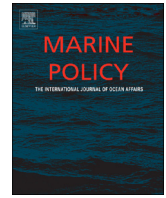




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Recreational fishing and boating: Are the determinants the same?

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ABSTRACT

The research uses household survey data collected from 656 people in Townsville (adjacent to the Great Barrier Reef, Australia) within a hurdle model to investigate key factors influencing both the probability of participating and the frequency of (a) boating trips which involve fishing; (b) boating trips which do not involve fishing; and (c) land-based fishing trips. The findings suggest that there are differences in determinants, highlighting the importance of disaggregating the fishing/boating and boat/land-based experience (an uncommon practice in the literature) if wishing to obtain information for use in the design of monitoring programs, policy and/or for developing monitoring and enforcement strategies relating to fishing and boating.

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1. Introduction

It is increasingly recognised that the sustainable management of marine resources requires managers and policy makers to understand (a) the way in which recreational boaters and fishers make decisions about their participation and the frequency of using the marine resources and (b) the factors that impact their behaviour, choices and welfare. However, the relative scarcity of regionally relevant recreational boating and fishing¹ data increases the challenges facing policy makers and resource managers who have to balance sustainable use with protection of the environment while maintaining high quality recreational experiences [1].

Most published studies on the value of recreational fishing [4–8] and boating [9–12] have been done in the USA, Canada and Europe, although some have also been done in New Zealand [13,14], in different parts of Australia [15–18] and on the Great Barrier Reef (GBR) [19–21]. But – most pertinent here – the vast majority of these studies have looked at boating and fishing as if it were a single, homogenous, good [6,19,20–24]. Others have treated boat and land-based fishing as similar [25–30]. This is problematic, since

treating them as a single, aggregated ‘good’ is equivalent to assuming that the drivers for boating and fishing and for boat and land-based fishing are the same but they may not be. As such, key indicators of recreational boating and fishing activities that have been identified by previous research (see Fig. 1) may apply to either boating, or fishing, or either boat fishing, or land-based fishing but not necessarily all.

The key point to note here, is that there are only a limited number of studies that have looked at fishing by itself – that of Zhang et al. [32]; Rolfe and Prayaga [31] and Loret et al. [8]. The first study looked at land-based fishing, whilst the other two looked at boat fishing. To the best of our knowledge no previous study has comprehensively investigated and compared different types of fishing (land and boat-based) with non-fishing related boating activities. As alluded to before, this knowledge gap is problematic, since some policy implementations and monitoring programs require information about boating and fishing to be considered separately (e.g. policies about boat-ramps and coastguards versus policies about fishing limits). Hence, there is a need to disaggregate the fishing and boating experience as well as boat fishing and land-based fishing.

The research described in this paper helps to redress that problem by demonstrating that it is indeed possible to look at boating and fishing separately. It uses the Townsville region near the Great Barrier Reef (GBR) as a case-study area, and analyses data collected from 656 householders in a hurdle model to identify important determinants of recreational boating and fishing. It looks at factors which influence both the probability of participating in boating and fishing activities and also at factors influencing

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¹ Recreational boats in this study are those that used for the purposes of recreation and not for any type of business, trade or commerce [2]. ‘Recreational fishing’ is used in accordance with definition by FRDC [3]. The recreational fishing sector comprises enterprises and individuals involved in recreational, sport or subsistence fishing activities that do not involve selling the products of these activities.

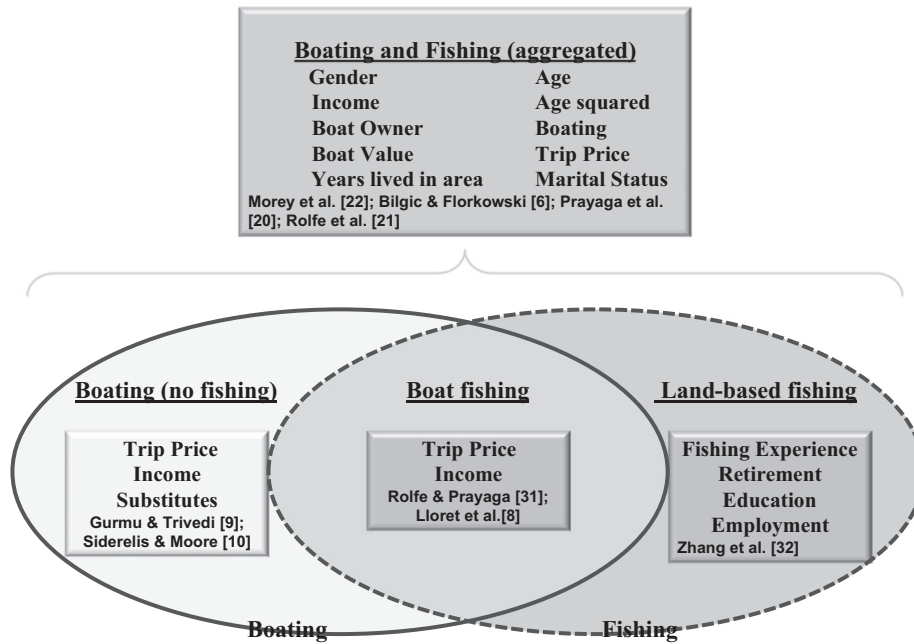


Fig. 1. Determinants of recreational boating and fishing – summary from the literature.

the intensity of boating and fishing trips.² As such, it provides information that allows one to address the following research question:

- Are the main drivers for boating and fishing and for boat and land-based fishing similar or different?

The paper is structured as follows: a brief overview of the case-study area is presented next. The data collection processes are discussed in Section 3. Section 4 describes the model and Section 5 provides the results. The discussion and some of the policy implications of our findings are provided in Sections 6 and 7 respectively.

2. Study area

The GBR is the largest coral reef system in the world. The marine park area extends more than 2000 km north–south on the continental shelf off Queensland and covers 348,700 km². The GBR is unique in its size, diversity of plants and marine species. In 1975 it was declared a marine park by the Australian Government and in 1981 it was declared a World Heritage Area [33]. The Great Barrier Reef Marine Park Authority (GBRMPA) is responsible for management (including fisheries) within the Great Barrier Reef Marine Park (GBRMP). It is challenged with conservation of fish resources and sustainability of the environment for the future [38].

² Despite the fact on-site surveys are ‘cheaper and practical way to obtain data on visits to sites’ [34, p. 568] the study described in this paper uses household survey to get information about recreation in Townsville region from people who go boating/fishing and who are not. On-site survey is a subject to only truncation but also endogenous stratification when users are ‘over-represented by on-site sampling’ [[34, p. 568], [35,37]] and where ‘frequent visitors are more likely to be sampled’ [34, p. 572]. Loomis [35] found that the consumer surplus estimates derived from on-site survey were significantly larger than the estimates derived from household survey. González-Sepúlveda and Loomis [37] finding also confirmed that ‘using on-site samples of visitors overstates visitor willingness to pay (WTP) estimates relative to a household sample of visitors, and substantially overstates the unconditional population values’ [37, p. 561]. To avoid these problems household survey was used.

The land area of eastern Queensland adjacent to the GBR Marine Park (GBRMP) (termed the GBR catchment area) includes the cities of Townsville, Cairns, Bowen, Mackay, Rockhampton, and Gladstone [39] (see Fig. 2). The current population is expected to increase by 40 per cent by 2026 [40].

The increasing number of people living adjacent to the GBR leads to an increase of use of the marine park area and an increase in the number of recreational vessels within the catchment [42,43]. In December 2011, there were almost 90,000 registered recreational vessels in the GBR catchment area [44]. The growing popularity of recreational boating in Queensland is increasing congestion and pollution pressures on coastal waterways and rivers, where most recreational vessels are used [45]. ‘This has driven an increased demand for boating facilities such as marinas, moorings and boat ramps, often located within the GBR region or adjacent coastal habitats’ [42, p.101], [46]. Indeed researchers have estimated that between 63 and 90 per cent of all registered vessels in the GBR catchment are used solely for recreational boating and fishing [19,43,47,48]. Evidently, the increase in population and in the number of recreational boats has the potential to increase fishing activity (both off-shore and land-based) putting even more pressure on infrastructure and on the fish stock.

Townsville is the largest town within the catchment, is one of the high growth coastal regions in Queensland [49] and has the second highest number of (registered) recreational boats [44] (see Fig. 3). As projected by Economic Associates [46] it will have the largest increase in boat registration in the next 20 years, and it also falls in the area with highest probability of recreational fishing usage [50]. As such the region offers itself as an ideal case study, since results are likely to be of use to regional policy makers.

3. Survey (data)

Most recreational fishing studies collected data from fishers at for example boat ramps. This study is different, in that it collected data via a mailout survey of randomly selected households in the Townsville region. As such it collected data from both participants and non- participants in recreational fishing and boating. It should be noted that it is also different with regard to the nature of data:

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