Economic Valuation of Charter Fishing In Louisiana (Redfish)

Prepared for: American Saltwater Guides Association

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Introduction and Background:

The purpose of this report is to assess the quantify and identify the economic values of the Louisiana fishery. To date, there appears to be a lack of data and attempts to economically validate the value of the stock– specifically in the for-hire fishing community (hereafter, "charter"). Given the lack of general data and analysis, this report relies upon available trip records and market prices (charter fees) from Louisiana.

Markets as a method of exchange, and prices being the language of markets is a hallmark of economics. Yet for many important goods and services, no such market exists (Lewis and Tietenberg, 2019). For example, no tradeable market values the hurricane-buffering power of marshes (Barbier, 2015), nor the aesthetic and tourism value of beaches (Bell and Leeworthy, 1990). But, it is clear that these areas have value and are useful and productive for humans. Given that the value of these areas is not $0, natural resource economists have sought to properly extract the *implied* market value by three core methods– revealed preference, stated preference, and benefits transfer (Lewis and Tietenberg, 2019).

The first method economists use to extract nonmarket valuations is *revealed preference*. This relies on the fact that much can be learned by the choices that humans make in the marketplace (Lewis and Tietenberg, 2019). For instance, if two equivalent beach houses are found on different beaches– one clean and white-sanded, while the other muddy and dirty– the difference in sales price likely reflects the inherent value of the clean, white-sanded beaches. Further, if a public stand of old-growth forest does not charge tickets for entry, this does not mean the forest lacks value. Instead, the values must be backed out by the *revealed preferences* of consumers. Specifically, economists can measure all the tangential expenditures behaviors that reflect the inherent values of the resource. One method, the *travel cost method*, examines the travel expenses spent by consumers to get to the resource, which allows economists to sketch a demand curve for that amenity (Caulkins et. al 1986, Lewis and Tietenberg, 2019, Bell and Leeworthy, 1990). Since admission is free, economists can net out the "consumer surplus" (the total value emanating from the resource) quite easily, as it is the maximum willingness to pay (via travel costs) less the *free* cost of admission. In the example of the old-growth forest above, economists would aggregate the transportation, lodging, and other adjacent costs to understand the implicit values consumers have for the forest, and then calculate the total consumer surplus for the forest. Alternatively, there might be spillover property values to the properties adjacent to this hypothetical stand of forest. To capture this value, economists can use *hedonic valuation*, where identical properties or homes values who lack such a forest access/view are compared to the properties adjoining the forest (Lewis and Tietenberg, 2019). The higher per-property price captures the

human-centric aesthetic valuation of the forest, which can then be scaled to the entire forest.

Secondly, there are contexts where revealed preferences are not available for analysis, which leads economists to use *stated preference* methods (Lewis and Tietenberg, 2019, Carson and Hanemann, 2005). This toolkit relies upon asking respondents directly for their valuation of a nonmarket good. Classically, this method surveyed knowledgeable populations asking them for their explicit valuation of a good. More recently, field experiments using nudges (slight changes to measure respondents values) as well as auction-based experiments have yielded more latitude in understanding goods that are difficult to measure.

Lastly, *benefits transfer* is a straight-forward method that uses established values from adjacent studies to understand the nonmarket values at hand (Johnston et. al. 2015, Johnston and Rosenberger, 2010)). Specifically, nonmarket valuations of biomes, regions, or species that are similar to the area being analyzed are combined with the specific details of the area to yield a credible estimate.

In the case of the Louisiana redfish, *stated preference* research is the preferred method given that a) stated value surveys are unavailable and b) the paucity of research on established values for a benefits transfer program.

Research Methods and Analysis:

In nonmarket valuation, the travel cost method is a well-cited and documented tool for assessing the monetary benefits a resource. Simplistically, it takes the travel costs associated with accessing a resource (here fishing) and charts a demand curve– relating the travel costs (prices) versus the amount of trips taken (quantity). This affords a researcher to compute the consumer surplus associated with the resource by netting the price (typically $0) off of willingness to pay for the resource. Core to the analysis are the car/airfare costs, opportunity costs (off work), and entrance costs (guiding fees) associated with, in this case, fishing for redfish.

Here, the survey furnished by the American Saltwater Guides Association is particularly useful, given the specificity in *all travel* costs for more than 100 anglers who frequent Louisiana. Following the canonical textbook approach of Champ et. al 2017, I used Stata (economics/statistic software), to trace general regression to obtain the *beta* for relating travel costs to trips (1/beta yields the per-trip value). Using the American Saltwater Guides Association, I obtain a beta of .000482, which means the per-trip value is

$2,074.69. Given the fact that many redfish tourists pay flights, rental cars, guide fees, gas, employment off, and hotels (omitted here), this estimate might well be a average or underestimate of the true value of the resource.

Thanks to the rich activity data from Louisiana Fish and Wildlife (LA Creel Data Query) that displays fishing effort (days fished) and harvest records from 2014-2023 the total value of these trips can be estimated. Simply, by multiplying the per-trip value and the the LA Creel Data for all fishing effort non-offshore, and restricted to charter trips only, the economic value of this fishing resource over the years can be displayed (Figure 1 & 2– Red). Here the peak value of the fishery was 2018, at $329.64 million, declining to 2022's level of $311.95 million (a loss of $17.69 million, or $4.4 million a year). A linear trend of this value would show the fishery losing another $22 million of economic value.

To bin the analysis on a lower point, it's also possible to leverage the minimum, prevailing charter price ($600) for redfish charters, and rich data from Louisiana Fish and Wildlife (LA Creel Data Query) that displays fishing effort (days fished) and harvest records from 2014-2023. By taking the LA Creel Data for all fishing effort non-offshore, and restricted to charter trips only, it affords a clear analysis of charter activity. By simply multiplying the market price (which represents the minimum value anglers have for the fishery, otherwise they would not book the trip), and the days fished per year, a general economic value of fishery is established (Figure 1 & 2– Blue). To be clear, this represents a lower bound, minimal level of valuation of the fishery, as this represents the willingness-to-pay to fish in Louisiana. Using this method, values of the fishery peak in 2018 at $ 95.37 million and declines to 2022 at $90.25 million (a loss of $5.2 million).

Overall these two methods present a "bandwidth" of economic values of the redfish fishery in Louisiana. At best, the guided/charter fishery has lost $5 million of its value during the current stock declines, and more likely, it has lost $17.69 million dollars, with current trends pointing to another $22 million decline over the next 5 years.

Figure 1:

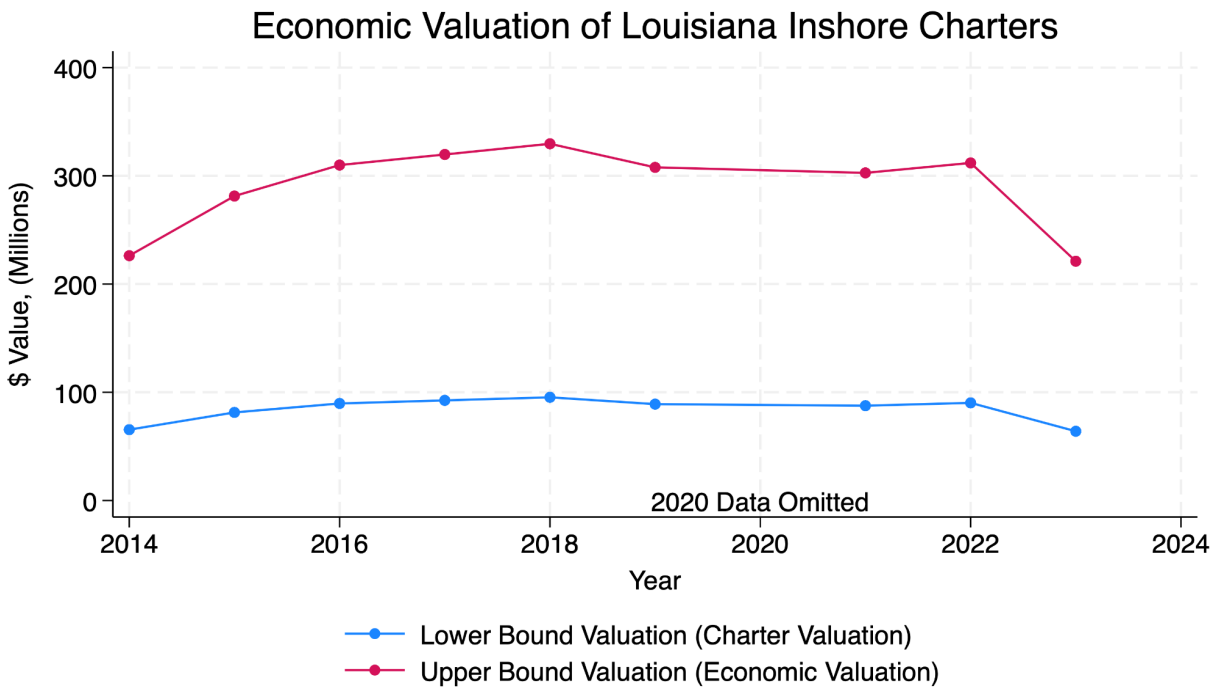
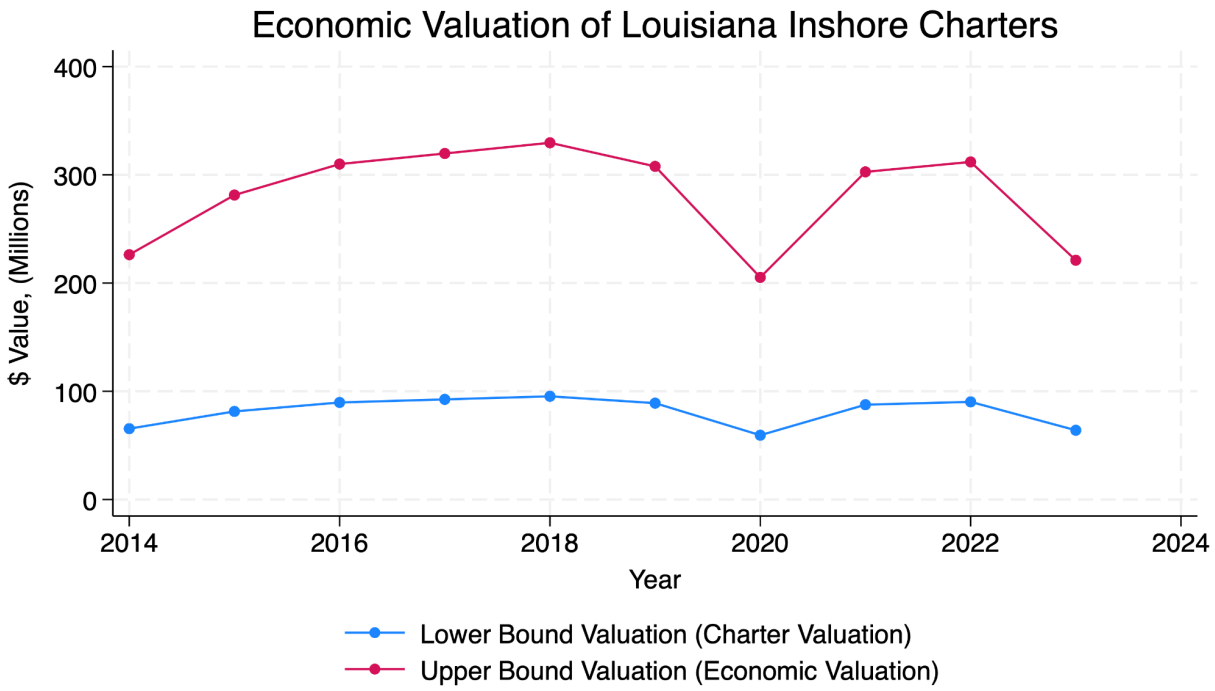

Economic Valuation of Louisiana Inshore Charters
$ Value, (Millions)
400
300
200
100
0
2020 Data Omitted
2014
2016
2018
2020
2022
2024
Year
Lower Bound Valuation (Charter Valuation)
Upper Bound Valuation (Economic Valuation)

Figure 2: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