



Estimating marine recreational fishing's economic contributions in New Zealand



Rob Southwick^a, John C. Holdsworth^b, Trish Rea^c, Lisa Bragg^{a,*}, Thomas Allen^a

^a Southwick Associates, Inc., PO Box 6435, Fernandina Beach, FL, 32035, United States

^b Blue Water Marine Research, Tutukaka, New Zealand

^c Moana Consultants, Auckland, New Zealand

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ABSTRACT

Economic information is critical for explaining why recreational fishing and marine stewardship is important to all citizens of a nation. Successfully raising public awareness of the importance of healthy and abundant marine fisheries is dependent on having reliable economic insights. These types of data can be used to inform discussions about how to institute better conservation policies, secure new partners and resources for conservation initiatives, and ultimately boost the long-term health and productivity of marine fisheries. Until now, the economic contribution of recreational marine fishing in New Zealand has not been measured, placing recreational fishing interests at a disadvantage compared to the commercial sector that has such information in various forms. This project filled that vacuum. Beginning with the \$946 million spent annually by more than 600,000 resident and visiting New Zealand fishers, these dollars circulate through the national economy, supporting 8000 jobs, stimulating \$1.7 billion in total economic activity, contributing \$638 million in Gross Domestic Product and \$342 million in salaries, wages and small business profits while adding nearly \$187 million in tax revenues. This study was built using data collection and analytical approaches available for use by other nations to increase public awareness of the critical economic importance of their marine fisheries.

1. Introduction

Management of New Zealand's fisheries is guided by the Fisheries Act of 1996. The Act provides for the conservation, utilization, enhancement, and development of fisheries resources to enable people to provide for their social, economic, and cultural well-being while maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future generations (Fisheries Act, 1996). Three key fisheries: 1) recreational, 2) commercial, and 3) customary are recognized by the Act. Customary being the non-commercial aboriginal seafood harvest for traditional purposes, under permit, of the Maori.

Recreational saltwater fishing is one of the most popular outdoor activities in New Zealand (Sports New Zealand, 2015). Expenditures made for the purpose of recreational marine fishing support a significant number of industries such as tackle retailers, boat builders, hotels, restaurants, and more. Despite the popularity of marine recreational fishing, the economic activity associated with marine recreational marine fishing has not yet been quantified.

Allocations across fisheries on an economic basis should consider changes 'at the margin' in the both consumer and producers surpluses

(Mcphee and Hundloe, 2004). However, implementing a consumer surplus study and developing marginal value and utility models for New Zealand can be cost-prohibitive. Value transfer, a method of estimating the non-market value based on available information from already completed studies, is an alternative approach to primary consumer surplus research.

Considering an original consumer surplus study to be cost-prohibitive, in 2011 the New Zealand Marine Research Foundation (Foundation) sponsored a scoping study to review all published international economic surveys on recreational fishing, with a view to using the value transfer method to estimate the non-market value (consumer surplus) of marine recreational fishing in New Zealand. Researchers from the Faculty of Commerce at Lincoln University found 27 unique studies worldwide that evaluated the worth of recreational fishing in the marine environment. These studies reported values per day, per trip, or per year. They differed greatly in terms of spatial scale and valuation method. The report concluded that the prospects for transferring values from other locations to accurately assess the value of the New Zealand recreational marine fishery were extremely slim (Kerr and Latham, 2011).

* Corresponding author.

E-mail addresses: Rob@SouthwickAssociates.com (R. Southwick), LBragg@SouthwickAssociates.com (L. Bragg).

An opportunity arose to leverage the latest data on the number of recreational fishers and number of fishing trips from the first National Panel Survey (NPS) of recreational fishers conducted by National Research Bureau, Ltd. (NRB) for the Ministry for Primary Industries (MPI). In light of this opportunity, the Foundation undertook a project to estimate the economic contribution, or the cycling of economic activity through an existing economy (Watson et al., 2007) associated with recreational fishers in New Zealand, which became the basis for this paper.

Economic contributions of recreational fishing to a regional or national economy has received investigation worldwide. McIlgorm and Pepperell (2013), Ernst and Young (2009), and Lyle et al. (2014) focus their research in Australia. Lovell et al. (2014, 2013), US DOI (2012), NMFS (2010), Southwick et al. (2010), Yong Chacon et al. (2010), and Pawson et al. (2007) focus their research efforts in North and Central America as well as the European Union. While the magnitude of the economic contributions vary by the size of the fisher population, their spending on fishing-related recreation and the linkages within the economy under study, suggest that recreational marine fishing is more than just a peaceful escape for some or an exhilarating experience of a catch for others.

Fishing-related activity spurs significant retail spending on items such as tackle, line, rods, and bait as well as food, lodging, and fuel. As this economic activity cycles through the economy, it generates indirect spending by manufacturers, wholesalers, and other supporting industries and makes substantial contributions to gross domestic product. It also supports numerous jobs and salaries in the fishing-related industry and service sectors. Economic information is critical therefore to explaining why a healthy recreational fishing industry and marine stewardship is important to public policy development (Watson et al., 2007). In combination with additional economic valuation studies, its results can be used to inform discussions about how to institute sustainable and equitable conservation policies, secure new partners and resources for conservation initiatives, and ultimately boost the long-term health and productivity of marine fisheries.

2. Methods

There are three measures commonly used, and sometimes confused, to evaluate economic analysis, each using specific techniques and producing values, typically monetary, with different interpretations (Watson et al., 2007). Economic benefit analysis investigates social welfare measures, economic impact analysis investigates an economy in the presence or absence of a change to an industry, and economic contribution analysis investigates the level of economic activity associated with an industry.

To be clear, this study did not set out to estimate the value fishers derive over and above what they spend (economic benefit) nor can it estimate the shrinkage in the economy if recreational fishing did not exist (economic impact). What this study does do is provide a better understanding of the general size, nature, and importance across the New Zealand national economy; effectively creating a snapshot of the economic contribution associated with New Zealand marine recreational fishing in 2014–15. Commercial and customary fisheries are not considered.

The number of people participating in the activity under study and their spending associated with the activity provide the basis for the initial measure of economic activity, referred to as total direct spending. For this analysis, the number of participants, both resident and non-resident fishers, are derived from two existing sources of data. Their spending is estimated via a survey implemented as part of this study. One key issue associated with quantifying spending is to include purchases related to a trip, when fishing occurred in this case, while at the same time isolating only that proportion of spending attributable to the activity under study, as best as possible.

The additional activity stemming from total direct spending and

flowing through inter-industry linkages is estimated using output multipliers. When more than one set of multipliers are available, the selection is based on those that best reflect the study-region's economy and provide the level of required granular detail at the industry-level. More discussion as to the data sources, key issues, assumptions, and adjustments are provided in Sections 2.1 through 2.3.

2.1. Quantifying marine fishing participation in New Zealand

2.1.1. New Zealand residents

Fishing has been identified as one of the top five most popular outdoor recreational activities among New Zealand residents with 20% of residents 18 years and older participating each year (Sports New Zealand-www.sportnz.org.nz-2015). One of the critical needs for this research effort was to determine the size of New Zealand's resident marine fishing population, regardless of harvest and avidity. To do this, we relied on the Ministry for Primary Industries (MPI) nationwide panel survey implemented among marine fishers by the National Research Bureau (NRB) between October 2011 and September 2012 (Wynne-Jones et al., 2014).

Fishers were recruited into the NRB survey through face to face interviews using a random mesh block sampling frame of dwellings and random selection of one resident per household. More than 7000 marine fishers agreed to participate from 30,390 dwellings approached. Contact with survey participants was made at structured intervals over a twelve-month period and detailed information collected by phone interview on their level of fishing activity, location visited, platform used and harvest, if any.

By applying calculated expansion weights based on selection probability, multiple demographic characteristics, and fishing activity-level of this respondent group, NRB researchers estimated New Zealand's resident marine fisher population 15 years and older, the number of fishing trips, and harvest by species. Interested readers are encouraged to refer to the detailed report published by MPI for additional explanation about the techniques used to develop the expansion weights (Wynne-Jones et al., 2014; Heinemann et al., 2015).

The NRB restricts the target audience to people 15 years of age or older because of New Zealand's requirement of parental permission for persons younger than 15 years of age. The MBIE's International Visitor Survey discussed in Section 2.1.2 also applies this restriction to the target audience. This restriction may skew estimates of the fisher population toward a conservative count.

2.1.2. International visitors

The estimate of international visitors was based on the country's ongoing International Visitor Survey (IVS) managed by the Ministry of Business, Innovation, and Employment (MBIE). The framework for the most recently implemented survey was to randomly sample approximately 9000 visitors, age 15 years or older, to New Zealand each year. The population of sampled travelers was contacted after their trip and asked to share information about activities, locations visited, and spending. For an in-depth discussion about the IVS and the methodologies employed readers are encouraged to refer to the IVS website (MBIE).

The MBIE IVS data only provides the number of visitors who fished, not whether the primary purpose was for marine recreational fishing. As a proxy, we estimate the proportion of international visitors who travel for the primary purpose of marine fishing based on data gathered through a survey of New Zealand's charter operators undertaken as part of this research. Operators may not be precise historians of the number of their customers who come primarily to fish. Nevertheless, we rely on operator estimates in the absence of primary data from the international visitor survey.

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