Marine Recreational Fishing Economic Contribution Report 2021: Hernando County

A data report for the Hernando County Government and Tourist Development Council prepared by:

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Glossary: Abbreviations and Definitions

APAIS: Access Point Angler Intercept Survey, the survey implemented by MRIP to collect information about angling. In Florida, the APAIS is implemented by the Florida Fish and Wildlife Conservation Commission (FWC).

Direct effects: The component of market activity describing the amount that was spent on a good or service within a region; analogous to revenues. Can be used to describe each of the output metrics (output, value added, labor income, employment).

Area: For the MRIP survey, the variable "area" describes the location fished, in general terms of distance from shore. The three areas described include (1) **inland**, which includes most waters that are not part of the open ocean or gulf, (2) **nearshore waters**, which are open ocean/gulf but within state-managed waters (up to 3 miles from shore in the Atlantic, 10 in the Gulf of Mexico), and (3) **offshore waters** which describes areas beyond state-managed waters (so areas greater than 3 miles from shore in the Atlantic, greater than 10 miles from shore in the Gulf of Mexico).

Economic contribution: – The total economic activity within an existing industry, event, or policy, and how money cycles through the region's economy.

Economic impact: The net changes in economic activity and flow of dollars resulting from a change within a given industry.

Economic value: The value an individual places on a good or service based on the benefit derived from the good or service.

Effort: The amount of fishing trips taken during an place and time. This report describes the number of fishing trips taken to Hernando County. It describes trips per year (overall trips and trips by **area** or **mode**), and then in also describes the seasonal effort patterns by looking at the proportions of trips per month.

Employment: One of the metrics used to measure economic activity in input-output analyses. Measure of the number of jobs involved, including full-time, part-time, and seasonal positions. It is not a measure of full-time equivalents (FTE).

Impact Analysis for Planning (IMPLAN©): A computer-based input-output modeling system that enables users to create regional economic models and multipliers for any region consisting of one or more counties or states in the United States. The current version of the IMPLAN© software, IMPLAN Pro, accounts for commodity production and consumption for over 500 industry sectors, 10 household income levels, taxes to local/state and federal governments, capital investment, imports and exports, transfer payments, and business inventories. Regional datasets for individual counties or states are purchased separately. The IMPLAN© software and regional data are licensed by IMPLAN© Group, LLC, Huntersville, NC.

Indirect Business Tax: A measure of the taxes paid by business associated with an industry. It includes taxes on sales, property, and production, but not employer

contributions for social insurance, as well as taxes on employee income. This number effectively represents the taxes businesses pay.

Input-Output (I-O) analysis: an established economic modeling technique that is capable of measuring the direct and indirect consequences of an initial shock or level of activity throughout an economic system, across all economic sectors. Input-output models quantify the interdependencies and linkages amongst industries, households, and institutions within a specified region for a specified time period.

Indirect effects: The first component of market activity beyond direct activity. It can be described as the summed value of input goods and services that are required for the direct market activity, and that are sourced from within a region across multiple rounds of spending. Can be used to describe each of the output metrics (output, value added, labor income, employment).

Induced effects: The second component of market activity beyond direct activity. It can be described as the spending by employees who work in the directly or indirectly supported industries, often including items such as groceries, housing, and clothing. Can be used to describe each of the output metrics (output, value added, labor income, employment).

Labor Income: One of the metrics used to measure economic activity in input-output analyses. Labor Income is the sum of wages and salaries, benefits, and payroll taxes (employee compensation) and payments received by self-employed individuals or unincorporated business owners (proprietor income).

Market activity: The expenditures that are spent directly on a given activity, industry, or event, and the recirculation of these expenditures within the economy.

Mode: For the MRIP survey, the "mode" variable describes the type of fishing trip. The three modes used are: (1) **private/rental vessel** which includes fishers in thier or rented boats, (2) **for-hire vessel**, which includes trips fishers make with guides, charters, party boats, and (3) **shore-based**, which includes all non-boat fishing (piers, docks, beaches, etc.).

Multiplier: Multipliers are a measure of an industry's connection to the broader regional economy vis-à-vis input purchases, payments of wages and taxes, and other transactions. Multipliers are derived from an I-O model and can be estimated for several economic metrics that measure economic activity, including output, employment, labor income, etc. Multipliers can vary considerably across sectors and regions. A sector-specific multiplier measures the total changes in economic activity associated with a unit change in activity in a given sector (i.e., the **direct effects**). **Indirect effects** represent the changes in activity within the region in backward-linked industries supplying input goods and services to the sector of interest. **Induced effects** represent the increased sales within the region from household spending of the income earned in the direct and supporting industries for housing, utilities, food, etc. **Total effects** are the sum of direct, indirect, and induced effects. An **imputed multiplier** is calculated as the ratio of the total effect divided by direct effect for any given metric (e.g., output, employment, labor income, etc.).

MRIP: Marine Recreational Information Program, which is operated by NMFS to survey coastal anglers. The MRIP data are what this report uses.

NMFS: National Marine Fisheries Service. The NMFS oversees the MRIP, as well as many other aspects of federal fisheries management.

Other Property Income: This represents income generated by industries from non-operating activities. It includes things like dividends, royalties, corporate profits, and interest income, and accounts for the fact that industries make money beyond selling things.

Output: One of the metrics used to measure economic activity in input-output analyses. The dollar value of the goods or services produced by an industry. From the sales perspective, output is the sum of sales to final users in the economy, sales to other industries, and changes in business inventories.

Total effects: The sum of direct, indirect, and induced effects. Can be used to describe the total economic contributions of direct expenditures in a region. Can be used to describe each of the output metrics (output, value added, labor income, employment).

Value Added: One of the metrics used to measure economic activity in input-output analyses. A broad measure of income, representing the sum of employee compensation, proprietor income, other property income, indirect business taxes and capital consumption (depreciation). Value added is a component of output and is a useful measure of wealth created by a sector or an economy.

Overview Summary

Why this report might be important
This report describes the 2019 economic contributions of marine recreational fishing in Hernando County. Marine recreational fisheries are especially important to Florida, which boasts the greatest number of saltwater fishers (2.4m; (USFWS 2011)) and total economic contributions associated with saltwater fishing ($8B in industry output annually; (NOAA 2017)) of any state in the country. While state-level economic metrics are often made available by federal or state agencies, metrics for specific counties are usually not available. This report addresses this need by describing the economic activity supported within Hernando County that results from marine recreational fishing. We believe this information can be useful to the Hernando County Government and Tourist Development Council, as well as the fishing-related industry and interested public.

What this report can be used for
This report describes the importance of marine recreational fishing to the Hernando County economy, in terms of market activity (spending, revenue, and jobs). The report first provides background information about economic market activity so that the terms and numbers used here can be understood an interpreted correctly. Then the report describes several important metrics measuring economic market activity associated with marine recreational fishing in Hernando County. The metrics are described for all recreational fishing, and by fishing **mode** (private/rental vessel, for-hire, and shore-based). **This report describes for specifically Hernando County** :

- The total economic activity associated with marine recreational fishing
- The total number of jobs supported by marine recreational fishing
- The relative importance of different modes of marine recreational fishing

We believe this information can inform discussions and decision making related to policy, management, or environmental changes in or around Hernando County that might impact recreational fishing activity, or when discussing similar changes that occur at a regional or state-wide scale but might affect Hernando County.

Where the information from this report comes from
The data used in this report come from National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (**NMFS**). Data about fishing trips comes from the Marine Recreational Information Program (**MRIP**), and this report uses specifically 2019 MRIP data on fishing trips. These data are publicly available for download at https://www.fisheries.noaa.gov/recreational-fishing-data/data-downloads. Data about angler expenditures comes from a NMFS report (Lovell et al. (2020)). These expenditure data are from 2017. Economic results were created by using these data along with licensed Impact Analysis for Planning (IMPLAN©) regional economic modeling software (IMPLAN Pro) and associated state and county level data representing economic structure for 2019.

Methods and Background Information

What is Economic Contribution?
Economic contributions measure the market activity associated with ongoing economic activity, such as market activity associated with a particular sector of the economy (e.g., commercial fishing or agriculture). Market activity is simply a term that represents money "exchanging hands" within the formal economy and does not include information transactions such as bartering or other types of informal exchange, nor does it include the economic value of goods and services that are not formally exchanged such as ecosystem services. Economic contributions are one measure of market activity. Readers might also be familiar with the related term economic impacts, but this terminology (and associated methods) are more appropriate for measuring changes in market activity from something like a policy change, or environmental disturbance (like a red tide). Unlike economic impact, economic contribution studies are most useful when quantifying ongoing economic activity associated with a particular industry or pastime, such as recreational fishing. Economic contributions are always described for a specific time and place. For this report, the time is the year 2019 (due to data availability and the potential influence of the COVID-19 pandemic), and the place was Hernando County. It is critical to understand that what is described here, economic contribution, is not the same as economic value. Economic value is a measure of the benefits to society, whereas measures of economic activity, specifically economic contributions, describe the way things are without describing whether this level of activity is optimal or even good for society or the environment. Economic contribution metrics are go beyond simply measuring the sales revenues or employment within the sector of interest and quantifies the relationships amongst industries within an economy. More information about market activity, economic metrics, economic contribution, and economic impact can be found in scientific literature Miller and Blair (2009), and the IMPLAN Group's Support Site (www.support.implan.com).

What was the overall approach we used?
When measuring the economic contributions of an activity, like recreational fishing, detailed information on total expenditures (what people spent) on the activity are critical to driving the model Creating this report required three steps:

1. Gathering information on the average marine recreational fisher expenditures per trip in Florida. This information was available from a recent NMFS report (Lovell et al. (2020)). Average trip expenditures were described for each mode of fishing (private/rental vessel, for-hire, and shore-based), for each coastal state. Expenditures were broken down into several categories, such as vessel fuel, automobile fuel, etc. For Florida, expenditures were calculated differently for the Atlantic and Gulf coasts. These data were for the 2017 season but represent the most recent information available and have been converted to 2019 dollars using industry sector-specific inflation rates. The Hernando County estimates use the average marine recreational fisher expenditures for the coast.

2. Estimating the number of marine recreational fishing trips in Hernando County during 2019. To do this we used the MRIP database, which is publicly available at https://www.fisheries.noaa.gov/recreational-fishing-data/data-downloads. The number of trips were estimated separately for each mode (private/rental, for-hire, and shore-based).

The 2019 year was chosen for this report because of the possible effects of the COVID-19 pandemic on 2020 data.

3. Calculating total marine recreational angler expenditures. The average expenditures per trip (by expense category, fishing mode, and Florida coastline) are then multiplied by the estimated number of trips (by mode and county in 2019) to estimate the total expenditures within a county by fishing mode and expense category. This information is used as an input to the IMPLAN© software to calculate total economic contributions, which include multiplier effects. Expenditures assigned to retail sectors are assumed to represent expenditures in purchaser prices from a retailer and are adjusted for margins accordingly using IMPLAN© industry-specific margins for 2019. IMPLAN© is a commonly used software tool based on input-output (IO) analysis. More information on IMPLAN© be found at the IMPLAN Group's Support Site (www.support.implan.com).

What economic metrics do we report?
We report 6 total metrics:

- **Industry Output**: The dollar value of the goods or services produced by an industry. From the sales perspective, output is the sum of sales to final users in the economy, sales to other industries, and changes in business inventories. This is the most common metrics used to describe the magnitude of an industry
- **Employment**: Measure of the number of jobs involved, including full-time, part-time, and seasonal positions, exclusive of H2-A certified guest workers. It is not a measure of full-time equivalents (FTE). This is what it sounds like—the numbers of jobs supported by an industry
- **Value Added**: A broad measure of income, representing the sum of employee compensation, proprietor income, other property income, indirect business taxes and capital consumption (depreciation). Value added is a component of output and is a useful measure of wealth created by a sector or an economy.
- **Labor Income**: The sum of wages and salaries, benefits, and payroll taxes (employee compensation) and payments received by self-employed individuals or unincorporated business owners (proprietor income). This may be important for the for-hire recreational fishing sector.
- **Other Property Income**: This represents income generated by industries from non-operating activities. It includes things like dividends, royalties, corporate profits, and interest income, and accounts for the fact that industries make money beyond selling things.
- **Indirect Business Tax**: A measure of the taxes paid by business associated with an industry. It includes taxes on sales, property, and production, but not employer contributions for social insurance, as well as taxes on employee income. This number effectively represents the taxes businesses pay.

Each metric can be quantified through four different effects:

- **Direct Effects**: The component of market activity describing the amount that was directly spent on a good or service within a region, in this case, total expenditures on marine recreational fishing within Hernando County in 2019.

- **Indirect Effects**: Summed value of the purchase of input goods and services sourced from within a region across multiple rounds of spending
- **Induced Effects**: Household expenditures of employees working in the directly or indirectly supported industries, often including items such as groceries, housing, and clothing.
- **Total Effects**: The sum of direct, indirect, and induced effects.

Are there any important caveats about the information reported here? The economic contribution values describe the economic magnitude of marine recreational fishing, which can be helpful for describing the relative importance of this activity to the Hernando economy. However, it is critical to remember that the economic contribution numbers reported for Hernando County are not equivalent to economic value, and thus they do not represent economic benefit to Hernando County. A second important caveat is to understand that the data used to calculate economic contributions for Hernando County are not perfectly precise. The estimates of trips (by fishing mode) can have substantial error (this is described in a separate report on recreational fishing effort in Hernando County, see authors or your local Sea Grant agent if you do not have this report). Also, the expenditures per trip represent the average, and were calculated at the coast-wide (Gulf, Atlantic) scale, rather than precisely in Hernando County. Additionally, the expenditure information was from 2017, and the numbers of trips was from 2019. To account for this, expenditures have been adjusted so that all contribution metrics are expressed in 2019 dollars. These are recent enough to generally expect them to be reasonable for the current time period, unless there have been large changes. Unfortunately, recent changes like the COVID-19 pandemic, as well as environmental changes like harmful algal blooms, might have affected both the total numbers of trips and the average expenditures in the most recent years. Nonetheless, this report represents the most detailed descriptions of the economic contribution of marine recreational fishing to Hernando County that we are aware of currently.

Results

Overview
The economic contribution results for Hernando County are described in terms of the fishing modes: private/rental vessel trips, for-hire trips, and shore-based trips. For each of these three modes plus a "total" that combines them all, a table is provided that shows the economic contribution metrics. Each of the metrics are described above and in the glossary.

All trips (all modes of fishing combined)

Total contributions in terms of output (or sales revenues) in Hernando County associated with all marine recreational fishing trips in 2019 was estimated to be $56.85M, and these trips supported 642 jobs. Additional details describing other contribution metrics and effect levels are provided in **Table 1**.

Table 1. Economic contribution of all marine recreational fishing trips from Hernando County in 2019. Contributions are described in terms of six metrics, and four levels. Metrics cannot be added to each other, but levels can, and Total represents the sum of Direct, Indirect, and Induced (with any discrepancies due to rounding).

Hernando County 2019 Marine Rec. Fishing Contribution, all modes

Contribution Metric	Direct	Indirect	Induced	Total
Industry Output ($M.)	38.19	10.15	8.51	56.85
Employment (Jobs)	493	82	66	642
Value added($M.)	21.58	3.6	4.54	29.73
Labor Income($M.)	13.05	2.29	2.33	17.66
Other Property Income($M.)	3.36	0.88	1.66	5.9
Indirect Business Tax($M.)	5.18	0.43	0.56	6.17

Shore-based trips

Total contributions in terms of output (or sales revenues) in Hernando County associated with shore-based marine recreational fishing trips in 2019 was estimated to be $20.53M, and these trips supported 253 jobs. Additional details describing other contribution metrics and effect levels are provided in **Table 2**.

Table 2. Economic contribution of shore-based marine recreational fishing trips from Hernando County in 2019. Contributions are described in terms of six metrics, and four levels. Metrics cannot be added to each other, but levels can, and Total represents the sum of Direct, Indirect, and Induced (with any discrepancies due to rounding).

Hernando County 2019 Marine Rec. Fishing Contribution, Shore-based

Contribution Metric	Direct	Indirect	Induced	Total
Industry Output ($M.)	13.83	3.51	3.18	20.53
Employment (Jobs)	200	28	25	253
Value added($M.)	8.19	1.28	1.7	11.17
Labor Income($M.)	4.91	0.82	0.87	6.6
Other Property Income($M.)	1.58	0.31	0.62	2.51
Indirect Business Tax($M.)	1.7	0.16	0.21	2.06

For-hire trips

Total contributions in terms of output (or sales revenues) in Hernando County associated with for-hire marine recreational fishing trips in 2019 was estimated to be $1.74M, and these trips supported 21 jobs. Additional details describing other contribution metrics and effect levels are provided in **Table 3**.

Table 3. Economic contribution of for-hire marine recreational fishing trips from Hernando County in 2019. Contributions are described in terms of six metrics, and four levels. Metrics cannot be added to each other, but levels can, and Total represents the sum of Direct, Indirect, and Induced (with any discrepancies due to rounding).

Hernando County 2019 Marine Rec. Fishing Contribution, Shore-based

Contribution Metric	Direct	Indirect	Induced	Total
Industry Output ($M.)	1.18	0.28	0.28	1.74
Employment (Jobs)	16	2	2	21
Value added($M.)	0.68	0.11	0.15	0.94
Labor Income($M.)	0.43	0.07	0.08	0.57
Other Property Income($M.)	0.13	0.02	0.05	0.21
Indirect Business Tax($M.)	0.13	0.01	0.02	0.16

Private/rental vessel trips

Total contributions in terms of output (or sales revenues) in Hernando County associated with private/rental vessel marine recreational fishing trips in 2019 was estimated to be $34.57M, and these trips supported 367 jobs. Additional details describing other contribution metrics and effect levels are provided in **Table 4**.

Table 4. Economic contribution of private/rental vessel marine recreational fishing trips from Hernando County in 2019. Contributions are described in terms of six metrics, and four levels. Metrics cannot be added to each other, but levels can, and Total represents the sum of Direct, Indirect, and Induced (with any discrepancies due to rounding).

Hernando County 2019 Marine Rec. Fishing Contribution, Shore-based

Contribution Metric	Direct	Indirect	Induced	Total
Industry Output ($M.)	23.18	6.35	5.05	34.57
Employment (Jobs)	277	51	39	367
Value added($M.)	12.71	2.21	2.69	17.61
Labor Income($M.)	7.71	1.4	1.38	10.49
Other Property Income($M.)	1.64	0.55	0.98	3.18
Indirect Business Tax($M.)	3.36	0.26	0.33	3.95

Summary

The report provides a detailed description of the economic contribution that marine recreational fishing makes to the Hernando County economy. We first describe the economic contribution in terms of types of fishing, including all trips, shore-based trips, for-hire trips, and private/rental vessel trips. Then we describe the contribution in terms of multiple metrics (e.g., output, employment, etc.) and different levels (direct, indirect, induced, and total). This approach should allow more precise descriptions of how different types of marine recreational fishing affect Hernando County.

The most critical thing to remember is that the numbers here do not describe the economic value—i.e. benefit to society of marine recreational fishing. What this means is that recreational fishing is important to people as a recreational activity, regardless of how much money they spend on it. Thus, if a certain mode of fishing (such as for-hire fishing) has a smaller economic contribution, it does not mean this fishing is unimportant! Another important caveat on this report is that all of these numbers arise from two sources of data that are both uncertain—the average expenditures per mode of marine recreational fishing (from 2017), and the number of marine recreational fishing trips by mode estimated to taken from Hernando County in 2019 These data are collected as part of the NMFS MRIP sampling program, and this sampling program was not primarily designed to provide such fine-scale (county) spatial data. This means that the economic contribution numbers may be especially inaccurate when describing fishing modes that occur much less frequently in Hernando County. Nonetheless, we believe this report includes the most detailed accounting economic contribution associated with marine recreational fishing in Hernando County to date. This information should help inform understanding of this important recreational activity, and may be useful for making decisions about recreational fishing in Hernando County.

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