waters from the Revolution Wind Export Cable Corridor" and "Fishery Impacts in Rhode Island State Waters from the Revolution Wind Export Cable Corridor," or "Baseline assessment" and "Impact assessment" respectively below. Review of these reports occurred between March and October of 2022. The evaluation and replication comments herein reflect my expertise in environmental economics. I did not evaluate the ecological responses of fish stocks to wind energy activities summarized in the impact assessment for their scientific validity, though I did replicate the analysis for computational validity.

Methods

Baseline assessment - commercial fishing

This report measures commercial fishing revenue at risk principally by conducting a geospatial and temporal overlay of commercial fishing activity in the cable corridor. This effort partially relies on existing federal efforts at NOAA to geospatially map fishing revenue for ocean planning purposes (DePiper 2014; Benjamin et al. 2018), leveraging federally managed vessel trip report data in combination with geospatial mapping methods that are commonly used to depict the marginal contribution of ocean locations to resource value (White et al., 2012; Griffin et al., 2015; St. Martin and Olson, 2017; Lester et al., 2018). Resource valuation is an important advancement over physical or biological measures of resources because it integrates users' values, which may vary widely depending on their use. This effort also relies on fisheries landings data supplied by Rhode Island Department of Environmental Management (RIDEM), in particular for NOAA Fisheries Statistical Reporting Area 539. The authors rely on RIDEM data for their baseline assessment as it has more appropriate geographic coverage, and includes state permit holders. Unfortunately, it also has a coarser spatial resolution than the federal data and also overlaps with federal waters. Given this, the authors appropriately bound their analysis with different assumptions about the spatial distribution and overlap of federal and state data. Revenue at risk in the Rhode Island state waters portion of the cable corridor is estimated using approaches to resample the federal and RIDEM data to the appropriate scale of the cable corridor.

This approach to measuring value at risk is consistent with scenario modeling of risk in the broader environmental/resource economics research literature - an analogue would be the common task of mapping the value of exposed shoreline assets at risk from flooding. In the context of fishing value at risk for the fishing fleet, the most appropriate measure would be net revenue at risk, accounting for fishing costs. In the event that effort is reduced due to wind farm activities, the fishing costs avoided (fuel, labor, etc.) due to this should generally not be considered as a monetary loss to fishermen. They would be when using total revenue as the value measure. Unfortunately, fishing costs are notoriously challenging to characterize and comprehensive data to understand these across space, time, and vessel characteristics are unavailable (Lam et al., 2011). By characterizing the value at risk as total revenue versus net revenue, the authors likely overestimate the exposed (and hence impacted) value. This is unavoidable given data limitations.

Annual average total revenue measures are calculated using an inflation-adjusted 12 year lookback period, from 2008 - 2019. While there has been a demonstrated and ongoing shift in species distributions due to climatic change (Nye et al., 2009; Rogers et al., 2019) that is affecting fisheries (Pinsky and Fogarty, 2012; Papaioannou et al., 2021), this lookback period captures recent market conditions and climate and ecological change that is appropriate for projecting out into the next decade, which is the period in which the present value of the majority of impacts are estimated to occur. Longer term projections of resource value that account for climate change are at the forefront of scientific inquiry and are therefore subject to considerable uncertainty.

Baseline assessment - for-hire/charter

For-hire/charter fishing value at risk is investigated using a similar overlap method to that used for commercial fishing. In this case, the authors originated their own survey to create a map of for-hire/charter visitation in the area within and adjacent to the Revolution Wind lease area and cable corridor. As a sample, this is extrapolated to the whole population using a conversion based on their relative sample sizes and assuming otherwise no differences between in- and out-of-sample. Given that the whole population is not known with certainty, the authors include upper and lower bounds by adjusting the scaling factor based on surveyed information and estimates from discussions with industry participants. Finally, annual total revenue that overlaps with the cable corridor in RI state waters is calculated by multiplying an estimate of the average revenue per angler (NOAA estimates for Revolution Wind) by the total number of anglers in that area per year. This approach of estimating spatial visitation patterns using survey data is widely used across a range of studies, including for marine uses in the Northeast U.S. (Seaplan 2015) and for charter fishing in the context of ocean planning (Steinback et al., 2010). While using a fixed value per angler may mask both spatial and temporal heterogeneity in value, this is the best available estimate from NOAA currently.

The economic impact multipliers for induced spending and indirect impacts reflect the broader linkage of commercial and for-hire/charter fishing to the economy of shoreside communities. Accounting for these broader impacts is commonly done in project evaluation with broad societal impact, including for wind energy development (Slattery et al., 2011), commercial and recreational fisheries policy (Steinback, 2011; Patrick and Benaka, 2013), and interactions between these industries (Hoagland et al., 2015). The estimates in the reports are based on existing research or expert elicitation, versus originating a new investigation into appropriate multipliers, and are appropriate for the geographical context and coincide with the lookback period.

Impact assessment

The impact assessment in the report identifies discrete pathways where construction, operations, and decommissioning may affect fisheries resources. This approach reflects best practices for evaluating environmental values (Olander et al., 2015). The impact of each of these activities is assessed as a fraction of the total revenue at risk derived in the baseline assessment, for a given duration. This approach is consistent with standard “expected damage function” based approaches for valuation in economics, where an impact (or damage) function is used to translate the value at risk to a final value impact (Barbier 2015). The authors did not explore fishing behavior responses to fish stock impacts, such as effort displacement to other areas and associated changes in revenue or cost. While there has been some recent research into fishing responses in the context of offshore wind energy in the Northeast U.S. (Scheld et al., 2022), these responses are based on hypothesized behavior. Given the lack of field data on fishing behavior alongside commercial scale offshore wind farms in the U.S., we currently cannot validate models of how fishing behavior will change.

Replication

All analytical content originating from the author team has been replicated by Dr. Griffin, and found to be reported correctly, allowing for a small margin of error due to rounding and other idiosyncratic factors (generally less than 1%). This was an iterative process of review with the authors, where any calculation discrepancies were presented and discussed with the authors, and then any modifications were returned for further review and checking. Calculations that rely on data sourced from other studies/data sources also have been pursued and validated as presented in those sources.

Robert D. Griffin

Robert Griffin