



## SCENARIO ECONOMIC IMPACT ANALYSIS OF OFFSHORE FISHING TOURNAMENTS IN OCEAN CITY

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### ABSTRACT

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This study used scenario analysis to estimate the economic impact of the expenditures of anglers who participated in offshore fishing tournaments in Ocean City, Maryland. The primary purposes of this study were to evaluate impacts on the adjacent areas, to identify potential uses for economic impact information, and to provide justification for investment and support of programs related to the needs of coastal communities and issues related to marine recreational fisheries management. To accomplish this study, the IMPLAN modeling system was employed to calculate the economic impact of offshore fishing tournaments on local and regional economies. Preliminary results using scenario analysis suggested the total economic impact of offshore fishing tournaments in Ocean City could be nearly \$2.2 million for Wicomico and Worcester counties. To get this estimate, three different scenarios were considered based on potential expenditure estimate of what each tournament party would spend on lodging, fuel, food, fishing and miscellaneous costs. Using IMPLAN, impact metric categories could be generated including general labor income, job opportunities - employment, and value added. This paper provides the extent to which fishery managers, municipalities, business and private sector stakeholders could benefit from local marine recreational fishing tournaments, and potentially justify investment in infrastructure which supports marine recreational fishing.

**Contribution/Originality:** This study uses scenario economic impact analysis to estimate the economic impact of offshore fishing tournaments in Ocean City, Maryland. It provides the extent to fishery managers, municipalities, business and private sector stakeholders could benefit from local marine recreational fishing tournaments, and potentially justify investment in infrastructure which supports marine recreational fishing.

## 1. INTRODUCTION

The National Recreational Fisheries Policy is developed by the National Marine Fisheries Service, a part of National Oceanic and Atmospheric Administration (NOAA), and ultimately the Department of Commerce. This policy has roots that stretch back to 1871 and the Commission of Fish and Fisheries. The goals of this policy are in line with the Magnuson-Stevens Fishery Conservation and Management Act which set goals to maintain and support sustainable saltwater recreational fishing resources; promote the social, cultural, economic benefits of the nation; and enable enduring participation, enjoyment of saltwater recreational fisheries through science based conservation and management (NOAA's National Marine Fisheries Service, 2015).

The National Marine Fisheries Service plays a leadership role in efforts to balance interests and resources; more specifically, maintaining healthy marine and coastal ecosystems capable of commercial harvest, and recreational opportunity via science based stewardship of our nations living marine resources. The National Marine Fisheries Service guiding principles are: 1) support ecosystem conservation and enhancement, 2) promote public access to quality recreational fishing opportunities, 3) coordinate with state and federal management entities, 4) advance innovative solutions to evolving science, management, and environmental challenges, 5) provide scientifically sound and trusted social, cultural, economic, and ecological information, and 6) communicate and engage with the recreational fishing public (NOAANMFS, 2015).

Fishery management attempts to balance constantly evolving manmade, natural, and market forces, access to common resources, and jurisdictional complexities. Stewardship and sustainable use of our nation's marine resources is vitally important to the long-term needs of the nation, individual states, and local coastal communities. In 2014, the non-governmental Morris-Deal Commission published a report aimed at improving stewardship of marine recreational fisheries, including the formation of a national policy with the help of the Atlantic States Marine Fisheries Commission and constituents from across the nation (Hutt *et al.*, 2014).

Marine recreational fishing is a popular pastime across the nation that generates significant economic impacts to local economies and to the nation. In 2011, over 70 million recreational fishing trips were taken by more than 11 million marine anglers in the United States. It is estimated that marine anglers spent an estimated \$4.4 billion on trip-based expenditures (e.g., ice, bait, and fuel) and another \$19 billion on fishing equipment and durable goods (e.g., fishing rods, fishing tackle, and boats). It is also shown that they contributed an estimated \$56 billion in total output impacts, \$29 billion in value-added impacts (i.e., contribution to gross domestic product), \$18 billion in income impacts, and supported 364 thousand jobs in the United States (Lovell *et al.*, 2013).

According to the American Sport fishing Association, marine recreational angler spending amounted to over \$13.4 billion in retail sales, supported 243,226 jobs, and produced over \$4.2 billion in federal, state and local tax revenues in the U.S. in 2011. Marine recreational fishing expenditures represented 25% of total fishing expenditures \$10.3 billion (trip and equipment related expenditures); total economic benefits generated by fishing in 2011 was estimated to be \$41.8 billion in the U.S (Southwick Associates, 2013).

Economic impact studies of recreational fishing tournaments have demonstrated that recreational fishing tournaments have positive economic impact on local areas. The influx of expenditures associated with marine recreational fishing tournament participants benefit coastal communities and promote recreational utilization of a wide set of valued resources. Marine recreational fishing tournaments provide managers, planners, and community oriented organizations with positive net gains for the community. If the popularity of these recreational fishing tournaments grow within the region they are located; it is possible to increase both the numbers of recreational fishing tournaments held annually and the impact on associated towns and regions, such has been the case in Ocean City, Maryland.

Ocean City, Maryland is particularly famous for white marlin fishing, and is locally known as the White Marlin Capital of the World. In 2016, The 43<sup>rd</sup> Annual White Marlin Open drew 329 boats, and carried a record purse of \$4,450,000, equally impressive is the fact that 99.8% of the billfish caught were released (<https://whitemarlinopen.com/conservation>). In Maryland, little is known about the participants of marine recreational fishing tournaments and the impact of their expenditures on the local, regional and State economies.

Further research is needed to understand the impact that recreational fishing tournament events have on the local, regional and state economies, and how results translate to other regions. Collaboration with recreational anglers must improve if managers are to understand how and if the recreational fishing tournament benefits justify the use of resources, and if the costs of infrastructure and facilities improvements necessary to host events are worthwhile. Partnerships between economic development and conservation organizations may facilitate the extent

to which recreational fisheries management actions can affect public awareness, revenues, taxes and employment generated by these recreational fishing tournament events.

The information gathered from this study will assist towns and recreational fishery managers in designing practical management strategies in the future. These strategies do not have to radically change from their predecessors; however collaborative solutions may require significantly more input from a wider range of stakeholders. Resource managers focused on biological objectives and community leaders with economic expectations are often required to play to competing interests. The participants of marine recreational fishing tournaments desire healthy fish populations and provide the significant economic incentive for coastal communities to commit to new valuations.

All fishermen are lumped into fishing mortality estimates used by fishery managers, this study also wanted to seek to highlight differences within the fishing community, and even the recreational fishing community and suggests that economic benefits and environmental sustainability objectives are not always at odds. Moreover, this study attempted to review the potential economic impact and community benefits of hosting marine recreational fishing tournaments at the regional and state levels, and to identify overlap between commercial and recreational communities, and potential avenues for collaboration amongst fishery participants stemming from recreational fishing tournaments.

Further research is necessary regarding recreational anglers motivations and beliefs systems; managers should identify recreational angler nuances which support of fishery objectives. Recreational fishing tournament fishermen have a significant interest in conservation and the sustainability of fish populations and may be one of the more progressive parts of the fishing community regarding mortality and maximum sustainable yield expectations. Recreational fishermen also tend to have a working relationship and overlap with the local economy and awareness of the local commercial fishery interests, traditions, and effects on an ecosystem. Recreational, commercial, and tournament fishermen have the ability to discuss common ground from somewhat different perspectives.

Recreational fishing tournaments have the potential to become community events which can facilitate the development of collaborative stakeholder based solutions where all voices can be fairly represented. Local planners and developers that sponsor events maintain a presence in the decision making process and drive outside expenditures towards their regions & businesses via collective marketing efforts. Government officials collaborating with resource managers and participants from different backgrounds within the fishing community may reduce unwanted conflicts earlier, encourage self-regulation, and even avert the need for new management regulations, policy, and laws by analyzing the extent a change in governance may have on coastal communities.

## **2. METHOD**

Scenario Analysis is a decision-making tool which is useful to assess how a situation can turn out and how different actions will affect outcomes. This method helps decision makers make informed choices and is widely used by leaders ranging from corporate managers to military leaders. It is especially useful in high stakes and high uncertainty: scenario analysis can help establish best-case and worst-case scenarios and sometime expose outcomes that might have been overlooked (Bood and Postma, 1998; Postma and Liebl, 2005). In order to estimate the potential level of economic activity arising from marine recreational fishing tournaments and related marine industries, scenario economic impact assessment method can be applied to better understand the local and regional-level impact possibilities associated with marine recreational fishing tournaments.

The IMPLAN system is a widely used, nationally recognized tool that provides detailed purchasing information and is used to customize input output models for site specific applications (IMPLAN Group, 2016). The IMPLAN model uses county-level economic data to generate a series of multipliers which estimate the total economic implications of an event. Using input and output calculations of regional data, IMPLAN allowed specialized research to ascertain where generally speaking, anglers choose to spend money within the Ocean City

region. Impact study results pertain specifically to state & county data from Wicomico, Worcester, and Maryland respectively.

The input-output table accounts for all dollar flows between different sectors of the economy. A dollar injected into one sector of the economy is spent and re-spent in other sectors of the economy, generating economic multiplier effects. The possibilities for future scenario analysis allows us to consider multiple nuanced stakeholder perspectives, appreciate internal and external environments, define possible outcomes, and consider more descriptive scenarios (Khazzam and Vincent, 2014). The level of flexibility that scenario analysis provides is significant in that it can be adjusted by region, stakeholder objectives and manipulated to consider increasingly complex dynamics between fishery managers, regulators, commercial, and recreational interests and the conservation expectations of marine fishing tournaments.

Using scenario economic impact analysis, it is able to model the flow of goods and services, income, and potential employment in related sectors of the economy, and estimate direct, indirect, and induced effects of marine recreational fishing tournament and fisher expenditures in a specific region. This study attempted isolate those contributions brought to a coastal community by marine recreational fishing tournaments. Through continued interaction with and amongst the recreational fishing community one can begin to see how fishers value competition, understand the need to utilize and protect resources, and develop expectations regarding conditions that affect successful marine recreational fishing and tournament experiences.

Direct angler expenditures in the form of goods such as bait, ice, gas, and groceries, tackle, and technology as well as services in the form restaurants, lodging, and entertainment etc., were combined to show significant cumulative effects for both established and potential host tournament locations. Tournament fisher expenditures from participants which hail from outside of the study region benefit the local economy by bringing in dollars that would not have otherwise impacted the region. In a similar study the impacts of non-resident recreational fishermen expenditures were found to be generally five times greater than those of their resident counterparts (Steinback, 1999).



Figure-1. Map of Ocean City, Maryland

Source: Ocean City, Maryland, Convention and Visitor Bureau and Department of Tourism (<https://ococean.com/maps/>)

### 3. RESULTS

Ocean City, Maryland (Figure 1) is host to roughly 20 significant marine recreational fishing annually. These marine recreational fishing tournaments are sponsored by a range of stakeholders and specialty organizations that cater to different subsets of fishermen which understand, support, and even define aspects of local culture. Specialized (often species specific) marine recreational fishing tournaments provide an excellent forum for dialogue with recreational fishermen; the marine recreational fishing tournaments and associated events can provide economic stimulus, be a source of pride for the community, and attract outside expenditures which benefit working waterfronts.

In the Ocean City region a variety of marine species are targeted including white and blue marlin, tuna, wahoo, dolphin, sharks, tilefish, swordfish, bluefish, flounder, and striped bass. The overall contributions highlighted and particularly jobs & outside participant expenditures highlighted in the scenario economic impact analysis method indicate that marine recreational fishing tournaments represent significant economic (as well as potentially collaborative / educational / biologically relevant) events. These marine recreational fishing tournament events attract many individuals within the fishing community and in doing so provide the platform to present, shape and highlight the sustainable economic, social, and environmental benefits that recreational/tourism interests bring to local coastal regions.

**Table-1. Scenario Economic Impact of Offshore Fishing Tournaments in Ocean City, Maryland**

Scenario #1	Tournaments	Ave # Entrants	Party Size (Individuals)	Economic (min)	Output	Economic (max)	Output
\$1,000	20	50 - 100	6	\$726,136		\$1,452,272	
				Generated Income (min)	Labor	Generated Labor Income (max)	
				\$283,815		\$567,629	
				Created Opportunities (min)	Job	Created Opportunities (max)	
				7.57		15.14	
Scenario #2	Tournaments	Ave # Entrants	Party Size (Individuals)	Economic Output (min)		Economic Output (max)	
\$1,200	20	50 - 100	6	\$871,363		\$1,742,726	
				Generated Income (min)	Labor	Generated Labor Income (max)	
				\$340,577		\$681,155	
				Created Opportunities (min)	Job	Created Opportunities (max)	
				9.08		18.16	
Scenario #3	Tournaments	Ave # Entrants	Party Size (Individuals)	Economic Output (min)		Economic Output (max)	
\$1,500	20	50 - 100	6	\$1,089,204		\$2,178,408	
				Generated Income (min)	Labor	Generated Labor Income (max)	
				\$425,722		\$851,583	
				Created Opportunities (min)	Job	Created Opportunities (max)	
				11.35		22.70	

Analysis of marine recreational fishing tournaments in Ocean City, MD utilizing IMPLAN, based on respective data show moderate marine recreational fishing tournament estimates producing economic outputs which range from \$726,136 to \$2,178,408 for given local communities. Job opportunities created by marine recreational fishing tournaments within these scenarios ranged from 7.57 to 22.7 additional jobs (Table 1). The value of marine recreational fishing tournament expenditures was determined with consideration of characteristics including: level of overall recreational fishing participation, socioeconomic characteristics, age, income, gender, place of residence, etc., and involvement, recreational tournament fishing experience, species preferences, recreational tournament fishing expenses by category and location, length of stay, reason for participating and overall satisfaction level of the tournament.

**4. CONCLUSIONS AND DISCUSSION**

In the past experience recreational fishing tournament organizers were hesitant to participate in efforts to incorporate and distribute angler specific research surveys for various reasons. Part of the initial objective was to canvas some recreational fishing tournaments in the economic region (Worcester County and surrounding Ocean City area). In the future researchers seeking to gain access to sensitive community and fishery data may need to resolve obstacles from the past, develop partnerships earlier, increase frequency of interaction, and maintain

goodwill with the fishing community when seeking information which involves a wide range of perspectives and value systems. Given the unstable relationship and complicated dynamics that exists between anglers, researchers, and fishery management, direct contact with recreational fishing tournament organizers and collaboration continues to be difficult. This scenario economic impact analysis showed the value of what recreational fishermen can potentially bring to local economies using different scenarios. Research sets the groundwork for collaboration towards stable policy, an atmosphere of mutual respect, and interaction between different stakeholders and may lead to future partnerships. Continued research endeavors should consider the varying degrees of participation within the fishing community, frequency and size of recreational fishing tournaments, non-participant observers, industry, commercial, and technological advances which can enable insight into the human network connections and variations that underlie coastal community economies. Recreational fishing tournament anglers purchase a wide range of goods and services creating significant economic contributions to coastal communities. The positive economic effects of increased economic activity derived from recreational fishing tournament participant expenditures are often appreciated by business level sponsors within the community. This study may be used by planners, managers and policy drivers to justify the use of resources needed for successful recreational fishing activities/tournaments. Local economies can then justify investment in support services, infrastructure and amenities like boat ramps, lodging, and campgrounds which support recreational fishing and tournaments. The effectiveness of the non-regulatory conservation measures largely implemented by the recreational fishing community is difficult to evaluate. In light of scenario economic impact analysis and conservation views expressed within the recreational tournament fishing community, government and non-profit organizations may want to consider sponsoring these events to gain access to this important stakeholder group. The direct effect of recreational tournament fisher expenditures with local businesses in coastal fishing regions lead to a positive cumulative effect on the economy and have the potential to shape views regarding policies and local governance, ecosystem health and the need for sustainable fish populations.

Coastal economies depend on the availability of marine resources for multiple uses; appreciation for varying use valuations may help to drive the basic concept of sustainability as described by varying perspectives. Historically anglers are cautious to participate in research projects for fear of greater regulation; this attitude must change. By highlighting recreational fishing tournaments in a positive economic light, we may begin to be able to access, change, or embrace recreational fishermen/women's perspectives, which will help drive expectations for healthy & sustainable fish populations. Open dialogue bridges communication gaps and access a network of citizens whose behaviors, interests, and decisions depend on the viability and availability of fish found in healthy marine ecosystems. Many recreational fishermen have a natural appreciation for wilderness environments, some are very conservation minded, and others participate in tournaments for the competitive aspects. Regardless of starting perspectives, educational and research goals should look to incorporate support or at an understanding of the dynamics within the fishery. As methods of research develop which are generally inclusive, acceptable to a large audience, and beneficial to both angler and fishery managers, longer term collaboration may begin to occur.

Political, economic, biologic, and legal realities complicate current fishery & ecological conditions. Attempts to understand recreational and commercial fishing communities has been hindered by isolated frameworks, coastal communities are woven together by the fact that livelihoods depend on the water for survival, there are many unexplored crossovers and a lack of understanding & failure to collaborate has led to an atmosphere of extreme caution Policy variations tied to years of political change, and lack of communication routed in a polarization facts and beliefs affect need to be addressed cautiously. Economic research specific to recreational fishing tournament expenditures, and the influx of money into the community may help leaders to highlight the value in seeking optimal ecosystem health not only for the recreational fishing community but the community as a whole. Economic windfalls have the potential to opens the channels of communication, education, and research via increased data availability for fishery stock assessment and management efforts. Recreational fishing tournament participants and

observers are frequently aware of nuances in fishing technology, techniques, and rules associated with the harvest management, quotas, and permit structures for a wide variety marine resources. From both the harvester and management perspective which attempts to adjust to or create and enforce policy, it can seem like a never ending battle. Partnerships with recreational fishing tournament participants represent a unique opportunity to address issues that managers and researchers don't understand, cannot address, or may simply overlook.

To advance scientific objectives, managers should engage the next generation of anglers when and where possible. Economic gains for coastal communities derived from events such as recreational fishing tournaments with low mortality rates (i.e. catch & release, and "sportfishing") should be readily embraced. Efforts and decisions to employ scientific best management practices must extend beyond academic and scientific communities. The human desire to utilize resources for personal benefit drives our economy; demystifying fishery, scientific, and economic truths in collaborative ways is where the potential for economics in fishery management resides. Scientific and environmental understanding can generally show how an ecosystem operates without human pressure. The concept of sustainable fisheries can be promoted through education and inclusiveness in regards to events like fishing tournaments, symposiums, colloquiums, roundtables as management partnerships form moving forward. As human populations grow, resource scarcity becomes increasingly relevant. Recreational fishing tournaments provide access to a wide range of people who are interested in clean water, require healthy ecosystems and may be interested in a more complete assessment of the environmental factors which affect their recreational bottom lines.

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