

2019

Scenario economic impact & marketing implications for south Texas saltwater fishing tournaments

Yeong Nain Chi
University of Maryland Eastern Shore

Marvin Lovett
The University of Texas Rio Grande Valley

Follow this and additional works at: https://scholarworks.utrgv.edu/marketing_fac



Part of the [Business Analytics Commons](#), [Entrepreneurial and Small Business Operations Commons](#),
and the [Marketing Commons](#)

Recommended Citation

Chi, Y. N., & Lovett, M. G. (2019). Scenario economic impact & marketing implications for south Texas saltwater fishing tournaments. *Journal of Management and Marketing Research*, 23, 12.

This Article is brought to you for free and open access by the Robert C. Vackar College of Business & Entrepreneurship at ScholarWorks @ UTRGV. It has been accepted for inclusion in Marketing Faculty Publications and Presentations by an authorized administrator of ScholarWorks @ UTRGV. For more information, please contact justin.white@utrgv.edu, william.flores01@utrgv.edu.

Scenario economic impact & marketing implications for south Texas saltwater fishing tournaments

Yeong Nain Chi
University of Maryland Eastern Shore

Marvin G. Lovett
University of Texas - Rio Grande Valley

ABSTRACT

The main purpose of this study is to employ scenario analysis to estimate the economic impact of the expenditures of anglers who participate in saltwater fishing tournaments in Port Isabel/South Padre Island, Texas. Secondly, this study discusses the implications for initiating, maintaining, and/or expanding marketing communications, including event marketing and event sponsorships, to promote saltwater fishing tournaments in South Texas. This study also evaluates impacts on adjacent areas, identifies potential uses for economic impact information, and provides justification for investment and support of programs related to the growing needs of saltwater recreational fisheries management. To accomplish this study, the IMPLAN modeling system was used to investigate the economic impact of saltwater fishing tournaments on local and regional economies. Preliminary results using scenario analysis suggest the total annual economic impact of saltwater fishing tournaments in South Texas range from \$680,138 to \$2,040,414. These estimates were based on three scenarios of the number of participants and on what each tournament participant party would spend on lodging, fuel, food, fishing, and miscellaneous expenses. Using IMPLAN, total economic output based on several categories were estimated, including generated labor income, job opportunities/employment, and value added. This paper also examines the extent to which fishery managers, municipalities, and business and private sector stakeholders could benefit from local saltwater fishing tournaments and potentially justify investment in marketing communications and the infrastructure, which supports saltwater recreational fishing.

Keywords: saltwater fishing tournament, marketing implications, expenditures, scenario analysis, economic impact, IMPLAN.

Copyright statement: Authors retain the copyright to the manuscripts published in AABRI journals. Please see the AABRI Copyright Policy at <http://www.aabri.com/copyright.html>

INTRODUCTION

Saltwater recreational fishing is a popular pastime across the nation that generates significant economic impacts to local economies and to the nation (Ihde et al., 2011; Lovell et al., 2013). 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 364,000 jobs in the United States (Lovell et al., 2013). According to the American Sportfishing Association, in 2011 saltwater 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. Saltwater fishing expenditures represented 25% of total fishing expenditures of \$10.3 billion (trip and equipment related expenditures); total economic benefits generated by fishing in 2011 was estimated to be \$41.8 billion (Southwick Associates, 2013).

The influx of expenditures associated with saltwater recreational fishing tournament participants benefits coastal communities and promotes recreational utilization of a wide set of valued resources. Saltwater fishing tournaments provide managers, planners, and other organizations in the community with positive net gains. As the popularity of these tournaments grows, more tournaments are held economically impacting associated towns and regions. Economic impact studies of saltwater fishing tournaments have demonstrated that fishing tournaments have significant positive economic impact on local areas. In Dare County, North Carolina, non-county residents spent \$189,950 in direct expenditures during a saltwater fishing tournament and generated an additional \$148,642 in economic output in the county (Ditton et al., 2000). Studies of the 1999 Texas International Fishing Tournament (TIFT) in South Padre Island and Port Isabel, Texas, showed that TIFT anglers in the bay and offshore divisions (non-Cameron County residents) spent \$827,631 in the local area. This resulted in an overall total economic output of \$1,457,144 and 37 full-time jobs (Ditton et al., 2000). From the 2000 Virginia Beach Red, White, and Blue (RWB) Fishing Tournament held in Virginia Beach, VA, RWB tournament participant expenditures were \$450,359. Of this total, \$223,759 was spent by local residents of Virginia Beach, non-local Virginia residents spent \$109,113 in Virginia Beach, and out-of-state participants spent \$96,042 in Virginia Beach. Overall, the total economic impact of RWB Tournament angler expenditures including direct, indirect, and induced impacts resulted in a total output of \$859,000 and \$471,000 in total income. In addition, 15 new jobs were created (Thailing et al., 2001).

The results of the 2011 Marine Recreational Fishing Expenditure Survey for the U.S. Gulf of Mexico (GOM) region and Puerto Rico showed that marine recreational anglers in the GOM region and Puerto Rico spent an estimated \$9.9 billion in 2011 on both trip-related expenditures and durable goods. Based on the individual state models, angler expenditures contributed an estimated \$8 billion in total output (i.e. sales) in West Florida, followed by Louisiana (\$2 billion in output), Texas (\$1.6 billion in output), Alabama (\$819 million in output), Mississippi (\$121 million in output), and Puerto Rico (\$29 million in output). In terms of full and part-time jobs, angler expenditures contributed 66,237 jobs in West Florida, followed by Louisiana (17,808 jobs), Texas (13,332 jobs), Alabama (8,867 jobs), Mississippi (1,383 jobs), and Puerto Rico (265 jobs) (Lovell et al., 2014).

Recently, the NOAA (National Oceanic and Atmospheric Administration) has become increasingly aware of how important and integral recreational fishing is to the nation's commerce and has decided to create the U.S. National Saltwater Recreational Fisheries Policy to make this a "key focus of Agency action." The major goals of the U.S. National Saltwater Recreational Fisheries Policy include: "Support and maintain sustainable saltwater recreational fisheries resources, including healthy marine and estuarine habitats; Promote saltwater recreational fishing for the social, cultural, and economic benefit of the nation; and Enable enduring participation in, and enjoyment of, saltwater recreational fisheries through science-based conservation and management." The Implementation Plan for this policy has six guiding principles: "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" (NOAA's National Marine Fisheries Service, 2015).

In order to better understand the economic contributions of marine recreational fishing to the nation's economy, in 2014 the NOAA conducted a nationwide survey of anglers about their annual purchases of durable goods used for saltwater recreational fishing. In the United States, marine anglers spent \$28 billion on fishing equipment and durable goods (e.g., fishing rods, fishing tackle, and boats), generated an estimated \$49.6 billion in total output, added \$29 billion in contribution to gross domestic product, contributed \$18 billion to personal income, and supported more than 358,000 jobs (Lovell et al., 2016).

Further research is needed to understand the impact that saltwater fishing tournament events have on the local, regional, and state economies, and how results translate to other regions. Collaboration with anglers must improve if recreational fishery managers are to understand how and if the tournament benefits justify the use of resources, and if the costs of infrastructure, facilities improvements, and marketing 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 tournament events.

The information gathered from this study may assist towns and recreational fishery managers in designing practical management strategies in the future. Regardless of the management strategy selected, successful implementation may require significantly more input from a wider range of stakeholders. Tournament participants 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 anglers 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 anglers have the ability to discuss common ground from somewhat different perspectives. Saltwater fishing tournaments have the potential to become community events that 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 and 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. All stakeholders may be more motivated to work together if significant economic impact of recreational saltwater fishing tournaments can be identified. Effective governance of sustainable recreational fisheries is based on transparency and the provision that all stakeholders feel adequately represented (Hilborn, 2007).

MATERIALS AND 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 officials. It is especially useful in situations involving high stakes and high uncertainty. Scenario analysis can help establish best-case and worst-case scenarios and sometimes expose outcomes that might have been overlooked (Bood & Postma, 1998; Postma & Liebl, 2005). In order to estimate the potential level of economic activity arising from saltwater fishing tournaments and related marine industries, we have applied scenario economic impact assessment methods. Using scenario economic impact analysis, we are 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 saltwater fishing tournaments and angler expenditures in a specific region.

Economic impact refers to the effects on an economy as measured in employment, income, taxes, and services, based on a regional or national set of economic expenses. The economic impact of South Texas recreational saltwater fishing tournaments was analyzed using the input-output model IMPLAN (IMPLAN Group, 2016). The IMPLAN system is a widely used, nationally recognized tool, which provides detailed purchasing information and is used to customize input output models for site specific applications. IMPLAN is a computer program originally developed by the United States Department of Agriculture Forest Service in cooperation with the Federal Emergency Management Agency and the University of Minnesota. IMPLAN is dependent upon the input-output transactions table which is based on the Department of Commerce, the U.S. Bureau of Labor Statistics, and other federal and state government agencies. County-level data sets describing total output, employment, personal income, and total value added are then used to analyze regional input-output (Day, n.d.).

Direct angler expenditures in the form of goods such as bait, ice, gas, groceries, tackle, and technology, as well as services in the form of restaurants, lodging, and entertainment etc., were combined to show significant cumulative effects for both established and potential host tournament locations. Tournament angler 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 angler expenditures were found to be generally five times greater than those of their resident counterparts (Steinback, 1999). This study attempts to isolate those contributions brought to a coastal community by marine fishing tournaments. Through continued interaction with the recreational fishing tournament community, insight can be gained into anglers' perspectives related to the value of competition, the need to utilize and protect resources, and the necessity to raise expectations regarding conditions that affect successful recreational fishing tournament experiences and effective marketing communication strategies.

The IMPLAN model uses county-level economic data to generate a series of multipliers, which estimate the total economic implications of an event. Two coastal counties in Texas included for this study were Cameron and Willacy counties. Using input and output calculations of regional data, IMPLAN facilitated specialized research to ascertain where anglers choose to spend money within the Port Isabel/South Padre Island region during saltwater fishing tournaments. 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, 2014). The level of flexibility that scenario analysis provides is significant in that it can be adjusted by region and stakeholder objectives and manipulated to consider increasingly complex dynamics among fishery managers, regulators, commercial, and recreational interests and the conservation expectations of marine fishing tournaments. See Figure 1: Map of South Texas Region.

RESULTS

South Texas serves as host to roughly 10 significant recreational saltwater fishing tournaments annually. Tournaments are sponsored by a range of stakeholders and organizations that cater to different subsets of anglers which understand, support, and even define aspects of local culture. Specialized (often species specific) tournaments provide an excellent forum for dialogue with the participants. The 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 Port Isabel/South Padre Island region a variety of marine species are targeted including blue marlin, white marlin, swordfish, sailfish, black fin tuna, yellowfin tuna, wahoo, dolphin, king mackerel, jack crevalle, Spanish mackerel, and shark for offshore fishing, and redfish, speckled trout, snook, tarpon, flounder, kingfish, mangrove snapper, black drum, sheepshead, ladyfish, for inshore or bay fishing.

The overall economic contributions and particularly jobs and outside participant expenditures highlighted in the scenario economic impact analysis methods demonstrate that saltwater fishing tournaments represent a significant economic (as well as potentially collaborative/educational/biologically relevant) event. These saltwater 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.

Scenario analysis of economic impact of saltwater fishing tournaments in the Port Isabel/South Padre Island area utilizing IMPLAN, based on respective data, shows moderate tournament estimates producing economic outputs which range from \$400,000 to \$1,200,000 in direct expenditures and from \$280,138 to \$840,414 in additional economic output and impact for the local Port Isabel/South Padre Island communities. Job opportunities created by tournaments within these scenarios ranged from 3.57 to 10.71 additional jobs (Table 1). The value of saltwater fishing tournament expenditures was determined with consideration of various characteristics including level of overall recreational fishing participation, socioeconomic characteristics, age, income, gender, place of residence, etc., and involvement, tournament

fishing experience, species preferences, tournament fishing expenses by category and location, length of stay, reason for participating, and overall satisfaction level of the tournament.

Three scenarios established for this study were based on the expenditure levels of the saltwater fishing tournament participants and the number of participants. For Scenario #1, the total economic output of 10 saltwater fishing tournaments in the Port Isabel/South Padre Island area, in which each participant spent approximately \$800 in out-of-pocket expense, resulted in total direct expenditures ranging from \$400,000 (50 parties in average) to \$600,000 (100 parties in average). The additional economic output was estimated roughly to be from \$280,138 (50 parties in average) to \$560,276 (100 parties in average), generated labor income from \$88,625 (50 parties in average) to \$177,249 (100 parties in average), and created job opportunities from 3.57 (50 parties in average) to 7.14 (100 parties in average).

For Scenario #2, the total economic output of 10 saltwater fishing tournaments in the Port Isabel/South Padre Island area, in which each participant spent approximately \$1,000 in out-of-pocket expenses, resulted in total direct expenditures ranging from \$500,000 (50 parties in average) to \$1,000,000 (100 parties in average). The additional economic output was estimated roughly to be from \$450,173 (50 parties in average) to \$700,345 (100 parties in average), generated labor income from \$110,781 (50 parties in average) to \$221,562 (100 parties in average), and created job opportunities from 4.46 (50 parties in average) to 8.93 (100 parties in average).

For Scenario #3, the total economic output of 10 saltwater fishing tournaments in the Port Isabel/South Padre Island area, in which participant spent approximately \$1,200 in out-of-pocket expenses, resulted in total direct expenditures ranging from \$600,000 (50 parties in average) to \$1,200,000 (100 parties in average). The additional economic output was estimated roughly to be from \$420,207 (50 parties in average) to \$840,414 (100 parties in average), generated labor income from \$132,937 (50 parties in average) to \$265,874 (100 parties in average), and created job opportunities from 5.36 (50 parties in average) to 10.71 (100 parties in average). See Table 1 (Appendix): Scenario Economic Impact of Saltwater Fishing Tournaments in South Texas.

MARKETING IMPLICATIONS

Saltwater 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 tournament participant expenditures are often appreciated by business 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 activity/tournaments, including further commitment to related marketing efforts. Local economies can justify such marketing expenditures, as well as invest in support services, infrastructure, and amenities like boat ramps, lodging, and campgrounds, which support recreational fishing and tournaments. The direct effect of tournament angler expenditures with local businesses in coastal fishing regions leads to a positive cumulative effect on the economy and has the potential to shape views regarding marketing budgets, policies and local governance, ecosystem health, and the need for sustainable fish populations.

Event marketing relates to marketing communications, which promote a popular activity, such as sporting events including saltwater fishing tournaments. Often this type of promotion is associates the promoted event to a specified company or brand. For community-based economic

development and tourism agencies, the name of the community and/or fishing tournament becomes the brand (Belch and Belch, 2015).

Event sponsorship provides the opportunity to promote events such as saltwater fishing tournaments with financial support of local business and community organizations, which then receive recognition and exposure during the event. Brand names and logos are often displayed throughout the event and within other marketing communications (Belch and Belch, 2015).

In light of scenario analysis and conservation views expressed within the tournament fishing community, government and non-profit organizations may want to consider sponsoring these events to gain access to this important stakeholder group, salt water anglers.

Although this study identified a robust recreational fishing tournament industry in the Port Isabel/South Padre Island area, marketing strategies may be needed to respond to the sharp decline in recreational fishing overall. Over the last decade, from 2006 to 2015, the total number of recreational anglers decreased by 33.1%. During that same ten-year period, the number of trips anglers made also decreased by 27% (National Marine Fisheries Service, 2017).

CONCLUSIONS AND DISCUSSION

Economic research specific to 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 open the channels of communication, education, and research via increased data availability for fishery stock assessment and management efforts.

Coastal economies depend on the availability of marine resources for multiple uses, and appreciation for varying use valuations may help to drive the basic concept of sustainability. Attempts to understand recreational and commercial fishing communities have been hindered by isolated stakeholder frameworks. In coastal communities, where livelihoods depend on water for survival, there are many unexplored beneficial relationships due to a lack of understanding and a failure to collaborate. By highlighting fishing tournaments in a positive economic light, there will be increasing ability to access, change, or embrace recreational anglers' perspectives, which will help drive expectations for healthy and sustainable fish populations. Open dialogue bridges communication gaps and provides access to a network of citizens whose behaviors, interests, and decisions depend on the viability and availability of fish found in healthy marine ecosystems. Many recreational anglers have a natural appreciation for wilderness environments and are agreeable to strategies supporting sustainability. Saltwater fishing tournament participants and observers are frequently aware of nuances in fishing technology, techniques, and rules associated with harvest management, quotas, and permit-structures for a wide variety of marine resources. 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. 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 within the fishing community when seeking information which involves a wide range of perspectives and value systems. As methods of research develop which are generally more inclusive, acceptable to a large audience, and beneficial to both angler and fishery managers, long-term collaboration may begin to occur.

Our economic impact analysis shows the value of what recreational fishing tournaments can potentially bring to local economies using different scenarios. Economic gains for coastal

communities derived from events such as tournaments with low mortality rates (i.e. catch & release, and “sportfishing”) should be readily embraced and promoted. Continued research endeavors should consider the varying degrees of participation within the fishing community, frequency and size of tournaments, non-participant observers, as well as, industrial, commercial, and technological advances, which can enable insight into the human network connections and variations that underlie coastal community economies.

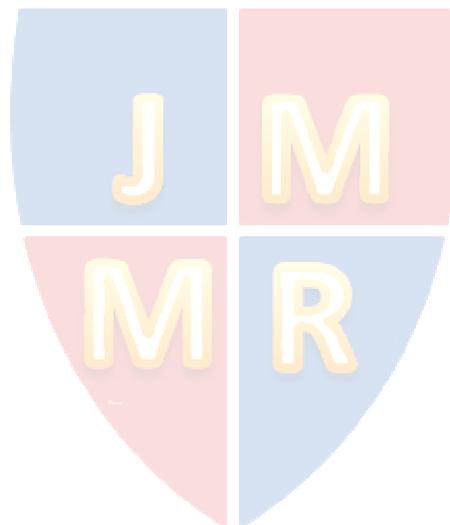
REFERENCES

- Belch, G.E. & Belch, M.A. (2015) Advertising and promotion: an integrated marketing communications perspective. McGraw Hill, New York, 10th ed.
- Bood, R. P., & Postma, T. (1998) Scenario analysis as a strategic management tool. Retrieved from <http://ecsocman.hse.ru/data/470/645/1219/scenario.pdf>.
- Day, F. n.d. Principles of impact analysis and IMPLAN applications. Huntersville, NIMPLAN Group LLC.
- Ditton, R. B., Anderson, D. K., Bohnsack, B. L., & Sutton, S. G. (2000) 1999 Texas international fishing tournament: participants’ characteristics, participation in fishing, attitudes, expenditures, and economic impacts. Technical Document, HD-614. College Station, Texas: Human Dimensions of Fisheries Research Laboratory, Texas A&M University. Retrieved from <http://texasseagrant.org/assets/uploads/publications/2000/00-703.pdf>.
- Ditton, R. B., Anderson, D. K., Thigpen, J. F. III, Bohnsack, B. L., & Sutton, S. G. (2000) 1999 Pirates Cove big game tournaments: participants’ characteristics, participation in fishing, attitude, expenditures, and economic impacts. Technical Document, HD-615. College Station, Texas: Human Dimensions of Fisheries Research Laboratory, Texas A&M University.
- Hilborn, R. (2007) Moving to sustainability by learning from successful fisheries. *Ambio: A Journal of the Human Environment*, 36(4), 296-303. [https://doi.org/10.1579/0044-7447\(2007\)36\[296:MTSBLF\]2.0.CO;2](https://doi.org/10.1579/0044-7447(2007)36[296:MTSBLF]2.0.CO;2).
- Ihda, T. F., Wilberg, M. J., Loewensteiner, D. A., Secor, D. H., & Miller, T. J. (2011) The increasing importance of marine recreational fishing in the US: Challenges for management. *Fisheries Research*, 108, 268-276. <https://doi.org/10.1016/j.fishres.2010.12.016>.
- IMPLAN Group. (2016) IMPLAN. Huntersville, NC: IMPLAN Group LLC.
- Khazzam, E. R. (2014) Of scenarios and accountants: The importance of scenario analysis for organizations. Retrieved from <https://www.ifac.org/global-knowledge-gateway/risk-management-internal-control/discussion/scenarios-and-accountants>.

- Lovell, S. J., Steinback, S., & Hilger, J. (2013) The economic contribution of marine angler expenditures in the United States, 2011. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/SPO-134, 188 p. Retrieved from <https://www.st.nmfs.noaa.gov/economics/publications/marine-angler-expenditures/marine-angler-2011>.
- Lovell, S. J., Steinback, S., & Miller, A. (2014) The economic contribution of marine angler expenditures in the U.S. Gulf of Mexico and Puerto Rico, 2011. Gulf States Marine Fisheries Commission Publication, Publication Number 224. Ocean Springs, Mississippi. Retrieved from <http://www.gsmfc.org/publications/GSMFC%20Number%20224.pdf>.
- Lovell, S. J., Hilger, J., Steinback, S., & Hutt, C. (2016) The economic contribution of marine angler expenditures on durable goods in the United States, 2014. U.S. Dep. Commerce, NOAA Tech. Memo. NMFS-F/SPO-165, 72 p. Retrieved from https://www.st.nmfs.noaa.gov/Assets/economics/durable-expenditures/documents/TM165_Durable_Goods_2014.pdf.
- National Marine Fisheries Service. (2017) Fisheries Economics of the United States, 2015: Economics and Socio-cultural Status and Trend Series. U.S. Dept. of Commerce, NOAA Technical Memorandum NMFS-F/SPO-170, 247p. Retrieved from: http://www.st.nmfs.noaa.gov/Assets/economics/publications/FEUS/FEUS-2015/Report-Chapters/FEUS%202015-AllChapters_Final.pdf.
- NOAA's National Marine Fisheries Service. (2015) National saltwater recreational fisheries policy 2015. Retrieved from http://www.nmfs.noaa.gov/sfa/management/recreational/documents/noaa_recfish_policy.pdf.
- NOAA's National Marine Fisheries Service. (2015) National saltwater recreational fisheries implementation plan 2015-2018. Retrieved from http://www.nmfs.noaa.gov/sfa/management/recreational/documents/noaa_recfish_imp_plan.pdf.
- Postma, T., & Liebl, F. (2005) How to improve scenario analysis as a strategic management tool? *Technological Forecasting & Social Change*, 72(2), 161-173. <https://doi.org/10.1016/j.techfore.2003.11.005>.
- Southwick Associates. (2013) Sportfishing in America: An economic force for conservation. Produced for the American Sportfishing Association (ASA) under a U.S. Fish and Wildlife Service (USFWS) Sport Fish Restoration grant (F12AP00137, VA M-26-R) awarded by the Association of Fish and Wildlife Agencies (AFWA), 2012. Retrieved from http://asafishing.org/uploads/2011_ASASportfishing_in_America_Report_January_2013.pdf.

Steinback, S. R. (1999) Regional economic impact assessments of recreational fisheries: An application of the IMPLAN modeling system to marine party and charter boat fishing in Maine, 1999. *North American Journal of Fisheries Management*, 19(3), 724-736. [http://dx.doi.org/10.1577/1548-8675\(1999\)0192.0.CO;2](http://dx.doi.org/10.1577/1548-8675(1999)0192.0.CO;2).

Thailing, C. E., Ditton, R. B., Anderson, D. K., Murray, T. J., Kirkley, J. E., & Lucy, J. (2001) The 2000 Virginia Beach red, white, and blue fishing tournament: Participants' characteristics, attitudes, expenditures, and economic impacts. VIMS, College of William and Mary, Virginia Marine Resource Report No. 2001-9, VSG-01-88. Retrieved from <http://web.vims.edu/GreyLit/VIMS/mrr01-9.PDF>.



APPENDIX

Figure 1: Map of South Texas Region

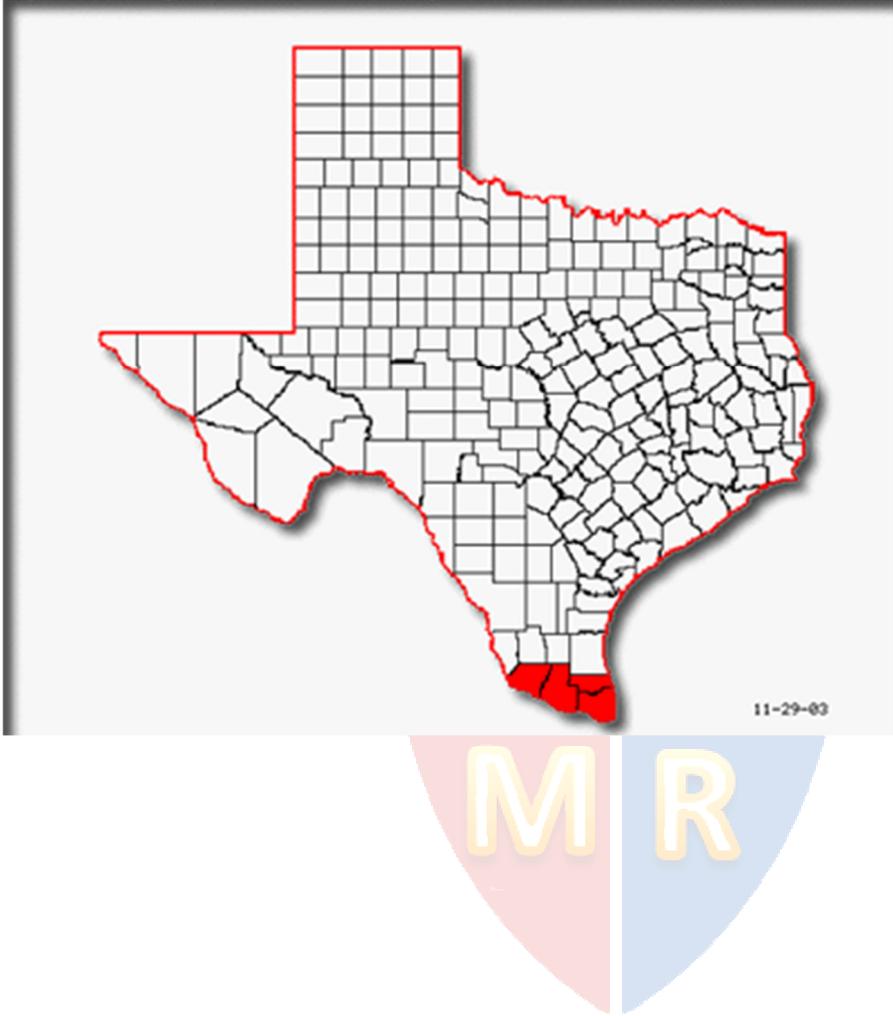


Table 1: Scenario Economic Impact of Saltwater Fishing Tournaments in South Texas*

| Scenario #1 | Tournaments | Ave # Entrants | Economic Output (min) | Economic Output (max) |
|-------------|-------------|----------------|---------------------------------|---------------------------------|
| \$800 | 10 | 50 - 100 | \$280,138 | \$560,276 |
| | | | Generated Labor Income (min) | Generated Labor Income (max) |
| | | | \$88,625 | \$177,249 |
| | | | Created Job Opportunities (min) | Created Job Opportunities (max) |
| | | | 3.57 | 7.14 |
| Scenario #2 | Tournaments | Ave # Entrants | Economic Output (min) | Economic Output (max) |
| \$1,000 | 10 | 50 - 100 | \$350,173 | \$700,345 |
| | | | Generated Labor Income (min) | Generated Labor Income (max) |
| | | | \$110,781 | \$221,562 |
| | | | Created Job Opportunities (min) | Created Job Opportunities (max) |
| | | | 4.46 | 8.93 |
| Scenario #3 | Tournaments | Ave # Entrants | Economic Output (min) | Economic Output (max) |
| \$1,200 | 10 | 50 - 100 | \$420,207 | \$840,414 |
| | | | Generated Labor Income (min) | Generated Labor Income (max) |
| | | | \$132,937 | \$265,874 |
| | | | Created Job Opportunities (min) | Created Job Opportunities (max) |
| | | | 5.36 | 10.71 |

(*based on direct expenditure estimates ranging from \$400,000 to \$1,200,000)

