

# The Economic Significance of Florida Bay

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# *The Economic Significance of Florida Bay*

- Florida Bay provides numerous benefits that directly impact the economy and wellbeing of people
  - Ecologists and economists frequently refer to these benefits as ecosystem services
- In this study the economic significance of some of the ecosystem services provided by Florida Bay were quantified



# *Economic Value v. Economic Impact*

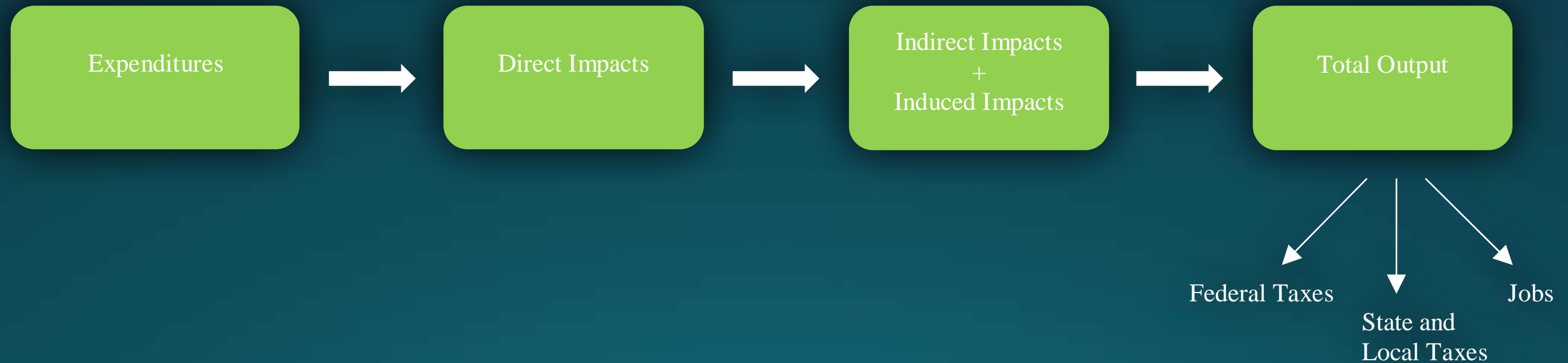
- Economic value measures how much someone or society is willing to pay for something
- Economic impact measures how spending on an activity impacts the local or regional economy
- *In this study both economic value and economic impact were estimated*

# *Estimating economic impact...*

- Recreational Fishing
  - A survey of recreational anglers fishing Florida Bay was conducted with assistance from Dr. Tony Fedler at the University of Florida
    - FWC database was used to identify saltwater fishing license holders and charter boat license holders
    - Anglers were grouped into four categories based on residence
    - Respondents were surveyed about their fishing habits and expenditures regarding Florida Bay
    - Surveys were conducted online and via mail
- Commercial Fishing
  - FWC database on commercial landings in Dry Tortugas for pink shrimp (*Farfantepenaeus duorarum*) and gray snapper (*Lutjanus griseus*) was used

# Estimating economic impact...

- Input-output analysis using IMPLAN Software





# Estimating economic impact...

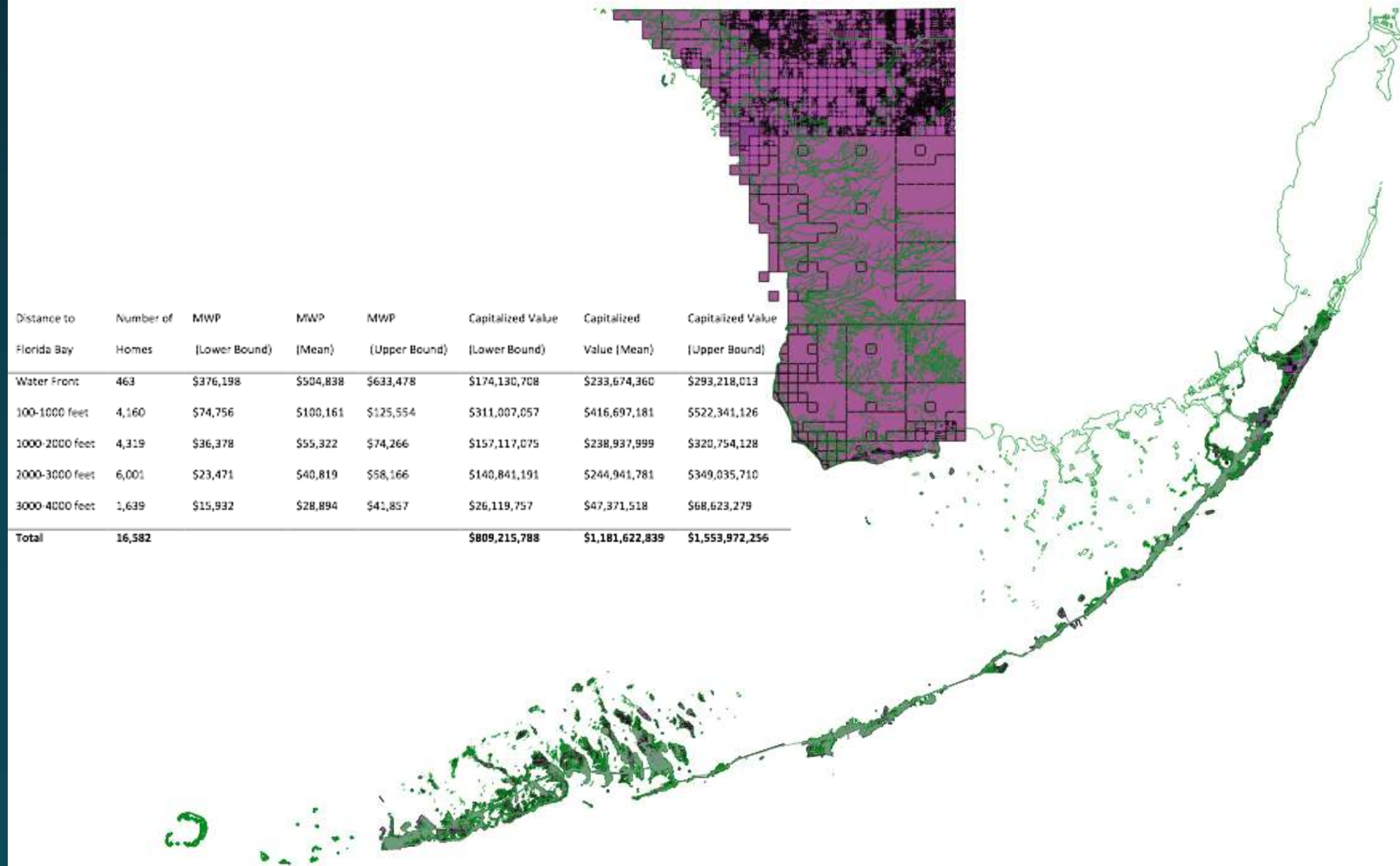
Trip Expenditures					
Expenditure category	Zone 1	Zone 2	Zone 3	Zone 4	Total
Food, drink, refreshments and ice	\$202.59	\$138.22	\$166.93	\$340.52	\$206.56
Lodging, including campgrounds	\$132.33	\$243.09	\$203.87	\$757.82	\$290.29
Public transportation by airplane, car rental including fuel	\$1.49	\$8.55	\$9.66	\$146.86	\$32.65
Private vehicle transportation, including fuel	\$146.51	\$95.24	\$136.29	\$229.16	\$151.85
Guide or charter fees	\$81.88	\$36.19	\$83.09	\$191.28	\$97.40
Fishing licenses and tags	\$16.84	\$8.26	\$16.59	\$35.06	\$19.13
Live and dead bait	\$83.93	\$47.50	\$50.66	\$93.87	\$68.27
Boat and equipment rental	\$27.32	\$14.30	\$16.05	\$114.58	\$37.57
Boat mooring, maintenance, storage, insurance, etc.	\$206.64	\$102.73	\$102.04	\$262.61	\$163.27
Boat fuel	\$290.98	\$187.32	\$164.66	\$346.86	\$238.97
<b>Total</b>	<b>\$1,190.50</b>	<b>\$881.39</b>	<b>\$949.84</b>	<b>\$2518.52</b>	<b>\$1,305.94</b>

# Estimating economic value...

Ecosystem Service	Methodology	Data Sources
Recreational Fishing	Willingness To Pay, Benefit-transfer	Survey of recreational anglers
Commercial Fishing	Market value of dock landings	FWC commercial fisheries database for Dry Tortugas
Residential Real Estate	Hedonic Regression, Benefit-transfer	Monroe County Property Appraiser's Office
Carbon Sequestration	Social costs of climate change	EPA social cost functions of CO <sub>2</sub> , Dr. James Fourqurean at FIU,
Gene Pool Protection, Cognitive Information, and Spiritual Experiences	Benefit-transfer	U.N. : The Economics of Ecosystems and Biodiversity



# Estimating economic value...



Distance to Florida Bay	Number of Homes	MWP (Lower Bound)	MWP (Mean)	MWP (Upper Bound)	Capitalized Value (Lower Bound)	Capitalized Value (Mean)	Capitalized Value (Upper Bound)
Water Front	463	\$376,198	\$504,838	\$633,478	\$174,130,708	\$233,674,360	\$293,218,013
100-1000 feet	4,160	\$74,756	\$100,161	\$125,554	\$311,007,057	\$416,697,181	\$522,341,126
1000-2000 feet	4,319	\$36,378	\$55,322	\$74,266	\$157,117,075	\$238,937,999	\$320,754,128
2000-3000 feet	6,001	\$23,471	\$40,819	\$58,166	\$140,841,191	\$244,941,781	\$349,035,710
3000-4000 feet	1,639	\$15,932	\$28,894	\$41,857	\$26,119,757	\$47,371,518	\$68,623,279
<b>Total</b>	<b>16,582</b>				<b>\$809,215,788</b>	<b>\$1,181,622,839</b>	<b>\$1,553,972,256</b>

# Results...

<b>Ecosystem Service</b>	<b>Data Sources</b>	<b>Direct Impact</b>	<b>Indirect Impact</b>	<b>Induced Impact</b>	<b>Total Output</b>	<b>Jobs</b>	<b>Tax Revenue</b>
Recreational Fishing	Survey of recreational anglers, IMPLAN	\$259 million	\$86 million	\$93 million	\$439 million	4,112	\$73 million
Commercial Fishing	FWC commercial fisheries database for Dry Tortugas, IMPLAN	\$13 million	\$3.2 million	\$4 million	\$20 million	245	\$3 million

# Results...

## Ecosystem Service

## Estimated Value

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Recreational Fishing

\$7.1 Billion

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Commercial Fishing

\$0.4 Billion

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Residential Real Estate

\$1.1 Billion

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Carbon Sequestration

\$4.5 Billion

## *Previous relevant economic impact studies...*

<b>Study</b>	<b>Organization</b>	<b>Total Economic Impact</b>
Keys Flats Fishing	Bonefish and Tarpon Trust (BTT)	\$550 million (2016 \$)
Florida Keys (north nearshore area) and Florida Bay	Bonefish and Tarpon Trust (BTT)	\$988 million (2016 \$)
Tourism in Florida Keys	National Oceanic and Atmospheric Administration (NOAA)	\$2.45 billion (2016 \$)
Marine Recreational Fishing in Florida	National Oceanic and Atmospheric Administration (NOAA)	\$12.6 billion (2016\$)
Tarpon Fishing in Caloosahatchee River	Bonefish and Tarpon Trust (BTT)	\$16 million (2016 \$)

## *Previous relevant economic value studies...*

- Value of restoration of Everglades by Mather Economics - \$51.2 Billion (2016 \$)
  - included: water supply, real estate, park visitation, open space, recreational and commercial fishing, wildlife and recreational hunting
- Value of CEPP by Richardson et al. - \$1.8 billion (2016 \$)
  - included: carbon sequestration, commercial and recreational fishing, park visitation, sediment reduction in St. Lucie estuary, and water supply

# *The Economic Significance of Florida Bay*

- Florida Bay is not just an environmental asset but an economic engine
  - Degradation of the ecosystem will have tangible economic consequences for people in the region
- Total value of ecosystem services from Florida Bay is over \$15 billion
- Recreational fishing alone has an economic impact of \$438 million per year
- Annual gross regional product of Monroe county is \$4.2 billion
- Recreational fishing generates \$73 million in federal, state and local taxes annually - \$2,200 per Monroe county household



# *The Economic Significance of Florida Bay*

- The values obtained in this study are very likely *underestimates*
  - Only some ecosystem services were included in estimates due to lack of data
  - Conservative assumptions were made for calculations



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